Annual Groundwater Monitoring Report

Southwestern Electric Power Company
Welsh Power Plant

Primary Bottom Ash Pond CN 602843245; RN100213370 Registration No: CCR 110

> 1187 Country Road 4865 Titus County Pittsburg, Texas

> > January 2023

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Table of Contents

	<u>Pag</u>	<u>e</u>
I.	Overview	2
II.	Groundwater Monitoring Well Locations and Identification Numbers	4
III.	Monitoring Wells Installed or Decommissioned	4
IV.	Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion	5
V.	Groundwater Quality Data Statistical Analysis	5
VI.	Alternate Source Demonstrations	5
VII.	Discussion About Transition Between Monitoring Requirements or Alternate Monitoring Frequency	6
VIII.	Other Information Required.	6
IX.	Description of Any Problems Encountered and Actions Taken	6
X.	A Projection of Key Activities for the Upcoming Year	6

Appendix 1: Groundwater Data Tables and Figures

Appendix 2: Statistical Analyses

Appendix 3: Alternative Source Demonstrations - NA

Appendix 4: Notices for Monitoring Program Transitions - NA

Appendix 5: Well Installation/Decommissioning Logs- NA

Appendix 6: Groundwater Monitoring Field and Laboratory Reports

Abbreviations:

ASD - Alternate Source Demonstration

CCR – Coal Combustion Residual

GWPS - Groundwater protection standards

PBAP – Primary Bottom Ash Pond

SSI - Statistically Significant Increase

SSL – Statistically Significant Level

TCEQ – Texas Commission on Environmental Quality

I. Overview

This Annual Groundwater Monitoring Report (Report) has been prepared to report the status of activities for the preceding year for an existing Coal Combustion Residual (CCR) unit at Southwestern Electric Power Company's, a wholly owned subsidiary of American Electric Power Company (AEP), Welsh Power Plant. The Texas Commission on Environmental Quality's (TCEQ's) CCR rule requires that the Annual Groundwater Monitoring Report be posted to the operating record for the preceding year no later than January 31, 2023.

In general, the following activities were completed:

- At the start of the current annual reporting period, the PBAP was operating under the Assessment monitoring program.
- At the end of the current annual reporting period, the PBAP was operating under the Assessment monitoring program.
- The PBAP initiated an assessment monitoring program on April 13, 2018.
- Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-8, AD-9, and AD-15 and analyzed for Appendix III and IV constituents, as specified in 30 TAC §352.951et seq. and AEP's Groundwater Sampling and Analysis Plan (2021).
- Groundwater data underwent various validation tests, including tests for completeness, valid values, transcription errors, and consistent units.
- Data and statistical analysis not available for the previous reporting period indicated that during the 2nd semi-annual 2021 sampling event (October, 2021):
 - Potential Statistically Significant Increases (SSIs) above background were identified for:
 - Boron at AD-8
 - pH at AD-9 and AD-15
 - o No potential Statistically Significant Levels (SSLs) above the groundwater protection standards (GWPS) were identified.
- Annual groundwater sampling was conducted in March 2022;
- The 1st semi-annual groundwater sampling event was conducted in June 2022;
 - o Potential SSIs above background were identified for:
 - Boron at AD-8
 - pH at AD-15
 - o No potential SSLs above GWPS were identified.
- Statistical evaluation of the 2nd semi-annual 2022 groundwater sampling event conducted October-November 2022 is underway.

The major components of this annual report, to the extent applicable at this time, are presented in sections that follow:

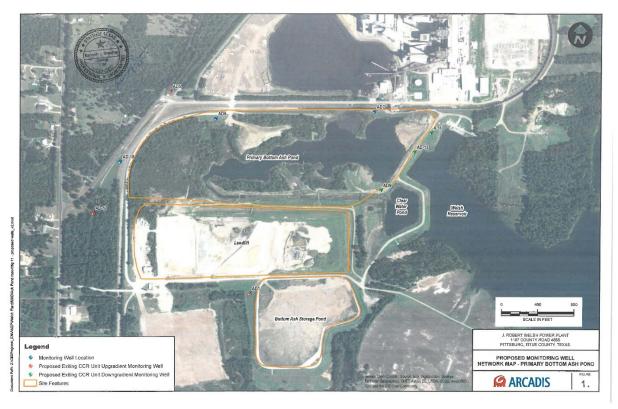
- A map, aerial photograph or a drawing showing the PBAP CCR management unit, all groundwater monitoring wells and monitoring well identification numbers;
- All of the monitoring data collected, including the rate and direction of groundwater flow, plus a summary showing the number of samples collected per monitoring well, the dates the samples were collected and whether the sample was collected as part of assessment monitoring programs is included in Appendix 1;
- Statistical comparison of monitoring data to determine if there have been SSI(s) and SSLs, where applicable (Appendix 2);
- A discussion of whether any alternate source demonstrations were performed, and the conclusions, where applicable (Appendix 3);
- A summary of any transition between monitoring programs or an alternate monitoring frequency, if applicable (Appendix 4).
- Identification of any monitoring wells that were installed, or decommissioned during the preceding year, along with a statement as to why that happened, where applicable (Appendix 5,); and
- Other information required to be included in the annual report, field sheets, analytical reports, etc. (Appendix 6)

In addition, this report summarizes key actions completed, and where applicable, describes any problems encountered and actions taken to resolve those problems. The report includes a projection of key activities for the upcoming year.

II. Groundwater Monitoring Well Locations and Identification Numbers

The figure that follows depicts the PE-certified groundwater monitoring network, the monitoring well locations and their corresponding identification numbers.

Primary Bot	tom Ash Pond Monitoring Wells								
Background Down Gradient									
AD-1	AD-8								
AD-5	AD-9								
AD-17	AD-15								



Note: ADs 6, 7, and 18 are used for gauging purposes only

III. Monitoring Wells Installed or Decommissioned

There were no groundwater monitoring wells installed or decommissioned during this reporting period.

IV. Groundwater Quality Data and Static Water Elevation Data, With Flow Rate and Direction and Discussion

Groundwater samples and elevations were collected for AD-1, AD-5, AD-17, AD-8, AD-9, and AD-15 and analyzed for Appendix III and IV constituents, as specified in §352.951et seq. and AEP's Groundwater Sampling and Analysis Plan (2021).

Appendix 1 contains potentiometric maps with the static water elevation, groundwater flow direction for each monitoring event, tables showing groundwater velocity, and all the groundwater quality data collected to date under 30 TAC 352.951.

V. <u>Groundwater Quality Data Statistical Analysis</u>

Appendix 2 contains the statistical analysis reports available for this reporting period.

Data and statistical analysis not available for the previous reporting period indicated that during the 2nd semi-annual 2021 sampling event (October 20, 2021 and certified February 16, 2022):

- o Potential SSIs above background were identified for:
 - Boron at AD-8
 - pH at AD-9 and AD-15
- No potential SSLs above GWPS were identified

The annual sampling event for the compliance wells for Appendix III and IV parameters was conducted March 1, 2022 and satisfies the requirement of 30 TAC 352.951.

The 1st semi-annual groundwater sampling event was conducted June 27-28, 2022 with statistical evaluation certified November 7, 2022;

- o Protentional SSIs above background were identified for:
 - Boron at AD-8
 - pH at AD-9
- o No potential SSLs above GWPS were identified

Statistical evaluation of the 2nd semi-annual 2022 groundwater sampling event conducted October 31 – November 1, 2022, is underway.

VI. Alternate Source Demonstrations

No ASDs were conducted for this reporting period.

VII. <u>Discussion About Transition Between Monitoring Requirements or Alternate</u> <u>Monitoring Frequency</u>

As of this annual groundwater report, the CCR Unit remains in assessment monitoring and will be sampled on a semi-annual basis.

VIII. Other Information Required

Field sheets and laboratory reports are in Appendix 6.

IX. <u>Description of Any Problems Encountered and Actions Taken</u>

No significant problems were encountered.

X. A Projection of Key Activities for the Upcoming Year

- Complete the statistical evaluation of the 2nd semi-annual 2022 groundwater monitoring event;
- Conducted the annual groundwater sampling event for all constituents listed in 30 TAC 352 Appendix III and IV;
- Assessment monitoring will continue on a semiannual groundwater sampling schedule for 30 TAC 352 Appendix III and IV constituents;
- Evaluation of the assessment monitoring results from a statistical analysis viewpoint, looking for SSIs above background and SSLs above GWPS;
- If needed, ASDs will be conducted to evaluate if the unit can remain in assessment monitoring or the unit will move to an assessment of corrective measures;
- Responding to any new data received considering TCEQ's CCR rule requirements; and
- Preparation of the next annual groundwater report.

APPENDIX 1

Potentiometric maps and tables follow, showing the groundwater monitoring data collected, the rate and direction of groundwater flow, and a summary showing the number of samples collected per monitoring well. The dates that the samples were collected also is shown.



- Groundwater Elevation Contour
- - Groundwater Elevation Contour (Inferred)
- → Approximate Groundwater Flow Direction

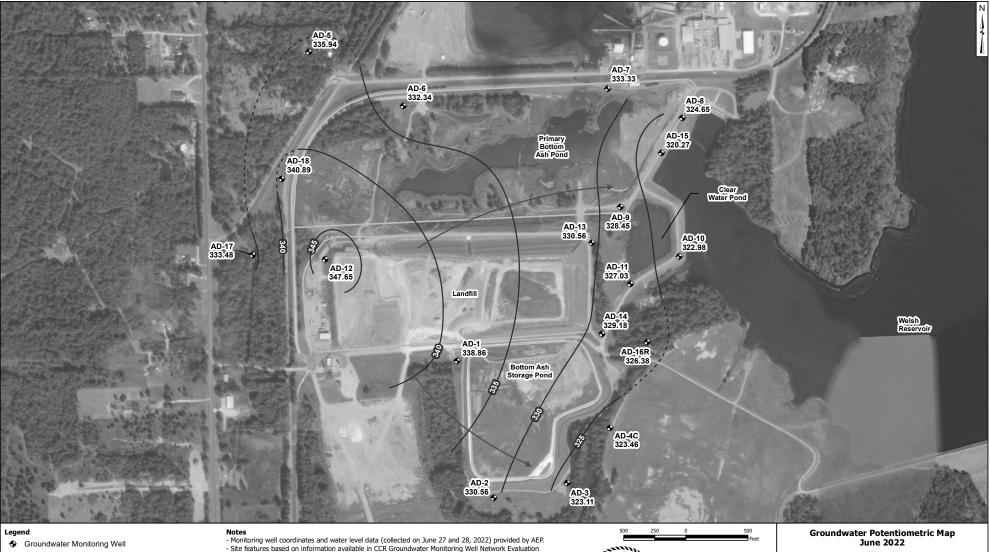
CCR Units

- (Arcadis, 2016).
 Groundwater elevation units are feet above mean sea level.



AEP Welsh Power Plant Cason, Texas

Geosy		Figure
con	sultants	- 1
Columbus, Ohio	2022/07/26	-



- Groundwater Elevation Contour
- - Groundwater Elevation Contour (Inferred)
- → Approximate Groundwater Flow Direction

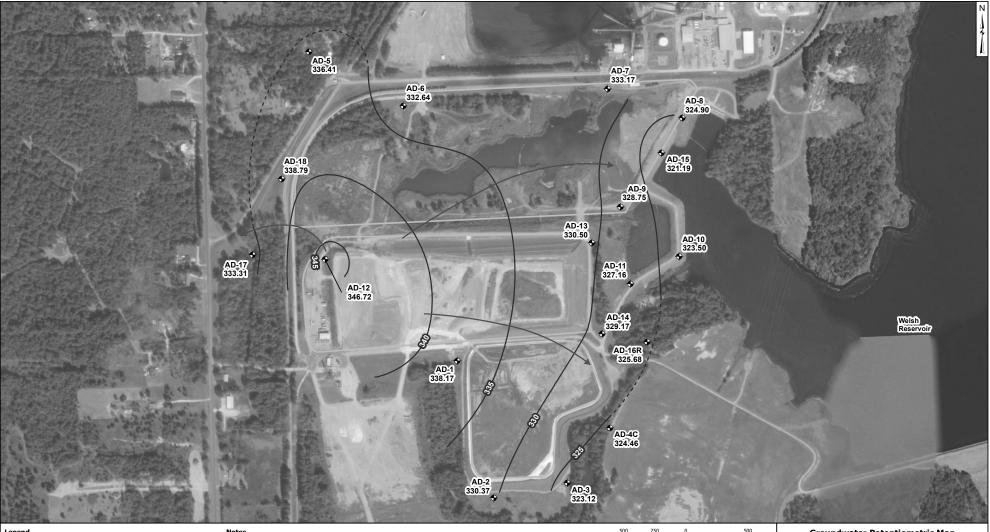
CCR Units

- (Arcadis, 2018).
 Groundwater elevation units are feet above mean sea level.



AEP Welsh Power Plant Cason, Texas

Geosy		Figure
con	sultants	2
Columbus, Ohio	2022/10/31	2



Legend

- Groundwater Monitoring Well
- Groundwater Elevation Contour
- - Groundwater Elevation Contour (Inferred)
- → Approximate Groundwater Flow Direction

CCR Units

- Monitoring well coordinates and water level data (collected on November 1, 2022) provided by AEP.
 Site features based on information available in CCR Groundwater Monitoring Well Network Evaluation
- (Arcadis, 2018).
 Groundwater elevation units are feet above mean sea level.
 Satellite imagery provided by ESRI.



Groundwater Potentiometric Map November 2022

AEP Welsh Power Plant Cason, Texas

Geosy		Figure
con	sultants	2
Columbus, Ohio	2022/11/16)

Table 1: Residence Time Calculation Summary Welsh Primary Bottom Ash Pond

			202	2-03	202	2-06	2022-11		
CCR Management Unit	Monitoring Well	Well Diameter (inches)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	Groundwater Velocity (ft/year)	Groundwater Residence Time (days)	
	AD-1 ^[1]	2.0	3.2	19.3	3.2	19.1	2.9	20.9	
	AD-5 ^[1]	2.0	1.7	36.5	1.5	39.8	1.7	36.7	
Primary Bottom	AD-8 ^[2]	2.0	3.4	18.0	3.4	17.9	3.2	18.8	
Ash Pond	AD-9 ^[2]	2.0	5.4	11.2	5.0	12.2	3.3	18.7	
	AD-15 ^[2]	2.0	7.1	8.5	7.0	8.7	6.8	8.9	
	AD-17 ^[1]	2.0	7.7	7.9	10.0	6.1	7.1	8.6	

Notes:

- [1] Upgradient Well
- [2] Downgradient Well

Table 1 - Groundwater Data Summary: AD-1 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	рН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/26/2016	Background	0.346	36.5	5	< 0.083 U1	5.9	42	252
7/27/2016	Background	0.35	39.6	4	< 0.083 U1	5.3	36	239
9/30/2016	Background	0.332	15	5	< 0.083 U1	5.4	35	173
10/19/2016	Background	0.398	19.1	4	< 0.083 U1	5.2	42	192
12/12/2016	Background	0.394	8.74	4	< 0.083 U1	5.2	40	200
1/17/2017	Background	0.656	129	4	< 0.083 U1	7.1	68	538
2/23/2017	Background	0.7	147	9	< 0.083 U1	6.9	68	612
6/7/2017	Background	0.449	15.1	4	< 0.083 U1	5.1	42	176
10/6/2017	Detection	0.453	14.3	4	< 0.083 U1	5.3	40	160
5/24/2018	Assessment	0.345	10.2	4	< 0.083 U1	5.2	43	150
8/14/2018	Assessment	0.443	5.95	5	< 0.083 U1	5.2	44	160
2/20/2019	Assessment	0.504	142	2.82	0.24	7.3	49.2	522
5/30/2019	Assessment	0.689	138	1.59	0.29	6.7	43.3	588
7/24/2019	Assessment	0.644	62.7	2	0.106 J1	6.0	58	180
2/17/2020	Assessment	0.626	115	3.41	0.31	5.8	56.3	488
5/20/2020	Assessment	0.801	126	1.83	0.20	7.2	51.4	508
10/14/2020	Assessment	0.670	3.88	2.16	0.25	4.5	66.9	183
2/23/2021	Assessment	0.617	113		0.31	6.6		
6/2/2021	Assessment	0.786	97.1	2.26	0.30	6.2	61.4	400
10/20/2021	Assessment	0.732	4.8	2.21	0.22	4.4	72.4	190
6/28/2022	Assessment	0.768	6.76	2.32	0.22	4.9	74.7	180
11/1/2022	Assessment	0.586	7.87	2.70	0.14	4.8	61.3	170

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-1 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/26/2016	Background	< 0.93 U1	1.39361 J1	191	0.271453 J1	0.213294 J1	0.240267 J1	1.15339 J1	1.184	< 0.083 U1	< 0.68 U1	0.01	0.033	0.53149 J1	1.74922 J1	0.959865 J1
7/27/2016	Background	< 0.93 U1	< 1.05 U1	191	0.315631 J1	0.0940357 J1	< 0.23 U1	0.615933 J1	0.9952	< 0.083 U1	< 0.68 U1	0.019	0.00793 J1	< 0.29 U1	1.81763 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	2.96797 J1	141	0.382874 J1	< 0.07 U1	5	0.850408 J1	1.38	< 0.083 U1	3.38434 J1	0.014	0.01773 J1	< 0.29 U1	1.02629 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	114	0.311247 J1	< 0.07 U1	0.412131 J1	0.649606 J1	1.141	< 0.083 U1	< 0.68 U1	0.008	0.00534 J1	1.39872 J1	2.03168 J1	1.25062 J1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	72	0.34133 J1	< 0.07 U1	< 0.23 U1	0.424105 J1	0.719	< 0.083 U1	< 0.68 U1	0.008	0.01521 J1	< 0.29 U1	1.85825 J1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	410	0.0366913 J1	< 0.07 U1	< 0.23 U1	0.480125 J1	3.009	< 0.083 U1	< 0.68 U1	0.000275956 J1	< 0.005 U1	< 0.29 U1	4.04737 J1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	488	< 0.02 U1	< 0.07 U1	< 0.23 U1	0.765099 J1	4.309	< 0.083 U1	< 0.68 U1	0.001	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	1.14 J1	93.46	0.37 J1	< 0.07 U1	0.66 J1	0.77 J1	0.676	< 0.083 U1	< 0.68 U1	0.00902	0.007 J1	< 0.29 U1	2.1 J1	< 0.86 U1
5/24/2018	Assessment	3.17 J1	< 1.05 U1	79.9	0.39 J1	< 0.07 U1	< 0.23 U1	0.35 J1	1.983	< 0.083 U1	< 0.68 U1	0.00814	0.006 J1	< 0.29 U1	1.38 J1	< 0.86 U1
8/14/2018	Assessment	0.03 J1	0.21	63.0	0.482	0.02	0.160	0.797	1.102	< 0.083 U1	0.238	0.00708	0.013 J1	0.21	1.7	0.03 J1
2/20/2019	Assessment	0.16	0.46	457	0.09 J1	0.01 J1	0.306	0.399	3.159	0.24	0.124	0.00155	< 0.005 U1	1 J1	0.7	< 0.1 U1
5/30/2019	Assessment	0.16	0.60	512	0.244	0.01 J1	0.1 J1	0.756	2.717	0.29	0.197	< 0.009 U1	< 0.005 U1	2.43	1.4	< 0.1 U1
7/24/2019	Assessment	0.08 J1	0.39	245	0.540	0.02 J1	0.1 J1	0.789	1.819	0.106 J1	0.1 J1	0.00557	< 0.005 U1	2 J1	3.4	< 0.1 U1
2/17/2020	Assessment	0.33	0.49	303	0.07 J1	0.02 J1	0.1 J1	0.28	2.665	0.31	0.1 J1	0.00105	< 0.002 U1	1 J1	2.3	< 0.1 U1
5/20/2020	Assessment	0.15	0.53	394	0.270	0.02 J1	0.1 J1	0.490	2.312	0.20	0.1 J1	0.00301	< 0.002 U1	2 J1	2.8	< 0.1 U1
10/14/2020	Assessment	< 0.1 U1	0.3 J1	84.7	0.984	< 0.05 U1	0.9 J1	2.12	1.552	0.25	0.3 J1	0.00932	0.003 J1	< 2 U1	5.3	< 0.5 U1
2/23/2021	Assessment	0.24	0.74	338	0.136	0.03 J1	0.338	0.477	1.737	0.31	0.852	0.00155	< 0.002 U1	1 J1	2.5	< 0.1 U1
6/2/2021	Assessment	0.18	0.66	349	0.088	0.01 J1	0.32	0.474	2.15	0.30	0.09 J1	0.00052	0.002 J1	4.8	1.26	< 0.04 U1
10/20/2021	Assessment	0.04 J1	0.20	86.1	0.932	0.026	0.33	2.44	0.99	0.22	0.23	0.00756	0.003 J1	< 0.1 U1	7.39	< 0.04 U1
6/28/2022	Assessment	0.03 J1	0.26	85.4	0.995	0.030	0.37	2.34	3.69	0.22	0.33	0.00855	0.002 J1	< 0.1 U1	8.35	0.05 J1
11/1/2022	Assessment	0.03 J1	0.19	78.9	0.620	0.024	0.35	1.17	2.01	0.14	0.13 J1	0.00818	0.002 J1	< 0.1 U1	5.51	< 0.04 U1

Notes:

μg/L: micrograms per liter mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-5 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	рН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/31/2016	Background	0.03	36.9	15	0.3469 J1	6.4	123	337
7/28/2016	Background	0.04	44.7	16	< 0.083 U1	5.4	163	360
9/30/2016	Background	0.04	46.3	15	0.2436 J1	5.3	190	416
10/20/2016	Background	0.05	50.7	14	< 0.083 U1	5.9	267	448
12/13/2016	Background	0.05	49.6	13	< 0.083 U1	6.2	233	484
1/17/2017	Background	0.04	49.8	14	< 0.083 U1	6.3	234	438
2/23/2017	Background	0.04	33	15	< 0.083 U1	5.5	127	286
6/7/2017	Background	0.05281	49.7	14	< 0.083 U1	6.0	82	300
10/6/2017	Detection	0.04322	33.1	16	< 0.083 U1	5.6	82	258
5/24/2018	Assessment	0.05007	28.1	22	< 0.083 U1	6.2	60	242
8/15/2018	Assessment	0.050	40.5	19	< 0.083 U1	6.2	240	428
2/21/2019	Assessment	0.033	33.9	24.7	0.21	5.4	46.5	220
5/30/2019	Assessment	0.03 J1	30.0	22.3	0.29	6.3	51.3	238
7/24/2019	Assessment	0.04 J1	41.1	18	0.112 J1	6.3	90	354
2/17/2020	Assessment	0.03 J1	39.8	19.8	0.22	5.5	43.7	248
5/20/2020	Assessment	0.03 J1	40.2	22.3	0.18	6.8	55.5	264
10/14/2020	Assessment	0.04 J1	36.6	18.8	0.18	6.5	148	338
2/23/2021	Assessment	0.03 J1	30.9		0.23	6.0		
6/2/2021	Assessment	0.027 J1	24.4	19.6	0.21	5.8	53.8	220
10/20/2021	Assessment	0.038 J1	38.4	17.4	0.17	5.6	155	370
6/28/2022	Assessment	0.048 J1	32.9	15.3	0.15	5.9	146	310
11/1/2022	Assessment	0.041 J1	38.6	16.9	0.16	5.9	185	380

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-5 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	57	0.149801 J1	0.0765156 J1	0.555038 J1	14	1.634	0.3469 J1	< 0.68 U1	0.135	0.01135 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/28/2016	Background	2.05116 J1	2.90819 J1	93	0.518653 J1	0.502155 J1	0.411466 J1	15	4.75	< 0.083 U1	< 0.68 U1	0.191	0.01516 J1	< 0.29 U1	1.08901 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	4.7609 J1	87	0.251584 J1	< 0.07 U1	0.90676 J1	14	3.33	0.2436 J1	< 0.68 U1	0.186	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	70	0.08781 J1	0.107488 J1	0.248085 J1	9	2.319	< 0.083 U1	< 0.68 U1	0.225	< 0.005 U1	1.36984 J1	< 0.99 U1	< 0.86 U1
12/13/2016	Background	< 0.93 U1	1.15381 J1	53	0.164529 J1	0.203546 J1	0.747921 J1	13	2.182	< 0.083 U1	< 0.68 U1	0.199	0.00802 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	47	0.0574718 J1	0.180502 J1	< 0.23 U1	12	1.023	< 0.083 U1	< 0.68 U1	0.239	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/23/2017	Background	< 0.93 U1	< 1.05 U1	42	0.0306858 J1	< 0.07 U1	< 0.23 U1	13	1.788	< 0.083 U1	< 0.68 U1	0.166	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/7/2017	Background	< 0.93 U1	3.85 J1	87.7	0.08 J1	0.39 J1	0.28 J1	11.93	2.32	< 0.083 U1	< 0.68 U1	0.124	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/24/2018	Assessment	< 0.93 U1	< 1.05 U1	71.16	< 0.02 U1	0.23 J1	0.8 J1	14.24	1.946	< 0.083 U1	< 0.68 U1	0.121	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/15/2018	Assessment	0.01 J1	1.69	63.7	0.055	0.008 J1	0.072	11.4	0.316	< 0.083 U1	0.079	0.147	< 0.005 U1	0.13	0.08 J1	< 10 U1
2/21/2019	Assessment	0.02 J1	1.59	69.4	0.08 J1	< 0.01 U1	0.432	8.58	1.267	0.21	0.147	0.0807	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
5/30/2019	Assessment	< 0.02 U1	3.05	60.5	0.08 J1	< 0.01 U1	0.06 J1	11.8	1.431	0.29	0.05 J1	0.104	0.006 J1	< 0.4 U1	0.05 J1	< 0.1 U1
7/24/2019	Assessment	< 0.02 U1	2.48	77.4	0.05 J1	< 0.01 U1	0.05 J1	8.38	2.533	0.112 J1	< 0.05 U1	0.108	< 0.005 U1	< 0.4 U1	0.06 J1	< 0.1 U1
2/17/2020	Assessment	0.03 J1	2.17	109	0.09 J1	0.02 J1	0.336	4.52	2.393	0.22	0.227	0.0732	< 0.002 U1	0.9 J1	0.2	< 0.1 U1
5/20/2020	Assessment	< 0.02 U1	1.78	93.1	0.05 J1	0.01 J1	0.1 J1	7.65	1.612	0.18	0.07 J1	0.0740	< 0.002 U1	< 0.4 U1	0.09 J1	< 0.1 U1
10/14/2020	Assessment	< 0.02 U1	6.28	71.7	0.09 J1	< 0.01 U1	0.09 J1	14.9	2.7	0.18	0.05 J1	0.134	< 0.002 U1	< 0.4 U1	0.1 J1	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	2.06	68.3	0.03 J1	< 0.01 U1	0.1 J1	6.31	1.397	0.23	< 0.05 U1	0.0705	< 0.002 U1	< 0.4 U1	0.03 J1	< 0.1 U1
6/2/2021	Assessment	< 0.02 U1	1.72	49.3	0.018 M1, J1	< 0.004 U1	0.26	10.5	2.47	0.21	< 0.05 U1	0.0764 M1	< 0.002 U1	0.1 J1	< 0.09 U1	< 0.04 U1
10/20/2021	Assessment	< 0.02 U1	1.44	53.2	0.018 J1	< 0.004 U1	0.23	6.85	2.68	0.17	< 0.05 U1	0.133 M1	< 0.002 U1	< 0.1 U1	< 0.09 U1	< 0.04 U1
6/28/2022	Assessment	< 0.02 U1	3.01	51.8	0.032 J1	< 0.004 U1	0.22	12.8	2.06	0.15	< 0.05 U1	0.161	< 0.002 U1	0.1 J1	< 0.09 U1	0.05 J1
11/1/2022	Assessment	< 0.02 U1	2.77	63.2	0.046 J1	< 0.004 U1	0.43	15.1	3.88	0.16	< 0.05 U1	0.174	< 0.002 U1	< 0.1 U1	< 0.09 U1	< 0.04 U1

Notes:

μg/L: micrograms per liter mg/L: milligrams per liter

pCi/L: picocuries per liter

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

M1: The associated matrix spike (MS) or matrix spike duplicate (MSD) recovery was outside acceptance limits.

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

Table 1 - Groundwater Data Summary: AD-8 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	рН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/31/2016	Background	1.46	32.6	36	0.6507 J1	6.9	217	524
7/28/2016	Background	1.44	25.9	26	0.485 J1	5.4	202	469
9/29/2016	Background	1.51	24.3	28	0.4912 J1	7.7	186	432
10/20/2016	Background	1.54	25.9	30	0.6234 J1	6.1	184	424
12/12/2016	Background	1.53	23.6	27	0.5355 J1	5.6	168	442
1/19/2017	Background	1.53	18.7	24	0.5574 J1	6.2	153	352
2/22/2017	Background	1.67	19.3	22	< 0.083 U1	6.8	163	356
6/6/2017	Background	1.39	17.4	22	0.6628 J1	5.6	151	368
10/5/2017	Detection	1.49	14.9	20	< 0.083 U1	6.7	128	284
1/4/2018	Detection	1.47						
5/23/2018	Assessment				0.501 J1	6.2		
8/15/2018	Assessment					6.8		
9/17/2018	Assessment	1.30	15.0	24			122	288
2/5/2019	Assessment	2.55	19.7	22.8	0.72	5.4	153	
2/21/2019	Assessment	1.47	17.6	23.2	0.66	6.4	163	352
4/30/2019	Assessment	1.21				6.9		
5/29/2019	Assessment	1.07	16.9	19.5	0.89	5.5	150	324
7/23/2019	Assessment	1.21	20.8	15	0.559 J1	6.6	145	392
2/17/2020	Assessment	1.25	14.6	17.0	0.67	6.5	159	344
5/19/2020	Assessment	1.23	15.1	16.5	0.66	6.4	149	336
7/22/2020	Assessment	1.14				6.6		
10/12/2020	Assessment	1.10	17.2	13.6	0.88	6.8	138	298
2/23/2021	Assessment	1.18	14.8		0.69	6.1		
6/1/2021	Assessment	1.10	15.3	14.8	0.73	5.3	162	330
10/19/2021	Assessment	1.10	17.2	13.7	0.90	5.5	139	300
3/1/2022	Assessment	1.16	18.7	15.9	0.97	5.9	138	260
6/27/2022	Assessment	1.15	19.5	15.9	0.82	5.9	156	330
10/31/2022	Assessment	1.08	22.3	20.9	0.93	6.1	141	280

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-8 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/31/2016	Background	< 0.93 U1	1.06251 J1	34	0.114491 J1	< 0.07 U1	2	7	1.046	0.6507 J1	< 0.68 U1	0.122	0.02103 J1	1.01326 J1	1.37017 J1	1.18455 J1
7/28/2016	Background	1.46141 J1	< 1.05 U1	26	0.171642 J1	< 0.07 U1	0.751164 J1	9	1.584	0.485 J1	< 0.68 U1	0.098	0.00859 J1	1.48301 J1	1.96333 J1	< 0.86 U1
9/29/2016	Background	< 0.93 U1	< 1.05 U1	23	< 0.02 U1	< 0.07 U1	0.51348 J1	7	6.3	0.4912 J1	< 0.68 U1	0.111	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	24	0.028758 J1	< 0.07 U1	0.617826 J1	7	0.3449	0.6234 J1	< 0.68 U1	0.135	< 0.005 U1	0.838863 J1	< 0.99 U1	1.64377 J1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	21	< 0.02 U1	< 0.07 U1	< 0.23 U1	7	1.083	0.5355 J1	< 0.68 U1	0.11	0.01007 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	< 1.05 U1	20	< 0.02 U1	< 0.07 U1	< 0.23 U1	6	0.823	0.5574 J1	< 0.68 U1	0.094	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	19	< 0.02 U1	< 0.07 U1	< 0.23 U1	6	0.536	< 0.083 U1	< 0.68 U1	0.092	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	19.08	< 0.02 U1	< 0.07 U1	< 0.23 U1	3.86 J1	1.0735	0.6628 J1	< 0.68 U1	0.09491	0.008 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/23/2018	Assessment	3.19 J1	< 1.05 U1	22.12	< 0.02 U1	< 0.07 U1	< 0.23 U1	3.19 J1	0.3366	0.501 J1	< 0.68 U1	0.0956	< 0.005 U1	< 0.29 U1	1.75 J1	< 0.86 U1
8/15/2018	Assessment	0.01 J1	0.31	21.2	0.008 J1	0.02 J1	0.050	5.36	3.44		0.039	0.0555		0.16	0.07 J1	0.129
2/21/2019	Assessment	< 0.02 U1	0.57	28.1	0.03 J1	0.03 J1	0.456	2.88	0.417	0.66	0.223	0.0911	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
5/29/2019	Assessment	< 0.02 U1	0.37	30.3	< 0.02 U1	0.02 J1	0.1 J1	6.03	0.911	0.89	0.07 J1	0.067	< 0.005 U1	< 0.4 U1	0.06 J1	0.1 J1
7/23/2019	Assessment	< 0.02 U1	0.41	31.0	< 0.02 U1	0.02 J1	0.09 J1	7.07	0.72	0.559 J1	0.08 J1	0.0641	< 0.005 U1	< 0.4 U1	0.08 J1	0.1 J1
2/17/2020	Assessment	< 0.02 U1	0.55	38.9	< 0.02 U1	0.05 J1	0.244	1.02	1.257	0.67	0.1 J1	0.124	< 0.002 U1	< 0.4 U1	0.08 J1	< 0.1 U1
5/19/2020	Assessment	< 0.02 U1	0.27	21.1	< 0.02 U1	0.04 J1	0.2 J1	1.17	0.344	0.66	< 0.05 U1	0.0872	< 0.002 U1	< 0.4 U1	0.07 J1	< 0.1 U1
10/12/2020	Assessment	< 0.02 U1	0.30	25.9	< 0.02 U1	0.04 J1	0.06 J1	5.71	0.267	0.88	0.06 J1	0.0615	< 0.002 U1	< 0.4 U1	0.08 J1	0.1 J1
2/23/2021	Assessment	< 0.02 U1	0.31	24.2	< 0.1 U1	0.03 J1	0.1 J1	0.899	0.544	0.69	0.06 J1	0.104	< 0.002 U1	< 0.4 U1	< 0.03 U1	< 0.1 U1
6/1/2021	Assessment	< 0.02 U1	0.37	47.9	0.01 J1	0.029	0.28	1.04	0.69	0.73	0.07 J1	0.0818	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.05 J1
10/19/2021	Assessment	< 0.02 U1	0.25	23.3	< 0.01 U1	0.021	0.27	4.13	1.15	0.90	< 0.05 U1	0.0690	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.11 J1
3/1/2022	Assessment	< 0.02 U1	0.27	23.6	< 0.04 U1	0.018 J1	0.23	5.10	1.31	0.97	< 0.05 U1	0.0654	< 0.002 Q1, U1	< 0.1 U1	< 0.09 U1	0.13 J1
6/27/2022	Assessment	< 0.02 U1	0.25	26.1	< 0.007 U1	0.018 J1	0.41	3.15	1.39	0.82	0.07 J1	0.0777	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.11 J1
10/31/2022	Assessment	< 0.02 U1	0.25	27.8	0.01 J1	0.038	0.31	8.92	1.1	0.93	< 0.05 U1	0.0559	< 0.002 U1	0.2 J1	< 0.09 U1	0.15 J1

Notes:

 $\mu g/L$: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Q1: Sample was received in inappropriate sample container.

Table 1 - Groundwater Data Summary: AD-9 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/31/2016	Background	0.12	229	88	0.4191 J1	6.3	1,352	2,541
7/28/2016	Background	0.105	255	98	0.4339 J1	5.0	1,464	2,564
9/29/2016	Background	0.115	220	86	0.304 J1	4.7	1,301	2,448
10/19/2016	Background	0.109	228	76	0.6227 J1	5.2	1,350	2,494
12/12/2016	Background	0.108	250	92	< 0.083 U1	5.7	1,639	2,667
1/19/2017	Background	0.312	91.1	54	< 0.083 U1	5.4	884	1,360
2/22/2017	Background	0.1	258	86	< 0.083 U1	5.8	1,774	2,662
6/6/2017	Background	0.146	191	19	< 0.083 U1	4.6	105	308
10/5/2017	Detection	0.129	9.64	20	< 0.083 U1	5.8	86	248
5/23/2018	Assessment	-			< 0.083 U1	5.3		
8/15/2018	Assessment					5.0		
9/17/2018	Assessment	0.198	230	103			1,910	2,694
2/5/2019	Assessment	0.096	133	27.9	0.16	4.2	181	
2/21/2019	Assessment	1.39	211	89	0.19	5.0	1,350	2,240
4/30/2019	Assessment	0.07				4.5		
5/29/2019	Assessment	0.06 J1	10.1	44.0	0.16	3.6	503	1,758
7/23/2019	Assessment	0.081	222	77	0.5736 J1	6.3	1,701	2,460
2/17/2020	Assessment	0.12	11.5	19.9	0.15	6.0	100	282
5/19/2020	Assessment	0.066	11.3	44.8	0.1 J1	4.9	536	902
10/12/2020	Assessment	0.100	11.8	18.8	0.19	4.8	100	296
2/23/2021	Assessment	0.219	11.6		0.21	4.7		
6/1/2021	Assessment	0.221	12.5	16.7	0.19	4.4	118	300
10/19/2021	Assessment	0.226	11.9	31.8	0.19	4.3	374	700
3/1/2022	Assessment	0.148	12.0	18.3	0.15	4.8	109	300
6/27/2022	Assessment	0.174	109	59.8	0.09 J1	4.8	933	1,460
10/31/2022	Assessment	0.109	12.4	16.8	0.17	5.0	122	300

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-9 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/31/2016	Background	< 0.93 U1	< 1.05 U1	51	0.999439 J1	1	< 0.23 U1	27	2.945	0.4191 J1	< 0.68 U1	1.32	0.0194 J1	< 0.29 U1	1.04175 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	< 1.05 U1	31	0.726564 J1	2	0.262163 J1	22	1.447	0.4339 J1	< 0.68 U1	1.38	0.045	< 0.29 U1	8	< 0.86 U1
9/29/2016	Background	< 0.93 U1	< 1.05 U1	33	0.582852 J1	0.187457 J1	< 0.23 U1	12	3.199	0.304 J1	< 0.68 U1	1.17	0.00739 J1	< 0.29 U1	3.52832 J1	< 0.86 U1
10/19/2016	Background	< 0.93 U1	< 1.05 U1	26	0.478576 J1	0.965032 J1	< 0.23 U1	16	1.311	0.6227 J1	< 0.68 U1	1.44	< 0.005 U1	< 0.29 U1	3.09028 J1	< 0.86 U1
12/12/2016	Background	< 0.93 U1	< 1.05 U1	27	0.481339 J1	2	< 0.23 U1	24	3	< 0.083 U1	< 0.68 U1	1.33	0.02123 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	< 1.05 U1	98	2	0.693618 J1	< 0.23 U1	42	2.349	< 0.083 U1	< 0.68 U1	0.634	0.00717 J1	< 0.29 U1	< 0.99 U1	1.7755 J1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	22	0.301057 J1	0.680144 J1	< 0.23 U1	24	2.32	< 0.083 U1	< 0.68 U1	1.41	< 0.005 U1	< 0.29 U1	1.06022 J1	1.45295 J1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	42.27	0.77 J1	2.22	< 0.23 U1	24.16	1.586	< 0.083 U1	< 0.68 U1	1	0.006 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	< 1.05 U1	30.45	0.32 J1	2.88	< 0.23 U1	26.7	2.556	< 0.083 U1	< 0.68 U1	1.2	< 0.005 U1	< 0.29 U1	< 0.99 U1	8.46
8/15/2018	Assessment	< 10 U1	1.68	24.2	0.268	0.06	0.420	11.1	1.864	-	0.262	0.851		0.11	0.3	0.062
2/21/2019	Assessment	< 0.02 U1	1.18	52.4	0.474	0.09	0.313	14.8	2.51	0.19	0.08 J1	1.12	0.01 J1	< 0.4 U1	0.3	0.1 J1
5/29/2019	Assessment	< 0.02 U1	0.20	49.7	0.941	0.21	0.346	15.9	1.36	0.16	0.07 J1	0.225	< 0.005 U1	< 0.4 U1	0.2	0.2 J1
7/23/2019	Assessment	< 0.02 U1	1.39	32.1	0.361	0.06	0.2 J1	12.7	1.689	0.5736 J1	0.2 J1	1.11	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
2/17/2020	Assessment	< 0.02 U1	0.33	52.8	0.979	0.24	0.608	17.7	1.938	0.15	0.2 J1	0.218	0.002 J1	< 0.4 U1	0.3	0.2 J1
5/19/2020	Assessment	< 0.02 U1	0.25	51.6	0.933	0.24	0.458	16.5	1.854	0.1 J1	0.07 J1	0.160	0.003 J1	< 0.4 U1	0.4	0.2 J1
10/12/2020	Assessment	< 0.02 U1	0.72	55.3	1.27	0.22	0.471	18.6	2.838	0.19	0.349	0.194	0.003 J1	< 0.4 U1	0.3	0.2 J1
2/23/2021	Assessment	< 0.02 U1	0.27	54.9	1.51	0.33	0.373	21.7	1.557	0.21	0.1 J1	0.189	0.003 J1	< 0.4 U1	0.4	0.2 J1
6/1/2021	Assessment	< 0.02 U1	0.21	51.6	1.15	0.353	0.59	20.6	1.74	0.19	0.08 J1	0.141	0.003 J1	< 0.1 U1	0.31 J1	0.22
10/19/2021	Assessment	< 0.02 U1	0.30	50.3	1.36	0.315	0.68	20.6	1.74	0.19	0.1 J1	0.184 P3	0.003 J1	< 0.1 U1	0.34 J1	0.23
3/1/2022	Assessment	< 0.02 U1	0.24	55.3	1.20	0.266	0.74	19.1	3.35	0.15	0.08 J1	0.205	0.003 Q1, J1	< 0.1 U1	0.26 J1	0.22
6/27/2022	Assessment	< 0.02 U1	0.87	49.7	0.780	0.244	0.59	19.5	3.52	0.09 J1	0.27	0.539	< 0.002 U1	< 0.1 U1	0.46 J1	0.22
10/31/2022	Assessment	< 0.02 U1	0.21	52.0	1.14	0.199	1.23	17.1	1.06	0.17	0.08 J1	0.231	0.004 J1	< 0.1 U1	0.27 J1	0.22

Notes:

μg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

P3: The precision on the matrix spike duplicate (MSD) was above acceptance limits.

Q1: Sample was received in inappropriate sample container.

Table 1 - Groundwater Data Summary: AD-15 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	рН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/31/2016	Background	0.329	5.09	30	< 0.083 U1	5.6	24	188
7/28/2016	Background	0.407	3.83	34	< 0.083 U1	4.8	28	196
9/29/2016	Background	0.36	13.7	28	0.2621 J1	4.6	23	367
10/19/2016	Background	0.152	4.57	26	< 0.083 U1	4.4	17	152
12/12/2016	Background	0.334	3.6	26	< 0.083 U1	4.7	19	204
1/19/2017	Background	0.413	3.35	32	< 0.083 U1	5.8	25	176
2/22/2017	Background	0.1	4.21	20	< 0.083 U1	4.6	8	88
6/6/2017	Background	0.321	3.57	27	< 0.083 U1	4.8	19	184
10/5/2017	Detection	0.395	3.08	30	< 0.083 U1	5.9	21	200
5/23/2018	Assessment				< 0.083 U1	4.8		
8/15/2018	Assessment					4.6		
9/17/2018	Assessment	0.341	3.04	37			24	174
2/5/2019	Assessment	0.03 J1	2.18	20.6	0.06	3.9	0.2 J1	-
2/21/2019	Assessment	0.169	2.67	28.2	0.09	5.0	10.6	150
5/29/2019	Assessment	< 0.02 U1	2.97	21.4	0.06 J1	4.9	2.1	34
7/23/2019	Assessment	0.306	3.45	28	0.086 J1	3.2	18	214
2/17/2020	Assessment	0.419	3.64	34.3	0.11	4.5	21.5	234
5/19/2020	Assessment	0.376	3.37	34.1	0.07	5.3	19.0	216
10/12/2020	Assessment	0.334	2.99	30.4	0.10	5.1	17.1	170
2/23/2021	Assessment	0.03 J1	2.30		0.08	4.4		
6/1/2021	Assessment	0.213	3.0	28.4	0.10	4.4	11.4	150
10/19/2021	Assessment	0.218	2.7	28.0	0.09	4.4	10.3	140
3/1/2022	Assessment	0.076	2.63	25.0	0.05 J1	4.4	4.29	80
6/27/2022	Assessment	0.329	3.25	30.9	0.09	4.5	18.9	170
10/31/2022	Assessment	0.093	2.57	26.2	0.07	4.4	4.62	90

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-15 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/31/2016	Background	< 0.93 U1	12	215	0.959793 J1	0.351465 J1	17	11	2.284	< 0.083 U1	7	0.017	0.054	1.77432 J1	3.46337 J1	< 0.86 U1
7/28/2016	Background	< 0.93 U1	6	124	0.362598 J1	0.111427 J1	4	6	1.322	< 0.083 U1	< 0.68 U1	0.021	0.01646 J1	0.586779 J1	1.19442 J1	< 0.86 U1
9/29/2016	Background	< 0.93 U1	131	1,930	15	7	280	134	9.92	0.2621 J1	161	0.149	0.707	3.60313 J1	14	< 0.86 U1
10/19/2016	Background	< 0.93 U1	23	415	2	0.575938 J1	54	19	3.567	< 0.083 U1	22	0.036	0.1	1.54555 J1	1.17613 J1	1.55993 J1
12/12/2016	Background	< 0.93 U1	6	184	0.695316 J1	0.246456 J1	15	10	3.36	< 0.083 U1	3.96087 J1	0.013	0.026	0.463544 J1	1.32943 J1	< 0.86 U1
1/19/2017	Background	< 0.93 U1	6	153	0.449612 J1	< 0.07 U1	9	7	2.386	< 0.083 U1	2.87518 J1	0.008	0.01932 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	20	353	2	0.319406 J1	49	20	2.261	< 0.083 U1	19	0.025	0.058	1.42695 J1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	8.54	166	0.61 J1	0.48 J1	12.35	8.44	2.491	< 0.083 U1	2.98 J1	0.0108	0.022 J1	< 0.29 U1	2.71 J1	< 0.86 U1
5/23/2018	Assessment	< 0.93 U1	2.56 J1	102	0.03 J1	0.1 J1	2.63	4.74 J1	1.46	< 0.083 U1	< 0.68 U1	0.00562	< 0.005 U1	< 0.29 U1	1.54 J1	1.37 J1
8/15/2018	Assessment	0.03 J1	3.26	85.2	0.116	0.01 J1	0.481	3.71	1.076		0.438	0.00338		0.05 J1	0.9	0.090
2/21/2019	Assessment	< 0.02 U1	2.21	76.6	0.208	0.01 J1	0.225	2.9	0.841	0.09	0.104	0.00294	< 0.005 U1	< 0.4 U1	0.4	< 0.1 U1
5/29/2019	Assessment	0.05 J1	2.95	203	1.50	0.08	9.31	5.49	3.55	0.06 J1	9.85	0.01 J1	0.081	< 0.4 U1	5.1	0.1 J1
7/23/2019	Assessment	0.03 J1	2.10	113	0.573	0.04 J1	2.26	5.41	2.245	0.086 J1	2.87	0.00414	0.025	< 0.4 U1	1.6	< 0.1 U1
2/17/2020	Assessment	0.09 J1	9.12	115	0.39	0.02 J1	6.01	4.08	2.546	0.11	4.8	0.00509	0.013	3.32	1.7	0.1 J1
5/19/2020	Assessment	0.02 J1	3.94	80.3	0.09 J1	0.01 J1	0.2 J1	3.28	1.115	0.07	0.09 J1	0.00383	< 0.002 U1	< 0.4 U1	0.7	< 0.1 U1
10/12/2020	Assessment	0.03 J1	4.90	83.4	0.146	0.01 J1	0.425	3.93	1.604	0.10	0.417	0.00393	0.003 J1	< 0.4 U1	0.7	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	1.39	72.4	0.190	0.02 J1	0.1 J1	2.61	1.021	0.08	0.08 J1	0.00167	< 0.002 U1	< 0.4 U1	0.2	< 0.1 U1
6/1/2021	Assessment	< 0.02 U1	3.04	76.9	0.138	0.015 J1	0.31	2.73	1.45	0.10	< 0.05 U1	0.00330	< 0.002 U1	< 0.1 U1	0.43 J1	0.05 J1
10/19/2021	Assessment	< 0.02 U1	3.72	73.1	0.143	0.009 J1	0.31	2.84	2.02	0.09	0.07 J1	0.00435	< 0.002 U1	< 0.1 U1	0.55	0.06 J1
3/1/2022	Assessment	< 0.02 U1	1.89	75.1	0.207	0.011 J1	0.55	2.76	2.01	0.05 J1	0.09 J1	0.00208	0.003 Q1, J1	< 0.1 U1	0.29 J1	0.05 J1
6/27/2022	Assessment	< 0.02 U1	3.03	78.5	0.088	0.015 J1	0.38	3.54	2.15	0.09	0.05 J1	0.00573	< 0.002 U1	< 0.1 U1	0.63	0.07 J1
10/31/2022	Assessment	< 0.02 U1	2.55	75.3	0.187	0.015 J1	0.41	2.94	1.67	0.07	0.12 J1	0.00235	< 0.002 U1	< 0.1 U1	0.38 J1	0.05 J1

Notes:

μg/L: micrograms per liter

mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Q1: Sample was received in inappropriate sample container.

