



Dynegy Midwest Generation, LLC  
1500 Eastport Plaza Dr.  
Collinsville, IL 62234

January 28, 2022

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

**Re: Hennepin Old West Ash Pond System (IEPA ID: W1550100002-01, 03) Annual Consolidated Report**

Dear Mr. LeCrone:

In accordance with 35 IAC § 845.550, Dynegy Midwest Generation, LLC (DMG) is submitting the annual consolidated report for the Hennepin Old West Ash Pond System (IEPA ID: W1550100002-01, 03), as enclosed.

Sincerely,

A handwritten signature in blue ink that reads "Dianna Tickner".

Dianna Tickner  
Director Decommissioning & Demolition

Enclosures

Annual Consolidated Report  
Dynergy Midwest Generation, LLC  
Hennepin Power Plant  
Old West Ash Pond System; IEPA ID: **W1550100002-01, 03**

In accordance with 35 IAC § 845.550, Dynergy Midwest Generation, LLC (DMG) has prepared the annual consolidated report. The report is provided in two sections as follows:

Section 1

1) Annual Inspection Report (Section 845.540(b))

Section 2

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

Section 1

Annual Inspection Report

**ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER**

35 IAC § 845.540

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

- A) A review of available information regarding the status and condition of the CCR surface impoundment, including files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections);
- B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures;
- C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation;
- D) The annual hazard potential classification certification, if applicable (see Section 845.440);
- E) The annual structural stability assessment certification, if applicable (see Section 845.450);
- F) The annual safety factor assessment certification, if applicable (see Section 845.460); and
- G) The inflow design flood control system plan certification (see Section 845.510(c)).

**SITE INFORMATION**

Site Name / Address / Date of Inspection	Hennepin Power Station Putnam County, Illinois 62327 10/21/2021
Operator Name / Address	Luminant Generation Company LLC 6555 Sierra Drive, Irving, TX 75039
CCR unit	Old West Polishing Pond

**INSPECTION REPORT 35 IAC § 845.540**

Date of Inspection 10/21/2021

(b)(1)(D) The annual hazard potential classification certification, if applicable (see Section 845.440).	Based on a review of the CCR unit's annual hazard potential classification, the unit is classified as a Class II CCR surface impoundment.
(b)(2)(A) Any changes in geometry of the structure since the previous annual inspection.	The Old West Polishing Pond was clean closed in 2020.
(b)(2)(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection	N/A
b)(2)(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;	N/A
b)(2)(D) The storage capacity of the impounding structure at the time of the inspection	Approximately 60 acre-feet
(b)(2)(E) The approximate volume of the impounded water and CCR contained in the unit at the time of the inspection.	Approximately 1 acre-feet of storm water only.
(b)(2)(F) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit	Based on a review of the CCR unit's records and visual observation during the on-site inspection, there was no appearance of an actual or potential structural weakness of the CCR unit, nor an existing condition that is disrupting or would disrupt the operation and safety of the unit.

INSPECTION REPORT 35 IAC § 845.540

Date of Inspection 10/21/2021

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

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

I, James Knutelski, P.E., certify under penalty of law that the information submitted in this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Illinois. The information submitted, is to the best of my knowledge and belief, true, accurate and complete. Based on the annual inspection, the design, construction, operation, and maintenance of the CCR Unit is consistent with recognized and generally accepted good engineering standards. Based on a review of the records for the CCR unit, the hazard potential classification was conducted in accordance with the requirements of Section 845.440 and the Safety Factor Assessment was conducted in accordance with the requirements of Section 845.460.



James Knutelski, PE  
Illinois PE No. 062-054206, Expires: 11/30/2023  
Date: 01/05/2022

Site Name: Hennepin Power Station

CCR Unit: Old West Polishing Pond

35 IAC § 845.540 (b)(2)(B)		
Instrument ID #	Type	Maximum recorded reading since previous annual inspection (ft)
None		

35 IAC § 845.540 (b)(2)(C)						
Approximate Depth / Elevation						
Since previous inspection:	Elevation (ft)			Depth (ft)		
	Minimum	Present	Maximum	Minimum	Present	Maximum
Impounded Water		446			1	
CCR	0		0	0		0

**ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER**

35 IAC § 845.540

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

- A) A review of available information regarding the status and condition of the CCR surface impoundment, including files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections);
- B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures;
- C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation;
- D) The annual hazard potential classification certification, if applicable (see Section 845.440);
- E) The annual structural stability assessment certification, if applicable (see Section 845.450);
- F) The annual safety factor assessment certification, if applicable (see Section 845.460); and
- G) The inflow design flood control system plan certification (see Section 845.510(c)).

**SITE INFORMATION**

Site Name / Address / Date of Inspection	Hennepin Power Station Putnam County, Illinois 62327 10/21/2021
Operator Name / Address	Luminant Generation Company LLC 6555 Sierra Drive, Irving, TX 75039
CCR unit	Old West Ash Pond

**INSPECTION REPORT 35 IAC § 845.540**

Date of Inspection 10/21/2021

(b)(1)(D) The annual hazard potential classification certification, if applicable (see Section 845.440).	Based on a review of the CCR unit's annual hazard potential classification, the unit is classified as a Class II CCR surface impoundment.
(b)(2)(A) Any changes in geometry of the structure since the previous annual inspection.	Capping and closure of the Old West Ash Pond complete.
(b)(2)(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection	See the attached.
b)(2)(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;	See the attached.
b)(2)(D) The storage capacity of the impounding structure at the time of the inspection	Capping and closure of the Old West Ash Pond complete.
(b)(2)(E) The approximate volume of the impounded water and CCR contained in the unit at the time of the inspection.	Approximately 310 acre-feet of capped and closed CCR.
(b)(2)(F) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit	Based on a review of the CCR unit's records and visual observation during the on-site inspection, there was no appearance of an actual or potential structural weakness of the CCR unit, nor an existing condition that is disrupting or would disrupt the operation and safety of the unit.

