

Prepared for  
**Zimmer Power Company, LLC**

Date  
**January 31, 2024**

Project No.  
**1940103649-016**

**2023 ANNUAL GROUNDWATER  
MONITORING AND CORRECTIVE  
ACTION REPORT**  
**COAL PILE RUNOFF POND**  
**ZIMMER POWER PLANT**  
**MOSCOW, OHIO**  
**CCR UNIT 125**

**2023 ANNUAL GROUNDWATER MONITORING AND  
CORRECTIVE ACTION REPORT  
ZIMMER POWER PLANT COAL PILE RUNOFF POND**

Project name **Zimmer Power Plant Coal Pile Runoff Pond**  
Project no. **1940103649-016**  
Recipient **Zimmer Power Company, LLC**  
Document type **Annual Groundwater Monitoring and Corrective Action Report**  
Version **FINAL**  
Date **January 31, 2024**  
Prepared by **Lauren D. Cook**  
Checked by **Nicole M. Pagano**  
Approved by **Nicole M. Pagano**  
Description **Annual Report as required by 40 C.F.R. § 257.90(e)**

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

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



---

**Lauren D. Cook**  
Managing Scientist



---

**Nicole M. Pagano, PE**  
Senior Managing Engineer

## CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. Monitoring and Corrective Action Program Status</b>	<b>6</b>
<b>3. Key Actions Completed in 2023</b>	<b>7</b>
<b>4. Problems Encountered and Actions to Resolve the Problems</b>	<b>9</b>
<b>5. Key Activities Planned for 2024</b>	<b>10</b>
<b>6. References</b>	<b>11</b>

### TABLES (IN TEXT)

Table A	2023 Assessment Monitoring Program Summary
---------	--

### TABLES (ATTACHED)

Table 1	Groundwater Elevation Data
Table 2	Analytical Results - Appendix III Parameters
Table 3	Analytical Results - Appendix IV Parameters
Table 4	Statistical Background Values
Table 5	Groundwater Protection Standards
Table 6	Determination of Statistically Significant Levels

### FIGURES (ATTACHED)

Figure 1	Monitoring Well Location Map
Figure 2	Potentiometric Surface Map, March 20, 2023
Figure 3	Potentiometric Surface Map, September 18, 2023

### APPENDICES

Appendix A	Laboratory Reports and Field Data Sheets
Appendix B	Statistical Methodology for Determination of Background Values
Appendix C	Statistical Methodology for Determination of Statistically Significant Levels

## ACRONYMS AND ABBREVIATIONS

40 C.F.R.	Title 40 of the Code of Federal Regulations
A6	Quarter 1, 2023 Assessment Monitoring sampling event
A6D	Quarter 3, 2023 Assessment Monitoring sampling event
ASD	Alternative Source Demonstration
CCR	coal combustion residuals
CMA	Corrective Measures Assessment
CPRP	Coal Pile Runoff Pond
GWPS	groundwater protection standard
NA	not applicable
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SAP	Sampling and Analysis Plan
SSI	statistically significant increase
SSL	statistically significant level
ZPP	Zimmer Power Plant

## EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257.90(e) for the Coal Pile Runoff Pond (CPRP) located at the Zimmer Power Plant (ZPP) near Moscow, Ohio.

Groundwater is being monitored at the CPRP in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95. Assessment Monitoring was initiated at the CPRP on April 9, 2018.

No changes were made to the monitoring system in 2023 (no wells were installed or decommissioned).

No Statistically Significant Levels (SSLs) of 40 C.F.R. § 257 Appendix IV parameters over groundwater protection standards (GWPSs) were determined in 2023. Since no SSLs of 40 C.F.R. § 257 Appendix IV parameters over GWPSs were determined in 2023, a Corrective Measures Assessment (CMA) is not required. Statistically significant increases (SSIs) of Appendix III parameters above background values were determined as discussed in **Section 3**.

Closure by removal construction was completed at the CPRP on October 26, 2022 and closure certification was completed on October 13, 2023. Post-closure groundwater concentrations do not exceed the GWPSs established pursuant to § 257.95(h) for constituents listed in Appendix IV. Accordingly, the groundwater component of the closure performance standard specified in 40 C.F.R. § 257.102(c) has been met and the CPRP is effectively removed from the Assessment Monitoring Program.

## 1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll) on behalf of Zimmer Power Company, LLC, to provide the information required by 40 C.F.R. § 257.90(e) for the CPRP located at the ZPP near Moscow, Ohio.

In accordance with 40 C.F.R. § 257.90(e), the owner or operator of a coal combustion residuals (CCR) unit must prepare an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year that documents the status of the Groundwater Monitoring and Corrective Action Program for the CCR unit (**Section 2**), summarizes key actions completed (**Section 3**), describes any problems encountered and actions to resolve the problems (**Section 4**), and projects key activities for the upcoming year (**Section 5**). 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 unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit (**Figure 1**).
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 (**Section 3**, paragraph 1).
3. In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection Monitoring or Assessment Monitoring Programs (**Section 3, Table A**).
4. A narrative discussion of any transition between monitoring programs (*e.g.*, the date and circumstances for transitioning from Detection Monitoring to Assessment Monitoring in addition to identifying the constituent(s) detected at a statistically significant increase relative to background levels) (**Section 3**).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.
6. A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit (see **Executive Summary**). At a minimum, the summary must specify all of the following:
  - i. At the start of the current annual reporting period, whether the CCR unit was operating under the Detection Monitoring Program in §257.94 or the Assessment Monitoring Program in §257.95.
  - ii. At the end of the current annual reporting period, whether the CCR unit was operating under the Detection Monitoring Program in §257.94 or the Assessment Monitoring Program in §257.95.
  - iii. If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III of §257 pursuant to §257.94(e):
    - A. Identify those constituents listed in Appendix III of §257 and the names of the monitoring wells associated with such an increase.

- B. Provide the date when the Assessment Monitoring Program was initiated for the CCR unit.
- iv. If it was determined that there was a statistically significant level above the groundwater protection standard [GWPS] for one or more constituents listed in Appendix IV of §257 pursuant to §257.95(g) include all of the following:
  - A. Identify those constituents listed in Appendix IV of §257 and the names of the monitoring wells associated with such an increase.
  - B. Provide the date when the assessment of corrective measures was initiated for the CCR unit.
  - C. Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit.
  - D. Provide the date when the assessment of corrective measures was completed for the CCR unit.
- v. Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection.
- vi. Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

This report provides the required information for the CPRP for calendar year 2023.

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

Closure certification was completed on October 13, 2023 and the CPRP has been removed from the Assessment Monitoring Program.



### 3. KEY ACTIONS COMPLETED IN 2023

A summary of the samples collected from background and compliance monitoring wells in 2023 under the Assessment Monitoring Program is included in **Table A** on the following page. The groundwater monitoring system, including the CCR unit and all background and compliance monitoring wells, is presented in **Figure 1**. No changes were made to the monitoring system in 2022 (no wells were installed or decommissioned).

One groundwater sample was collected from each background and compliance well during each monitoring event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (SAP) (AECOM, 2017).

Potentiometric surfaces are included in **Figures 2 and 3**. All monitoring data and analytical results obtained under 40 C.F.R. § 257.90 through 257.98 in 2023 are presented in **Tables 1 through 3**. All associated laboratory reports and field data sheets are included in **Appendix A**.

Analytical data were evaluated in accordance with the Multi-Site Statistical Analysis Plan (Ramboll, 2022a), the Multi-Site Quality Assurance Project Plan (Ramboll, 2022b), and the Multi-Site Data Management Plan (Ramboll, 2022c) to determine any SSLs of Appendix IV parameters over GWPSs and SSIs of Appendix III parameters above background values. SSL notifications were completed in accordance with 40 C.F.R. § 257.95(g). SSIs are highlighted in **Table 2**. Statistical background values are provided in **Table 4** and GWPSs in **Table 5**. A flow chart showing the statistical methodology for determination of background values is included as **Appendix B**. A summary of the determination of SSLs is included in **Table 6**. A flow chart showing the statistical methodology for determination of SSLs is included as **Appendix C**.

Closure by removal construction was completed at the CPRP on October 26, 2022 and closure certification was completed on October 13, 2023. Post-closure groundwater concentrations do not exceed the GWPSs established pursuant to § 257.95(h) for constituents listed in Appendix IV. Accordingly, the groundwater component of the closure performance standard specified in 40 C.F.R. § 257.102(c) has been met and the CPRP is effectively removed from the Assessment Monitoring Program.

**Table A. 2023 Assessment Monitoring Program Summary**

<b>Event ID</b>	<b>Sampling Dates <sup>1, 2, 3</sup></b>	<b>Analytical Data Receipt Date</b>	<b>SSL(s) Determination Date</b>	<b>SSL(s)</b>	<b>ASD Completion Date</b>
A6	March 20, 2023	April 24, 2023	July 23, 2023	None	NA
A6D	September 18, 2023	October 6, 2023	October 13, 2023	None	NA

**Notes:**

ASD: Alternative Source Demonstration

NA: not applicable

SSL: Statistically Significant Level

<sup>1</sup> All samples were analyzed for Appendix III parameters listed in 40 C.F.R. § 257.94(e) and Appendix IV parameters listed in 40 C.F.R. § 257.95(g).

<sup>2</sup> The following background wells were sampled for each event: MW-1

<sup>3</sup> The following compliance wells were sampled for each event: MW-3S, MW-16, MW-17, and MW-18

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

No problems were encountered with the Groundwater Monitoring Program during 2023. Groundwater samples were collected and analyzed in accordance with the SAP and all data were accepted.

## **5. KEY ACTIVITIES PLANNED FOR 2024**

No activities are planned for 2024. Closure certification was completed on October 13, 2023 and the CPRP has been removed from the Assessment Monitoring Program.

## 6. REFERENCES

Code of Federal Regulations, Title 40, Chapter I, Subchapter I, Part 257, Subpart D, Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, effective April 17, 2015. Accessed from URL <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D#page-top>

AECOM, 2017. Sampling and Analysis Plan, CCR Rule Groundwater Monitoring, Coal Pile Runoff Pond, Unit 125, Zimmer Power Station, Moscow, Ohio, Job Number: 60442412, Revision 0. October 17, 2017.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022a. Multi-Site Statistical Analysis Plan, 40 C.F.R. § 257. December 28, 2022.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022b. Multi-Site Quality Assurance Project Plan. December 28, 2022.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2022c. Multi-Site Data Management Plan. December 28, 2022.

## **TABLES**

**TABLE 1  
GROUNDWATER ELEVATION DATA**

2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
ZIMMER POWER PLANT  
COAL PILE RUNOFF POND  
MOSCOW, OH

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
MW-1	Background	UA	03/20/2023	45.97	464.95
MW-1	Background	UA	09/18/2023	53.89	457.03
MW-3S	Compliance	UA	03/20/2023	48.76	461.45
MW-3S	Compliance	UA	09/18/2023	54.57	455.64
MW-16	Compliance	UA	03/20/2023	50.06	461.60
MW-16	Compliance	UA	09/18/2023	55.92	455.74
MW-17	Compliance	UA	03/20/2023	49.68	461.57
MW-17	Compliance	UA	09/18/2023	55.49	455.76
MW-18	Compliance	UA	03/20/2023	50.15	461.48
MW-18	Compliance	UA	09/18/2023	55.90	455.73

**Notes:**

Only wells with groundwater elevations measured are included.

BMP = below measuring point

NAVD88 = North American Vertical Datum of 1988

Monitored Unit Abbreviations:

UA = uppermost aquifer

Generated 2024-01-14 00:39:49.279963 by banoffra

**TABLE 2**  
**ANALYTICAL RESULTS - APPENDIX III PARAMETERS**  
2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
ZIMMER POWER PLANT  
COAL PILE RUNOFF POND  
MOSCOW, OH

Well ID	HSU	Well Type	Date	Event ID	Parameter	Unit	Result	Background	SSI Type
MW-1	UA	Background	03/21/2023	A6	Boron, total	mg/L	0.0408	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Boron, total	mg/L	0.0677	NA	NA
MW-1	UA	Background	03/21/2023	A6	Calcium, total	mg/L	164	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Calcium, total	mg/L	162	NA	NA
MW-1	UA	Background	03/21/2023	A6	Chloride, total	mg/L	74.8	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Chloride, total	mg/L	83.1 J-	NA	NA
MW-1	UA	Background	03/21/2023	A6	Fluoride, total	mg/L	0.139 J	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Fluoride, total	mg/L	0.144 J	NA	NA
MW-1	UA	Background	03/21/2023	A6	pH (field)	SU	6.9	NA	NA
MW-1	UA	Background	09/18/2023	A6D	pH (field)	SU	7.0	NA	NA
MW-1	UA	Background	03/21/2023	A6	Sulfate, total	mg/L	85.5	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Sulfate, total	mg/L	79.3 J-	NA	NA
MW-1	UA	Background	03/21/2023	A6	Total Dissolved Solids	mg/L	580	NA	NA
MW-1	UA	Background	09/18/2023	A6D	Total Dissolved Solids	mg/L	585	NA	NA
MW-3S	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	3.66	0.0846	Determined
MW-3S	UA	Compliance	09/19/2023	A6D	Boron, total	mg/L	3.79	0.0846	Determined
MW-3S	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	239	214	Determined
MW-3S	UA	Compliance	09/19/2023	A6D	Calcium, total	mg/L	280	214	Determined
MW-3S	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	45.7	74.1	No Exceedance
MW-3S	UA	Compliance	09/19/2023	A6D	Chloride, total	mg/L	66.3	74.1	No Exceedance
MW-3S	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.183 J+	0.200	No Exceedance
MW-3S	UA	Compliance	09/19/2023	A6D	Fluoride, total	mg/L	0.149 J	0.200	No Exceedance
MW-3S	UA	Compliance	03/21/2023	A6	pH (field)	SU	6.9	7.0/8.3	Determined
MW-3S	UA	Compliance	09/19/2023	A6D	pH (field)	SU	7.0	7.0/8.3	No Exceedance
MW-3S	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	648	103	Determined
MW-3S	UA	Compliance	09/19/2023	A6D	Sulfate, total	mg/L	722	103	Determined
MW-3S	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	1,120	680	Determined
MW-3S	UA	Compliance	09/19/2023	A6D	Total Dissolved Solids	mg/L	1,320	680	Determined
MW-16	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	0.390	0.0846	Determined
MW-16	UA	Compliance	09/18/2023	A6D	Boron, total	mg/L	0.808	0.0846	Determined
MW-16	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	192	214	No Exceedance
MW-16	UA	Compliance	09/18/2023	A6D	Calcium, total	mg/L	204	214	No Exceedance
MW-16	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	38.3	74.1	No Exceedance
MW-16	UA	Compliance	09/18/2023	A6D	Chloride, total	mg/L	34.3	74.1	No Exceedance
MW-16	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.181 J+	0.200	No Exceedance
MW-16	UA	Compliance	09/18/2023	A6D	Fluoride, total	mg/L	0.156	0.200	No Exceedance
MW-16	UA	Compliance	03/21/2023	A6	pH (field)	SU	6.9	7.0/8.3	Determined
MW-16	UA	Compliance	09/18/2023	A6D	pH (field)	SU	7.0	7.0/8.3	No Exceedance
MW-16	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	369	103	Determined
MW-16	UA	Compliance	09/18/2023	A6D	Sulfate, total	mg/L	426	103	Determined
MW-16	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	816	680	Determined
MW-16	UA	Compliance	09/18/2023	A6D	Total Dissolved Solids	mg/L	861	680	Determined
MW-17	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	1.40	0.0846	Determined
MW-17	UA	Compliance	09/18/2023	A6D	Boron, total	mg/L	1.67	0.0846	Determined
MW-17	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	207	214	No Exceedance
MW-17	UA	Compliance	09/18/2023	A6D	Calcium, total	mg/L	214	214	No Exceedance



**TABLE 2**  
**ANALYTICAL RESULTS - APPENDIX III PARAMETERS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Well Type	Date	Event ID	Parameter	Unit	Result	Background	SSI Type
MW-17	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	30.9	74.1	No Exceedance
MW-17	UA	Compliance	09/18/2023	A6D	Chloride, total	mg/L	29.0	74.1	No Exceedance
MW-17	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.191 J+	0.200	No Exceedance
MW-17	UA	Compliance	09/18/2023	A6D	Fluoride, total	mg/L	0.154	0.200	No Exceedance
MW-17	UA	Compliance	03/21/2023	A6	pH (field)	SU	7.0	7.0/8.3	No Exceedance
MW-17	UA	Compliance	09/18/2023	A6D	pH (field)	SU	7.1	7.0/8.3	No Exceedance
MW-17	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	470	103	Determined
MW-17	UA	Compliance	09/18/2023	A6D	Sulfate, total	mg/L	489	103	Determined
MW-17	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	903	680	Determined
MW-17	UA	Compliance	09/18/2023	A6D	Total Dissolved Solids	mg/L	991	680	Determined
MW-18	UA	Compliance	03/21/2023	A6	Boron, total	mg/L	5.35	0.0846	Determined
MW-18	UA	Compliance	09/19/2023	A6D	Boron, total	mg/L	6.62	0.0846	Determined
MW-18	UA	Compliance	03/21/2023	A6	Calcium, total	mg/L	270	214	Determined
MW-18	UA	Compliance	09/19/2023	A6D	Calcium, total	mg/L	267	214	Determined
MW-18	UA	Compliance	03/21/2023	A6	Chloride, total	mg/L	79.7	74.1	Determined
MW-18	UA	Compliance	09/19/2023	A6D	Chloride, total	mg/L	71.0	74.1	No Exceedance
MW-18	UA	Compliance	03/21/2023	A6	Fluoride, total	mg/L	0.187 J+	0.200	No Exceedance
MW-18	UA	Compliance	09/19/2023	A6D	Fluoride, total	mg/L	0.155	0.200	No Exceedance
MW-18	UA	Compliance	03/21/2023	A6	pH (field)	SU	7.0	7.0/8.3	No Exceedance
MW-18	UA	Compliance	09/19/2023	A6D	pH (field)	SU	7.0	7.0/8.3	No Exceedance
MW-18	UA	Compliance	03/21/2023	A6	Sulfate, total	mg/L	864	103	Determined
MW-18	UA	Compliance	09/19/2023	A6D	Sulfate, total	mg/L	875	103	Determined
MW-18	UA	Compliance	03/21/2023	A6	Total Dissolved Solids	mg/L	1,420	680	Determined
MW-18	UA	Compliance	09/19/2023	A6D	Total Dissolved Solids	mg/L	1,520	680	Determined

**Notes:**

HSU = hydrostratigraphic unit:

UA = Uppermost Aquifer

ID = identification

mg/L = milligrams per liter

NA = not applicable

Statistically Significant Increase (SSI) Type:

No Exceedance: No exceedance of the background.

Determined: An exceedance was determined without comparison to a resample.

SU = Standard Units

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- = The result is an estimated quantity, but the result may be biased low.

J+ = The result is an estimated quantity, but the result may be biased high.