Table 1 - Groundwater Data Summary: AD-17 Welsh - PBAP Appendix III Constituents

Collection Date	Monitoring Program	Boron	Calcium	Chloride	Fluoride	pН	Sulfate	Total Dissolved Solids
		mg/L	mg/L	mg/L	mg/L	SU	mg/L	mg/L
5/26/2016	Background	0.121	200	43	0.4023 J1	7.2	1,166	1,810
7/27/2016	Background	0.119	195	32	0.4135 J1	5.7	1,005	1,576
9/30/2016	Background	0.111	191	36	0.3055 J1	6.2	1,055	1,663
10/20/2016	Background	0.124	194	32	0.583 J1	6.1	1,163	1,612
12/13/2016	Background	0.135	196	31	0.5399 J1	6.0	1,096	1,560
1/17/2017	Background	0.101	196	33	< 0.083 U1	5.9	1,445	1,686
2/22/2017	Background	0.135	189	30	< 0.083 U1	5.7	1,055	1,628
6/6/2017	Background	0.121	188	30	< 0.083 U1	5.8	1,105	1,578
10/6/2017	Detection	0.183	183	31	< 0.083 U1	5.9	1,090	1,548
5/24/2018	Assessment	0.239	193	39	< 0.083 U1	6.3	1,067	1,836
8/15/2018	Assessment	0.118	187	40	< 0.083 U1	5.6	1,168	1,748
2/21/2019	Assessment	0.151	207	43.2	0.18	6.9	1,060	1,722
5/30/2019	Assessment	0.158	202	41.7	< 0.04 U1	6.1	1,120	1,546
7/24/2019	Assessment	0.113	216	37	0.085 J1	6.0	1,127	1,864
2/17/2020	Assessment	0.104	184	36.0	0.16	5.9	1,070	1,750
5/20/2020	Assessment	0.115	250	47.7	0.15	5.7	1,190	1,890
10/14/2020	Assessment	0.100	185	35.7	0.17	5.4	1,060	1,720
2/23/2021	Assessment	0.098	168		0.17	5.6		
6/2/2021	Assessment	0.124	233	44.9	0.31	5.7	1,210	1,890
10/20/2021	Assessment	0.104	164	37.3	0.16	5.1	1,040	1,710
6/28/2022	Assessment	0.112	167	37.0	0.09 J1	5.2	1,050	1,740
11/1/2022	Assessment	0.097	165	40.3	0.09 J1	5.7	1,110	1,690

Notes:

mg/L: milligrams per liter

SU: standard unit

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

- -: Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

Table 1 - Groundwater Data Summary: AD-17 Welsh - PBAP Appendix IV Constituents

Collection Date	Monitoring	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Combined Radium	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium
	Program	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	pCi/L	mg/L	μg/L	mg/L	μg/L	μg/L	μg/L	μg/L
5/26/2016	Background	< 0.93 U1	1.37501 J1	21	0.173275 J1	2	1	63	1.525	0.4023 J1	< 0.68 U1	0.37	0.032	< 0.29 U1	< 0.99 U1	< 0.86 U1
7/27/2016	Background	1.13716 J1	< 1.05 U1	20	0.307264 J1	4	1	68	2.78	0.4135 J1	< 0.68 U1	0.374	0.02133 J1	1.04115 J1	4.56733 J1	< 0.86 U1
9/30/2016	Background	< 0.93 U1	< 1.05 U1	31	0.175474 J1	0.848199 J1	3	58	2.358	0.3055 J1	< 0.68 U1	0.354	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
10/20/2016	Background	< 0.93 U1	< 1.05 U1	34	0.200656 J1	2	4	65	2.224	0.583 J1	< 0.68 U1	0.394	< 0.005 U1	0.322249 J1	3.34422 J1	< 0.86 U1
12/13/2016	Background	< 0.93 U1	< 1.05 U1	17	0.0498325 J1	3	0.816224 J1	68	2.384	0.5399 J1	< 0.68 U1	0.323	0.01485 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
1/17/2017	Background	< 0.93 U1	< 1.05 U1	14	0.0319852 J1	3	68	68	2.436	< 0.083 U1	< 0.68 U1	0.341	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
2/22/2017	Background	< 0.93 U1	< 1.05 U1	20	0.0665729 J1	2	1	73	2.288	< 0.083 U1	< 0.68 U1	0.331	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
6/6/2017	Background	< 0.93 U1	< 1.05 U1	10.33	< 0.02 U1	6.06	< 0.23 U1	74.8	1.598	< 0.083 U1	< 0.68 U1	0.329	0.013 J1	< 0.29 U1	< 0.99 U1	< 0.86 U1
5/24/2018	Assessment	< 0.93 U1	< 1.05 U1	9.65	< 0.02 U1	6.46	< 0.23 U1	71.73	1.939	< 0.083 U1	< 0.68 U1	0.308	< 0.005 U1	< 0.29 U1	< 0.99 U1	< 0.86 U1
8/15/2018	Assessment	0.02 J1	1.83	12.8	0.069	0.25	0.604	43.5	2.35	< 0.083 U1	1.10	0.243	0.011 J1	0.35	0.3	0.074
2/21/2019	Assessment	0.08 J1	2.51	120	0.24	0.27	3.34	64.5	2.657	0.18	2.49	0.268	0.007 J1	0.7 J1	0.8	< 0.1 U1
5/30/2019	Assessment	< 0.02 U1	0.41	19.6	0.02 J1	0.03 J1	0.246	51.1	2.508	< 0.04 U1	0.03 J1	0.341	< 0.005 U1	< 0.4 U1	0.06 J1	< 0.1 U1
7/24/2019	Assessment	< 0.02 U1	1.07	14.3	0.130	0.03 J1	0.228	57.7	3.45	0.085 J1	0.263	0.283	< 0.005 U1	< 0.4 U1	0.1 J1	< 0.1 U1
2/17/2020	Assessment	< 0.02 U1	0.72	9.6	0.04 J1	< 0.01 U1	0.08 J1	42.3	3.46	0.16	< 0.05 U1	0.273	< 0.004 U1	< 0.4 U1	< 0.03 U1	< 0.1 U1
5/20/2020	Assessment	< 0.02 U1	0.86	11.4	0.07 J1	0.02 J1	0.231	70.0	2.76	0.15	0.08 J1	0.302	< 0.002 U1	< 0.4 U1	0.09 J1	< 0.1 U1
10/14/2020	Assessment	< 0.02 U1	0.84	10.9	0.04 J1	0.01 J1	0.327	45.4	2.169	0.17	0.2 J1	0.274	< 0.002 U1	< 0.4 U1	0.06 J1	< 0.1 U1
2/23/2021	Assessment	< 0.02 U1	0.61	10.6	0.03 J1	0.03 J1	0.1 J1	41.1	1.433	0.17	0.08 J1	0.249	< 0.002 U1	< 0.4 U1	0.04 J1	< 0.1 U1
6/2/2021	Assessment	< 0.02 U1	0.84	10.9	0.066	0.026	0.38	72.9	2.4	0.31	0.09 J1	0.311	< 0.002 U1	0.2 J1	< 0.09 U1	< 0.04 U1
10/20/2021	Assessment	< 0.02 U1	0.57	10.2	0.035 J1	0.019 J1	0.38	42.9	1.73	0.16	0.07 J1	0.250	< 0.002 U1	< 0.1 U1	< 0.09 U1	0.05 J1
6/28/2022	Assessment	< 0.02 U1	0.53	12.6	0.040 J1	0.011 J1	0.40	41.3	6.54	0.09 J1	0.12 J1	0.267	0.003 J1	0.1 J1	< 0.09 U1	< 0.04 U1
11/1/2022	Assessment	0.02 J1	0.62	12.7	0.073	0.019 J1	0.96	41.9	3.81	0.09 J1	0.27	0.278	0.004 J1	< 0.1 U1	< 0.09 U1	< 0.04 U1

Notes:

μg/L: micrograms per liter mg/L: milligrams per liter

pCi/L: picocuries per liter

<: Non-detect value. Analytes which were not detected are shown as less than the method detection limit (MDL) followed by a 'U1' flag. In analytical data prior to 5/18/2021, U1 flags were reported as U in the analytical report.

^{- -:} Not analyzed

J1: Concentration estimated. Analyte was detected between the method detection limit and the reporting limit. In analytical data prior to 5/18/2021, J1 flags were reported as J in the analytical report.

APPENDIX 2

Where applicable, show in this appendix the results from statistical analyses, and a description of the statistical analysis method chosen. These statistical analyses are to be conducted separately for each constituent in each monitoring well.

STATISTICAL ANALYSIS SUMMARY PRIMARY BOTTOM ASH POND J. Robert Welsh Plant Pittsburg, Texas

Submitted to



1 Riverside Plaza Columbus, Ohio 43215-2372

Submitted by



engineers | scientists | innovators

941 Chatham Lane Suite 103 Columbus, Ohio 43221

> February 10, 2022 CHA8500

TABLE OF CONTENTS

SECTION 1	l Execut	tive Summary	1
		ry Bottom Ash Pond Evaluation	
2.1	Data V	Validation & QA/QC	2-1
2.2	Statist	ical Analysis	2-1
	2.2.1	Establishment of GWPSs	2-1
	2.2.2	Evaluation of Potential Appendix IV SSLs	2-2
	2.2.3	Establishment of Appendix III Prediction Limits	2-2
	2.2.4	Evaluation of Potential Appendix III SSIs	2-3
2.3	Conclu	usions	2-4
SECTION 3	Refere	ences	3-1

LIST OF TABLES

Table 1	Groundwater Data Summary
Table 2	Appendix IV Groundwater Protection Standards
Table 3	Appendix III Data Summary

LIST OF ATTACHMENTS

Attachment A Certification by Qualified Professional Engineer
Attachment B Statistical Analysis Output

LIST OF ACRONYMS AND ABBREVIATIONS

AEP American Electric Power

CCR Coal Combustion Residuals

CCV Continuing Calibration Verification

GWPS Groundwater Protection Standard

LCL Lower Confidence Limit

LFB Laboratory Fortified Blanks

LPL Lower Prediction Limit

LRB Laboratory Reagent Blanks

MCL Maximum Contaminant Level

NELAP National Environmental Laboratory Accreditation Program

PBAP Primary Bottom Ash Pond

QA Quality Assurance

QC Quality Control

SSI Statistically Significant Increase

SSL Statistically Significant Level

TCEQ Texas Commission on Environmental Quality

TDS Total Dissolved Solids

UPL Upper Prediction Limit

UTL Upper Tolerance Limit

SECTION 1

EXECUTIVE SUMMARY

In accordance with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, "CCR rule"), groundwater monitoring has been conducted at the Primary Bottom Ash Pond (PBAP), an existing CCR unit at the Welsh Power Plant located in Pittsburg, Texas. Recent groundwater monitoring results were compared to site-specific groundwater protection standards (GWPSs) to identify potential exceedances for CCR units in assessment monitoring.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron at the PBAP. An alternative source was not identified at the time, so the PBAP entered assessment monitoring. GWPSs were set in accordance with § 352.951(b) and a statistical evaluation of the assessment monitoring data was conducted. During 2021, as required by § 352.951(a), an annual sampling event for Appendix IV and select Appendix III parameters was completed in February, and semiannual sampling events for both Appendix III parameters and Appendix IV parameters were completed in June and October. During the June and October 2021 assessment monitoring events, no statistically significant levels (SSLs) were observed; however, concentration of Appendix III parameters remained above background (Geosyntec, 2021). Thus, the unit remained in assessment monitoring. One assessment monitoring event was conducted at the PBAP in October 2021 in accordance with § 352.951(a). The results of the October 2021 assessment event are documented in this report.

Prior to conducting the statistical analyses, the groundwater data underwent several validation tests, including those for completeness, sample tracking accuracy, transcription errors, and consistent use of measurement units. No data quality issues were identified which would impact data usability.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. GWPSs were re-established for the Appendix IV parameters. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether SSLs of Appendix IV parameters were present above the GWPS. No SSLs were identified during this event; however, concentrations of Appendix III parameters remained above background. Thus, the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A.

SECTION 2

PRIMARY BOTTOM ASH POND EVALUATION

2.1 Data Validation & QA/QC

During the assessment monitoring program, one set of samples was collected for analysis from each background and compliance well to meet the requirements of § 352.951(a) in October 2021. Samples from October 2021 were analyzed for all Appendix III and Appendix IV parameters. A summary of data collected during this assessment monitoring event is presented in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the SanitasTM v.9.6.32 statistics software. The export file was checked against the analytical data for transcription errors and completeness. No QA/QC issues were noted which would impact data usability.

2.2 Statistical Analysis

Statistical analyses for the PBAP were conducted in accordance with the October 2020 *Statistical Analysis Plan* (Geosyntec, 2020), except where noted below. Time series plots and results for all completed statistical tests are provided in Attachment B.

The data obtained in October 2021 were screened for potential outliers. No outliers were identified for this event.

2.2.1 Establishment of GWPSs

A GWPS was established for each Appendix IV parameter in accordance with § 352.951(b) and the *Statistical Analysis Plan* (Geosyntec, 2020). The established GWPS was determined to be the greater value of the background concentration and the maximum contaminant level (MCL) for each Appendix IV parameter. To determine background concentrations, an upper tolerance limit (UTL) was calculated using pooled data from the background wells collected during the background monitoring and assessment monitoring events. Tolerance limits were calculated parametrically with 95% coverage and 95% confidence for barium, beryllium, chromium, combined radium, and selenium. Non-parametric tolerance limits were calculated for arsenic, cadmium, cobalt, fluoride, and lithium due to apparent non-normal distributions and for antimony,

lead, mercury, molybdenum, and thallium due to a high non-detect frequency. Tolerance limits and the final GWPSs are summarized in Table 2.

2.2.2 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically (α = 0.01); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment B.

No SSLs were identified at the Welsh PBAP.

2.2.3 Establishment of Appendix III Prediction Limits

Upper prediction limits (UPLs) were previously established for all Appendix III parameters following the background monitoring period (Geosyntec, 2018). Intrawell tests were used to evaluate potential SSIs for calcium, chloride, fluoride, sulfate, and total dissolved solids (TDS), whereas interwell tests were used to evaluate potential SSIs for boron and pH. Interwell and intrawell prediction limits are updated periodically during the assessment monitoring period as sufficient data became available.

For the intrawell tests, insufficient data was available to compare against the existing background dataset, thus the prediction limits were not updated for the intrawell tests at this time. The intrawell prediction limits were previously calculated using all historical data through May 2020, except for chloride in compliance well AD-8, which used data from January 2017 to May 2020.

Prediction limits for the interwell tests were calculated using data collected through the 2021 assessment monitoring events. New background well data were tested for outliers prior to being added to the background dataset. Background well data were also evaluated for statistically significant trends using the Sen's Slope/Mann-Kendall trend test, and the results are included in Attachment B. The boron and pH prediction limits were calculated using a one-of-two retesting procedure, as during detection monitoring. The revised interwell prediction limits were used to evaluate a potential SSIs for boron and pH.

After the revised background set was established, a parametric or non-parametric analysis was selected based on the distribution of the data and the frequency of non-detect data. Estimated results less than the practical quantitation limit (PQL) – i.e., "J-flagged" data – were considered detections and the estimated results were used in the statistical analyses. Non-parametric analyses were selected for datasets with at least 50% non-detect data or datasets that could not be normalized. Parametric analyses were selected for datasets (either transformed or untransformed) that passed the Shapiro-Wilk / Shapiro-Francía test for normality. The Kaplan-Meier non-detect adjustment was applied to datasets with between 15% and 50% non-detect data. For datasets with fewer than 15% non-detect data, non-detect data were replaced with one half of the PQL. The

selected analysis (i.e., parametric or non-parametric) and transformation (where applicable) for each background dataset are shown in Attachment B.

Interwell UPLs were updated for boron and pH and lower prediction limits (LPLs) were also updated for pH using historical data through October 2021. The updated prediction limits are summarized in Table 3. Intrawell UPLs were previously updated for calcium, chloride, fluoride, sulfate, and TDS using the historical data through May 2020, except for chloride in compliance well AD-8, which used data from January 2017 to May 2020. The prediction limits were calculated for a one-of-two retesting procedure; i.e., if at least one sample in a series of two does not exceed the UPL, or in the case of pH, is neither less than the LPL nor greater than the UPL, then it can be concluded that an SSI has not occurred. In practice, where the initial result does not exceed the UPL, or in the case of pH, is neither less than the LPL nor greater than the UPL, a second sample will not be collected. The retesting procedures allowed achieving an acceptably high statistical power to detect changes at compliance wells for constituents evaluated using intrawell prediction limits.

2.2.4 Evaluation of Potential Appendix III SSIs

A review of the Appendix III results was also completed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations.

Data collected during the October 2021 assessment monitoring event from each compliance well were compared to the calculated prediction limits to evaluate results above background values. The results from this event and the prediction limits are summarized in Table 3. The following exceedances of the UPLs were noted:

- Boron concentrations exceeded the interwell UPL of 0.801 mg/L at AD-8 (1.10 mg/L).
- pH values were below the interwell LPL of 4.8 at AD-9 (4.3) and AD-15 (4.4).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the October 2021 sample was above the UPL or below the LPL. Based on these results, concentrations of Appendix III constituents appear to be above background levels at compliance wells.

2.3 Conclusions

A semi-annual assessment monitoring event was conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that impacted data usability. A review of outliers identified no potential outliers in the October 2021 data. GWPSs were re-established for the Appendix IV parameters. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. No SSLs were identified. Appendix III parameters were compared to established prediction limits, with exceedances of the UPL identified for boron and the LPL for pH.

Based on this evaluation, the Welsh PBAP CCR unit will remain in assessment monitoring.

SECTION 3

REFERENCES

Geosyntec Consultants (Geosyntec). 2018. Statistical Analysis Summary – Primary Bottom Ash Pond, J. Robert Welsh Plant, Pittsburg, Texas. January 2018.

Geosyntec. 2020. Statistical Analysis Plan. October 2020.

Geosyntec. 2021. Statistical Analysis Summary – Primary Bottom Ash Pond, J. Robert Welsh Plant, Pittsburg, Texas. September 2021.

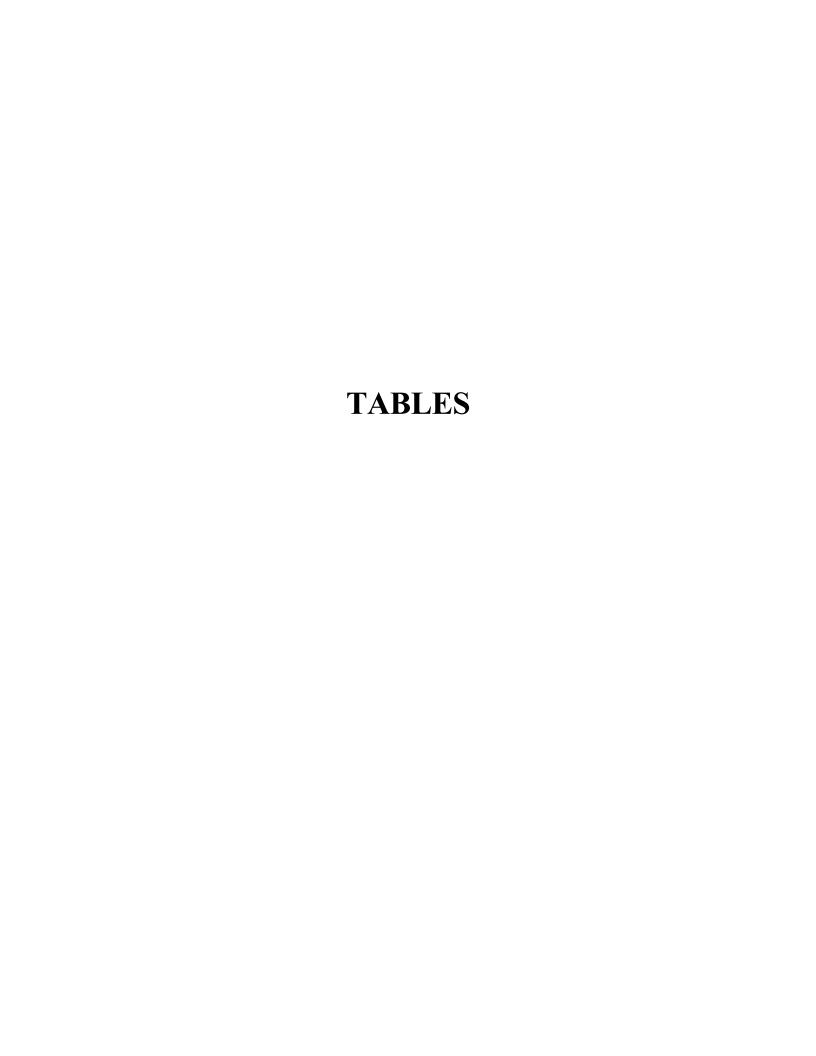


Table 1 - Groundwater Data Summary Welsh Plant - Primary Bottom Ash Pond

Well ID		AD-1	AD-5	AD-8	AD-9	AD-15	AD-17
Well Classification	n	Background	Background	Compliance	Compliance	Compliance	Background
Parameter	Unit	10/20/2021	10/20/2021	10/19/2021	10/19/2021	10/19/2021	10/20/2021
Antimony	μg/L	0.04 J	0.1 U				
Arsenic	μg/L	0.20	1.44	0.25	0.30	3.72	0.57
Barium	μg/L	86.1	53.2	23.3	50.3	73.1	10.2
Beryllium	μg/L	0.932	0.018 J	0.1 U	1.36	0.143	0.035 J
Boron	mg/L	0.732	0.038 J	1.10	0.226	0.218	0.104
Cadmium	μg/L	0.026	0.02 U	0.021	0.315	0.009 J	0.019 J
Calcium	mg/L	4.8	38.4	17.2	11.9	2.7	164
Chloride	mg/L	2.21	17.4	13.7	31.8	28	37.3
Chromium	μg/L	0.33	0.23	0.27	0.68	0.31	0.38
Cobalt	μg/L	2.44	6.85	4.13	20.6	2.84	42.9
Combined Radium	pCi/L	0.99	2.68	1.15	1.74	2.02	1.73
Fluoride	mg/L	0.22	0.17	0.9	0.19	0.09	0.16
Lead	μg/L	0.23	0.2 U	0.2 U	0.1 J	0.07 J	0.07 J
Lithium	mg/L	0.00756	0.133	0.0690	0.184	0.00435	0.250
Mercury	μg/L	0.003 J	0.005 U	0.005 U	0.003 J	0.005 U	0.005 U
Molybdenum	μg/L	0.5 U					
Selenium	μg/L	7.39	0.5 U	0.5 U	0.34 J	0.55	0.5 U
Sulfate	mg/L	72.4	155	139	374	10.3	1,040
Thallium	μg/L	0.2 U	0.2 U	0.11 J	0.23	0.06 J	0.05 J
Total Dissolved Solids	mg/L	190	370	300	700	140	1,710
рН	SU	4.4	5.6	5.5	4.3	4.4	5.1

Notes:

mg/L: milligrams per liter $\mu g/L$: micrograms per liter

SU: standard unit

pCi/L: picocuries per liter

U: Parameter was not present in concentrations above method detection limit and is reported as the reporting limit

J: Estimated value. Parameter was detected in concentrations below the reporting limit

All samples were collected as part of the assessment monitoring program in accordance with Texas Administrative Code Title 30 § 352.951(a).

Table 2: Appendix IV Groundwater Protection Standards Welsh Plant - Primary Bottom Ash Pond

Constituent Name	MCL	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.00600	0.00317	0.00600
Arsenic, Total (mg/L)	0.0100	0.00628	0.0100
Barium, Total (mg/L)	2.00	0.630	2.00
Beryllium, Total (mg/L)	0.00400	0.000762	0.00400
Cadmium, Total (mg/L)	0.00500	0.00400	0.00500
Chromium, Total (mg/L)	0.100	0.00235	0.100
Cobalt, Total (mg/L)	n/a	0.0748	0.0748
Combined Radium, Total (pCi/L)	5.00	3.84	5.00
Fluoride, Total (mg/L)	4.00	0.583	4.00
Lead, Total (mg/L)	n/a	0.00338	0.00338
Lithium, Total (mg/L)	n/a	0.394	0.394
Mercury, Total (mg/L)	0.00200	0.0000330	0.00200
Molybdenum, Total (mg/L)	n/a	0.00243	0.00243
Selenium, Total (mg/L)	0.0500	0.0160	0.0500
Thallium, Total (mg/L)	0.00200	0.00125	0.00200

Notes:

MCL = Maximum Contaminant Level

GWPS = Groundwater Protection Standard

Calculated UTL (Upper Tolerance Limit) represents site-specific background values.

Grey cells indicate the GWPS is based on the calculated UTL, which is either higher than the MCL or an MCL does not exist.

Table 3 - Appendix III Data Summary Welsh Plant - Primary Bottom Ash Pond

Analyte	Unit	Description	AD-8	AD-9	AD-15			
Analyte	Omi	Description	10/19/2021	10/19/2021	10/19/2021			
Boron	mg/L	Interwell Background Value (UPL)	0.801					
DOIOII	mg/L	Analytical Result	1.10	0.226	0.218			
Calcium	mg/L	Intrawell Background Value (UPL)	30.2	292	4.97			
Calcium	mg/L	Analytical Result	17.2	11.9	2.7			
Chloride	mg/L	Intrawell Background Value (UPL)	27.6	127	38.6			
Cilioride	mg/L	Analytical Result	13.7	31.8	28.0			
Fluoride	mg/L	Intrawell Background Value (UPL)	1.02	0.766	1.00			
Tuonide	mg/L	Analytical Result	0.9	0.19	0.09			
		Interwell Background Value (UPL)		7.0				
pН	SU	Interwell Background Value (LPL)	4.8					
		Analytical Result	5.5	4.3	4.4			
Sulfate	mg/L	Intrawell Background Value (UPL)	214	2,370	32.5			
Sullate		Analytical Result	139	374	10.3			
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	514	2,870	282			
Total Dissolved Solids	mg/L	Analytical Result	300	700	140			

Notes:

UPL: Upper prediction limit LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

ATTACHMENT A Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Welsh Primary Bottom Ash Pond CCR management area and that the requirements of § 352.931(a) have been met.

DAVID ANTHONY MILLER Printed Name of Licensed Professional Engineer David Anthony Miller Signature

TEXAS 112498 License Number

Licensing State

Date

62.16.22

ATTACHMENT B Statistical Analysis Output

GROUNDWATER STATS CONSULTING

February 1, 2022

Geosyntec Consultants Attn: Ms. Allison Kreinberg 941 Chatham Lane, #103 Columbus, OH 43221



Re: Welsh PBAP - Assessment Monitoring Event & Background Update 2021

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis and background update of 2021 groundwater data for American Electric Power Inc.'s Welsh PBAP. The analysis complies with the Texas Commission of Environmental Quality Rule 30 TAC 352 as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the Coal Combustion Residuals (CCR) program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

o **Upgradient wells:** AD-1, AD-5, and AD-17

Downgradient wells: AD-8, AD-9, and AD-15

Data were sent electronically, and the statistical analysis was reviewed by Andrew Collins, Project Manager of Groundwater Stats Consulting. The analysis was conducted according to the Statistical Analysis Plan prepared by GSC and approved by Dr. Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC.

The CCR program consists of the following constituents:

 Appendix III (Detection Monitoring) - boron, calcium, chloride, fluoride, pH, sulfate, and TDS Appendix IV (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

Time series plots for Appendix III and IV parameters are provided for all wells and constituents, and are used to evaluate concentrations over the entire record (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells. Values flagged as outliers may be seen in the Outlier Summary following this letter (Figure C) and are plotted in a lighter font and disconnected symbol on the time series graphs.

Summary of Statistical Method:

- 1) Intrawell prediction limits, combined with a 1-of-2 resample plan for calcium, chloride, fluoride, sulfate, and TDS
- 2) Interwell prediction limits combined with a 1-of-2 resample plan for boron and pH

In the event of an initial exceedance of compliance well data, the 1-of-2 resample plan allows for collection of an additional sample to determine whether the initial exceedance is confirmed. When the resample confirms the initial exceedance, a statistically significant increase (SSI) is identified and further research would be required to identify the cause of the exceedance (i.e., impact from the site, natural variation, or an off-site source). If the resample falls within the statistical limit, the initial exceedance is considered to be a false positive result and, therefore, no further action is necessary.

Parametric prediction limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are non-detects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (US EPA, 2009), data are analyzed using either parametric or non-parametric prediction limits.

- No statistical analyses are required on wells and analytes containing 100% nondetects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the practical quantification limit (PQL) as reported by the laboratory.

- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric prediction limits are used on data containing greater than 50% non-detects.

Natural systems continuously evolve due to physical changes made to the environment. Examples include capping a landfill, paving areas near a well, or lining a drainage channel to prevent erosion. Periodic updating of background statistical limits will be necessary to accommodate these types of changes. In the interwell case, newer data will be included in background during each sample event after screening the upgradient well data for any new outliers. Data will also be periodically evaluated for statistically significant trends, and earlier data may be deselected prior to construction of statistical limits so that limits represent present-day conditions. In the intrawell case, data for all wells and constituents are re-evaluated when a minimum of 4 new data points are available to determine whether earlier concentrations are representative of present-day groundwater quality. In some cases, the earlier portion of data are deselected prior to construction of limits in order to provide sensitive limits that will rapidly detect changes in groundwater quality. Even though the data are excluded from the calculation, the values will continue to be reported and shown in tables and graphs.

Summary of Background Screening Conducted in December 2017

Outlier Evaluation

Time series plots were used to identify suspected outliers, or extreme values that would result in limits that are not conservative from a regulatory perspective, in proposed background data. Suspected outliers at all wells for Appendix III and Appendix IV parameters were formally tested using Tukey's box plot method and, when identified, flagged in the computer database with "o" and deselected prior to construction of statistical limits.

Tukey's outlier test noted a few outliers that were flagged as outliers and a summary of those values was submitted with the screening. The outliers identified by Tukey's test for TDS in well AD-15, however, were not flagged as these values were not unusual to the data set at the time and were similar to observations reported in neighboring wells. However, the measured concentrations of most metals for September 30, 2016 at well AD-15 are high compared to the rest of the observations, which suggests a possible laboratory problem. These values were flagged as outliers as they do not appear to

represent the population at this well. Flagged values may be seen in a lighter font on the time series graphs. Note that reporting limits have recently decreased; therefore, no non-detect substitution was made for the data. During the next background update, the more historical and higher reporting limits may be deselected providing there are sufficient samples to construct statistical limits.

<u>Seasonality</u>

No true seasonal patterns were observed on the time series plots for any of the detected data; therefore, no deseasonalizing adjustments were made to the data. When seasonal patterns are observed, data may be deseasonalized so that the resulting limits will correctly account for the seasonality as a predictable pattern rather than random variation or a release. It was noted that for each constituent evaluated, the highest concentrations are reported in the upgradient wells.

Trend Test Evaluation

While trends may be visual, a quantification of the trend and its significance is needed. The Sen's Slope/Mann Kendall trend test was used to evaluate all data at each well to identify statistically significant increasing or decreasing trends. In the absence of suspected contamination, significant trending data are typically not included as part of the background data used for construction of prediction limits. This step serves to eliminate the trend and, thus, reduce variation in background. When statistically significant decreasing trends are present, earlier data are evaluated to determine whether earlier concentration levels are significantly different than current reported concentrations and will be deselected as necessary. When the historical records of data are truncated for the reasons above, a summary report will be provided to show the date ranges used in construction of the statistical limits.

The results of the trend analyses showed a couple statistically significant decreasing trends that were relatively low in magnitude when compared to average concentrations; therefore, no adjustments were required.

<u>Appendix III – Determination of Spatial Variation</u>

The Analysis of Variance (ANOVA) was used to statistically evaluate differences in average concentrations among upgradient wells, which assists in identifying the most appropriate statistical approach. Interwell tests, which compare downgradient well data to statistical limits constructed from pooled upgradient well data, are appropriate when average concentrations are similar across upgradient wells. Intrawell tests, which compare

compliance data from a single well to screened historical data within the same well, are appropriate when upgradient wells exhibit spatial variation; when statistical limits constructed from upgradient wells would not be conservative from a regulatory perspective; and when downgradient water quality is unimpacted compared to upgradient water quality for the same parameter.

As a result of the screening, intrawell prediction limits were determined to be most appropriate for calcium, fluoride, sulfate, and TDS while interwell prediction limits were appropriate for boron and pH. A summary of these findings was included with the report.

Appendix III Background Update Summaries

December 2020

Prior to updating background data for the 2020 analysis, data were evaluated using Tukey's outlier test and visual screening for updating background limits through May 2020 on all wells for parameters that use intrawell prediction limits (calcium, chloride, fluoride, sulfate, and TDS) and through October 2020 on upgradient wells for parameters that use interwell prediction limits (boron and pH). Tukey's test did not identify any new outliers except for calcium at upgradient well AD-17. This value was not flagged as an outlier as the value appears similar to the surrounding population.

For constituents requiring intrawell prediction limits, the Mann-Whitney (Wilcoxon Rank Sum) test was used to compare the medians of historical data through February 2019 to the new compliance samples at each well through May 2020 to evaluate whether the groups are statistically different at the 99% confidence level, in which case background data may not be updated with more recent compliance data. Statistically significant differences were found for chloride in upgradient well AD-1 and downgradient well AD-8, as well as all fluoride in all upgradient wells and downgradient well AD-15. All well/constituent pairs for parameters using intrawell prediction limits were updated with compliance samples to use all historical data through May 2020, with the exception of chloride in downgradient well AD-8 and fluoride in downgradient well AD-17. These well/constituent pairs were truncated to use measurements from January 2017 through May 2020.

The Sen's Slope/Mann Kendall trend test was used to evaluate data at upgradient wells for boron and pH to identify statistically significant increasing or decreasing trends. The results of the trend analyses showed a statistically significant increasing trend for boron in upgradient well AD-1. However, the magnitude of the trend was low relative to the average concentrations in this well. Therefore, no adjustment was required at this time.

All well/constituent pairs for parameters using interwell prediction limits were updated to use all historical data through October 2020. A summary of the background update results was included in the December 2020 report.

February 2022

Outlier Analysis

Prior to updating background data during this analysis, Tukey's outlier test and visual screening were used to re-evaluate data through October 2021 at all upgradient wells for parameters utilizing interwell prediction limits (boron and pH). Tukey's outlier test did not identify any values as potential outliers; therefore, no new values were flagged as outliers and no changes were made to previously flagged outliers for these constituents. Tukey's outlier test results for all Appendix III parameters are shown in Figure C.

For parameters which use intrawell prediction limits (calcium, chloride, fluoride, sulfate, and TDS), values were not re-evaluated for new outliers as these records had insufficient samples for updating background during this evaluation period. However, a value of 9 mg/L for chloride in upgradient well AD-1 was flagged during this analysis in order to be consistent with the shared upgradient well network among Welsh sites. A list of all flagged values follows this report (Figure C).

Intrawell – Prediction Limits

Intrawell prediction limits, combined with a 1-of-2 resample plan, are constructed using historical data through May 2020 (except for chloride at well AD-8 and fluoride at well AD-17 as discussed above) for calcium, chloride, fluoride, sulfate, and TDS (Figure D). Background data sets for all parameters utilizing intrawell prediction limits will be updated after the Fall 2022 sample event when a minimum of 4 compliance samples are available. A summary table of the limits follows this report.

<u>Interwell – Trend Test Evaluation</u>

The Sen's Slope/Mann Kendall trend test was used to evaluate data at upgradient wells for boron and pH to identify statistically significant increasing or decreasing trends (Figure E). The results of the trend analyses showed a statistically significant increasing trend for boron in upgradient well AD-1 as well as a decreasing trend for pH in upgradient well AD-17. However, the magnitude of the trends was low relative to the average concentrations in this well; therefore, no adjustment was required at this time.

Interwell – Prediction Limits

Interwell prediction limits, combined with a 1-of-2 resample plan, were updated using all available data from upgradient wells through October 2021 for boron and pH (Figure F). Interwell prediction limits pool upgradient well data to establish a background limit for an individual constituent. A summary table of the updated limits may be found following this letter in the Prediction Limit Summary Tables.

Evaluation of Appendix IV Parameters - October 2021

Prior to evaluating Appendix IV parameters, upgradient well data are screened through both visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. All flagged values may be seen on the Outlier Summary following this letter (Figure C) and no changes to previously flagged outliers were made.

For the current analysis, Tukey's outlier test on pooled upgradient well data through October 2021 identified outliers for fluoride, lead, and mercury. The values identified by Tukey's test were either similar to concentrations upgradient of the facility or were lower than the respective Maximum Contaminant Level (MCL); therefore, none of these values were flagged as outliers. Although not identified by Tukey's test, the highest value for molybdenum in upgradient well AD-1 and two highest values for cadmium in upgradient well AD-17 were flagged in order to maintain statistical limits that are conservative (i.e., lower) from a regulatory perspective.

Additionally, downgradient well data through October 2021 were screened through visual screening using time series graphs. Since the downgradient well data are used to construct confidence intervals, a regulatory conservative approach is taken in that values that are marginally high relative to the rest of the data are retained unless there is particular justification for excluding them. No new outliers among downgradient wells were flagged during this analysis. All flagged values may be seen on the Outlier Summary following this letter (Figure C) and no changes to previously flagged outliers were made.

Interwell Upper Tolerance Limits

Upper tolerance limits were used to calculate background limits from pooled upgradient well data through October 2021 for Appendix IV parameters (Figure G). For parametric limits a target of 95% confidence and 95% coverage is used. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples.

Groundwater Protection Standards

These background limits were compared to the Maximum Contaminant Levels (MCLs) as shown in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the confidence interval comparisons (Figure H).

Confidence Intervals

Confidence intervals were then constructed using data through October 2021 on downgradient wells for each of the Appendix IV parameters and compared to the GWPS, (i.e., the highest limit of the MCL or background limit as discussed above). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. Complete graphical results of the confidence intervals follow this letter (Figure I). No statistical exceedances were identified.

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Welsh PBAP. If you have any questions or comments, please feel free to contact us.

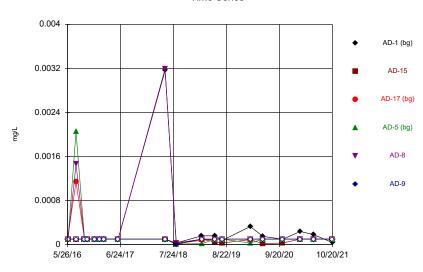
For Groundwater Stats Consulting,

Easton Rayner

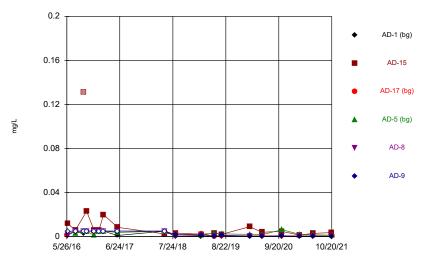
Groundwater Analyst

Andrew Collins Project Manager



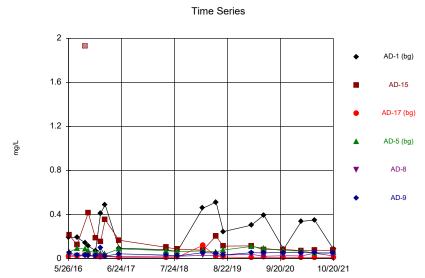


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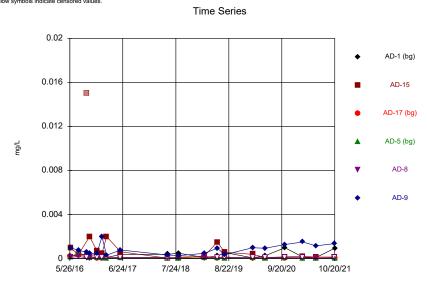
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Sanitas[™] v.9.6.32 Groundwater Stats Consulting. UG

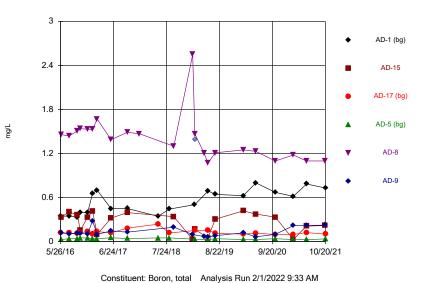


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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

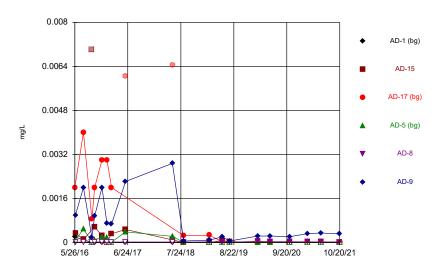


Constituent: Beryllium, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



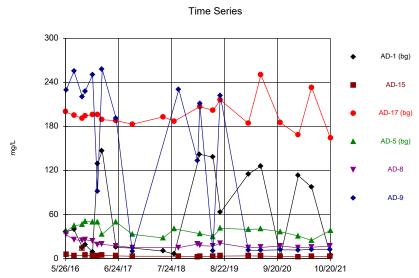
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Time Series



Constituent: Cadmium, total Analysis Run 2/1/2022 9:33 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

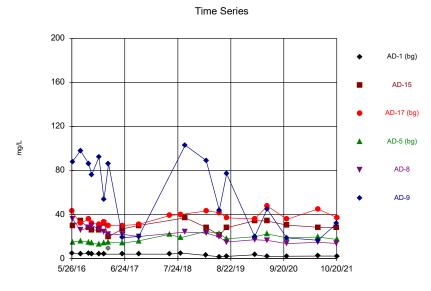
Sanitas[™] v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Calcium, total Analysis Run 2/1/2022 9:33 AM

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



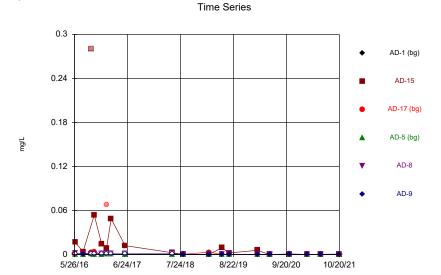
Constituent: Chloride, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

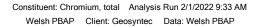
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

5/31/16

6/28/17

0.2



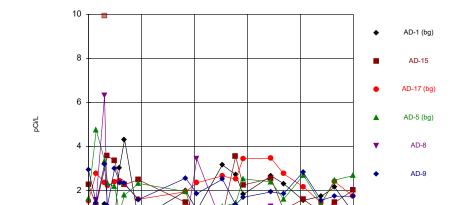


Time Series

AD-1 (bg) 0.16 AD-15 88 AD-17 (bg) 0.12 AD-5 (bg) mg/L 0.08 AD-8 AD-9 0.04 7/24/18 8/22/19 5/26/16 6/24/17 10/20/21 Constituent: Cobalt, total Analysis Run 2/1/2022 9:33 AM

Time Series

Constituent: Cobalt, total Analysis Run 2/1/2022 9:33 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP



Constituent: Combined Radium 226 + 228 Analysis Run 2/1/2022 9:33 AM

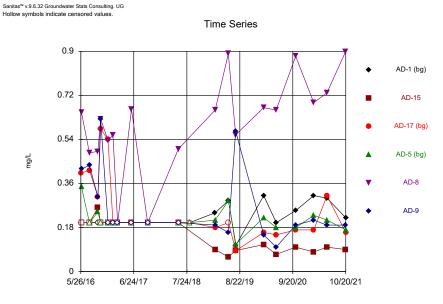
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

8/24/19

9/21/20

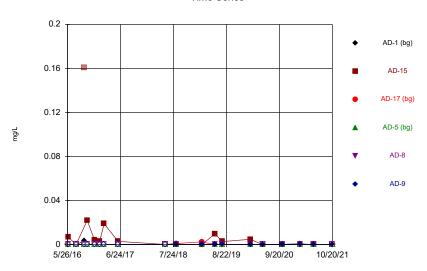
10/20/21

7/27/18

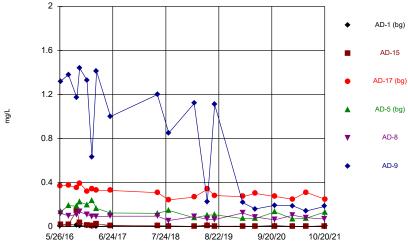


Constituent: Fluoride, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



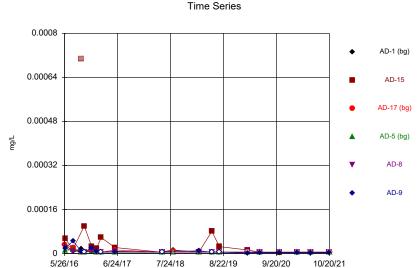


Constituent: Lead, total Analysis Run 2/1/2022 9:33 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP



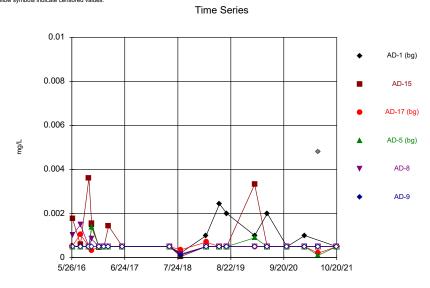
Constituent: Lithium, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

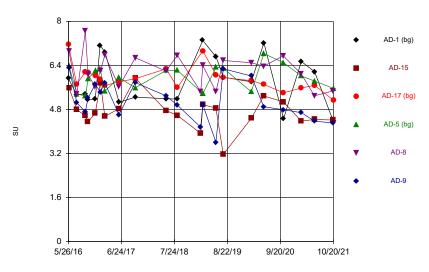


Constituent: Mercury, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

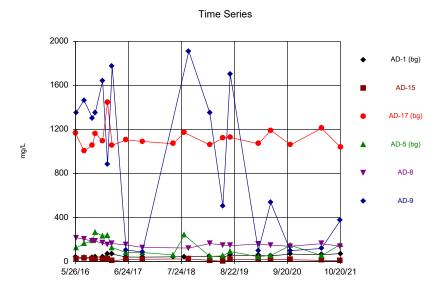


Constituent: Molybdenum, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



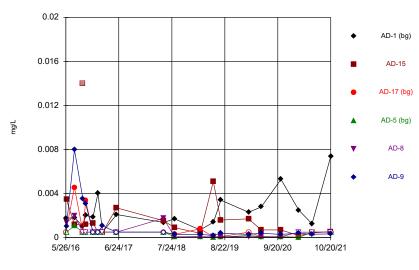
Constituent: pH, field Analysis Run 2/1/2022 9:33 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Sulfate, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Time Series

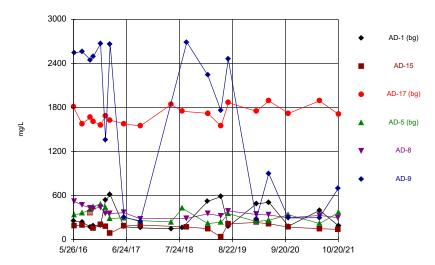


Constituent: Selenium, total Analysis Run 2/1/2022 9:33 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

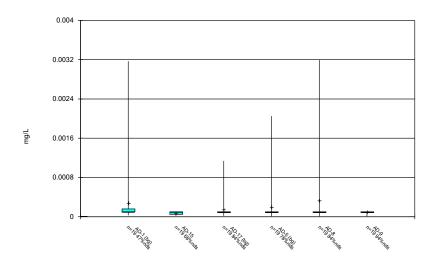
Time Series 0.009 AD-1 (bg) 0.0072 AD-15 AD-17 (bg) 0.0054 AD-5 (bg) 0.0036 AD-8 AD-9 0.0018 5/26/16 6/24/17 7/24/18 8/22/19 9/20/20 10/20/21

Constituent: Thallium, total Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



Constituent: Total Dissolved Solids Analysis Run 2/1/2022 9:33 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

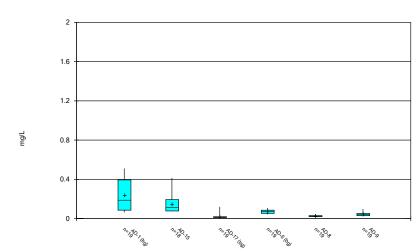
Box & Whiskers Plot



Constituent: Antimony, total Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

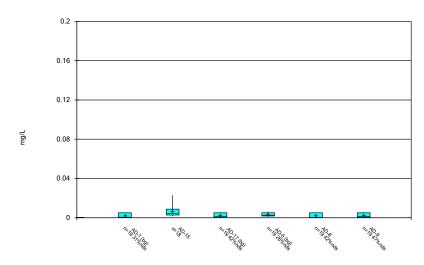
Sanitas[™] v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Barium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

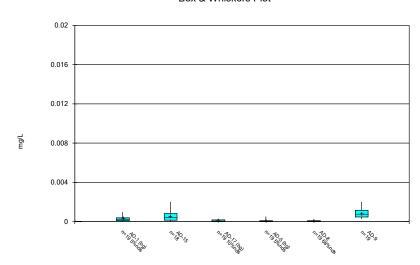
Box & Whiskers Plot



Constituent: Arsenic, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

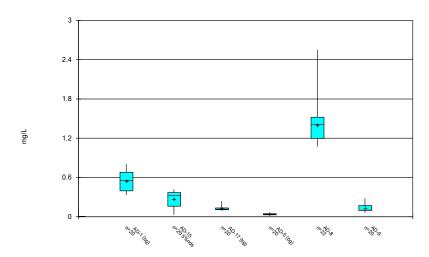
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Beryllium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

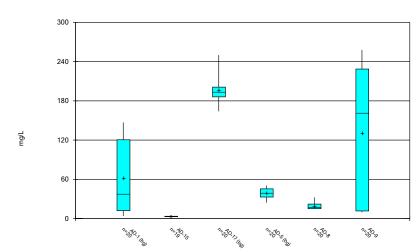
Box & Whiskers Plot



Constituent: Boron, total Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

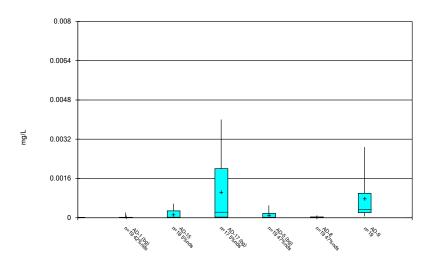
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Calcium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

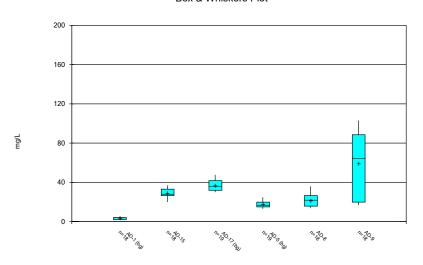
Box & Whiskers Plot



Constituent: Cadmium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

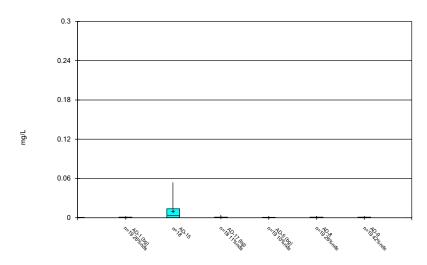
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Chloride, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

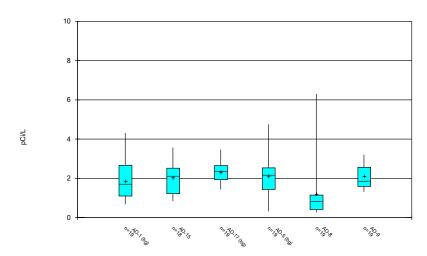
Box & Whiskers Plot



Constituent: Chromium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

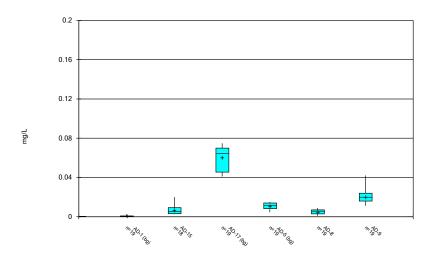
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 2/1/2022 9:35 AM

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

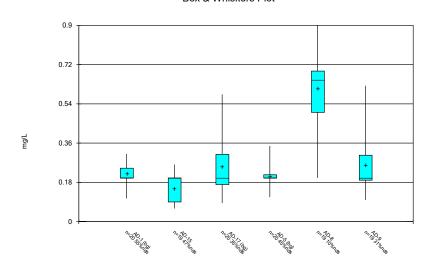
Box & Whiskers Plot



Constituent: Cobalt, total Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

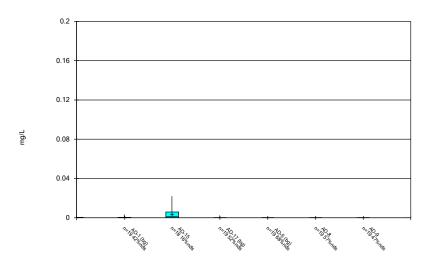
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Fluoride, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