INSPECTION REPORT 35 IAC § 845.540

Date of Inspection 10/21/2021

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

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

I, James Knutelski, P.E., certify under penalty of law that the information submitted in this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Illinois. The information submitted, is to the best of my knowledge and belief, true, accurate and complete. Based on the annual inspection, the design, construction, operation, and maintenance of the CCR Unit is consistent with recognized and generally accepted good engineering standards. Based on a review of the records for the CCR unit, the hazard potential classification was conducted in accordance with the requirements of Section 845.440 and the Safety Factor Assessment was conducted in accordance with the requirements of Section 845.460.



James Knutelski, PE  
Illinois PE No. 062-054206, Expires: 11/30/2023  
Date: 01/05/2022



Site Name: Hennepin Power Station

CCR Unit: Old West Ash Pond

35 IAC § 845.540 (b)(2)(B)		
Instrument ID #	Type	Maximum recorded reading since previous annual inspection (ft)
P002	Piezometer	abandoned
P003	Piezometer	abandoned

35 IAC § 845.540 (b)(2)(C)						
Since previous inspection:	Approximate Depth / Elevation					
	Elevation (ft)			Depth (ft)		
	Minimum	Present	Maximum	Minimum	Present	Maximum
Impounded Water						
CCR	460		465	19		24

Section 2

Annual Groundwater and Corrective Action Report

Prepared for  
**Dynegy Midwest Generation, LLC**

Date  
**January 31, 2022**

Project No.  
**1940100711-008**

**2021 ANNUAL GROUNDWATER  
MONITORING AND CORRECTIVE  
ACTION REPORT**  
**WEST ASH POND SYSTEM**  
**HENNEPIN POWER PLANT**  
**HENNEPIN, ILLINOIS**

**2021 ANNUAL GROUNDWATER MONITORING AND  
CORRECTIVE ACTION REPORT  
HENNEPIN POWER PLANT WEST ASH POND SYSTEM**

Project name **Hennepin West Ash Pond System**  
Project no. **1940100711-008**  
Recipient **Dynegy Midwest Generation, LLC**  
Document type **Annual Groundwater Monitoring and Corrective Action Report**  
Version **FINAL**  
Date **January 31, 2022**  
Prepared by **Chase J. Christenson, PG**  
Checked by **Lauren Cook**  
Approved by **Brian Hennings**  
Description **Annual Report in Support of Part 845**

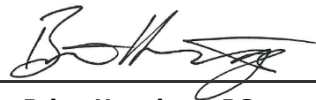
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**Chase J. Christenson, PG**  
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Senior Managing Hydrogeologist

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Table B	Summary of Groundwater Samples Collected

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Figure 1	Proposed 845 Groundwater Monitoring Well Network
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## APPENDICES

Appendix A	<i>Table 3-1. Background Groundwater Quality and Standards, Groundwater Monitoring Plan, Hennepin, West Ash Pond System, Hennepin, Illinois.</i>
Appendix B	<i>History of Potential Exceedances, Hennepin, West Ash Pond System, Hennepin, Illinois.</i>

## ACRONYMS AND ABBREVIATIONS

§	Section
35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
bgs	below ground surface
CCR	coal combustion residuals
DMG	Dynegy Midwest Generation, LLC
GMP	Addendum to the Groundwater Monitoring Plan
GWPS	groundwater protection standard
HPP	Hennepin Power Plant
ID	identification
IEPA	Illinois Environmental Protection Agency
NID	National Inventory of Dams
No.	number
Part 845	35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SI	surface impoundment
SSI	statistically significant increase
TDS	total dissolved solids
UA	uppermost aquifer
WAPS	West Ash Pond System

## EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 35 of the Illinois Administrative Code (35 I.A.C.) Section (§) 845.610(e) (*Annual Groundwater Monitoring and Corrective Action Report*) for the West Ash Pond System (WAPS) located at Hennepin Power Plant (HPP) near Hennepin, Illinois.

An operating permit application for the WAPS was submitted by Dynegy Midwest Generation, LLC (DMG) to the Illinois Environmental Protection Agency (IEPA) by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. The WAPS is recognized by Vistra identification (ID) number (No.) 804, IEPA ID No. W1550100002-01 and W1550100002-03, and National Inventory of Dams (NID) No. IL50698.

An Addendum to the Groundwater Monitoring Plan (GMP; Ramboll Americas Engineering Solutions, Inc. [Ramboll], 2021a), which included a Statistical Analysis Plan, was developed and submitted as part of the operating permit application to propose a monitoring well network and monitoring program specific to the WAPS that will comply with 35 I.A.C. § 845: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (Part 845; IEPA, 2021). The proposed groundwater protection standards (GWPS), as presented in the GMP, are shown in **Appendix A**.

Groundwater concentrations observed from 2015 to 2021 were evaluated in the presentation of the History of Potential Exceedances (Ramboll, 2021b) included in the operating permit application, as required by 35 I.A.C. § 845.230(d). Groundwater concentrations from 2015 to 2021 that exceeded the GWPS set forth in 35 I.A.C. § 845.600(a) are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. The determination of potential historical exceedances of 35 I.A.C. § 845.600(a) and a summary of potential historical exceedances of proposed GWPS are shown in **Appendix B**.