Generated 2024-01-14 00:40:08.100993 by banoffra

**TABLE 3**  
**ANALYTICAL RESULTS - APPENDIX IV PARAMETERS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	Well Type	Date	Event ID	Antimony, total (mg/L)	Arsenic, total (mg/L)	Barium, total (mg/L)	Beryllium, total (mg/L)	Cadmium, total (mg/L)	Chromium, total (mg/L)	Cobalt, total (mg/L)	Fluoride, total (mg/L)	Lead, total (mg/L)	Lithium, total (mg/L)	Mercury, total (mg/L)	Molybdenum, total (mg/L)	Radium 226 + 228 (pCi/L)	Selenium, total (mg/L)	Thallium, total (mg/L)
MW-1	B	03/21/2023	A6	0.00103 U	0.00018 U	0.0685	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.139 J	0.000849 U	0.00693	0.0001 U	0.000348 U	0.153	0.000595 J	0.000121 U
MW-1	B	09/18/2023	A6D	--	0.00018 U	0.0739	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.144 J	0.000849 U	0.00808	--	0.000348 U	1.38	0.000567 J	0.000121 U
MW-3S	C	03/21/2023	A6	0.00103 U	0.000224 J	0.0575	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.183 J+	0.000849 U	0.00538	0.0001 U	0.000743 J	0.507	0.00147 J	0.000121 U
MW-3S	C	09/19/2023	A6D	--	0.00018 U	0.0649	0.00019 U	0.00015 U	0.00124 U	0.0000596 U	0.149 J	0.000849 U	0.00527	--	0.000858 J	0.855	0.00380	0.000121 U
MW-16	C	03/21/2023	A6	0.00103 U	0.000191 J	0.0571	0.00019 U	0.00015 U	0.00124 U	0.00229	0.181 J+	0.000849 U	0.00512	0.0001 U	0.00135 J	0.398	0.00415	0.000186 J
MW-16	C	09/18/2023	A6D	--	0.00018 U	0.0607	0.00019 U	0.00015 U	0.00124 U	0.00164 J	0.156	0.000849 U	0.00572	--	0.00146 J	0.927	0.00902	0.00016 J
MW-17	C	03/21/2023	A6	0.00103 U	0.000414 J	0.0666	0.00019 U	0.000303 J	0.00124 U	0.00162 J	0.191 J+	0.000849 U	0.00515	0.0001 U	0.00181 J	0.212	0.00355	0.000293 J
MW-17	C	09/18/2023	A6D	--	0.00018 U	0.0640	0.00019 U	0.00015 U	0.00124 U	0.000948 J	0.154	0.000849 U	0.00551	--	0.00189 J	1.67	0.00293	0.000123 J
MW-18	C	03/21/2023	A6	0.00103 U	0.000201 J	0.0343	0.00019 U	0.00015 U	0.00164 J	0.000369 J	0.187 J+	0.000849 U	0.00524	0.0001 U	0.00124 J	0	0.00417	0.000121 U
MW-18	C	09/19/2023	A6D	--	0.00018 U	0.0349	0.00019 U	0.000176 J	0.00124 U	0.000752 J	0.155	0.000849 U	0.00552	--	0.00113 J	0.503	0.00603	0.000121 U

**Notes:**  
 - = no data available  
 ID = identification  
 mg/L = milligrams per liter  
 pCi/L = picoCuries per liter  
 J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.  
 J+ = The result is an estimated quantity, but the result may be biased high.  
 U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.  
 Well Type:  
 B = Background  
 C = Compliance

Generated 2024-01-14 00:24:13.657593 by banoffra

**TABLE 4**  
**STATISTICAL BACKGROUND VALUES**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Parameter	Date Range	Sample Count	Percent Non-Detects	Statistical Calculation	Statistical Background Value (LPL/UPL)
Boron (mg/L)	12/30/2015 - 07/13/2017	8	38	Parametric UPL	0.0846
Calcium (mg/L)	12/30/2015 - 07/13/2017	8	0	Parametric UPL	214
Chloride (mg/L)	12/30/2015 - 07/13/2017	8	0	Parametric UPL	74.1
Fluoride (mg/L)	12/30/2015 - 07/13/2017	8	75	Non-parametric UPL	0.200
pH (field) (SU)	12/30/2015 - 07/13/2017	8	0	Non-parametric LPL/UPL	7.0/8.3
Sulfate (mg/L)	12/30/2015 - 07/13/2017	8	0	Parametric UPL	103
Total Dissolved Solids (mg/L)	12/30/2015 - 07/13/2017	8	0	Parametric UPL	680

**Notes:**  
 LPL = lower prediction limit (applicable for pH only)  
 mg/L = milligrams per liter  
 SU = standard units  
 UPL = upper prediction limit

Generated 2024-01-14 01:44:49.986107 by banoffra

**TABLE 5**  
**GROUNDWATER PROTECTION STANDARDS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Parameter	Background					MCL/HBL	Groundwater Protection Standard*	Groundwater Protection Standard Source
	Date Range	Sample Count	Percent Non-Detects	Statistical Calculation	Value			
Antimony (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.002	0.006	0.006	MCL/HBL
Arsenic (mg/L)	12/30/2015 - 07/13/2017	8	88	Non-parametric UTL	0.00142	0.010	0.010	MCL/HBL
Barium (mg/L)	12/30/2015 - 07/13/2017	8	0	Parametric UTL (log-transformed)	0.0969	2.0	2.0	MCL/HBL
Beryllium (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.001	0.004	0.004	MCL/HBL
Cadmium (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.001	0.005	0.005	MCL/HBL
Chromium (mg/L)	12/30/2015 - 07/13/2017	8	88	Non-parametric UTL	0.00191	0.1	0.1	MCL/HBL
Cobalt (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.0005	0.006	0.006	MCL/HBL
Fluoride (mg/L)	12/30/2015 - 07/13/2017	8	75	Non-parametric UTL	0.200	4.0	4.0	MCL/HBL
Lead (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.001	0.015	0.015	MCL/HBL
Lithium (mg/L)	12/30/2015 - 07/13/2017	8	62	Non-parametric UTL	0.0116	0.04	0.04	MCL/HBL
Mercury (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.0002	0.002	0.002	MCL/HBL
Molybdenum (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.005	0.1	0.1	MCL/HBL
Radium 226 + Radium 228 (pCi/L)	12/30/2015 - 07/13/2017	8	0	Parametric UTL	0.845	5	5	MCL/HBL
Selenium (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.005	0.05	0.05	MCL/HBL
Thallium (mg/L)	12/30/2015 - 07/13/2017	8	100	All ND - Last Reporting Limit	0.001	0.002	0.002	MCL/HBL

**Notes:**  
 \* Groundwater Protection Standard is the higher of the MCL/HBL or background.  
 MCL/HBL = maximum contaminant level/health-based level  
 mg/L = milligrams per liter  
 ND = non-detect  
 pCi/L = picoCuries per liter  
 UTL = upper tolerance limit

Generated 2024-01-14 00:24:19.110794 by banoffra

**TABLE 6**  
**DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-3S	UA	A6	Antimony, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.004	0.006	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-3S	UA	A6	Arsenic, total	mg/L	08/31/2016 - 03/21/2023	18	94	CB around T-S line	0.001	0.010	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Arsenic, total	mg/L	08/31/2016 - 09/19/2023	19	95	CB around T-S line	0.001	0.010	MCL/HBL	No Exceedance
MW-3S	UA	A6	Barium, total	mg/L	08/31/2016 - 03/21/2023	18	5.6	CI around geomean	0.048	2.0	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Barium, total	mg/L	08/31/2016 - 09/19/2023	19	5.3	CI around geomean	0.0487	2.0	MCL/HBL	No Exceedance
MW-3S	UA	A6	Beryllium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Beryllium, total	mg/L	08/31/2016 - 09/19/2023	17	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-3S	UA	A6	Cadmium, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Cadmium, total	mg/L	08/31/2016 - 09/19/2023	19	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-3S	UA	A6	Chromium, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Chromium, total	mg/L	08/31/2016 - 09/19/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-3S	UA	A6	Cobalt, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.0005	0.006	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Cobalt, total	mg/L	08/31/2016 - 09/19/2023	19	95	CI around median	0.0005	0.006	MCL/HBL	No Exceedance
MW-3S	UA	A6	Fluoride, total	mg/L	08/31/2016 - 03/21/2023	20	85	CB around T-S line	-0.265	4.0	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Fluoride, total	mg/L	08/31/2016 - 09/19/2023	21	86	CB around T-S line	-0.344	4.0	MCL/HBL	No Exceedance
MW-3S	UA	A6	Lead, total	mg/L	08/31/2016 - 03/21/2023	18	89	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Lead, total	mg/L	08/31/2016 - 09/19/2023	19	89	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-3S	UA	A6	Lithium, total	mg/L	08/31/2016 - 03/21/2023	18	56	CI around median	0.00547	0.04	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Lithium, total	mg/L	08/31/2016 - 09/19/2023	19	53	CB around T-S line	0.00157	0.04	MCL/HBL	No Exceedance
MW-3S	UA	A6	Mercury, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-3S	UA	A6	Molybdenum, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.005	0.1	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Molybdenum, total	mg/L	08/31/2016 - 09/19/2023	19	100	All ND - Last	0.005	0.1	MCL/HBL	No Exceedance
MW-3S	UA	A6	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 03/21/2023	19	0	CI around geomean	0.216	5	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 09/19/2023	20	0	CI around geomean	0.228	5	MCL/HBL	No Exceedance
MW-3S	UA	A6	Selenium, total	mg/L	08/31/2016 - 03/21/2023	18	50	CI around mean	0.00256	0.05	MCL/HBL	No Exceedance

**TABLE 6**  
**DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-3S	UA	A6D	Selenium, total	mg/L	08/31/2016 - 09/19/2023	19	47	CI around mean	0.00276	0.05	MCL/HBL	No Exceedance
MW-3S	UA	A6	Thallium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-3S	UA	A6D	Thallium, total	mg/L	08/31/2016 - 09/19/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-16	UA	A6	Antimony, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.004	0.006	MCL/HBL	No Exceedance
MW-16	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-16	UA	A6	Arsenic, total	mg/L	08/31/2016 - 03/21/2023	18	94	CB around T-S line	0.001	0.010	MCL/HBL	No Exceedance
MW-16	UA	A6D	Arsenic, total	mg/L	08/31/2016 - 09/18/2023	19	95	CB around T-S line	0.001	0.010	MCL/HBL	No Exceedance
MW-16	UA	A6	Barium, total	mg/L	08/31/2016 - 03/21/2023	18	5.6	CB around T-S line	0.054	2.0	MCL/HBL	No Exceedance
MW-16	UA	A6D	Barium, total	mg/L	08/31/2016 - 09/18/2023	19	5.3	CB around T-S line	0.0558	2.0	MCL/HBL	No Exceedance
MW-16	UA	A6	Beryllium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-16	UA	A6D	Beryllium, total	mg/L	08/31/2016 - 09/18/2023	17	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-16	UA	A6	Cadmium, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-16	UA	A6D	Cadmium, total	mg/L	08/31/2016 - 09/18/2023	19	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-16	UA	A6	Chromium, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-16	UA	A6D	Chromium, total	mg/L	08/31/2016 - 09/18/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-16	UA	A6	Cobalt, total	mg/L	08/31/2016 - 03/21/2023	18	17	CB around linear reg	0.000471	0.006	MCL/HBL	No Exceedance
MW-16	UA	A6D	Cobalt, total	mg/L	08/31/2016 - 09/18/2023	19	21	CB around linear reg	0.000505	0.006	MCL/HBL	No Exceedance
MW-16	UA	A6	Fluoride, total	mg/L	08/31/2016 - 03/21/2023	20	85	CB around T-S line	-0.276	4.0	MCL/HBL	No Exceedance
MW-16	UA	A6D	Fluoride, total	mg/L	08/31/2016 - 09/18/2023	21	81	CB around T-S line	-0.354	4.0	MCL/HBL	No Exceedance
MW-16	UA	A6	Lead, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-16	UA	A6D	Lead, total	mg/L	08/31/2016 - 09/18/2023	19	95	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-16	UA	A6	Lithium, total	mg/L	08/31/2016 - 03/21/2023	18	50	CB around T-S line	0.00246	0.04	MCL/HBL	No Exceedance
MW-16	UA	A6D	Lithium, total	mg/L	08/31/2016 - 09/18/2023	19	47	CB around T-S line	0.00212	0.04	MCL/HBL	No Exceedance
MW-16	UA	A6	Mercury, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-16	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-16	UA	A6	Molybdenum, total	mg/L	08/31/2016 - 03/21/2023	18	72	CB around T-S line	0.00358	0.1	MCL/HBL	No Exceedance
MW-16	UA	A6D	Molybdenum, total	mg/L	08/31/2016 - 09/18/2023	19	74	CB around T-S line	0.00358	0.1	MCL/HBL	No Exceedance

**TABLE 6**  
**DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-16	UA	A6	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 03/21/2023	19	0	CI around geomean	0.328	5	MCL/HBL	No Exceedance
MW-16	UA	A6D	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 09/18/2023	20	0	CI around geomean	0.343	5	MCL/HBL	No Exceedance
MW-16	UA	A6	Selenium, total	mg/L	08/31/2016 - 03/21/2023	18	72	CI around median	0.0043	0.05	MCL/HBL	No Exceedance
MW-16	UA	A6D	Selenium, total	mg/L	08/31/2016 - 09/18/2023	19	68	CI around median	0.0043	0.05	MCL/HBL	No Exceedance
MW-16	UA	A6	Thallium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-16	UA	A6D	Thallium, total	mg/L	08/31/2016 - 09/18/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-17	UA	A6	Antimony, total	mg/L	08/31/2016 - 03/21/2023	16	94	CB around T-S line	0.002	0.006	MCL/HBL	No Exceedance
MW-17	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-17	UA	A6	Arsenic, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.002	0.010	MCL/HBL	No Exceedance
MW-17	UA	A6D	Arsenic, total	mg/L	08/31/2016 - 09/18/2023	19	100	All ND - Last	0.002	0.010	MCL/HBL	No Exceedance
MW-17	UA	A6	Barium, total	mg/L	08/31/2016 - 03/21/2023	18	5.6	CB around T-S line	0.0656	2.0	MCL/HBL	No Exceedance
MW-17	UA	A6D	Barium, total	mg/L	08/31/2016 - 09/18/2023	19	5.3	CB around T-S line	0.0652	2.0	MCL/HBL	No Exceedance
MW-17	UA	A6	Beryllium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-17	UA	A6D	Beryllium, total	mg/L	08/31/2016 - 09/18/2023	17	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-17	UA	A6	Cadmium, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-17	UA	A6D	Cadmium, total	mg/L	08/31/2016 - 09/18/2023	19	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-17	UA	A6	Chromium, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-17	UA	A6D	Chromium, total	mg/L	08/31/2016 - 09/18/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-17	UA	A6	Cobalt, total	mg/L	08/31/2016 - 03/21/2023	18	44	CI around median	0.00139	0.006	MCL/HBL	No Exceedance
MW-17	UA	A6D	Cobalt, total	mg/L	08/31/2016 - 09/18/2023	19	47	CI around median	0.00139	0.006	MCL/HBL	No Exceedance
MW-17	UA	A6	Fluoride, total	mg/L	08/31/2016 - 03/21/2023	20	70	CB around T-S line	-0.255	4.0	MCL/HBL	No Exceedance
MW-17	UA	A6D	Fluoride, total	mg/L	08/31/2016 - 09/18/2023	21	67	CB around T-S line	-0.333	4.0	MCL/HBL	No Exceedance
MW-17	UA	A6	Lead, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-17	UA	A6D	Lead, total	mg/L	08/31/2016 - 09/18/2023	19	95	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance
MW-17	UA	A6	Lithium, total	mg/L	08/31/2016 - 03/21/2023	18	56	CI around median	0.00538	0.04	MCL/HBL	No Exceedance
MW-17	UA	A6D	Lithium, total	mg/L	08/31/2016 - 09/18/2023	19	53	CB around T-S line	0.00195	0.04	MCL/HBL	No Exceedance
MW-17	UA	A6	Mercury, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance

**TABLE 6**  
**DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-17	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-17	UA	A6	Molybdenum, total	mg/L	08/31/2016 - 03/21/2023	18	72	CB around T-S line	0.000319	0.1	MCL/HBL	No Exceedance
MW-17	UA	A6D	Molybdenum, total	mg/L	08/31/2016 - 09/18/2023	19	74	CB around T-S line	7.36e-05	0.1	MCL/HBL	No Exceedance
MW-17	UA	A6	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 03/21/2023	19	0	CI around geomean	0.348	5	MCL/HBL	No Exceedance
MW-17	UA	A6D	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 09/18/2023	20	0	CI around geomean	0.367	5	MCL/HBL	No Exceedance
MW-17	UA	A6	Selenium, total	mg/L	08/31/2016 - 03/21/2023	18	61	CB around T-S line	0.00329	0.05	MCL/HBL	No Exceedance
MW-17	UA	A6D	Selenium, total	mg/L	08/31/2016 - 09/18/2023	19	58	CB around T-S line	0.00307	0.05	MCL/HBL	No Exceedance
MW-17	UA	A6	Thallium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-17	UA	A6D	Thallium, total	mg/L	08/31/2016 - 09/18/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-18	UA	A6	Antimony, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.004	0.006	MCL/HBL	No Exceedance
MW-18	UA	A6D	Antimony, total	mg/L	--	--	--	--	--	0.006	MCL/HBL	--
MW-18	UA	A6	Arsenic, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.002	0.010	MCL/HBL	No Exceedance
MW-18	UA	A6D	Arsenic, total	mg/L	08/31/2016 - 09/19/2023	19	100	All ND - Last	0.002	0.010	MCL/HBL	No Exceedance
MW-18	UA	A6	Barium, total	mg/L	08/31/2016 - 03/21/2023	18	5.6	CB around T-S line	0.0134	2.0	MCL/HBL	No Exceedance
MW-18	UA	A6D	Barium, total	mg/L	08/31/2016 - 09/19/2023	19	5.3	CB around T-S line	0.0105	2.0	MCL/HBL	No Exceedance
MW-18	UA	A6	Beryllium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-18	UA	A6D	Beryllium, total	mg/L	08/31/2016 - 09/19/2023	17	100	All ND - Last	0.002	0.004	MCL/HBL	No Exceedance
MW-18	UA	A6	Cadmium, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-18	UA	A6D	Cadmium, total	mg/L	08/31/2016 - 09/19/2023	19	100	All ND - Last	0.001	0.005	MCL/HBL	No Exceedance
MW-18	UA	A6	Chromium, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-18	UA	A6D	Chromium, total	mg/L	08/31/2016 - 09/19/2023	19	95	CI around median	0.002	0.1	MCL/HBL	No Exceedance
MW-18	UA	A6	Cobalt, total	mg/L	08/31/2016 - 03/21/2023	18	44	CI around geomean	0.00161	0.006	MCL/HBL	No Exceedance
MW-18	UA	A6D	Cobalt, total	mg/L	08/31/2016 - 09/19/2023	19	47	CI around median	0.002	0.006	MCL/HBL	No Exceedance
MW-18	UA	A6	Fluoride, total	mg/L	08/31/2016 - 03/21/2023	20	70	CB around T-S line	-0.249	4.0	MCL/HBL	No Exceedance
MW-18	UA	A6D	Fluoride, total	mg/L	08/31/2016 - 09/19/2023	21	67	CB around T-S line	-0.322	4.0	MCL/HBL	No Exceedance
MW-18	UA	A6	Lead, total	mg/L	08/31/2016 - 03/21/2023	18	94	CI around median	0.001	0.015	MCL/HBL	No Exceedance
MW-18	UA	A6D	Lead, total	mg/L	08/31/2016 - 09/19/2023	19	95	CB around T-S line	0.001	0.015	MCL/HBL	No Exceedance



**TABLE 6**  
**DETERMINATION OF STATISTICALLY SIGNIFICANT LEVELS**  
 2023 40 C.F.R. § 257 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
 ZIMMER POWER PLANT  
 COAL PILE RUNOFF POND  
 MOSCOW, OH

Well ID	HSU	Event ID	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	SSL Type
MW-18	UA	A6	Lithium, total	mg/L	08/31/2016 - 03/21/2023	18	33	CI around median	0.00524	0.04	MCL/HBL	No Exceedance
MW-18	UA	A6D	Lithium, total	mg/L	08/31/2016 - 09/19/2023	19	32	CI around median	0.00524	0.04	MCL/HBL	No Exceedance
MW-18	UA	A6	Mercury, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.0002	0.002	MCL/HBL	No Exceedance
MW-18	UA	A6D	Mercury, total	mg/L	--	--	--	--	--	0.002	MCL/HBL	--
MW-18	UA	A6	Molybdenum, total	mg/L	08/31/2016 - 03/21/2023	18	100	All ND - Last	0.005	0.1	MCL/HBL	No Exceedance
MW-18	UA	A6D	Molybdenum, total	mg/L	08/31/2016 - 09/19/2023	19	100	All ND - Last	0.005	0.1	MCL/HBL	No Exceedance
MW-18	UA	A6	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 03/21/2023	19	0	CI around mean	0.404	5	MCL/HBL	No Exceedance
MW-18	UA	A6D	Radium 226 + Radium 228, total	pCi/L	08/31/2016 - 09/19/2023	20	0	CI around mean	0.41	5	MCL/HBL	No Exceedance
MW-18	UA	A6	Selenium, total	mg/L	08/31/2016 - 03/21/2023	18	17	CI around mean	0.00636	0.05	MCL/HBL	No Exceedance
MW-18	UA	A6D	Selenium, total	mg/L	08/31/2016 - 09/19/2023	19	16	CI around mean	0.00633	0.05	MCL/HBL	No Exceedance
MW-18	UA	A6	Thallium, total	mg/L	08/31/2016 - 03/21/2023	16	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance
MW-18	UA	A6D	Thallium, total	mg/L	08/31/2016 - 09/19/2023	17	100	All ND - Last	0.002	0.002	MCL/HBL	No Exceedance

**Notes:**

- = no data available

Statistically Significant Level (SSL) Type:

No Exceedance: No exceedance of the GWPS and no resample was collected.

GWPS = Groundwater Protection Standard

GWPS Source:

MCL/HBL = maximum contaminant level/health-based level

HSU = hydrostratigraphic unit:

UA = Uppermost Aquifer

ID = identification

mg/L = milligrams per liter

ND = non-detect

pCi/L = picocuries per liter

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

Statistical Calculation = method used to calculate the statistical result:

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

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

CB around linear reg = Confidence band around linear regression

CI around geomean = Confidence interval around the geometric mean

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median






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

## FIGURES



OHIO RIVER



-  BACKGROUND WELL
-  COMPLIANCE WELL
-  REGULATED UNIT (SUBJECT UNIT)
-  SITE FEATURE
-  PROPERTY BOUNDARY

0 150 300 Feet

### MONITORING WELL LOCATION MAP

2023 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
COAL PILE RUNOFF POND  
ZIMMER POWER PLANT  
MOSCOW, OHIO

FIGURE 1

RAMBOLL AMERICAS  
ENGINEERING SOLUTIONS, INC.





- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (1-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- PROPERTY BOUNDARY

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



**POTENTIOMETRIC SURFACE MAP  
 MARCH 20, 2023**

**2023 ANNUAL GROUNDWATER MONITORING  
 AND CORRECTIVE ACTION REPORT  
 COAL PILE RUNOFF POND  
 ZIMMER POWER PLANT  
 MOSCOW, OHIO**

**FIGURE 2**





- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (0.5-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE

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



**POTENTIOMETRIC SURFACE MAP  
 SEPTEMBER 18, 2023**

**2023 ANNUAL GROUNDWATER MONITORING  
 AND CORRECTIVE ACTION REPORT  
 COAL PILE RUNOFF POND  
 ZIMMER POWER PLANT  
 MOSCOW, OHIO**

**FIGURE 3**



## **APPENDICES**

**APPENDIX A**  
**LABORATORY REPORTS AND FIELD DATA SHEETS**

## ANALYTICAL REPORT

March 30, 2023

1  
Cp2  
Tc3  
Ss4  
Cn5  
Sr6  
Qc7  
Gl8  
Al9  
Sc**S&ME - Nashville, TN**

Sample Delivery Group:	L1597566
Samples Received:	03/23/2023
Project Number:	7217-17-001D
Description:	Zimmer Station
Site:	WHZ UNIT 125 (COAL PILE)
Report To:	Vince Epps
	862 East Crescentville Road
	Cincinnati, OH 45246

Entire Report Reviewed By:



Mark W. Beasley  
Project Manager

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



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



# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	1
<b>Tc: Table of Contents</b>	2
<b>Ss: Sample Summary</b>	3
<b>Cn: Case Narrative</b>	4
<b>Sr: Sample Results</b>	5
<b>MW-03S L1597566-01</b>	5
<b>MW-16 L1597566-02</b>	6
<b>MW-17 L1597566-03</b>	7
<b>MW-18 L1597566-04</b>	8
<b>Qc: Quality Control Summary</b>	9
<b>Gravimetric Analysis by Method 2540 C-2011</b>	9
<b>Wet Chemistry by Method 2320 B-2011</b>	10
<b>Wet Chemistry by Method 9056A</b>	11
<b>Mercury by Method 7470A</b>	13
<b>Metals (ICPMS) by Method 6020</b>	15
<b>Gl: Glossary of Terms</b>	18
<b>Al: Accreditations &amp; Locations</b>	19
<b>Sc: Sample Chain of Custody</b>	20



# SAMPLE SUMMARY

## ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

### ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

#### MW-03S L1597566-01 GW

Collected by: Carter H  
 Collected date/time: 03/21/23 11:55  
 Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2030515	1	03/27/23 11:03	03/27/23 14:41	AS	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 16:01	03/27/23 16:01	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 02:20	03/29/23 02:20	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 02:34	03/29/23 02:34	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2029442	1	03/26/23 17:11	03/27/23 08:28	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/29/23 23:27	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/30/23 12:16	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	20	03/29/23 14:43	03/30/23 11:09	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032954	1	03/30/23 15:12	03/30/23 17:32	LD	Mt. Juliet, TN



#### MW-16 L1597566-02 GW

Collected by: Carter H  
 Collected date/time: 03/21/23 10:10  
 Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2030515	1	03/27/23 11:03	03/27/23 14:41	AS	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 16:08	03/27/23 16:08	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 02:47	03/29/23 02:47	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 03:01	03/29/23 03:01	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2029442	1	03/26/23 17:11	03/27/23 08:30	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/29/23 23:43	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/30/23 11:13	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032954	1	03/30/23 15:12	03/30/23 17:36	LD	Mt. Juliet, TN

#### MW-17 L1597566-03 GW

Collected by: Carter H  
 Collected date/time: 03/21/23 11:00  
 Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2030515	1	03/27/23 11:03	03/27/23 14:41	AS	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 16:14	03/27/23 16:14	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 03:14	03/29/23 03:14	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 03:27	03/29/23 03:27	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2029442	1	03/26/23 17:11	03/27/23 08:36	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/29/23 23:46	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/30/23 12:19	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	10	03/29/23 14:43	03/30/23 11:16	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032954	1	03/30/23 15:12	03/30/23 17:39	LD	Mt. Juliet, TN

#### MW-18 L1597566-04 GW

Collected by: Carter H  
 Collected date/time: 03/21/23 12:40  
 Received date/time: 03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2030515	1	03/27/23 11:03	03/27/23 14:41	AS	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2030548	1	03/27/23 16:20	03/27/23 16:20	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	1	03/29/23 03:41	03/29/23 03:41	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2031537	10	03/29/23 03:54	03/29/23 03:54	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG2030401	1	03/28/23 17:37	03/29/23 09:40	SRT	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/29/23 23:50	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	1	03/29/23 14:43	03/30/23 12:38	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032107	20	03/29/23 14:43	03/30/23 11:19	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2032954	1	03/30/23 15:12	03/30/23 17:42	LD	Mt. Juliet, TN

# CASE NARRATIVE

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



Mark W. Beasley  
Project Manager

- <sup>1</sup> Cp
- <sup>2</sup> Tc
- <sup>3</sup> Ss
- <sup>4</sup> Cn
- <sup>5</sup> Sr
- <sup>6</sup> Qc
- <sup>7</sup> Gl
- <sup>8</sup> Al
- <sup>9</sup> Sc

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	1120000		20000	1	03/27/2023 14:41	<a href="#">WG2030515</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity,Bicarbonate	188000		8450	20000	1	03/27/2023 16:01	<a href="#">WG2030548</a>
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 16:01	<a href="#">WG2030548</a>

Sample Narrative:

L1597566-01 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

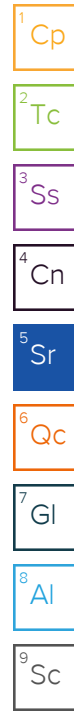
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	45700		379	1000	1	03/29/2023 02:20	<a href="#">WG2031537</a>
Fluoride	183	<u>B</u>	64.0	150	1	03/29/2023 02:20	<a href="#">WG2031537</a>
Sulfate	648000		5940	50000	10	03/29/2023 02:34	<a href="#">WG2031537</a>

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.100	0.200	1	03/27/2023 08:28	<a href="#">WG2029442</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		1.03	4.00	1	03/30/2023 12:16	<a href="#">WG2032107</a>
Arsenic	0.224	<u>J</u>	0.180	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Barium	57.5		0.381	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Beryllium	U		0.190	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Boron	3660		193	600	20	03/30/2023 11:09	<a href="#">WG2032107</a>
Cadmium	U		0.150	1.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Calcium	239000		93.6	1000	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Chromium	U		1.24	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Cobalt	U		0.0596	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Lead	U		0.849	2.00	1	03/30/2023 12:16	<a href="#">WG2032107</a>
Magnesium	42200		73.5	1000	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Molybdenum	0.743	<u>J</u>	0.348	5.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Potassium	1890	<u>B J</u>	108	2000	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Selenium	1.47	<u>J</u>	0.300	2.00	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Sodium	28900		376	2000	1	03/29/2023 23:27	<a href="#">WG2032107</a>
Thallium	U		0.121	2.00	1	03/30/2023 12:16	<a href="#">WG2032107</a>
Lithium	5.38		0.695	2.00	1	03/30/2023 17:32	<a href="#">WG2032954</a>



Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	816000		13300	1	03/27/2023 14:41	<a href="#">WG2030515</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity,Bicarbonate	260000		8450	20000	1	03/27/2023 16:08	<a href="#">WG2030548</a>
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 16:08	<a href="#">WG2030548</a>

Sample Narrative:

L1597566-02 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	38300		379	1000	1	03/29/2023 02:47	<a href="#">WG2031537</a>
Fluoride	181	<u>B</u>	64.0	150	1	03/29/2023 02:47	<a href="#">WG2031537</a>
Sulfate	369000		5940	50000	10	03/29/2023 03:01	<a href="#">WG2031537</a>

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.100	0.200	1	03/27/2023 08:30	<a href="#">WG2029442</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		1.03	4.00	1	03/30/2023 11:13	<a href="#">WG2032107</a>
Arsenic	0.191	<u>J</u>	0.180	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Barium	57.1		0.381	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Beryllium	U		0.190	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Boron	390		9.63	30.0	1	03/30/2023 11:13	<a href="#">WG2032107</a>
Cadmium	U		0.150	1.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Calcium	192000		93.6	1000	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Chromium	U		1.24	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Cobalt	2.29		0.0596	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Lead	U		0.849	2.00	1	03/30/2023 11:13	<a href="#">WG2032107</a>
Magnesium	33100		73.5	1000	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Molybdenum	1.35	<u>J</u>	0.348	5.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Potassium	1660	<u>B J</u>	108	2000	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Selenium	4.15		0.300	2.00	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Sodium	25000		376	2000	1	03/29/2023 23:43	<a href="#">WG2032107</a>
Thallium	0.186	<u>J</u>	0.121	2.00	1	03/30/2023 11:13	<a href="#">WG2032107</a>
Lithium	5.12		0.695	2.00	1	03/30/2023 17:36	<a href="#">WG2032954</a>



Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	903000		13300	1	03/27/2023 14:41	<a href="#">WG2030515</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity,Bicarbonate	237000		8450	20000	1	03/27/2023 16:14	<a href="#">WG2030548</a>
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 16:14	<a href="#">WG2030548</a>

Sample Narrative:

L1597566-03 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

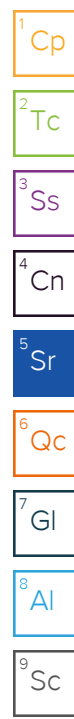
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	30900		379	1000	1	03/29/2023 03:14	<a href="#">WG2031537</a>
Fluoride	191	<u>B</u>	64.0	150	1	03/29/2023 03:14	<a href="#">WG2031537</a>
Sulfate	470000		5940	50000	10	03/29/2023 03:27	<a href="#">WG2031537</a>

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.100	0.200	1	03/27/2023 08:36	<a href="#">WG2029442</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		1.03	4.00	1	03/30/2023 12:19	<a href="#">WG2032107</a>
Arsenic	0.414	<u>J</u>	0.180	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Barium	66.6		0.381	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Beryllium	U		0.190	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Boron	1400		96.3	300	10	03/30/2023 11:16	<a href="#">WG2032107</a>
Cadmium	0.303	<u>J</u>	0.150	1.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Calcium	207000		93.6	1000	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Chromium	U		1.24	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Cobalt	1.62	<u>J</u>	0.0596	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Lead	U		0.849	2.00	1	03/30/2023 12:19	<a href="#">WG2032107</a>
Magnesium	38000		73.5	1000	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Molybdenum	1.81	<u>J</u>	0.348	5.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Potassium	1930	<u>J</u>	108	2000	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Selenium	3.55		0.300	2.00	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Sodium	32000		376	2000	1	03/29/2023 23:46	<a href="#">WG2032107</a>
Thallium	0.293	<u>J</u>	0.121	2.00	1	03/30/2023 12:19	<a href="#">WG2032107</a>
Lithium	5.15		0.695	2.00	1	03/30/2023 17:39	<a href="#">WG2032954</a>



Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	1420000		20000	1	03/27/2023 14:41	<a href="#">WG2030515</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity,Bicarbonate	190000		8450	20000	1	03/27/2023 16:20	<a href="#">WG2030548</a>
Alkalinity,Carbonate	U		8450	20000	1	03/27/2023 16:20	<a href="#">WG2030548</a>

Sample Narrative:

L1597566-04 WG2030548: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

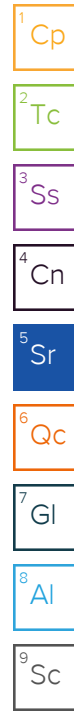
Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	79700		379	1000	1	03/29/2023 03:41	<a href="#">WG2031537</a>
Fluoride	187	<u>B</u>	64.0	150	1	03/29/2023 03:41	<a href="#">WG2031537</a>
Sulfate	864000		5940	50000	10	03/29/2023 03:54	<a href="#">WG2031537</a>

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Mercury	U		0.100	0.200	1	03/29/2023 09:40	<a href="#">WG2030401</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Antimony	U		1.03	4.00	1	03/30/2023 12:38	<a href="#">WG2032107</a>
Arsenic	0.201	<u>J</u>	0.180	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Barium	34.3		0.381	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Beryllium	U		0.190	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Boron	5350		193	600	20	03/30/2023 11:19	<a href="#">WG2032107</a>
Cadmium	U		0.150	1.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Calcium	270000		93.6	1000	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Chromium	1.64	<u>J</u>	1.24	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Cobalt	0.369	<u>J</u>	0.0596	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Lead	U		0.849	2.00	1	03/30/2023 12:38	<a href="#">WG2032107</a>
Magnesium	97300		73.5	1000	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Molybdenum	1.24	<u>J</u>	0.348	5.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Potassium	2320		108	2000	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Selenium	4.17		0.300	2.00	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Sodium	27900		376	2000	1	03/29/2023 23:50	<a href="#">WG2032107</a>
Thallium	U		0.121	2.00	1	03/30/2023 12:38	<a href="#">WG2032107</a>
Lithium	5.24		0.695	2.00	1	03/30/2023 17:42	<a href="#">WG2032954</a>



(MB) R3906565-1 03/27/23 14:41

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U		10000	10000

L1597000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597000-01 03/27/23 14:41 • (DUP) R3906565-3 03/27/23 14:41

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	753000	791000	1	4.84		5

L1597566-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597566-01 03/27/23 14:41 • (DUP) R3906565-4 03/27/23 14:41

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1120000	1130000	1	1.24		5

Laboratory Control Sample (LCS)

(LCS) R3906565-2 03/27/23 14:41

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	7030000	79.9	77.3-123	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



(MB) R3906149-2 03/27/23 13:42

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1597477-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597477-01 03/27/23 14:01 • (DUP) R3906149-3 03/27/23 14:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity,Bicarbonate	89200	89500	1	0.385		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1597498-10 Original Sample (OS) • Duplicate (DUP)

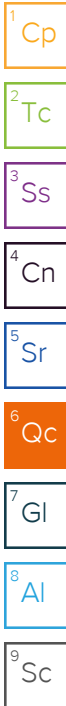
(OS) L1597498-10 03/27/23 15:24 • (DUP) R3906149-4 03/27/23 15:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity,Bicarbonate	535000	536000	1	0.222		20
Alkalinity,Carbonate	151000	151000	1	0.232		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5



1 Cp

(MB) R3907338-1 03/29/23 01:54

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	438	U	379	1000
Fluoride	80.8	U	64.0	150
Sulfate	U		594	5000

2 Tc

3 Ss

4 Cn

L1597585-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1597585-03 03/29/23 10:50 • (DUP) R3907338-3 03/29/23 11:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	5810	5790	1	0.412		15
Fluoride	292	270	1	7.86		15
Sulfate	11300	11200	1	0.913		15

5 Sr

6 Qc

7 Gl

L1597585-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1597585-04 03/29/23 11:44 • (DUP) R3907338-6 03/29/23 11:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	86200	87200	1	1.20		15
Fluoride	278	278	1	0.216		15
Sulfate	27300	27600	1	0.998		15

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3907338-2 03/29/23 02:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chloride	40000	39900	99.7	80.0-120	
Fluoride	8000	8470	106	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 10:50 • (MS) R3907338-4 03/29/23 11:17 • (MSD) R3907338-5 03/29/23 11:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	5810	54400	54200	97.2	96.8	1	80.0-120			0.341	15
Fluoride	5000	292	5270	5260	99.5	99.4	1	80.0-120			0.146	15
Sulfate	50000	11300	61000	60900	99.4	99.2	1	80.0-120			0.221	15

L1597585-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1597585-04 03/29/23 11:44 • (MS) R3907338-7 03/29/23 12:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	86200	131000	89.4	1	80.0-120	
Fluoride	5000	278	5290	100	1	80.0-120	
Sulfate	50000	27300	76300	98.1	1	80.0-120	

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

(MB) R3905637-1 03/27/23 07:47

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.100	0.200

Laboratory Control Sample (LCS)

(LCS) R3905637-2 03/27/23 07:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	3.00	2.93	97.6	80.0-120	

L1597201-53 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597201-53 03/27/23 07:51 • (MS) R3905637-3 03/27/23 07:53 • (MSD) R3905637-4 03/27/23 07:55

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	3.00	U	2.78	2.69	92.8	89.8	1	75.0-125			3.29	20

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

ZM-257-125 Blank (MB)

(MB) R3906722-1 03/29/23 09:19

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.100	0.200

Laboratory Control Sample (LCS)

(LCS) R3906722-2 03/29/23 09:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	3.00	2.88	95.9	80.0-120	

L1597585-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597585-03 03/29/23 09:28 • (MS) R3906722-3 03/29/23 09:30 • (MSD) R3906722-4 03/29/23 09:32

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	3.00	U	2.96	2.97	98.6	99.2	1	75.0-125			0.556	20

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

(MB) R3907081-1 03/29/23 22:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Antimony	U		1.03	4.00
Arsenic	U		0.180	2.00
Barium	U		0.381	2.00
Beryllium	U		0.190	2.00
Boron	U		9.63	30.0
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	191	U	108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3907081-2 03/29/23 22:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Antimony	50.0	47.6	95.2	80.0-120	
Arsenic	50.0	47.6	95.2	80.0-120	
Barium	50.0	45.7	91.3	80.0-120	
Beryllium	50.0	48.7	97.5	80.0-120	
Boron	50.0	51.5	103	80.0-120	
Cadmium	50.0	49.3	98.7	80.0-120	
Calcium	5000	4760	95.1	80.0-120	
Chromium	50.0	49.3	98.7	80.0-120	
Cobalt	50.0	50.2	100	80.0-120	
Lead	50.0	47.7	95.5	80.0-120	
Magnesium	5000	4760	95.3	80.0-120	
Molybdenum	50.0	48.9	97.8	80.0-120	
Potassium	5000	5280	106	80.0-120	
Selenium	50.0	48.6	97.1	80.0-120	
Sodium	5000	5050	101	80.0-120	
Thallium	50.0	47.1	94.2	80.0-120	

(OS) L1597529-86 03/29/23 22:22 • (MS) R3907081-4 03/29/23 22:28 • (MSD) R3907081-5 03/29/23 22:32

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	51.7	51.7	103	103	1	75.0-125			0.00983	20
Arsenic	50.0	8.44	59.8	60.3	103	104	1	75.0-125			0.937	20
Barium	50.0	22.4	71.3	71.6	97.7	98.3	1	75.0-125			0.445	20
Beryllium	50.0	U	48.7	48.7	97.5	97.4	1	75.0-125			0.00462	20
Boron	50.0	1040	1120	1130	167	179	1	75.0-125	∇	∇	0.549	20
Cadmium	50.0	U	47.7	48.3	95.5	96.5	1	75.0-125			1.06	20
Calcium	5000	577000	585000	577000	162	8.85	1	75.0-125	∇	∇	1.32	20
Chromium	50.0	U	50.8	51.3	102	103	1	75.0-125			0.931	20
Cobalt	50.0	4.79	55.4	55.3	101	101	1	75.0-125			0.0375	20
Lead	50.0	12.0	63.0	61.8	102	99.6	1	75.0-125			2.00	20
Magnesium	5000	406000	424000	422000	368	329	1	75.0-125	∇	∇	0.458	20
Molybdenum	50.0	58.9	112	111	107	104	1	75.0-125			1.50	20
Potassium	5000	9150	14000	13800	97.0	92.0	1	75.0-125			1.80	20
Selenium	50.0	4.42	58.7	57.8	109	107	1	75.0-125			1.60	20
Sodium	5000	267000	273000	274000	131	141	1	75.0-125	∇	∇	0.189	20
Thallium	50.0	U	50.9	50.3	102	101	1	75.0-125			1.26	20

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

(MB) R3907533-1 03/30/23 17:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Lithium	U		0.695	2.00

Laboratory Control Sample (LCS)

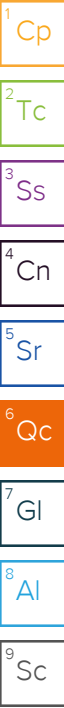
(LCS) R3907533-2 03/30/23 17:16

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Lithium	50.0	47.5	95.1	80.0-120	

L1598451-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1598451-02 03/30/23 17:19 • (MS) R3907533-4 03/30/23 17:26 • (MSD) R3907533-5 03/30/23 17:29

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Lithium	50.0	U	44.3	44.2	88.6	88.3	1	75.0-125			0.306	20





1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

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

## Abbreviations and Definitions

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

## Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

## ACCREDITATIONS &amp; LOCATIONS

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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

City/State: **Moscow, OH**  
 Accounts Payable  
 AP@smeinc.com

862 E. Crescentville Rd.  
 Cincinnati, OH 45246

Report to: **Vince Epps**  
 Email To: **vepps@smeinc.com**  
 Project Description: **Zimmer Station**  
 City/State Collected: **Moscow, OH**  
 Please Circle: **PT MT CT ET**


Phone: **513-771-8471**  
 Client Project #: **7217-17-001D**  
 Lab Project #: **LITEGNTN-ZIMMER**

Collected by (print): **Carter Work**  
 Site/Facility ID #: **WHZ Unit 125 (Coal Pile)**  
 P.O. #

Collected by (signature): *[Signature]*  
**Rush?** (Lab MUST Be Notified)  
 Same Day  Five Day  
 Next Day  5 Day (Rad Only)  
 Two Day  10 Day (Rad Only)  
 Three Day  
 Date Results Needed  
 No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4	125mIHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg	250mIHDPE F	RA-226/228COMB	1L-HPE-HNO3	TDS	250mIHDPE-NonPres
MW-03S	Grab	GW	NA	3/21/23	1155	5	X	X	X	X				
MW-16	Grab	GW	NA	3/21/23	1010	1	X	X	X	X				
MW-17	Grab	GW	NA	3/21/23	1100	1	X	X	X	X				
MW-18	Grab	GW	NA	3/21/23	1240	1	X	X	X	X				