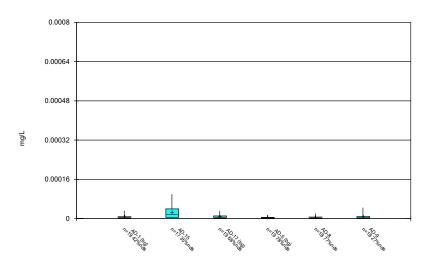
Box & Whiskers Plot



Constituent: Lead, total Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

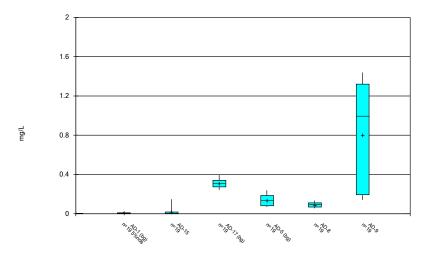
Sanitas[™] v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Mercury, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

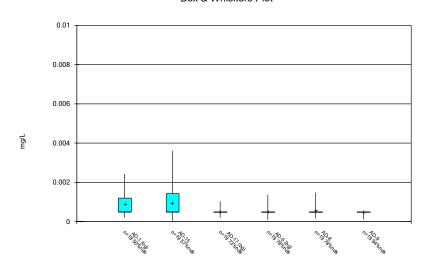
Box & Whiskers Plot



Constituent: Lithium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

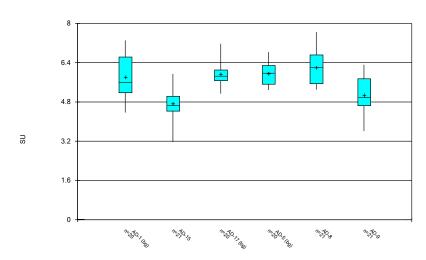
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Molybdenum, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

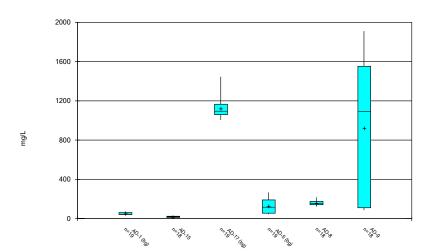
Box & Whiskers Plot



Constituent: pH, field Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

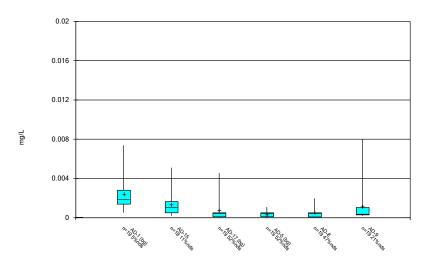
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Sulfate, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

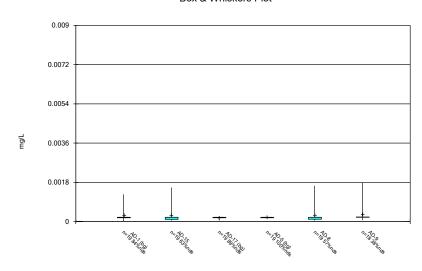
Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 2/1/2022 9:35 AM Welsh PBAP Client: Geosyntec Data: Welsh PBAP

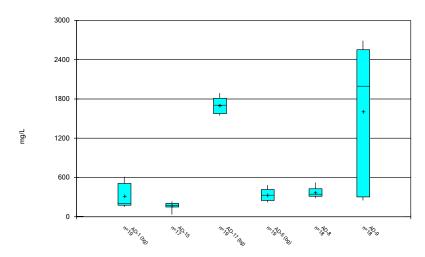
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Thallium, total Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot



Constituent: Total Dissolved Solids Analysis Run 2/1/2022 9:35 AM
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Outlier Summary

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 2/1/2022, 9:34 AM

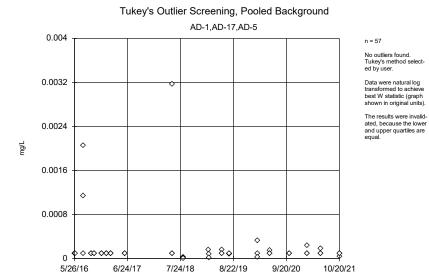
		tal (mg/L)	ing(L)	total (mg/	(mall)	total (III9	+0491 (1a	total (mg/2		
	AD-15 Arser	nic, total (AD-15 Bariu	m, total (mg/L) AD-15 Beryl	_{ium, total} (mg/l AD-9 Boron,	AD-15 Cadm	nium, total (mg/ AD-17 Cadm	L) _{nium, total} (mg/ AD-15 Calciu	L) _{um, total} (mg/L AD-1 Chlorid	AD-15 Chro) _{Dmium, total} (mg/L) AD-17 Chromium, total (mg/
9/29/2016										
9/30/2016	0.131 (o)	1.93 (o)	0.015 (o)		0.007 (o)		13.7 (o)		0.28 (o)	
1/20/2017										0.068 (o)
/24/2017								9 (o)		
/8/2017						0.00606 (o)				
23/2018										
5/24/2018						0.00646 (o)				
/21/2019				1.39 (o)						
6/2/2021										
	AD-15 Coba	_{ilt, total} (mg/L) AD-15 Com	_{bined Radium 2} AD-15 Lead	_{:26} + 228 (p ^{Ci/l} total (mg/L) AD-15 Merci	L) _{Iry, total} (mg/L) AD-1 Molybo) _{Jenum, total} (m AD-15 Selen	ig/L) _{iium, total} (mg/ AD-9 Thalliu	L) m, total (mg/L) AD-15 Total	Dissolved Soli	ids (mg/L)
29/2016	AD-15 Coba	_{ilt, total} (mg/L) AD-15 Com ^l 9.92 (o)	oined Radium 2 AD-15 Lead	₁₂₆ + 228 (pCil ^l total (mg/L) AD-15 Mercu	L) _{Iry, total} (mg/L AD-1 Molybo) _{Jenum, total} (m AD-15 Selen	ig/L) _{ilium, t} otal (mg/ AD-9 Thalliu	L) m, total (mg/L) AD-15 Total '	Dissolved Soli	_{ids} (mg/L)
	AD-15 Coba		oined Radium i AD-15 Lead 0.161 (o)	26 + 228 (pCil ¹) total (mg/L) AD-15 Mercu 0.000707 (o)) _{Jenum, total} (m AD-15 Sel ^{en} 0.014 (o)	ıg/L) ium, total (mg/ AD-9 Thalliu	L) m, total (mg/L) AD-15 Total 367 (o)	Dissolved Soli	_{ids} (mg/L)
30/2016							g/L) _{ilum, t} otal (mg/ AD-9 Thalliu		_{Dissol} ved Soli	_{ids} (mg/L)
30/2016 20/2017							ig/L) iium, total (mg/ AD-9 Thalliu		Dissolved Soli	_{ids} (mg/L)
/30/2016 /20/2017 /24/2017							ig/L) iium, total (mg/ AD-9 Thalliu		Dissolved Soli	_{ids} (mg/L)
/30/2016 /20/2017 /24/2017 /8/2017							igiL) jium, total (mg/ AD-9 Thalliu AD-9 Thalliu		Dissolved Soli	_{ids} (mg ^j L)
/30/2016 /20/2017 //24/2017 //8/2017									_{Dissolv} ed Soli	_{ids} (mg/L)
9/29/2016 9/30/2016 1/20/2017 2/24/2017 5/8/2017 5/23/2018 5/24/2018 2/21/2019									Dissolved Soli	_{ids} (mg/L)

Tukey's Outlier Test - Upgradient Wells - Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 2/1/2022, 12:34 PM Constituent Well Outlier Method Std. Dev. <u>Distribution</u> <u>Normality Test</u> Value(s) <u>Alpha</u> <u>N</u> <u>Mean</u> Fluoride, total (mg/L) AD-1,AD-17,AD-5 Yes 0.106,0.4023,0.4135,0.583,0.5399,0.085,0.112 NP NaN 60 0.2275 0.08694 In(x) ShapiroFrancia Lead, total (mg/L) AD-1,AD-17,AD-5 Yes 0.003384,0.000852,0.0011,0.00249,0.00003 NaN 57 0.0002972 0.0005397 ln(x) ShapiroFrancia Mercury, total (mg/L) AD-1,AD-17,AD-5 Yes 0.000033,0.000032,0.00002133 NaN 57 0.000007595 0.00000614 ln(x) ShapiroFrancia

Tukey's Outlier Test - Upgradient Wells - All Results

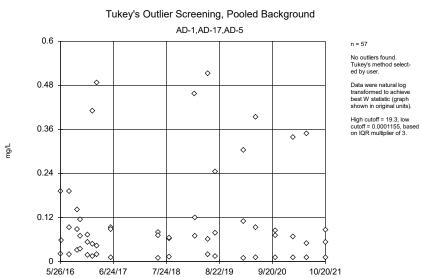
		Welsh PBAP	Client: Geosyntec Data: Welsh PBAP	Printed 2/1/2022, 12	2:34 PM					
Constituent	Well	Outlier	Value(s)	Method	<u>Alpha</u>	<u>N</u>	Mean	Std. Dev.	Distribution	Normality Test
Antimony, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	57	0.0002086	0.0004957	unknown	ShapiroFrancia
Arsenic, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.002696	0.001965	ln(x)	ShapiroFrancia
Barium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.1113	0.1321	ln(x)	ShapiroFrancia
Beryllium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.0002088	0.0002158	ln(x)	ShapiroFrancia
Boron, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	60	0.2382	0.2418	ln(x)	ShapiroFrancia
Cadmium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.0005722	0.001384	ln(x)	ShapiroFrancia
Chromium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.001833	0.008953	ln(x)	ShapiroFrancia
Cobalt, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.02391	0.02704	x^(1/3)	ShapiroFrancia
Combined Radium 226 + 228 (pCi/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	2.108	0.8532	sqrt(x)	ShapiroFrancia
Fluoride, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.106,0.4023,0.4135,0.583,0.5399,0.0	35,0.112 NP	NaN	60	0.2275	0.08694	ln(x)	ShapiroFrancia
Lead, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.003384,0.000852,0.0011,0.00249,0.	00003 NP	NaN	57	0.0002972	0.0005397	ln(x)	ShapiroFrancia
Lithium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.1515	0.132	sqrt(x)	ShapiroFrancia
Mercury, total (mg/L)	AD-1,AD-17,AD-5	Yes	0.000033,0.000032,0.00002133	NP	NaN	57	0.000007595	0.00000614	ln(x)	ShapiroFrancia
Molybdenum, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	57	0.0007102	0.0007011	unknown	ShapiroFrancia
pH, field (SU)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	60	5.902	0.6318	sqrt(x)	ShapiroFrancia
Selenium, total (mg/L)	AD-1,AD-17,AD-5	No	n/a	NP	NaN	57	0.001165	0.001465	ln(x)	ShapiroFrancia
Thallium, total (mg/L)	AD-1,AD-17,AD-5	n/a	n/a	NP	NaN	57	0.0002239	0.000175	unknown	ShapiroFrancia



Constituent: Antimony, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

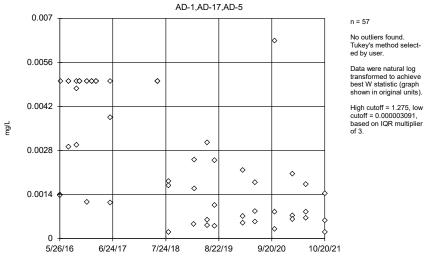
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Barium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

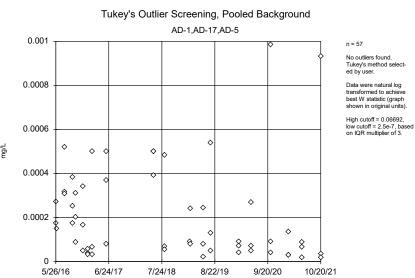
Tukey's Outlier Screening, Pooled Background



Constituent: Arsenic, total Analysis Run 2/1/2022 12:33 PM View: Outliers

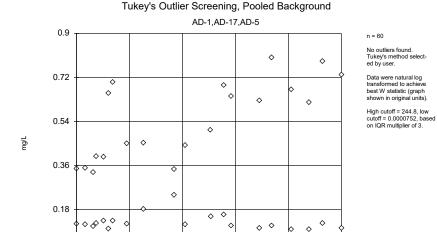
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Beryllium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP



Constituent: Boron, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

8/22/19

9/20/20

10/20/21

 \Diamond

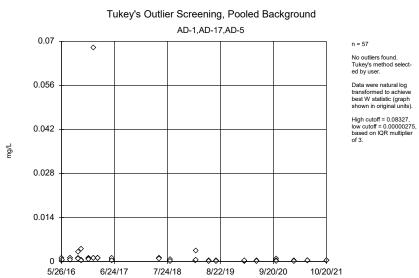
 \Diamond

7/24/18

 \Diamond

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

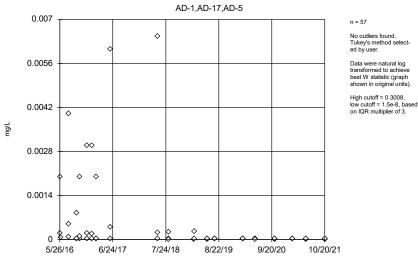
5/26/16



Constituent: Chromium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Tukey's Outlier Screening, Pooled Background



Constituent: Cadmium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background AD-1,AD-17,AD-5 0.08 n = 57 No outliers found. \Diamond \Diamond \Diamond Tukev's method select- \Diamond ed by user. \Leftrightarrow 0.064 Data were cube root transformed to achieve best W statistic (graph shown **\lambda** in original units). High cutoff = 1.635, low \Diamond cutoff = -0.3756, based on IQR multiplier of 3. 0.048 mg/L \Diamond 0.032 0.016 \Diamond \Diamond \Diamond \Diamond \Diamond \Diamond nΨ 5/26/16 6/24/17 7/24/18 8/22/19 9/20/20 10/20/21

Constituent: Cobalt, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

pCi/L

Tukey's Outlier Screening, Pooled Background

n = 57

No outliers found.

ed by user.

Tukey's method select-

Data were square root

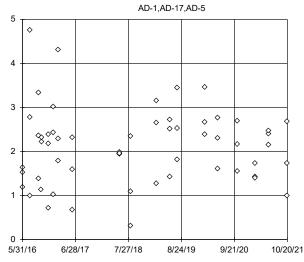
transformed to achieve best W statistic (graph

shown in original units).

High cutoff = 7.823, low

on IQR multiplier of 3.

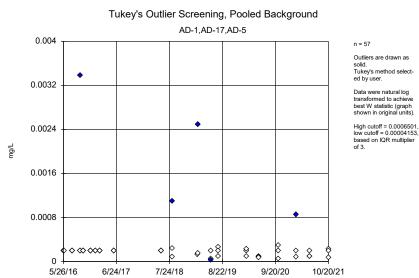
cutoff = 0.0009145, based



Constituent: Combined Radium 226 + 228 Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

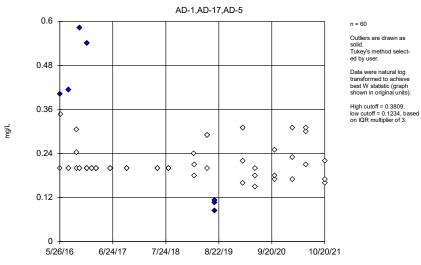
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Lead, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Tukey's Outlier Screening, Pooled Background



Constituent: Fluoride, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Tukey's Outlier Screening, Pooled Background

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

0.4

mg/L

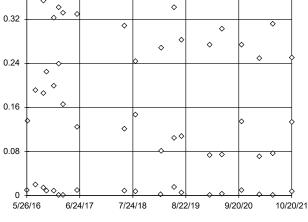
 \Diamond

AD-1,AD-17,AD-5 n = 57 No out Tukey's ed by u

No outliers found. Tukey's method selected by user.

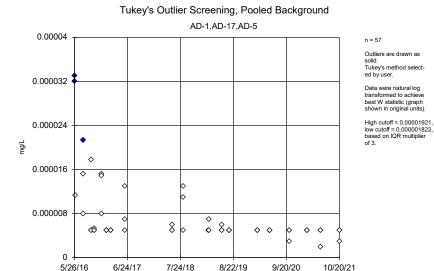
Data were square root transformed to achieve best W statistic (graph shown in original units).

High cutoff = 3.257, low cutoff = -1.406, based on IQR multiplier of 3.



Constituent: Lithium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP



Constituent: Mercury, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

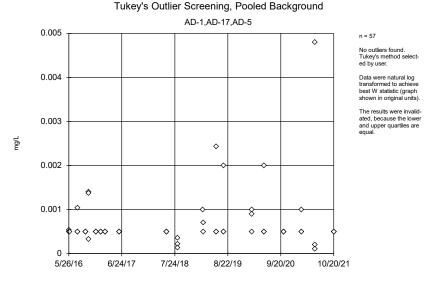
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tukey's Outlier Screening, Pooled Background AD-1,AD-17,AD-5 8 n = 60 \Diamond No outliers found. \Diamond Tukey's method select- \Diamond \Diamond 0 ed by user. 8 Data were square root $\diamond \diamond$ \Diamond transformed to achieve **\$** \Diamond \Diamond \Diamond best W statistic (graph \Diamond \Diamond \Diamond **♦**♦♦ shown in original units). \Diamond \Diamond 4.8 High cutoff = 9.056, low cutoff = 3.316, based on IQR multiplier of 3. SU 3.2 1.6 5/26/16 6/24/17 7/24/18 8/22/19 9/20/20 10/20/21

Constituent: pH, field Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

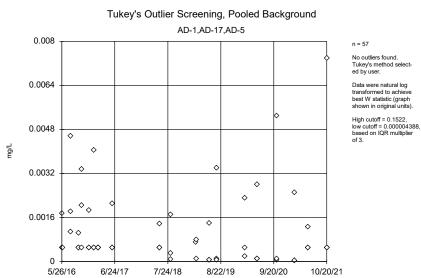
nitas'" v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Molybdenum, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG



Constituent: Selenium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

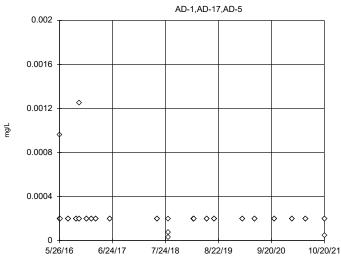


n = 57

No outliers found. Tukey's method selected by user.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

The results were invalidated, because the lower and upper quartiles are equal.



Constituent: Thallium, total Analysis Run 2/1/2022 12:33 PM View: Outliers

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Intrawell Prediction Limits

Client: Geosyntec Data: Welsh PBAP Printed 1/14/2022, 8:55 AM Constituent Well Upper Lim. Date Observ. Sig. Bg N Bg Mean Std. Dev. <u>%NDs</u> ND Adj. Transform Alpha Method AD-1 Param Intra 1 of 2 Calcium, total (mg/L) 237.4 n/a 16 3.586 0.002505 n/a 1 future 1.323 0 None x^(1/3) Calcium, total (mg/L) AD-15 4.972 n/a 15 3.508 0.002505 Param Intra 1 of 2 None Calcium, total (mg/L) AD-17 250 n/a 1 future n/a 16 n/a n/a 0 n/a n/a 0.006456 NP Intra (normality) 1 of 2 55.22 AD-5 n/a 16 40.46 7.491 0 0.002505 Param Intra 1 of 2 Calcium, total (mg/L) n/a 1 future None No Calcium, total (mg/L) AD-8 30.17 16 20.14 5.091 0.002505 Param Intra 1 of 2 Calcium, total (mg/L) AD-9 292.3 n/a 1 future n/a 16 34784 25721 0 None x^2 0.002505 Param Intra 1 of 2 Chloride, total (mg/L) AD-1 5.876 n/a 1 future n/a 15 3.643 1.113 0 None 0.002505 Param Intra 1 of 2 No AD-15 Param Intra 1 of 2 Chloride, total (mg/L) 38.62 1 future n/a 15 29.07 4.762 None 0.002505 Chloride, total (mg/L) AD-17 47.28 n/a 1 future n/a 16 36.41 5.517 None No 0.002505 Param Intra 1 of 2 AD-5 24.81 n/a 16 17.51 3.708 0 None 0.002505 Param Intra 1 of 2 Chloride, total (mg/L) n/a 1 future No Chloride, total (mg/L) AD-8 27.62 n/a 1 future n/a 10 20.32 3.261 0 None No 0.002505 Param Intra 1 of 2 Chloride, total (mg/L) AD-9 126.7 n/a 1 future n/a 15 66.45 30.03 0 None No 0.002505 Param Intra 1 of 2 NP Intra (NDs) 1 of 2 Fluoride, total (mg/L) AD-1 n/a 16 0.006456 1 n/a 1 future n/a n/a 68.75 n/a n/a AD-15 0.007533 NP Intra (NDs) 1 of 2 Fluoride, total (mg/L) 1 future n/a Fluoride, total (mg/L) AD-17 0.2 n/a 1 future n/a 11 n/a 63 64 n/a n/a 0.01276 NP Intra (NDs) 1 of 2 Fluoride, total (mg/L) AD-5 56.25 0.006456 NP Intra (NDs) 1 of 2 n/a 1 future n/a 16 n/a 1 n/a n/a n/a Fluoride, total (mg/L) 1.018 n/a 1 future n/a 15 0.8085 0.09992 sqrt(x) Param Intra 1 of 2 Fluoride, total (mg/L) AD-9 0.7664 n/a 1 future n/a 15 0.5493 0.1627 40 Kaplan-Meier 0.002505 Param Intra 1 of 2 Sulfate, total (mg/L) AD-1 67 66 47 39 0.002505 Param Intra 1 of 2 n/a 1 future n/a 16 10 29 0 None Nο Sulfate, total (mg/L) AD-15 32.52 1 future n/a 15 18.61 6.934 0 None No 0.002505 Param Intra 1 of 2 Sulfate, total (mg/L) AD-17 1445 n/a 1 future n/a 16 n/a n/a 0 n/a n/a 0.006456 NP Intra (normality) 1 of 2 Sulfate, total (mg/L) AD-5 286.7 n/a 16 130.5 79.29 0 0.002505 Param Intra 1 of 2 n/a 1 future None No Sulfate, total (mg/L) AD-8 214.3 n/a 1 future n/a 15 162.7 25.75 0 None No 0.002505 Param Intra 1 of 2 Sulfate, total (mg/L) AD-9 2367 n/a 1 future n/a 15 1070 646.4 None No 0.002505 Param Intra 1 of 2 Total Dissolved Solids (mg/L) AD-1 612 n/a 1 future n/a 16 n/a n/a 0 n/a n/a 0.006456 NP Intra (normality) 1 of 2

Total Dissolved Solids (mg/L)

AD-15

AD-17

AD-5

AD-8

AD-9

281.5

1921

505.2

514.3

2874

n/a

n/a

n/a

1 future

1 future

1 future

1 future

1 future

n/a 14

n/a 16

n/a 16

n/a 15

n/a 15

172.1

1689

332.6

379.1

2.6e13

53.59

118.1

87.61

67.41

2.1e13

0

0

None

None

None

None

None

No

No

No

x^4

0.002505

0.002505

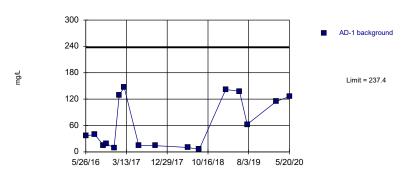
0.002505

0.002505

0.002505

Param Intra 1 of 2

Prediction Limit Intrawell Parametric, AD-1 (bg)

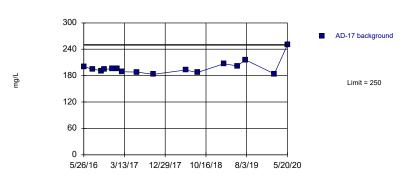


Background Data Summary (based on cube root transformation): Mean=3.586, Std. Dev.=1.323, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8572, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.0052505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

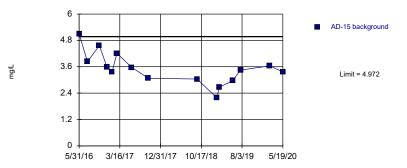
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Non-parametric, AD-17 (bg)



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 16 background values. Well-constituent pair annual alpha = 0.01287. Individual comparison alpha = 0.006456 (1 of 2). Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-15

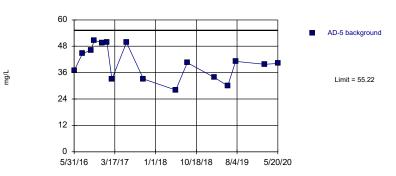


Background Data Summary: Mean=3.508, Std. Dev.=0.7301, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9705, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-5 (bg)



Background Data Summary: Mean=40.46, Std. Dev.=7.491, n=16. Normality test: Shapiro Wilk @alpha = 0.01, collulated = 0.9322, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-8

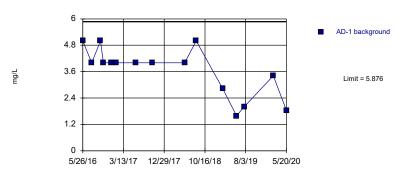


Background Data Summary: Mean=20.14, Std. Dev.=5.091, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8995, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

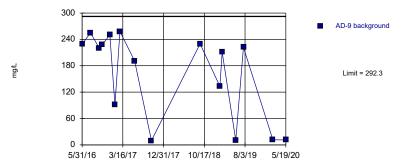
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-1 (bg)



Background Data Summary: Mean=3.643, Std. Dev.=1.113, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8562, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-9

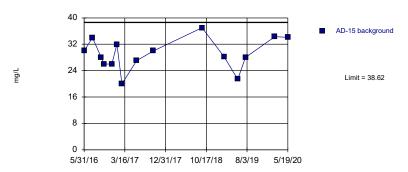


Background Data Summary (based on square transformation): Mean=34784, Std. Dev.=25721, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8454, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Calcium, total Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

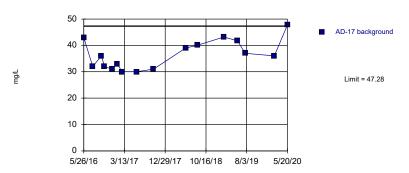
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-15



Background Data Summary: Mean=29.07, Std. Dev.=4.762, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9628, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-17 (bg)

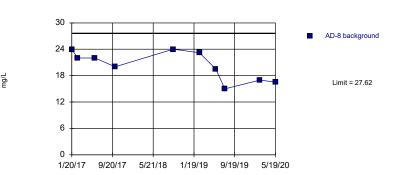


Background Data Summary: Mean=36.41, Std. Dev.=5.517, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9197, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

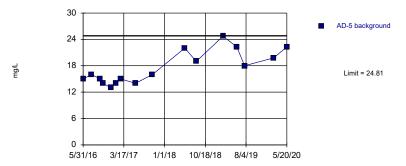
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-8



Background Data Summary: Mean=20.32, Std. Dev.=3.261, n=10. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9127, critical = 0.781. Kappa = 2.238 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-5 (bg)

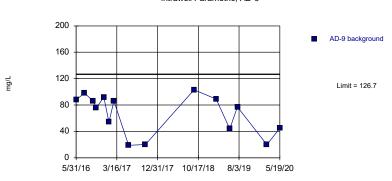


Background Data Summary: Mean=17.51, Std. Dev.=3.708, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8923, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Chloride, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

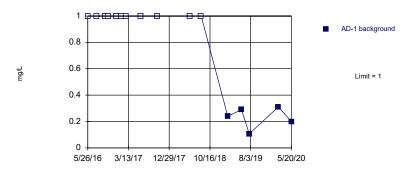
Prediction Limit Intrawell Parametric, AD-9



Background Data Summary: Mean=66.45, Std. Dev.=30.03, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8663, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Sanitas™ v.9.6.32 . UG Hollow symbols indicate censored values.

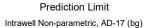
Prediction Limit Intrawell Non-parametric, AD-1 (bg)

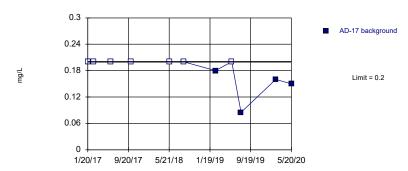


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.01287. Individual comparison alpha = 0.006456 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

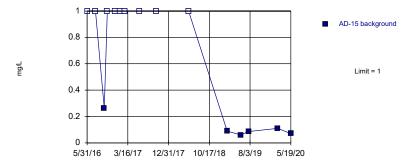
Sanitas™ v.9.6.32 . UG Hollow symbols indicate censored values.





Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 11 background values. 63.64% NDs. Well-constituent pair annual alpha = 0.02537. Individual comparison alpha = 0.01276 (1 of 2). Assumes 1 future value.

Prediction Limit Intrawell Non-parametric, AD-15

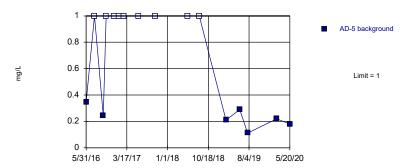


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 60% NDs. Well-constituent pair annual alpha = 0.01501. Individual comparison alpha = 0.007533 (1 of 2). Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG Hollow symbols indicate censored values.

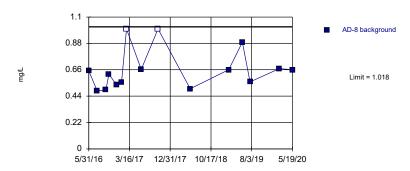
Prediction Limit Intrawell Non-parametric, AD-5 (bg)



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 16 background values. 56.25% NDs. Well-constituent pair annual alpha = 0.01287. Individual comparison alpha = 0.006456 (1 of 2). Assumes 1 future value.

Sanitas™ v.9.6.32 . UG Hollow symbols indicate censored values.

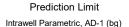
Prediction Limit Intrawell Parametric, AD-8

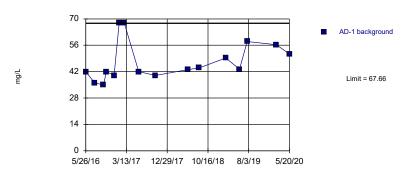


Background Data Summary (based on square root transformation): Mean=0.8085, Std. Dev.=0.09992, n=15, 13.33% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8572, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

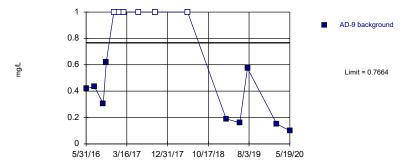
Sanitas™ v.9.6.32 . UG





Background Data Summary: Mean=47.39, Std. Dev.=10.29, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8677, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-9

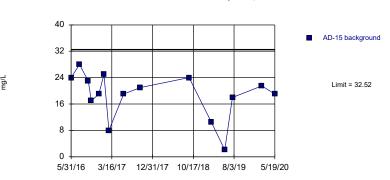


Background Data Summary (based on square root transformation) (after Kaplan-Meier Adjustment): Mean=0.5493, Std. Dev.=0.1627, n=15, 40% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8499, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Fluoride, total Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

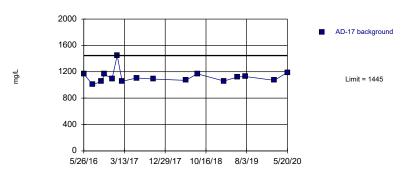
Prediction Limit Intrawell Parametric, AD-15



Background Data Summary: Mean=18.61, Std. Dev.=6.934, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8989, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Non-parametric, AD-17 (bg)



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 16 background values. Well-constituent pair annual alpha = 0.01287. Individual comparison alpha = 0.006456 (1 of 2). Assumes 1 future value.

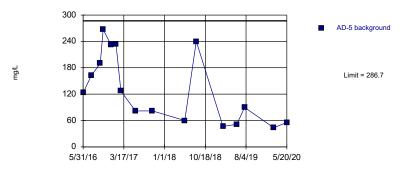
Constituent: Sulfate, total Analysis Run 1/14/2022 8:53 AM View: AlII Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-8 AD-8 background Limit = 214.3

Background Data Summary: Mean=162.7, Std. Dev.=25.75, n=15. Normality test: Shapiro Wilk @alpha = 0.01, collabled = 0.954, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-5 (bg)

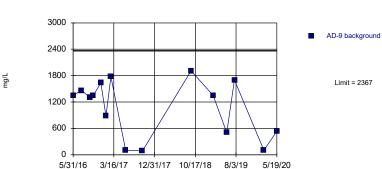


Background Data Summary: Mean=130.5, Std. Dev.=79.29, n=16. Normality test: Shapiro Wilk @alpha = 0.01, collabed = 0.8753, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Sulfate, total Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

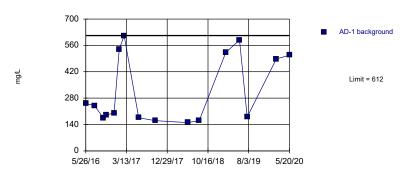
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-9



Background Data Summary: Mean=1070, Std. Dev.=646.4, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8834, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Non-parametric, AD-1 (bg)



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 16 background values. Well-constituent pair annual alpha = 0.01287. Individual comparison alpha = 0.006456 (1 of 2). Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

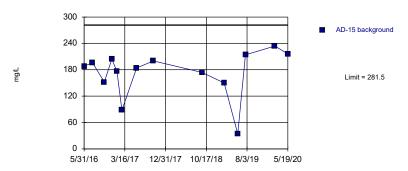
Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-17 (bg)



Background Data Summary: Mean=1689, Std. Dev.=118.1, n=16. Normality test: Shapiro Wilk @alpha = 0.01, collalated = 0.9189, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Prediction Limit Intrawell Parametric, AD-15



Background Data Summary: Mean=172.1, Std. Dev.=53.59, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8428, critical = 0.825. Kappa = 2.041 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

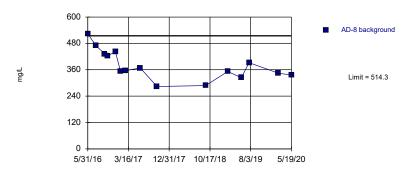
Prediction Limit Intrawell Parametric, AD-5 (bg)



Background Data Summary: Mean=332.6, Std. Dev.=87.61, n=16. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9126, critical = 0.844. Kappa = 1.97 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-8

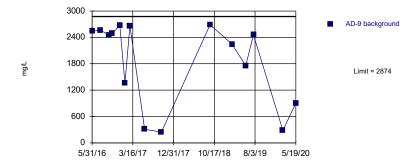


Background Data Summary: Mean=379.1, Std. Dev.=67.41, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9509, critical = 0.835. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 1/14/2022 8:53 AM View: AllI Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 . UG

Prediction Limit Intrawell Parametric, AD-9



Background Data Summary (based on x^4 transformation): Mean=2.6e13, Std. Dev.=2.1e13, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8396, critical = 0.8356. Kappa = 2.006 (c=7, w=3, 1 of 2, event alpha = 0.00180). Report alpha = 0.001800. Assumes 1 future value.

Constituent: Total Dissolved Solids Analysis Run 1/14/2022 8:53 AM View: AIII Intrawell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Trend Test - Significant Results

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 1/10/2022, 10:29 AM

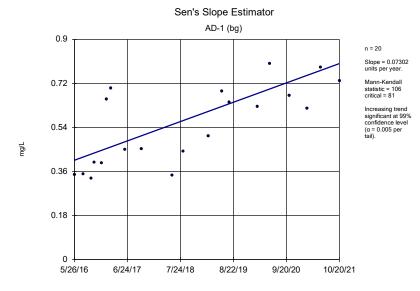
Constituent	Well	Slope	Calc.	Critical	Sig.	<u>N</u>	%NDs	Normality	<u>Xform</u>	<u>Alpha</u>	Method
Boron, total (mg/L)	AD-1 (bg)	0.07302	106	81	Yes	20	0	n/a	n/a	0.01	NP
pH, field (SU)	AD-17 (bg)	-0.1299	-86	-81	Yes	20	0	n/a	n/a	0.01	NP

Trend Test - All Results

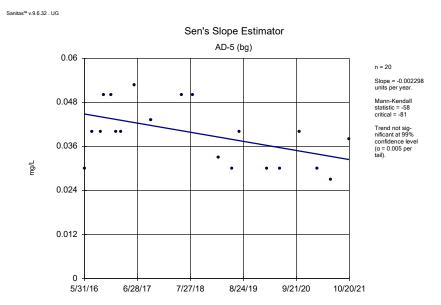
Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 1/10/2022, 10:29 AM

Constituent	Well	Slope	Calc.	Critical	Sig.	<u>N</u>	%NDs	Normality	<u>Xform</u>	<u>Alpha</u>	Method
Boron, total (mg/L)	AD-1 (bg)	0.07302	106	81	Yes	20	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	AD-17 (bg)	-0.002795	-38	-81	No	20	0	n/a	n/a	0.01	NP
Boron, total (mg/L)	AD-5 (bg)	-0.002298	-58	-81	No	20	0	n/a	n/a	0.01	NP
pH, field (SU)	AD-1 (bg)	0.003456	1	81	No	20	0	n/a	n/a	0.01	NP
pH, field (SU)	AD-17 (bg)	-0.1299	-86	-81	Yes	20	0	n/a	n/a	0.01	NP
pH, field (SU)	AD-5 (bg)	0.04563	28	81	No	20	0	n/a	n/a	0.01	NP

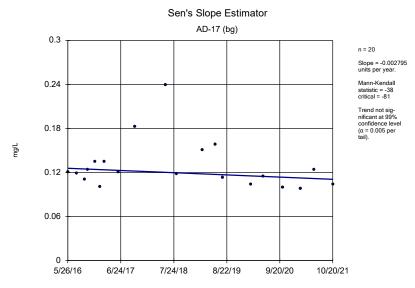
Sanitas™ v.9.6.32 . UG



Constituent: Boron, total Analysis Run 1/10/2022 10:28 AM View: AIII Interwell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

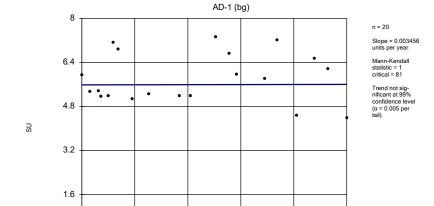


Constituent: Boron, total Analysis Run 1/10/2022 10:28 AM View: AIII Interwell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP



Constituent: Boron, total Analysis Run 1/10/2022 10:28 AM View: AllI Interwell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sen's Slope Estimator



Sanitas™ v.9.6.32 . UG

0

5/26/16

6/24/17

Constituent: pH, field Analysis Run 1/10/2022 10:28 AM View: AllI Interwell

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

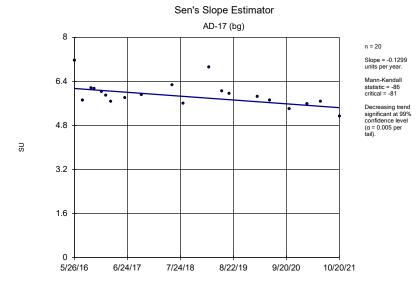
8/22/19

9/20/20

10/20/21

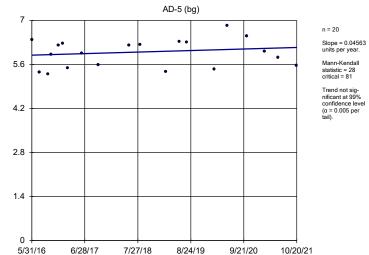
7/24/18

Sanitas** v.9.6.32 . UG



Constituent: pH, field Analysis Run 1/10/2022 10:28 AM View: AIII Interwell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sen's Slope Estimator



SU

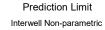
Constituent: pH, field Analysis Run 1/10/2022 10:28 AM View: AlII Interwell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

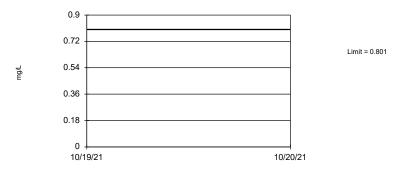
Interwell Prediction Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 1/10/2022, 10:27 AM

Constituent	Well	Upper Li	m.Lower Lii	m.Date	Observ.	Sig. Bg I	N Bg Mean	Std. Dev.	%NDs	ND Adj.	Transforr	n <u>Alpha</u>	Method
Boron, total (mg/L)	n/a	0.801	n/a	n/a	3 future	n/a 60	n/a	n/a	0	n/a	n/a	0.0005253	NP Inter (normality) 1 of 2
pH, field (SU)	n/a	6.979	4.824	n/a	3 future	n/a 60	5.902	0.6318	0	None	No	0.001253	Param Inter 1 of 2

Sanitas™ v.9.6.32 . UG

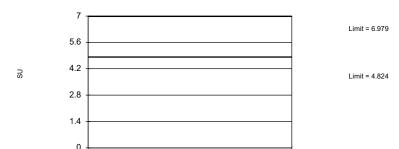




Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. Annual per-constituent alpha = 0.003148. Individual comparison alpha = 0.0005253 (1 of 2). Assumes 3 future values.

Constituent: Boron, total Analysis Run 1/10/2022 10:26 AM View: AlII Interwell
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Prediction Limit Interwell Parametric



Sanitas™ v.9.6.32 . UG

10/19/21

Background Data Summary: Mean=5.902, Std. Dev=0.6318, n=60. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9783, critical = 0.945. Kappa = 1.706 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001253. Assumes 3 future values.

10/20/21

Constituent: pH, field Analysis Run 1/10/2022 10:26 AM View: AllI Interwell Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Upper Tolerance Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 2/1/2022, 9:42 AM Std. Dev. %NDs ND Adj. <u>Transform</u> <u>Alpha</u> Constituent <u>Well</u> Upper Lim. Date Observ. Sig. Bg N Bg Mean Method n/a 0.00317 n/a 57 70.18 n/a 0.05373 NP Inter(NDs) Antimony, total (mg/L) n/a n/a n/a n/a n/a Arsenic, total (mg/L) 0.00628 33.33 n/a n/a 0.05373 NP Inter(normality) n/a n/a n/a n/a 57 n/a n/a Barium, total (mg/L) 0.6299 n/a 57 -2.819 1.162 0 None ln(x) 0.05 Inter n/a n/a n/a Beryllium, total (mg/L) n/a 0.0007622 n/a n/a n/a 57 0.05309 0.01886 7.018 None x^(1/3) 0.05 Cadmium, total (mg/L) NP Inter(normality) n/a 0.004 n/a n/a n/a 55 n/a n/a 32.73 n/a n/a 0.05954 Chromium, total (mg/L) n/a 0.00235 n/a n/a n/a 56 -8.217 1.064 16.07 Kaplan-Meier ln(x) 0.05 Inter Cobalt, total (mg/L) 0.0748 0 0.05373 NP Inter(normality) n/a n/a 57 n/a n/a n/a n/a n/a n/a Combined Radium 226 + 228 (pCi/L) 3.838 n/a n/a 57 2.108 0.8532 0 None 0.05 Fluoride, total (mg/L) n/a 0.583 45 0.04607 NP Inter(normality) n/a n/a n/a 60 n/a n/a n/a n/a Lead, total (mg/L) n/a 0.003384 n/a 57 54.39 0.05373 NP Inter(NDs) Lithium, total (mg/L) 0.05373 NP Inter(normality) n/a 0.394 n/a 57 n/a 1.754 n/a n/a n/a n/a n/a Mercury, total (mg/L) 0.000033 n/a 57 63.16 0.05373 NP Inter(NDs) 0.00243 0.05656 NP Inter(NDs) Molybdenum, total (mg/L) n/a 56 67.86 n/a n/a n/a n/a n/a n/a n/a Selenium, total (mg/L) n/a 0.016 n/a 57 1.82 ln(x) 0.05

n/a

n/a

91.23

n/a

0.05373

n/a

NP Inter(NDs)

n/a 57

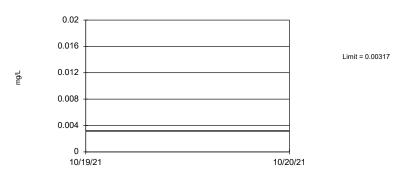
n/a

0.001251 n/a

n/a

Thallium, total (mg/L)

Tolerance Limit Interwell Non-parametric



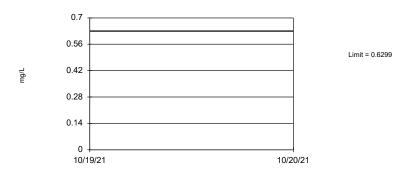
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 70.18% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Antimony, total Analysis Run 2/1/2022 9:40 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

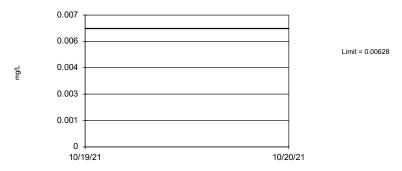
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=-2.819, Std. Dev.=1.162, n=57. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9595, critical = 0.944. Report alpha = 0.05.

Tolerance Limit Interwell Non-parametric



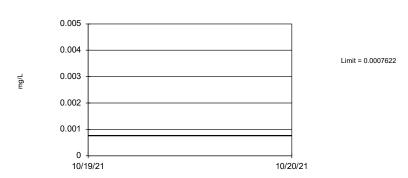
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 33.33% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Arsenic, total Analysis Run 2/1/2022 9:40 AM View: UTLs

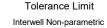
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

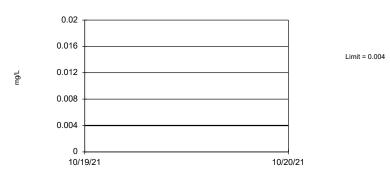
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on cube root transformation): Mean=0.05309, Std. Dev.=0.01886, n=57, 7.018% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.946, critical = 0.944. Report alpha = 0.05.





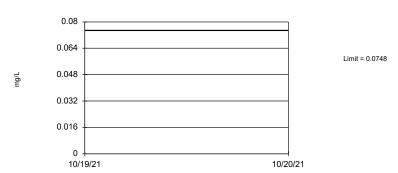
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 55 background values. 32.73% NDs. 91.99% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05954.

Constituent: Cadmium, total Analysis Run 2/1/2022 9:40 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

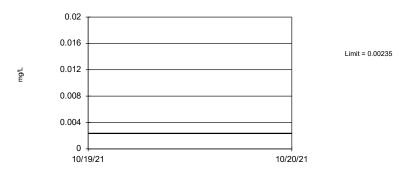
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05. Report alpha = 0.05373.

Tolerance Limit Interwell Parametric



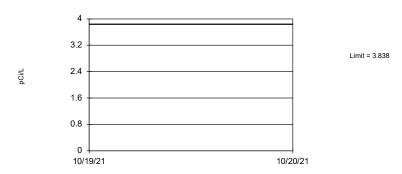
95% coverage. Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-8.217, Std. Dev.=1.064, n=56, 16.07% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9539, critical = 0.942. Report alpha = 0.05.

Constituent: Chromium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

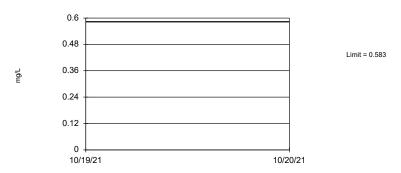
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary: Mean=2.108, Std. Dev.=0.8532, n=57. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9636, critical = 0.944. Report alpha = 0.05.

Tolerance Limit Interwell Non-parametric



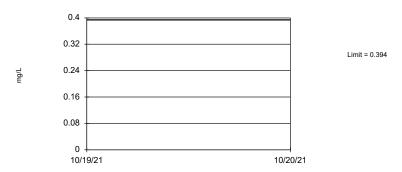
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. 45% NDs. 92.77% coverage at alpha=0.01; 95.12% coverage at alpha=0.05; 99.02% coverage at alpha=0.5. Report alpha = 0.04607.

Constituent: Fluoride, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

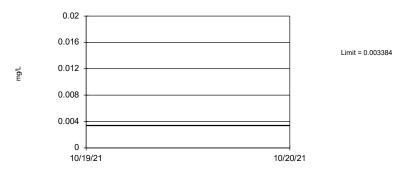
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 1.754% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Tolerance Limit Interwell Non-parametric



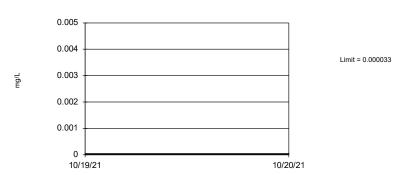
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 54.39% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Lead, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

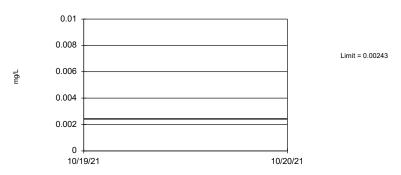
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 63.16% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit
Interwell Non-parametric



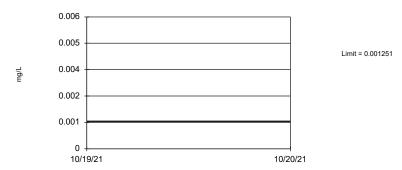
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 56 background values. 67.86% NDs. 91.99% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha=0.05656.

Constituent: Molybdenum, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit
Interwell Non-parametric



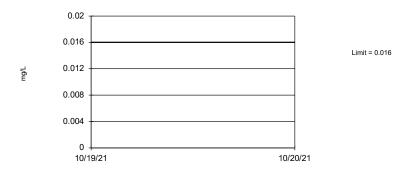
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 91.23% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Thallium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG





95% coverage. Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-7.827, Std. Dev.=1.82, n=57, 36.84% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9462, critical = 0.9444. Report alpha = 0.05.