Evaluation of background groundwater quality was presented in the GMP (Ramboll, 2021a), and compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of an operating permit.

This report summarizes only the information presented in the operating permit application for the WAPS, submitted to IEPA by October 31, 2021, which is pending IEPA approval.

## 1. INTRODUCTION

This report has been prepared by Ramboll on behalf of DMG, to provide the information required by 35 I.A.C. § 845.610(e) for the WAPS located at HPP near Hennepin, Illinois. The owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) must prepare and submit to IEPA by January 31<sup>st</sup> of each year an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year as part of the Annual Consolidated Report required by 35 I.A.C. § 845.550. The Annual Groundwater Monitoring and Corrective Action Report shall document the status of the groundwater monitoring and corrective action plan for the CCR SI, summarize key actions completed, including the status of permit applications and Agency approvals, describe any problems encountered and actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the annual report must contain the following information, to the extent available:

1. A map, aerial image, or diagram showing the CCR SI and all background (or upgradient) and downgradient monitoring wells, including the well ID Nos., that are part of the groundwater monitoring program for the CCR SI, and a visual delineation of any exceedances of the GWPS.
2. 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.
3. A potentiometric surface map for each groundwater elevation sampling event required by 35 I.A.C. § 845.650(b)(2).
4. In addition to all the monitoring data obtained under 35 I.A.C. §§ 845.600-680, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected.
5. A narrative discussion of any statistically significant increases (SSIs) over background levels for the constituents listed in 35 I.A.C. § 845.600.
6. Other information required to be included in the annual report as specified in 35 I.A.C. §§ 845.600-680.
7. A section at the beginning of the annual report that provides an overview of the current status of the groundwater monitoring program and corrective action plan for the CCR SI. At a minimum, the summary must:
  - i. Specify whether groundwater monitoring data shows a SSI over background concentrations for one or more constituents listed in 35 I.A.C. § 845.600.
  - ii. Identify those constituents having a SSI over background concentrations and the names of the monitoring wells associated with the SSI(s).
  - iii. Specify whether there have been any exceedances of the GWPS for one or more constituents listed in 35 I.A.C. § 845.600.
  - iv. Identify those constituents with exceedances of the GWPS in 35 I.A.C. § 845.600 and the names of the monitoring wells associated with the exceedance.
  - v. Provide the date when the assessment of corrective measures was initiated for the CCR SI.



- vi. Provide the date when the assessment of corrective measures was completed for the CCR SI.
- vii. Specify whether a remedy was selected under 35 I.A.C. § 845.670 during the current annual reporting period, and if so, the date of remedy selection.
- viii. Specify whether remedial activities were initiated or are ongoing under 35 I.A.C. § 845.780 during the current annual reporting period.

An operating permit application for the WAPS was submitted by DMG to IEPA by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d), and is pending approval. Therefore, the Part 845 groundwater monitoring program has not yet been initiated. This report summarizes the data collected for the WAPS as it was presented in the operating permit application, and includes the following:

- A map showing the CCR SI and all proposed background (or upgradient) and downgradient monitoring wells, including their identification numbers, that are part of the proposed groundwater monitoring program for the CCR SI presented in the GMP included in the operating permit application (Ramboll, 2021a).
- A summary from the independent sampling events completed in 2021, including the number of groundwater samples that were collected for analysis for each proposed background and downgradient well and the dates the samples were collected.
- The proposed GWPS as presented in the GMP.
- A summary of the History of Potential Exceedances included in the operating permit application (Ramboll, 2021b), as required by 35 I.A.C. § 845.230(d), summarizing groundwater concentrations from 2015-2021 that exceeded the proposed GWPS.
  - These are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A of the GMP), which is pending IEPA approval.

## **2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS**

The Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for the WAPS.

### 3. KEY ACTIONS COMPLETED IN 2021

The proposed Part 845 monitoring well network is presented in **Figure 1** and summarized below in **Table A**. The proposed Part 845 monitoring well network includes wells previously installed for other programs.

**Table A. Proposed Part 845 Monitoring Well Network**

Well ID	Monitored Unit	Well Screen Interval (feet bgs)	Well Type <sup>1</sup>
21	UA	49 - 59	Compliance
21R	UA	37.6 - 47.6	Compliance
22	UA	24.4 - 34.4	Compliance
22D	UA	49.7 - 59.7	Compliance
23	UA	34 - 44	Compliance
24	UA	56.4 - 66.4	Compliance
27	UA	30 - 35	Compliance
32	UA	7 - 17	Background
34	UA	30 - 35	Background
35	UA	8 - 18	Compliance
49	UA	35 - 45	Compliance
50	UA	19.6 - 29.6	Compliance
51	UA	56 - 66	Compliance
51	UA	56 - 66	Compliance

<sup>1</sup> Well type refers to the role of the well in the monitoring network.

bgs = below ground surface

UA = uppermost aquifer

Select proposed Part 845 monitoring wells are monitored as part of the monitoring system for the requirements of Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257 and to assess natural attenuation. A summary of the samples collected during 2021 is included in **Table B** below. All analytical results obtained in 2021 are presented in the presentation of the History of Potential Exceedances (Ramboll, 2021b).