Chain of Custody Page \_\_\_ of \_\_\_



PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122  
 Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>

SDG # **L1597566**  
**1243**  
 Acctnum: **LITEGNTN**  
 Template:  
 Prelogin:  
 PM: **134**  
 PB:

Shipped Via:

Remarks	Sample # (lab only)
	01
	02
	03
	04

\* Matrix:  
 SS - Soil AIR - Air F - Filter  
 GW - Groundwater B - Bioassay  
 WW - WasteWater  
 DW - Drinking Water  
 OT - Other

Remarks:  
 pH \_\_\_\_\_ Temp \_\_\_\_\_  
 Flow \_\_\_\_\_ Other \_\_\_\_\_  
 Samples returned via:  
 UPS  FedEx  Courier \_\_\_\_\_  
 Tracking # \_\_\_\_\_

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y	N
COC Signed/Accurate:		Y	N
Bottles arrive intact:		Y	N
Correct bottles used:		Y	N
Sufficient volume sent:		Y	N
If Applicable			
VOA Zero Headspace:		Y	N
Preservation Correct/Checked:		X	N
RAD Screen <0.5 mR/hr:		X	N

Relinquished by: (Signature) <i>[Signature]</i>	Date: <b>3/22/23</b>	Time: <b>1740</b>	Received by: (Signature) <i>[Signature]</i>	Trip Blank Received: Yes/No HCL / MeOH TBR
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C <b>70</b> Bottles Received:
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: <b>3/23/23</b> Time: <b>0915</b> Hold: Condition: <b>NCF / OK</b>

<u>Tracking Numbers</u>	<u>Temperature</u>
6357 9911 4700	<sup>NSA</sup> 4.0 to 4.0
4754	<sup>NSA</sup> 2.5 to 2.5
4721	<sup>NSA</sup> 3.6 to 3.6

April 24, 2023

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

## S&ME - Nashville, TN

Sample Delivery Group: L1597592  
Samples Received: 03/23/2023  
Project Number: 7217-17-001D  
Description: Zimmer Station  
Site: BG WELLS  
Report To: Vince Epps  
862 East Crescentville Road  
Cincinnati, OH 45246

Entire Report Reviewed By:



Mark W. Beasley  
Project Manager

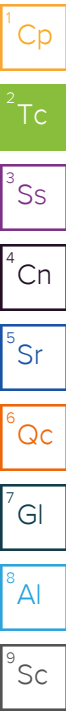
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 [www.pacenational.com](http://www.pacenational.com)

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	1
<b>Tc: Table of Contents</b>	2
<b>Ss: Sample Summary</b>	3
<b>Cn: Case Narrative</b>	4
<b>Sr: Sample Results</b>	5
<b>MW-01 L1597592-01</b>	5
<b>MW-08 L1597592-02</b>	6
<b>Qc: Quality Control Summary</b>	7
<b>Radiochemistry by Method 904/9320</b>	7
<b>Radiochemistry by Method SM7500Ra B M</b>	8
<b>Gl: Glossary of Terms</b>	9
<b>Al: Accreditations &amp; Locations</b>	10
<b>Sc: Sample Chain of Custody</b>	11



# SAMPLE SUMMARY

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

## MW-01 L1597592-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/21/23 09:10	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

## MW-08 L1597592-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/20/23 13:45	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

1  
Cp

2  
Tc

3  
Ss

4  
Cn

5  
Sr

6  
Qc

7  
Gl

8  
Al

9  
Sc

# CASE NARRATIVE

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



Mark W. Beasley  
Project Manager

- <sup>1</sup>Cp
- <sup>2</sup>Tc
- <sup>3</sup>Ss
- <sup>4</sup>Cn
- <sup>5</sup>Sr
- <sup>6</sup>Qc
- <sup>7</sup>Gl
- <sup>8</sup>Al
- <sup>9</sup>Sc



Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.153	<u>U</u>	0.280	0.519	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Barium	113			30.0-143	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Yttrium	104			30.0-136	04/21/2023 10:57	<a href="#">WG2044320</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.153	<u>U</u>	0.340	0.693	04/21/2023 10:57	<a href="#">WG2034931</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	-0.0567	<u>U</u>	0.192	0.459	04/19/2023 19:09	<a href="#">WG2034931</a>
(T) Barium-133	59.4			30.0-143	04/19/2023 19:09	<a href="#">WG2034931</a>

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

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.501	<u>U</u>	0.277	0.528	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Barium	108			30.0-143	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Yttrium	103			30.0-136	04/21/2023 10:57	<a href="#">WG2044320</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.34		0.560	0.620	04/21/2023 10:57	<a href="#">WG2034931</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	1.34		0.487	0.325	04/19/2023 19:09	<a href="#">WG2034931</a>
(T) Barium-133	86.6			30.0-143	04/19/2023 19:09	<a href="#">WG2034931</a>

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

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(MB) R3916733-1 04/21/23 10:57

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-228	0.150	↓	0.126	0.234
(T) Barium	113		113	
(T) Yttrium	116		116	

L1597559-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597559-01 04/21/23 10:57 • (DUP) R3916733-5 04/21/23 10:57

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-228	0.225	0.237	0.419	0.691	0.335	0.419	1	102	1.14		20	3
(T) Barium	111			117	117							
(T) Yttrium	105			99.5	99.5							

Laboratory Control Sample (LCS)

(LCS) R3916733-2 04/21/23 10:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.38	108	80.0-120	
(T) Barium			113		
(T) Yttrium			109		

L1597617-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597617-03 04/21/23 10:57 • (MS) R3916733-3 04/21/23 10:57 • (MSD) R3916733-4 04/21/23 10:57

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	-0.0118	9.99	9.26	99.9	92.6	1	70.0-130			7.57		20
(T) Barium		96.8			108	111							
(T) Yttrium		103			104	100							

(MB) R3915555-1 04/19/23 18:51

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-226	0.00529	<u>U</u>	0.0319	0.0641
(T) Barium-133	89.5		89.5	

L1597703-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597703-01 04/19/23 22:38 • (DUP) R3915555-5 04/19/23 19:09

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-226	7.34	1.04	0.287	5.86	0.936	0.287	1	22.3	1.05		20	3
(T) Barium-133	104			102	102							

Laboratory Control Sample (LCS)

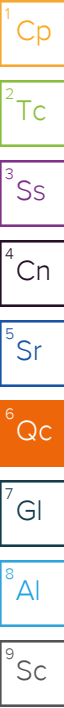
(LCS) R3915555-2 04/19/23 18:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.01	4.42	88.3	80.0-120	
(T) Barium-133			62.5		

L1597701-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597701-01 04/19/23 22:38 • (MS) R3915555-3 04/19/23 19:09 • (MSD) R3915555-4 04/19/23 19:09

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.0	12.0	36.1	35.2	121	116	1	75.0-125			2.61		20
(T) Barium-133		109			111	113							



1  
Cp2  
Tc3  
Ss4  
Cn5  
Sr6  
Qc7  
Gl8  
Al9  
Sc

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

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

## Abbreviations and Definitions

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

## Qualifier Description

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

## ACCREDITATIONS &amp; LOCATIONS

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

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

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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

APPENDIX A.  
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, GOAL PILE RUNOFF POND

Name/Address:

**S&ME - Cincinnati**  
862 E. Crescentville Rd.  
Cincinnati. OH 45246

Billing Information:  
**Accounts Payable**  
AP@smeinc.com

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_ of \_\_\_



12065 Lebanon Rd Mount Juliet, TN 37122  
Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # **4597592**

**H069**

Account: **LITEGNTN**

Template:

Prelogin:

PM: **134**

PB:

Shipped Via:

Report to:  
**Vince Epps**

Email To:  
**vepps@smeinc.com**

Project Description:  
**Zimmer Station**

City/State Collected: **Moscow, OH**

Please Circle:  
PT MT CT ET

Phone: **513-771-8471**

Client Project #  
**7217-17-001D**

Lab Project #  
**LITEGNTN-ZIMMER**

Collected by (print):

*Carter Herban*

Site/Facility ID #  
**BG Wells**

P.O. #

Collected by (signature):

*Carter Hill*

Rush? (Lab MUST Be Notified)

Same Day Five Day  
Next Day 5 Day (Rad Only)  
Two Day 10 Day (Rad Only)  
Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N \_\_\_ Y **X**

No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	Alk Bi/Ca, Cl, F, SO4 125mIHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mIHDPE F	RA-226/228COMB 1L-HPE-HNO3	TDS 250mIHDPE-NonPres										Remarks	Sample # (lab only)	
MW-01	Grab	GW	NA	3/21/23	910	5	X	X	X	X											01	
MW-08	Grab	GW	NA	3/20/23	1345	5	X	X	X	X											02	

\* Matrix:  
SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - WasteWater  
DW - Drinking Water  
OT - Other

Remarks: pH \_\_\_\_\_ Temp \_\_\_\_\_  
Flow \_\_\_\_\_ Other \_\_\_\_\_

Samples returned via:  
 UPS  FedEx  Courier

Tracking #

Sample Receipt Checklist  
COC Seal Present/Intact: \_\_\_ NP \_\_\_ Y \_\_\_ N  
COC Signed/Accurate: \_\_\_ Y \_\_\_ N  
Bottles arrive intact: \_\_\_ Y \_\_\_ N  
Correct bottles used: \_\_\_ Y \_\_\_ N  
Sufficient volume sent: \_\_\_ Y \_\_\_ N  
If Applicable  
VOA Zero Headspace: \_\_\_ Y \_\_\_ N  
Preservation Correct/Checked: \_\_\_ Y \_\_\_ N  
RAD Screen <0.5 mR/hr: \_\_\_ Y \_\_\_ N

Relinquished by (Signature): *Carter Hill*

Date: 3/22/23 Time: 1740

Received by (Signature): *FedEx*

Trip Blank Received: Yes/No  
HCL / MeOH  
TBR

Relinquished by (Signature):

Date: Time:

Received by (Signature):

Temp: °C Bottles Received: 10

If preservation required by Login: Date/Time

Relinquished by (Signature):

Date: Time:

Received for lab by (Signature): *[Signature]*

Date: 3/23/23 Time: 0945

Hold: Condition: NCF / OK

<u>Tracking Numbers</u>	<u>Temperature</u>
6357 9911 4700	NSA 4.0 to = 4.0
4751	NSA 2.5 to = 2.5
4721	NSA 3.6 to = 7.6



## ANALYTICAL REPORT

April 24, 2023

1  
Cp2  
Tc3  
Ss4  
Cn5  
Sr6  
Qc7  
Gl8  
Al9  
Sc**S&ME - Nashville, TN**

Sample Delivery Group: L1597595  
 Samples Received: 03/23/2023  
 Project Number: 7217-17-001D  
 Description: Zimmer Station  
 Site: WHZ UNIT 125 (COAL PILE)  
 Report To: Vince Epps  
 862 East Crescentville Road  
 Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley  
Project Manager

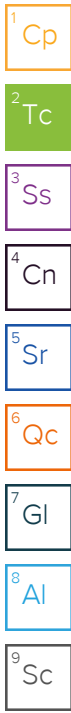
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

Pace Analytical National

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

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	1
<b>Tc: Table of Contents</b>	2
<b>Ss: Sample Summary</b>	3
<b>Cn: Case Narrative</b>	4
<b>Sr: Sample Results</b>	5
<b>MW-3S L1597595-01</b>	5
<b>MW-16 L1597595-02</b>	6
<b>MW-17 L1597595-03</b>	7
<b>MW-18 L1597595-04</b>	8
<b>Qc: Quality Control Summary</b>	9
<b>Radiochemistry by Method 904/9320</b>	9
<b>Radiochemistry by Method SM7500Ra B M</b>	10
<b>Gl: Glossary of Terms</b>	11
<b>Al: Accreditations &amp; Locations</b>	12
<b>Sc: Sample Chain of Custody</b>	13



# SAMPLE SUMMARY

## ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

### MW-35 L1597595-01 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/21/23 11:55	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

<sup>1</sup>Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

### MW-16 L1597595-02 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/21/23 10:10	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

### MW-17 L1597595-03 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/21/23 11:00	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 19:09	RGT	Mt. Juliet, TN

### MW-18 L1597595-04 Non-Potable Water

Collected by	Collected date/time	Received date/time
Carter H.	03/21/23 12:40	03/23/23 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2044320	1	04/19/23 12:37	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2034931	1	04/17/23 16:38	04/21/23 10:57	SWM	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2034931	1	04/17/23 16:38	04/19/23 22:38	RGT	Mt. Juliet, TN

# CASE NARRATIVE

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



Mark W. Beasley  
Project Manager

- <sup>1</sup>Cp
- <sup>2</sup>Tc
- <sup>3</sup>Ss
- <sup>4</sup>Cn
- <sup>5</sup>Sr
- <sup>6</sup>Qc
- <sup>7</sup>Gl
- <sup>8</sup>Al
- <sup>9</sup>Sc

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.440	J	0.303	0.556	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Barium	115			30.0-143	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Yttrium	91.1			30.0-136	04/21/2023 10:57	<a href="#">WG2044320</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.507	J	0.382	0.677	04/21/2023 10:57	<a href="#">WG2034931</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0670	U	0.233	0.387	04/19/2023 19:09	<a href="#">WG2034931</a>
(T) Barium-133	84.2			30.0-143	04/19/2023 19:09	<a href="#">WG2034931</a>

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

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.179	U	0.239	0.455	04/21/2023 10:57	WG2044320
(T) Barium	104			30.0-143	04/21/2023 10:57	WG2044320
(T) Yttrium	113			30.0-136	04/21/2023 10:57	WG2044320

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.398	J	0.341	0.498	04/21/2023 10:57	WG2034931

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.398		0.243	0.202	04/19/2023 19:09	WG2034931
(T) Barium-133	81.4			30.0-143	04/19/2023 19:09	WG2034931

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

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.0415	<u>U</u>	0.224	0.421	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Barium	110			30.0-143	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Yttrium	107			30.0-136	04/21/2023 10:57	<a href="#">WG2044320</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.212	<u>U</u>	0.315	0.528	04/21/2023 10:57	<a href="#">WG2034931</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.171	<u>J</u>	0.222	0.318	04/19/2023 19:09	<a href="#">WG2034931</a>
(T) Barium-133	77.6			30.0-143	04/19/2023 19:09	<a href="#">WG2034931</a>

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

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	-0.0407	<u>U</u>	0.212	0.401	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Barium	108			30.0-143	04/21/2023 10:57	<a href="#">WG2044320</a>
(T) Yttrium	110			30.0-136	04/21/2023 10:57	<a href="#">WG2044320</a>

Radiochemistry by Method Calculation

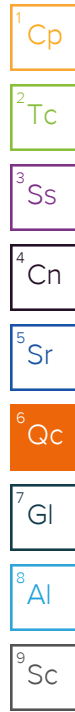
Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.000	<u>U</u>	0.293	0.558	04/21/2023 10:57	<a href="#">WG2034931</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.000	<u>U</u>	0.202	0.388	04/19/2023 22:38	<a href="#">WG2034931</a>
(T) Barium-133	89.7			30.0-143	04/19/2023 22:38	<a href="#">WG2034931</a>

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





(MB) R3916733-1 04/21/23 10:57

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-228	0.150	↓	0.126	0.234
(T) Barium	113		113	
(T) Yttrium	116		116	

L1597559-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597559-01 04/21/23 10:57 • (DUP) R3916733-5 04/21/23 10:57

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-228	0.225	0.237	0.419	0.691	0.335	0.419	1	102	1.14		20	3
(T) Barium	111			117	117							
(T) Yttrium	105			99.5	99.5							

Laboratory Control Sample (LCS)

(LCS) R3916733-2 04/21/23 10:57

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-228	5.00	5.38	108	80.0-120	
(T) Barium			113		
(T) Yttrium			109		

L1597617-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597617-03 04/21/23 10:57 • (MS) R3916733-3 04/21/23 10:57 • (MSD) R3916733-4 04/21/23 10:57

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-228	10.0	-0.0118	9.99	9.26	99.9	92.6	1	70.0-130			7.57		20
(T) Barium		96.8			108	111							
(T) Yttrium		103			104	100							

(MB) R3915555-1 04/19/23 18:51

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-226	0.00529	<u>U</u>	0.0319	0.0641
(T) Barium-133	89.5		89.5	

L1597703-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1597703-01 04/19/23 22:38 • (DUP) R3915555-5 04/19/23 19:09

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-226	7.34	1.04	0.287	5.86	0.936	0.287	1	22.3	1.05		20	3
(T) Barium-133	104			102	102							

Laboratory Control Sample (LCS)

(LCS) R3915555-2 04/19/23 18:51

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.01	4.42	88.3	80.0-120	
(T) Barium-133			62.5		

L1597701-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1597701-01 04/19/23 22:38 • (MS) R3915555-3 04/19/23 19:09 • (MSD) R3915555-4 04/19/23 19:09

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.0	12.0	36.1	35.2	121	116	1	75.0-125			2.61		20
(T) Barium-133		109			111	113							

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

1  
Cp2  
Tc3  
Ss4  
Cn5  
Sr6  
Qc7  
Gl8  
Al9  
Sc

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

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

## Abbreviations and Definitions

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

## Qualifier Description

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

## ACCREDITATIONS &amp; LOCATIONS

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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

862 E. Crescentville Rd.  
Cincinnati, OH 45246

Accounts Payable  
AP@smeinc.com

Pres  
Chk

Analysis / Container / Preservative

Chain of Custody Page \_\_\_\_ of \_\_\_\_



PEOPLE ADVANCING SCIENCE

12065 Lebanon Rd Mount Juliet, TN 37122

Phone: 615-758-5858 Alt: 800-767-5859

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubs/pas-standard-terms.pdf>

SDG # 4597595  
1243

Acctnum: LITEGNTN

Template:

Prelogin:

PM: 134

PB:

Shipped Via:

Report to: Vince Epps  
Email To: vepps@smeinc.com

Project Description: Zimmer Station  
City/State Collected: Moscow, OH  
Please Circle: PT MT CT ET

Phone: 513-771-8471  
Client Project # 7217-17-001D  
Lab Project # LITEGNTN-ZIMMER

Collected by (print): Carter Horke  
Site/Facility ID # WHZ Unit 125 (Coal Pile)  
P.O. #

Collected by (signature): [Signature]  
Rush? (Lab MUST Be Notified)  
Same Day Five Day  
Next Day 5 Day (Rad Only)  
Two Day 10 Day (Rad Only)  
Three Day  
Quote #  
Date Results Needed  
No. of Cntrs

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs
-----------	-----------	---------	-------	------	------	--------------

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	AIK Bi/Ca, Cl, F, SO4 125mIHDPE-NonPres	CCR Metals+B, Li, K, Na, Mg 250mIHDPE+	RA-226/228COMB 1L-HPE-HNO3	TDS 250mIHDPE-NonPres											
MW-03S	Grab	GW	NA	3/21/23	1155	5	X	X	X	X											01
MW-16	Grab	GW	NA	3/21/23	1010	1	X	X	X	X											02
MW-17	Grab	GW	NA	3/21/23	1100	1	X	X	X	X											03
MW-18	Grab	GW	NA	3/21/23	1240	1	X	X	X	X											04

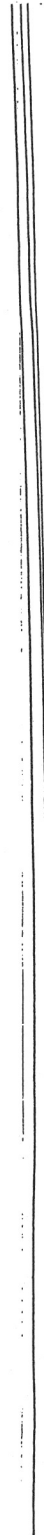
\* Matrix:  
SS - Soil AIR - Air F - Filter  
GW - Groundwater B - Bioassay  
WW - WasteWater  
DW - Drinking Water  
OT - Other

Remarks:  
pH \_\_\_\_\_ Temp \_\_\_\_\_  
Flow \_\_\_\_\_ Other \_\_\_\_\_  
Samples returned via:  
UPS FedEx Courier  
Tracking #

Sample Receipt Checklist	
COC Seal Present/Intact:	NP Y N
COC Signed/Accurate:	Y N
Bottles arrive intact:	Y N
Correct bottles used:	Y N
Sufficient volume sent:	Y N
If Applicable	
VOA Zero Headspace:	Y N
Preservation Correct/Checked:	Y N
RAD Screen <0.5 mR/hr:	Y N

Relinquished by (Signature): [Signature]	Date: 3/22/23	Time: 1740	Received by (Signature): FedEx	Trip Blank Received: Yes/No HCL / MeOH TBR
Relinquished by (Signature):	Date:	Time:	Received by (Signature):	Temp: °C Bottles Received: 70
Relinquished by (Signature):	Date:	Time:	Received for lab by (Signature): [Signature]	Date: 3/23/23 Time: 0915 Hold: Condition: NCF / OK

<u>Tracking Numbers</u>	<u>Temperature</u>
6357 9917 4700	NSA 4.0 to 4.0
4754	NSA 2.5 to 2.5
4721	NSA 3.6 to 3.6







## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-03S	Sample Time:	11:55
Locked?:	Yes	Air Temp:	43F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	48.68	ft-TOC	
Total Well Depth:	68.60	ft-TOC	
Height of Water Column:	19.92	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.0	Gal
3 * Well Volume	39.01	Gal
5 * Well Volume	65.01	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	11:25	End Time:	11:50
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	1.3	Gallons			
Final Volume Purge Rate:	200	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
11:25	0.0	---	---	---	---	---	---	---	---	Start Purging	
11:30	0.3	200	48.63	15.1	6.8	1.481	0.3	91	2.27	Clear, no odor	
11:35	0.5	200	48.63	15.3	6.9	1.585	0.3	91	0.42	Clear, no odor	
11:40	0.8	200	48.63	15.6	6.9	1.594	0.3	91	0.23	Clear, no odor	
11:45	1.1	200	48.63	15.5	6.9	1.600	0.3	91	0.73	Clear, no odor	
11:50	1.3	200	48.63	15.6	6.9	1.601	0.3	91	0.19	Clear, no odor	
<b>Final:</b>	11:50	1.3	200	48.63	15.6	6.9	1.601	0.3	91	0.2	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 11:55      Sample End Time: 12:10

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

Notes:







## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 20, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 20, 2023
Source Well:	MW-08	Sample Time:	13:45
Locked?:	Yes	Air Temp:	42F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	46.52	ft-TOC	
Total Well Depth:	95.60	ft-TOC	
Height of Water Column:	49.08	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	32.0	Gal
3 * Well Volume	96.11	Gal
5 * Well Volume	160.19	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	13:15	End Time:	13:40
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet		Flow Through Cell Vol:	200 mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC			
Final Volume Purged:		1.5		Gallons			
Final Volume Purge Rate:		200		mL/min			
Well Purged Dry?:		No		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
13:15	0.0	---	---	---	---	---	---	---	---	Start Purging	
13:20	0.3	250	46.55	13.1	7.3	0.637	2.5	88	0.49	Clear, no odor	
13:25	0.7	250	46.55	12.7	7.0	0.664	2.2	89	0.33	Clear, no odor	
13:30	0.9	200	46.55	11.9	7.0	0.665	2.3	90	0.65	Clear, no odor	
13:35	1.2	200	46.55	11.5	7.0	0.662	2.3	91	0.33	Clear, no odor	
13:40	1.5	200	46.55	11.8	7.0	0.661	2.2	90	0.31	Clear, no odor	
Final:	13:40	1.5	200	46.55	11.8	7.0	0.661	2.2	90	0.3	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 13:45      Sample End Time: 14:00

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

(1) \_\_\_\_\_

Notes:



**LOW FLOW GROUNDWATER SAMPLING FORM**

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	23 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-09	Sample Time:	13:35
Locked?:	No	Air Temp:	47F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:	Top of Casing		
Depth to Water:	47.65	ft-TOC	
Total Well Depth:	93.50	ft-TOC	
Height of Water Column:	45.85	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	29.9	Gal
3 * Well Volume	89.79	Gal
5 * Well Volume	149.64	Gal

**Well Purging Information**

Purge Method:	Bladder Pump		Start Time:	13:07	End Time:	13:30
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:			ft-TOC			
Water Column Above Pump Intake:			feet		Flow Through Cell Vol:	200 mL
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC			
Final Volume Purged:	1.7		Gallons			
Final Volume Purge Rate:	300		mL/min			
Well Purged Dry?:			(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
13:07	0.0	---	---	---	---	---	---	---	---	Start Purging	
13:10	0.2	250	47.65	11.5	7.2	1.393	0.4	91	0.83	Clear, no odor	
13:15	0.5	250	47.65	14.7	7.1	1.406	0.2	89	0.75	Clear, no odor	
13:20	0.9	250	47.65	14.6	7.0	1.357	0.2	89	3.50	Clear, no odor	
13:25	1.3	300	47.65	14.5	7.0	1.367	0.2	89	4.08	Clear, no odor	
13:30	1.7	300	47.65	14.5	7.0	1.403	0.2	89	3.28	Clear, no odor	
Final:	13:30	1.7	300	47.65	14.5	7.0	1.403	0.2	89	3.3	End of Purging

Sample Method: Bladder Pump

Sample Start Time: 13:35

Sample End Time: 13:50

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_  
 (1) \_\_\_\_\_

Notes:



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station		
Project Location:	Moscow, Ohio	Purge Date:	March 20, 2023
Project Number:	7217-17-001D	Purge Time:	30 Minutes
Source Well:	MW-10	Sample Date:	March 20, 2023
Locked?:	Yes	Sample Time:	16:00
Sampled By:	Carter Harlan	Air Temp:	47F
Weather:	Sunny		

Measuring Point:		Top of Casing	
Depth to Water:	47.43	ft-TOC	
Total Well Depth:	63.68	ft-TOC	
Height of Water Column:	16.25	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Diameter	2	inch
Water Volume	2.7	Gal
3 * Well Volume	7.96	Gal
5 * Well Volume	13.26	Gal

Purge Method:	Bladder Pump	Start Time:	15:25	End Time:	15:55
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	1.6	Gallons	Duplicate sample collected (DUP-1)		
Final Volume Purge Rate:	200	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
15:25	0.0	---	---	---	---	---	---	---	---	Start Purging	
15:30	0.3	200	47.45	13.2	7.2	1.338	2.2	87	12.5	Clear, no odor	
15:35	0.5	200	47.45	14.0	7.0	1.391	1.9	87	47.3	Cloudy, no odor	
15:40	0.8	200	47.45	13.9	7.0	1.379	1.1	87	23.2	Clear, no odor	
15:45	1.1	200	47.45	13.9	7.0	1.366	1.0	87	8.66	Clear, no odor	
15:50	1.3	200	47.45	13.9	7.0	1.354	0.9	87	5.19	Clear, no odor	
15:55	1.6	200	47.45	14.0	7.0	1.340	0.9	87	3.07	Clear, no odor	
<b>Final:</b>	15:55	1.6	200	47.45	14.0	7.0	1.340	0.9	87	3.1	End of Purging

Sample Method: Bladder Pump
Sample Start Time: 16:00
Sample End Time: 16:20

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

<b>Name</b>	<b>Signature</b>	<b>Date</b>

(1) \_\_\_\_\_

**Notes:** Duplicate sample collected (DUP-1)



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 20, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 20, 2023
Source Well:	MW-11	Sample Time:	12:50
Locked?:	No	Air Temp:	40F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	44.49	ft-TOC	
Total Well Depth:	64.31	ft-TOC	
Height of Water Column:	19.82	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

<b>Well Volume</b>		
Well Diameter	2	inch
Water Volume	3.2	Gal
3 * Well Volume	9.70	Gal
5 * Well Volume	16.17	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	12:20	End Time:	12:45
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet		Flow Through Cell Vol:	200 mL
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC			
Final Volume Purged:		1.3		Gallons			
Final Volume Purge Rate:		200		mL/min			
Well Purged Dry?:				(Yes/No)			
<b>Comments:</b>							

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
12:20	0.0	---	---	---	---	---	---	---	---	Start Purging	
12:25	0.3	200	44.49	14.2	7.1	0.726	2.4	89	8.58	Clear, no odor	
12:30	0.5	200	44.49	13.9	7.0	0.765	0.7	89	8.94	Clear, no odor	
12:35	0.8	200	44.49	13.8	7.0	0.765	0.5	89	5.17	Clear, no odor	
12:40	1.1	200	44.49	14.0	7.0	0.763	0.4	89	3.56	Clear, no odor	
12:45	1.3	200	44.49	14.0	7.0	0.765	0.4	90	2.49	Clear, no odor	
<b>Final:</b>	12:45	1.3	200	44.49	14.0	7.0	0.765	0.4	90	2.5	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 12:50      Sample End Time: 13:05

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

Notes:





## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	23 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-13	Sample Time:	14:25
Locked?:	Yes	Air Temp:	51F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:				Top of Casing	
Depth to Water:		37.42	ft-TOC		
Total Well Depth:		54.31	ft-TOC		
Height of Water Column:		16.89	feet		
Screen Length:	20	feet	Stickup:		ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	11.0	Gal
3 * Well Volume	33.08	Gal
5 * Well Volume	55.13	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	13:57	End Time:	14:20
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet			
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC			
Final Volume Purged:		1.8	Gallons		Comments: Duplicate sample collected (DUP-2)		
Final Volume Purge Rate:		300	mL/min				
Well Purged Dry?:							

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
13:57	0.0	---	---	---	---	---	---	---	---	Start Purging	
14:00	0.2	300	37.42	15.3	7.0	0.885	0.1	90	22.3	Clear, no odor	
14:05	0.6	300	37.41	15.3	7.0	0.934	0.1	88	14.0	Clear, no odor	
14:10	1.0	300	37.41	15.3	7.0	0.948	0.1	88	4.94	Clear, no odor	
14:15	1.4	300	37.41	15.3	7.0	0.967	0.1	88	2.73	Clear, no odor	
14:20	1.8	300	37.41	15.2	7.0	0.977	0.2	88	2.34	Clear, no odor	
<b>Final:</b>	14:20	1.8	300	37.41	15.2	7.0	0.977	0.2	88	2.3	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 14:25      Sample End Time: 14:40

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

Notes: Duplicate sample collected (DUP-2)



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	30 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-14	Sample Time:	15:20
Locked?:	Yes	Air Temp:	54 F
Sampled By:	Carter Harlan		
Weather:	Sunny		

### Water Level & Well Data

Measuring Point:		Top of Casing	
Depth to Water:	41.97	ft-TOC	
Total Well Depth:	58.75	ft-TOC	
Height of Water Column:	16.78	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	11.0	Gal
3 * Well Volume	32.86	Gal
5 * Well Volume	54.77	Gal

### Well Purging Information

Purge Method:	Bladder Pump	Start Time:	14:45	End Time:	15:15
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	1.6	Gallons			
Final Volume Purge Rate:	200	mL/min			
Well Purged Dry?:		(Yes/No)			

### Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
14:45	0.0	---	---	---	---	---	---	---	---	Start Purging	
14:50	0.3	200	42.00	14.8	6.9	1.130	0.3	154	11.8	Clear, No odor	
14:55	0.5	200	42.00	15.0	6.8	1.230	0.3	164	10.8	Clear, No odor	
15:00	0.8	200	42.00	15.0	6.9	1.234	0.3	91	28.5	Clear, No odor	
15:05	1.1	200	42.00	15.0	6.9	1.239	0.3	88	9.64	Clear, No odor	
15:10	1.3	200	42.00	15.0	6.9	1.243	0.3	88	2.31	Clear, No odor	
15:15	1.6	200	42.00	15.1	6.9	1.248	0.2	88	1.39	Clear, No odor	
<b>Final:</b>	15:15	1.6	200	42.00	15.1	6.9	1.248	0.2	88	1.4	End of Purging

Sample Method: Bladder Pump

Sample Start Time: 15:20

Sample End Time: 15:35

### Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name
Signature
Date

(1)

Notes:



## LOW FLOW GROUNDWATER SAMPLING FORM



Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-15	Sample Time:	16:10
Locked?:	Yes	Air Temp:	55F
Sampled By:	Carter Harlan		
Weather:	Sunny		

### Water Level & Well Data

Measuring Point:		Top of Casing	
Depth to Water:	48.50	ft-TOC	
Total Well Depth:	61.96	ft-TOC	
Height of Water Column:	13.46	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	8.8	Gal
3 * Well Volume	26.36	Gal
5 * Well Volume	43.93	Gal

### Well Purging Information

Purge Method:		Bladder Pump	Start Time:	15:40	End Time:	16:05
(If Used)	Bladder Pump Control Settings:	On (sec):	Off (sec):	Pressure:		psi
Pump Intake Depth from Top of Casing:			ft-TOC			
Water Column Above Pump Intake:			feet			
DTW-TOC at 25% Drawdown of WC Above Pump:			ft-TOC			
Final Volume Purged:			2.0	Gallons		
Final Volume Purge Rate:			300	mL/min		
Well Purged Dry?:			(Yes/No)			

### Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
15:40	0.0	---	---	---	---	---	---	---	---	Start Purging	
15:45	0.4	300	48.54	15.1	6.8	1.718	0.2	88	4.34	Clear, no odor	
15:50	0.8	300	48.53	15.1	6.9	1.727	0.2	88	2.35	Clear, no odor	
15:55	1.2	300	48.55	15.1	6.9	1.725	0.2	88	1.34	Clear, no odor	
16:00	1.6	300	48.54	15.1	6.9	1.721	0.2	88	1.08	Clear, no odor	
16:05	2.0	300	48.54	15.0	6.9	1.708	0.2	88	0.61	Clear, no odor	
Final:	16:05	2.0	300	48.54	15.0	6.9	1.708	0.2	88	0.6	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 16:10      Sample End Time: 16:25

### Analytical Data

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date:

(1) \_\_\_\_\_

Notes: \_\_\_\_\_



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-16	Sample Time:	10:10
Locked?:	Yes	Air Temp:	34F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	49.89	ft-TOC	
Total Well Depth:	69.78	ft-TOC	
Height of Water Column:	19.89	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.0	Gal
3 * Well Volume	38.95	Gal
5 * Well Volume	64.92	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	9:40	End Time:	10:05
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	
							psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet			
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC			
Final Volume Purged:				2.0		Gallons	
Final Volume Purge Rate:				300		mL/min	
Well Purged Dry?:				(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
09:40	0.0	---	---	---	---	---	---	---	---	Start Purging	
09:45	0.4	300	49.89	14.1	6.9	1.306	0.4	88	1.25	Clear, no odor	
09:50	0.8	300	49.89	14.7	6.9	1.304	0.3	87	0.60	Clear, no odor	
09:55	1.2	300	49.89	14.9	6.9	1.303	0.2	87	0.69	Clear, no odor	
10:00	1.6	300	49.89	15.0	6.9	1.302	0.2	88	0.30	Clear, no odor	
10:05	2.0	300	49.89	14.6	6.9	1.313	0.3	89	0.18	Clear, no odor	
<b>Final:</b>	10:05	2.0	300	49.89	14.6	6.9	1.313	0.3	89	0.2	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 10:10      Sample End Time: 10:25

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	

Notes:



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-17	Sample Time:	11:00
Locked?:	Yes	Air Temp:	40F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	49.49	ft-TOC	
Total Well Depth:	69.80	ft-TOC	
Height of Water Column:	20.31	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.3	Gal
3 * Well Volume	39.77	Gal
5 * Well Volume	66.29	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	10:30	End Time:	10:55
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	2.0	Gallons			
Final Volume Purge Rate:	300	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
10:30	0.0	---	---	---	---	---	---	---	---	Start Purging	
10:35	0.4	300	49.50	15.2	6.9	1.378	0.5	93	29.5	Clear, no odor	
10:40	0.8	300	49.50	15.5	6.9	1.395	0.3	92	22.3	Clear, no odor	
10:45	1.2	300	49.50	15.5	7.0	1.393	0.3	91	8.21	Clear, no odor	
10:50	1.6	300	49.50	15.2	7.0	1.396	0.2	91	4.11	Clear, no odor	
10:55	2.0	300	49.50	15.0	7.0	1.393	0.2	92	3.30	Clear, no odor	
Final:	10:55	2.0	300	49.50	15.0	7.0	1.393	0.2	92	3.3	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 11:00      Sample End Time: 11:15

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name \_\_\_\_\_ Signature \_\_\_\_\_ Date

(1) \_\_\_\_\_

Notes:



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	March 21, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	March 21, 2023
Source Well:	MW-18	Sample Time:	12:40
Locked?:	Yes	Air Temp:	45F
Sampled By:	Carter Harlan		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	49.93	ft-TOC	
Total Well Depth:	70.20	ft-TOC	
Height of Water Column:	20.27	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	4	inch
Water Volume	13.2	Gal
3 * Well Volume	39.69	Gal
5 * Well Volume	66.16	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	12:10	End Time:	12:35
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	2.0	Gallons			
Final Volume Purge Rate:	300	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
12:10	0.0	---	---	---	---	---	---	---	---	Start Purging	
12:15	0.4	300	49.89	14.2	7.2	2.052	0.3	91	0.97	Clear, no odor	
12:20	0.8	300	49.89	15.6	7.1	2.034	0.2	89	0.82	Clear, no odor	
12:25	1.2	300	49.89	15.6	7.0	2.028	0.2	89	0.48	Clear, no odor	
12:30	1.6	300	49.89	15.6	7.0	2.026	0.1	89	0.38	Clear, no odor	
12:35	2.0	300	49.89	15.7	7.0	2.023	0.1	89	0.21	Clear, no odor	
Final:	12:35	2.0	300	49.89	15.7	7.0	2.023	0.1	89	0.2	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 12:40      Sample End Time: 12:55

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

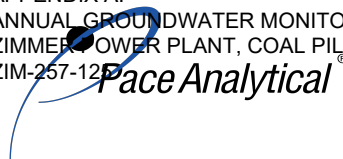
Notes:

APPENDIX A.  
 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023  
 ZIMMER POWER PLANT, COAL PILE RUNOFF POND  
 ZIM-257-125

<b>Zimmer Station</b>			
<b>Well ID</b>	<b>Date</b>	<b>Time</b>	<b>Depth to Water</b>
<b>D Basin - Unit 121</b>			
MW-01	3/20/2023	10:37	45.97
MW-08	3/20/2023	8:41	46.57
MW-09	3/20/2023	9:53	47.87
MW-12	3/20/2023	10:43	45.89
MW-13	3/20/2023	9:48	37.64
MW-14	3/20/2023	9:45	42.32
MW-15	3/20/2023	9:41	48.84
<b>Gypsum Recycle Pond - Unit 124</b>			
MW-07A	3/20/2023	8:55	46.63
MW-10	3/20/2023	15:23	47.43
MW-11	3/20/2023	9:03	44.54
<b>Coal Pile Runoff Pond - Unit 125</b>			
MW-03S	3/20/2023	10:12	48.76
MW-16	3/20/2023	10:19	50.06
MW-17	3/20/2023	10:15	49.68
MW-18	3/20/2023	10:00	50.15
<b>Piezometers</b>			
PZ-1	3/20/2023	9:24	46.55
PZ-2	3/20/2023	9:18	40.90
PZ-3	3/20/2023	9:30	48.02

APPENDIX A.  
 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 1, 2023  
 ZIMMER POWER PLANT, COAL PILE RUNOFF POND  
 ZIM-257-125

Well I.D.	Date	Time	Depth	Temp	pH	Spec. Cond.	Dissolved Oxygen	ORP*	Turbidity
MW-01	3/21/2023	9:10	45.97	13.52	6.88	1.137	0.81	90.8	0.17
MW-08	3/20/2023	13:45	46.57	11.8	7	0.661	2.22	90.2	0.31
MW-09	3/21/2023	13:35	47.87	14.5	7.01	1.403	0.16	88.9	3.28
MW-12	3/20/2023	15:05	45.89	14.1	6.91	0.809	2.02	87.8	3.09
MW-13	3/21/2023	14:25	37.64	15.2	7.01	0.977	0.16	88.1	2.34
MW-14	3/21/2023	9:10	42.32	15.1	6.89	1.248	0.21	87.9	1.39
MW-15	3/21/2023	16:10	48.84	15	6.9	1.708	0.17	88.3	0.61
MW-07A	3/20/2023	11:55	46.63	13.9	6.98	1.007	0.38	88.3	1.31
MW-10	3/20/2023	16:00	47.43	14.0	7.00	1.34	0.87	86.5	3.07
MW-11	3/20/2023	12:50	44.54	14	7.02	0.765	0.39	89.5	2.49
MW-03S	3/21/2023	11:55	48.76	15.6	6.86	1.601	0.25	90.6	0.19
MW-16	3/21/2023	10:10	50.06	14.6	6.87	1.313	0.27	88.6	0.18
MW-17	3/21/2023	11:00	49.68	15	6.95	1.393	0.22	91.9	3.3
MW-18	3/21/2023	12:40	50.15	15.7	7	2.023	0.12	88.6	0.21