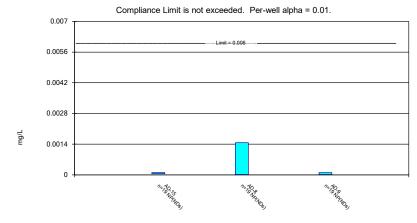
Constituent: Selenium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Confidence Intervals - All Results (No Significant)

Client: Geosyntec Data: Welsh PBAP Printed 2/1/2022, 9:51 AM Method Constituent <u>Well</u> Compliance Std. Dev. %NDs ND Adj. Transform Alpha Upper Lim. Lower Lim. Sig. N Antimony, total (mg/L) AD-15 0.0001 0.00005 0.006 No 19 0.00008158 0.00003096 68.42 None No 0.01 NP (NDs) 0.001461 0.00001 0.0007604 NP (NDs) Antimony, total (mg/L) AD-8 0.006 No 19 0.0003295 84.21 None 0.01 No Antimony, total (mg/L) AD-9 0.0001 0.00001 0.006 0.00009526 0.00002065 No 0.01 NP (NDs) 0.01 Arsenic, total (mg/L) AD-15 0.008637 0.003174 0.006707 0.006073 0.01 0 x^(1/3) Param Arsenic, total (mg/L) AD-8 0.005 0.00031 0.01 Nο 19 0.002356 0.002323 42 11 None Nο 0.01 NP (normality) AD-9 0.005 0.00027 0.002712 0.002265 NP (normality) Arsenic, total (mg/L) 0.01 No 47.37 0.01 None No Barium, total (mg/L) AD-15 0.203 0.0769 0.1495 0.0975 0 0.01 NP (normality) No None No Barium, total (mg/L) AD-8 0.0295 0.02203 2 0.02632 0.007452 ln(x) 0.01 Barium, total (mg/L) AD-9 0.05126 0.03281 2 Nο 19 0.04398 0.01772 0 None ln(x) 0.01 Param. Beryllium, total (mg/L) AD-15 0.0008144 0.0001993 0.004 No 18 0.000589 0.0006306 0 None sqrt(x) 0.01 Param. 0.0001145 0.00008752 NP (NDs) Beryllium, total (mg/L) AD-8 0.00003 0.004 No 0.00004009 68.42 None No 0.01 Beryllium, total (mg/L) AD-9 0.001113 0.000561 0.004 0.0008371 0.0004716 0 No 0.01 Param. Cadmium, total (mg/L) AD-15 0.0003515 0.00001 0.005 0.0001894 0.0002695 5.556 0.01 NP (normality) Cadmium, total (mg/L) AD-8 0.001 0.000021 0.005 No 0.0004895 0.0004977 47.37 None Nο 0.01 NP (normality) Cadmium, total (mg/L) AD-9 0.0009815 0.0002373 0.005 0.000776 0.0008579 0 x^(1/3) 0.01 Param. No 19 None Chromium, total (mg/L) AD-15 0.01172 0.001058 0.1 No 0.01015 0.01602 0 x^(1/3) 0.01 Param. None Chromium, total (mg/L) AD-8 0.0005027 0.0001362 0.1 0.0005649 0.0005077 26.32 Kaplan-Meier sqrt(x) 0.01 Param. AD-9 Chromium, total (mg/L) 0.001 0.000346 0.1 No 0.0006695 0.0003106 42.11 None No 0.01 NP (normality) 0.006842 Cobalt, total (mg/L) AD-15 0.008124 0.003773 0.075 Nο 18 0.005229 n None In(x) 0.01 Param Cobalt, total (mg/L) AD-8 0.00627 0.003347 0.075 19 0.004808 0.002496 0 0.01 No None No Param. Cobalt, total (mg/L) AD-9 0.02397 0.01621 0.075 No 0.02042 0.007099 0 None sqrt(x) 0.01 Param. Combined Radium 226 + 228 (pCi/L) 2.557 5 2.034 0.8649 AD-15 1.51 No 0 No 0.01 Param Combined Radium 226 + 228 (pCi/L) AD-8 1 328 0.5192 5 No 19 1 204 1 424 n None ln(x) 0.01 Param Combined Radium 226 + 228 (pCi/L) AD-9 2.446 1.743 5 2.095 0.6007 0 0.01 No 19 None No Param. 47.37 Fluoride, total (mg/L) AD-15 0.086 No 19 0.5288 0.461 None No 0.01 NP (normality) Fluoride, total (mg/L) AD-8 0.7809 0.5913 0.6919 0.1665 10.53 0.01 Fluoride, total (mg/L) AD-9 1 0.19 No 0.5123 0.3677 31.58 0.01 NP (normality) No 0.0003128 Lead, total (mg/L) AD-15 0.003606 0.0034 No 0.004285 0.006531 16.67 Kaplan-Meier In(x) 0.01 Param. 0.0001527 0.00006725 Lead. total (mg/L) AD-8 0.0002 0.00007 0.0034 57.89 Kaplan-Meier 0.01 NP (NDs) No No Lead, total (mg/L) AD-9 0.0002 0.00008 0.0034 0.0001743 0.00007305 47.37 0.01 NP (normality) No None No AD-15 0.01546 0.004345 0.01727 0.03316 0 Lithium, total (mg/L) 0.39 In(x) 0.01 Lithium, total (mg/L) AD-8 0.1056 0.07943 0.39 No 0.09251 0.02234 0 None No 0.01 Param. Lithium, total (mg/L) AD-9 1.33 0.189 0.39 0.804 0.52 0 0.01 NP (normality) No 19 None No Mercury, total (mg/L) AD-15 0.00002634 0.00002939 0.000006165 0.002 No 0.00002937 35.29 Kaplan-Meier In(x) 0.01 Param. Mercury, total (mg/L) AD-8 0.000008 0.000005 0.002 0.000006538 0.000003925 Kaplan-Meier 0.01 NP (NDs) 0.000003 AD-9 0.00001 0.002 0.000008788 0.00001051 27.78 0.01 NP (normality) Mercury, total (mg/L) Molybdenum, total (mg/L) AD-15 0.001546 0.0004635 0.0024 Nο 0.0009616 0.000981 57.89 None No 0.01 NP (NDs) 0.0008389 0.0005787 NP (NDs) Molybdenum, total (mg/L) AD-8 0.00016 0.0024 No 19 0.0002731 78.95 None No 0.01 Molybdenum, total (mg/L) AD-9 0.0005 0.00011 0.0024 0.0004795 0.00008947 NP (NDs) No 94.74 0.01 None No sqrt(x) Selenium, total (mg/L) AD-15 0.001857 0.0006319 0.05 0.001372 0.001257 None 0.01 Param. Selenium, total (mg/L) AD-8 0.00137 0.00008 0.05 No 0.0005328 0.0005624 47.37 No 0.01 NP (normality) 0.00106 0.001156 0.001899 NP (normality) Selenium, total (mg/L) AD-9 0.0003 0.05 No 21.05 None No 0.01 Thallium, total (mg/L) AD-15 0.00137 0.0001 0.002 No 0.000491 0.0003918 63.16 0.01 NP (NDs) 19 None No Thallium, total (mg/L) AD-8 0.001185 0.00011 0.0004693 0.0003895 57.89 0.01 NP (NDs) Thallium, total (mg/L) AD-9 0.0003362 0.00008834 0.002 18 0.0004634 0.0004514 0.01 Param. 38.89 Kaplan-Meier In(x)

Non-Parametric Confidence Interval

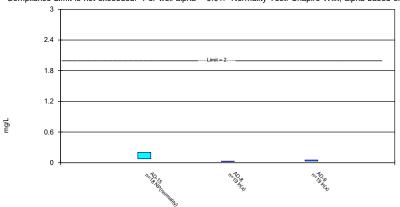


Constituent: Antimony, total Analysis Run 2/1/2022 9:47 AM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

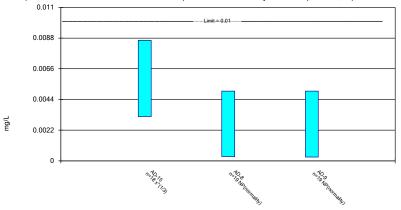


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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Parametric and Non-Parametric (NP) Confidence Interval

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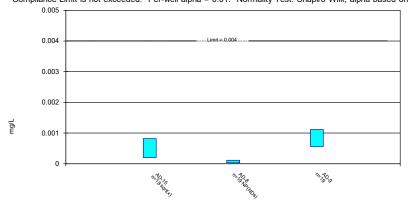
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

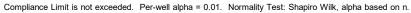
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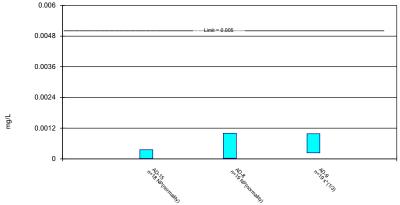
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Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval





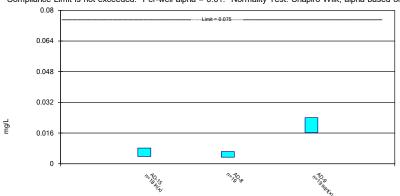
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

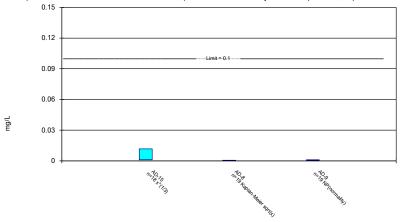
Parametric Confidence Interval

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Parametric and Non-Parametric (NP) Confidence Interval

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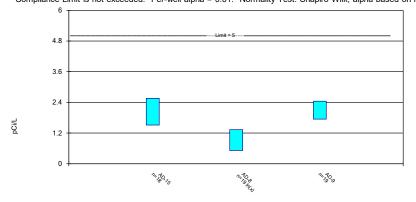
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

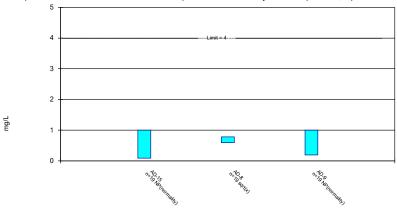
Parametric Confidence Interval

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Parametric and Non-Parametric (NP) Confidence Interval

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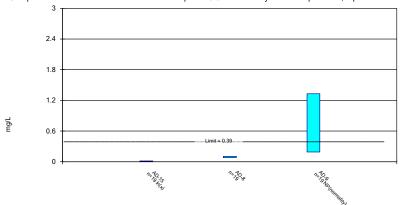
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

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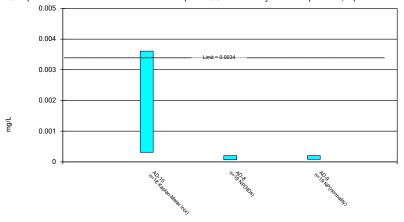


Constituent: Lithium, total Analysis Run 2/1/2022 9:47 AM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Parametric and Non-Parametric (NP) Confidence Interval

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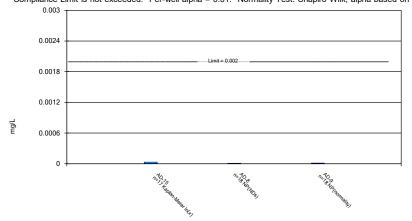
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

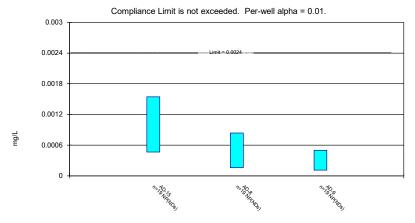
Parametric and Non-Parametric (NP) Confidence Interval

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Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

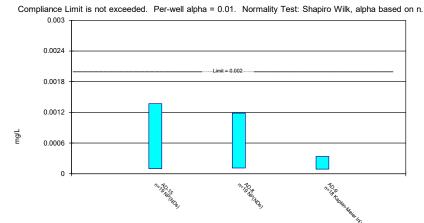


Constituent: Molybdenum, total Analysis Run 2/1/2022 9:47 AM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval



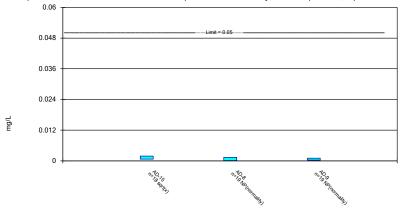
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 2/1/2022 9:47 AM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

STATISTICAL ANALYSIS SUMMARY PRIMARY BOTTOM ASH POND J. Robert Welsh Plant Pittsburg, Texas

Submitted to



1 Riverside Plaza Columbus, Ohio 43215-2372

Submitted by



engineers | scientists | innovators

500 W. Wilson Bridge Road Suite 250 Worthington, Ohio 43085

October 31, 2022

CHA8500B

TABLE OF CONTENTS

SECTION 1	Executive Summary	⁷	1
		n Pond Evaluation	
2.1	Data Validation & Q	QA/QC	2-1
2.2	Statistical Analysis		2-1
	2.2.1 Evaluation o	of Potential Appendix IV SSLs	2-1
	2.2.2 Evaluation o	of Potential Appendix III SSIs	2-2
2.3	Conclusions		2-2
SECTION 3	References		3-1

LIST OF TABLES

Table 1	Groundwater Data Summary
Table 2	Appendix IV Groundwater Protection Standards
Table 3	Appendix III Data Summary

LIST OF ATTACHMENTS

Attachment A	Certification by Qualified Professional Engineer
Attachment B	Data Quality Review Memorandum
Attachment C	Statistical Analysis Output

LIST OF ACRONYMS AND ABBREVIATIONS

AEP American Electric Power

CCR Coal Combustion Residuals

CCV Continuing Calibration Verification

GWPS Groundwater Protection Standard

LCL Lower Confidence Limit

LFB Laboratory Fortified Blanks

LPL Lower Prediction Limit

LRB Laboratory Reagent Blanks

MCL Maximum Contaminant Level

NELAP National Environmental Laboratory Accreditation Program

PBAP Primary Bottom Ash Pond

QA Quality Assurance

QC Quality Control

SSI Statistically Significant Increase

SSL Statistically Significant Level

SU Standard Units

TCEQ Texas Commission on Environmental Quality

TDS Total Dissolved Solids

UPL Upper Prediction Limit

UTL Upper Tolerance Limit

SECTION 1

EXECUTIVE SUMMARY

In accordance with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, "CCR rule"), groundwater monitoring has been conducted at the Primary Bottom Ash Pond (PBAP), an existing CCR unit at the Welsh Power Plant located in Pittsburg, Texas. Recent groundwater monitoring results were compared to site-specific groundwater protection standards (GWPSs) to identify potential exceedances for CCR units in assessment monitoring.

Based on detection monitoring conducted in 2017 and 2018, statistically significant increases (SSIs) over background were concluded for boron at the PBAP. An alternative source was not identified at the time, so assessment monitoring was initiated and GWPS were set in accordance with § 352.951(b). Two assessment monitoring events were conducted at the PBAP in March and June 2022 in accordance with § 352.951(a). The results of these assessment events are documented in this report.

The monitoring data were submitted to Groundwater Stats Consulting, LLC for statistical analysis. Confidence intervals were calculated for Appendix IV parameters at the compliance wells to assess whether Appendix IV parameters were present at an SSL above previously established GWPS. No SSLs were identified; however, concentrations of Appendix III parameters remained above background. Thus, the unit will remain in assessment monitoring. Certification of the selected statistical methods by a qualified professional engineer is documented in Attachment A. The statistical analysis and certification of the selected methods were completed within 90 days of obtaining the data.

SECTION 2

PRIMARY BOTTOM ASH POND EVALUATION

2.1 Data Validation & QA/QC

During the assessment monitoring program in 2022, two sets of samples (March 2022 and June 2022) were collected for analysis. Samples were collected from each background and compliance well during the June 2022 event, whereas samples were collected only from the compliance well locations during the March 2022 event. Samples from both events were analyzed for all Appendix III and Appendix IV parameters. A summary of data collected during these assessment monitoring events may be found in Table 1.

Chemical analysis was completed by an analytical laboratory certified by the National Environmental Laboratory Accreditation Program (NELAP). Quality assurance and quality control (QA/QC) samples completed by the analytical laboratory included the use of laboratory reagent blanks (LRBs), continuing calibration verification (CCV) samples, and laboratory fortified blanks (LFBs).

A data quality review was completed to assess if the data met the objectives outlined in TCEQ Draft Technical Guidance No. 32 related to groundwater sampling and analysis (TCEQ, 2020). The data were determined usable for supporting project objectives, as documented in the review memorandum provided in Attachment B. The analytical data were imported into a Microsoft Access database, where checks were completed to assess the accuracy of sample location identification and analyte identification. Where necessary, unit conversions were applied to standardize reported units across all sampling events. Exported data files were created for use with the SanitasTM v.9.6.32 statistics software. The export file was checked against the analytical data for transcription errors and completeness.

2.2 Statistical Analysis

Time series plots and results for all completed statistical tests are provided in Attachment C. The data obtained in March and June 2022 were screened for potential outliers. No outliers were identified for this event.

2.2.1 Evaluation of Potential Appendix IV SSLs

A confidence interval was constructed for each Appendix IV parameter at each compliance well. Confidence limits were generally calculated parametrically (α = 0.01); however, non-parametric confidence limits were calculated in some cases (e.g., when the data did not appear to be normally distributed or when the non-detect frequency was too high). An SSL was concluded if the lower confidence limit (LCL) exceeded the GWPS (i.e., if the entire confidence interval exceeded the GWPS). Calculated confidence limits are shown in Attachment C. The calculated confidence limits were compared to the GWPSs provided in Table 2. The GWPSs were established as either

the greater value of the background concentration calculated during a previous statistical analysis (Geosyntec, 2022) or the maximum contaminant level (MCL).

No SSLs were identified at the PBAP.

2.2.2 Evaluation of Potential Appendix III SSIs

A review of the Appendix III results was also completed to assess whether concentrations of Appendix III parameters at the compliance wells exceeded background concentrations. Data collected during the June 2022 assessment monitoring event from each compliance well were compared to previously established prediction limits to evaluate results above background values. The results from this event and the prediction limits are summarized in Table 3. The following exceedances of the upper prediction limits (UPLs) or, in the case of pH, values below the lower prediction limits (LPLs) were noted:

- Boron concentrations exceeded the interwell UPL of 0.801 mg/L at AD-8 (1.15 mg/L).
- The reported pH values were below the interwell LPL of 4.8 SU mg/L at AD-15 (4.5 SU).

While the prediction limits were calculated for a one-of-two retesting procedure, SSIs were conservatively assumed if the initial (June 2022) sample was above the UPL or below the LPL. Based on these results, the boron and pH concentrations appear to be above or below the appropriate background concentrations and the unit will remain assessment monitoring.

2.3 Conclusions

An annual and semi-annual assessment monitoring event were conducted in accordance with the CCR Rule. The laboratory and field data were reviewed prior to statistical analysis, with no QA/QC issues identified that prevented data usage. A review of outliers identified no potential outliers in the March and June 2022 data. A confidence interval was constructed at each compliance well for each Appendix IV parameter; SSLs were concluded if the entire confidence interval exceeded the GWPS. **No SSLs were identified.**

The Appendix III results were evaluated to assess whether concentrations of Appendix III parameters exceeded background levels. Boron concentrations exceeded and pH values were below background levels at select downgradient wells.

Based on this evaluation, the PBAP CCR unit will remain in assessment monitoring.

SECTION 3

REFERENCES

Geosyntec Consultants, Inc. (Geosyntec). 2022. Statistical Analysis Summary – Primary Bottom Ash Pond, J. Robert Welsh Plant. February 10, 2022.

Texas Commission on Environmental Quality (TCEQ). 2020. Draft Technical Guidance No. 32. Coal Combustion Residuals Groundwater Monitoring and Corrective Action. May.

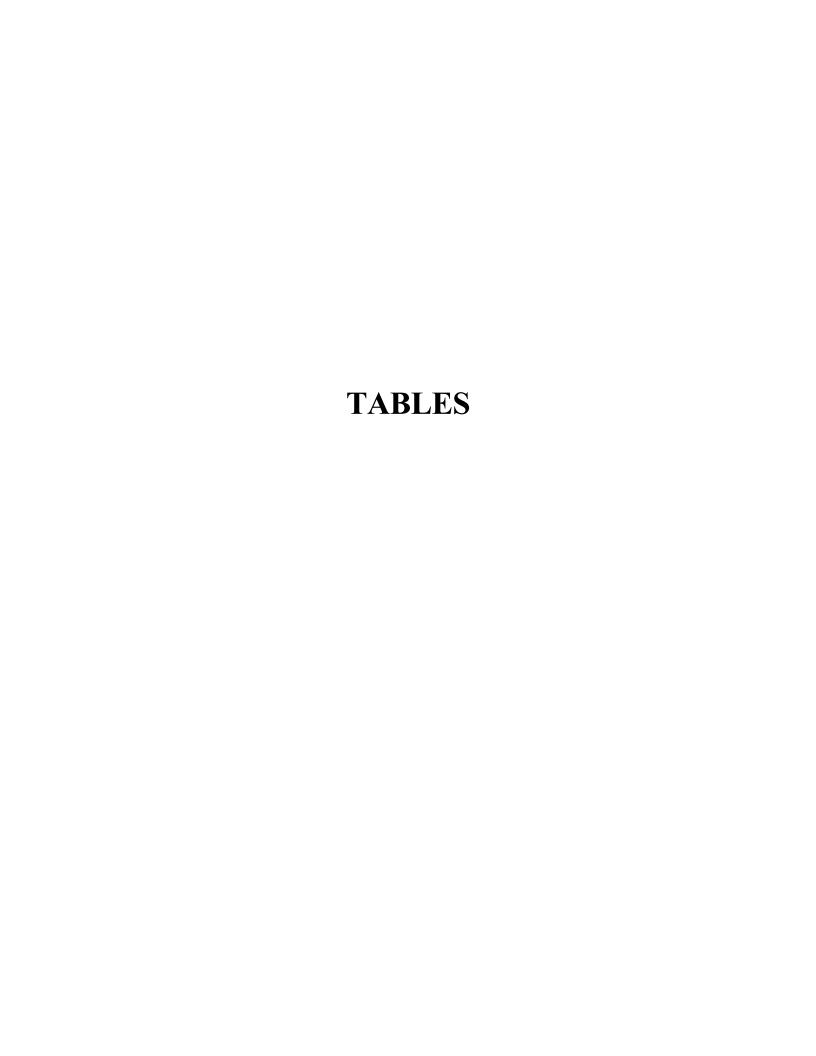


Table 1: Groundwater Data Summary Welsh Plant - Primary Bottom Ash Pond

Well ID		AD-1	AD-5	AI)-8	AI)-9	AD)-15	AD-17
Well Classific	ation	Background	Background	Comp	liance	Comp	liance	Comp	oliance	Background
Parameter	Unit	6/28/2022	6/28/2022	3/1/2022	6/27/2022	3/1/2022	6/27/2022	3/1/2022	6/27/2022	6/28/2022
Antimony	μg/L	0.03 J1	0.1 U1	0.1 U1	0.1 U1	0.1 U1	0.1 U1	0.1 U1	0.1 U1	0.1 U1
Arsenic	μg/L	0.26	3.01	0.27	0.25	0.24	0.87	1.89	3.03	0.53
Barium	μg/L	85.4	51.8	23.6	26.1	55.3	49.7	75.1	78.5	12.6
Beryllium	μg/L	0.995	0.032 J1	0.25 U1	0.05 U1	1.20	0.780	0.207	0.088	0.040 J1
Boron	mg/L	0.768	0.048 J1	1.16	1.15	0.148	0.174	0.076	0.329	0.112
Cadmium	μg/L	0.030	0.02 U1	0.018 J1	0.018 J1	0.266	0.244	0.011 J1	0.015 J1	0.011 J1
Calcium	mg/L	6.76	32.9	18.7	19.5	12.0	109	2.63	3.25	167
Chloride	mg/L	2.32	15.3	15.9	15.9	18.3	59.8	25.0	30.9	37.0
Chromium	μg/L	0.37	0.22	0.23	0.41	0.74	0.59	0.55	0.38	0.40
Cobalt	μg/L	2.34	12.8	5.10	3.15	19.1	19.5	2.76	3.54	41.3
Combined Radium	pCi/L	3.69	2.06	1.31	1.39	3.35	3.52	2.01	2.15	6.54
Fluoride	mg/L	0.22	0.15	0.97	0.82	0.15	0.09 J1	0.05 J1	0.09	0.09 J1
Lead	μg/L	0.33	0.2 U1	0.2 U1	0.07 J1	0.08 J1	0.27	0.09 J1	0.05 J1	0.12 J1
Lithium	mg/L	0.00855	0.161	0.0654	0.0777	0.205	0.539	0.00208	0.00573	0.267
Mercury	μg/L	0.002 J1	0.005 U1	0.005 Q1, U1	0.005 U1	0.003 Q1, J1	0.005 U1	0.003 Q1, J1	0.005 U1	0.003 J1
Molybdenum	μg/L	0.5 U1	0.1 J1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.5 U1	0.1 J1
Selenium	μg/L	8.35	0.5 U1	0.5 U1	0.5 U1	0.26 J1	0.46 J1	0.29 J1	0.63	0.5 U1
Sulfate	mg/L	74.7	146	138	156	109	933	4.29	18.9	1,050
Thallium	μg/L	0.05 J1	0.05 J1	0.13 J1	0.11 J1	0.22	0.22	0.05 J1	0.07 J1	0.2 U1
Total Dissolved Solids	mg/L	180	310	260	330	300	1,460	80	170	1,740
рН	SU	4.87	5.88	5.92	5.93	4.79	4.79	4.37	4.5	5.17

Notes:

μg/L: micrograms per liter mg/L: milligrams per liter pCi/L: picocuries per liter SU: standard unit

U1: Non-detect value. For statistical analysis, parameters which were not detected were replaced with the reporting limit.

J1: Estimated value. Parameter was detected in concentrations below the reporting limit.

Q1: Sample was received in inappropriate sample container.

Table 2: Appendix IV Groundwater Protection Standards Welsh Plant - Primary Bottom Ash Pond

Constituent Name	MCL	Calculated UTL	GWPS
Antimony, Total (mg/L)	0.00600	0.00317	0.00600
Arsenic, Total (mg/L)	0.0100	0.00628	0.0100
Barium, Total (mg/L)	2.00	0.630	2.00
Beryllium, Total (mg/L)	0.00400	0.000762	0.00400
Cadmium, Total (mg/L)	0.00500	0.00400	0.00500
Chromium, Total (mg/L)	0.100	0.00235	0.100
Cobalt, Total (mg/L)	n/a	0.0748	0.0748
Combined Radium, Total (pCi/L)	5.00	3.84	5.00
Fluoride, Total (mg/L)	4.00	0.583	4.00
Lead, Total (mg/L)	n/a	0.00338	0.00338
Lithium, Total (mg/L)	n/a	0.394	0.394
Mercury, Total (mg/L)	0.00200	0.0000330	0.00200
Molybdenum, Total (mg/L)	n/a	0.00243	0.00243
Selenium, Total (mg/L)	0.0500	0.0160	0.0500
Thallium, Total (mg/L)	0.00200	0.00125	0.00200

Notes:

MCL = Maximum Contaminant Level

GWPS = Groundwater Protection Standard

Calculated UTL (Upper Tolerance Limit) represents site-specific background values.

Grey cells indicate the GWPS is based on the calculated UTL, which is either higher than the MCL or an MCL does not exist.

Table 3: Appendix III Data Summary Welsh - Primary Bottom Ash Pond

Analyte	Unit	Description	AD-8	AD-9	AD-15	
Analyte	Oiit	Description	6/27/2022	6/27/2022	6/27/2022	
Boron	mg/L	Interwell Background Value (UPL)		0.801		
Boron	mg/L	Analytical Result	1.15	0.174	0.329	
Calcium	ma/I	Intrawell Background Value (UPL)	30.2	292	4.97	
Calcium	mg/L	Analytical Result	19.5	109	3.25	
Chloride	mg/L	Intrawell Background Value (UPL)	27.6	127	38.6	
Cilioride		Analytical Result	15.9	59.8	30.9	
F1: 1-	mg/L	Intrawell Background Value (UPL)	1.02	0.766	1.00	
Fluoride		Analytical Result	0.82	0.09	0.09	
		Interwell Background Value (UPL)		7.0		
рН	SU	Interwell Background Value (LPL)	4.8			
		Analytical Result	5.9	4.8	4.5	
Sulfate		Intrawell Background Value (UPL)	214	2,370	32.5	
Sultate	mg/L	Analytical Result	156	933	18.9	
Total Dissolved Solids	/T	Intrawell Background Value (UPL)	514	2,870	282	
Total Dissolved Solids	mg/L	Analytical Result	330	1,460	170	

Notes:

UPL: Upper prediction limit LPL: Lower prediction limit

Bold values exceed the background value.

Background values are shaded gray.

ATTACHMENT A Certification by Qualified Professional Engineer

Certification by Qualified Professional Engineer

I certify that the selected and above described statistical method is appropriate for evaluating the groundwater monitoring data for the Welsh Primary Bottom Ash Pond CCR management area and that the requirements of 30 TAC § 352.931(a) have been met.

DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Enthony Miller Signature

TEXAS 112498 License Number

Licensing State

11.07.22

DAVID ANTHONY MILLER

Date

ATTACHMENT B Data Quality Review Memorandum



500 West Wilson Bridge Road, Suite 250 Worthington, Ohio 43085 PH 614.468.0415 FAX 614.468.0416 www.geosyntec.com

Memorandum

Date: October 19, 2022

To: David Miller (AEP)

Copies to: Jill Parker-Witt (AEP)

From: Allison Kreinberg (Geosyntec)

Subject: Data Quality Review – Welsh Power Plant

June 2022 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in June 2022. The groundwater samples were collected to comply with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, "CCR Rule"). 40 CFR 257 Appendix III and IV constituents were analyzed.

The following sample data groups (SDGs) were associated with the thirty-six (36) groundwater samples collected during the June 2022 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222057
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222059
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222060
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222061
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222084
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222085
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222086
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 222087

Data Quality Review – Welsh June 2022 Data October 19, 2022 Page 2

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

The following data quality issues were identified:

- As reported in SDG 222084, barium, boron, chromium, cobalt, and lithium were detected in the equipment blank sample "EQ BLANK BACKGROUND" collected on 6/28/2022. The detected boron concentration in the equipment blank (0.027 mg/L) was more than 10% of the detected value in sample AD-5 (0.048 mg/L), which could result in high bias in the AD-5 boron results. Likewise, the detected chromium concentration in the equipment blank (0.84 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.
- As reported in SDG 222085, barium, boron, chromium, cobalt, and lithium were detected in the equipment blank sample "EQUIPMENT BLANK PBAP" collected on 6/27/2022. The detected boron concentration in the equipment blank (0.024 mg/L) was more than 10% of the detected value in sample AD-9 (0.174 mg/L), which could result in high bias in the AD-9 boron results. Likewise, the detected chromium concentration in the equipment blank (0.84 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.
- As reported in SDG 222086, barium, boron, chromium, cobalt, and lithium were detected in the equipment blank sample "EQUIPMENT BLANK LANDFILL" collected on 6/27/2022. The detected chromium concentration in the equipment blank (0.96 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.
- As reported in SDG 222087, barium, boron, chromium, and cobalt were detected in the
 equipment blank sample "EQUIPMENT BLANK BASP" collected on 6/28/2022. The
 detected boron concentration in the equipment blank (0.024 mg/L) was more than 10% of

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¹ TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

Data Quality Review – Welsh June 2022 Data October 19, 2022 Page 3

the detected values for boron in all groundwater samples, which could result in high bias for all groundwater boron results. Likewise, the detected chromium concentration in the equipment blank (0.90 μ g/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.

- As reported in SDG 222085, the relative percent difference (RPD) for chromium concentrations from parent sample "AD-15" and duplicate sample "DUPLICATE PBAP" was 27%. The AD-15 chromium results should be considered estimated.
- As reported in SDG 222086, the matrix spike (MS) recovery (68.2%) and matrix spike duplicate (MSD) recovery (68%) for beryllium were below the acceptable range of 75-125%. The associated sample (AD-11) was flagged M1: the associated MS or MSD recovery was outside acceptance limits. The AD-11 beryllium results should be considered estimated.
- As reported in SDG 222060, the RPD for total dissolved solids (TDS; 17.5%) in the laboratory duplicate was above the acceptable limit of 10%. The associated sample (AD-14) was flagged P1: the precision between duplicate results was above acceptance limits. The AD-14 TDS results should be considered estimated.

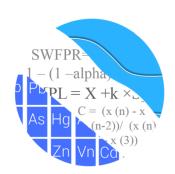
Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data use since the affected results are considered estimated or have elevated reporting limits, the data are considered usable for supporting project objectives.

ATTACHMENT C Statistical Analysis Output

GROUNDWATER STATS CONSULTING

September 19, 2022

Geosyntec Consultants Attn: Ms. Allison Kreinberg 500 W. Wilson Bridge Road, Suite 250 Worthington, OH 43085



Re: Welsh PBAP – March & June 2022 Assessment Monitoring Report

Dear Ms. Kreinberg,

Groundwater Stats Consulting, formerly the statistical consulting division of Sanitas Technologies, is pleased to provide the statistical analysis of groundwater data for the March and June 2022 Assessment Monitoring report for American Electric Power Inc.'s Welsh PBAP. The analysis complies with the Texas Commission of Environmental Quality Rule 30 TAC 352 as well as with the United States Environmental Protection Agency (USEPA) Unified Guidance (2009).

Sampling began at the site for the Coal Combustion Residual (CCR) program in 2016. The monitoring well network, as provided by Geosyntec Consultants, consists of the following:

Upgradient wells: AD-1, AD-5, and AD-17

Downgradient wells: AD-8, AD-9, and AD-15

Data were sent electronically, and the statistical analysis was reviewed by Andrew Collins, Project Manager of Groundwater Stats Consulting (GSC). The analysis was conducted according to the Statistical Analysis Plan prepared by GSC and approved by Dr. Cameron, PhD Statistician with MacStat Consulting, primary author of the USEPA Unified Guidance, and Senior Advisor to GSC.

The CCR Assessment Monitoring program consists of the following constituents:

 Appendix IV (Assessment Monitoring) – antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, combined radium 226 + 228, fluoride, lead, lithium, mercury, molybdenum, selenium, and thallium

Time series plots for Appendix IV parameters are provided for all wells and constituents; and are used to evaluate concentrations over the entire record (Figure A). Additionally, box plots are included for all constituents at upgradient and downgradient wells (Figure B). For all constituents, a substitution of the most recent reporting limit is used for non-detect data. While the reporting limits may vary from well to well, a single reporting limit substitution is used across all wells for a given parameter in the time series plots since the wells are plotted as a group.

The time series plots are used to initially screen for suspected outliers and trends, while the box plots provide visual representation of variation within individual wells and between all wells. Values previously identified and flagged as outliers may be seen in the Outlier Summary following this letter (Figure C) and are plotted in a lighter font and disconnected symbol on the time series graphs. Note that the measured concentrations of most metals for the September 30, 2016 sample event at well AD-15 are very high compared to the rest of the observations and resulted from elevated turbidity levels of >1000 NTU. These values were flagged as outliers as they do not represent the population at this well.

Summary of Statistical Methods – Appendix IV Parameters

Parametric tolerance limits are utilized when the screened historical data follow a normal or transformed-normal distribution. When data cannot be normalized or the majority of data are non-detects, a nonparametric test is utilized. The distribution of data is tested using the Shapiro-Wilk/Shapiro-Francia test for normality. After testing for normality and performing any adjustments as discussed below (USEPA, 2009), data are analyzed using either parametric or non-parametric tolerance limits as appropriate.

- No statistical analyses are required on wells and analytes containing 100% non-detects (USEPA Unified Guidance, 2009, Chapter 6).
- When data contain <15% non-detects in background, simple substitution of one-half the reporting limit is utilized in the statistical analysis. The reporting limit utilized for non-detects is the most recent practical quantification limit (PQL) as reported by the laboratory.

- When data contain between 15-50% non-detects, the Kaplan-Meier non-detect adjustment is applied to the background data. This technique adjusts the mean and standard deviation of the historical concentrations to account for concentrations below the reporting limit.
- Nonparametric tolerance limits are used on data containing greater than 50% nondetects.

Summary of Background Update – Conducted in February 2022

Outlier Analysis

Prior to evaluating Appendix IV parameters, upgradient well data are screened through both visual screening and Tukey's outlier test for potential outliers and extreme trending patterns that would lead to artificially elevated statistical limits. High outliers are also cautiously flagged in the downgradient wells when they are clearly much different from the rest of the data. This is generally a regulatory conservative approach in that it will reduce the variance and thus reduce the width of parametric confidence intervals, although it will also reduce the mean and thus lower the entire interval. The intent is to better represent the actual downgradient mean. All flagged values may be seen on the Outlier Summary following this letter (Figure C) and no changes to previously flagged outliers were made.

Tukey's outlier test on pooled upgradient well data through October 2021 identified outliers for fluoride, lead, and mercury. The values identified by Tukey's test were either similar to concentrations upgradient of the facility or were lower than the respective Maximum Contaminant Level (MCL); therefore, none of these values were flagged as outliers. Although not identified by Tukey's test, the highest value for molybdenum in upgradient well AD-1 and two highest values for cadmium in upgradient well AD-17 were flagged in order to maintain statistical limits that are conservative (i.e., lower) from a regulatory perspective.

Additionally, downgradient well data through October 2021 were screened through visual screening using time series graphs. Since the downgradient well data are used to construct confidence intervals, a regulatory conservative approach is taken in that values that are marginally high relative to the rest of the data are retained unless there is particular justification for excluding them. No new outliers among downgradient wells were flagged during the background update.

Interwell Upper Tolerance Limits

Upper tolerance limits were used to calculate background limits from pooled upgradient well data through October 2021 for Appendix IV parameters (Figure D). For parametric limits a target of 95% confidence and 95% coverage is used. The confidence and coverage levels for nonparametric tolerance limits are dependent upon the number of background samples.

Groundwater Protection Standards

These background limits were compared to the Maximum Contaminant Levels (MCLs) as shown in the Groundwater Protection Standard (GWPS) table following this letter to determine the highest limit for use as the GWPS in the confidence interval comparisons (Figure E).

Evaluation of Appendix IV Parameters – March & June 2022

Time series plots were used to visually identify potential outliers in downgradient wells during the March and June 2022 sample events. When suspected outliers are identified, Tukey's outlier test is used to formally test whether measurements are statistically significant. As mentioned above, high outliers are 'cautiously' flagged in the downgradient wells when measurements are clearly much different from remaining data within a given well. This is intended to be a regulatory conservative approach in that it will reduce the variance and thus reduce the width of parametric confidence intervals; although it will also reduce the mean and thus lower the entire interval. The intent is to better represent the actual downgradient mean. No suspected outliers were identified.

Confidence intervals were then constructed with data through June 2022 on downgradient wells for each of the Appendix IV parameters and compared to the GWPS (i.e., the highest limit of the MCL or background limit as discussed above). Only when the entire confidence interval is above a GWPS is the well/constituent pair considered to exceed its respective standard. No exceedances were noted for any of the well/constituent pairs. A summary of the confidence interval results follows this letter (Figure F).

Thank you for the opportunity to assist you in the statistical analysis of groundwater quality for the Welsh PBAP. If you have any questions or comments, please feel free to contact us.

For Groundwater Stats Consulting,

Tristan Clark

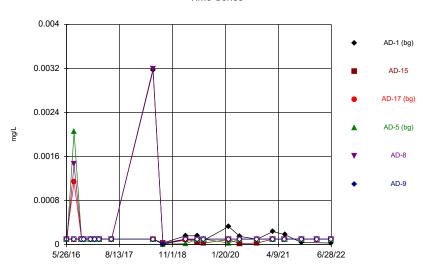
Groundwater Analyst

Tristan Clark

Andrew Collins

Project Manager

Time Series

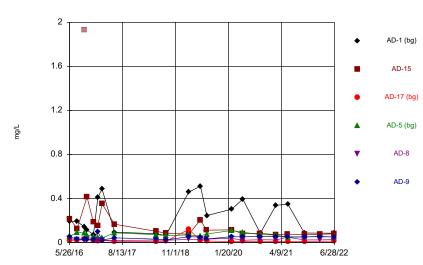


Constituent: Antimony, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

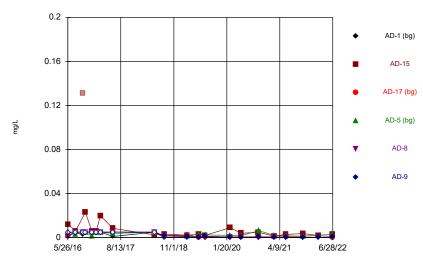
Time Series



Constituent: Barium, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Time Series

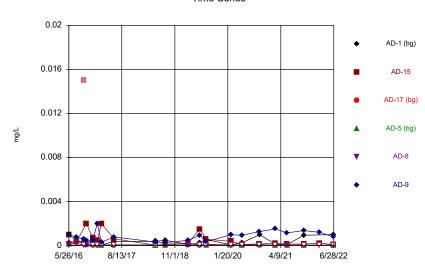


Constituent: Arsenic, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

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Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

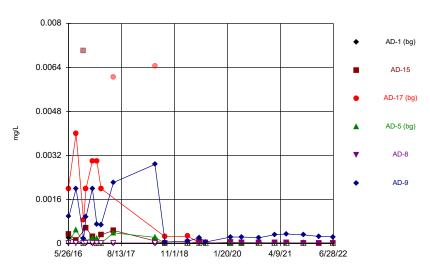
Time Series



Constituent: Beryllium, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Time Series



Constituent: Cadmium, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

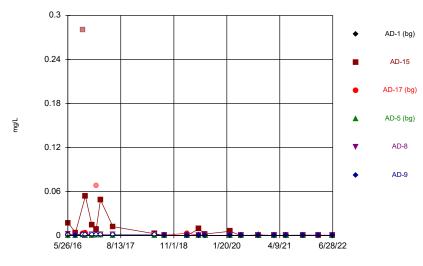
Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series 0.2 AD-1 (bg) 0.16 AD-15 AD-17 (bg) 0.12 AD-5 (bg) 0.08 AD-9 0.04 5/26/16 8/13/17 11/1/18 1/20/20 4/9/21 6/28/22

Constituent: Cobalt, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Time Series



Constituent: Chromium, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

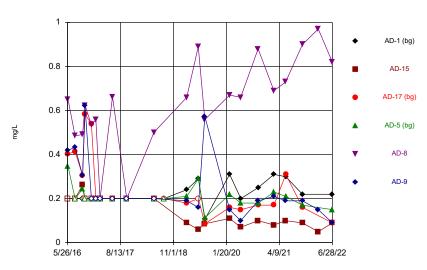
Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Time Series AD-1 (bg) AD-15 AD-17 (bg) AD-15 (bg) AD-8 AD-9

Constituent: Combined Radium 226 + 228 Analysis Run 9/15/2022 9:26 AM View: Appendix IV

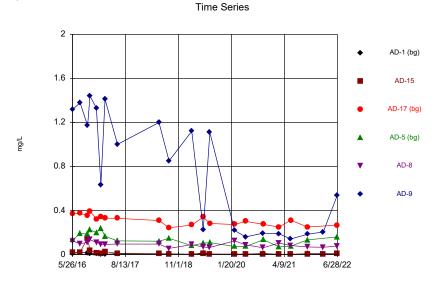
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Constituent: Fluoride, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

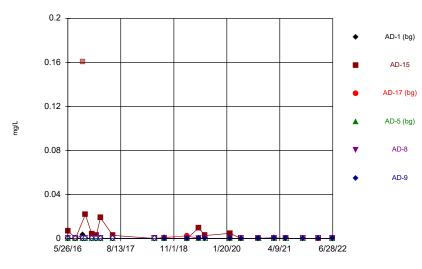
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Constituent: Lithium, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP



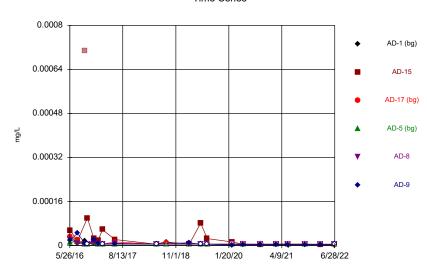


Constituent: Lead, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

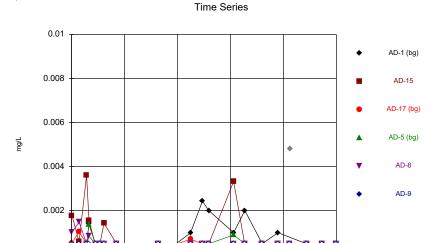
Time Series



Constituent: Mercury, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG Hollow symbols indicate censored values.



Constituent: Molybdenum, total Analysis Run 9/15/2022 9:26 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

1/20/20

4/9/21

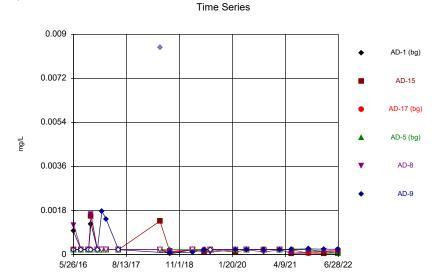
6/28/22

11/1/18

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG Hollow symbols indicate censored values.

5/26/16

8/13/17

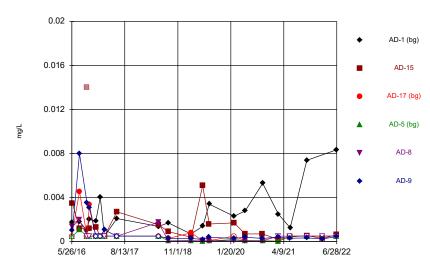


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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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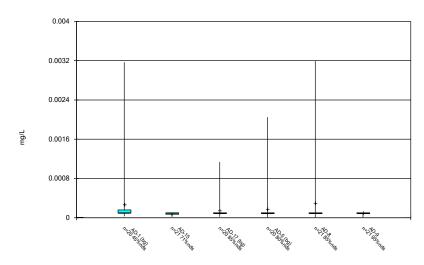
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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

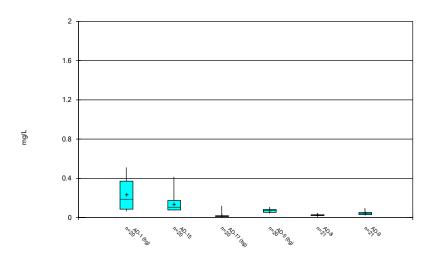


Constituent: Antimony, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

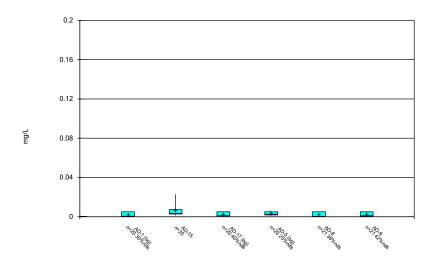
Box & Whiskers Plot



Constituent: Barium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

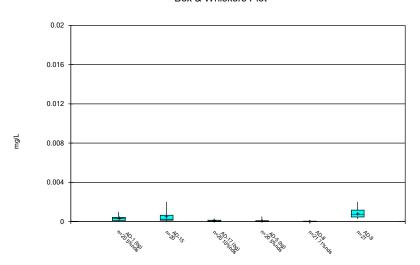


Constituent: Arsenic, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

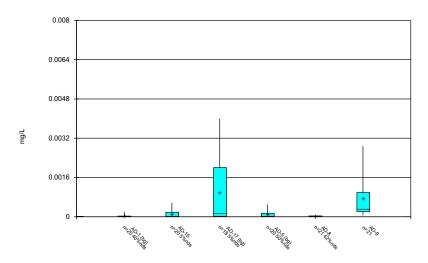
Box & Whiskers Plot



Constituent: Beryllium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

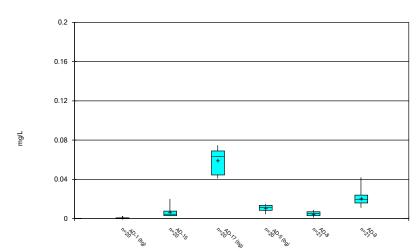


Constituent: Cadmium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

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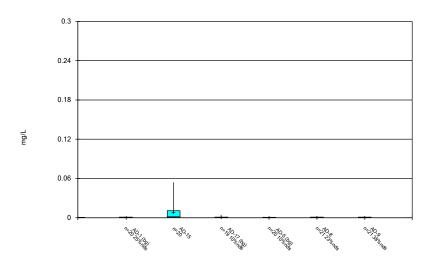
Box & Whiskers Plot



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Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

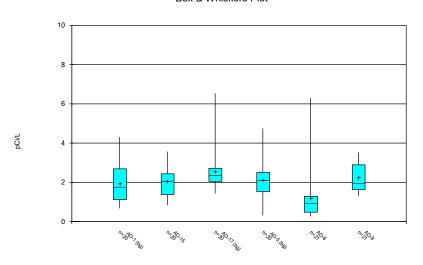


Constituent: Chromium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

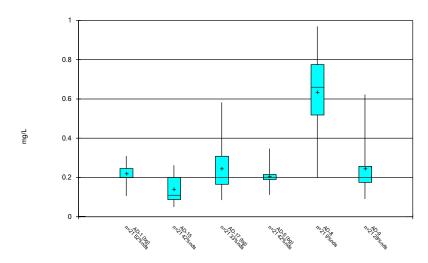
Box & Whiskers Plot



Constituent: Combined Radium 226 + 228 Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

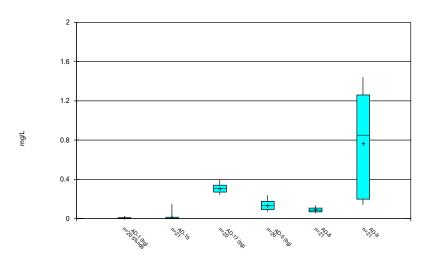


Constituent: Fluoride, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

 ${\sf Sanitas^{\text{\tiny{IM}}}} \ {\sf v.9.6.33} \ {\sf Sanitas} \ {\sf software} \ {\sf utilized} \ {\sf by} \ {\sf Groundwater} \ {\sf Stats} \ {\sf Consulting.} \ {\sf UG}$

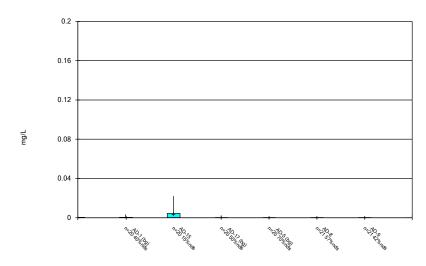
Box & Whiskers Plot



Constituent: Lithium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Box & Whiskers Plot

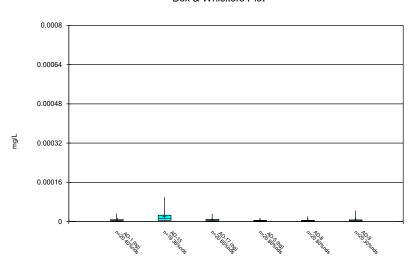


Constituent: Lead, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

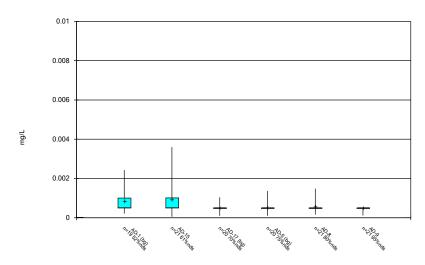


Constituent: Mercury, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

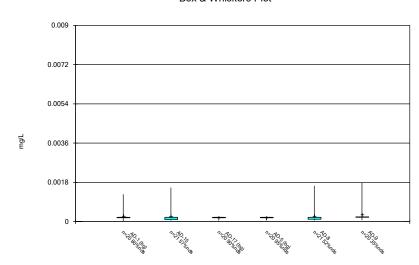


Constituent: Molybdenum, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot

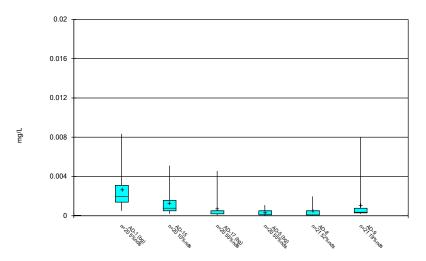


Constituent: Thallium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Box & Whiskers Plot



Constituent: Selenium, total Analysis Run 9/15/2022 9:27 AM View: Appendix IV

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Outlier Summary

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 9/15/2022, 9:28 AM

	AD-15 Arsenic	, _{total} (mg/L) AD-15 Barium	_{, total (mg/L)} AD-15 Berylliu	_{m, total} (mg/L) AD-15 Cadmiul	_{m, total} (mg/L) AD-17 Cadmiu	_{m, total} (mg/L) AD-15 Chromiu	_{um, total} (mg/L) AD-17 Chromiu	_{lm, total} (mg/L) AD-15 Cobalt,	_{total} (mg/L) AD-15 Combin	ed Radium 226 + 228 (pCil AD-15 Lead, total (mg/L)
9/29/2016									9.92 (o)	
9/30/2016	0.131 (o)	1.93 (o)	0.015 (o)	0.007 (o)		0.28 (o)		0.134 (o)		0.161 (o)
1/20/2017							0.068 (o)			
6/8/2017					0.00606 (o)					
5/23/2018										
5/24/2018					0.00646 (o)					
6/2/2021										

AD-15 Mercury, total (mg/L)

AD-1 Molybdenum, total (mg/L)

AD-1 Molybdenum, total (mg/L)

AD-9 Thallium, total (mg/L)

9/29/2016

9/30/2016 0.000707 (o) 0.014 (o)

1/20/2017

6/8/2017

5/23/2018 0.00846 (o)

5/24/2018

6/2/2021 0.0048 (o)

Upper Tolerance Limits

Welsh PBAP Client: Geosyntec Data: Welsh PBAP Printed 2/1/2022, 9:42 AM Std. Dev. %NDs ND Adj. <u>Transform</u> <u>Alpha</u> Constituent <u>Well</u> Upper Lim. Date Observ. Sig. Bg N Bg Mean Method n/a 0.00317 n/a 57 70.18 n/a 0.05373 NP Inter(NDs) Antimony, total (mg/L) n/a n/a n/a n/a n/a Arsenic, total (mg/L) 0.00628 33.33 n/a n/a 0.05373 NP Inter(normality) n/a n/a n/a n/a 57 n/a n/a Barium, total (mg/L) 0.6299 n/a 57 -2.819 1.162 0 None ln(x) 0.05 Inter n/a n/a n/a Beryllium, total (mg/L) n/a 0.0007622 n/a n/a n/a 57 0.05309 0.01886 7.018 None x^(1/3) 0.05 Cadmium, total (mg/L) NP Inter(normality) n/a 0.004 n/a n/a n/a 55 n/a n/a 32.73 n/a n/a 0.05954 Chromium, total (mg/L) n/a 0.00235 n/a n/a n/a 56 -8.217 1.064 16.07 Kaplan-Meier ln(x) 0.05 Inter Cobalt, total (mg/L) 0.0748 0 0.05373 NP Inter(normality) n/a n/a 57 n/a n/a n/a n/a n/a n/a Combined Radium 226 + 228 (pCi/L) 3.838 n/a n/a 57 2.108 0.8532 0 None 0.05 Fluoride, total (mg/L) n/a 0.583 45 0.04607 NP Inter(normality) n/a n/a n/a 60 n/a n/a n/a n/a Lead, total (mg/L) n/a 0.003384 n/a 57 54.39 0.05373 NP Inter(NDs) Lithium, total (mg/L) 0.05373 NP Inter(normality) n/a 0.394 n/a 57 n/a 1.754 n/a n/a n/a n/a n/a Mercury, total (mg/L) 0.000033 n/a 57 63.16 0.05373 NP Inter(NDs) 0.00243 0.05656 NP Inter(NDs) Molybdenum, total (mg/L) n/a 56 67.86 n/a n/a n/a n/a n/a n/a n/a Selenium, total (mg/L) n/a 0.016 n/a 57 1.82 ln(x) 0.05

n/a

n/a

91.23

n/a

0.05373

n/a

NP Inter(NDs)

n/a 57

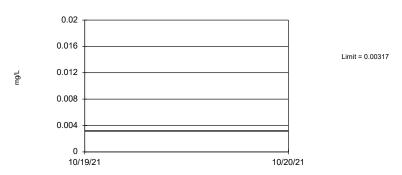
n/a

0.001251 n/a

n/a

Thallium, total (mg/L)

Tolerance Limit Interwell Non-parametric



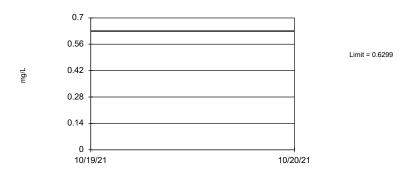
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 70.18% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Antimony, total Analysis Run 2/1/2022 9:40 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

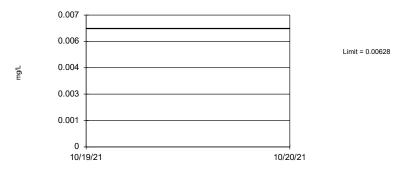
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on natural log transformation): Mean=-2.819, Std. Dev.=1.162, n=57. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9595, critical = 0.944. Report alpha = 0.05.