**Table B. Summary of Groundwater Samples Collected**

Sampling Dates	Parameters Collected	Monitoring Wells Sampled <sup>1</sup>
February 24, 2021	Metals <sup>2</sup> , mercury, inorganic parameters <sup>3</sup> , radium 226 and 228, field parameters <sup>4</sup>	22 and 23
March 4 - 30, 2021	Arsenic, boron, calcium, chloride, lithium, molybdenum, sulfate, total dissolved solids (TDS)	22 and 23
March 17 - 19, 2021	Appendix III <sup>5</sup> , Appendix IV <sup>6</sup> , field parameters <sup>4</sup>	21R, 22, 22D, 23, 27, 35, 49, 50, and 51
June 23 - 24, 2021	Appendix III <sup>5</sup> , Appendix IV <sup>6</sup> , field parameters <sup>4</sup>	21R, 22, 22D, 23, 27, 35, 49, and 50

<sup>1</sup> In general, one sample was collected per monitoring well per event.

<sup>2</sup> Total metals include antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, mercury, molybdenum, selenium, thallium.

<sup>3</sup> Inorganic parameters include chloride, cyanide, fluoride, nitrate-N, sulfate, TDS.

<sup>4</sup> Field parameters include pH, dissolved oxygen, temperature, oxidation/reduction potential, specific conductance, and turbidity.

<sup>5</sup> Appendix III parameters include boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids TDS.

<sup>6</sup> Appendix IV parameters include antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, radium 226 and 228 combined, selenium, thallium.

Evaluation of background groundwater quality is presented in the GMP and the proposed GWPSs are included in **Appendix A**. Compliance with Part 845 will be determined after the first round of groundwater sampling following IEPA's issuance of the operating permit for the WAPS.

Groundwater concentrations from 2015 to 2021 were evaluated in the presentation of the History of Potential Exceedances included in the operating permit application. Groundwater concentrations that exceeded the proposed GWPS are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan, which is pending IEPA approval. Tables summarizing how potential historical exceedances were determined and the potential exceedances themselves are provided in **Appendix B**.

## **4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS**

The first round of groundwater sampling for compliance with the Part 845 groundwater monitoring program will commence the quarter following IEPA approval and issuance of the operating permit for the WAPS, and in accordance with the GMP.

## 5. KEY ACTIVITIES PLANNED FOR 2022

The following key activities are planned for 2022:

- Groundwater sampling and reporting for compliance will be initiated the quarter following issuance of the operating permit at all monitoring wells in the approved monitoring well network as presented in the GMP and required by 35 I.A.C. § 845.610(b)(3), including:
  - Monthly groundwater elevations.
  - Quarterly groundwater sampling.

## 6. REFERENCES

Illinois Environmental Protection Agency (IEPA), 2021. *In the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Title 35 Illinois Administration Code 845, Addendum*. April 15, 2021.






Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021a. *Addendum to the Groundwater Monitoring Plan. Hennepin Power Plant, West Ash Pond System, Hennepin, Illinois*. Dynege Midwest Generation, LLC. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021b. *History of Potential Exceedances. Hennepin Power Plant, West Ash Pond System, Hennepin, Illinois*. Dynege Midwest Generation, LLC. October 25, 2021.

## FIGURES





-  BACKGROUND WELL
-  COMPLIANCE WELL
-  PART 845 REGULATED UNIT (SUBJECT UNIT)
-  LIMITS OF FINAL COVER
-  PROPERTY BOUNDARY



**PROPOSED PART 845  
GROUNDWATER MONITORING  
WELL NETWORK**

**2021 ANNUAL GROUNDWATER MONITORING  
AND CORRECTIVE ACTION REPORT  
WEST ASH POND SYSTEM**  
HENNEPIN POWER PLANT  
HENNEPIN, ILLINOIS

**FIGURE 1**



## **APPENDICES**

**APPENDIX A**  
**TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND**  
**STANDARDS**

**TABLE 3-1. BACKGROUND GROUNDWATER QUALITY AND STANDARDS**  
 ADDENDUM TO THE GROUNDWATER MONITORING PLAN  
 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Parameter	Background Concentration	845 Limit	Groundwater Protection Standard	Unit
Antimony, total	0.001	0.006	0.006	mg/L
Arsenic, total	0.001	0.010	0.010	mg/L
Barium, total	0.156	2.0	2.0	mg/L
Beryllium, total	0.001	0.004	0.004	mg/L
Boron, total	0.205	2	2	mg/L
Cadmium, total	0.001	0.005	0.005	mg/L
Chloride, total	108	200	200	mg/L
Chromium, total	0.0013	0.1	0.1	mg/L
Cobalt, total	0.0017	0.006	0.006	mg/L
Fluoride, total	0.17	4.0	4.0	mg/L
Lead, total	0.001	0.0075	0.0075	mg/L
Lithium, total	0.014	0.04	0.04	mg/L
Mercury, total	0.0002	0.002	0.002	mg/L
Molybdenum, total	0.002	0.1	0.1	mg/L
pH (field)	7.4 / 6.7	9.0 / 6.5	9.0 / 6.5	SU
Radium 226 and 228 combined	2.6	5	5	pCi/L
Selenium, total	0.0011	0.05	0.05	mg/L
Sulfate, total	117	400	400	mg/L
Thallium, total	0.001	0.002	0.002	mg/L
Total Dissolved Solids	830	1200	1200	mg/L

**Notes:**

For pH, the values presented are the upper / lower limits  
 Groundwater protection standards for calcium and turbidity do not apply per 35 I.A.C. § 845.600(b)  
 mg/L = milligrams per liter  
 SU = standard units  
 pCi/L = picocuries per liter

generated 10/07/2021, 6:49:07 AM CDT

**APPENDIX B  
HISTORY OF POTENTIAL EXCEEDANCES**

## HISTORY OF POTENTIAL EXCEEDANCES

This presentation of the History of Potential Exceedances, and any corrective action taken to remediate groundwater, is provided to meet the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.230(d)(3)(G) for the Hennepin Power Plant West Ash Pond System, Illinois Environmental Protection Agency (IEPA) ID Nos. W1550100002-01 and W1550100002-03.