# ANALYTICAL REPORT

October 06, 2023

Revised Report

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

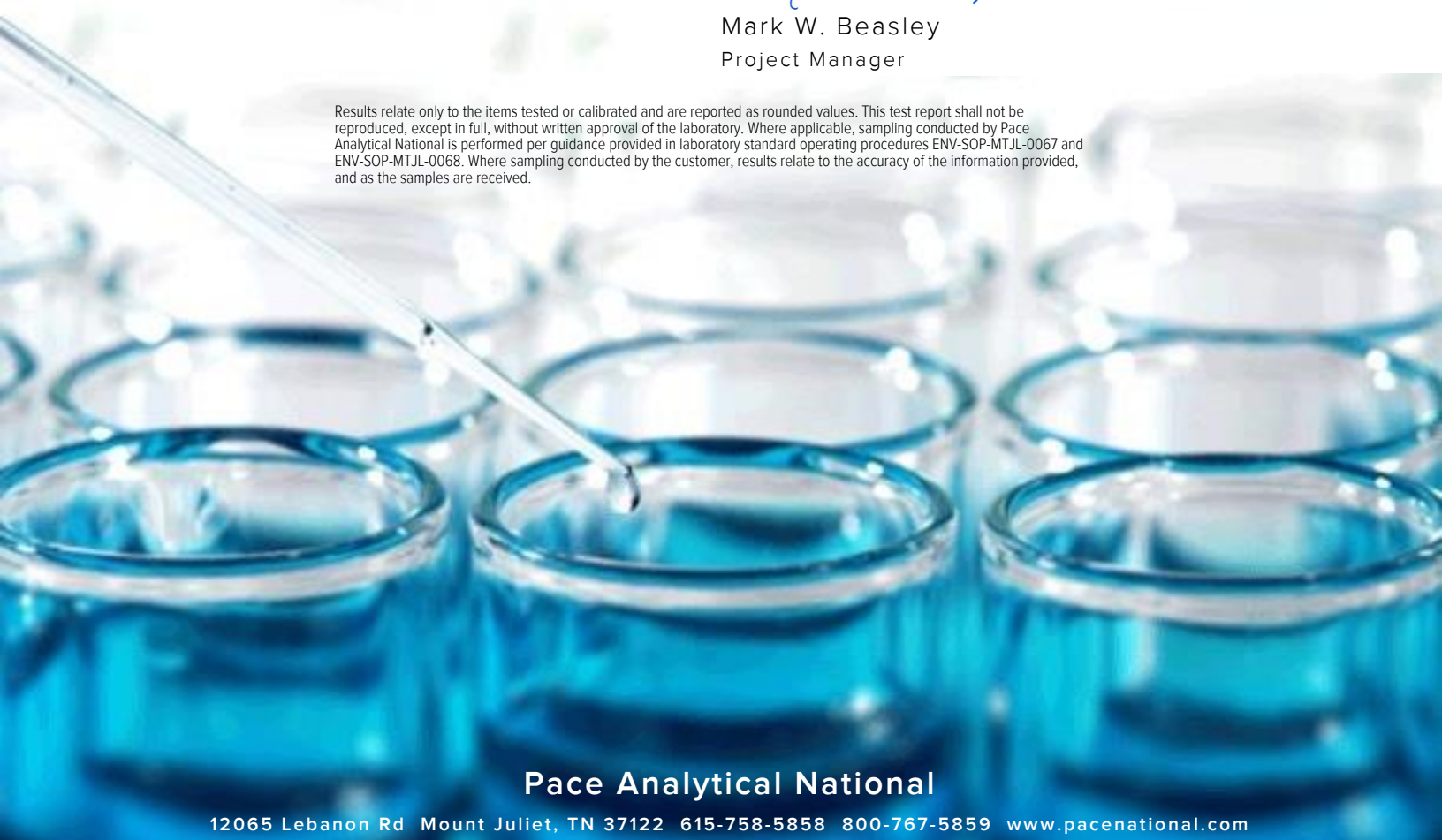
## S&ME - Nashville, TN

Sample Delivery Group: L1658197  
Samples Received: 09/21/2023  
Project Number: 7217-17-001D  
Description:  
Site: BG WELLS  
Report To: Vince Epps  
862 East Crescentville Road  
Cincinnati, OH 45246

Entire Report Reviewed By:

Mark W. Beasley  
Project Manager

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

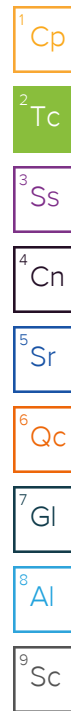


Pace Analytical National

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

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	1
<b>Tc: Table of Contents</b>	2
<b>Ss: Sample Summary</b>	3
<b>Cn: Case Narrative</b>	4
<b>Sr: Sample Results</b>	5
MW-01 L1658197-01	5
MW-01 L1658197-02	6
MW-08 L1658197-03	7
MW-08 L1658197-04	8
<b>Qc: Quality Control Summary</b>	9
Gravimetric Analysis by Method 2540 C-2011	9
Radiochemistry by Method 904/9320	10
Radiochemistry by Method SM7500Ra B M	11
Wet Chemistry by Method 2320 B-2011	12
Wet Chemistry by Method 9056A	14
Metals (ICPMS) by Method 6020	16
<b>Gl: Glossary of Terms</b>	19
<b>Al: Accreditations &amp; Locations</b>	20
<b>Sc: Sample Chain of Custody</b>	21





# SAMPLE SUMMARY

## ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

### ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Collected by \_\_\_\_\_ Collected date/time 09/18/23 12:15 Received date/time 09/21/23 09:00

#### MW-01 L1658197-01 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:42	09/25/23 12:42	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 07:08	09/24/23 07:08	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:40	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:55	JPD	Mt. Juliet, TN



Collected by \_\_\_\_\_ Collected date/time 09/18/23 12:15 Received date/time 09/21/23 09:00

#### MW-01 L1658197-02 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN



Collected by \_\_\_\_\_ Collected date/time 09/20/23 12:40 Received date/time 09/21/23 09:00

#### MW-08 L1658197-03 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137674	1	09/25/23 12:54	09/25/23 12:54	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 07:46	09/24/23 07:46	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:44	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/26/23 13:58	JPD	Mt. Juliet, TN



Collected by \_\_\_\_\_ Collected date/time 09/20/23 12:40 Received date/time 09/21/23 09:00

#### MW-08 L1658197-04 Non-Potable Water

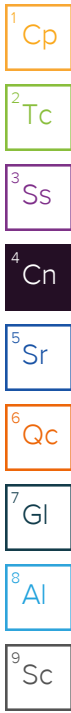
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

# CASE NARRATIVE

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



Mark W. Beasley  
Project Manager



## Report Revision History

---

Level II Report - Version 1: 10/02/23 16:41

## Project Narrative

---

Prelim results

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	585000		13300	1	09/22/2023 16:06	<a href="#">WG2137489</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	378000		8450	20000	1	09/25/2023 12:42	<a href="#">WG2137674</a>
Alkalinity,Bicarbonate	378000		8450	20000	1	09/25/2023 12:42	<a href="#">WG2137674</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:42	<a href="#">WG2137674</a>

Sample Narrative:

L1658197-01 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	83100	<a href="#">J6</a>	379	1000	1	09/24/2023 07:08	<a href="#">WG2138268</a>
Fluoride	144	<a href="#">J P1</a>	64.0	150	1	09/24/2023 07:08	<a href="#">WG2138268</a>
Sulfate	79300	<a href="#">J6</a>	594	5000	1	09/24/2023 07:08	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Barium	73.9		0.381	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Boron	67.7		9.63	30.0	1	09/26/2023 13:55	<a href="#">WG2137818</a>
Cadmium	U		0.150	1.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Calcium	162000		93.6	1000	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Cobalt	U		0.0596	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Magnesium	22100		73.5	1000	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Molybdenum	U		0.348	5.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Potassium	2270		108	2000	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Selenium	0.567	<a href="#">J</a>	0.300	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Sodium	25800		376	2000	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Thallium	U		0.121	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>
Lithium	8.08		0.695	2.00	1	09/25/2023 13:40	<a href="#">WG2137818</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.35		0.265	0.455	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	126			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	101			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.38		0.348	0.596	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0348	<u>U</u>	0.226	0.385	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	86.1			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	428000		10000	1	09/22/2023 16:06	<a href="#">WG2137489</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	333000		8450	20000	1	09/25/2023 12:54	<a href="#">WG2137674</a>
Alkalinity,Bicarbonate	333000		8450	20000	1	09/25/2023 12:54	<a href="#">WG2137674</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 12:54	<a href="#">WG2137674</a>

Sample Narrative:

L1658197-03 WG2137674: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	14500		379	1000	1	09/24/2023 07:46	<a href="#">WG2138268</a>
Fluoride	113	J	64.0	150	1	09/24/2023 07:46	<a href="#">WG2138268</a>
Sulfate	57500		594	5000	1	09/24/2023 07:46	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Barium	45.1		0.381	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Boron	52.6		9.63	30.0	1	09/26/2023 13:58	<a href="#">WG2137818</a>
Cadmium	0.394	J	0.150	1.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Calcium	114000		93.6	1000	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Cobalt	U		0.0596	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Magnesium	21000		73.5	1000	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Molybdenum	U		0.348	5.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Potassium	1590	J	108	2000	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Selenium	U		0.300	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Sodium	9190		376	2000	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Thallium	U		0.121	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>
Lithium	4.80		0.695	2.00	1	09/25/2023 13:44	<a href="#">WG2137818</a>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.0850	<u>U</u>	0.260	0.486	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	116			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	85.8			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.0850	<u>U</u>	0.331	0.626	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.000	<u>U</u>	0.205	0.395	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	77.8			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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

(MB) R3977878-1 09/22/23 16:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U	U	10000	10000

L1658000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658000-01 09/22/23 16:06 • (DUP) R3977878-3 09/22/23 16:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1100000	1130000	1	2.33		5

L1658010-01 Original Sample (OS) • Duplicate (DUP)

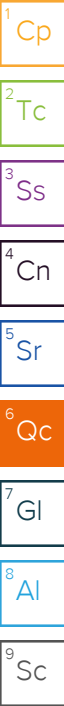
(OS) L1658010-01 09/22/23 16:06 • (DUP) R3977878-4 09/22/23 16:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	900000	936000	1	3.92		5

Laboratory Control Sample (LCS)

(LCS) R3977878-2 09/22/23 16:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	8580000	97.5	77.3-123	



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(MB) R3981388-1 09/29/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	0.377		0.172	0.312
(T) Barium	111		111	
(T) Yttrium	99.5		99.5	

L1658192-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-08 09/29/23 21:09 • (DUP) R3981388-5 09/29/23 21:09

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.07	0.311	0.545	0.554	0.327	0.596	1	63.9	1.15	J	20	3
(T) Barium	104			107	107							
(T) Yttrium	86.3			96.0	96.0							

Laboratory Control Sample (LCS)

(LCS) R3981388-2 09/29/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			121		
(T) Yttrium			92.4		

L1659083-19 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1659083-19 09/29/23 21:09 • (MS) R3981388-3 09/29/23 21:09 • (MSD) R3981388-4 09/29/23 21:09

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.469	16.1	15.3	93.3	89.0	1	70.0-130			4.59		20
(T) Barium		98.7			104	108							
(T) Yttrium		107			87.4	99.8							



(MB) R3982569-1 09/25/23 19:20

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-226	0.0295	<u>U</u>	0.0634	0.105
(T) Barium-133	72.4		72.4	

L1658192-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-02 09/25/23 19:20 • (DUP) R3982569-5 09/25/23 19:20

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-226	0.238	0.266	0.358	1.59	0.522	0.359	1	148	2.31		20	3
(T) Barium-133	84.2			101	101							

Laboratory Control Sample (LCS)

(LCS) R3982569-2 09/25/23 19:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.01	5.40	108	80.0-120	
(T) Barium-133			71.8		

L1658218-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658218-24 09/25/23 19:20 • (MS) R3982569-3 09/25/23 19:20 • (MSD) R3982569-4 09/25/23 19:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.0	1.73	19.4	19.4	88.3	88.4	1	75.0-125			0.103		20
(T) Barium-133		102			92.4	86.2							

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(MB) R3977409-2 09/25/23 09:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Alkalinity	U		8450	20000
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1658192-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-01 09/25/23 10:06 • (DUP) R3977409-3 09/25/23 10:12

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l	%	%		%
Alkalinity	354000	353000	1	0.288		20
Alkalinity,Bicarbonate	354000	353000	1	0.288		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1658197-01 Original Sample (OS) • Duplicate (DUP)

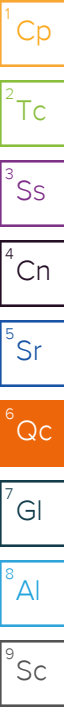
(OS) L1658197-01 09/25/23 12:42 • (DUP) R3977409-4 09/25/23 12:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l	%	%		%
Alkalinity	378000	376000	1	0.568		20
Alkalinity,Bicarbonate	378000	376000	1	0.568		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5



(LCS) R3977409-1 09/25/23 09:45

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100000	100000	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

1 Cp

(MB) R3977734-1 09/24/23 02:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	U		379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

2 Tc

3 Ss

4 Cn

L1657521-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1657521-24 09/24/23 03:09 • (DUP) R3977734-3 09/24/23 03:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	5440	5230	1	3.80		15
Fluoride	96.1	67.5	1	35.0	J P1	15
Sulfate	8650	8610	1	0.449		15

5 Sr

6 Qc

7 Gl

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/24/23 07:08 • (DUP) R3977734-6 09/24/23 07:21

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	83100	82800	1	0.367		15
Fluoride	144	199	1	32.1	P1	15
Sulfate	79300	79500	1	0.190		15

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3977734-2 09/24/23 02:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chloride	40000	40200	101	80.0-120	
Fluoride	8000	8150	102	80.0-120	
Sulfate	40000	40000	99.9	80.0-120	

L1657521-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1657521-24 09/24/23 03:09 • (MS) R3977734-4 09/24/23 03:34 • (MSD) R3977734-5 09/24/23 03:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40000	5440	44800	44400	98.5	97.5	1	80.0-120			0.950	15
Fluoride	8000	96.1	8220	8260	102	102	1	80.0-120			0.506	15
Sulfate	40000	8650	47500	47400	97.0	96.9	1	80.0-120			0.0896	15

L1658197-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1658197-01 09/24/23 07:08 • (MS) R3977734-7 09/24/23 07:33

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40000	83100	106000	57.7	1	80.0-120	<u>J6</u>
Fluoride	8000	144	8060	98.9	1	80.0-120	
Sulfate	40000	79300	104000	60.6	1	80.0-120	<u>J6</u>

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

ZM-257-125 Blank (MB)

(MB) R3977402-1 09/25/23 12:57

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Arsenic	U		0.180	2.00
Barium	0.414	U	0.381	2.00
Beryllium	U		0.190	2.00
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00
Lithium	U		0.695	2.00

Method Blank (MB)

(MB) R3977815-1 09/26/23 12:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Boron	U		9.63	30.0

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Arsenic	50.0	50.0	100	80.0-120	
Barium	50.0	49.4	98.7	80.0-120	
Beryllium	50.0	48.5	97.0	80.0-120	
Cadmium	50.0	52.1	104	80.0-120	
Calcium	5000	4910	98.3	80.0-120	
Chromium	50.0	49.1	98.2	80.0-120	
Cobalt	50.0	50.0	100	80.0-120	
Lead	50.0	50.7	101	80.0-120	
Magnesium	5000	5060	101	80.0-120	
Molybdenum	50.0	49.1	98.1	80.0-120	
Potassium	5000	4980	99.7	80.0-120	



Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Selenium	50.0	52.7	105	80.0-120	
Sodium	5000	5110	102	80.0-120	
Thallium	50.0	49.9	99.9	80.0-120	
Lithium	50.0	49.2	98.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977815-2 09/26/23 12:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	50.0	51.2	102	80.0-120	

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/25/23 13:04 • (MS) R3977402-4 09/25/23 13:11 • (MSD) R3977402-5 09/25/23 13:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.06	49.7	50.3	97.2	98.5	1	75.0-125			1.27	20
Barium	50.0	19.1	66.6	68.0	94.9	97.8	1	75.0-125			2.14	20
Beryllium	50.0	U	48.0	47.4	95.9	94.7	1	75.0-125			1.26	20
Cadmium	50.0	U	51.4	50.8	103	102	1	75.0-125			1.07	20
Calcium	5000	164000	167000	168000	58.4	71.3	1	75.0-125	V	V	0.385	20
Chromium	50.0	U	46.5	47.6	93.0	95.3	1	75.0-125			2.47	20
Cobalt	50.0	1.24	48.0	48.6	93.6	94.8	1	75.0-125			1.22	20
Lead	50.0	U	50.6	50.2	101	100	1	75.0-125			0.809	20
Magnesium	5000	31400	35700	35600	86.1	83.5	1	75.0-125			0.376	20
Molybdenum	50.0	1.46	53.5	53.0	104	103	1	75.0-125			0.927	20
Potassium	5000	2590	7410	7340	96.4	95.1	1	75.0-125			0.853	20
Selenium	50.0	U	54.8	54.0	110	108	1	75.0-125			1.54	20
Sodium	5000	16100	20700	20500	92.0	88.9	1	75.0-125			0.757	20
Thallium	50.0	0.207	49.6	49.3	98.8	98.2	1	75.0-125			0.674	20
Lithium	50.0	5.57	53.7	52.3	96.3	93.4	1	75.0-125			2.74	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(OS) L1658192-01 09/26/23 13:02 • (MS) R3977815-4 09/26/23 13:09 • (MSD) R3977815-5 09/26/23 13:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Boron	50.0	56.0	112	111	112	109	1	75.0-125			1.19	20

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

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

## Abbreviations and Definitions

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

## Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
U	Below Detectable Limits: Indicates that the analyte was not detected.
V	The sample concentration is too high to evaluate accurate spike recoveries.

## ACCREDITATIONS &amp; LOCATIONS

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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


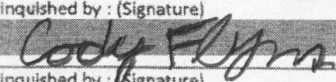
\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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

APPENDIX A.  
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023  
ZIMMER POWER PLANT COAL PILE RUNOFF POND

ZIM-257-125

<b>Company Name/Address:</b> S&ME - Cincinnati 862 E. Crescentville Rd. Cincinnati, OH 45246		<b>Billing Information:</b> Accounts Payable smeinc_invoice@concurolutions.com .com		Pres Chk		Analysis / Container / Preservative								Chain of Custody Page ___ of ___			
<b>Report to:</b> Vince Epps		<b>Email To:</b> vepps@smeinc.com												 PEOPLE ADVANCING SCIENCE 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Alt: 800-767-5859 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <a href="http://info.pacelabs.com/subs/pas-standard-terms.pdf">http://info.pacelabs.com/subs/pas-standard-terms.pdf</a>			
<b>Project Description:</b> Zimmer Station		<b>City/State Collected:</b> Moscow, OH		Please Circle: PT MT CT ET										SDG # <u>4658197</u> <b>A231</b>			
Phone: 513-771-8471		Client Project # 7217-17-001D		Lab Project # LITEGNTN-ZIMMER										Acctnum: LITEGNTN Template: Prelogin: PM: 134 PB:			
Collected by (print):		Site/Facility ID # BG Wells		P.O. #										Shipped Via:			
Collected by (signature):		<b>Rush? (Lab MUST Be Notified)</b> <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day		Quote #										Remarks Sample # (lab only)			
Immediately Packed on Ice N ___ Y <input checked="" type="checkbox"/>		Date Results Needed		No. of Cntrs										PH-10BDH4321 TRC 2/20/16 CR6-20221V			
Sample ID	Comp/Grab	Matrix*	Depth	Date	Time												
MW-01	Grab	GW	NA	9/18	12:15	5	X	X	X	X							
MW-08	Grab	GW	NA	9/20	12:40	5	X	X	X	X							
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other _____		<b>Remarks:</b> Log Rad to same SDG as different dash #s as EX 10 day TAT CCR Metals: As, Ba, Be, B, Cd, Ca, Cr, Co, K, Pb, Li, Mg, Mo, Na, Se, Tl		Samples returned via: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> Courier _____		Tracking #		pH _____ Temp _____ Flow _____ Other _____		<b>Sample Receipt Checklist:</b> CDC Seal Present/Intact: <input type="checkbox"/> NP <input type="checkbox"/> N CDC Signed/Accurate: <input type="checkbox"/> N <input type="checkbox"/> N Bottles arrive intact: <input type="checkbox"/> N <input type="checkbox"/> N Correct bottles used: <input type="checkbox"/> N <input type="checkbox"/> N Sufficient volume sent: <input type="checkbox"/> N <input type="checkbox"/> N If Applicable: VOA Zero Headpace: <input type="checkbox"/> N <input type="checkbox"/> N Preservation Correct/Checked: <input type="checkbox"/> N <input type="checkbox"/> N RAD Screen <0.5 mR/hr: <input checked="" type="checkbox"/> Y <input type="checkbox"/> N							
Relinquished by: (Signature) 		Date: 9/20/23		Time: 18:00		Received by: (Signature)		Trip Blank Received: Yes/NO <input checked="" type="checkbox"/> HCL/MeOH TBR		Temp: _____ °C Bottles Received: 10 If preservation required by Login: Date/Time							
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Date:		Time:		Hold:		Condition: NCF / <input checked="" type="checkbox"/>			

Tracking Numbers	Temperature
7019 S6852436	2.8
0503	0.9
2447	1.5
2458	2.3
2425	1.8
6643 4303133	1.5

# ANALYTICAL REPORT

October 06, 2023

Revised Report

## S&ME - Nashville, TN

Sample Delivery Group: L1658199  
Samples Received: 09/21/2023  
Project Number: 7217-17-001D  
Description:  
Site: WHZ UNIT 125  
Report To: Vince Epps  
862 East Crescentville Road  
Cincinnati, OH 45246

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Entire Report Reviewed By:



Mark W. Beasley  
Project Manager

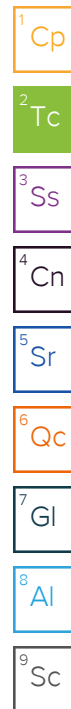
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory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

**Pace Analytical National**

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

# TABLE OF CONTENTS

<b>Cp: Cover Page</b>	1
<b>Tc: Table of Contents</b>	2
<b>Ss: Sample Summary</b>	3
<b>Cn: Case Narrative</b>	5
<b>Sr: Sample Results</b>	6
MW-03S L1658199-01	6
MW-03S L1658199-02	7
MW-16 L1658199-03	8
MW-16 L1658199-04	9
MW-17 L1658199-05	10
MW-17 L1658199-06	11
MW-18 L1658199-07	12
MW-18 L1658199-08	13
<b>Qc: Quality Control Summary</b>	14
Gravimetric Analysis by Method 2540 C-2011	14
Radiochemistry by Method 904/9320	17
Radiochemistry by Method SM7500Ra B M	18
Wet Chemistry by Method 2320 B-2011	19
Wet Chemistry by Method 9056A	21
Metals (ICPMS) by Method 6020	23
<b>Gl: Glossary of Terms</b>	26
<b>Al: Accreditations &amp; Locations</b>	27
<b>Sc: Sample Chain of Custody</b>	28