Tolerance Limit Interwell Non-parametric



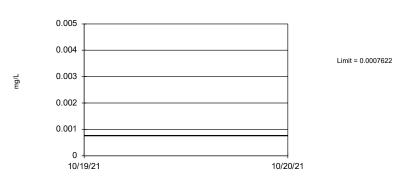
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 33.33% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Arsenic, total Analysis Run 2/1/2022 9:40 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

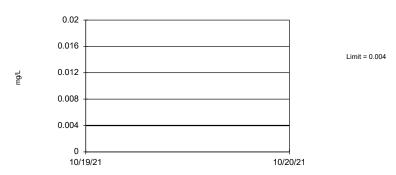
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary (based on cube root transformation): Mean=0.05309, Std. Dev.=0.01886, n=57, 7.018% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.946, critical = 0.944. Report alpha = 0.05.

Tolerance Limit Interwell Non-parametric



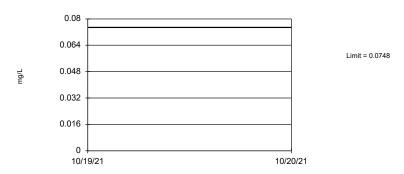
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 55 background values. 32.73% NDs. 91.99% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05954.

Constituent: Cadmium, total Analysis Run 2/1/2022 9:40 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

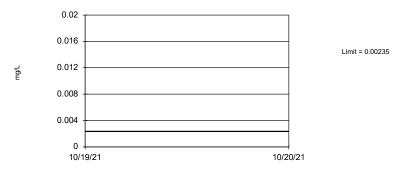
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05. Report alpha = 0.05373.

Tolerance Limit Interwell Parametric



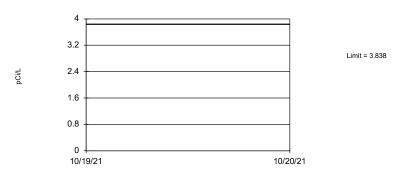
95% coverage. Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-8.217, Std. Dev.=1.064, n=56, 16.07% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9539, critical = 0.942. Report alpha = 0.05.

Constituent: Chromium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

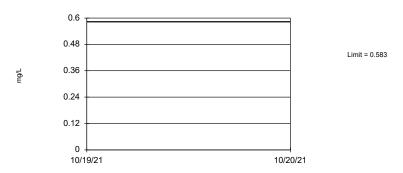
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Parametric



95% coverage. Background Data Summary: Mean=2.108, Std. Dev.=0.8532, n=57. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9636, critical = 0.944. Report alpha = 0.05.

Tolerance Limit Interwell Non-parametric



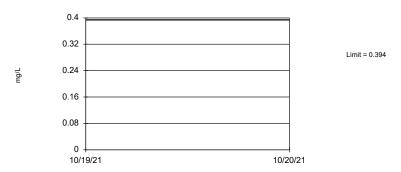
Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 60 background values. 45% NDs. 92.77% coverage at alpha=0.01, 95.12% coverage at alpha=0.05, 99.02% coverage at alpha=0.5. Report alpha = 0.04607.

Constituent: Fluoride, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

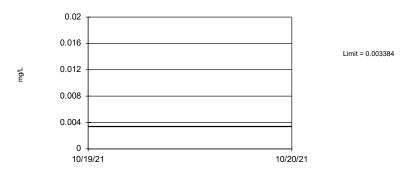
Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 57 background values. 1.754% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Tolerance Limit Interwell Non-parametric



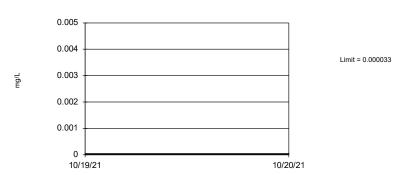
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 54.39% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Lead, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

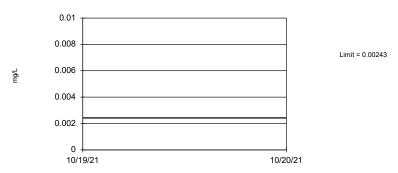
Tolerance Limit Interwell Non-parametric



Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 63.16% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit
Interwell Non-parametric



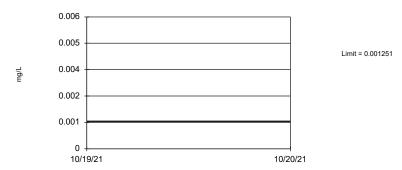
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 56 background values. 67.86% NDs. 91.99% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha=0.05656.

Constituent: Molybdenum, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG

Tolerance Limit
Interwell Non-parametric



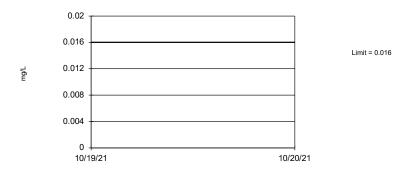
Non-parametric test used in lieu of parametric tolerance limit because censored data exceeded 50%. Limit is highest of 57 background values. 91.23% NDs. 92.38% coverage at alpha=0.01; 94.73% coverage at alpha=0.05; 98.63% coverage at alpha=0.5. Report alpha = 0.05373.

Constituent: Thallium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.32 Groundwater Stats Consulting. UG





95% coverage. Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-7.827, Std. Dev.=1.82, n=57, 36.84% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9462, critical = 0.9444. Report alpha = 0.05.

Constituent: Selenium, total Analysis Run 2/1/2022 9:41 AM View: UTLs

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

WELSH PBAP GWPS								
		Background						
Constituent Name	MCL	Limit	GWPS					
Antimony, Total (mg/L)	0.006	0.0032	0.006					
Arsenic, Total (mg/L)	0.01	0.0063	0.01					
Barium, Total (mg/L)	2	0.63	2					
Beryllium, Total (mg/L)	0.004	0.00076	0.004					
Cadmium, Total (mg/L)	0.005	0.004	0.005					
Chromium, Total (mg/L)	0.1	0.0024	0.1					
Cobalt, Total (mg/L)	n/a	0.075	0.075					
Combined Radium, Total (pCi/L)	5	3.84	5					
Fluoride, Total (mg/L)	4	0.58	4					
Lead, Total (mg/L)	n/a	0.0034	0.0034					
Lithium, Total (mg/L)	n/a	0.39	0.39					
Mercury, Total (mg/L)	0.002	0.000033	0.002					
Molybdenum, Total (mg/L)	n/a	0.0024	0.0024					
Selenium, Total (mg/L)	0.05	0.016	0.05					
Thallium, Total (mg/L)	0.002	0.0013	0.002					

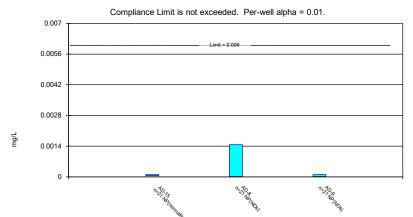
^{*}MCL = Maximum Contaminant Level

^{*}GWPS = Groundwater Protection Standard

Confidence Interval - All Results (No Significant)

		Welsh PBAP	Client: Geosynt	tec Data: W	elsh PE	BAP F	Printed 9/16/	2022, 3:53 PM		
Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	<u>N</u>	%NDs	<u>Transform</u>	Alpha	Method
Antimony, total (mg/L)	AD-15	0.0001	0.00005	0.006	No	21	71.43	No	0.01	NP (normality)
Antimony, total (mg/L)	AD-8	0.001461	0.00001	0.006	No	21	85.71	No	0.01	NP (NDs)
Antimony, total (mg/L)	AD-9	0.0001	0.00001	0.006	No	21	95.24	No	0.01	NP (NDs)
Arsenic, total (mg/L)	AD-15	0.007857	0.003046	0.01	No	20	0	x^(1/3)	0.01	Param.
Arsenic, total (mg/L)	AD-8	0.005	0.0003	0.01	No	21	38.1	No	0.01	NP (normality)
Arsenic, total (mg/L)	AD-9	0.005	0.00027	0.01	No	21	42.86	No	0.01	NP (normality)
Barium, total (mg/L)	AD-15	0.184	0.0769	2	No	20	0	No	0.01	NP (normality)
Barium, total (mg/L)	AD-8	0.02933	0.02231	2	No	21	0	x^(1/3)	0.01	Param.
Barium, total (mg/L)	AD-9	0.05271	0.03493	2	No	21	0	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	AD-15	0.0007295	0.0001892	0.004	No	20	0	sqrt(x)	0.01	Param.
Beryllium, total (mg/L)	AD-8	0.0001145	0.00003	0.004	No	21	71.43	No	0.01	NP (normality)
Beryllium, total (mg/L)	AD-9	0.001103	0.0006009	0.004	No	21	0	No	0.01	Param.
Cadmium, total (mg/L)	AD-15	0.0003194	0.000011	0.005	No	20	5	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-8	0.001	0.000021	0.005	No	21	42.86	No	0.01	NP (normality)
Cadmium, total (mg/L)	AD-9	0.0008845	0.0002385	0.005	No	21	0	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	AD-15	0.009726	0.0009452	0.1	No	20	0	x^(1/3)	0.01	Param.
Chromium, total (mg/L)	AD-8	0.000483	0.0001533	0.1	No	21	23.81	sqrt(x)	0.01	Param.
Chromium, total (mg/L)	AD-9	0.000525	0.0003495	0.1	No	21	38.1	sqrt(x)	0.01	Param.
Cobalt, total (mg/L)	AD-15	0.007461	0.003664	0.075	No	20	0	ln(x)	0.01	Param.
Cobalt, total (mg/L)	AD-8	0.006065	0.003421	0.075	No	21	0	No	0.01	Param.
Cobalt, total (mg/L)	AD-9	0.02404	0.0166	0.075	No	21	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-15	2.503	1.574	5	No	20	0	No	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-8	1.333	0.5672	5	No	21	0	ln(x)	0.01	Param.
Combined Radium 226 + 228 (pCi/L)	AD-9	2.608	1.837	5	No	21	0	No	0.01	Param.
Fluoride, total (mg/L)	AD-15	1	0.086	4	No	21	42.86	No	0.01	NP (normality)
Fluoride, total (mg/L)	AD-8	0.8056	0.6169	4	No	21	9.524	No	0.01	Param.
Fluoride, total (mg/L)	AD-9	0.2832	0.1361	4	No	21	28.57	ln(x)	0.01	Param.
Lead, total (mg/L)	AD-15	0.002486	0.0002351	0.0034	No	20	15	ln(x)	0.01	Param.
Lead, total (mg/L)	AD-8	0.0002	0.00007	0.0034	No	21	57.14	No	0.01	NP (normality)
Lead, total (mg/L)	AD-9	0.0002	80000.0	0.0034	No	21	42.86	No	0.01	NP (normality)
Lithium, total (mg/L)	AD-15	0.01364	0.004177	0.39	No	21	0	ln(x)	0.01	Param.
Lithium, total (mg/L)	AD-8	0.1028	0.07827	0.39	No	21	0	No	0.01	Param.
Lithium, total (mg/L)	AD-9	1.32	0.194	0.39	No	21	0	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-15	0.000054	0.000005	0.002	No	19	36.84	No	0.01	NP (normality)
Mercury, total (mg/L)	AD-8	800000.0	0.000005	0.002	No	20	80	No	0.01	NP (NDs)
Mercury, total (mg/L)	AD-9	0.00000739	0.000003	0.002	No	20	30	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-15	0.001427	0.0004635	0.0024	No	21	61.9	No	0.01	NP (normality)
Molybdenum, total (mg/L)	AD-8	0.0008389	0.00016	0.0024	No	21	80.95	No	0.01	NP (NDs)
Molybdenum, total (mg/L)	AD-9	0.0005	0.00011	0.0024	No	21	95.24	No	0.01	NP (NDs)
Selenium, total (mg/L)	AD-15	0.001692	0.0005996	0.05	No	20	10	sqrt(x)	0.01	Param.
Selenium, total (mg/L)	AD-8	0.00137	80000.0	0.05	No	21	52.38	No	0.01	NP (normality)
Selenium, total (mg/L)	AD-9	0.001042	0.0003	0.05	No	21	19.05	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-15	0.00137	0.00009	0.002	No	21	57.14	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-8	0.0005	0.00011	0.002	No	21	52.38	No	0.01	NP (normality)
Thallium, total (mg/L)	AD-9	0.0002857	0.00008587	0.002	No	20	35	ln(x)	0.01	Param.

Non-Parametric Confidence Interval



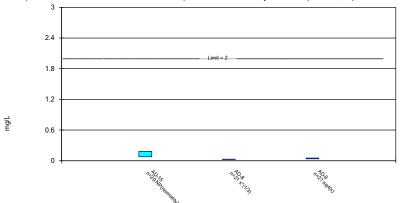
Constituent: Antimony, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

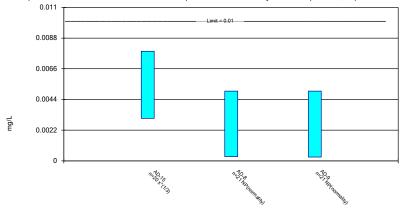


Constituent: Barium, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



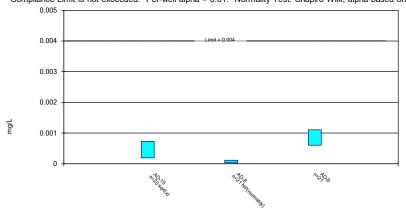
Constituent: Arsenic, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

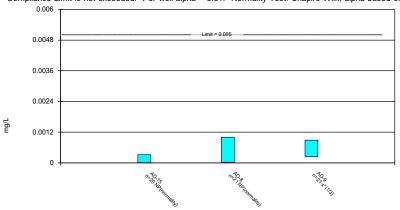
Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



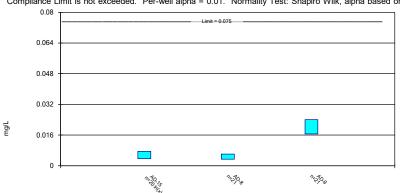
Constituent: Cadmium, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

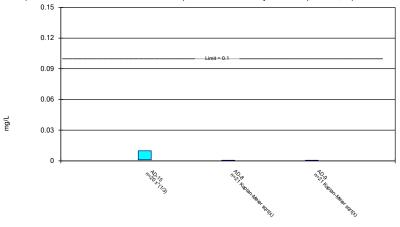
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



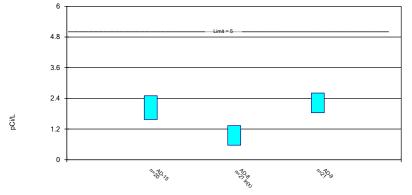
Constituent: Chromium, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

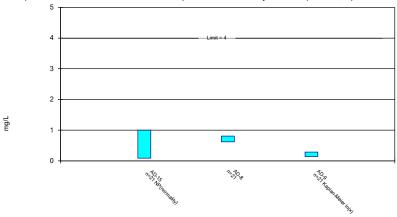
Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



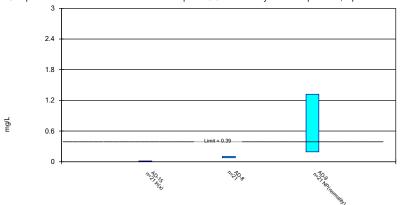
Constituent: Fluoride, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.

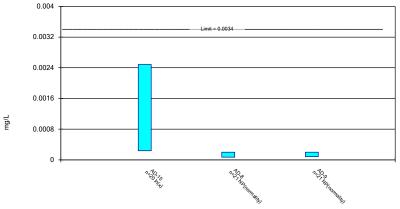


Constituent: Lithium, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



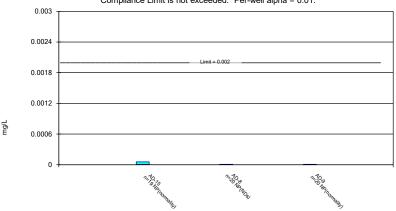
Constituent: Lead, total Analysis Run 9/16/2022 3:52 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.



Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Non-Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01.

0.003

0.0024

0.0018

0.0012

0.0006

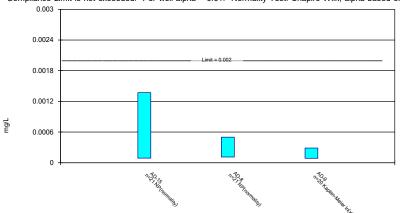
Constituent: Molybdenum, total Analysis Run 9/16/2022 3:53 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



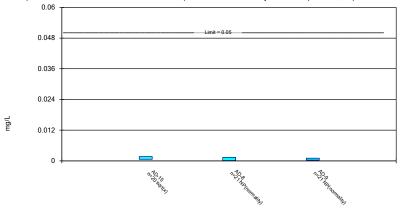
Constituent: Thallium, total Analysis Run 9/16/2022 3:53 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP

Sanitas™ v.9.6.33 Sanitas software utilized by Groundwater Stats Consulting. UG

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Selenium, total Analysis Run 9/16/2022 3:53 PM View: Confidence Intervals

Welsh PBAP Client: Geosyntec Data: Welsh PBAP



500 West Wilson Bridge Road, Suite 250 Worthington, Ohio 43085 PH 614.468.0415 FAX 614.468.0416 www.geosyntec.com

Memorandum

Date: January 18, 2023

To: David Miller (AEP)

Copies to: Jill Parker-Witt (AEP)

From: Allison Kreinberg (Geosyntec)

Subject: Data Quality Review – Welsh Power Plant

October-November 2022 Sampling Event

This memorandum summarizes the findings of a data quality review for groundwater samples collected at the Welsh Power Plant, located in Pittsburg, Texas in October and November 2022. The groundwater samples were collected to comply with the Texas Commission on Environmental Quality's (TCEQ's) regulations regarding the disposal of coal combustion residuals (CCRs) in landfills and surface impoundments (Title 30 Chapter 352, "CCR Rule"). 40 CFR 257 Appendix III and IV constituents were analyzed.

The following sample data groups (SDGs) were associated with the twenty-one (21) groundwater samples collected during the October and November 2022 sampling event and are reviewed in this memorandum:

- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223477
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223481
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223483
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223484
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223509
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223510
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223511
- Dolan Chemical Laboratory (Groveport, Ohio) Job ID # 223515

Data Quality Review – Welsh November 2022 Data January 18, 2023 Page 2

The data included in these SDGs were reviewed to assess if they met the objectives outlined in TCEQ Draft Technical Guideline No. 32¹ prior to submittal of this data to TCEQ.

The following data quality issues were identified:

- As reported in SDG 223509, chromium and cobalt were detected in the equipment blank sample "EQUIPMENT BLANK BASP" collected on 11/1/2022. The detected chromium concentration in the equipment blank (0.53 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. The detected cobalt concentration in the equipment blank (0.145 μg/L) was more than 10% of the detected value in sample AD-4C (0.757 μg/L), which could result in high bias in the AD-4C cobalt results.
- As reported in SDG 222510, barium, boron, chromium, cobalt, lithium, and molybdenum were detected in the equipment blank sample "EB Background" collected on 11/1/2022. The detected boron concentration in the equipment blank (0.01 mg/L) was more than 10% of the detected value in samples AD-5 (0.041 mg/L) and AD-17 (0.097 mg/L), which could result in high bias in the AD-5 and AD-17 boron results. Likewise, the detected chromium concentration in the equipment blank (0.52 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. The detected cobalt concentration in the equipment blank (0.161 μg/L) was more than 10% of the detected value in samples AD-1 (1.17 μg/L) and "Dup-Background" (1.17 μg/L), which could result in high bias in the AD-1 and duplicate cobalt results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.
- As reported in SDG 223511, chromium, cobalt, lithium, and molybdenum were detected in the equipment blank sample "EQUIPMENT BLANK PBAP" collected on 10/31/2022. The detected chromium concentration in the equipment blank (0.53 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. The estimated molybdenum concentration in the equipment blank (0.2 μg/L) was more than 10% of the estimated value in sample AD-8 (0.2 μg/L), which could result in high bias in the AD-8 molybdenum results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.

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¹ TCEQ. Topic: Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action: Technical Guidance No. 32. May 2020.

Data Quality Review – Welsh November 2022 Data January 18, 2023 Page 3

- As reported in SDG 223513, chromium, cobalt, lithium, and molybdenum were detected in the equipment blank sample "EQUIPMENT BLANK LF" collected on 10/31/2022. The detected chromium concentration in the equipment blank (0.7 μg/L) was more than 10% of the detected values for chromium in all groundwater samples, which could result in high bias for all groundwater chromium results. The estimated molybdenum concentration in the equipment blank (0.3 μg/L) was more than 10% of the estimated value in samples AD-13 (0.2 μg/L) and AD-14 (0.4 μg/L), which could result in high bias in the AD-13 and AD-14 molybdenum results. All other equipment blank detections were less than 10% of the detected values in groundwater and would not result in a high bias.
- As reported in SDG 223510, the relative percent difference (RPD) for chromium concentrations from parent sample "AD-1" and duplicate sample "Dup Background" was 41%. The AD-1 chromium results should be considered estimated.
- As reported in SDG 223510, the RPD for radium-226 (77.1%) in the laboratory duplicate was above the acceptable limit of 25%. The "AD-1" radium-226 results should be considered estimated.
- As reported in SDG 223509, the matrix spike (MS) recovery (47.8%) and matrix spike duplicate (MSD) recovery (35.3%) for lithium were below the acceptable range of 75-125%. The associated sample (AD-3) was flagged M1: the associated MS or MSD recovery was outside acceptance limits. The AD-3 lithium results should be considered estimated.

Based on these findings, the majority of the data reported in these SDGs are considered accurate and complete. Although the QC failures mentioned above will result in some limitations of data use since the affected results are considered estimated or have elevated reporting limits, the data are considered usable for supporting project objectives.

APPENDIX 3 - NA

Alternate source demonstrations are included in this appendix. Alternate sources are sources or reasons that explain that statistically significant increases over background or statistically significant levels above the groundwater protection standard are not attributable to the CCR unit.

APPENDIX 4 - NA

A summary of any transition between monitoring programs or an alternate monitoring frequency, for example the date and circumstances for transitioning from detection monitoring to assessment monitoring

APPENDIX 5- NA

Reports documenting monitoring well plugging and abandonment or well installation are included in the appendix. or other information required to be included in the annual report such as program related notification or assessment of corrective measures.

APPENDIX 6

Field reports and analytical reports.