### **Note**

*Groundwater concentrations observed from 2015 to 2021 in monitoring wells included in an existing groundwater monitoring program have been evaluated and summarized in the following tables. These concentrations are considered potential exceedances because the methodology used to determine them is proposed in the Statistical Analysis Plan (Appendix A to Groundwater Monitoring Plan [GMP]), which has not been reviewed or approved by IEPA at the time of submittal of the 35 I.A.C. § 845 Operating Permit application.*

*Alternate sources for potential exceedances as allowed by 35 I.A.C. § 845.650(e) have not yet been evaluated. These will be evaluated and presented in future submittals to IEPA as appropriate.*

*Table 1 summarizes how the potential exceedances were determined. Table 2 is a summary of all potential exceedances.*

### Background Concentrations

*Background monitoring wells identified in the GMP include 32 and 34.*

*Background concentrations calculated from sampling events in 2015-2017 were compared to the standards identified in 35 I.A.C. § 845.600(a)(1). For constituents with calculated background concentrations in 2015-2017 greater than the standards in 35 I.A.C. § 845.600(a)(1), those calculated background concentrations were used as Groundwater Protection Standards (GWPSs) for comparing to statistical calculation results for each compliance well to determine potential exceedances. Compliance well statistical calculations consider concentrations from all sampling events in 2015-2021.*

### Corrective Action

*A Corrective Measures Assessment (CMA) was completed to address statistically significant levels of total arsenic, total lithium, and total molybdenum, as required by 40 C.F.R. § 257.96. The CMA indicated the source control measure consists of closure in place with a geomembrane cover system in accordance with the Closure and Post Closure Care Plan submitted to the IEPA in January 2018 and approved on June 19, 2018. Closure construction began in August of 2019 and was completed in November of 2020.*

*Activities completed associated with the selection of a groundwater remedy include review of existing groundwater and source water data, and collection of additional samples to support analysis of natural attenuation mechanisms, rates, and aquifer capacity. Preliminary results indicate that site-specific conditions are favorable for implementation of monitored natural attenuation (MNA) in combination with the recently completed closure referenced above.*

**TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES**

HISTORY OF POTENTIAL EXCEEDANCES  
 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
21/21R	UA	Antimony, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
21/21R	UA	Arsenic, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.00719	0.010	0.001	0.01	Standard
21/21R	UA	Barium, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.26	2.0	0.16	2	Standard
21/21R	UA	Beryllium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
21/21R	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	2.8	2.0	0.20	2	Standard
21/21R	UA	Cadmium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
21/21R	UA	Chloride, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	67	200	108	200	Standard
21/21R	UA	Chromium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.001	0.10	0.0013	0.1	Standard
21/21R	UA	Cobalt, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.001	0.006	0.0017	0.006	Standard
21/21R	UA	Fluoride, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.14	4.0	0.17	4	Standard
21/21R	UA	Lead, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.001	0.0075	0.001	0.0075	Standard
21/21R	UA	Lithium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.015	0.040	0.014	0.04	Standard
21/21R	UA	Mercury, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
21/21R	UA	Molybdenum, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.006	0.10	0.002	0.1	Standard
21/21R	UA	pH (field)	SU	03/18/2015 - 06/23/2021	CI around median	7.4	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
21/21R	UA	Radium-226 + Radium 228, tot	pCi/L	12/10/2015 - 06/23/2021	CI around mean	0.54	5.0	2.6	5	Standard
21/21R	UA	Selenium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
21/21R	UA	Sulfate, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	56	400	117	400	Standard
21/21R	UA	Thallium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
21/21R	UA	Total Dissolved Solids	mg/L	03/18/2015 - 06/23/2021	CI around median	542	1200	830	1200	Standard
22	UA	Antimony, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.001	0.006	0.001	0.006	Standard
22	UA	Arsenic, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.001	0.010	0.001	0.01	Standard
22	UA	Barium, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.066	2.0	0.16	2	Standard
22	UA	Beryllium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
22	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	3.3	2.0	0.20	2	Standard
22	UA	Cadmium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.00586	0.005	0.001	0.005	Standard