# SAMPLE SUMMARY

## ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

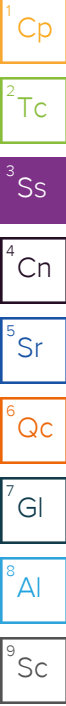
### ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

#### MW-03S L1658199-01 GW

Collected by  
Collected date/time  
Received date/time  
09/19/23 10:10 09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137500	1	09/22/23 10:03	09/25/23 09:32	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137677	1	09/25/23 10:26	09/25/23 10:26	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 07:59	09/24/23 07:59	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 08:11	09/24/23 08:11	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:47	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	20	09/24/23 10:58	09/26/23 14:01	JPD	Mt. Juliet, TN



#### MW-03S L1658199-02 Non-Potable Water

Collected by  
Collected date/time  
Received date/time  
09/19/23 10:10 09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

#### MW-16 L1658199-03 GW

Collected by  
Collected date/time  
Received date/time  
09/18/23 14:55 09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2138752	1	09/25/23 09:21	09/25/23 10:37	MMF	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137677	1	09/25/23 10:31	09/25/23 10:31	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 08:24	09/24/23 08:24	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 08:36	09/24/23 08:36	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:50	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	10	09/24/23 10:58	09/26/23 14:05	JPD	Mt. Juliet, TN

#### MW-16 L1658199-04 Non-Potable Water

Collected by  
Collected date/time  
Received date/time  
09/18/23 14:55 09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

#### MW-17 L1658199-05 GW

Collected by  
Collected date/time  
Received date/time  
09/18/23 16:25 09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137500	1	09/22/23 10:03	09/25/23 09:32	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137677	1	09/25/23 10:36	09/25/23 10:36	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 08:49	09/24/23 08:49	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 09:02	09/24/23 09:02	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:53	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	10	09/24/23 10:58	09/26/23 14:31	JPD	Mt. Juliet, TN

# SAMPLE SUMMARY

## ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

### MW-17 L1658199-06 Non-Potable Water

Collected by	Collected date/time	Received date/time
	09/18/23 16:25	09/21/23 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	09/19/23 11:40	09/21/23 09:00

### MW-18 L1658199-07 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG2137489	1	09/22/23 09:57	09/22/23 16:06	JAC	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG2137677	1	09/25/23 10:40	09/25/23 10:40	BJM	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	1	09/24/23 09:39	09/24/23 09:39	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG2138268	10	09/24/23 09:52	09/24/23 09:52	GEB	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	1	09/24/23 10:58	09/25/23 13:57	SJM	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG2137818	50	09/24/23 10:58	09/26/23 14:34	JPD	Mt. Juliet, TN

Collected by	Collected date/time	Received date/time
	09/19/23 11:40	09/21/23 09:00

### MW-18 L1658199-08 Non-Potable Water

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 904/9320	WG2140277	1	09/27/23 12:21	09/29/23 21:09	DDD	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG2137491	1	09/25/23 15:11	09/29/23 21:09	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG2137491	1	09/25/23 15:11	09/26/23 15:47	RGT	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

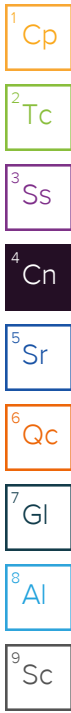


# CASE NARRATIVE

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



Mark W. Beasley  
Project Manager



## Report Revision History

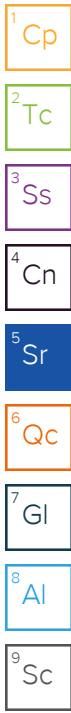
---

Level II Report - Version 1: 10/02/23 16:41

## Project Narrative

---

Prelim results



Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	1320000		20000	1	09/25/2023 09:32	<a href="#">WG2137500</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	163000		8450	20000	1	09/25/2023 10:26	<a href="#">WG2137677</a>
Alkalinity,Bicarbonate	163000		8450	20000	1	09/25/2023 10:26	<a href="#">WG2137677</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 10:26	<a href="#">WG2137677</a>

Sample Narrative:

L1658199-01 WG2137677: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	66300		379	1000	1	09/24/2023 07:59	<a href="#">WG2138268</a>
Fluoride	149	J	64.0	150	1	09/24/2023 07:59	<a href="#">WG2138268</a>
Sulfate	722000		5940	50000	10	09/24/2023 08:11	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Barium	64.9		0.381	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Boron	3790		193	600	20	09/26/2023 14:01	<a href="#">WG2137818</a>
Cadmium	U		0.150	1.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Calcium	280000		93.6	1000	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Cobalt	U		0.0596	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Magnesium	46500		73.5	1000	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Molybdenum	0.858	J	0.348	5.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Potassium	2430		108	2000	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Selenium	3.80		0.300	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Sodium	23100		376	2000	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Thallium	U		0.121	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>
Lithium	5.27		0.695	2.00	1	09/25/2023 13:47	<a href="#">WG2137818</a>

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.674		0.253	0.453	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	97.2			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	103			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

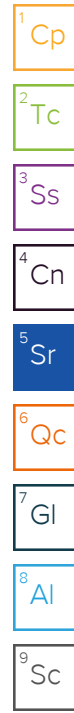
Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.855		0.397	0.652	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.181	J	0.306	0.469	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	73.0			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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



Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	861000		13300	1	09/25/2023 10:37	<a href="#">WG2138752</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	235000		8450	20000	1	09/25/2023 10:31	<a href="#">WG2137677</a>
Alkalinity,Bicarbonate	235000		8450	20000	1	09/25/2023 10:31	<a href="#">WG2137677</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 10:31	<a href="#">WG2137677</a>

Sample Narrative:

L1658199-03 WG2137677: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	34300		379	1000	1	09/24/2023 08:24	<a href="#">WG2138268</a>
Fluoride	156		64.0	150	1	09/24/2023 08:24	<a href="#">WG2138268</a>
Sulfate	426000		5940	50000	10	09/24/2023 08:36	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Barium	60.7		0.381	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Boron	808		96.3	300	10	09/26/2023 14:05	<a href="#">WG2137818</a>
Cadmium	U		0.150	1.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Calcium	204000		93.6	1000	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Cobalt	1.64	J	0.0596	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Magnesium	32800		73.5	1000	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Molybdenum	1.46	J	0.348	5.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Potassium	2050		108	2000	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Selenium	9.02		0.300	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Sodium	23900		376	2000	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Thallium	0.160	J	0.121	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>
Lithium	5.72		0.695	2.00	1	09/25/2023 13:50	<a href="#">WG2137818</a>

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.848		0.292	0.521	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	92.4			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	96.2			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.927		0.365	0.632	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0785	<u>U</u>	0.219	0.358	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	94.9			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	991000		13300	1	09/25/2023 09:32	<a href="#">WG2137500</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	209000		8450	20000	1	09/25/2023 10:36	<a href="#">WG2137677</a>
Alkalinity,Bicarbonate	209000		8450	20000	1	09/25/2023 10:36	<a href="#">WG2137677</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 10:36	<a href="#">WG2137677</a>

Sample Narrative:

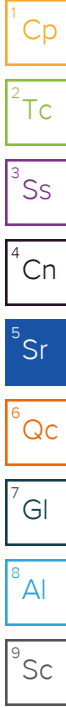
L1658199-05 WG2137677: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	29000		379	1000	1	09/24/2023 08:49	<a href="#">WG2138268</a>
Fluoride	154		64.0	150	1	09/24/2023 08:49	<a href="#">WG2138268</a>
Sulfate	489000		5940	50000	10	09/24/2023 09:02	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Barium	64.0		0.381	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Boron	1670		96.3	300	10	09/26/2023 14:31	<a href="#">WG2137818</a>
Cadmium	U		0.150	1.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Calcium	214000		93.6	1000	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Cobalt	0.948	J	0.0596	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Magnesium	34900		73.5	1000	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Molybdenum	1.89	J	0.348	5.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Potassium	2050		108	2000	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Selenium	2.93		0.300	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Sodium	24100		376	2000	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Thallium	0.123	J	0.121	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>
Lithium	5.51		0.695	2.00	1	09/25/2023 13:53	<a href="#">WG2137818</a>



Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	1.51		0.306	0.527	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	103			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	81.3			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	1.67		0.386	0.635	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.159	J	0.236	0.354	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	76.6			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	1520000		20000	1	09/22/2023 16:06	<a href="#">WG2137489</a>

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Alkalinity	176000		8450	20000	1	09/25/2023 10:40	<a href="#">WG2137677</a>
Alkalinity,Bicarbonate	176000		8450	20000	1	09/25/2023 10:40	<a href="#">WG2137677</a>
Alkalinity,Carbonate	U		8450	20000	1	09/25/2023 10:40	<a href="#">WG2137677</a>

Sample Narrative:

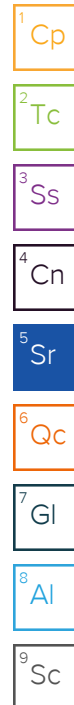
L1658199-07 WG2137677: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Chloride	71000		379	1000	1	09/24/2023 09:39	<a href="#">WG2138268</a>
Fluoride	155		64.0	150	1	09/24/2023 09:39	<a href="#">WG2138268</a>
Sulfate	875000		5940	50000	10	09/24/2023 09:52	<a href="#">WG2138268</a>

Metals (ICPMS) by Method 6020

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Arsenic	U		0.180	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Barium	34.9		0.381	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Beryllium	U		0.190	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Boron	6620		482	1500	50	09/26/2023 14:34	<a href="#">WG2137818</a>
Cadmium	0.176	J	0.150	1.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Calcium	267000		93.6	1000	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Chromium	U		1.24	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Cobalt	0.752	J	0.0596	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Lead	U		0.849	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Magnesium	90800		73.5	1000	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Molybdenum	1.13	J	0.348	5.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Potassium	2460		108	2000	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Selenium	6.03		0.300	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Sodium	30500		376	2000	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Thallium	U		0.121	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>
Lithium	5.52		0.695	2.00	1	09/25/2023 13:57	<a href="#">WG2137818</a>





Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-228	0.424	J	0.295	0.539	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Barium	102			30.0-143	09/29/2023 21:09	<a href="#">WG2140277</a>
(T) Yttrium	93.3			30.0-136	09/29/2023 21:09	<a href="#">WG2140277</a>

Radiochemistry by Method Calculation

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
Combined Radium	0.503	J	0.351	0.628	09/29/2023 21:09	<a href="#">WG2137491</a>

Radiochemistry by Method SM7500Ra B M

Analyte	Result	Qualifier	Uncertainty	MDA	Analysis Date	Batch
	pCi/l		+ / -	pCi/l	date / time	
RADIUM-226	0.0794	U	0.191	0.322	09/26/2023 15:47	<a href="#">WG2137491</a>
(T) Barium-133	81.1			30.0-143	09/26/2023 15:47	<a href="#">WG2137491</a>

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

(MB) R3977878-1 09/22/23 16:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U	↓	10000	10000

L1658000-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658000-01 09/22/23 16:06 • (DUP) R3977878-3 09/22/23 16:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1100000	1130000	1	2.33		5

L1658010-01 Original Sample (OS) • Duplicate (DUP)

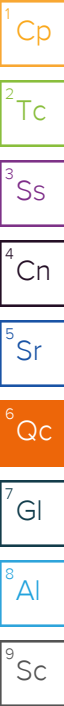
(OS) L1658010-01 09/22/23 16:06 • (DUP) R3977878-4 09/22/23 16:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	900000	936000	1	3.92		5

Laboratory Control Sample (LCS)

(LCS) R3977878-2 09/22/23 16:06

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	8580000	97.5	77.3-123	



(MB) R3978403-1 09/25/23 09:32

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U		10000	10000

L1658103-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1658103-06 09/25/23 09:32 • (DUP) R3978403-3 09/25/23 09:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1440000	1410000	1	1.75		5

L1658199-05 Original Sample (OS) • Duplicate (DUP)

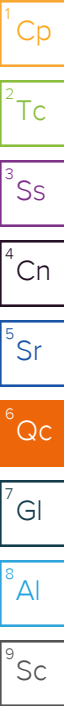
(OS) L1658199-05 09/25/23 09:32 • (DUP) R3978403-4 09/25/23 09:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	991000	985000	1	0.540		5

Laboratory Control Sample (LCS)

(LCS) R3978403-2 09/25/23 09:32

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	8610000	97.8	77.3-123	



(MB) R3978558-1 09/25/23 10:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Dissolved Solids	U	U	10000	10000

L1658459-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658459-01 09/25/23 10:37 • (DUP) R3978558-3 09/25/23 10:37

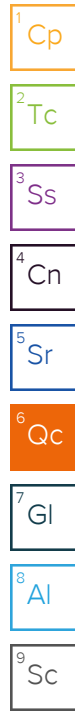
Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Dissolved Solids	1750000	1940000	1	10.5	J3	5

Laboratory Control Sample (LCS)

(LCS) R3978558-2 09/25/23 10:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Dissolved Solids	8800000	8680000	98.6	77.3-123	

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



(MB) R3981388-1 09/29/23 21:09

Analyte	MB Result pCi/l	MB Qualifier	MB Uncertainty + / -	MB MDA pCi/l
Radium-228	0.377		0.172	0.312
(T) Barium	111		111	
(T) Yttrium	99.5		99.5	

L1658192-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-08 09/29/23 21:09 • (DUP) R3981388-5 09/29/23 21:09

Analyte	Original Result pCi/l	Original Uncertainty + / -	Original MDA pCi/l	DUP Result pCi/l	DUP Uncertainty + / -	DUP MDA pCi/l	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228	1.07	0.311	0.545	0.554	0.327	0.596	1	63.9	1.15	J	20	3
(T) Barium	104			107	107							
(T) Yttrium	86.3			96.0	96.0							

Laboratory Control Sample (LCS)

(LCS) R3981388-2 09/29/23 21:09

Analyte	Spike Amount pCi/l	LCS Result pCi/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	5.13	103	80.0-120	
(T) Barium			121		
(T) Yttrium			92.4		

L1659083-19 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1659083-19 09/29/23 21:09 • (MS) R3981388-3 09/29/23 21:09 • (MSD) R3981388-4 09/29/23 21:09

Analyte	Spike Amount pCi/l	Original Result pCi/l	MS Result pCi/l	MSD Result pCi/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	16.7	0.469	16.1	15.3	93.3	89.0	1	70.0-130			4.59		20
(T) Barium		98.7			104	108							
(T) Yttrium		107			87.4	99.8							

(MB) R3982569-1 09/25/23 19:20

Analyte	MB Result	MB Qualifier	MB Uncertainty	MB MDA
	pCi/l		+ / -	pCi/l
Radium-226	0.0295	<u>U</u>	0.0634	0.105
(T) Barium-133	72.4		72.4	

L1658192-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1658192-02 09/25/23 19:20 • (DUP) R3982569-5 09/25/23 19:20

Analyte	Original Result	Original Uncertainty	Original MDA	DUP Result	DUP Uncertainty	DUP MDA	Dilution	DUP RPD	DUP RER	DUP Qualifier	DUP RPD Limits	DUP RER Limit
	pCi/l	+ / -	pCi/l	pCi/l	+ / -	pCi/l		%			%	
Radium-226	0.238	0.266	0.358	1.59	0.522	0.359	1	148	2.31		20	3
(T) Barium-133	84.2			101	101							

Laboratory Control Sample (LCS)

(LCS) R3982569-2 09/25/23 19:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	pCi/l	pCi/l	%	%	
Radium-226	5.01	5.40	108	80.0-120	
(T) Barium-133			71.8		

L1658218-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658218-24 09/25/23 19:20 • (MS) R3982569-3 09/25/23 19:20 • (MSD) R3982569-4 09/25/23 19:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	MS RER	RPD Limits
	pCi/l	pCi/l	pCi/l	pCi/l	%	%		%			%		%
Radium-226	20.0	1.73	19.4	19.4	88.3	88.4	1	75.0-125			0.103		20
(T) Barium-133		102			92.4	86.2							

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(MB) R3977347-2 09/25/23 08:51

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8450	20000
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1656160-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1656160-01 09/25/23 09:21 • (DUP) R3977347-3 09/25/23 09:25

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	120000	125000	1	3.61		20
Alkalinity,Bicarbonate	120000	125000	1	3.61		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1657189-03 Original Sample (OS) • Duplicate (DUP)

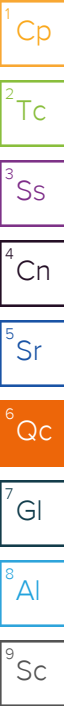
(OS) L1657189-03 09/25/23 10:59 • (DUP) R3977347-4 09/25/23 11:03

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	126000	125000	1	0.463		20
Alkalinity,Bicarbonate	126000	125000	1	0.463		20
Alkalinity,Carbonate	U	U	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5



(LCS) R3977347-1 09/25/23 08:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Alkalinity	100000	99900	99.9	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

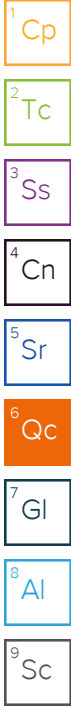
<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc





(MB) R3977734-1 09/24/23 02:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Chloride	U		379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

L1657521-24 Original Sample (OS) • Duplicate (DUP)

(OS) L1657521-24 09/24/23 03:09 • (DUP) R3977734-3 09/24/23 03:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	5440	5230	1	3.80		15
Fluoride	96.1	67.5	1	35.0	J P1	15
Sulfate	8650	8610	1	0.449		15

L1658197-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1658197-01 09/24/23 07:08 • (DUP) R3977734-6 09/24/23 07:21

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Chloride	83100	82800	1	0.367		15
Fluoride	144	199	1	32.1	P1	15
Sulfate	79300	79500	1	0.190		15

Laboratory Control Sample (LCS)

(LCS) R3977734-2 09/24/23 02:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Chloride	40000	40200	101	80.0-120	
Fluoride	8000	8150	102	80.0-120	
Sulfate	40000	40000	99.9	80.0-120	

L1657521-24 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1657521-24 09/24/23 03:09 • (MS) R3977734-4 09/24/23 03:34 • (MSD) R3977734-5 09/24/23 03:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	40000	5440	44800	44400	98.5	97.5	1	80.0-120			0.950	15
Fluoride	8000	96.1	8220	8260	102	102	1	80.0-120			0.506	15
Sulfate	40000	8650	47500	47400	97.0	96.9	1	80.0-120			0.0896	15

L1658197-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1658197-01 09/24/23 07:08 • (MS) R3977734-7 09/24/23 07:33

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	40000	83100	106000	57.7	1	80.0-120	<u>J6</u>
Fluoride	8000	144	8060	98.9	1	80.0-120	
Sulfate	40000	79300	104000	60.6	1	80.0-120	<u>J6</u>

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

ZM-257-12 Blank (MB)

(MB) R3977402-1 09/25/23 12:57

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Arsenic	U		0.180	2.00
Barium	0.414	U	0.381	2.00
Beryllium	U		0.190	2.00
Cadmium	U		0.150	1.00
Calcium	U		93.6	1000
Chromium	U		1.24	2.00
Cobalt	U		0.0596	2.00
Lead	U		0.849	2.00
Magnesium	U		73.5	1000
Molybdenum	U		0.348	5.00
Potassium	U		108	2000
Selenium	U		0.300	2.00
Sodium	U		376	2000
Thallium	U		0.121	2.00
Lithium	U		0.695	2.00

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

Method Blank (MB)

(MB) R3977815-1 09/26/23 12:56

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Boron	U		9.63	30.0

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Arsenic	50.0	50.0	100	80.0-120	
Barium	50.0	49.4	98.7	80.0-120	
Beryllium	50.0	48.5	97.0	80.0-120	
Cadmium	50.0	52.1	104	80.0-120	
Calcium	5000	4910	98.3	80.0-120	
Chromium	50.0	49.1	98.2	80.0-120	
Cobalt	50.0	50.0	100	80.0-120	
Lead	50.0	50.7	101	80.0-120	
Magnesium	5000	5060	101	80.0-120	
Molybdenum	50.0	49.1	98.1	80.0-120	
Potassium	5000	4980	99.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977402-2 09/25/23 13:01

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Selenium	50.0	52.7	105	80.0-120	
Sodium	5000	5110	102	80.0-120	
Thallium	50.0	49.9	99.9	80.0-120	
Lithium	50.0	49.2	98.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3977815-2 09/26/23 12:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	50.0	51.2	102	80.0-120	

L1658192-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1658192-01 09/25/23 13:04 • (MS) R3977402-4 09/25/23 13:11 • (MSD) R3977402-5 09/25/23 13:14

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	50.0	1.06	49.7	50.3	97.2	98.5	1	75.0-125			1.27	20
Barium	50.0	19.1	66.6	68.0	94.9	97.8	1	75.0-125			2.14	20
Beryllium	50.0	U	48.0	47.4	95.9	94.7	1	75.0-125			1.26	20
Cadmium	50.0	U	51.4	50.8	103	102	1	75.0-125			1.07	20
Calcium	5000	164000	167000	168000	58.4	71.3	1	75.0-125	V	V	0.385	20
Chromium	50.0	U	46.5	47.6	93.0	95.3	1	75.0-125			2.47	20
Cobalt	50.0	1.24	48.0	48.6	93.6	94.8	1	75.0-125			1.22	20
Lead	50.0	U	50.6	50.2	101	100	1	75.0-125			0.809	20
Magnesium	5000	31400	35700	35600	86.1	83.5	1	75.0-125			0.376	20
Molybdenum	50.0	1.46	53.5	53.0	104	103	1	75.0-125			0.927	20
Potassium	5000	2590	7410	7340	96.4	95.1	1	75.0-125			0.853	20
Selenium	50.0	U	54.8	54.0	110	108	1	75.0-125			1.54	20
Sodium	5000	16100	20700	20500	92.0	88.9	1	75.0-125			0.757	20
Thallium	50.0	0.207	49.6	49.3	98.8	98.2	1	75.0-125			0.674	20
Lithium	50.0	5.57	53.7	52.3	96.3	93.4	1	75.0-125			2.74	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

(OS) L1658192-01 09/26/23 13:02 • (MS) R3977815-4 09/26/23 13:09 • (MSD) R3977815-5 09/26/23 13:12

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Boron	50.0	56.0	112	111	112	109	1	75.0-125			1.19	20

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

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

## Abbreviations and Definitions

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

## Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
U	Below Detectable Limits: Indicates that the analyte was not detected.
V	The sample concentration is too high to evaluate accurate spike recoveries.