CCR Groundwater Monitoring Well Inspection Form

~~~		Comments			NTW 20.38		DTW 27,38	DT1/1457	NTW 18 49	1	DIW 7.66	DTW 23 18	DIW 7.53	NTW 1027
3-1-22	Mark July	Well Properly Labeled	)	1	)	)		2	)	).	7	)	1	\
Sampling Period:	Signature:	Well Housing and Pad in Good Shape	)	1	7	\		1	)	\	(	1	\	\
S 0	S	Access to Well Maintained	1	\	1	1	\	`	1	1	\	\	\	)
	Essic	Well Locked After Sampling	1	)	1	\	)	1	\	\	/	\	(	\
Welsh		Lock Functioning	>	)	\	\	)		\	Z	/	1	(	\
	g Contrac	Well	1	)	1	)	>	1	1	>	\	1	1	(
Facility:	Sampling Contractor:	Well No.	AD 14	AD-11	AD-10	AD-15	AD-16R	AD. 44	AD-4	AD-418	AD4C	AD-17	AD-(8	An-12

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

4N-23

DTW (0.05

## **CCR Groundwater Monitoring Well Inspection Form**

MAACH 2022	Laty!
Sampling Period:	Signature:
IEUSH PP	CAGIF ENVIRONMENTAL
Facility: $A \ell \rho \nu$	Sampling Contractor: _

	13,88	58.21	21,53	17.99	15,24	9.30		55'2)			
Comments											
Well Properly Labeled	>	>	7	>	>	7	>		1	/	
Well Housing and Pad in Good Shape	>	>	>	\	>	>	>		>	1	
Access to Well Maintained	>		>	>	>	>	>	>	>		
Well Locked After Sampling	}			>	7	>	>	>	>		
Lock Functioning	>	>	>	1	>	>	<i>\</i>	/	>	>	
Well	/	>	>	>	>	>	1	>	>	>	
Well No.	A0-05	A0-06	A0-12	AD-01	AD-02	A0-03	A0-08	A0-07	90-04	A10-13	

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

	•		
Facility Name	Afro wersty pp		
Sample by	Kinny MiDanged	Sample Location ID	140~08

Depth to water, feet (TOC)	[5,3]
1easured Total Depth, feet (TOC)	10.62

Depth to water date

	Temperature	() ()	18,29	19,75	20,48	2002							
	ORP	(mV)	417	915	5/5	111							
	D.0.	(mg/L)	18,50	10,53	5,57	4.24							
	Turbidity	(N.T.U)	6115	20.02	33,1	34,6							
	Spec Cond	(µS/cm)	458	"Jhh	いたが	441							
	Hd	(S.U.)	60.03	6.97	5,93	5,92							
	Flow Rate	(mL/min)	174	174	174	174							
Purge Stabilization Data	Water Depth	(trom IOC)	15.61	15,64	15,66	15,67							
Purge Stab	Time		8760	0 933	0938	8460							

Total volume purged	
Sample appearance	W41)
Sample time	5hho 241450
Sample date	72/10/50

Facility Name	Ato WISH		
Sample by	Kinny M. Donigell	Sample Location ID	A0-09

Depth to water, feet (TOC) 13, 8 $\ell$ Measured Total Depth, feet (TOC) 3 $\ell$ ,  $\gamma$  $\zeta$ 

10.41		te 03/01/27
Sample Location		Depth to water date

	Spec Cond Turbidity D.O.	(mS/cm) (N.T.U) (mg/L) (mV)	367 13,7 19,43	370 0,0 585 408	371 0:0 4:30	378 0.0 4.26 391	371 0,3 4,23 387							
					L									
	Turbidity	(N.T.U)	13,7	0.0	0.0	0.0	0.3							
	Spec Cond	(mS/cm)	367	370	371	378	371	-						
	Hd	(S.U.)	6015	261h	4,83	187	641h							
	Flow Rate	(mL/min)	180	180	891	89!	891	4						
Purge Stabilization Data	Water Depth	(from TOC)	14.26	14,34	L21/1	14,28	14,30							
Purge Stabil	Time	)	1024	102 9	1034	1039	1043							

Total volume purged	
Sample appearance	CIM
Sample time	1045
Sample date	22/10/20

Ab. 15	3 22,78 3 22,78 3 23,16 5 23,09	
Sample Location ID  Depth to water date	Turbidity D.O. ORP (N.T.U) (mg/L) (mV) 27.1 2.26 3cg 4.1 8.2 2.26 3cg 1.7 1.72 2.55 2.55 2.55 2.55 2.55 2.55 2.55 2	
22.77	(S.U.) (µS/cm) (26   42 (34   33 (33   133 (33   134 (34   35 (34   34 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35   35 (35	
OC)	epth Flow Rate OC) (mL/min) 28. 4 28. 5 28. 6 28. 7 28. 7 28. 8 28. 8 28. 9 28.	77.1.5
Facility Name Sample by Depth to water, feet (TOC) Measured Total Depth, feet (TOC) Purge Stabilization Data	Time (from Till 23.2)	-

# **CCR Groundwater Monitoring Well Inspection Form**

your of the wall Hauf WELF HULF, VENTED CAP, Comments INSIDE LABEL Junt 7022 1. An Well Cap Vented* Present and 5 5 Sampling Period: Properly Labeled Well S 5 Signature: **Barriers and** Pad in Good Well Casing, Protective Cover, Shape Maintained Access to Well S Sampling Locked After Well AF WEISH PP S Sampling Contractor: FA61F Functioning Fastener and Lock Locked Well A4-0A P-0-48 Facility: Well No. AD-113 A0-6 A0-4 P-0-4C P. 0.4 A0-5 77.00

18,47

65'81

9.73

4

A 0-1

13,99

^{*}Not all wells will be vented, especially flush mounted wells. If that is the case, please note "flush mount well" in the comments.

# **CCR Groundwater Monitoring Well Inspection Form**

Facility:		Welsh			Sampl	Sampling Period:		WAR 2022
Sampling Contractor:	Contract	tor:	5		Signature:	ure:	Mark	
Well No.	Well	Fastener	Well	Access to	Well Casing,	Well	Well Cap	Comments
	Locked	and Lock	Locked	Well	Protective	Properly	Present	All medic
		Functioning	After Sampling	Maintained	Cover, Barriers and	Labeled	and Vented*	- 1
		Þ			Pad in Good Shape			The fill like
Y	~			• >		-	4	i Manilla
AB-10	1	7 1		1			i_	DTW-20.03
A - L	7 (-		5			76		٠
AD-14	14		7		1	5	5	-Hss fill
A.K.	\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\script{\sinte\sint\sint\sint\sint\sint\sint\sint\sint		N	~		N	~	-1425 infernal label
AD-2	M	\ \\	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	~	1	\	9	JTW-15.60 -HS Fill
J. W.	~	5	7		5	5	5	no boll-163
AD-7		<u></u>		5	7	5	V	DJW 17.45
An-17	\ \	\ \ <u>\</u>	M	\ <u>\</u>	7	4	15	DTW 21.68
AN-17	14	14	7	\ <u>\</u>	7	5	5	DE THU JAKAN
81-514	7	n	V		$\sim$	7	7	DTW 8.34
AN-22	N/A	N/A	t/N	)	7	2	~	DIW 12.58 - Flush.
*No+oW	le will be v	leisana bataa	lly flush mou	nted wells If the	hat is the case. r	olease note "f	lush mount	Many all wells will be vented especially flush mounted wells. If that is the case, please note "flush mount well" in the comments.
Not all well	sils will be v	enteu, especial	III) III III III III III III III III II		(acros   )	);;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	V	DTW 1031 Wel

*Not all wells will be vented, especially flush mounted wells. If that is the case, please note "flush mount well" in the comments.  $\frac{1}{\sqrt{N}} = \frac{1}{\sqrt{N}} =$ 

	10-01
	Sample Location ID
ACT WHISH PP	Kommy M. Dorsed
Facility Name	Sample by

16.0	28.71
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

16.31	28.71
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

Depth to water date

ourge Sta	Purge Stabilization Data									
Timo	Water Depth	Flow Rate	Hd	Spec Cond	Turbidity	D.O.	ORP	Temperature		
2	(from TOC)	(mL/min)	(S.U.)	(h2/cm)	(N.T.U)	(mg/L)	(mV)	(),		
1118	18,84	881	16'4	253	13,2	3,89	345	121/12		
1123	18,96	881	96'h	2h2	910	2,54	238	27/58		
1128	19,06	188	4,51	247	0.0	5,70	23%	hh'22		
133	19:02	881	187h	7 h Z	2'0	2,43	329	2738		
						1				
									å :	

Sample appearance CVAA. Sample time 1135 Sample date 06/28/22	Total volume purged	
	Sample appearance	CUMM
Sample date 06/28/22	Sample time	\$
	Sample date	22/82/00

BACKGAWA DAPLINTH 1430

Sample by (Clark of Mr Danger) Sample Location ID	Facility Name	A FO WELSH PA	-	•	
	_	Kinny M. Dingel	Sample Location ID	F0-5	

Depth to water, feet (TOC)  $|S,0|_{\mathcal{B}}$ Measured Total Depth, feet (TOC) 32.8

Depth to water date 0 6/28/22

Purge Stal	Purge Stabilization Data								
£	Water Depth	Flow Rate	Hd	Spec Cond	Turbidity	D.0.	ORP	Temperature	:
ם	(from TOC)	(mL/min)	(S.U.)	(m2/cm)	(N.T.U)	(mg/L)	(mV)	(°C)	
0837	16.21	704	1815	280	751	7,61	962	23.31	
2680	88191	N. C.	88.5	<i>KLS</i>	641	89'h	22	23.14	
		,							
			41 201	HELD WATH LINE	a the pa	į			

Total volume purged	
Sample appearance	BROWNISH
Sample time	(NO)
Sample date	22/82/90

Facility Name	HET WELSH AP		
Sample by	Kinga M. Mora is	Sample Location ID	

15,36	79.00
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

Depth to water date

Purge Sta	Purge Stabilization Data								
Time	Water Depth	Flow Rate	Hd	Spec Cond	Turbidity	D.0.	ORP	Temperature	
	(from TOC)	(mL/min)	(S.U.)	(µS/cm)	(N.T.U)	(mg/L)	(mV)	(0)	
200	15.62	162	25.3	Ž	26.7	5,69	388	27.36	
10	28 S	291	5.90	453	3,6	238	371	27,67	
9	15.66	291	5,89	25h	1,	7,31	372	27.06	
162	15.67	291	5.93	45 <i>2</i>	5	27.2	105	27.0%	
							i		

Total volume purged	Sample appearance CL (mit)	: time	date 06/27/22
Total vol	Sample	Sample time	Sample date

,	₩0~9
	Sample Location ID
AFF WELSHAD	( compart on colombic d
Facility Name	Sample by

Depth to water, feet (TOC) |H, G|Measured Total Depth, feet (TOC) 3b' 45

Depth to water date 06/27/22

Purge Sta	Purge Stabilization Data								
Lim	Water Depth	Flow Rate	Hd	Spec Cond	Turbidity	D.O.	ORP	Temperature	
ט ב	(from TOC)	(mL/min)	(S.U.)	(µS/cm)	(N.T.U)	(mg/L)	(mV)	(°C)	
1103	14,97	5	78,2	297	0 0	80'5	275	1812	
30	[4,99	1/1/	4.83	200	0.0	N. C.	25	27.4	
	.30'51		\$\int z^2	392	ت د	0	2	27:11	
25 	15.61		しんどわ	265	0,0	202	2 Jh	27,25	
			-						
			:						
				,					

Fotal volume purged	
Sample appearance	Celian
sample time	92.33
sample date	72/12/90

A)-15 6-27-22	Temperature (°C) 25.77 25.26 26.17 26.17	
Sample Location ID Depth to water date	Turbidity D.O. ORP (N.T.U) (mg/L) (mV) (mg/L) (mV) (43.2) (cold) (25.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5) (5.5)	
Wolsh Mast Hamilter	Flow Rate   pH   Spec Cond   (mL/min) (s.u.) (uS/cm)   2.8	clew 1007 6-27-33
Facility Name Sample by Depth to water, feet (TOC) Measured Total Depth, feet (TOC)	Purge Stabilization Data  Time Water Depth (from TOC)  Auth 23.5   15.5   23.5   15.5   23.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5   15.5	Total volume purged Sample appearance Sample time Sample date

PBAD

JMD - 1300

MD-17	Temperature (°C) 26 4 5 23 48		
on ID	ORP (mV)		
Sample Location ID Depth to water date	D.O. (mg/L) 2.44		· -
<u>[S]</u>	Turbidity (N.T.U) 251.C 23.4		* *
Loni 11.0(	Spec Cond (µS/cm)		
Melsh 14	pH (S.U.)		Cle 1/ 1229 28-22
	Flow Rate (mL/min)		9
Facility Name Sample by Depth to water, feet (TOC) Measured Total Depth, feet (TOC) Purge Stabilization Data	Time Water Depth (from TOC) 1/3.7 26.4 4/ 1/42 25.02		Total volume purged Sample appearance Sample time Sample date

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## CCR Groundwater Monitoring Well Inspection Form

		750									,	2	Ç				
22			Comments				DIW-19,51				DTW 17.65		DTU (5.79		DIV. 10.49	DTW 11.09	DTW-12.22
ict 2-22	meter		Well cap	present		5	5	7	<b>ا</b>	17	6	4	5	7	5	4	7
od:	本		Well	Properly Labeled		5	5	7	9	5	5	7	7	7	5	V	7
Sampling Period:	Signature:	A .	Well Casing,	Housing, and Pad in Good	Shape	5	7	5	5	5		5	5	5	· ·	7	\(\frac{1}{2}\)
S	S	The state of the s	Access to	Well Maintained		5	~	5	5	-	5	5	4	5	<u>\</u>	34. ⁴	
	Erale		Well Locked	After Sampling		5	5	5	4	5	7	4	2	5	V	7	40.23 S S S S DIW-12.2
We(54	tor:		Lock	Functioning		7	~	5	7	5	, 7	7	5	Y		~	~ ·
	Contrac		Well	Locked		3	5	7	7	7	~	Y	P	4	7	V	7
Facility:	Sampling Contractor: _		Well No.			AD-15	AD-10	AD-11	MD-14	AD-16A	An-7	AD 3	AD-2	AD-17	AD-15	AD-22	AD-23

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

## **CCR Groundwater Monitoring Well Inspection Form**

Sampling Period: October 31 - NOV 1, 2022 Signature: AEP WELSH PP Sampling Contractor: ___ Facility:

Well No.	Well	Lock	Well Locked	Access to	Well Casing,	Well	Well cap	Comments	
	Locked	Functioning	After Sampling	Well Maintained	Housing, and Pad in Good	Properly Labeled	present		
					Shape				
AD-08	5	S	S	5	S	S	S		
A0-09	5	5	5	5	S	5	5		
AD-13	5	S	~	4	5	5	S	NELOS WHOGATING	
AD-05	5	5	5	5	5	5	5		
RO-04C	>	5	5	5	5	S	5		
A0-04	5	4	5	5	5	4	4		17.63
A0-01	5	5	5		•	5	5	NEWS WELDAMA	2
40-12	S	5	5	5	5	5	5		22.61
A0-06	5	5	5	5	5	5	5		13,69
Inctriction	e. Complet	to form and city	Instructions: Complete form and submit to AFD Environmental Services with Field Data	V againg letuci		Jaca Joods osch	for itome tha	Disco chack mark for itame that are entiefactory	

Instructions: Complete form and submit to AEP Environmental Services with Field Data. Place check mark for items that are satisfactory. Unsatisfactory items should be left blank with a note in the comments section on what needs to be remedied.

31100	7 Mr Den 4L J
ility Name	nple by

06.6	28.7
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

した。これ	22/10/11	
Sample Location ID	Depth to water date	

	T		T	T	Г	Т	<u> </u>	Ī	T	_		<u> </u>		Ī	Ī	l
	Temperature	(),	19.62	19,82	19,87	16'61										
	ORP	(mV)	272	276	187	288					28					
	D.O.	(mg/L)	12.2	1.84	2,86	18:2										
	Turbidity	(N.T.U)	15.2	2,7	3,6	3.8										
	Spec Cond	(µS/cm)	122	216	217	214										
	Hd	(S.U.)	4.83	4.76	4,75	4,75										
	Flow Rate	(mL/min)	220	022	022	022										
Purge Stabilization Data	Water Depth	(from TOC)	19,52	19,82	19,9)	20,13										
Purge Stab	Time	,	1401	9601	1051	1056										

Total volume purged	
Sample appearance	N64772
Sample time	8501
Sample date	22/10/11

DACHEROLMB DUPLICATE 1400

Facility Name	F 50 VICSH PP	
Sample by	Kirry Mighaid	Sample Location ID

65.41	32,88
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

|--|

	Ī		Т	T	T	T	T							
	Temperature	( _C )	70.17	20,23										
	ORP	(mV)	141	13.7										
	D.O.	(mg/L)	4.71	2,41		·	UFC.							
Purge Stabilization Data	Turbidity	(N.T.U)	1/0	107			d wormile							
	Spec Cond	(mS/cm)	169	289			WON'7 1+01							
	Hd	(S.U.)	5.90	2,87										
	Flow Rate	(mL/min)	110	110										
	Water Depth	(from TOC)	15,71	16,48										
Purge Stabi	i L	<u> </u>	0831	0836										

Total volume purged	
Sample appearance	019414 414 175
Sample time	9580
Sample date	22/10/11

7 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
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11:5	29.04
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

Depth to water date	16/3/122

	Temperature	(S _e )	23.37	23.29	92,25	25.52								
	ORP	(mV)	310	182	181	774								
	D.0.	(mg/L)	5,34	2,43	2,40	2,39								
	Turbidity	(N.T.U)	13.8	2.9	2'5	4.7	,							
	Spec Cond	(m2/cm)	896	443	11.1	436								
	Hd	(S.U.)	28'5	00'9	2019	6.09								
	Flow Rate	(mL/min)	200	200	200	002								
Purge Stabilization Data	Water Depth	(from TOC)	15,33	15.37	15,38	15.41								
Purge Stabi	Time	) = = -	1580	9580	1010	9060								

0000	TSHF DOUGH	
	2 /	

Total volume purged Sample appearance

Sample time Sample date

1400

Facility Name	AFP WELSH PP
Sample by	Konny Mr Danged

77,77	56.45
Depth to water, feet (TOC)	Measured Total Depth, feet (TOC)

PO-09	10/31/22
Sample Location ID	Depth to water date

Purge Sta	Purge Stabilization Data									
Time	Water Depth	Flow Rate	Hd	Spec Cond	Turbidity	D.0.	ORP	Temperature		
2	(from TOC)	(mL/min)	(S.U.)	(µS/cm)	(N.T.U)	(mg/L)	(mV)	(0,)		
1003	14,59	130	5,13	340	0.0	19/4	266	22.96		
1008	89.61	220	5,10	340	0,0	2,23	3/0	23.06		
1013	14.80	430	5,06	342	0.0	2,18	112	22,17		
8101	14,89	230	5,03	343	0.0	2,13	222	23.23		
			,							
				9						
									-	

Total volume purged $\mathcal{CL}(\mathcal{H}_{\Lambda})$ Sample appearance $0.000$ Sample time $0.000$		
Sample appearance C ( 1777 Sample time 1070 Sample date 10/31/72	Total volume purged	
Sample time   1020 Sample date   10 /3   1/22	Sample appearance	V4) 17
Sample date (0 /3 1 / 7 2	Sample time	020!
	Sample date	22/15/01

AD-15 10-31-22	mperature (°C) 3, (£ 3, 7, 3, 7, 3, 7,	
Sample Location ID Depth to water date	Turbidity D.O. ORP (N.T.U) (mg/L) (mV)  467	
22.10 22.10	pH Spec Cond (s.υ.) (μs/cm) 4.42 163 4.35 13 5 4.35 13 5 13 5 13 5 13 5 13 5 13 5 13 5 1	clear 433 0312
Facility Name Sample by  Depth to water, feet (TOC)  Measured Total Depth, feet (TOC)	Time Water Depth Flow Rate (from TOC) (mL/min) 22, 85 25, 87 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28, 17 28,	Total volume purged Sample appearance Sample time

	process of the same of the sam	The state of the s	v. 27000 per 27002 p. comp 2 2 45	er sperioasj	
40-1	Temperature (°C)				
	Temper (°C				
ID Jate	ORP (mV)				
ocation Water (					
Sample Location ID Depth to water date	D.O. (mg/L)			-	
	Turbidity (N.T.U) (S. 2) S. 3	0			
	Spec Cond (µS/cm)	1			
4164					-
Welsh 1964	Hd (S.U.)			Cleid 1225	
	Flow Rate (mL/min)				
(TOC) , feet (TC	pth 200				
Facility Name Sample by Depth to water, feet (TOC) Measured Total Depth, feet (TOC) Purge Stabilization Data	(from TOC)			Total volume purged Sample appearance Sample time Sample date	
Facility Name Sample by Depth to wai Measured Tot	Time   1114			Total volume purger Sample appearance Sample time Sample date	
Sa Sa Mc	COL SIMPLE ROBERT OF THE PARTY OF THE		THE SECTION WHEN SELECT	Sar	



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-8 (PBAP) Customer Description:

Lab Number: 220714-001 Preparation:

Date Collected: 03/01/2022 10:45 EST Date Received: 03/03/2022 11:00 EST

### **Ion Chromatography**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.11 mg/L	2	0.10	0.02	CRJ	03/08/2022 02:27	EPA 300.1 -1997, Rev. 1.0
Chloride	15.9 mg/L	2	0.04	0.02	CRJ	03/08/2022 02:27	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.97 mg/L	2	0.06	0.02	CRJ	03/08/2022 02:27	EPA 300.1 -1997, Rev. 1.0
Sulfate	138 mg/L	10	2.0	0.3	CRJ	03/07/2022 21:09	EPA 300.1 -1997, Rev. 1.0

### **Metals**

Parameter	Result Ur	nits C	Dilution	RL	MDL	Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg	g/L	1	0.10	0.02	U1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Arsenic	0.27 µg	g/L	1	0.10	0.03		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Barium	23.6 µg	g/L	1	0.20	0.05		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.04 µg	g/L	5	0.25	0.04	U1	GES	03/14/2022 10:36	EPA 200.8-1994, Rev. 5.4
Boron	1.16 m	g/L	1	0.050	0.009		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Cadmium	0.018 µg	g/L	1	0.020	0.004	J1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Calcium	18.7 m	g/L	1	0.05	0.02		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Chromium	0.23 µg	g/L	1	0.20	0.04		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Cobalt	5. <b>1</b> 0 µg	g/L	1	0.020	0.003		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg	g/L	1	0.20	0.05	U1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Lithium	0.0654 mg	g/L	5	0.0010	0.0003		GES	03/14/2022 10:36	EPA 200.8-1994, Rev. 5.4
Magnesium	7.94 mg	g/L	1	0.10	0.02		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng	g/L	1	5	2	Q1, U1	JAB	03/23/2022 11:38	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg	g/L	1	0.5	0.1	U1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Potassium	4.24 m	g/L	1	0.10	0.02		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg	g/L	1	0.50	0.09	U1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Sodium	43.2 m	g/L	1	0.20	0.05		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Strontium	0.194 mg	g/L	1	0.0020	0.0004		GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4
Thallium	0. <b>1</b> 3 µg	g/L	1	0.20	0.04	J1	GES	03/14/2022 09:57	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.91 pCi/L	0.19	0.23	ST	03/11/2022 11:23	SW-846 9315-1986, Rev. 0
Carrier Recovery	89.4 %					
Radium-228	0.40 pCi/L	0.17	0.58	TTP	03/16/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	79.4 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-8 (PBAP) Customer Description:

Lab Number: 220714-001 Preparation:

Date Collected: 03/01/2022 10:45 EST Date Received: 03/03/2022 11:00 EST

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	10 mg/L	1	20	5 J1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	260 mg/L	1	50	20 P1	SDW	03/05/2022 09:35	SM 2540C-2011

Customer Sample ID: AD-9 (PBAP) Customer Description:

Lab Number: 220714-002 Preparation:

Date Collected: 03/01/2022 11:45 EST Date Received: 03/03/2022 11:00 EST

### **Ion Chromatography**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.25 mg/L	2	0.10	0.02	CRJ	03/08/2022 02:53	EPA 300.1 -1997, Rev. 1.0
Chloride	18.3 mg/L	2	0.04	0.02	CRJ	03/08/2022 02:53	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.15 mg/L	2	0.06	0.02	CRJ	03/08/2022 02:53	EPA 300.1 -1997, Rev. 1.0
Sulfate	109 mg/L	25	5.0	0.8	CRJ	03/07/2022 21:36	EPA 300.1 -1997, Rev. 1.0



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-9 (PBAP) Customer Description:

Lab Number: 220714-002 Preparation:

Date Collected: 03/01/2022 11:45 EST Date Received: 03/03/2022 11:00 EST

### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Arsenic	0.24 μg/L	1	0.10	0.03	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Barium	55.3 μg/L	1	0.20	0.05	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Beryllium	1.20 µg/L	5	0.25	0.04	GES	03/14/2022 10:41	EPA 200.8-1994, Rev. 5.4
Boron	0.148 mg/L	1	0.050	0.009	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Cadmium	0.266 μg/L	1	0.020	0.004	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Calcium	12.0 mg/L	1	0.05	0.02	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Chromium	0.74 μg/L	1	0.20	0.04	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Cobalt	<b>19.1</b> μg/L	1	0.020	0.003	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Lead	0.08 μg/L	1	0.20	0.05 J1	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Lithium	0.205 mg/L	5	0.0010	0.0003	GES	03/14/2022 10:41	EPA 200.8-1994, Rev. 5.4
Magnesium	5.64 mg/L	1	0.10	0.02	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Mercury	3 ng/L	1	5	2 Q1, J1	JAB	03/23/2022 11:45	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Potassium	3.05 mg/L	1	0.10	0.02	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Selenium	0.26 μg/L	1	0.50	0.09 J1	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Sodium	41.8 mg/L	1	0.20	0.05	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Strontium	0.426 mg/L	1	0.0020	0.0004	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4
Thallium	0.22 μg/L	1	0.20	0.04	GES	03/14/2022 10:02	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.79 pCi/L	0.28	0.31	ST	03/11/2022 11:23	SW-846 9315-1986, Rev. 0
Carrier Recovery	83.1 %					
Radium-228	1.56 pCi/L	0.14	0.40	TTP	03/16/2022 16:21	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	91.3 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	8 mg/L	1	20	5 J1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	300 mg/L	1	50	20	SDW	03/05/2022 09:45	SM 2540C-2011



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-11 (LF)

Customer Description:

Lab Number: 220714-003 Preparation:

Date Collected: 03/01/2022 11:45 EST Date Received: 03/03/2022 11:00 EST

### **Ion Chromatography**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.27 mg/L	2	0.10	0.02	CRJ	03/08/2022 03:46	EPA 300.1 -1997, Rev. 1.0
Chloride	<b>11</b> .5 mg/L	2	0.04	0.02	CRJ	03/08/2022 03:46	EPA 300.1 -1997, Rev. 1.0
Fluoride	1.19 mg/L	2	0.06	0.02	CRJ	03/08/2022 03:46	EPA 300.1 -1997, Rev. 1.0
Sulfate	594 mg/L	25	5.0	0.8	CRJ	03/07/2022 22:02	EPA 300.1 -1997, Rev. 1.0

### **Metals**

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Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Arsenic	0.84 µg/L	1	0.10	0.03	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Barium	<b>1</b> 0.5 μg/L	1	0.20	0.05	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Beryllium	2.56 μg/L	5	0.25	0.04	GES	03/14/2022 10:46	EPA 200.8-1994, Rev. 5.4
Boron	1.67 mg/L	1	0.050	0.009	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Cadmium	0.426 μg/L	1	0.020	0.004	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Calcium	10.2 mg/L	1	0.05	0.02	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Chromium	0.66 µg/L	1	0.20	0.04	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Cobalt	21.3 µg/L	1	0.020	0.003	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Lead	1.48 µg/L	1	0.20	0.05	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Lithium	0.0254 mg/L	5	0.0010	0.0003	GES	03/14/2022 10:46	EPA 200.8-1994, Rev. 5.4
Magnesium	13.2 mg/L	1	0.10	0.02	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Mercury	10 ng/L	1	5	2 Q1	JAB	03/23/2022 11:47	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Potassium	2.10 mg/L	1	0.10	0.02	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Selenium	1.89 µg/L	1	0.50	0.09	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Sodium	225 mg/L	5	1.0	0.3	GES	03/14/2022 10:46	EPA 200.8-1994, Rev. 5.4
Strontium	0.246 mg/L	1	0.0020	0.0004	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4
Thallium	0.20 μg/L	1	0.20	0.04	GES	03/14/2022 10:07	EPA 200.8-1994, Rev. 5.4



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-11 (LF)

Customer Description:

Lab Number: 220714-003 Preparation:

Date Collected: 03/01/2022 11:45 EST Date Received: 03/03/2022 11:00 EST

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	3.24 pCi/L	0.36	0.24	ST	03/11/2022 11:23	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.9 %					
Radium-228	1.66 pCi/L	0.19	0.59 L1	TTP	03/17/2022 16:45	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	79.3 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5 mg/L	1	20	5 U1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	900 mg/L	1	50	20	SDW	03/05/2022 09:45	SM 2540C-2011

Customer Sample ID: AD-13 (LF)

Customer Description:

Lab Number: 220714-004 Preparation:

Date Collected: 03/01/2022 12:48 EST Date Received: 03/03/2022 11:00 EST

### Ion Chromatography

Parameter	Result Units D	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.13 mg/L	2	0.10	0.02	CRJ	03/08/2022 05:05	EPA 300.1 -1997, Rev. 1.0
Chloride	<b>11.0</b> mg/L	2	0.04	0.02	CRJ	03/08/2022 05:05	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.17 mg/L	2	0.06	0.02	CRJ	03/08/2022 05:05	EPA 300.1 -1997, Rev. 1.0
Sulfate	221 mg/L	10	2.0	0.3	CRJ	03/07/2022 23:22	EPA 300.1 -1997, Rev. 1.0



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-13 (LF)

Customer Description:

Lab Number: 220714-004 Preparation:

Date Collected: 03/01/2022 12:48 EST Date Received: 03/03/2022 11:00 EST

### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Arsenic	0.22 μg/L	1	0.10	0.03	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Barium	<b>12</b> .9 μg/L	1	0.20	0.05	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Beryllium	0.67 μg/L	5	0.25	0.04	GES	03/14/2022 10:51	EPA 200.8-1994, Rev. 5.4
Boron	1.36 mg/L	1	0.050	0.009	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Cadmium	0. <b>148</b> μg/L	1	0.020	0.004	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Calcium	4.98 mg/L	1	0.05	0.02	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Chromium	0.32 μg/L	1	0.20	0.04	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Cobalt	6.57 μg/L	1	0.020	0.003	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Lead	0.30 μg/L	1	0.20	0.05	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Lithium	0.0305 mg/L	5	0.0010	0.0003	GES	03/14/2022 10:51	EPA 200.8-1994, Rev. 5.4
Magnesium	3.32 mg/L	1	0.10	0.02	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Mercury	3 ng/L	1	5	2 Q1, J1	JAB	03/23/2022 11:49	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Potassium	2.08 mg/L	1	0.10	0.02	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Selenium	0.32 μg/L	1	0.50	0.09 J1	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Sodium	89.7 mg/L	1	0.20	0.05	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Strontium	0.0988 mg/L	1	0.0020	0.0004	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4
Thallium	0.16 µg/L	1	0.20	0.04 J1	GES	03/14/2022 10:12	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.69 pCi/L	0.35	0.26	ST	03/11/2022 11:23	SW-846 9315-1986, Rev. 0
Carrier Recovery	86.1 %					
Radium-228	1.18 pCi/L	0.14	0.43 L1	TTP	03/17/2022 16:45	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	96.5 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5 mg/L	1	20	5 U1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	390 mg/L	1	50	20	SDW	03/05/2022 09:50	SM 2540C-2011



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-14 (LF)

Customer Description:

Lab Number: 220714-005 Preparation:

Date Collected: 03/01/2022 10:47 EST Date Received: 03/03/2022 11:00 EST

### **Ion Chromatography**

Parameter	Result Units D	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.66 mg/L	2	0.10	0.02	CRJ	03/08/2022 05:32	EPA 300.1 -1997, Rev. 1.0
Chloride	9.34 mg/L	2	0.04	0.02	CRJ	03/08/2022 05:32	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.28 mg/L	2	0.06	0.02	CRJ	03/08/2022 05:32	EPA 300.1 -1997, Rev. 1.0
Sulfate	241 mg/L	10	2.0	0.3	CRJ	03/07/2022 23:48	EPA 300.1 -1997, Rev. 1.0

### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Arsenic	0.42 μg/L	1	0.10	0.03	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Barium	21.9 µg/L	1	0.20	0.05	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Beryllium	1.60 µg/L	5	0.25	0.04	GES	03/14/2022 10:57	EPA 200.8-1994, Rev. 5.4
Boron	1.08 mg/L	1	0.050	0.009	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Cadmium	3.34 µg/L	1	0.020	0.004	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Calcium	8.58 mg/L	1	0.05	0.02	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Chromium	0.57 μg/L	1	0.20	0.04	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Cobalt	26.7 µg/L	1	0.020	0.003	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Lead	0.35 μg/L	1	0.20	0.05	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Lithium	0.0180 mg/L	5	0.0010	0.0003	GES	03/14/2022 10:57	EPA 200.8-1994, Rev. 5.4
Magnesium	6.82 mg/L	1	0.10	0.02	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Mercury	500 ng/L	100	500	200 Q1	JAB	03/29/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Potassium	1.58 mg/L	1	0.10	0.02	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Selenium	2.22 µg/L	1	0.50	0.09	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Sodium	95.3 mg/L	1	0.20	0.05	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Strontium	0.195 mg/L	1	0.0020	0.0004	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4
Thallium	0.30 µg/L	1	0.20	0.04	GES	03/14/2022 10:20	EPA 200.8-1994, Rev. 5.4



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### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-14 (LF)

Customer Description:

Lab Number: 220714-005 Preparation:

Date Collected: 03/01/2022 10:47 EST Date Received: 03/03/2022 11:00 EST

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	4.10 pCi/L	0.43	0.27	ST	03/11/2022 11:23	SW-846 9315-1986, Rev. 0
Carrier Recovery	79.4 %					
Radium-228	1.96 pCi/L	0.19	0.55 L1	TTP	03/17/2022 16:45	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	77.0 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5 mg/L	1	20	5 U1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	440 mg/L	1	50	20	SDW	03/05/2022 09:50	SM 2540C-2011

Customer Sample ID: AD-15 (PBAP) Customer Description:

Lab Number: 220714-006 Preparation:

Date Collected: 03/01/2022 12:33 EST Date Received: 03/03/2022 11:00 EST

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.89 mg/L	2	0.10	0.02	CRJ	03/07/2022 20:17	EPA 300.1 -1997, Rev. 1.0
Chloride	25.0 mg/L	2	0.04	0.02	CRJ	03/07/2022 20:17	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.05 mg/L	2	0.06	0.02 J1	CRJ	03/07/2022 20:17	EPA 300.1 -1997, Rev. 1.0
Sulfate	4.29 mg/L	2	0.40	0.06	CRJ	03/07/2022 20:17	EPA 300.1 -1997, Rev. 1.0



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-15 (PBAP) Customer Description:

Lab Number: 220714-006 Preparation:

Date Collected: 03/01/2022 12:33 EST Date Received: 03/03/2022 11:00 EST

### **Metals**

Parameter	Result Ur	its Dilution	RL	MDL Data Qualifiers	s Analyst	Analysis Date	Method
Antimony	<0.02 µg	/L 1	0.10	0.02 U1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Arsenic	1.89 µg	/L 1	0.10	0.03	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Barium	75.1 µg	/L 1	0.20	0.05	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Beryllium	0.207 µg	/L 1	0.050	0.007	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Boron	0.076 mg	g/L 1	0.050	0.009	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Cadmium	0.0 <b>11</b> µg	/L 1	0.020	0.004 J1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Calcium	2.63 mg	g/L 1	0.05	0.02	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Chromium	0.55 µg	/L 1	0.20	0.04	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Cobalt	2.76 µg	/L 1	0.020	0.003	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Lead	0.09 µg	/L 1	0.20	0.05 J1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Lithium	0.00208 mg	g/L 1	0.00020	0.00005	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Magnesium	3.27 mg	g/L 1	0.10	0.02	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Mercury	3 ng	/L 1	5	2 Q1, J1	JAB	03/23/2022 11:42	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg	/L 1	0.5	0.1 U1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Potassium	0.54 m	g/L 1	0.10	0.02	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Selenium	0.29 µg	/L 1	0.50	0.09 J1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Sodium	16.6 m	g/L 1	0.20	0.05	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Strontium	0.0359 m	g/L 1	0.0020	0.0004	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4
Thallium	0.05 µg	/L 1	0.20	0.04 J1	GES	03/14/2022 12:02	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.61 pCi/L	0.32	0.39	ST	03/11/2022 15:29	SW-846 9315-1986, Rev. 0
Carrier Recovery	94.9 %					
Radium-228	0.40 pCi/L	0.14	0.48 L1	TTP	03/17/2022 16:45	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	81.6 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	25 mg/L	1	20	5	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	80 mg/L	1	50	20	SDW	03/05/2022 09:58	SM 2540C-2011



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: Duplicate Customer Description:

Lab Number: 220714-007 Preparation:

Date Collected: 03/01/2022 11:59 EST Date Received: 03/03/2022 11:00 EST

### **Ion Chromatography**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Bromide	0.66 mg/L	2	0.10	0.02	CRJ	03/08/2022 04:12	EPA 300.1 -1997, Rev. 1.0
Chloride	9.37 mg/L	2	0.04	0.02	CRJ	03/08/2022 04:12	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.28 mg/L	2	0.06	0.02	CRJ	03/08/2022 04:12	EPA 300.1 -1997, Rev. 1.0
Sulfate	255 mg/L	25	5.0	0.8	CRJ	03/07/2022 22:29	EPA 300.1 -1997, Rev. 1.0

### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Arsenic	0.41 µg/L	1	0.10	0.03	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Barium	21.9 µg/L	1	0.20	0.05	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Beryllium	1.68 µg/L	5	0.25	0.04	GES	03/14/2022 12:59	EPA 200.8-1994, Rev. 5.4
Boron	1.09 mg/L	1	0.050	0.009	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Cadmium	3.32 µg/L	1	0.020	0.004	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Calcium	8.67 mg/L	1	0.05	0.02	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Chromium	0.66 µg/L	1	0.20	0.04	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Cobalt	26.6 μg/L	1	0.020	0.003	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Lead	0.36 µg/L	1	0.20	0.05	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Lithium	0.0190 mg/L	5	0.0010	0.0003	GES	03/14/2022 12:59	EPA 200.8-1994, Rev. 5.4
Magnesium	6.91 mg/L	1	0.10	0.02	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Mercury	500 ng/L	100	500	200 Q1	JAB	03/29/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Potassium	1.62 mg/L	1	0.10	0.02	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Selenium	2.16 µg/L	1	0.50	0.09	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Sodium	96.3 mg/L	1	0.20	0.05	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Strontium	0.195 mg/L	1	0.0020	0.0004	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4
Thallium	0.29 µg/L	1	0.20	0.04	GES	03/14/2022 12:07	EPA 200.8-1994, Rev. 5.4

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Alkalinity, as CaCO3	<5 mg/L	1	20	5 U1	MGK	03/04/2022 11:00	SM 2320B-2011
TDS, Filterable Residue	440 mg/L	1	50	20	SDW	03/05/2022 09:58	SM 2540C-2011



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: Equipment Blank

**Customer Description:** 

Lab Number: 220714-008

Preparation:

Date Collected: 03/01/2022 12:18 EST

Date Received: 03/03/2022 11:00 EST

### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03 µg/L	1	0.10	0.03 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Barium	0.05 μg/L	1	0.20	0.05 J1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Boron	<0.009 mg/L	1	0.050	0.009 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.32 μg/L	1	0.20	0.04	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Cobalt	0.011 μg/L	1	0.020	0.003 J1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Lithium	<0.00005 mg/L	1	0.00020	0.00005 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Magnesium	<0.02 mg/L	1	0.10	0.02 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 Q1, U1	JAB	03/23/2022 11:58	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Potassium	<0.02 mg/L	1	0.10	0.02 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Sodium	<0.05 mg/L	1	0.20	0.05 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Strontium	<0.0004 mg/L	1	0.0020	0.0004 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	03/14/2022 12:13	EPA 200.8-1994, Rev. 5.4

220714 Job Comments:

Original report issued 4/1/22. Report reissued 5/10/22. Report reissued with amended matrix spike precision calculations.



### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 220714 Customer: Welsh Power Station Date Reported: 12/27/2022

**Report Verification** 

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

 Email:
 msohlinger@aep.com

 Phone:
 614-836-4184

 Audinet:
 8-210-4184

Muhael S. Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

### **Data Qualifer Legend**

- U1 Not detected at or above method detection limit (MDL).
- J1 Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
- Q1 Sample was received in inappropriate sample container.
- P1 The precision between duplicate results was above acceptance limits.
- L1 The associated laboratory control sample (LCS) or laboratory control sample duplicate (LCSD) recovery was outside acceptance limits.

### **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

4001 Bixby Road Groveport, Ohio 43125				Prog	ram:	oal Co	mbustion	Program: Coal Combustion Residuals (CCR)	s (CCR)				- 5
Contacts: Michael Ohlinger (614-836-4184)					<u> </u>	Site Contact:	끍			Date:		For Lab Use Only: COC/Order #	_
			i i			2 2	250 mL F	Field-filter 500 mL	11	Three (six every		5	
Contact Name: Jill Parker-Witt	Analysis 1	umaround	Analysis Turnaround Time (in Calendar Days)	lendar D				then pH<2,	Cool,	1 L bottles,	ICF++' ueq pa Se wr	h11_czz	
Confect Figure (515) of 5-55 to							200	5	2	prive, nino,	11		-
Sampler(s): Matt Hamilton Kenny McDonald					-		'qa 'o	:M bns e		1-228			
Sample Identification	Sample	Sample	Sample Type (C=Comp, G=Grab)	W Batrix	Cont.	Sampler(s) Inli 8, Ca, Ll, Sb,	Be, Cd, Cr, C Mo, Se, TL and Na, K, M	dissolved Fe	TDS, F, CI, and Br, All	Ra-226, Ra	6 _H	Sample Specific Notes:	
AD-8 (PBAP)	3712022	945		δ	ro.		×		×	×			
AD-9 (PBAP)	3/1/2022	1045	9	GW	22		×		×	×			
AD-11 (LF)	3/1/2022	1045	უ	GW	2		×		×	×			-
AD-13 (LF)	3/1/2022	1148	ဗ	GW	2	$\exists$	×		×	×			
AD-14 (LF)	3/1/2022	947		ВW	80		×		×	×			_
AD-15 (PBAP)	3/1/2022	1133		ΒW	22		×		×	×			
DUPLICATE	34/2022	1059	ტ	W.S	2		×		×				_
EQUIPMENT BLANK	3/1/2022	1118	ပ		-		×						_
													-
													445
													_
													_
Preservation Used: 1= ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	INO3; S=Na	OH; 6= Ot	her	; Fa f	; F¤ filter in field	ple	7	7	-	4			
* Six 1L Bottles must be collected for Radium for every 10th sample.	r every 10th	sample.											-

Received in Laboratory by: Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17 Date/Time: Company: Relinquished by:

Company:

Relinquished by

Relinquished by:

Special Instructions/QC Requirements & Comments:

11.00Am

Date/Time. 5/27

Date/Time:

Date/Time:

(530 Received by:

Received by:

### AEP WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS (FedEX) USPS
	Other
Plant/Customer Velsh PS	Number of Plastic Containers:
Opened By MSO	Number of Glass Containers:
Date/Time 3/7/22 12:300M	Number of Mercury Containers:
Were all temperatures within 0-6°C? Y/N	or N/A Initial:on ice / fo ice
(IR Gun Ser# 210441568, Expir.5/27/2023)	-\f-\No, specify each deviation:
Was container in good condition? (Y) N	Comments
Was Chain of Custody received? N	Comments
Requested turnaround: Routing	If RUSH, who was notified?
pH (15 min) Cr ⁺⁶ (pres ) NO₂ or N (24 hr)	IO ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out property? (Y)/ N	Comments
Were samples labeled properly? (Y) N	Comments
Were correct containers used? YN	Comments
Was pH checked & Color Coding done?	IN or N/A Initial & Date: M50 3/7/22
nH paper (circle one) MQuant pH Cat 1.0	9535.0001 [OR] Lab rat pH Cat # LRS -4801 Lot X000RWDG21 (See Prep Book)
_	
Is sample filtration requested? Y / N	Comments (See Prep Book)
Was the customer contacted? If Yes:	Person Contacted:
Lab ID# CCON	Date & Time :
Logged byCommer	nts: Znd half of shipment
Reviewed by AAD	·····
Reviewed by STATE	

**REMINDER**: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

7



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 222057 Customer: Welsh Power Station Date Reported: 12/27/2022

Customer Sample ID: AD-1 Customer Description: TG-32

Lab Number: 222057-001 Preparation:

Date Collected: 06/28/2022 12:35 EDT Date Received: 06/30/2022 10:30 EDT

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.32 mg/L	2	0.04	0.02	CRJ	07/13/2022 00:06	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.22 mg/L	2	0.06	0.02	CRJ	07/13/2022 00:06	EPA 300.1 -1997, Rev. 1.0
Sulfate	74.7 mg/L	2	0.40	0.06	CRJ	07/13/2022 00:06	EPA 300.1 -1997, Rev. 1.0

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS, Filterable Residue	180 mg/L	1	50	20	SDW	07/01/2022 14:30	SM 2540C-2015	

Customer Sample ID: AD-5 Customer Description: TG-32

Lab Number: 222057-002 Preparation:

Date Collected: 06/28/2022 10:05 EDT Date Received: 06/30/2022 10:30 EDT

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	<b>1</b> 5.3 mg/L	2	0.04	0.02	CRJ	07/12/2022 23:13	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.15 mg/L	2	0.06	0.02	CRJ	07/12/2022 23:13	EPA 300.1 -1997, Rev. 1.0
Sulfate	146 mg/L	10	2.0	0.3	CRJ	07/12/2022 22:47	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method

SDW

07/01/2022 14:38 SM 2540C-2015

40

Customer Sample ID: AD-17 Customer Description: TG-32

Lab Number: 222057-003 Preparation:

310 mg/L

Date Collected: 06/28/2022 13:29 EDT Date Received: 06/30/2022 10:30 EDT

100

### Ion Chromatography

TDS, Filterable Residue

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	37.0 mg/L	5	0.10	0.05	CRJ	07/12/2022 21:54	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09 mg/L	5	0.15	0.05 J1	CRJ	07/12/2022 21:54	EPA 300.1 -1997, Rev. 1.0
Sulfate	1050 mg/L	50	10	2	CRJ	07/12/2022 21:28	EPA 300.1 -1997, Rev. 1.0

### Wet Chemistry

wet onemiatry							
Parameter	Result Units [	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS. Filterable Residue	1740 mg/L	2	100	40	SDW	07/01/2022 14:48	SM 2540C-2015



**Dolan Chemical Laboratory** 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

**Customer: Welsh Power Station** Date Reported: 12/27/2022 Job ID: 222057

**Customer Sample ID: DUPLICATE - BACKGROUND** 

**Customer Description: TG-32** 

Lab Number: 222057-004

Preparation:

Date Collected: 06/28/2022 15:30 EDT

Date Received: 06/30/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.25 mg/L	2	0.04	0.02	CRJ	07/12/2022 21:01	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.22 mg/L	2	0.06	0.02	CRJ	07/12/2022 21:01	EPA 300.1 -1997, Rev. 1.0
Sulfate	73.0 mg/L	2	0.40	0.06	CRJ	07/12/2022 21:01	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	180 mg/L	1	50	20	SDW	07/01/2022 14:50	SM 2540C-2015

#### 222057

**Job Comments:** 

Original report issued 8/9/2022. Report reissued with amended matrix spike precision calculations.

#### **Report Verification**

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com 614-836-4184 Phone: Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Job ID: 222057

## **Water Analysis Report**

#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Customer: Welsh Power Station Date Reported: 12/27/2022

## **Data Qualifer Legend**

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

(and (consoner matter)						5		Chair of Castoay Income	3			
4001 Bixby Road Groveport, Ohio 43125				Prod	Program: (	Coal Com	bustion	Coal Combustion Residuals (CCR)	s (CCR)	-		
Contacts: Michael Ohlinger (614-836-4184)						Site Contact:	<u>.</u>	:		Date:		For Lab Use Only: COC/Order #:
Project Name: Welsh Background					<u> </u>	25	$\vdash$	<u> </u>	11	Three (six every		
Contact Name: Jill Parker-Witt	Analysis	Furmarround Routine	Analysis Turnaround Time (in Calendar Days) Routine (28 days)	lendar D.	938	<u> </u>	Dottle,	_	bottle,		են '' Մար Մար Մար Մար Մար	7.30200
Contact Phone: (318) 673-3816						ıΞ		_	0-8°C,	pH<2, HNO ₃	r 10 line	7550
Sampler(s): Matt Hamilton Kenny McDonald						,8 <b>8</b> ,8A	'qa 'o:	nM bas e	'os	977-1		
Sample Identification	Sample Date	Sample	Sample Type (C=Comp, G=Grab)	Matrix	# of Conf.	Sampler(s) Inli	Be, Cd, Cr, C Mo, Se, TL	Fevlossib	,ю, я, сот	Ra-226, Ra	6H	Sample Specific Notes:
AD-1	6/28/2022	1135	9	GW	-				×			TG-32 needed
AD-5	6/28/2022	905	G	GW	-				×			
AD-17	6/28/2022	1229	၅	GW	-				×			
DUPLICATE - BACKGROUND	6/28/2022	1430	၅	GW	-				×			
										42 m 854 / S		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	HNO3; 5=Na	OH; 6= Ot	her	; F= filter in		field	4	F4	1	4		
* Six 1L Bottles must be collected for Radium for every 10th sample.	r every 10th	sample.										

Special Instructions/QC Requirements & Comments:

-					
Relinquished W.	Company	ا ا	Date/Time: 1600 Received by: 6/21127		Date/Time:
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Relinquished by:	Company:	Dat	Jate/Time:	Received in Laboratory by Chily	6/30/2 6 (0,304m)
		0, 10.16.10. D. 10.16.10.	Charles Constitute Charles	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17

# WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

, i	Packag	ge Type				Delivery Ty	<u>/pe</u>		
Cooled	Box	Bag	Envelo	pe	PONY	UPS	FedEX	USPS	
				1	Other_			<del></del>	
Plant/Cu	ıstomer	WE	rish		Number of l	Plastic Co	ntainers:	4	
Opened	ву^	nisgn	ra/r	ni chae	∠ Number of	Glass Cor	ntainers: _	<u></u>	
F		•			Number of			-	1
	6.00			_	or N/A Initial:				
1.				_	- If No, specify				1
ì				_	Comments				}
			_	<b>T</b>	Comments			200	
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pH (15	min)		(pres ) (24 hr)	NO ₂ or I	NO₃ (48 hr)	onno-PC	)₄ (48 hr)	Hg-aiss	(pres ) (48 hr)
Was Co	OC filled	out prop	perly?	Ø1N	Comments		+70	-	
Were s	amples la	abeled p	properly?	GIN	Comments	·			
			s used?		Comments				
Was pl	-I checke	d & Col	or Coding	done?	N or N/A	initial &	Date:	UK O	6/30/22
рН рар	er (circle	опе):	MQuant   lot HC90	pH Cat 1. 4495	09535.0001	(OR)	Lab rat pl	I Cat # LF RWDG21	RS -4801
-Was	Add'l Pre	eservati	ve needed	13 A M	If Yes: By whon	n & when:		(S	ee Prep Book)
ls sam	ple filtrati	ion requ	ested?	Y 1 10	Comments _			(5	See Prep Book)
Was th	ne custon	ner con	tacted?	if Yes:	Person Cont	acted:	·		. 9
Lab II	# <u>1</u> 2	205	7	Initial 8 —	& Date & Time :		Ξ-		
Logg	ed by	MSO		Comm	ents:	32			
	ewed by_	011	)						

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

AEP- Dolan Chemical Laboratory

Sample Receipt Form SOP-7102

Page I of i

4, 4,

# **Municipal Solid Waste Laboratory Review Checklist**

This da	ata pack	cage cor	nsists of:		
×	(which	include	e page, and the laboratory review che es the reportable data identified on the ption Reports.		
X	R1	Field c	hain-of-custody documentation		
×	R2	Sample	e identification cross-reference		
X	R3	(a) Ite N1 (b) Di (c) Pr (d) Cl	eports (analytical data sheets) for each ems specified in NELAC Chapter 5 fo ELAC Standard ilution factors reparation methods leanup methods required for the project, tentatively in	r reporting results, e.g., Section	
x	R4	(a) Ca	gate recovery data including: alculated recovery (%R) ne laboratory's surrogate QC limits		
×	R5	Test re	ports/summary forms for blank sam	ples	
×	R6	(a) L(c) (b) Ca	eports/summary forms for laboratory CS spiking amounts alculated %R for each analyte he laboratory's LCS QC limits	control samples (LCSs) inclu	ıding:
×	R7	(a) Sa (b) M (c) Ca (d) Ca	eports for project matrix spike/matrix amples associated with the MS/MSD IS/MSD spiking amounts oncentration of each MS/MSD analytal alculated %Rs and relative percent di he laboratory's MS/MSD QC limits	clearly identified te measured in the parent and	-
X	R8	(a) Ti (b) Ti	atory analytical duplicate (if applicab he amount of analyte measured in the he calculated RPD he laboratory's QC limits for analytica	e duplicate	
X	R9	List of	method quantitation limits (MQLs)	for each analyte for each metl	hod and matrix
X	R10	Other	problems or anomalies		
×	The Ex	cception	a Report for every item for which the	result is "No" or "NR" (Not R	eviewed)
packag require reports by the labora	ge as beements s. By m labora tory in	een revieus of the raise signs tory as labeled	t: I am responsible for the release of ewed by the laboratory and is completed by the laboratory and is completed by ature below, I affirm to the best of my having the potential to affect the qual oratory Review Checklist, and no info quality of the data.	ete and technically compliant the laboratory in the attached knowledge, all problems/and lity of the data, have been ide	with the d exception omalies, observed ntified by the
respon used is statem	iding to respor ent is t	rule. The rule of the rule.	le: This laboratory is an in-house he official signing the cover page of the releasing this data package and is he	he rule-required report in whi by signature affirming the abo	ich these data are ve release
		E. Arno		Chemist Principle	7/13/2022
Name	(printe	a)	Signature	Official Title	Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Wesh Background
Reviewer Name: Timothy E. Arnold
LRC Date: 7/13/2022
Laboratory Job Number: 222057
Prep Batch Number(s): QC2207091

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	0, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	0, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	YES	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	YES	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	:
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		ļ
	I	Were surrogates added prior to extraction?	Yes	
	ĭ	Were surrogate percent recoveries in all samples within the laboratory QC limits?	YES	
R5	0, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	YES	
R6	0, 1	Laboratory control samples (LCS):	,	
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	,
	I	Were LCS (and LCSD, If applicable) %Rs within the laboratory QC limits?	YES	
_	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	YES	
R7	0, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	1	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	YES	
	I	Were MS/MSD RPDs within laboratory QC limits?	YES	
R8	0, 1	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	YES	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		1
	1	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Wesh Background
Reviewer Name: Timothy E. Arnold

LRC Date: 7/13/2022

Laboratory Job Number: 222057

Prep Batch Number(s): QC2207091

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
<b>S1</b>	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	1	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
<b>S</b> 5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	1	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
<b>S7</b>	0	Tentatively identified compounds (TICs):		
	1	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	1	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	0, 1	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Wesh Background
Reviewer Name: Timothy E. Arnold
LRC Date: 7/13/2022
Laboratory Job Number: 222057
Prep Batch Number(s): QC2207091

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB <mql.< th=""></mql.<>

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

## Municipal Solid Waste Laboratory Review Checklist

This data package consists of:  $\mathbf{x}$ This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.  $\mathbf{x}$  $R_1$ Field chain-of-custody documentation X R₂ Sample identification cross-reference  $\mathbf{x}$ R₃ Test reports (analytical data sheets) for each environmental sample that includes: (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard (b) Dilution factors (c) Preparation methods (d) Cleanup methods (e) If required for the project, tentatively identified compounds (TICs) M Surrogate recovery data including: **R**4 (a) Calculated recovery (%R) (b) The laboratory's surrogate OC limits X Test reports/summary forms for blank samples **R**5  $\mathbf{x}$ **R6** Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits  $\square$ **R**7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) Samples associated with the MS/MSD clearly identified (b) MS/MSD spiking amounts (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples (d) Calculated %Rs and relative percent differences (RPDs) (e) The laboratory's MS/MSD QC limits X R8 Laboratory analytical duplicate (if applicable) recovery and precision: (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates × R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix X R10 Other problems or anomalies The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed) **Release Statement:** I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data. Check, if applicable: ( ) This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true. Michael Ohlinger **Chemist** Official Title Name (printed)

## Table 1. Reportable Data.

 Laboratory Name:
 American Electric Power Dolan Chemical Laboratory

 Project Name:
 Welsh Background

 Reviewer Name:
 Michael Ohlinger

LRC Date: 8/9/22

Laboratory Job Number: 222057

Prep Batch Number(s): QC2207067

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	0, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	0, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	0, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	0, 1	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	О, І	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	No	ER1
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	0, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

**Laboratory Job Number:** 222057

Prep Batch Number(s): QC2207067

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	0, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
<b>S</b> 3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9 	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

## Table 3. Exception Reports.

Laboratory Nan	American Electric Power Dolan Chemical Laboratory
Project Name:	Welsh Background
Reviewer Name	Michael Ohlinger
LRC Date: 8/9/2	22
Laboratory Job	Number: 222057
=	nber(s): QC2207067

Exception Report No.	Description
ER1	The precision between the duplicate results was above acceptance limits.
<u> </u>	
<u> </u>	

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222084 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: AD-1 Customer Description: TG-32

Lab Number: 222084-001 Preparation:

Date Collected: 06/28/2022 12:35 EDT Date Received: 07/01/2022 11:00 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifier	rs Analyst	Analysis Date	Method
Antimony	0.03 µg/L	1	0.10	0.02 J1	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Arsenic	0.26 μg/L	1	0.10	0.03	GES	07/22/2022 08:56	EPA 200.8-1994, Rev. 5.4
Barium	85.4 μg/L	1	0.20	0.05	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Beryllium	0.995 μg/L	1	0.050	0.007	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Boron	0.768 mg/L	1	0.050	0.009	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Cadmium	0.030 μg/L	1	0.020	0.004	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Calcium	6.76 mg/L	1	0.05	0.02	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Chromium	0.37 μg/L	1	0.20	0.04	GES	07/22/2022 08:56	EPA 200.8-1994, Rev. 5.4
Cobalt	2.34 μg/L	1	0.020	0.003	GES	07/22/2022 08:56	EPA 200.8-1994, Rev. 5.4
Lead	0.33 μg/L	1	0.20	0.05	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Lithium	0.00855 mg/L	1	0.00020	0.00005	GES	07/22/2022 08:56	EPA 200.8-1994, Rev. 5.4
Mercury	2 ng/L	1	5	2 J1	JAB	07/19/2022 15:04	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4
Selenium	8.35 µg/L	1	0.50	0.09	GES	07/22/2022 08:56	EPA 200.8-1994, Rev. 5.4
Thallium	0.05 µg/L	1	0.20	0.04 J1	GES	07/14/2022 15:13	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	3.03 pCi/L	0.47	0.44	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
Carrier Recovery	91.8 %					
Radium-228	0.66 pCi/L	0.16	0.51	TTP	07/12/2022 16:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	79.7 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222084 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: AD-5 Customer Description: TG-32

Lab Number: 222084-002 Preparation:

Date Collected: 06/28/2022 10:05 EDT Date Received: 07/01/2022 11:00 EDT

#### **Metals**

_								
Parameter	Result	Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02	µg/L	1	0.10	0.02 U1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Arsenic	3.01	µg/L	1	0.10	0.03	GES	07/22/2022 09:01	EPA 200.8-1994, Rev. 5.4
Barium	51.8	µg/L	1	0.20	0.05	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Beryllium	0.032	µg/L	1	0.050	0.007 J1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Boron	0.048	mg/L	1	0.050	0.009 J1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004	µg/L	1	0.020	0.004 U1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Calcium	32.9	mg/L	1	0.05	0.02	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Chromium	0.22	µg/L	1	0.20	0.04	GES	07/22/2022 09:01	EPA 200.8-1994, Rev. 5.4
Cobalt	12.8	µg/L	1	0.020	0.003	GES	07/22/2022 09:01	EPA 200.8-1994, Rev. 5.4
Lead	<0.05	µg/L	1	0.20	0.05 U1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Lithium	0.161	mg/L	1	0.00020	0.00005	GES	07/22/2022 09:01	EPA 200.8-1994, Rev. 5.4
Mercury	<2	ng/L	1	5	2 U1	JAB	07/19/2022 15:07	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.1	μg/L	1	0.5	0.1 J1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09	μg/L	1	0.50	0.09 U1	GES	07/22/2022 09:01	EPA 200.8-1994, Rev. 5.4
Thallium	0.05	μg/L	1	0.20	0.04 J1	GES	07/14/2022 15:28	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.06 pCi/L	0.38	0.47	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
<b>Carrier Recovery</b>	94.0 %					
Radium-228	-0.10 pCi/L	0.33	1.12	TTP	07/12/2022 16:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	85.1 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222084 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: AD-17 Customer Description: TG-32

Lab Number: 222084-003 Preparation:

Date Collected: 06/28/2022 13:29 EDT Date Received: 07/01/2022 11:00 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Arsenic	0.53 μg/L	1	0.10	0.03	GES	07/22/2022 09:11	EPA 200.8-1994, Rev. 5.4
Barium	12.6 µg/L	1	0.20	0.05	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Beryllium	0.040 µg/L	1	0.050	0.007 J1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Boron	0.112 mg/L	1	0.050	0.009	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Cadmium	0.011 µg/L	1	0.020	0.004 J1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Calcium	167 mg/L	1	0.05	0.02	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Chromium	0.40 µg/L	1	0.20	0.04	GES	07/22/2022 09:11	EPA 200.8-1994, Rev. 5.4
Cobalt	41.3 µg/L	1	0.020	0.003	GES	07/22/2022 09:11	EPA 200.8-1994, Rev. 5.4
Lead	0.12 µg/L	1	0.20	0.05 J1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Lithium	0.267 mg/L	1	0.00020	0.00005	GES	07/22/2022 09:11	EPA 200.8-1994, Rev. 5.4
Mercury	3 ng/L	1	5	2 J1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.1 µg/L	1	0.5	0.1 J1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	07/22/2022 09:11	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	07/14/2022 15:33	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	5.26 pCi/L	0.59	0.39	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
Carrier Recovery	98.4 %					
Radium-228	1.28 pCi/L	0.15	0.45	TTP	07/12/2022 16:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	92.1 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222084 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: DUPLICATE - BACKGROUND Customer Description: TG-32

Lab Number: 222084-004 Preparation:

Date Collected: 06/28/2022 15:30 EDT Date Received: 07/01/2022 11:00 EDT

#### Metals

Motals							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.03 µg/L	1	0.10	0.02 J1	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Arsenic	0.26 µg/L	1	0.10	0.03	GES	07/22/2022 09:21	EPA 200.8-1994, Rev. 5.4
Barium	82.3 µg/L	1	0.20	0.05	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Beryllium	0.852 µg/L	1	0.050	0.007	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Boron	0.779 mg/L	1	0.050	0.009	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Cadmium	0.032 µg/L	1	0.020	0.004	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Calcium	6.56 mg/L	1	0.05	0.02	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Chromium	0.32 µg/L	1	0.20	0.04	GES	07/22/2022 09:21	EPA 200.8-1994, Rev. 5.4
Cobalt	2.35 µg/L	1	0.020	0.003	GES	07/22/2022 09:21	EPA 200.8-1994, Rev. 5.4
Lead	0.38 µg/L	1	0.20	0.05	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Lithium	0.00837 mg/L	1	0.00020	0.00005	GES	07/22/2022 09:21	EPA 200.8-1994, Rev. 5.4
Mercury	2 ng/L	1	5	2 J1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4
Selenium	7.92 µg/L	1	0.50	0.09	GES	07/22/2022 09:21	EPA 200.8-1994, Rev. 5.4
Thallium	0.04 µg/L	1	0.20	0.04 J1	GES	07/14/2022 15:43	EPA 200.8-1994, Rev. 5.4



Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222084 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: EQ BLANK - BACKGROUND Customer Description: TG-32

Lab Number: 222084-005 Preparation:

Date Collected: 06/28/2022 12:09 EDT Date Received: 07/01/2022 11:00 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03 µg/L	1	0.10	0.03 U1	GES	07/22/2022 09:26	EPA 200.8-1994, Rev. 5.4