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HISTORY OF POTENTIAL EXCEEDANCES  
 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
22	UA	Chloride, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	86	200	108	200	Standard
22	UA	Chromium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.0015	0.10	0.0013	0.1	Standard
22	UA	Cobalt, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.00231	0.006	0.0017	0.006	Standard
22	UA	Fluoride, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.14	4.0	0.17	4	Standard
22	UA	Lead, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.0075	0.001	0.0075	Standard
22	UA	Lithium, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.054	0.040	0.014	0.04	Standard
22	UA	Mercury, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
22	UA	Molybdenum, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.103	0.10	0.002	0.1	Standard
22	UA	pH (field)	SU	03/18/2015 - 06/23/2021	CI around mean	7.6	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
22	UA	Radium-226 + Radium 228, tot	pCi/L	12/10/2015 - 06/23/2021	CI around mean	0.29	5.0	2.6	5	Standard
22	UA	Selenium, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.012	0.050	0.0011	0.05	Standard
22	UA	Sulfate, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	143	400	117	400	Standard
22	UA	Thallium, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.002	0.002	0.001	0.002	Standard
22	UA	Total Dissolved Solids	mg/L	03/18/2015 - 06/23/2021	CI around mean	677	1200	830	1200	Standard
22D	UA	Antimony, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
22D	UA	Arsenic, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.00116	0.010	0.001	0.01	Standard
22D	UA	Barium, total	mg/L	09/17/2019 - 06/23/2021	CB around T-S line	0.066	2.0	0.16	2	Standard
22D	UA	Beryllium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
22D	UA	Boron, total	mg/L	09/17/2019 - 06/23/2021	CB around linear reg	1.4	2.0	0.20	2	Standard
22D	UA	Cadmium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
22D	UA	Chloride, total	mg/L	09/17/2019 - 06/23/2021	CB around linear reg	93	200	108	200	Standard
22D	UA	Chromium, total	mg/L	09/17/2019 - 06/23/2021	CI around median	0.0015	0.10	0.0013	0.1	Standard
22D	UA	Cobalt, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.006	0.0017	0.006	Standard
22D	UA	Fluoride, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.11	4.0	0.17	4	Standard
22D	UA	Lead, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.0075	0.001	0.0075	Standard
22D	UA	Lithium, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.015	0.040	0.014	0.04	Standard



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Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
22D	UA	Mercury, total	mg/L	12/11/2019 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
22D	UA	Molybdenum, total	mg/L	09/17/2019 - 06/23/2021	CI around median	0.007	0.10	0.002	0.1	Standard
22D	UA	pH (field)	SU	09/17/2019 - 06/23/2021	CI around mean	7.2	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
22D	UA	Radium-226 + Radium 228, tot	pCi/L	09/17/2019 - 06/23/2021	CI around mean	0.20	5.0	2.6	5	Standard
22D	UA	Selenium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
22D	UA	Sulfate, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	103	400	117	400	Standard
22D	UA	Thallium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
22D	UA	Total Dissolved Solids	mg/L	09/17/2019 - 06/23/2021	CI around mean	580	1200	830	1200	Standard
23	UA	Antimony, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
23	UA	Arsenic, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.010	0.001	0.01	Standard
23	UA	Barium, total	mg/L	12/10/2015 - 06/24/2021	CI around median	0.032	2.0	0.16	2	Standard
23	UA	Beryllium, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
23	UA	Boron, total	mg/L	12/10/2015 - 06/24/2021	CI around mean	7.8	2.0	0.20	2	Standard
23	UA	Cadmium, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
23	UA	Chloride, total	mg/L	03/18/2015 - 06/24/2021	CI around mean	59	200	108	200	Standard
23	UA	Chromium, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.0015	0.10	0.0013	0.1	Standard
23	UA	Cobalt, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.006	0.0017	0.006	Standard
23	UA	Fluoride, total	mg/L	12/10/2015 - 06/24/2021	CI around median	0.15	4.0	0.17	4	Standard
23	UA	Lead, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.0075	0.001	0.0075	Standard
23	UA	Lithium, total	mg/L	12/10/2015 - 06/24/2021	CI around mean	0.00465	0.040	0.014	0.04	Standard
23	UA	Mercury, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
23	UA	Molybdenum, total	mg/L	12/10/2015 - 06/24/2021	CI around median	0.014	0.10	0.002	0.1	Standard
23	UA	pH (field)	SU	03/18/2015 - 06/24/2021	CI around mean	7.4	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
23	UA	Radium-226 + Radium 228, tot	pCi/L	12/10/2015 - 06/24/2021	CI around mean	0.18	5.0	2.6	5	Standard
23	UA	Selenium, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
23	UA	Sulfate, total	mg/L	03/18/2015 - 06/24/2021	CI around mean	419	400	117	400	Standard

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 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
23	UA	Thallium, total	mg/L	12/10/2015 - 06/24/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
23	UA	Total Dissolved Solids	mg/L	03/18/2015 - 06/24/2021	CI around mean	888	1200	830	1200	Standard
24/51	UA	Antimony, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
24/51	UA	Arsenic, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.020	0.010	0.001	0.01	Standard
24/51	UA	Barium, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.10	2.0	0.16	2	Standard
24/51	UA	Beryllium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
24/51	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	2.0	2.0	0.20	2	Standard
24/51	UA	Cadmium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
24/51	UA	Chloride, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	98	200	108	200	Standard
24/51	UA	Chromium, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.00197	0.10	0.0013	0.1	Standard
24/51	UA	Cobalt, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.001	0.006	0.0017	0.006	Standard
24/51	UA	Fluoride, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.13	4.0	0.17	4	Standard
24/51	UA	Lead, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.001	0.0075	0.001	0.0075	Standard
24/51	UA	Lithium, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.022	0.040	0.014	0.04	Standard
24/51	UA	Mercury, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
24/51	UA	Molybdenum, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.010	0.10	0.002	0.1	Standard
24/51	UA	pH (field)	SU	03/18/2015 - 06/23/2021	CB around linear reg	7.2	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
24/51	UA	Radium-226 + Radium 228, tot	pCi/L	12/10/2015 - 06/23/2021	CI around mean	0.51	5.0	2.6	5	Standard
24/51	UA	Selenium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
24/51	UA	Sulfate, total	mg/L	03/18/2015 - 06/23/2021	CB around linear reg	96	400	117	400	Standard
24/51	UA	Thallium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
24/51	UA	Total Dissolved Solids	mg/L	03/18/2015 - 06/23/2021	CI around mean	611	1200	830	1200	Standard
27	UA	Antimony, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
27	UA	Arsenic, total	mg/L	09/12/2018 - 06/24/2021	CI around median	0.001	0.010	0.001	0.01	Standard
27	UA	Barium, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	0.083	2.0	0.16	2	Standard
27	UA	Beryllium, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard

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Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
27	UA	Boron, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	2.3	2.0	0.20	2	Standard
27	UA	Cadmium, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
27	UA	Chloride, total	mg/L	03/18/2015 - 06/24/2021	CB around linear reg	103	200	108	200	Standard
27	UA	Chromium, total	mg/L	09/12/2018 - 06/24/2021	CI around median	0.0015	0.10	0.0013	0.1	Standard
27	UA	Cobalt, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	0.00145	0.006	0.0017	0.006	Standard
27	UA	Fluoride, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	0.12	4.0	0.17	4	Standard
27	UA	Lead, total	mg/L	09/12/2018 - 06/24/2021	CI around median	0.001	0.0075	0.001	0.0075	Standard
27	UA	Lithium, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	0.022	0.040	0.014	0.04	Standard
27	UA	Mercury, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
27	UA	Molybdenum, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	0.004	0.10	0.002	0.1	Standard
27	UA	pH (field)	SU	03/18/2015 - 06/24/2021	CI around mean	7.2	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
27	UA	Radium-226 + Radium 228, tot	pCi/L	09/12/2018 - 06/24/2021	CI around mean	-0.0969	5.0	2.6	5	Standard
27	UA	Selenium, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
27	UA	Sulfate, total	mg/L	03/18/2015 - 06/24/2021	CB around linear reg	76	400	117	400	Standard
27	UA	Thallium, total	mg/L	09/12/2018 - 06/24/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
27	UA	Total Dissolved Solids	mg/L	03/18/2015 - 06/24/2021	CI around median	642	1200	830	1200	Standard
35	UA	Antimony, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
35	UA	Arsenic, total	mg/L	12/09/2015 - 06/23/2021	CI around median	0.001	0.010	0.001	0.01	Standard
35	UA	Barium, total	mg/L	12/09/2015 - 06/23/2021	CI around geomean	0.037	2.0	0.16	2	Standard
35	UA	Beryllium, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
35	UA	Boron, total	mg/L	12/09/2015 - 06/23/2021	CB around linear reg	10	2.0	0.20	2	Standard
35	UA	Cadmium, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.001	0.005	0.001	0.005	Standard
35	UA	Chloride, total	mg/L	12/09/2015 - 06/23/2021	CI around mean	41	200	108	200	Standard
35	UA	Chromium, total	mg/L	12/09/2015 - 06/23/2021	CB around T-S line	0.00138	0.10	0.0013	0.1	Standard
35	UA	Cobalt, total	mg/L	12/09/2015 - 06/23/2021	CB around T-S line	0.001	0.006	0.0017	0.006	Standard
35	UA	Fluoride, total	mg/L	12/09/2015 - 06/23/2021	CI around mean	0.18	4.0	0.17	4	Standard

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Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
35	UA	Lead, total	mg/L	12/09/2015 - 06/23/2021	CI around median	0.001	0.0075	0.001	0.0075	Standard
35	UA	Lithium, total	mg/L	12/09/2015 - 06/23/2021	CI around mean	0.025	0.040	0.014	0.04	Standard
35	UA	Mercury, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
35	UA	Molybdenum, total	mg/L	12/09/2015 - 06/23/2021	CI around mean	0.066	0.10	0.002	0.1	Standard
35	UA	pH (field)	SU	12/09/2015 - 06/23/2021	CI around mean	7.0	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
35	UA	Radium-226 + Radium 228, tot	pCi/L	12/09/2015 - 06/23/2021	CI around mean	0.34	5.0	2.6	5	Standard
35	UA	Selenium, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
35	UA	Sulfate, total	mg/L	12/09/2015 - 06/23/2021	CB around linear reg	466	400	117	400	Standard
35	UA	Thallium, total	mg/L	12/09/2015 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
35	UA	Total Dissolved Solids	mg/L	12/09/2015 - 06/23/2021	CB around linear reg	1050	1200	830	1200	Standard
49	UA	Antimony, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
49	UA	Arsenic, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.001	0.010	0.001	0.01	Standard
49	UA	Barium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.057	2.0	0.16	2	Standard
49	UA	Beryllium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
49	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.56	2.0	0.20	2	Standard
49	UA	Cadmium, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.00164	0.005	0.001	0.005	Standard
49	UA	Chloride, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	97	200	108	200	Standard
49	UA	Chromium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.001	0.10	0.0013	0.1	Standard
49	UA	Cobalt, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	0.00528	0.006	0.0017	0.006	Standard
49	UA	Fluoride, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.15	4.0	0.17	4	Standard
49	UA	Lead, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.0075	0.001	0.0075	Standard
49	UA	Lithium, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.025	0.040	0.014	0.04	Standard
49	UA	Mercury, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
49	UA	Molybdenum, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.030	0.10	0.002	0.1	Standard
49	UA	pH (field)	SU	12/10/2015 - 06/23/2021	CI around mean	7.1	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
49	UA	Radium-226 + Radium 228, tot	pCi/L	12/10/2015 - 06/23/2021	CI around mean	0.30	5.0	2.6	5	Standard

**TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES**

HISTORY OF POTENTIAL EXCEEDANCES  
 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
49	UA	Selenium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
49	UA	Sulfate, total	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	68	400	117	400	Standard
49	UA	Thallium, total	mg/L	12/10/2015 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
49	UA	Total Dissolved Solids	mg/L	12/10/2015 - 06/23/2021	CB around linear reg	585	1200	830	1200	Standard
50	UA	Antimony, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.006	0.001	0.006	Standard
50	UA	Arsenic, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.010	0.001	0.01	Standard
50	UA	Barium, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.085	2.0	0.16	2	Standard
50	UA	Beryllium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.004	0.001	0.004	Standard
50	UA	Boron, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.73	2.0	0.20	2	Standard
50	UA	Cadmium, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	0.0012	0.005	0.001	0.005	Standard
50	UA	Chloride, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	87	200	108	200	Standard
50	UA	Chromium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.0015	0.10	0.0013	0.1	Standard
50	UA	Cobalt, total	mg/L	09/17/2019 - 06/23/2021	CB around linear reg	0.00192	0.006	0.0017	0.006	Standard
50	UA	Fluoride, total	mg/L	09/17/2019 - 06/23/2021	CB around linear reg	0.11	4.0	0.17	4	Standard
50	UA	Lead, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.0075	0.001	0.0075	Standard
50	UA	Lithium, total	mg/L	09/17/2019 - 06/23/2021	CI around median	0.018	0.040	0.014	0.04	Standard
50	UA	Mercury, total	mg/L	12/11/2019 - 06/23/2021	All ND - Last	0.0002	0.002	0.0002	0.002	Standard
50	UA	Molybdenum, total	mg/L	09/17/2019 - 06/23/2021	CB around linear reg	0.038	0.10	0.002	0.1	Standard
50	UA	pH (field)	SU	09/17/2019 - 06/23/2021	CI around mean	7.1	6.5/9.0	6.8/7.4	6.5/9	Standard/Standard
50	UA	Radium-226 + Radium 228, tot	pCi/L	09/17/2019 - 06/23/2021	CI around mean	0.082	5.0	2.6	5	Standard
50	UA	Selenium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.001	0.050	0.0011	0.05	Standard
50	UA	Sulfate, total	mg/L	09/17/2019 - 06/23/2021	CI around mean	83	400	117	400	Standard
50	UA	Thallium, total	mg/L	09/17/2019 - 06/23/2021	All ND - Last	0.002	0.002	0.001	0.002	Standard
50	UA	Total Dissolved Solids	mg/L	09/17/2019 - 06/23/2021	CI around mean	614	1200	830	1200	Standard

**TABLE 1. DETERMINATION OF POTENTIAL EXCEEDANCES**

HISTORY OF POTENTIAL EXCEEDANCES  
HENNEPIN POWER PLANT  
WEST ASH POND SYSTEM  
HENNEPIN, ILLINOIS

**Notes:**

**Potential exceedance of GWPS**

HSU = hydrostratigraphic unit:

UA = uppermost aquifer

mg/L = milligrams per liter

pCi/L = picocuries per liter

SU = standard units

Statistical Calculation = method used to calculate the statistical result:

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

CB around linear reg = Confidence band around linear regression

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

CI around geomean = Confidence interval around the geometric mean

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median

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

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

GWPS = Groundwater Protection Standard

GWPS Source:

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

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

**TABLE 2. SUMMARY OF POTENTIAL EXCEEDANCES**

HISTORY OF POTENTIAL EXCEEDANCES  
 HENNEPIN POWER PLANT  
 WEST ASH POND SYSTEM  
 HENNEPIN, ILLINOIS

Sample Location	HSU	Constituent	Result Unit	Sample Date Range	Statistical Calculation	Statistical Result	GWPS	Background	Part 845 Standard	GWPS Source
21/21R	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	2.8	2.0	0.20	2	Standard
22	UA	Boron, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	3.3	2.0	0.20	2	Standard
22	UA	Cadmium, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.00586	0.005	0.001	0.005	Standard
22	UA	Lithium, total	mg/L	12/10/2015 - 06/23/2021	CI around median	0.054	0.040	0.014	0.04	Standard
22	UA	Molybdenum, total	mg/L	12/10/2015 - 06/23/2021	CB around T-S line	0.103	0.10	0.002	0.1	Standard
23	UA	Boron, total	mg/L	12/10/2015 - 06/24/2021	CI around mean	7.8	2.0	0.20	2	Standard
23	UA	Sulfate, total	mg/L	03/18/2015 - 06/24/2021	CI around mean	419	400	117	400	Standard
24/51	UA	Arsenic, total	mg/L	12/10/2015 - 06/23/2021	CI around mean	0.020	0.010	0.001	0.01	Standard
27	UA	Boron, total	mg/L	09/12/2018 - 06/24/2021	CI around mean	2.3	2.0	0.20	2	Standard
35	UA	Boron, total	mg/L	12/09/2015 - 06/23/2021	CB around linear reg	10	2.0	0.20	2	Standard
35	UA	Sulfate, total	mg/L	12/09/2015 - 06/23/2021	CB around linear reg	466	400	117	400	Standard

**Notes:**

HSU = hydrostratigraphic unit:

UA = uppermost aquifer

mg/L = milligrams per liter

pCi/L = picocuries per liter

SU = standard units

Statistical Calculation = method used to calculate the statistical result:

CB around linear reg = Confidence band around linear regression

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

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median

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

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

GWPS = Groundwater Protection Standard

GWPS Source:

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

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