## ACCREDITATIONS &amp; LOCATIONS

ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

ZIMMER POWER PLANT, COAL PILE RUNOFF POND

ZIM-257-125

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico <sup>1</sup>	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina <sup>1</sup>	DW21704
Georgia	NELAP	North Carolina <sup>3</sup>	41
Georgia <sup>1</sup>	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky <sup>1,6</sup>	KY90010	South Carolina	84004002
Kentucky <sup>2</sup>	16	South Dakota	n/a
Louisiana	AI30792	Tennessee <sup>1,4</sup>	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

\* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

\* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

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

APPENDIX A.  
ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023

ZIMMER POWER PLANT COAL PILE RUNOFF POND  
ZIM-2576125

<b>Company Name/Address:</b> <b>SME - Cincinnati</b> 862 E. Crescentville Rd. Cincinnati, OH 45246				<b>Billing Information:</b> Accounts Payable smeinc_invoice@concurrency.com .com				Analysis / Container / Preservative				Chain of Custody Page ___ of ___	
<b>Report to:</b> Vince Epps				<b>Email To:</b> vepps@smeinc.com				Pres Chk [Handwritten: 5, 27]				Pace PEOPLE ADVANCING SCIENCE 12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-9858 Alt: 800-767-5859 Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <a href="https://info.pacelabs.com/hubs/pas-standard-terms.pdf">https://info.pacelabs.com/hubs/pas-standard-terms.pdf</a>	
<b>Project Description:</b> Zimmer Station				<b>City/State Collected:</b> Moscow, OH		Please Circle: PT MT CT ET							
<b>Phone:</b> 513-771-8471		<b>Client Project #</b> 7217-17-001D		<b>Lab Project #</b> LITEGNTN-ZIMMER		AIK Bi/Ca, Cl, F, SO4 125miHDPE-NonPres CCR Metals+B, Li, K, Na, Mg 250miHDPE+ RA-226/228COMB 1L-HPE-HNO3 TDS 250miHDPE-NonPres				SDG # <b>U653199</b> <b>A232</b>			
<b>Collected by (print):</b>		<b>Site/Facility ID #</b> WHZ Unit 125 (Coal Pile)		<b>P.O. #</b>						Acctnum: LITEGNTN Template: Prelogin: PM: 134 PB: Shipped Via:		Remarks      Sample # (lab only)	
<b>Collected by (signature):</b>		<b>Rush? (Lab MUST Be Notified)</b> ___ Same Day    ___ Five Day ___ Next Day    ___ 5 Day (Rad Only) ___ Two Day     ___ 10 Day (Rad Only) ___ Three Day		<b>Quote #</b>		Date Results Needed		No. of Cntrs					
Immediately Packed on Ice N ___ Y ___ X													
Sample ID	Comp/Grab	Matrix*	Depth	Date	Time								
MW-035	Grab	GW	NA	9/19	10:10:5	X	X	X	X				
MW-16	Grab	GW	NA	9/19	14:55	X	X	X	X				
MW-17	Grab	GW	NA	9/19	15:25	X	X	X	X				
MW-18	Grab	GW	NA	9/19	11:10	X	X	X	X				
* Matrix: SS - Soil   AIR - Air   F - Filter GW - Groundwater   B - Bioassay WW - WasteWater DW - Drinking Water OT - Other						<b>Remarks:</b> Log Rad to same SDG as different dash #s as EX 10 day TAT CCR Metals: As, Ba, Be, B, Cd, Ca, Cr, Co, K, Pb, Li, Mg, Mo, Na, S						pH _____ Temp _____ Other _____	
Samples returned via: UPS ___ FedEx ___ Courier _____						Tracking # _____						PH-10BDH4321 TRC 2362362 CR6-20221V	
Relinquished by: (Signature) <i>Cody Flynn</i>		Date: 9/20/23		Time: 18:00		Received by: (Signature)		Trip Blank Received: Yes (No)		HCL/MeOH TBR			
Relinquished by: (Signature)		Date:		Time:		Received by: (Signature)		Temp: °C		Bottles Received: 19			
Relinquished by: (Signature)		Date:		Time:		Received for lab by: (Signature)		Date:		Time:			
						Hold:						Condition: NCF / PK	



Tracking Numbers	Temperature
701956882436	2.8
0503	0.9
2447	1.5
2458	2.3
2425	1.8
664348031133	1.5











## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	September 19, 2023
Project Location:	Moscow, Ohio	Purge Time:	50 Minutes
Project Number:	7217-17-001D	Sample Date:	September 19, 2023
Source Well:	MW-09	Sample Time:	13:15
Locked?:	Yes	Weather:	Sunny; 75
Sampled By:	JEB/EF	Air Temp:	

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	53.95	ft-TOC	
Total Well Depth:	93.50	ft-TOC	
Height of Water Column:	39.55	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	6.5	Gal
3 * Well Volume	19.36	Gal
5 * Well Volume	32.27	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	12:20	End Time:	13:10
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	1.0	Gallons	Used YSI ProQuattro - B22672B 2100P Turbidimeter - B22918B		
Final Volume Purge Rate:	75	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
12:20	0.0	---	---	---	---	---	---	---	---	Start Purging	
12:25	0.1	75	53.85	21.5	7.3	1.220	5.7	277	1.89	Clear, no odor	
12:30	0.2	75	53.85	22.2	7.2	1.240	5.6	277	2.16	Clear, no odor	
12:35	0.3	75	53.85	22.3	7.2	1.257	5.2	278	1.43	Clear, no odor	
12:40	0.4	75	53.85	22.3	7.2	1.283	5.7	279	1.36	Clear, no odor	
12:45	0.5	75	53.85	22.3	7.2	1.306	5.8	279	0.81	Clear, no odor	
12:50	0.6	75	53.85	22.1	7.2	1.331	5.6	282	1.28	Clear, no odor	
12:55	0.7	75	53.85	21.8	7.1	1.350	4.4	280	1.50	Clear, no odor	
13:00	0.8	75	53.85	21.4	7.0	1.364	2.9	228	2.00	Clear, no odor	
13:05	0.9	75	53.85	21.1	7.0	1.354	2.0	115	3.23	Clear, no odor	
13:10	1.0	75	53.85	22.9	7.0	1.333	2.1	84	3.30	Clear, no odor	
Final:	13:10	1.0	75	53.85	22.9	7.0	1.333	2.1	84	3.3	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 13:15      Sample End Time:  

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

**Notes:** Collected sample a little early due to spreadsheet formatting





## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	September 20, 2023
Project Location:	Moscow, Ohio	Purge Time:	20 Minutes
Project Number:	7217-17-001D	Sample Date:	September 20, 2023
Source Well:	MW-11	Sample Time:	15:35
Locked?:	Yes	Air Temp:	84F
Sampled By:	CJH & AKL		
Weather:	Sunny		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	52.50	ft-TOC	
Total Well Depth:	64.31	ft-TOC	
Height of Water Column:	11.81	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.9	Gal
3 * Well Volume	5.78	Gal
5 * Well Volume	9.64	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	15:10	End Time:	15:30
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	
							psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet		Flow Through Cell Vol:	
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC		200 mL	
Final Volume Purged:				1.3		Gallons	
Final Volume Purge Rate:				250		mL/min	
Well Purged Dry?:				(Yes/No)			
<b>Comments:</b>							
Duplicate sample collected (DUP-2)							

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
15:10	0.0	---	---	---	---	---	---	---	---	Start Purging	
15:15	0.3	250	52.41	15.9	7.0	1.009	0.5	40	5.18	Clear, no odor	
15:20	0.7	250	52.42	15.6	7.0	1.015	0.0	39	2.67	Clear, no odor	
15:25	1.0	250	52.40	16.3	7.0	1.011	-0.1	38	2.67	Clear, no odor	
15:30	1.3	250	52.57	15.5	7.0	1.003	0.0	39	0.51	Clear, no odor	
<b>Final:</b>	15:30	1.3	250	52.57	15.5	7.0	1.003	0.0	39	0.5	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 15:35      Sample End Time: 15:50

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	

Notes: \_\_\_\_\_









## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	September 19, 2023
Project Location:	Moscow, Ohio	Purge Time:	30 Minutes
Project Number:	7217-17-001D	Sample Date:	September 19, 2023
Source Well:	MW-14	Sample Time:	16:40
Locked?:	Yes	Weather:	Sunny; 75
Sampled By:	JEB/EF	Air Temp:	

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	48.08	ft-TOC	
Total Well Depth:	58.75	ft-TOC	
Height of Water Column:	10.67	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.7	Gal
3 * Well Volume	5.22	Gal
5 * Well Volume	8.71	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	16:05	End Time:	16:35
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b> Used YSI ProQuattro - B22672B 2100P Turbidimeter - B22918B		
Final Volume Purged:	1.0	Gallons			
Final Volume Purge Rate:	125	mL/min			
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
16:05	0.0	---	---	---	---	---	---	---	---	Start Purging	
16:10	0.2	125	48.30	17.9	6.7	1.161	0.4	107	23.4	Clear, no odor	
16:15	0.3	125	48.30	18.3	6.7	1.154	0.2	101	11.5	Clear, no odor	
16:20	0.5	125	48.30	19.9	6.8	1.149	0.2	94	9.21	Clear, no odor	
16:25	0.7	125	48.30	19.2	6.8	1.168	0.3	89	4.56	Clear, no odor	
16:30	0.8	125	48.30	18.2	6.7	1.153	0.2	86	3.80	Clear, no odor	
16:35	1.0	125	48.30	18.2	6.7	1.153	0.2	85	2.58	Clear, no odor	
Final:	16:35	1.0	125	48.30	18.2	6.7	1.153	0.2	85	2.6	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 16:40      Sample End Time:  

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

Notes: \_\_\_\_\_

## LOW FLOW GROUNDWATER SAMPLING FORM



Project Name:	Zimmer Station	Purge Date:	September 20, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Weather:	Sunny
Source Well:	MW-15	Air Temp:	66F

**Water Level & Well Data**

Measuring Point:	Top of Casing		
Depth to Water:	54.59	ft-TOC	
Total Well Depth:	61.96	ft-TOC	
Height of Water Column:	7.37	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	1.2	Gal
3 * Well Volume	3.61	Gal
5 * Well Volume	6.01	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	10:45	End Time:	11:10
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	0.7	Gallons	Used YSI ProQuattro - B22672B		
Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B		
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals  $\geq$  5 minutes and purge volumes  $\geq$  1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment
10:45	0.0	---	---	---	---	---	---	---	---	Start Purging
10:50	0.1	100	54.59	17.6	6.9	1.560	0.5	158	2.68	Clear, odorless
10:55	0.3	100	54.59	17.5	6.9	1.560	0.5	158	4.42	Clear, odorless
11:00	0.4	100	54.59	17.4	6.9	1.562	0.3	157	3.20	Clear, odorless
11:05	0.5	100	54.59	17.5	6.9	1.560	0.2	148	2.65	Clear, odorless
11:10	0.7	100	54.59	17.7	6.9	1.562	0.1	144	2.78	Clear, odorless

<b>Final:</b>	11:10	0.7	100	54.59	17.7	6.9	1.562	0.1	144	2.8	End of Purging
Sample Method:	Bladder Pump		Sample Start Time:	11:15		Sample End Time:	11:41				

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

**Name** \_\_\_\_\_ **Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

(1) \_\_\_\_\_

Notes:





## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	September 18, 2023
Project Location:	Moscow, Ohio	Purge Time:	25 Minutes
Project Number:	7217-17-001D	Sample Date:	September 18, 2023
Source Well:	MW-17	Sample Time:	16:25
Locked?:	Yes	Air Temp:	
Sampled By:	JEB,EF		
Weather:	sunny;75		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	55.49	ft-TOC	
Total Well Depth:	69.80	ft-TOC	
Height of Water Column:	14.31	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	7.01	Gal
5 * Well Volume	11.68	Gal

**Well Purging Information**

Purge Method:		Bladder Pump		Start Time:	15:55	End Time:	16:20
(If Used)	Bladder Pump Control Settings:	On (sec):		Off (sec):		Pressure:	
							psi
Pump Intake Depth from Top of Casing:				ft-TOC			
Water Column Above Pump Intake:				feet		Flow Through Cell Vol:	
DTW-TOC at 25% Drawdown of WC Above Pump:				ft-TOC		200 mL	
Final Volume Purged:				0.7 Gallons		<b>Comments:</b> Used YSI ProQuattro - B22672B 2100P Turbidimeter - B22918B	
Final Volume Purge Rate:				100 mL/min			
Well Purged Dry?:							
				(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
15:55	0.0	---	---	---	---	---	---	---	---	Start Purging	
16:00	0.1	100	55.45	18.8	6.9	1.315	3.5	166	2.45	clear, no odor	
16:05	0.3	100	55.45	17.9	7.0	1.330	0.5	180	3.25	clear, no odor	
16:10	0.4	100	55.45	18.3	7.1	1.326	0.5	181	1.93	clear, no odor	
16:15	0.5	100	55.45	18.9	7.1	1.334	0.5	181	1.56	clear, no odor	
16:20	0.7	100	55.45	18.5	7.1	1.331	0.5	182	1.65	clear, no odor	
<b>Final:</b>	16:20	0.7	100	55.45	18.5	7.1	1.331	0.5	182	1.7	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 16:25      Sample End Time:  

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

<b>Name</b>	<b>Signature</b>	<b>Date</b>

(1) \_\_\_\_\_  
**Notes:** Sampled at 1625



## LOW FLOW GROUNDWATER SAMPLING FORM

Project Name:	Zimmer Station	Purge Date:	September 19, 2023
Project Location:	Moscow, Ohio	Purge Time:	30 Minutes
Project Number:	7217-17-001D	Sample Date:	September 19, 2023
Source Well:	MW-18	Sample Time:	11:40
Locked?:	Yes	Air Temp:	
Sampled By:	JEB/EF		
Weather:	Sunny; 70		

**Water Level & Well Data**

Measuring Point:		Top of Casing	
Depth to Water:	55.90	ft-TOC	
Total Well Depth:	70.20	ft-TOC	
Height of Water Column:	14.30	feet	
Screen Length:	20	feet	Stickup:
			ft-GRD

Well Volume		
Well Diameter	2	inch
Water Volume	2.3	Gal
3 * Well Volume	7.00	Gal
5 * Well Volume	11.67	Gal

**Well Purging Information**

Purge Method:	Bladder Pump	Start Time:	11:05	End Time:	11:35
(If Used) Bladder Pump Control Settings:	On (sec):	Off (sec):		Pressure:	psi
Pump Intake Depth from Top of Casing:		ft-TOC			
Water Column Above Pump Intake:		feet	Flow Through Cell Vol:	200	mL
DTW-TOC at 25% Drawdown of WC Above Pump:		ft-TOC	<b>Comments:</b>		
Final Volume Purged:	0.8	Gallons	Used YSI ProQuattro - B22672B		
Final Volume Purge Rate:	100	mL/min	2100P Turbidimeter - B22918B		
Well Purged Dry?:		(Yes/No)			

**Field Parameters (Taken at time intervals ≥ 5 minutes and purge volumes ≥ 1 flow-through cell volume)**

Time	Volume Purged (gal)	Flow Rate (mL/min)	Depth to Water (ft)	Temp (°C)	pH (s.u.)	Spec. Cond. (mS/cm)	Dissolved Oxygen (mg/L)	ORP* (mV)	Turbidity (NTU)	Comment	
11:05	0.0	---	---	---	---	---	---	---	---	Start Purging	
11:15	0.3	100	55.90	18.5	7.0	1.918	3.1	271	0.92	clear, no odor	
11:20	0.4	100	55.90	17.6	7.0	1.926	0.7	261	1.21	clear, no odor	
11:25	0.5	100	55.90	17.7	7.0	1.921	0.7	253	1.37	clear, no odor	
11:30	0.7	100	55.90	18.3	7.0	1.927	0.5	246	0.60	clear, no odor	
11:35	0.8	100	55.90	18.0	7.0	1.927	0.4	243	0.37	clear, no odor	
Final:	11:35	0.8	100	55.90	18.0	7.0	1.927	0.4	243	0.4	End of Purging

Sample Method: Bladder Pump      Sample Start Time: 11:40      Sample End Time:  

**Analytical Data**

Method	Qty	Container	Preservative	Method	Qty	Container	Preservative

Name	Signature	Date
(1) _____	_____	_____

Notes:

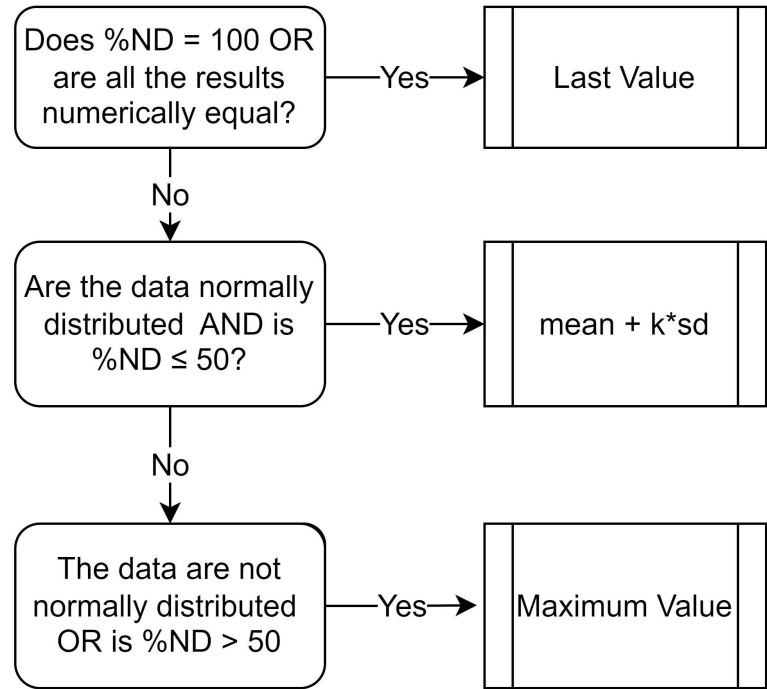
APPENDIX A.  
 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT - QUARTER 3, 2023  
 ZIMMER POWER PLANT, COAL PILE RUNOFF POND  
 ZIM-257-125

<b>Zimmer Station</b>			
<b>Well ID</b>	<b>Date</b>	<b>Time</b>	<b>Depth to Water</b>
<b>D Basin - Unit 121</b>			
MW-01	9/18/2023	10:47	53.89
MW-08	9/18/2023	8:53	55.03
MW-09	9/18/2023	9:51	53.95
MW-12	9/18/2023	9:00	54.52
MW-13	9/18/2023	9:18	46.57
MW-14	9/18/2023	9:22	48.08
MW-15	9/18/2023	9:27	54.59
<b>Gypsum Recycle Pond - Unit 124</b>			
MW-07A	9/18/2023	8:44	55.67
MW-10	9/18/2023	10:35	55.70
MW-11	9/18/2023	8:39	52.49
<b>Coal Pile Runoff Pond - Unit 125</b>			
MW-03S	9/18/2023	9:24	54.57
MW-16	9/18/2023	9:11	55.92
MW-17	9/18/2023	9:08	55.49
MW-18	9/18/2023	9:18	55.90



**APPENDIX B  
STATISTICAL METHODOLOGY FOR DETERMINATION  
OF BACKGROUND VALUES**

Notes
%ND = Percent non-detected samples
sd = standard deviation
k = kappa for tolerance limit (95% confidence/95% coverage)



**APPENDIX C  
STATISTICAL METHODOLOGY FOR DETERMINATION OF  
STATISTICALLY SIGNIFICANT LEVELS**

Notes
%ND = Percent non-detected samples
MK = Mann-Kendall Trend Test
<u>Alpha Levels</u>
Normality = 0.01
MK Trend = 0.01
Residuals = 0.01
Confidence Level= 0.01