Barium	0.06 µg/L	1	0.20	0.05 J1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Boron	0.027 mg/L	1	0.050	0.009 J1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Chromium	0.84 µg/L	1	0.20	0.04	GES	07/22/2022 09:26	EPA 200.8-1994, Rev. 5.4
Cobalt	0.009 µg/L	1	0.020	0.003 J1	GES	07/22/2022 09:26	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Lithium	0.00008 mg/L	1	0.00020	0.00005 J1	GES	07/22/2022 09:26	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	07/22/2022 09:26	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	07/14/2022 15:48	EPA 200.8-1994, Rev. 5.4

222084 Job Comments:

Original report issued 8/10/2022. Report reissued with amended matrix spike precision calculations.



Job ID: 222084

## **Water Analysis Report**

#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Customer: Welsh Power Station Date Reported: 12/29/2022

**Report Verification** 

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Muhael S. Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

#### **Data Qualifer Legend**

- J1 Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
- U1 Not detected at or above method detection limit (MDL).

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

1

4001 Bixby Road				,		5		all of custody type of	5				
Groveport, Ohio 43125				Prog	am:	Soal Col	mbustio	Program: Coal Combustion Residuals (CCR)	s (CCR)				Ī
Contacts: Michael Ohlinger (614-836-4184)					ਲ	Site Contact:	<del>;;</del>			Date:		For Lab Use Only:	
Project Name: Welsh Background					<u> </u>	~ ~	<b>—</b>	Field-filter 500 mL	11	Three (six every	250 mL Glass		
Contact Name: Jill Parker-Witt	Analysis	Furnaround Routin	Analysis Turnaround Time (in Calendar Days) Routine (28 days)	endar Da	<u> </u>		bottle,	bottle,	bottle,	10th*)	bottle,	722004	
Contact Phone: (318) 673-3816								HNO3	0-6°C	T L Bottles, pH<2, HNO ₃	pH<2	7-6-77	
Sampler(s): Matt Hamilton Kenny McDonald							'qa 'oʻ	nM bas e	'os	872-1			
Sample Identification	Sample Date	Sample	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sampler(s) Ini	8, Çê, Li, Sb, 8e, Cd, Cr, G Mo, Se, TL	dissolved F	, F, CI,	Ra-226, Ra	_∠ ^B H	Sample Specific Notes:	
AD-1	6/28/2022	1135	9	gw	8		×			×	×	Routine (28 days)	
AD-5	6/28/2022	905	9	GW	2		×			×	×	TG-32 needed	
AD-17	6/28/2022	1229	9	GW	ç		×			×	×		
DUPLICATE - BACKGROUND	6/28/2022	1430	g	δ	2		×				×		
EQUIPMENT BLANK - BACKGROUND	6/28/2022	1109	g	8 B	2		×				×		
					_								
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other; F= fitter	HNO3; 5=Na	OH; 6= Oti	her	F=f	ter in field	eld	4	7	1	4	2		P.M
* Six 1L Bottles must be collected for Radium for every 10th sample.	r every 10th	sample.											Г

Six 1L Bottles must be collected for Radium for every 10th sample.

Special Instructions/QC Requirements & Comments:

Relinquished by Amultan	Company C	Date/Time: 160-1	/60 € Received by:	Date/Time:
Relinquished by	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by	Company	Date/Time:	Received in Laboratory by: CMM	Date/Time: 1/7 1/52
Form COC-04. AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17	scord for Coal Combustion Residua	al (CCR) Sampling - Shr	reveport, Rev. 1, 1/10/17	/ ,

# WATER & WASTE SAMPLE RECEIPT FORM (IK#T)

- Package Type	Delivery Type
Cooler Box Bag Envelope	PONY UPS (edEX USPS
	Other
Plant/Customer No. ISh	Number of Plastic Containers:
Opened By MSO	Number of Glass Containers: 5
Date/Time 7/1/22 10:30AM	Number of Mercury Containers:
Were all temperatures within 0-6°C? Y/N	or N/A Initial:on ice no ice
(IR Gun Ser# 210441568, Expir.5/27/2023)	- If No, specify each deviation:
Was container in good condition? (Ŷ) / N	Comments
Was Chain of Custody received? (Y) / N	Comments
Requested turnaround: 28 2 245	If RUSH, who was notified?
1	NO ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out properly? (Y) N	Comments
Were samples labeled properly? (Y) N	Comments
Were correct containers used? YN	Comments
Was pH checked & Color Coding done? Y	/ N or N/A Initial & Date:
pH paper (circle one): MQuant pH Cat 1. lot HC904495	09535.0001 {OR} Lab rat pH Cat # LRS -4801 Lot X000RWDG21
- Was Add'l Preservative needed? Y / N	If Yes: By whom & when: (See Prep Book)
Is sample filtration requested? Y / N	Comments (See Prep Book)
Was the customer contacted? If Yes:	Person Contacted:
Lab ID# 222084 Initial 8	& Date & Time :
Lawred by MSO	ents:
Reviewed by MG1c	

**REMINDER**: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

AEP- Dolan Chemical Laboratory

Sample Receipt Form SOP-7102

Page l of l

# **Municipal Solid Waste Laboratory Review Checklist**

This da	ata pack	kage consists of:
X	(which	gnature page, and the laboratory review checklist consisting of Table 1, Reportable Data includes the reportable data identified on this page), Table 2, Supporting Data, and 3, Exception Reports.
x	R1	Field chain-of-custody documentation
x	R2	Sample identification cross-reference
×	R3	<ul> <li>Test reports (analytical data sheets) for each environmental sample that includes:</li> <li>(a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard</li> <li>(b) Dilution factors</li> <li>(c) Preparation methods</li> <li>(d) Cleanup methods</li> <li>(e) If required for the project, tentatively identified compounds (TICs)</li> </ul>
NA	R4	Surrogate recovery data including:  (a) Calculated recovery (%R)  (b) The laboratory's surrogate QC limits
х	R ₅	Test reports/summary forms for blank samples
×	R6	Test reports/summary forms for laboratory control samples (LCSs) including:  (a) LCS spiking amounts  (b) Calculated %R for each analyte  (c) The laboratory's LCS QC limits
x	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:  (a) Samples associated with the MS/MSD clearly identified  (b) MS/MSD spiking amounts  (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples  (d) Calculated %Rs and relative percent differences (RPDs)  (e) The laboratory's MS/MSD QC limits
x	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates
×	R9	List of method quantitation limits (MQLs) for each analyte for each method and matrix
×	R10	Other problems or anomalies
x	The Ex	sception Report for every item for which the result is "No" or "NR" (Not Reviewed)
packag require reports by the labora	ge as beements s. By m laborat tory in	tement: I am responsible for the release of this laboratory data package. This data seen reviewed by the laboratory and is complete and technically compliant with the of the methods used, except where noted by the laboratory in the attached exception by signature below, I affirm to the best of my knowledge, all problems/anomalies, observed tory as having the potential to affect the quality of the data, have been identified by the the Laboratory Review Checklist, and no information or data have been knowingly withheld fect the quality of the data.
respon used is statem	iding to respon ent is t	
		Mann S. Sulzmann Chemist 7-21-22

Name (printed)

Signature

Date

Official Title

Table 1. Reportable Data.

-	
Laboratory Name:	American Electric Power Dolan Chemical Laboratory
Project Name:	Wolsh Power
Reviewer Name: _	Susann Sulzmann
LRC Date:	7-21-22
Laboratory Job Nu	ımber:
Prep Batch Numbe	er(s): 1822070806

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
·	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	ve (	
R6	0, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
•	I	Was the LCSD RPD within QC limits?	Ves	
R7	0, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	11es	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	yes	
R9	O, I	Method quantitation limits (MQLs):	1	
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

- 1	American Electric Pow	ver Dolan Chemical Laboratory
Laboratory Name:		
	Nelsh Pou	
Reviewer Name: _		Sultmann
LRC Date:	7-21-27	r
Laboratory Job Nu	mber: <u>2220</u>	84
Prep Batch Numbe	mber: <u>2720</u> r(s): PB2070	806

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
51	0, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
<b>S</b> 3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		(5)
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

## Table 3. Exception Reports.

Laboratory Name:	American Electric Power Dolan Chemical Laboratory
Project Name:	Welsh Power
Reviewer Name: _	Susann Sulzmann
LRC Date:	7-21-22
Laboratory Job Nu	ımber: <u>222084</u>
Prep Batch Numbe	er(s): 1622070806

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB <mql.< td=""></mql.<>

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).
NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:

X	(which	is signature page, and the laboratory review checklist consisting of Table 1, Reportable Data nich includes the reportable data identified on this page), Table 2, Supporting Data, and ole 3, Exception Reports.					
X	R1	Field chain-or	d chain-of-custody documentation				
X	R2	Sample identi	fication cross-	fication cross-reference			
x	R3	<ul><li>(a) Items spender</li><li>(b) Dilution</li><li>(c) Preparate</li><li>(d) Cleanup</li></ul>	ecified in NELA standard factors ion methods methods	AC Chapter 5 for	environmental samp reporting results, e.g	., Section 5.5.10 in 2003	
NA	R4	(a) Calculate	overy data incl ed recovery (%l ratory's surroga	R)			
Х	R ₅	Test reports/s	summary form	s for blank sam _l	oles		
X	R6	Test reports/summary forms for laboratory control samples (LCSs) including:  (a) LCS spiking amounts  (b) Calculated %R for each analyte  (c) The laboratory's LCS QC limits				s) including:	
X	R7	<ul><li>(a) Samples</li><li>(b) MS/MSI</li><li>(c) Concentro</li><li>(d) Calculate</li></ul>	eports for project matrix spike/matrix spike duplicates (MS/MSDs) including: amples associated with the MS/MSD clearly identified IS/MSD spiking amounts oncentration of each MS/MSD analyte measured in the parent and spiked samples alculated %Rs and relative percent differences (RPDs) he laboratory's MS/MSD QC limits				
X	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates					
X	R9	List of metho	d quantitation	limits (MQLs) f	or each analyte for ea	ch method and matrix	
X	R10	o Other problems or anomalies					
X	The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed)						
packag require reports by the laborat	e as be ements s. By m laborat tory in t	en reviewed by of the methods y signature be cory as having	y the laborator s used, except v low, I affirm to the potential to Review Check	y and is complet where noted by to the best of my affect the quali	ty of the data, have be	apliant with the attached exception ms/anomalies, observed	
respon used is	ding to	rule. The offic sible for releas	ial signing the	cover page of th	laboratory controlled e rule-required repor signature affirming	t in which these data are	
Jonat	than B	arnhill	Sonathan	Bornhill	Lab Supervisor	8-2-2022	
Name (	Name (printed) Signature Official Title Date						

## **Table 1. Reportable Data.**

Laboratory Name:	
Project Name:	
Reviewer Name:	
LRC Date:	
Laboratory Job Number:	
Prep Batch Number(s):	

I tem ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?		
		Were all departures from standard conditions described in an exception report?		
R2	O, I	Sample and quality control (QC) identification		
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?		
R3	O, I	Test reports		
		Were all samples prepared and analyzed within holding times?		
		Other than those results < MQL, were all other raw values bracketed by calibration standards?		
		Were calculations checked by a peer or supervisor?		
		Were all analyte identifications checked by a peer or supervisor?		
		Were sample quantitation limits reported for all analytes not detected?		
		Were all results for soil and sediment samples reported on a dry weight basis?		
		Was % moisture (or solids) reported for all soil and sediment samples?		
		If required for the project, TICs reported?		
R4	0	Surrogate recovery data		
		Were surrogates added prior to extraction?		
		Were surrogate percent recoveries in all samples within the laboratory QC limits?		
R5	Ο, Ι	Test reports/summary forms for blank samples		
		Were appropriate type(s) of blanks analyzed?		
		Were blanks analyzed at the appropriate frequency?		

I tem ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
		Were method blanks taken through the entire analytical process, including preparation and, if applicable,		
		cleanup procedures?		
		Were blank concentrations < MQL?		
R6	O, I	Laboratory control samples (LCS):		
		Were all COCs included in the LCS?		
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?		
		Were LCSs analyzed at the required frequency?		
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		
		Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?		
		Was the LCSD RPD within QC limits?		
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
		Were the project/method specified analytes included in the MS and MSD?		
		Were MS/MSD analyzed at the appropriate frequency?		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		
		Were MS/MSD RPDs within laboratory QC limits?		
R8	O, I	Analytical duplicate data		
		Were appropriate analytical duplicates analyzed for each matrix?		
		Were analytical duplicates analyzed at the appropriate frequency?		
		Were RPDs or relative standard deviations within the laboratory QC limits?		
R9	O, I	Method quantitation limits (MQLs):		
		Are the MQLs for each method analyte included in the laboratory data package?		
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?		
		Are unadjusted MQLs included in the laboratory data package?		
R10	O, I	Other problems/anomalies		
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		
		Were all necessary corrective actions performed for the reported data?		
		Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?		

## **Table 2. Supporting Data.**

Laboratory Name:	
Project Name:	
Reviewer Name:	
LRC Date:	
Laboratory Job Number:	
Prep Batch Number(s):	

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
		Were response factors and/or relative response factors for each analyte within QC limits?		
		Were percent RSDs or correlation coefficient criteria met?		
		Was the number of standards recommended in the method used for all analytes?		
		Were all points generated between the lowest and highest standard used to calculate the curve?		
		Are ICAL data available for all instruments used?		
		Has the initial calibration curve been verified using an appropriate second source standard?		
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
		Was the CCV analyzed at the method-required frequency?		
		Were percent differences for each analyte within the method-required QC limits?		
		Was the ICAL curve verified for each analyte?		
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?		
S3	0	Mass spectral tuning:		
		Was the appropriate compound for the method used for tuning?		
		Were ion abundance data within the method-required QC limits?		
S4	0	Internal standards (IS):		
		Were IS area counts and retention times within the method-required QC limits?		
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?		
		Were data associated with manual integrations flagged on the raw data?		

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
		Did dual column confirmation results meet the method-required QC?		
S7	0	Tentatively identified compounds (TICs):		
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?		
S8	I	Interference Check Sample (ICS) results:		
		Were percent recoveries within method QC limits?		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		
S10	O, I	Method detection limit (MDL) studies		
		Was a MDL study performed for each reported analyte?		
		Is the MDL either adjusted or supported by the analysis of DCSs?		
S11	O, I	Proficiency test reports:		
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?		
S12	O, I	Standards documentation		
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?		
S13	O, I	Compound/analyte identification procedures		
		Are the procedures for compound/analyte identification documented?		
S14	O, I	Demonstration of analyst competency (DOC)		
		Was DOC conducted consistent with NELAC Chapter 5C?		
		Is documentation of the analyst's competency up-to-date and on file?		
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
		Are all the methods used to generate the data documented, verified, and validated, where applicable?		
S16	O, I	Laboratory standard operating procedures (SOPs):		
		Are laboratory SOPs current and on file for each method performed?		

## **Table 3. Exception Reports.**

Laboratory Name:	
Project Name:	
Reviewer Name:	
LRC Date:	
Prep Batch Number(s):	

Exception Report No.	Description

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222059 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: AD-8 Customer Description: TG-32

Lab Number: 222059-001 Preparation:

Date Collected: 06/27/2022 11:23 EDT Date Received: 06/30/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	15.9 mg/L	2	0.04	0.02	CRJ	07/13/2022 17:51	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.82 mg/L	2	0.06	0.02	CRJ	07/13/2022 17:51	EPA 300.1 -1997, Rev. 1.0
Sulfate	156 mg/L	10	2.0	0.3	CRJ	07/13/2022 17:25	EPA 300.1 -1997, Rev. 1.0

#### **Wet Chemistry**

Parameter	Result Units I	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS, Filterable Residue	330 mg/L	1	50	20	SDW	07/01/2022 14:59	SM 2540C-2015	

Customer Sample ID: AD-9 Customer Description: TG-32

Lab Number: 222059-002 Preparation:

Date Collected: 06/27/2022 12:20 EDT Date Received: 06/30/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	59.8 mg/L	5	0.10	0.05	CRJ	07/13/2022 19:11	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09 mg/L	5	0.15	0.05 J1	CRJ	07/13/2022 19:11	EPA 300.1 -1997, Rev. 1.0
Sulfate	933 mg/L	50	10	2	CRJ	07/13/2022 18:44	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method

SDW

07/01/2022 15:01 SM 2540C-2015

40

Customer Sample ID: AD-15 Customer Description: TG-32

Lab Number: 222059-003 Preparation:

1460 mg/L

Date Collected: 06/27/2022 11:07 EDT Date Received: 06/30/2022 10:30 EDT

100

#### Ion Chromatography

TDS, Filterable Residue

Parameter	Result Units I	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	30.9 mg/L	2	0.04	0.02	CRJ	07/13/2022 20:30	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09 mg/L	2	0.06	0.02	CRJ	07/13/2022 20:30	EPA 300.1 -1997, Rev. 1.0
Sulfate	18.9 mg/L	2	0.40	0.06	CRJ	07/13/2022 20:30	EPA 300.1 -1997, Rev. 1.0

#### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	170 mg/L	1	50	20	SDW	07/01/2022 15:05	SM 2540C-2015



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222059 Customer: Welsh Power Station Date Reported: 12/29/2022

Customer Sample ID: DUPLICATE - PBAP

**Customer Description: TG-32** 

SDW

07/01/2022 15:10 SM 2540C-2015

Lab Number: 222059-004 Preparation:

Date Collected: 06/27/2022 14:00 EDT Date Received: 06/30/2022 10:30 EDT

50

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	30.4 mg/L	2	0.04	0.02	CRJ	07/13/2022 20:03	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09 mg/L	2	0.06	0.02	CRJ	07/13/2022 20:03	EPA 300.1 -1997, Rev. 1.0
Sulfate	17.6 mg/L	2	0.40	0.06	CRJ	07/13/2022 20:03	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method

20

#### 222059

**Job Comments:** 

TDS, Filterable Residue

Original report issued 8/2/2022. Report reissued with amended matrix spike precision calculations.

160 mg/L

#### **Report Verification**

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Muhuel S. Ollinga

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Job ID: 222059

#### **Water Analysis Report**

#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Customer: Welsh Power Station Date Reported: 12/29/2022

#### **Data Qualifer Legend**

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL) 4001 Bixby Road

Groveport, Ohio 43125				Prog	ıram:	Coal C	ombustio	Program: Coal Combustion Residuals (CCR)	Is (CCR,			
Contacts: Michael Ohlinger (614-838-4184)						Site Contact:	tact:			Date:		For Lab Use Only: COC/Order #:
Project Name: Welsh PBAP							250 mL	Field-filter 500 mL	11	Three (six every		
Contact Name: Jill Parker-Witt	Analysis Turnaround Time (in Calendar Days) Routine (28 days)	maround Routine	around Time (in Ca Routine (28 days)	lendar D	ays)		Dottle,	bottle,	bottle,	10th")		7700.00
Contact Phone: (318) 673-3816			· ·				$\neg$	HNO	0-6°C	pH<2, HNO,	t 10 enii	666054
Sampler(s): Matt Hamilton Kenny McDonald						elait	, <b>As, B</b> a, ,dq ,o;	uM bns e	'os	9-228		
Sample Identification	Sample S	Sample	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	ini (a)nelgma2	B, Ca, Li, Sb Be, Cd, Cr, C Mo, Se, TL	dissolved F	10 , F, CI	Ra-226, Ra	βН	Sample Specific Notes:
AD-8	6/27/2022	1023	G	ВW	٠				×			Routine (28 days)
AD-9	6/27/2022	1120	G	GW	-				×			TG-32 needed
AD-15	6/27/2022	1007	G	GW	-				×			
DUPLICATE - PBAP	6/27/2022	1300	G	GW	-				×			
												8
												10
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	HNO3; 5=NaO	H; 6= Oth	er	; F= f	F= filter in field	field	4	F4	-	4		
* Six 1L Bottles must be collected for Radium for every 10th sample.	every 10th s	ample.										

(0,30/m

Date/Time: /2

Date/Time:

Date/Time:

Received by:

Received by:

Date/Time 160c 6/21/22 Date/Time:

Company: Exel Company:

Relinquished by:

Special Instructions/QC Requirements & Comments:

Date/Time:

# VATER & WASTE SAMPLE RECEIPT FORM (IR#1)

Package Type	Delivery Type
(Cooler) Box Bag Envelope	PONY UPS FedEX USPS
	Other
Plant/Customer Welsh	Number of Plastic Containers: 4
Opened By Misgina/Mi One	∠ Number of Glass Containers:
Date/Time 06/30/22 10:30	Number of Mercury Containers:
Were all temperatures within 0-6°C?(V)/ N	or N/A Initial: MCC on ice/ no ice
	- If No, specify each deviation:
	Comments
	Comments
	If RUSH, who was notified?
pH (15 min) Cr ⁺⁶ (pres ) NO₂ or (24 hr)	NO₃ (48 hr) ortho-PO₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out properly? 0/N	
Were samples labeled properly? Ø/ N	Comments
Were correct containers used? 🗳 / N	Comments
Was pH checked & Color Coding done?	DIN or N/A Initial & Date: 106/30/22
pH paper (circle one); MQuant pH Cat 1.	.09535.0001 Lab rat pH Cat # LRS -4801
- Was Add'l Preservative needed? Y (N)	If Yes: By whom & when:(See Prep Book)
Is sample filtration requested? Y / 10	Comments (See Prep Book)
Was the customer contacted? If Yes	Person Contacted:
Lab ID# 222059 Initial 8	& Date & Time :
Logged by MSD Comm	ents:
MAG -	

**REMINDER**: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

AEP- Dolan Chemical Laboratory

Sample Receipt Form SOP-7102

Page I of I

4,

#### Municipal Solid Waste Laboratory Review Checklist

This data package consists of: х This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports. х R1 Field chain-of-custody documentation Х R₂ Sample identification cross-reference х R₃ Test reports (analytical data sheets) for each environmental sample that includes: (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 **NELAC Standard** (b) Dilution factors (c) Preparation methods (d) Cleanup methods (e) If required for the project, tentatively identified compounds (TICs) NA **R**4 Surrogate recovery data including: (a) Calculated recovery (%R) (b) The laboratory's surrogate QC limits Test reports/summary forms for blank samples X **R**5 х R6 Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits × **R**7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) Samples associated with the MS/MSD clearly identified (b) MS/MSD spiking amounts (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples (d) Calculated %Rs and relative percent differences (RPDs) (e) The laboratory's MS/MSD QC limits x R8 Laboratory analytical duplicate (if applicable) recovery and precision: (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates X R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix × R10 Other problems or anomalies The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed) **Release Statement:** I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data. Check, if applicable: ( ) This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true. hew they Chemist Michael Ohlinger

Official Title

Name (printed)

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 8/2/22

Laboratory Job Number: 222059

Prep Batch Number(s): QC2207067

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	0, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	0, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		<u></u>
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	1	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	0, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	No	ER1
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	0, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

Laboratory Job Number: 222059

Prep Batch Number(s): QC2207067

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	,
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA_	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
-	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	122
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
_	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
<b>\$7</b>	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11_	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
<b>S13</b>	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
<b>\$14</b>	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
<b>S</b> 15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Na	me: American Electric Power Dolan Chemical Laboratory
Project Name:	Welsh PBAP
Reviewer Nam	e: Michael Ohlinger
LRC Date: 8/2	
Laboratory Jol	
	mber(s): QC2207067

Exception Report No.	Description
ER1	The precision between the duplicate results was above acceptance limits.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

#### **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of: х This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports. X Field chain-of-custody documentation  $R_1$ х  $R_2$ Sample identification cross-reference х R₃ Test reports (analytical data sheets) for each environmental sample that includes: (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 **NELAC Standard** (b) Dilution factors (c) Preparation methods (d) Cleanup methods (e) If required for the project, tentatively identified compounds (TICs) X Surrogate recovery data including: **R**4 (a) Calculated recovery (%R) (b) The laboratory's surrogate QC limits X **R**5 Test reports/summary forms for blank samples х R6 Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits X **R**7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) Samples associated with the MS/MSD clearly identified (b) MS/MSD spiking amounts (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples (d) Calculated %Rs and relative percent differences (RPDs) (e) The laboratory's MS/MSD QC limits  $|\mathbf{x}|$ Laboratory analytical duplicate (if applicable) recovery and precision: R8 (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates List of method quantitation limits (MQLs) for each analyte for each method and matrix X R9  $\square$ **R10** Other problems or anomalies  $\overline{\mathbf{x}}$ The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed) Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data. Check, if applicable: ( ) This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true. Timothy E. Arnold **Chemist Principle** 07/14/2022

Name (printed)

Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E. Arnold

LRC Date: 07/14/2022

Laboratory Job Number: 222059

Prep Batch Number(s): QC2207097

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	0, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	ı	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E. Arnold

LRC Date: 07/14/2022

Laboratory Job Number: 222059

Prep Batch Number(s): QC2207097

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	0, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
<b>S</b> 3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
<b>S</b> 5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4	
S6	0	Dual column confirmation			
	I	Did dual column confirmation results meet the method-required QC?	, NA		
S7	0	Tentatively identified compounds (TICs):			
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA		
S8	I	Interference Check Sample (ICS) results:			
	I	Were percent recoveries within method QC limits?	NA		
<b>S</b> 9	I	Serial dilutions, post digestion spikes, and method of standard additions			
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA		
S10	O, I	Method detection limit (MDL) studies			
	I	Was a MDL study performed for each reported analyte?	Yes		
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes		
S11	O, I	Proficiency test reports:			
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes		
S12	O, I	Standards documentation			
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes		
S13	O, I	Compound/analyte identification procedures			
	I	Are the procedures for compound/analyte identification documented?	Yes		
S14	O, I	Demonstration of analyst competency (DOC)			
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes		
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes		
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)			
	1	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes		
S16	O, I	Laboratory standard operating procedures (SOPs):			
	I	Are laboratory SOPs current and on file for each method performed?	Yes		

#### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E. Arnold

LRC Date: 07/14/2022

Laboratory Job Number: 222059

Prep Batch Number(s): QC2207097

CCB acceptance criteria is CCB <mql.< th=""></mql.<>

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: AD-8 Customer Description:

Lab Number: 222085-001 Preparation:

Date Collected: 06/27/2022 11:23 EDT Date Received: 07/01/2022 10:30 EDT

#### **Metals**

Parameter	Result Unit	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Arsenic	0.25 μg/L	1	0.10	0.03	GES	07/22/2022 09:31	EPA 200.8-1994, Rev. 5.4
Barium	26.1 μg/L	1	0.20	0.05	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Boron	<b>1.15</b> mg/l	. 1	0.050	0.009	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Cadmium	0.018 µg/L	1	0.020	0.004 J1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Calcium	<b>1</b> 9.5 mg/l	. 1	0.05	0.02	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Chromium	0. <b>41</b> µg/L	1	0.20	0.04	GES	07/22/2022 09:31	EPA 200.8-1994, Rev. 5.4
Cobalt	3.15 µg/L	1	0.020	0.003	GES	07/22/2022 09:31	EPA 200.8-1994, Rev. 5.4
Lead	0.07 µg/L	1	0.20	0.05 J1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Lithium	0.0777 mg/l	. 1	0.00020	0.00005	GES	07/22/2022 09:31	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	07/22/2022 09:31	EPA 200.8-1994, Rev. 5.4
Thallium	0. <b>11</b> μg/L	1	0.20	0.04 J1	GES	07/14/2022 15:53	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.25 pCi/L	0.29	0.43	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
Carrier Recovery	96.2 %					
Radium-228	0.14 pCi/L	0.13	0.43	TTP	07/12/2022 16:41	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	82.8 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: AD-9 Customer Description:

Lab Number: 222085-002 Preparation:

Date Collected: 06/27/2022 12:20 EDT Date Received: 07/01/2022 10:30 EDT

#### **Metals**

Parameter	Result Ur	its Diluti	on RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg	/L	1 0.10	0.02 U1	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Arsenic	0.87 µg	/L	1 0.10	0.03	GES	07/22/2022 09:47	EPA 200.8-1994, Rev. 5.4
Barium	49.7 µg	/L	1 0.20	0.05	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Beryllium	0.780 µg	/L	1 0.050	0.007	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Boron	0.174 m	g/L	1 0.050	0.009	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Cadmium	0.244 µg	/L	1 0.020	0.004	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Calcium	109 m	g/L	1 0.05	0.02	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Chromium	0.59 µg	/L	1 0.20	0.04	GES	07/22/2022 09:47	EPA 200.8-1994, Rev. 5.4
Cobalt	19.5 µg	/L	1 0.020	0.003	GES	07/22/2022 09:47	EPA 200.8-1994, Rev. 5.4
Lead	0.27 µg	/L	1 0.20	0.05	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Lithium	0.539 mg	g/L	1 0.00020	0.00005	GES	07/22/2022 09:47	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng	/L	1 5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg	/L	1 0.5	0.1 U1	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4
Selenium	0.46 µg	/L	1 0.50	0.09 J1	GES	07/22/2022 09:47	EPA 200.8-1994, Rev. 5.4
Thallium	0.22 μg	/L	1 0.20	0.04	GES	07/14/2022 15:59	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.09 pCi/L	0.37	0.50	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
<b>Carrier Recovery</b>	97.8 %					
Radium-228	1.43 pCi/L	0.14	0.41	TTP	07/20/2022 15:35	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	93.5 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: AD-15 Customer Description:

Lab Number: 222085-003 Preparation:

Date Collected: 06/27/2022 11:07 EDT Date Received: 07/01/2022 10:30 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Arsenic	3.03 µg/L	1	0.10	0.03	GES	07/22/2022 09:57	EPA 200.8-1994, Rev. 5.4
Barium	78.5 μg/L	1	0.20	0.05	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Beryllium	0.088 µg/L	1	0.050	0.007	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Boron	0.329 mg/L	1	0.050	0.009	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Cadmium	0.015 µg/L	1	0.020	0.004 J1	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Calcium	3.25 mg/L	1	0.05	0.02	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Chromium	0.38 µg/L	1	0.20	0.04	GES	07/22/2022 09:57	EPA 200.8-1994, Rev. 5.4
Cobalt	3.54 µg/L	1	0.020	0.003	GES	07/22/2022 09:57	EPA 200.8-1994, Rev. 5.4
Lead	0.05 μg/L	1	0.20	0.05 J1	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Lithium	0.00573 mg/L	1	0.00020	0.00005	GES	07/22/2022 09:57	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4
Selenium	0.63 µg/L	1	0.50	0.09	GES	07/22/2022 09:57	EPA 200.8-1994, Rev. 5.4
Thallium	0.07 μg/L	1	0.20	0.04 J1	GES	07/14/2022 16:04	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.07 pCi/L	0.37	0.38	ST	07/07/2022 14:01	SW-846 9315-1986, Rev. 0
<b>Carrier Recovery</b>	94.7 %					
Radium-228	0.08 pCi/L	0.14	0.46	TTP	07/20/2022 15:35	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	946 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

#### Reissued

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: DUPLICATE - PBAP

**Customer Description:** 

Lab Number: 222085-004

Preparation:

Date Collected: 06/27/2022 14:00 EDT

Date Received: 07/01/2022 10:30 EDT

#### Metals

Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
3.12 µg/L	1	0.10	0.03	GES	07/22/2022 10:02	EPA 200.8-1994, Rev. 5.4
77. <b>1</b> μg/L	1	0.20	0.05	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.096 μg/L	1	0.050	0.007	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.323 mg/L	1	0.050	0.009	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.013 µg/L	1	0.020	0.004 J1	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
3.20 mg/L	1	0.05	0.02	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.29 µg/L	1	0.20	0.04	GES	07/22/2022 10:02	EPA 200.8-1994, Rev. 5.4
3.63 µg/L	1	0.020	0.003	GES	07/22/2022 10:02	EPA 200.8-1994, Rev. 5.4
0.05 µg/L	1	0.20	0.05 J1	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.00561 mg/L	1	0.00020	0.00005	GES	07/22/2022 10:02	EPA 200.8-1994, Rev. 5.4
<2 ng/L	1	5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
0.67 µg/L	1	0.50	0.09	GES	07/22/2022 10:02	EPA 200.8-1994, Rev. 5.4
0.07 µg/L	1	0.20	0.04 J1	GES	07/14/2022 16:09	EPA 200.8-1994, Rev. 5.4
	<0.02 µg/L 3.12 µg/L 77.1 µg/L 0.096 µg/L 0.323 mg/L 0.013 µg/L 3.20 mg/L 0.29 µg/L 3.63 µg/L 0.05 µg/L <0.0561 mg/L <2 ng/L <0.1 µg/L <0.1 µg/L <0.67 µg/L	<0.02 μg/L 1 3.12 μg/L 1 77.1 μg/L 1 0.096 μg/L 1 0.323 mg/L 1 0.013 μg/L 1 3.20 mg/L 1 3.63 μg/L 1 0.05 μg/L 1 0.05 μg/L 1 <0.05 μg/L 1 <0.0561 mg/L 1 <2 ng/L 1 <0.1 μg/L 1	<ul> <li>&lt;0.02 μg/L</li> <li>1 0.10</li> <li>3.12 μg/L</li> <li>1 0.10</li> <li>77.1 μg/L</li> <li>0.050</li> <li>0.323 mg/L</li> <li>0.050</li> <li>0.013 μg/L</li> <li>0.020</li> <li>3.20 mg/L</li> <li>0.05</li> <li>0.29 μg/L</li> <li>0.05</li> <li>0.29 μg/L</li> <li>0.020</li> <li>3.63 μg/L</li> <li>0.020</li> <li>0.05 μg/L</li> <li>0.020</li> <li>0.05 μg/L</li> <li>0.020</li> <li>0.05 μg/L</li> <li>0.00020</li> <li>&lt;2 ng/L</li> <li>1 0.00020</li> <li>&lt;2 ng/L</li> <li>1 5</li> <li>&lt;0.1 μg/L</li> <li>0.50</li> </ul>	<ul> <li>&lt;0.02 μg/L</li> <li>1 0.10 0.02 U1</li> <li>3.12 μg/L</li> <li>1 0.10 0.03</li> <li>77.1 μg/L</li> <li>1 0.20 0.05</li> <li>0.096 μg/L</li> <li>1 0.050 0.007</li> <li>0.323 mg/L</li> <li>1 0.050 0.009</li> <li>0.013 μg/L</li> <li>1 0.020 0.004 J1</li> <li>3.20 mg/L</li> <li>0.05 0.02</li> <li>0.29 μg/L</li> <li>0.020 0.04</li> <li>3.63 μg/L</li> <li>0.020 0.003</li> <li>0.05 μg/L</li> <li>0.020 0.05 J1</li> <li>0.00561 mg/L</li> <li>0.00020 0.00005</li> <li>&lt;2 ng/L</li> <li>0.5 0.1 U1</li> <li>0.67 μg/L</li> <li>0.50 0.09</li> </ul>	<0.02 μg/L	<0.02 μg/L



Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: EQUIPMENT BLANK - PBAP

Customer Description:

Lab Number: 222085-005

Preparation:

Date Received: 07/01/2022 10:30 EDT

Date Collected: 06/27/2022 11:56 EDT

#### Metals

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03 µg/L	1	0.10	0.03 U1	GES	07/22/2022 10:07	EPA 200.8-1994, Rev. 5.4
Barium	0.06 μg/L	1	0.20	0.05 J1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Boron	0.024 mg/L	1	0.050	0.009 J1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Chromium	1.04 µg/L	1	0.20	0.04	GES	07/22/2022 10:07	EPA 200.8-1994, Rev. 5.4
Cobalt	0.012 μg/L	1	0.020	0.003 J1	GES	07/22/2022 10:07	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Lithium	0.00006 mg/L	1	0.00020	0.00005 J1	GES	07/22/2022 10:07	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	07/19/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	07/22/2022 10:07	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	07/14/2022 16:14	EPA 200.8-1994, Rev. 5.4

222085 Job Comments:

Original report issued 8/9/2022. Report reissued with amended matrix spike precision calculations.



#### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 222085 Customer: Welsh Power Station Date Reported: 12/30/2022

**Report Verification** 

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Muhael S. Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

#### **Data Qualifer Legend**

U1 - Not detected at or above method detection limit (MDL).

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

				•		5	701011	Chain of Gustouy Necola	5					
4001 Bixby Road Groveport, Ohio 43125				Prod	) Energy	Soal Cor	mbustior	Program: Coal Combilation Residuals (CCR)	S (CCR)	-				
					<u> </u>	Site Contact:	t			Date:		900	For Lab Use Only:	
Contacts: Michael Ohlinger (614-836-4184)					ı							8	COC/Order #:	
Project Name: Welsh PBAP						2 .		Field-filter 500 mL	11	Three (six every	250 mL Glass			
Contact Name: Jill Parker-Witt	Analysis	rumaround Routin	Analysis Turnaround Time (In Calendar Days) Routine (28 days)	atendar D.	e S		DOTTIE,	bottle,	bottle.	10th")	bottle,			
Contact Phone: (318) 673-3816							$\neg$	$\rightarrow$	0-e°C,	pH<2, HNO ₃	PH2,		520227	
Sampler(s): Matt Hamilton Kenny McDonald						101	الاع (من 'da (من	oM bas e	*os	822-6				
Semple Identification	Sample Date	Sample	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	ini (a)helqma2	B, Ca, LJ, Sp, Be, Ca, Cr, C Mo, Se, TL	dissolved F	TDS, F, CI,	Ra-226, Ra	₆ н		Sample Specific Notes:	
AD-8	6/27/2022	1023	9	οw	5		×			×	×	5	TG-32 needed	
AD-9	6/27/2022	1120	9	GW	2		×			×	×			
AD-15	6/27/2022	1007	ပ	Q.	80		×			×	×			
DUPLICATE - PBAP	6/27/2022	1300	ტ	GW	2		×				×			
EQUIPMENT BLANK - PBAP	6/27/2022	1056		S.	7		×				×	$\dashv$		
			N											
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	HNO3; 5≂Na	DH; 6= Oth	her	; F= filter	ilter in f	in field	4	F4	-	4	2			
Six 1L Bottles must be collected for Radium for every 10th sample.	r every 10th	sample.												

Special Instructions/QC Requirements & Comments:

Relinquistre Mr.	Company:	Date/Time: $ \delta_{cc} $ Received by: $ \delta/21/2\rangle$	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Lationation by: Calluny	Date Time / 25 101 30Am
Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual	Record for Coal Combustion Residu	_	CCR) Sampling - Shreveport, Rev. 1, 1/10/17	, , /,

# WATER & WASTE SAMPLE RECEIPT FORM (IR#1)

. <u>Package Type</u>	Delivery Type
Cooler Box Bag Envelope	PONY UPS (adEX USPS
	Other
Plant/Customer Wolsh	Number of Plastic Containers:1_7
Opened By MSO	Number of Glass Containers:5
Were all temperatures within 0-6°C? Y/N (IR Gun Ser# 210441568, Expir.5/27/2023)	Number of Mercury Containers: or N/A Initial: on ice no ice  - If No, specify each deviation: Comments
Was Chain of Custody received? (Y) / N Requested turnaround: 28 2 245	Comments  If RUSH, who was notified?
pH (15 min) Cr ⁺⁶ (pres ) NO₂ or N (24 hr)	NO₃ (48 hr) ortho-PO₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out properly?	Comments
Were samples labeled properly? (Y) N	Comments
Were correct containers used? Y N	Comments
_	/ N or N/A Initial & Date:
pH paper (circle one): MQuant pH Cat 1. lot HC904495	09535.0001 (OR) Lab rat pH Cat # LRS -4801 Lot X000RWDG21
	If Yes: By whom & when: (See Prep Book)
Is sample filtration requested? Y / N	Comments (See Prep Book)
Was the customer contacted? If Yes:	Person Contacted:
Lab ID# 222085 Initial 8	& Date & Time :
Logged by	ents:
Reviewed by MGC	

**REMINDER**: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

AEP- Dolan Chemical Laboratory

Sample Receipt Form SOP-7102

Page 1 of I

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# **Municipal Solid Waste Laboratory Review Checklist**

This da	ata pacl	rage consists of:
x	(which	gnature page, and the laboratory review checklist consisting of Table 1, Reportable Data includes the reportable data identified on this page), Table 2, Supporting Data, and 3, Exception Reports.
x	R1	Field chain-of-custody documentation
x	R2	Sample identification cross-reference
x	R3	Test reports (analytical data sheets) for each environmental sample that includes:  (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003  NELAC Standard  (b) Dilution factors  (c) Preparation methods  (d) Cleanup methods  (e) If required for the project, tentatively identified compounds (TICs)
NA	R4	Surrogate recovery data including:  (a) Calculated recovery (%R)  (b) The laboratory's surrogate QC limits
x	R ₅	Test reports/summary forms for blank samples
X	R6	Test reports/summary forms for laboratory control samples (LCSs) including:  (a) LCS spiking amounts  (b) Calculated %R for each analyte  (c) The laboratory's LCS QC limits
×	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:  (a) Samples associated with the MS/MSD clearly identified  (b) MS/MSD spiking amounts  (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples  (d) Calculated %Rs and relative percent differences (RPDs)  (e) The laboratory's MS/MSD QC limits
×	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates
х	R9	List of method quantitation limits (MQLs) for each analyte for each method and matrix
x	R10	Other problems or anomalies
x	The Ex	sception Report for every item for which the result is "No" or "NR" (Not Reviewed)
packag require reports by the labora that w	ge as beements s. By m labora tory in ould aff	tement: I am responsible for the release of this laboratory data package. This data sen reviewed by the laboratory and is complete and technically compliant with the of the methods used, except where noted by the laboratory in the attached exception by signature below, I affirm to the best of my knowledge, all problems/anomalies, observed tory as having the potential to affect the quality of the data, have been identified by the the Laboratory Review Checklist, and no information or data have been knowingly withheld feet the quality of the data.
respon used is statem	iding to respor ient is t	plicable: This laboratory is an in-house laboratory controlled by the person rule. The official signing the cover page of the rule-required report in which these data are asible for releasing this data package and is by signature affirming the above release rue.
Name	nn (printe	d) Signature Official Title Date

Table 1. Reportable Data.

ican Electric Power Dolan Chemical Laboratory
Ish Power
Susann Sulamann
7-21.22
222085
PB22070806
֡

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	hes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	ijes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Ye	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	1	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	il (	
R8	O, I	Analytical duplicate data	1'	
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):	1 '	
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	_
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	0, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

American Electric Power Dolan Chemical Laboratory
Welsh Power
Susann Sultmany
7-21-22
mber: 222085
r(s): 1822070806

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)	<u>-</u>	
-	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
<b>S</b> 2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
<b>S</b> 7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
<b>S8</b>	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
<b>S</b> 9	I	Serial dilutions, post digestion spikes, and method of standard additions	9.8	
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		_
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14_	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

Table 3. Exception Reports.

CCB acceptance criteria is CCB <mql.< th=""></mql.<>

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:

11115 (1)	ata paci	age consists or.				
X	(which	This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports.				
X	R1	Field chain-of-custody documentation				
Х	R2	Sample identification cross-reference				
x	R3	Test reports (analytical data sheets) for each environmental sample that includes:  (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003  NELAC Standard  (b) Dilution factors  (c) Preparation methods  (d) Cleanup methods  (e) If required for the project, tentatively identified compounds (TICs)				
NA	R4	Surrogate recovery data including:  (a) Calculated recovery (%R)  (b) The laboratory's surrogate QC limits				
X	R5	Test reports/summary forms for blank samples				
X	R6	Test reports/summary forms for laboratory control samples (LCSs) including:  (a) LCS spiking amounts  (b) Calculated %R for each analyte  (c) The laboratory's LCS QC limits				
X	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:  (a) Samples associated with the MS/MSD clearly identified  (b) MS/MSD spiking amounts  (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples  (d) Calculated %Rs and relative percent differences (RPDs)  (e) The laboratory's MS/MSD QC limits				
X	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates				
х	R9	List of method quantitation limits (MQLs) for each analyte for each method and matrix				
х	R10	Other problems or anomalies				
X	The Ex	sception Report for every item for which the result is "No" or "NR" (Not Reviewed)				
packag require reports by the labora	ge as be ements s. By m laborat tory in t	tement: I am responsible for the release of this laboratory data package. This data been reviewed by the laboratory and is complete and technically compliant with the of the methods used, except where noted by the laboratory in the attached exception by signature below, I affirm to the best of my knowledge, all problems/anomalies, observed tory as having the potential to affect the quality of the data, have been identified by the the Laboratory Review Checklist, and no information or data have been knowingly withheld feet the quality of the data.				
respon used is	ding to	plicable: This laboratory is an in-house laboratory controlled by the person rule. The official signing the cover page of the rule-required report in which these data are asible for releasing this data package and is by signature affirming the above release rue.				

Lab Supervisor

Official Title

Jonathan Barnhill

Name (printed)

8-2-2022

Date

# Table 1. Reportable Data.

Laboratory Name: A	American Electric Power Dolan Chemical Laboratory
Project Name:	
Reviewer Name: Jor	nathan Barnhill
LRC Date: 8-2-2022	
Laboratory Job Num	ber: 222085
•	PB22070706 PB22072101 QC2207151 QC2207182

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	0, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

### Table 2. Supporting Data.

Laboratory Name:	American Electric Power Dolan Chemical Laboratory
Project Name:	
Reviewer Name: J	onathan Barnhill
LRC Date: 8-2-202	
Laboratory Job Nu	mber: 222085

**Prep Batch Number(s):** PB22070706 PB22072101 QC2207151 QC2207182

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

### **Table 3. Exception Reports.**

Laboratory Name: _	American Electric Power Dolan Chemical Laboratory
Project Name:	
Reviewer Name: ^{Jo}	nathan Barnhill
LRC Date: 8-2-2022	
Laboratory Job Nun	
rep Batch Number	DD00070700 DD00070404 000007464 000007400

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is CCB<2.2*MDL.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# APPENDIX 6

# 2H 2022 analytical reports.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

Job ID: 223481 Customer: Welsh Power Station Date Reported: 12/30/2022

Customer Sample ID: AD-1 Customer Description: TG-32

Lab Number: 223481-001 Preparation:

Date Collected: 11/01/2022 11:58 EDT Date Received: 11/03/2022 10:30 EDT

### **Ion Chromatography**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.70 mg/L	2	0.04	0.02	CRJ	11/15/2022 20:47	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.14 mg/L	2	0.06	0.02	CRJ	11/15/2022 20:47	EPA 300.1 -1997, Rev. 1.0
Sulfate	61.3 mg/L	2	0.40	0.06	CRJ	11/15/2022 20:47	EPA 300.1 -1997, Rev. 1.0

### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS, Filterable Residue	170 mg/L	1	50	20	SDW	11/04/2022 12:35	SM 2540C-2015	

Customer Sample ID: AD-5 Customer Description: TG-32

Lab Number: 223481-002 Preparation:

Date Collected: 11/01/2022 09:56 EDT Date Received: 11/03/2022 10:30 EDT

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
Chloride	16.9 mg/L	2	0.04	0.02	CRJ	11/16/2022 01:43	EPA 300.1 -1997, Rev. 1.0	_
Fluoride	0.16 mg/L	2	0.06	0.02	CRJ	11/16/2022 01:43	EPA 300.1 -1997, Rev. 1.0	
Sulfate	185 mg/L	10	2.0	0.3	CRJ	11/15/2022 21:53	EPA 300.1 -1997, Rev. 1.0	
Wat Ob andatas								
Wet Chemistry								

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	380 mg/L	1	50	20	SDW	11/04/2022 12:35	SM 2540C-2015

Customer Sample ID: AD-17 Customer Description: TG-32

Lab Number: 223481-003 Preparation:

Date Collected: 11/01/2022 13:25 EDT Date Received: 11/03/2022 10:30 EDT

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	40.3 mg/L	5	0.10	0.05	CRJ	11/16/2022 02:16	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.09 mg/L	5	0.15	0.05 J1	CRJ	11/16/2022 02:16	EPA 300.1 -1997, Rev. 1.0
Sulfate	1110 mg/L	50	10	2	CRJ	11/15/2022 22:26	EPA 300.1 -1997, Rev. 1.0

### **Wet Chemistry**

Wot offormstry								
Parameter	Result Units D	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS. Filterable Residue	1690 mg/L	1	50	20	SDW	11/04/2022 12:40	SM 2540C-2015	



**Dolan Chemical Laboratory** 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

### Reissued

**Customer: Welsh Power Station** Date Reported: 12/30/2022 Job ID: 223481

**Customer Sample ID: DUPLICATE - BAP** 

**Customer Description: TG-32** 

Lab Number: 223481-004

Preparation:

Date Collected: 11/01/2022 15:00 EDT

Date Received: 11/03/2022 10:30 EDT

### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	2.91 mg/L	2	0.04	0.02	CRJ	11/15/2022 12:33	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.14 mg/L	2	0.06	0.02	CRJ	11/15/2022 12:33	EPA 300.1 -1997, Rev. 1.0
Sulfate	60.7 mg/L	2	0.40	0.06	CRJ	11/15/2022 12:33	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	170 mg/L	1	50	20	SDW	11/04/2022 12:40	SM 2540C-2015

### 223481

**Job Comments:** 

Original report issued 11/18/2022. Report reissued with amended matrix spike precision calculations.

### **Report Verification**

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com 614-836-4184 Phone: Audinet: 8-210-4184

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.



Job ID: 223481

### **Water Analysis Report**

### Reissued

Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Customer: Welsh Power Station Date Reported: 12/30/2022

**Data Qualifer Legend** 

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

				,				, , , , , , , , , , , , , , , , , , ,					
4001 Bixby Road				Č			1		(0,0)				
Groveport, Onio 43125				Prog	raill.	Joan Coll	ionsno.	Program: Coal Collibusuon Residuais (CCN)	2 (207)			Earl oh lee Only	-01
Contacts: Michael Ohlinger (614-836-4184)					ń	Site Contact:	.					COC/Order #:	SIDE C
Project Name: Welsh Background Contact Name: Jill Parker-Witt	Analysis	Analysis Turnaround Time (in Catendar Days) Routine (26 days)	around Time (in Ca Routine (26 days)	lendar Da	178)	2 <u>5</u>	250 mL Fi bottle, th	Field-filter 500 mL bottle, then pH<2,	1 L bottle, Cool,	Three (six every 10th*)	10 mL Glass visi or 125 mL PTFE ined bottle, fCL**, pH<2	223481	
Sampler(s): Matt Hamilton Kenny McDonald	, ,						'qa 'o:		1	82Z-¥	 		
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	B, Ca, Li, Sb,	Be, Cd, Cr, C Mo, Se, TL	od bevlossib	, F, CI,	Ra-226, Ra	вн	Sample Specific Notes:	
AD-1	11/1/2022	1058	ß	ΑŅ	-				×			TG-32 needed	
AD-5	11/1/2022	856	G	GW	-				×				
AD-17	11/1/2022	1225	G	GW	-				×				_
DUPLICATE - BACKGROUND	11/1/2022	1400	G	οw	-				×				_
													_
													_
													_
													-
Preservation Used: 1= ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	HNO3; 5=Na	OH; 6= Ott	her	; F= filter	ilter in field	ple	4	F4	-	4			
* Six 1L Bottles must be collected for Radium for every 10th sample.	ır every 10th	sample.											

Special Instructions/QC Requirements & Comments:

Date/Time:	Date/Time:	Date(1)/3/22 10, 30/fm
Received by:	Received by:	Regerved in Aborajory by.
Date/Time: 16- Received by:	Date/Time	Date/Time
Company	Company:	Company
Relinquished by The Am Chan	Relinquished by:	Relinquished by:

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17

# WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

. Package Type	Delivery Type					
Copier Box Bag Envelope	PONY UPS FedEX USPS					
	Other					
Plant/Customer Welsh BA	Sρ Number of Plastic Containers:					
Opened By Mi Chael	Number of Glass Containers:					
	O Number of Mercury Containers:					
Were all temperatures within 0-6°C?	N or N/A Initial: MELL on ice / no					
ice (IR Gun Ser# 221368900, Expir	3/22/2024) - If No, specify each deviation:					
Was container in good condition?						
	N Comments					
1	If RUSH, who was notified?					
pH (15 min) Cr ⁺⁶ (pres ) 1 (24 hr)	NO ₂ or NO ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)					
Was COC filled out properly?	)/ N Comments					
Were samples labeled properly?	N Comments					
Were correct containers used? 4/N Comments						
Was pH checked & Color Coding done? (Y) N or N/A Initial & Date: M/J/C 11/03/22						
pH paper (circle one): MQuant,PN1.095	35.0001,LOT# HC904495 [OR] Lab Rat,PN4801,LOT# X000RWDG24					
Was Add'l Preservative needed? Y	If Yes: By whom & when: (See Prep Book)					
is sample filtration requested?	Y / (V) Comments (See Prep Book)					
Was the customer contacted?	If Yes: Person Contacted:					
Lab ID# 223481	Initial & Date & Time :					
Logged by MSO	Comments:					
Reviewed by A6						

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of: X This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports. R₁ Field chain-of-custody documentation ΙXΠ X. R₂ Sample identification cross-reference  $|\mathbf{x}|$ **R**3 Test reports (analytical data sheets) for each environmental sample that includes: (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 **NELAC Standard** (b) Dilution factors (c) Preparation methods (d) Cleanup methods (e) If required for the project, tentatively identified compounds (TICs) X Surrogate recovery data including: **R**4 (a) Calculated recovery (%R) (b) The laboratory's surrogate QC limits  $\square$ Test reports/summary forms for blank samples **R**5  $\mathbf{x}$ **R6** Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits  $|\mathbf{x}|$ **R**7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) Samples associated with the MS/MSD clearly identified (b) MS/MSD spiking amounts (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples (d) Calculated %Rs and relative percent differences (RPDs) (e) The laboratory's MS/MSD QC limits  $|\mathbf{x}|$ R8 Laboratory analytical duplicate (if applicable) recovery and precision: (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates List of method quantitation limits (MQLs) for each analyte for each method and matrix  $|\mathbf{x}|$ R9 X R10 Other problems or anomalies X The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed) Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data. **Check, if applicable:** ( ) This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Chemist Prin

Official Title

Timothy E Arnold

Name (printed)

11/17/2022

Date

### Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Timothy E Arnold

LRC Date: 11/17/2022

Laboratory Job Number: 223481

Prep Batch Number(s): QC2211157

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Yes		
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10 -	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Background

Reviewer Name: Timothy E Arnold

LRC Date: 11/17/2022

Laboratory Job Number: 223481

Prep Batch Number(s): QC2211157

Item¹	Analytes ²	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴	
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
<b>S</b> 2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	- I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Result (Yes, No, NA, NR) ³	Exception Report No.4	
S6	0	Dual column confirmation		
	I	NA		
S7	0	Tentatively identified compounds (TICs):		
-	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
\$14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		0
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		-
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name: Welsh Background
Reviewer Name: Timothy E Arnold
LRC Date: 11/17/2022
Laboratory Job Number: 223481
Prep Batch Number(s): QC2211157

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB <mql.< th=""></mql.<>

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# **Municipal Solid Waste Laboratory Review Checklist**

This da	ata pacl	kage consists of:						
x	(which	ignature page, and the laboratory review checklist consisting of Table 1, Repon includes the reportable data identified on this page), Table 2, Supporting Dag, Exception Reports.						
x	R1	Field chain-of-custody documentation						
×	<b>R2</b>	Sample identification cross-reference	cation cross-reference					
×	R3 Test reports (analytical data sheets) for each environmental sample that includes:  (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003  NELAC Standard  (b) Dilution factors  (c) Preparation methods  (d) Cleanup methods  (e) If required for the project, tentatively identified compounds (TICs)							
NA	R4	Surrogate recovery data including: (a) Calculated recovery (%R) (b) The laboratory's surrogate QC limits						
х	R5	Test reports/summary forms for blank samples						
×	R6	Test reports/summary forms for laboratory control samples (LCSs) including (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits	ng:					
×	R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:  (a) Samples associated with the MS/MSD clearly identified  (b) MS/MSD spiking amounts  (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples  (d) Calculated %Rs and relative percent differences (RPDs)  (e) The laboratory's MS/MSD QC limits							
X	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates						
x	R9	List of method quantitation limits (MQLs) for each analyte for each method	l and matrix					
x	R10	Other problems or anomalies						
X	The E	xception Report for every item for which the result is "No" or "NR" (Not Revi	ewed)					
packag requir report by the labora	ge as be ements s. By n labora tory in	tement: I am responsible for the release of this laboratory data package. The een reviewed by the laboratory and is complete and technically compliant with sof the methods used, except where noted by the laboratory in the attached except signature below, I affirm to the best of my knowledge, all problems/anomatory as having the potential to affect the quality of the data, have been identified the Laboratory Review Checklist, and no information or data have been knowledge, the quality of the data.	h the keeption alies, observed fied by the					
respon used in staten	nding to s respon nent is t	hlinger // Chemist /1/	these data are					
Name	(printe	ed) Signature Official Title	ate					
Munici	pal Solid	d Waste Laboratory Review Checklist (rev. 08/19/11)	Page 1 of (					

Page 1 of 6

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Michael Ohlinger

LRC Date: 11/18/22

**Laboratory Job Number:** 223481

Prep Batch Number(s): QC2211076

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	0, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
-	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
-	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
4	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):	L	
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
·	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

**Laboratory Job Number:** 223481

Prep Batch Number(s): QC2211076

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Analytes ² Description			
S6	0	Dual column confirmation			
	I	Did dual column confirmation results meet the method-required QC?	. NA		
S7	0	Tentatively identified compounds (TICs):			
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	- NA		
S8	I	Interference Check Sample (ICS) results:			
	I_	Were percent recoveries within method QC limits?	NA		
<b>S9</b>	I	Serial dilutions, post digestion spikes, and method of standard additions			
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA		
S10	O, I	Method detection limit (MDL) studies			
	I	Was a MDL study performed for each reported analyte?	Yes		
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes		
S11	O, I	O, I Proficiency test reports:			
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes		
S12	O, I	Standards documentation			
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes		
S13	O, I	Compound/analyte identification procedures			
	I	Are the procedures for compound/analyte identification documented?	Yes		
S14	O, I	Demonstration of analyst competency (DOC)			
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes		
	I	Is documentation of the analyst's competency up-to- date and on file?	Yes	,	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)			
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes		
S16	O, I	Laboratory standard operating procedures (SOPs):			
	r	Are laboratory SOPs current and on file for each method performed?	Yes		

Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh BASP

Reviewer Name: Michael Ohlinger

LRC Date: 11/18/22

Laboratory Job Number: 223481

Prep Batch Number(s): QC2211076

Exception Report No.	Description

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

³ NA - Not applicable; NR - Not reviewed.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-1 Customer Description: TG-32

Lab Number: 223510-001 Preparation:

Date Collected: 11/01/2022 11:58 EDT Date Received: 11/04/2022 13:30 EDT

### **Metals**

Parameter	Result Unit	Dilution	RL	MDL Data Qualifiers	s Analyst	Analysis Date	Method
Antimony	0.03 µg/L	1	0.10	0.02 J1	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Arsenic	0. <b>1</b> 9 μg/L	1	0.10	0.03	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Barium	78.9 μg/L	1	0.20	0.05	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Beryllium	0.620 μg/L	1	0.050	0.007	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Boron	0.586 mg/	. 1	0.050	0.009	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Cadmium	0.024 μg/L	1	0.020	0.004	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Calcium	7.87 mg/	. 1	0.05	0.02	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Chromium	0.35 μg/L	1	0.20	0.04	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Cobalt	1.17 µg/L	1	0.020	0.003	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Lead	0. <b>1</b> 3 μg/L	1	0.20	0.05 J1	GES	12/01/2022 15:24	EPA 200.8-1994, Rev. 5.4
Lithium	0.00818 mg/	. 1	0.00020	0.00005	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Mercury	2 ng/L	1	5	2 J1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Selenium	5.51 µg/L	1	0.50	0.09	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/21/2022 22:32	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.06 pCi/L	0.29	0.50 P1	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	87.5 %					
Radium-228	0.95 pCi/L	0.14	0.42	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	87.7 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-5 Customer Description: TG-32

Lab Number: 223510-002 Preparation:

Date Collected: 11/01/2022 09:56 EDT Date Received: 11/04/2022 13:30 EDT

### **Metals**

Parameter	Result Unit	s Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/l	1	0.10	0.02 U1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Arsenic	2.77 µg/l	1	0.10	0.03	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Barium	63.2 µg/L	1	0.20	0.05	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Beryllium	0.046 µg/L	1	0.050	0.007 J1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Boron	0.041 mg/	. 1	0.050	0.009 J1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Calcium	38.6 mg/	. 1	0.05	0.02	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Chromium	0.43 µg/L	1	0.20	0.04	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Cobalt	15.1 µg/l	1	0.020	0.003	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	12/01/2022 15:39	EPA 200.8-1994, Rev. 5.4
Lithium	0.174 mg/	. 1	0.00020	0.00005	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/l	1	0.5	0.1 U1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/21/2022 22:37	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.90 pCi/L	0.38	0.55	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	93.6 %					
Radium-228	1.98 pCi/L	0.18	0.52	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	81.7 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-17 Customer Description: TG-32

Lab Number: 223510-003 Preparation:

Date Collected: 11/01/2022 13:25 EDT Date Received: 11/04/2022 13:30 EDT

### **Metals**

Parameter	Result Unit	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.02 μg/L	1	0.10	0.02 J1	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Arsenic	0.62 μg/L	1	0.10	0.03	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Barium	12.7 µg/L	1	0.20	0.05	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Beryllium	0.073 μg/L	1	0.050	0.007	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Boron	0.097 mg/	. 1	0.050	0.009	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Cadmium	0.019 μg/L	1	0.020	0.004 J1	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Calcium	165 mg/	. 1	0.05	0.02	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Chromium	0.96 μg/L	1	0.20	0.04	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Cobalt	41.9 µg/L	1	0.020	0.003	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Lead	0.27 μg/L	1	0.20	0.05	GES	12/01/2022 15:44	EPA 200.8-1994, Rev. 5.4
Lithium	0.278 mg/	. 1	0.00020	0.00005	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Mercury	4 ng/L	1	5	2 J1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/21/2022 22:43	EPA 200.8-1994, Rev. 5.4

### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	2.42 pCi/L	0.41	0.52	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	97.8 %					
Radium-228	1.39 pCi/L	0.14	0.42	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	92.4 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: Dup Background Customer Description: TG-32

Lab Number: 223510-004 Preparation:

Date Collected: 11/01/2022 15:00 EDT Date Received: 11/04/2022 13:30 EDT

### Metals

Motals							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	0.03 μg/L	1	0.10	0.02 J1	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Arsenic	0.19 µg/L	1	0.10	0.03	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Barium	77.1 µg/L	1	0.20	0.05	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Beryllium	0.593 μg/L	1	0.050	0.007	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Boron	0.568 mg/L	1	0.050	0.009	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Cadmium	0.026 µg/L	1	0.020	0.004	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Calcium	7.61 mg/L	1	0.05	0.02	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Chromium	0.53 μg/L	1	0.20	0.04	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Cobalt	1.17 µg/L	1	0.020	0.003	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Lead	0.13 µg/L	1	0.20	0.05 J1	GES	12/01/2022 16:41	EPA 200.8-1994, Rev. 5.4
Lithium	0.00781 mg/L	1	0.00020	0.00005	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Mercury	2 ng/L	1	5	2 J1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Selenium	5.31 μg/L	1	0.50	0.09	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/21/2022 22:48	EPA 200.8-1994, Rev. 5.4



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: EB- Background Customer Description: TG-32

Lab Number: 223510-005 Preparation:

Date Collected: 11/01/2022 11:37 EDT Date Received: 11/04/2022 13:30 EDT

### Metals

Motals							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03 µg/L	1	0.10	0.03 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Barium	0.06 μg/L	1	0.20	0.05 J1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Boron	0.010 mg/L	1	0.050	0.009 J1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Chromium	0.52 μg/L	1	0.20	0.04	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Cobalt	0.161 μg/L	1	0.020	0.003	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Lithium	0.00006 mg/L	1	0.00020	0.00005 J1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.8 µg/L	1	0.5	0.1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/22/2022 11:09	EPA 200.8-1994, Rev. 5.4



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223510 Customer: Welsh Power Station Date Reported: 12/20/2022

**Report Verification** 

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Muhael S. Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

### **Data Qualifer Legend**

- J1 Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.
- U1 Not detected at or above method detection limit (MDL).
- P1 The precision between duplicate results was above acceptance limits.

# Chain of Custody Record

Dolan Chemical Laboratory (DCL.)

4001 Bixby Road

Sample Specific Notes: For Lab Use Only: Routine (28 days) TG-32 needed COC/Order #: 250 mL Glass bottle, HCL", 6H N × × × Date: Three (six every 10th*)
1 L' bottles, pH<2, HNO₃ Ra-226, Ra-228 × 4 Program: Coal Combustion Residuals (CCR) Dottle Cool т<mark>р</mark>з, ғ, сі, sо<mark>,</mark> then pH<2, HNO₃ Field-filter 500 mL bottle, 7 oM bas 97 bevlossib Mo, Se, Tl. Sb, As, Be, B, Cd, Cr, Co, Pb, Mo, Se, Tl 250 mL bottle, pH<2 HNO 4 × × Site Contact: Sampler(s) initials F= filter in field Analysis Turnaround Time (in Calendar Days) Routine (28 days) Matrix GW δW 8 ςĶ G₩ Sampte
Type
(C=Comp,
G=Grab) ග Ø O O ပ Preservation Used: 1* Ice, 2* HCI; 3* H2SO4; 4*HNO3; 5*NaOH; 6* Other Sample Six 11. Bottles must be collected for Radium for every 10th sample. 1225 1037 Time 1058 1400 856 11/1/2022 Sample Date 11/1/2022 11/1/2022 11/1/2022 11/1/2022 Michael Ohlinger (614-836-4184) Sampler(s): Matt Hamilton Kenny McDonald **EQUIPMENT BLANK - BACKGROUND DUPLICATE - BACKGROUND** Groveport, Ohio 43125 Sample Identification Project Name: Welsh Background Contact Name: Jill Parker-Witt Contact Phone: (318) 673-3816 AD-5 AD-17 AD-1

Special instructions/QC Requirements & Comments:

 Date/Time	Date/Time:	Date/Time 1 1/4/22 1,300M
Received by:	Received by:	Received in Landardow by:
Date/Time: 160 Received by:		Date/Time
Company:	Company	Сотрапу
Relinquished by My Many	Relinquished by:	Relinquished by:

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17



7,-

# WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

Package Type	Delivery Type
Cooler Box Bag Envelope	PONY UPS FedEX USPS
	Other
Plant/Customer Will	Number of Plastic Containers:
Opened By MGK	Number of Glass Containers:
1	Number of Mercury Containers:
1	or N/A Initial:on ice / no
	024) - If No, specify each deviation:  Comments
	Comments
Requested turnaround: Rouline	If RUSH, who was notified?
1	O ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out properly? YN	Comments
Were samples labeled properly? (y/ N	Comments
Were correct containers used? (Y) N	Comments
Was pH checked & Color Coding done? Y	N or N/A Initial & Date: 9AB M6K 11 4 22
pH paper (circle one): MQuant,PN1.09535.0001,LC	0T# HC904495 [OR] Lab Rat,PN4801,LOT# X000RWDG21
Was Add'l Preservative needed? Y / N Y	es: By whom & when: (See Prep Book)
Is sample filtration requested? Y / N	Comments (See Prep Book)
Was the customer contacted? If Yes:	Person Contacted:
Lab ID# 2235 10 Initial & I	Date & Time :
Logged by MST	nts:
Reviewed by	

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:

	F	0						
X	(which	inclu		ortable data id		klist consisting of is page), Table 2,		
X	R1	Field	chain-of-cu	ıstody docum	entation			
Х	R2	Samp	ole identific	ation cross-re	ference			
x	R3	(a) II (b) II (c) II (d) C	tems specif NELAC Star Dilution fact Preparation Cleanup me	ied in NELAC ndard tors methods thods	Chapter 5 for	environmental sareporting results	, e.g., Sectio	includes: on 5.5.10 in 2003
NA	R4	(a) (	Calculated r	ery data includ recovery (%R) ory's surrogate				
X	R5	Test r	reports/sun	nmary forms f	or blank samp	oles		
X	R6	(a) I (b) C	LCS spiking Calculated 9		alyte	control samples (	LCSs) inclu	ding:
X	R7	(a) S (b) M (c) G (d) G	Samples ass MS/MSD sp Concentrati Calculated 9	sociated with to oiking amount on of each MS	he MS/MSD os s s/MSD analyte ve percent dif	spike duplicates ( clearly identified e measured in the ferences (RPDs)	·	-
X	R8	(a) T (b) T	Γhe amount Γhe calculat	t of analyte me	easured in the	_	recision:	
X	R9	List o	of method q	uantitation lin	nits (MQLs) fo	or each analyte for	r each meth	nod and matrix
X	R10	Other	r problems	or anomalies				
X	The Ex	ceptio	on Report fo	or every item f	or which the r	esult is "No" or "I	NR" (Not Re	eviewed)
packag require reports by the laborat	ge as be ements of s. By my laborat tory in t	en revof the sign sign tory as the Lab	riewed by the methods us lature below Is having the	ne laboratory a sed, except wh v, I affirm to the potential to a eview Checklis	and is complet ere noted by the best of my ffect the quali	ty of the data, hav	compliant y the attached oblems/and ve been ider	with the l exception omalies, observed
respon used is	ding to	rule. T sible f	Γhe official	signing the co	ver page of th	aboratory control e rule-required re signature affirm	port in whi	ch these data are
Jonat	than B	arnhi	ill 🤇	Sonathan	Bounhill	Lab Supervise	or	12/13/2022
Name	(printed	d)	S	ignature		Official Title		Date

# Table 1. Reportable Data.

<b>Laboratory Nam</b>	American Electric Power Dolan Chemical Laboratory
Project Name: _	
<b>Reviewer Name:</b>	Jonathan Barnhill
LRC Date: 12/13	3/2022
Laboratory Job	Number: 223510
Pren Ratch Num	her(s): PB22111712 PB22112101 PB22112902 QC2211221 QC2211222 QC2212034

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?		
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item ¹	tem ¹ Analytes ² Description		Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

# **Table 2. Supporting Data.**

<b>Laboratory Name:</b>	American Electric Power Dolan Chemical Laboratory
Project Name:	
Reviewer Name: Jo	onathan Barnhill
LRC Date: 12/13/20	022
Laboratory Job Nu	
Prep Batch Number	PP00444740 PP00440404 PP00440000 CC0044004 CC0044000 CC0040004

Item¹	Analytes ²	Description		Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item ¹	Analytes ²	Description		Exception Report No.4
S6	0	<b>Dual column confirmation</b>		
	I	Did dual column confirmation results meet the method-required QC?		
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory
Project Name:
Reviewer Name: Jonathan Barnhill
LRC Date: 12/13/2022
Laboratory Job Number: 223510
Prep Batch Number(s): PB22111712 PB22112101 PB22112902 QC2211221 QC2211222 QC2212034

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is CCB<2.2*MDL.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable). ³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# Mercury Laboratory Review Checklist

# **Municipal Solid Waste Laboratory Review Checklist**

This data pac	kage cor	isists o	t:
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	_	_					
х	(which	signature page, and the laboratory review checklist consisting of Table 1, Reportable Data ch includes the reportable data identified on this page), Table 2, Supporting Data, and e 3, Exception Reports.					
х	R1	Field cl	hain-of-custody documenta	ation			
х	R ₂	Sample identification cross-reference					
X	R3	(a) Ite NI (b) Di (c) Pro (d) Cle	ports (analytical data sheet ems specified in NELAC Ch ELAC Standard lution factors eparation methods eanup methods required for the project, ter	apter 5 for	reporting results, e.g., Sect		
NA	R4	(a) Ca	ate recovery data including dculated recovery (%R) de laboratory's surrogate Q0				
х	R5	Test re	ports/summary forms for l	blank samp	les		
X	R6	(a) LO (b) Ca	ports/summary forms for l CS spiking amounts lculated %R for each analy le laboratory's LCS QC limi	te	control samples (LCSs) incl	uding:	
x	R7	<ul><li>(a) Sa</li><li>(b) Ma</li><li>(c) Co</li><li>(d) Ca</li></ul>	ports for project matrix spi imples associated with the S/MSD spiking amounts oncentration of each MS/M alculated %Rs and relative p ne laboratory's MS/MSD Q	MS/MSD ci (SD analyte percent diff	early identified measured in the parent an		
X	R8	R8 Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates					
x	R9	List of	method quantitation limits	(MQLs) fo	r each analyte for each met	hod and matrix	
х	R10	Other 1	problems or anomalies				
x	The Ex	ception	Report for every item for	which the r	esult is "No" or "NR" (Not I	Reviewed)	
packag require reports by the laborat	Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.						
respon used is	ding to	rule. Th sible fo	e: This laboratory is an ne official signing the cover r releasing this data package	page of the ge and is by	e rule-required report in wh	nich these data are	
Susa	nn Su	Izmanı	n S. Sultm	ann	Senior Chemist	11-16-2022	
Name	(printed	 1)	Signature		Official Title	Date	

### Mercury Laboratory Review Checklist

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 11-16-2022

**Laboratory Job Number:** 223510

Prep Batch Number(s): PB22110704

Item¹	Analytes ² Description		Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	YES	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	YES	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	0, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

# Mercury Laboratory Review Checklist

Item¹			Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	YES	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	YES	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
22	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	YES	
	I	Were MS/MSD RPDs within laboratory QC limits?	YES	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	YES	
R9	O, I	Method quantitation limits (MQLs):	•	
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies	=	
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 11-16-2022

**Laboratory Job Number:** 223510

Prep Batch Number(s): PB22110704

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	:
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
_	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
<b>S</b> 3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
=	= I	Were ion abundance data within the method-required QC limits?	- NA	_ =
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
<b>S</b> 5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	□ NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 11-16-2022

Laboratory Job Number: 223510

Prep Batch Number(s): PB22110704

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB <mql.< th=""></mql.<>
	100,000
	5.500.550
	2

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

²O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable, NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223483 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-8 Customer Description: TG-32

Lab Number: 223483-001 Preparation:

Date Collected: 10/31/2022 10:08 EDT Date Received: 11/03/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	20.9 mg/L	2	0.04	0.02	CRJ	11/16/2022 11:05	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.93 mg/L	2	0.06	0.02	CRJ	11/16/2022 11:05	EPA 300.1 -1997, Rev. 1.0
Sulfate	141 mg/L	10	2.0	0.3	CRJ	11/16/2022 10:32	EPA 300.1 -1997, Rev. 1.0

#### **Wet Chemistry**

Parameter	Result Units I	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS, Filterable Residue	280 mg/L	1	50	20	SDW	11/04/2022 13:47	SM 2540C-2015	

Customer Sample ID: AD-9 Customer Description: TG-32

Lab Number: 223483-002 Preparation:

Date Collected: 10/31/2022 11:20 EDT Date Received: 11/03/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	16.8 mg/L	5	0.10	0.05	CRJ	11/16/2022 12:43	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.17 mg/L	5	0.15	0.05	CRJ	11/16/2022 12:43	EPA 300.1 -1997, Rev. 1.0
Sulfate	122 mg/L	5	1.0	0.2	CRJ	11/16/2022 12:43	EPA 300.1 -1997, Rev. 1.0
144 . 61							

#### **Wet Chemistry**

Parameter	Result Units Dilu	ution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method	
TDS, Filterable Residue	300 mg/L	1	50	20	SDW	11/04/2022 13:54	SM 2540C-2015	

Customer Sample ID: AD-15 Customer Description: TG-32

Lab Number: 223483-003 Preparation:

Date Collected: 10/31/2022 10:33 EDT Date Received: 11/03/2022 10:30 EDT

#### Ion Chromatography

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	26.2 mg/L	2	0.04	0.02	CRJ	11/16/2022 15:28	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.07 mg/L	2	0.06	0.02	CRJ	11/16/2022 15:28	EPA 300.1 -1997, Rev. 1.0
Sulfate	4.62 mg/L	2	0.40	0.06	CRJ	11/16/2022 15:28	EPA 300.1 -1997, Rev. 1.0

#### **Wet Chemistry**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
TDS, Filterable Residue	90 mg/L	1	50	20	SDW	11/04/2022 13:54	SM 2540C-2015



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223483 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: DUPLICATE - PBAP

**Customer Description: TG-32** 

SDW

11/04/2022 14:01 SM 2540C-2015

Lab Number: 223483-004

Preparation:

Date Collected: 10/31/2022 15:00 EDT

Date Received: 11/03/2022 10:30 EDT

#### Ion Chromatography

TDS, Filterable Residue

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Chloride	20.8 mg/L	2	0.04	0.02	CRJ	11/16/2022 14:23	EPA 300.1 -1997, Rev. 1.0
Fluoride	0.94 mg/L	2	0.06	0.02	CRJ	11/16/2022 14:23	EPA 300.1 -1997, Rev. 1.0
Sulfate	134 mg/L	25	5.0	0.8	CRJ	11/16/2022 13:49	EPA 300.1 -1997, Rev. 1.0
Wet Chemistry							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method

20

50

# Report Verification

This report and the above data have been confirmed by the following analyst.

280 mg/L

Michael Ohlinger, Chemist

Email: msohlinger@aep.com Phone: 614-836-4184 Audinet: 8-210-4184

Muhuel & Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

4001 Bixby Road

Groveport, Ohio 43125				Pro	Jram:	Coal C	ombustic	Program: Coal Combustion Residuals (CCR)	ıls (CCR	(				1
Contacts: Michael Ohlinger (814-836-4184)						Site Contact:	tact:			Date:		COCYC	For Lab Use Only: COC/Order #:	14700000
Project Name: Welsh PBAP							250 mL	Field-filter 500 mL	11	Three (six every				979,238,907
Contact Name: Jill Parker-Witt	Analysis	Turnaround Routin	Analysis Turnaround Time (in Calendar Days) Routine (28 days)	lendar E	ays)		bottle, pH<2.	bottle,	Pottle,	10th")			201165	10.50
Contact Phone: (318) 673-3816			•				HNO,	HNO	0-6'C	pH<2, HNO ₃	l 10 line		CC5402	955
Sampler(s): Matt Hamilton Kenny McDonald						elait	,88 ,84 , ,d9 ,o;	nM bns e	'os	1-228				7.
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	ini (a)reiqma2	B, Ca, Li, Sb, Ro, Ca, Li, Sb,	Febriossip	, TDS, F, CI,	년 년 년 년 년 년 년 년 년 년 년 년 년 년 년 년 년 년 년	βн		Sample Specific Notes:	
AD-8	10/31/2022	808	9	W9	1				×			Routin	Routine (28 days)	
AD-9	10/31/2022	1020	ပ	ΑS	-				×			TG-32	TG-32 needed	
AD-15	10/31/2022	933	ဗ	αw	1				×					
DUPLICATE - PBAP	10/31/2022	1400	G	GW	1				×					
										1		_		-
													535	T
														1
														-
Preservation Used: 1= ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other	HNO3; 5=N8	OH; 6= Ot	her	; F= filter	filter in	in field	4	F4	·	4				
* Six 1L Bottles must be collected for Radium for every 10th sample.	r every 10th	sample.												
Special Instructions/QC Requirements & Comments:	ants:							:						

Received in Laboratory Received by: Received by: 8 Date/Time: Date/Time: Company Company: Company: Relinquished by Relinquished by: Relinquished by:

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17

Date/Time; 5/22

Date/Time:

Date/Time:

# WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

Package Type	Delivery Type							
Corole Box Bag Envelope	PONY UPS FedEX USPS							
	Other							
Plant/Customer Welsh BASP	Number of Plastic Containers:							
Opened By Mi ChaeL	Number of Glass Containers:							
	_ Number of Mercury Containers:							
	or N/A Initial: MULL on ice / no							
ice (IR Gun Ser# 221368900, Expir. 3/22/2	2024) - If No, specify each deviation:							
	Comments							
Was Chain of Custody received? \( \forall \) \( \text{N} \)	Comments							
)	If RUSH, who was notified?							
pH (15 min) Cr ⁺⁰ (pres ) NO₂ or N (24 hr)	NO ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)							
Was COC filled out properly?	Comments							
Were samples labeled properly? $\sqrt[6]{N}$	Comments							
Were correct containers used? 4/N	Comments							
Was pH checked & Color Coding done? Y/N or N/A Initial & Date: M/J/C 11/03/22								
pH paper (circle one): MQuant,PN1.09535.0001,L0	OT# HC904495 [OR] Lab Rat,PN4801,LOT# X000RWDG21							
Was Add'l Preservative needed? Y/N/If Y	(See Prep Book)							
Is sample filtration requested? Y / Ŋ	Comments (See Prep Book)							
	Person Contacted:							
	Date & Time :							
Logged by MSO Comme	ents:							
Reviewed by AB								

**REMINDER**: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

7

# **Municipal Solid Waste Laboratory Review Checklist**

This da	ita pack	age consi	sts of:					
X	(which	includes				Table 1, Reportable Data Supporting Data, and		
x	R1	Field cha	in-of-custody docume	entation				
x	R2		dentification cross-ref					
x	R3	<ul> <li>Test reports (analytical data sheets) for each environmental sample that includes:</li> <li>(a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 NELAC Standard</li> <li>(b) Dilution factors</li> <li>(c) Preparation methods</li> <li>(d) Cleanup methods</li> <li>(e) If required for the project, tentatively identified compounds (TICs)</li> </ul>						
NA	R4	(a) Calc	e recovery data includ ulated recovery (%R) laboratory's surrogate	Ü				
x	R5		orts/summary forms f	-	oles			
x	R6	Test repo (a) LCS (b) Calc	orts/summary forms forms forms for spiking amounts ulated %R for each an laboratory's LCS QC l	or laboratory	•	LCSs) including:		
x	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: <ul> <li>(a) Samples associated with the MS/MSD clearly identified</li> <li>(b) MS/MSD spiking amounts</li> <li>(c) Concentration of each MS/MSD analyte measured in the parent and spiked sampl</li> <li>(d) Calculated %Rs and relative percent differences (RPDs)</li> <li>(e) The laboratory's MS/MSD QC limits</li> </ul>						
x	R8	<ul><li>(a) The</li><li>(b) The</li></ul>	ry analytical duplicate amount of analyte me calculated RPD laboratory's QC limits	easured in the	duplicate	recision:		
X	R9	List of m	ethod quantitation lin	nits (MQLs) f	or each analyte for	r each method and matrix		
x	R10	Other pro	oblems or anomalies		•			
x	The Ex	ception R	eport for every item fo	or which the	esult is "No" or "I	NR" (Not Reviewed)		
packag require reports by the laborat that wo	e as beoments of the control of the	en review of the met y signatu ory as hav he Labora ect the qu	re below, I affirm to the ring the potential to a story Review Checklist ality of the data.	nd is completere noted by the best of my ffect the qualit, and no info	te and technically the laboratory in t knowledge, all pro ty of the data, hav rmation or data ha	compliant with the he attached exception bblems/anomalies, observed been identified by the ave been knowingly withheld		
respone used is stateme	ding to respone ent is tr	rule. The sible for r ue.	This laboratory is official signing the co- eleasing this data/pack	ver page of th	e rule-required re	port in which these data are		
	el Oh		_ Muhul	my/	Chemist	11/28/22		
Name (	printed	l)	/Signature	/	Official Title	Date		

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 11/28/22

Laboratory Job Number: 223483

Prep Batch Number(s): QC2211066

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	0, I	Chain-of-custody (COC)		
•	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	NA	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	NA	
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
_	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	NA	
	I	Were MS/MSD analyzed at the appropriate frequency?	NA	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	NA	
	I	Were MS/MSD RPDs within laboratory QC limits?	NA	
R8	0, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	1	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	1	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 4/5/22

Laboratory Job Number: 223483

Prep Batch Number(s): QC2211066

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	NA	
	I	Was the number of standards recommended in the method used for all analytes?	NA	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	NA	
	I	Are ICAL data available for all instruments used?	NA	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	NA	
<b>S</b> 2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	NA	
	I	Were percent differences for each analyte within the method-required QC limits?	NA	
	I	Was the ICAL curve verified for each analyte?	NA	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	NA	
<b>S</b> 3	0	Mass spectral tuning:		_
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
<b>S</b> 5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	NA		
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
<b>S12</b>	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
\$14	O, I	Demonstration of analyst competency (DOC)		
18	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Michael Ohlinger

LRC Date: 11/28/22

Laboratory Job Number: 223483

Prep Batch Number(s): QC2211066

Exception Report No.	Description	
	\$00.0000000000000000000000000000000000	<u> </u>
		<u></u>
		· · · · · · · · · · · · · · · · · · ·
		-

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

#### **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:  $|\mathbf{x}|$ This signature page, and the laboratory review checklist consisting of Table 1, Reportable Data (which includes the reportable data identified on this page), Table 2, Supporting Data, and Table 3, Exception Reports. X R₁ Field chain-of-custody documentation X R₂ Sample identification cross-reference N **R**3 Test reports (analytical data sheets) for each environmental sample that includes: (a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 2003 **NELAC Standard** (b) Dilution factors (c) Preparation methods (d) Cleanup methods (e) If required for the project, tentatively identified compounds (TICs) X. Surrogate recovery data including: R4 (a) Calculated recovery (%R) (b) The laboratory's surrogate QC limits × Test reports/summary forms for blank samples **R**5  $\mathbf{x}$ **R6** Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts (b) Calculated %R for each analyte (c) The laboratory's LCS QC limits  $\mathbf{x}$ Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: **R**7 (a) Samples associated with the MS/MSD clearly identified (b) MS/MSD spiking amounts (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples (d) Calculated %Rs and relative percent differences (RPDs) (e) The laboratory's MS/MSD QC limits  $|\mathbf{x}|$ Laboratory analytical duplicate (if applicable) recovery and precision: R8 (a) The amount of analyte measured in the duplicate (b) The calculated RPD (c) The laboratory's QC limits for analytical duplicates  $\square$ List of method quantitation limits (MQLs) for each analyte for each method and matrix R9  $\square$ R10 Other problems or anomalies  $\overline{\mathbf{x}}$ The Exception Report for every item for which the result is "No" or "NR" (Not Reviewed) Release Statement: I am responsible for the release of this laboratory data package. This data package as been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exception reports. By my 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 in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data. Check, if applicable: ( ) This laboratory is an in-house laboratory controlled by the person responding to rule. The official signing the cover page of the rule-required report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true. Chemist Prin Timothy E. Arnold 11/17/2022

Name (printed)

Date

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E Arnold

LRC Date: 11/17/2022

Laboratory Job Number: 223483

Prep Batch Number(s): QC2111158

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	ı	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	Yes	
·	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		-
	I	Were surrogates added prior to extraction?	Yes	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	Yes	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
·	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	0, I	Other problems/anomalies		10.7
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E Arnold

LRC Date: 11/17/2022

Laboratory Job Number: 223483

Prep Batch Number(s): QC2111158

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
·	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	7/1
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	·····NA	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	> 463
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Analytes ² Description		Exception Report No.4
S6	0	Dual column confirmation		
	I	NA		
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
<b>59</b>	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	5
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
184	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):	Ar n	
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh PBAP

Reviewer Name: Timothy E Arnold

LRC Date: 11/17/2022

Laboratory Job Number: 223483

Prep Batch Number(s): QC2111158

Exception Report No.	Description					
ER1	CCB acceptance criteria is CCB <mql.< th=""></mql.<>					

³ NA - Not applicable; NR - Not reviewed.

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-8 Customer Description: TG-32

Lab Number: 223511-001 Preparation:

Date Collected: 10/31/2022 10:08 EDT Date Received: 11/04/2022 13:30 EDT

#### **Metals**

Parameter	Result Un	its Dilutio	n RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg	′L 1	0.10	0.02 U1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Arsenic	0.25 µg	′L 1	0.10	0.03	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Barium	27.8 µg	′L 1	0.20	0.05	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Beryllium	0.01 µg,	′L 1	0.050	0.007 J1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Boron	1.08 mg	/L 1	0.050	0.009	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Cadmium	0.038 µg,	′L 1	0.020	0.004	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Calcium	22.3 mg	/L 1	0.05	0.02	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Chromium	0.31 µg,	′L 1	0.20	0.04	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Cobalt	8.92 µg,	′L 1	0.020	0.003	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg	′L 1	0.20	0.05 U1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Lithium	0.0559 mg	/L 1	0.00020	0.00005	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/	′L 1	. 5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2 µg,	′L 1	. 0.5	0.1 J1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg	′L 1	0.50	0.09 U1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4
Thallium	0. <b>1</b> 5 μg,	′L 1	0.20	0.04 J1	GES	11/22/2022 11:14	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	0.36 pCi/L	0.18	0.49	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	92.5 %					
Radium-228	0.74 pCi/L	0.18	0.57	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	72.3 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-9 Customer Description: TG-32

Lab Number: 223511-002 Preparation:

Date Collected: 10/31/2022 11:20 EDT Date Received: 11/04/2022 13:30 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Arsenic	0.21 μg/L	1	0.10	0.03	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Barium	52.0 μg/L	1	0.20	0.05	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Beryllium	1.14 µg/L	5	0.25	0.04	GES	11/28/2022 08:57	EPA 200.8-1994, Rev. 5.4
Boron	0.109 mg/l	. 1	0.050	0.009	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Cadmium	0.199 µg/L	1	0.020	0.004	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Calcium	12.4 mg/l	. 1	0.05	0.02	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Chromium	1.23 µg/L	1	0.20	0.04	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Cobalt	17.1 µg/L	1	0.020	0.003	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Lead	0.08 µg/L	1	0.20	0.05 J1	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Lithium	0.231 mg/l	. 5	0.0010	0.0003	GES	11/28/2022 08:57	EPA 200.8-1994, Rev. 5.4
Mercury	4 ng/L	1	5	2 J1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Selenium	0.27 μg/L	1	0.50	0.09 J1	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4
Thallium	0.22 μg/L	1	0.20	0.04	GES	11/22/2022 12:10	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.06 pCi/L	0.30	0.58	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	81.1 %					
Radium-228	-1.43 pCi/L	0.18	0.67	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	74.8 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: AD-15 Customer Description: TG-32

Lab Number: 223511-003 Preparation:

Date Collected: 10/31/2022 10:33 EDT Date Received: 11/04/2022 13:30 EDT

#### **Metals**

Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Arsenic	2.55 μg/L	1	0.10	0.03	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Barium	75.3 μg/L	1	0.20	0.05	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Beryllium	0. <b>1</b> 87 μg/L	1	0.050	0.007	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Boron	0.093 mg/L	1	0.050	0.009	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Cadmium	0.015 μg/L	1	0.020	0.004 J1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Calcium	2.57 mg/L	1	0.05	0.02	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Chromium	0.41 μg/L	1	0.20	0.04	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Cobalt	2.94 μg/L	1	0.020	0.003	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Lead	0. <b>12</b> μg/L	1	0.20	0.05 J1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Lithium	0.00235 mg/L	1	0.00020	0.00005	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Selenium	0.38 μg/L	1	0.50	0.09 J1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4
Thallium	0.05 μg/L	1	0.20	0.04 J1	GES	11/22/2022 12:15	EPA 200.8-1994, Rev. 5.4

#### Radiochemistry

Parameter	Result Units	UNC*(+/-)	MDA* Data Qualifiers	Analyst	Analysis Date	Method
Radium-226	1.12 pCi/L	0.27	0.44	ST	11/15/2022 14:39	SW-846 9315-1986, Rev. 0
Carrier Recovery	98.9 %					
Radium-228	0.55 pCi/L	0.16	0.52	TTP	11/17/2022 15:56	SW-846 9320-2014, Rev. 1.0
Carrier Recovery	90.9 %					

^{*} The Required Detection Limit (RDL) is equivalent to the RL and for Radium-226 and Radium-228, the RDL is calculated to be 1.0 pCi/L. The Minimal Detectable Activity (MDA) listed with these results is sample specific and empirical. The combined standard uncertainty (UNC) is a counting uncertainty representing "one-sigma" which has the same units of measurement as the result.



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: DUPLICATE - PBAP Customer Description: TG-32

Lab Number: 223511-004 Preparation:

Date Collected: 10/31/2022 15:00 EDT Date Received: 11/04/2022 13:30 EDT

#### Metals

Motais							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Arsenic	0.24 µg/L	1	0.10	0.03	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Barium	27.5 μg/L	1	0.20	0.05	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Beryllium	0.009 µg/L	1	0.050	0.007 J1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Boron	1.10 mg/L	1	0.050	0.009	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Cadmium	0.041 µg/L	1	0.020	0.004	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Calcium	22.2 mg/L	1	0.05	0.02	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Chromium	0.36 µg/L	1	0.20	0.04	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Cobalt	9.00 µg/L	1	0.020	0.003	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Lithium	0.0558 mg/L	1	0.00020	0.00005	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	<0.1 µg/L	1	0.5	0.1 U1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4
Thallium	0.15 µg/L	1	0.20	0.04 J1	GES	11/22/2022 12:21	EPA 200.8-1994, Rev. 5.4



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

Customer Sample ID: EQUIPMENT BLANK - PBAP Customer Description: TG-32

Lab Number: 223511-005 Preparation:

Date Collected: 10/31/2022 11:00 EDT Date Received: 11/04/2022 13:30 EDT

#### Metals

Motals							
Parameter	Result Units	Dilution	RL	MDL Data Qualifiers	Analyst	Analysis Date	Method
Antimony	<0.02 µg/L	1	0.10	0.02 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Arsenic	<0.03 µg/L	1	0.10	0.03 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Barium	<0.05 µg/L	1	0.20	0.05 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Beryllium	<0.007 µg/L	1	0.050	0.007 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Boron	<0.009 mg/L	1	0.050	0.009 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Cadmium	<0.004 µg/L	1	0.020	0.004 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Calcium	<0.02 mg/L	1	0.05	0.02 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Chromium	0.53 μg/L	1	0.20	0.04	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Cobalt	0. <b>1</b> 57 μg/L	1	0.020	0.003	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Lead	<0.05 µg/L	1	0.20	0.05 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Lithium	0.00012 mg/L	1	0.00020	0.00005 J1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Mercury	<2 ng/L	1	5	2 U1	JAB	11/15/2022 00:00	EPA 245.7-2005, Rev. 2.0
Molybdenum	0.2 µg/L	1	0.5	0.1 J1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Selenium	<0.09 µg/L	1	0.50	0.09 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4
Thallium	<0.04 µg/L	1	0.20	0.04 U1	GES	11/22/2022 12:26	EPA 200.8-1994, Rev. 5.4



Dolan Chemical Laboratory 4001 Bixby Road Groveport, OH 43125 Phone: 614-836-4221 Audinet: 210-4221

Job ID: 223511 Customer: Welsh Power Station Date Reported: 12/20/2022

**Report Verification** 

This report and the above data have been confirmed by the following analyst.

Michael Ohlinger, Chemist

Email: msohlinger@aep.com
Phone: 614-836-4184
Audinet: 8-210-4184

Muhael S. Ollinger

THIS TEST REPORT RELATES ONLY TO THE ITEMS TESTED AND SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF THE LABORATORY. ALL TEST RESULTS MEET ALL OF THE REQUIREMENTS OF THE ACCREDITING AUTHORITY, UNLESS OTHERWISE NOTED. ALL TIMES LISTED ARE IN THE EASTERN TIME ZONE.

#### **Data Qualifer Legend**

U1 - Not detected at or above method detection limit (MDL).

J1 - Concentration estimated. Analyte was detected between the method detection limit and the reporting limit.

# **Chain of Custody Record**

Dolan Chemical Laboratory (DCL)

Groveport, Ohio 43125				P		Soal So	Tue LO	Program: Coal Combustion Residuals (CCR)	S (CCR)					
Contacts: Michael Ohlinger (614-836-4184)						Site Contact:	act:			Date:			For Lab Use Only: COC/Order #:	
Project Name: Welsh PBAP Contact Name: Jill Parker-Witt Contact Phone: (318) 673-3816	Analysis	Furnaround Routin	Analysis Turnaround Time (in Calendar Days) Routine (28 days)	Jendar C	ays)		250 mL bottle, pH<2, HNO,	Fleid-filter 500 mL bottle, then pH<2, HNO ₃	1 L bottle, Cool, 0-6°C	Three (six every 10th") 1 L bottles, pH<2, HNO ₃	250 mL Glass bottle, HCL**,		115827	
Sampler(s): Matt Hamilton Kenny McDonald		98					,68 ,8A , ,69 ,00	nM bns e	'os	822-6				
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	ini (a)reiqma2	8, Ca, Li, Sb 86, Cd, Cr, C Mo, Se, TL	dissolved F	, F, CI,	Ka-226, Ra	6н		Sample Specific Notes:	
AD-8	10/31/2022	908	၅	ΘW	æ		×			×	×		TG-32 needed	
AD-9	10/31/2022	1020	ပ	βW	2		×	:		×	×	_		
AD-15	10/31/2022	933	ဖ	GW	ß		×			×	×	$\dashv$		111
DUPLICATE - PBAP	10/31/2022	1400	Ø	δĶ	2		×				×	$\dashv$	A PERSONAL PROPERTY AND A STATE OF THE STATE	e100 8
EQUIPMENT BLANK - PBAP	10/31/2022	1000	ဖ	ΟW	2		×				×	$\dashv$		1000
					┪	+						+		
					$\exists$	$\dashv$						$\dashv$		
												$\dashv$		
												_		
										j			140 140 140	
													and the second s	
Preservation Used: 1= ice, 2= HCi; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other_	HNO3; 5=Na	OH; 6= Ot	her	Fe.	filter in field	Field	4	74	-	4	2			
Six 1L Bottles must be collected for Radium for every 10th sample.	ır every 10th	sample.												

Special Instructions/QC Requirements & Comments:

Relinquished by:     Company:     Date/Time:     I/S - 2.2     Received by:     Date/Time:     Date/Tim	(				in the second se
Company: Date/Time: Received by:  Company: Date/Time: Received in Laboratory by:  Date/Time: Date/T	Relinquished by Amulas	Company:	Date/Time: 1600		Date/Time:
Company: Date/Time: Received in Laboratory by Date/Time: Pacety Park Date/Time: Date/Tim	Relinquished by	Сотрапу	Date/Time:		Date/Time.
	Relinquished by:	Company:	Date/Time:	Juny J	22/2

Form COC-04, AEP Chain of Custody (COC) Record for Coal Combustion Residual (CCR) Sampling - Shreveport, Rev. 1, 1/10/17



# WATER & WASTE SAMPLE RECEIPT FORM (Temp Gun 1)

Package Type	Delivery Type
Cooler Box Bag Envelope	PONY UPS FedEX USPS
	Other
	Number of Plastic Containers:
Opened By MSK	Number of Glass Containers:
	Number of Mercury Containers:
Were all temperatures within 0-6°C(Y)N	o N/A Initial:on ice / no
ice (IR Gun Ser# 221368900, Expir. 3/22/20	024) - If No, specify each deviation:
Was container in good condition? (Y) N	Comments
Was Chain of Custody received? (Y). N	Comments
Requested turnaround: Kouline	If RUSH, who was notified?
pH (15 min) Cr*6 (pres ) NO₂ or N (24 hr)	IO ₃ (48 hr) ortho-PO ₄ (48 hr) Hg-diss (pres ) (48 hr)
Was COC filled out properly?  Y N	Comments
Were samples labeled properly? Y N	Comments
Were correct containers used?  \( \frac{\frac{1}{2}}{N} \)	Comments
Was pH checked & Color Coding done (Y)	N or N/A Initial & Date: MOK JAB 114 22
pH paper (circle one): MQuant,PN1.09535.0001,L0	OT# HC904495OR] Lab Rat,PN4801,LOT# X000RWDG21
Was Add'l Preservative needed? Y / N If Y	es: By whom & when: (See Prep Book)
Is sample filtration requested? Y / (N)	Comments (See Prep Book)
Was the customer contacted? If Yes:	Person Contacted:
Lab ID# 223511	Date & Time :
Comme	nts:
Logged by MSD	
Reviewed by	
$\cup$	

REMINDER: Document the pertinent sample integrity information and deviations in sample receipt (as noted above) in the "Notes" field in the LIMS to be included on the report to the customer.

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:

		U							
x	(which		and the laboratory review cleportable data identified on eports.						
х	R1	Field chain-of	-custody documentation						
х	R2	Sample identi	fication cross-reference						
×	R3	<ul><li>(a) Items specified NELAC S</li><li>(b) Dilution 1</li><li>(c) Preparation (d) Cleanup 1</li></ul>	actors on methods	for reporting results, e.g., S	Section 5.5.10 in 2003				
NA	R4	(a) Calculate	overy data including: d recovery (%R) atory's surrogate QC limits						
х	R ₅	Test reports/s	ummary forms for blank sa	mples					
х	R6	(a) LCS spik (b) Calculate	nummary forms for laborate ing amounts d %R for each analyte atory's LCS QC limits	ry control samples (LCSs)	including:				
х	R7	<ul><li>(a) Samples</li><li>(b) MS/MSI</li><li>(c) Concentr</li><li>(d) Calculate</li></ul>	or project matrix spike/mat associated with the MS/MS spiking amounts ation of each MS/MSD ana d %Rs and relative percent ratory's MS/MSD QC limits	D clearly identified lyte measured in the paren differences (RPDs)	_				
x	R8	Laboratory analytical duplicate (if applicable) recovery and precision:  (a) The amount of analyte measured in the duplicate  (b) The calculated RPD  (c) The laboratory's QC limits for analytical duplicates							
x									
×	R10	Other problem	ns or anomalies						
×	The Ex	ception Repor	t for every item for which th	ne result is "No" or "NR" (N	lot Reviewed)				
packag require reports by the laborat	ge as be ements s. By m laborat tory in t	en reviewed by of the methods y signature be cory as having	responsible for the release of the laboratory and is compound is used, except where noted low, I affirm to the best of the potential to affect the quality Review Checklist, and no in of the data.	plete and technically compl by the laboratory in the atta ny knowledge, all problems ality of the data, have been	iant with the ached exception s/anomalies, observed a identified by the				
respon used is	ding to	rule. The offic sible for releas	This laboratory is an in-hou ial signing the cover page of sing this data package and i	f the rule-required report in	n which these data are				
Susa	nn Su	Izmann	S. Sul7mann	Senior chemist	11-16-2022				
Name	(printed	i)	Signature	Official Title	Date				

Table 1. Reportable Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 11-16-2022

Laboratory Job Number: 223511

Prep Batch Number(s): PB22110704, PB22110705

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
-	I	Were all samples prepared and analyzed within holding times?	Yes	
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	YES	
-	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	⊗ I	Were blank concentrations < MQL?	yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		
	I	Were MS/MSD RPDs within laboratory QC limits?		
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	,
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	_
R9	. O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10_	O, I	Other problems/anomalies		22
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

Table 2. Supporting Data.

Laboratory Name: American Electric Power Dolan Chemical Laboratory

Project Name: Welsh Power Station

Reviewer Name: Susann Sulzmann

LRC Date: 11-16-2022

Laboratory Job Number: 223511

Prep Batch Number(s): PB22110704, PB22110705

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	0, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	_
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
· <del>-</del>	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER1
<b>S</b> 3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	NA	
	I	Were ion abundance data within the method-required QC limits?	NA =	= =
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	NA	
\$5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I_	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
<b>S</b> 11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		=
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### Table 3. Exception Reports.

Laboratory Nam	e: American Electric Power Dolan Chemical Laboratory
	Welsh Power Station
_	Susann Sulzmann
LRC Date: 11-16	
	Number: 223511
Prep Batch Num	ber(s): PB22110704, PB22110705

Exception Report No.	Description
ER1	CCB acceptance criteria is CCB <mql.< th=""></mql.<>

Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

²O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."

# **Municipal Solid Waste Laboratory Review Checklist**

This data package consists of:

Х	(which	s signature page, and the laboratory review checklist consisting of Table 1, Reportable Data ich includes the reportable data identified on this page), Table 2, Supporting Data, and le 3, Exception Reports.				
X	R1	Field chain-o	f-custody documentation			
X	R2	Sample ident	ification cross-reference			
X	R3	<ul> <li>Test reports (analytical data sheets) for each environmental sample that includes:</li> <li>(a) Items specified in NELAC Chapter 5 for reporting results, e.g., Section 5.5.10 in 200 NELAC Standard</li> <li>(b) Dilution factors</li> <li>(c) Preparation methods</li> <li>(d) Cleanup methods</li> <li>(e) If required for the project, tentatively identified compounds (TICs)</li> </ul>				
NA	R4	(a) Calculate	covery data including: ed recovery (%R) ratory's surrogate QC limits			
X	R5	Test reports/	summary forms for blank san	nples		
x	R6	(a) LCS spik (b) Calculate		y control samples (LCSs) incl	ıding:	
X	R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:  (a) Samples associated with the MS/MSD clearly identified  (b) MS/MSD spiking amounts  (c) Concentration of each MS/MSD analyte measured in the parent and spiked samples  (d) Calculated %Rs and relative percent differences (RPDs)  (e) The laboratory's MS/MSD QC limits				
X	R8	(a) The amo	nalytical duplicate (if applicat ount of analyte measured in th ulated RPD ratory's QC limits for analytic	e duplicate		
Х	R9	List of metho	d quantitation limits (MQLs)	for each analyte for each met	hod and matrix	
X	R10	Other proble	ms or anomalies			
X	The Ex	ception Repo	rt for every item for which the	result is "No" or "NR" (Not R	leviewed)	
packag require reports by the laborat	ge as be ements s. By m laborat tory in t	en reviewed b of the method y signature be tory as having	y the laboratory and is comples used, except where noted by clow, I affirm to the best of my the potential to affect the quay Review Checklist, and no inf	this laboratory data package, ete and technically compliant the laboratory in the attache y knowledge, all problems/andity of the data, have been ideformation or data have been k	with the d exception omalies, observed ntified by the	
respon used is	ding to	rule. The offic sible for relea	cial signing the cover page of t	e laboratory controlled by the he rule-required report in wh by signature affirming the abo	ich these data are	
Jonat	than B	arnhill	Jonathan Barnhill	Lab Supervisor	12/13/2022	
Name (printed) Signature Official Title Date						

# Table 1. Reportable Data.

<b>Laboratory Name:</b>	American Electric Power Dolan Chemical Laboratory
Project Name:	
Reviewer Name: J	onathan Barnhill
LRC Date: 12/13/2	022
Laboratory Job Nu	mber: 223511
Pren Ratch Numbe	r(s). PB22112101 QC2211222 QC2211238

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No. ⁴
R1	O, I	Chain-of-custody (COC)		
	I	Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	Yes	
	I	Were all departures from standard conditions described in an exception report?	Yes	
R2	O, I	Sample and quality control (QC) identification		
	I	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	Yes	
	I	Are all laboratory ID numbers cross-referenced to the corresponding QC data?	Yes	
R3	O, I	Test reports		
	I	Were all samples prepared and analyzed within holding times?		
	I	Other than those results < MQL, were all other raw values bracketed by calibration standards?	No	ER1
	I	Were calculations checked by a peer or supervisor?	Yes	
	I	Were all analyte identifications checked by a peer or supervisor?	Yes	
	I	Were sample quantitation limits reported for all analytes not detected?	Yes	
	I	Were all results for soil and sediment samples reported on a dry weight basis?	NA	
	I	Was % moisture (or solids) reported for all soil and sediment samples?	NA	
	I	If required for the project, TICs reported?	NA	
R4	0	Surrogate recovery data		
	I	Were surrogates added prior to extraction?	NA	
	I	Were surrogate percent recoveries in all samples within the laboratory QC limits?	NA	
R5	O, I	Test reports/summary forms for blank samples		
	I	Were appropriate type(s) of blanks analyzed?	Yes	
	I	Were blanks analyzed at the appropriate frequency?	Yes	

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
	I	Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	Yes	
	I	Were blank concentrations < MQL?	Yes	
R6	O, I	Laboratory control samples (LCS):		
	I	Were all COCs included in the LCS?	Yes	
	I	Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	Yes	
	I	Were LCSs analyzed at the required frequency?	Yes	
	I	Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	Yes	
	I	Was the LCSD RPD within QC limits?	Yes	
R7	O, I	Matrix spike (MS) and matrix spike duplicate (MSD) data		
	I	Were the project/method specified analytes included in the MS and MSD?	Yes	
	I	Were MS/MSD analyzed at the appropriate frequency?	Yes	
	I	Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	Yes	
	I	Were MS/MSD RPDs within laboratory QC limits?	Yes	
R8	O, I	Analytical duplicate data		
	I	Were appropriate analytical duplicates analyzed for each matrix?	Yes	
	I	Were analytical duplicates analyzed at the appropriate frequency?	Yes	
	I	Were RPDs or relative standard deviations within the laboratory QC limits?	Yes	
R9	O, I	Method quantitation limits (MQLs):		
	I	Are the MQLs for each method analyte included in the laboratory data package?	Yes	
	I	Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	Yes	
	I	Are unadjusted MQLs included in the laboratory data package?	Yes	
R10	O, I	Other problems/anomalies		
	I	Are all known problems/anomalies/special conditions noted in this LRC and ER?	Yes	
	I	Were all necessary corrective actions performed for the reported data?	Yes	
	I	Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	Yes	

# **Table 2. Supporting Data.**

Laboratory Nai	me: American Electric Power Dolan Chemical Laboratory
<b>Project Name:</b>	
Reviewer Name	e: Jonathan Barnhill
LRC Date: 12/	13/2022
Laboratory Job	Number: 223511

**Prep Batch Number(s):** PB22112101 QC2211222 QC2211238

Item¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S1	O, I	Initial calibration (ICAL)		
	I	Were response factors and/or relative response factors for each analyte within QC limits?	NA	
	I	Were percent RSDs or correlation coefficient criteria met?	Yes	
	I	Was the number of standards recommended in the method used for all analytes?	Yes	
	I	Were all points generated between the lowest and highest standard used to calculate the curve?	Yes	
	I	Are ICAL data available for all instruments used?	Yes	
	I	Has the initial calibration curve been verified using an appropriate second source standard?	Yes	
S2	O, I	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):		
	I	Was the CCV analyzed at the method-required frequency?	Yes	
	I	Were percent differences for each analyte within the method-required QC limits?	Yes	
	I	Was the ICAL curve verified for each analyte?	Yes	
	I	Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	No	ER2
S3	0	Mass spectral tuning:		
	I	Was the appropriate compound for the method used for tuning?	Yes	
	I	Were ion abundance data within the method-required QC limits?	Yes	
S4	0	Internal standards (IS):		
	I	Were IS area counts and retention times within the method-required QC limits?	Yes	
S5	O, I	Raw data (NELAC section 1 appendix A glossary, and section 5.)		
	I	Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	Yes	
	I	Were data associated with manual integrations flagged on the raw data?	NA	

Item ¹	Analytes ²	Description	Result (Yes, No, NA, NR) ³	Exception Report No.4
S6	0	Dual column confirmation		
	I	Did dual column confirmation results meet the method-required QC?	NA	
S7	0	Tentatively identified compounds (TICs):		
	I	If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?	NA	
S8	I	Interference Check Sample (ICS) results:		
	I	Were percent recoveries within method QC limits?	NA	
S9	I	Serial dilutions, post digestion spikes, and method of standard additions		
	I	Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	NA	
S10	O, I	Method detection limit (MDL) studies		
	I	Was a MDL study performed for each reported analyte?	Yes	
	I	Is the MDL either adjusted or supported by the analysis of DCSs?	Yes	
S11	O, I	Proficiency test reports:		
	I	Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	Yes	
S12	O, I	Standards documentation		
	I	Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	Yes	
S13	O, I	Compound/analyte identification procedures		
	I	Are the procedures for compound/analyte identification documented?	Yes	
S14	O, I	Demonstration of analyst competency (DOC)		
	I	Was DOC conducted consistent with NELAC Chapter 5C?	Yes	
	I	Is documentation of the analyst's competency up-to-date and on file?	Yes	
S15	O, I	Verification/validation documentation for methods (NELAC Chap 5n 5)		
	I	Are all the methods used to generate the data documented, verified, and validated, where applicable?	Yes	
S16	O, I	Laboratory standard operating procedures (SOPs):		
	I	Are laboratory SOPs current and on file for each method performed?	Yes	

#### **Table 3. Exception Reports.**

<b>Laboratory Name:</b> American Electric Power Dolan Chemical Laboratory
Project Name:
Reviewer Name: Jonathan Barnhill
ARC Date: 12/13/2022
aboratory Job Number: 223511
Prep Batch Number(s): PB22112101 QC2211222 QC2211238

Exception Report No.	Description
ER1	Linear Dynamic Range (LDR) study used to determine upper limit of analyte calibration.
ER2	CCB acceptance criteria is CCB<2.2*MDL.

¹ Items identified by the letter "R" must be available as a hard copy or as a .pdf file. Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.

² O - organic analyses; I - inorganic analyses (including general chemistry constituents, when applicable).

³ NA - Not applicable; NR - Not reviewed.

⁴ Exception Report identification number; an Exception Report should be completed for an item if the result is "No" or "NR."