2018 NC2 CCR Landfill Annual Groundwater Monitoring and Corrective Action Report

Nebraska City Generating Station NC2 Ash Disposal Area

Nebraska City, Nebraska

January 31, 2019

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Professional Engineer Certification

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am duly licensed Professional Engineer under the laws of the Sate of Nebraska.

Print Name: Megan B. Seymour

Signature: Megan Seymour

Date: 1-31-2019

License #: E-15931

My license renewal date is December 31, 2020.

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1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under Subtitle D of the Resource Conservation and Recovery Act (RCRA). The CCR rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). The Omaha Public Power District (OPPD), Nebraska City Generating Station currently has two (2) active CCR landfills. Section 40 CFR 257.90(e) specifies that an owner or operator of an existing CCR landfill must prepare an annual groundwater monitoring and corrective action report to summarize any key actions completed, problems encountered, and activities coming up relating to the ground water monitoring system.

1.1 Purpose

The CCR rule established requirements for annual reporting of groundwater monitoring and corrective action in 40 CFR Section 257.90. The information included in this report complies with the requirements established in Section 257.90(e) of the CCR Rule. This report provides a summary of CCR related groundwater monitoring network activities for calendar year 2018.

1.2 Facility Information

OPPD has a two-unit fossil fuel-fired generating station (NC1 and NC2), located 5.5 miles southeast of Nebraska City, Nebraska, along the west shore of the Missouri River. This Station has two (2) existing CCR landfills that are permitted under the current NDEQ Title 132 regulations for fossil fuel combustion ash disposal area; the NC1 Ash Disposal Area and NC2 Ash Disposal Area that are active after the CCR rule effective date of October 19, 2015. This annual report covers the NC2 Ash Disposal Area (NDEQ Permit No. NE0204421, Facility ID 58343).

The NC2 Ash Disposal Area is an existing CCR landfill permitted under NDEQ Title 132 regulations for 40.7 acres; Cell 1 was constructed in 2008/2009 with a composite liner and leachate collection system. Construction for NC2 Ash Disposal Area Cells 2 and 3 started before the effective date of the CCR rule – October 19, 2015. The construction of Cells 2 and 3 base liner and West Leachate Pond base liner was completed January 23, 2018. Cells 2 and 3 base liners were constructed with 24 inches of re-compacted clay overlain by a 60 mil high-density polyethylene (HDPE) geomembrane and geotextile fabric layer. Figure 1 identifies the relevant CCR unit for this report and the supporting monitoring well network (§257.90(e)(1)).

2 Monitoring Program Summary

The groundwater monitoring system currently consists of eight monitoring wells. Monitoring well details for the monitoring network, including the date of installation, is provided in Table 1 (attached). Table 1 provides a summary of monitoring well network identified in the “CCR Groundwater Monitoring System” dated June 2016. The location of the monitoring wells in the groundwater monitoring program in respect to the CCR unit are shown in the attached Figure 1.

2.1 Groundwater Monitoring Network Condition Assessment

OPPD personnel evaluated the condition of each monitoring well in the groundwater monitoring system during the sampling events from March 2018 through October 2018. During this time period, it was noted that ponding water was occuring around monitoring well NC2-MW-3. Re-grading around the well will be completed to direct stormwater flow away from the monitoring well. No repairs were required at the other monitoring wells, and the wells were noted in good working condition, concrete pads were intact, and no damage was observed to the protective well casings. Monitoring well NC2-MW-8 was installed downgradient of the NC2 Ash Disposal Area at the request of NDEQ due to the construction of Cell 2/3 liner and west leachate pond. It was installed on July 9, 2018, and will be added to the Groundwater Monitoring System Certification in 2019.

2.2 Groundwater Purging and Sampling

Groundwater sampling events were conducted by OPPD personnel in March 2018 as part of an ASD evaluation, in June 2018 as the first semi-annual detection monitoring event, and in October 2018 as the second semi-annual detection monitoring event. Samples were collected in compliance with 40 CFR Section 257.90(c), which requires groundwater monitoring be conducted throughout the active life and post-closure care period of the CCR unit for each current background and downgradient well in the monitoring network, as specified in Table 1. The number of samples collected for each background and downgradient well during each groundwater sample event, whether the sample was required by detection or assessment monitoring programs, and the date of each event is summarized in Table 2 (attached).

Groundwater sampling was conducted by OPPD personnel in accordance with the facility's Sampling and Analysis Plan (SAP) dated June 2016. Field sampling forms are provided in Appendix A. The collected groundwater samples were analyzed by TestAmerica Laboratories, Inc. The laboratory analytical reports are provided in Appendix B.

2.3 Groundwater Elevations & Flow Direction

Static groundwater level measurements were recorded at the monitoring wells specified in Table 1 prior to purging and sampling activities conducted during the groundwater sampling events. Groundwater measurements were used to determine elevations, as provided in Table 3. Groundwater flow observed during the first detection monitoring event completed in June 2018 indicated groundwater flow to the southeast near the NC2 landfill with an average flow velocity of 0.01 ft/day to 0.11 ft/day (based on a range of hydraulic conductivity at the Site of 3.94 ft/day to 39 ft/day, respectively [*Groundwater Sampling & Analysis Plan*, HDR, 2019]). Groundwater flow observed during the October detection monitoring event was to the south/southeast; consistent with CCR background and 2017 detection monitoring sampling events.

2.4 Detection Monitoring Program Results

The results of background and detection monitoring sampling activities for Appendix III constituents are presented in Table 4. The results of background monitoring sampling activities for Appendix IV constituents are presented in Table 5. Statistically-derived background threshold values (BTVs) for Appendix III constituents are provided in Table 6 (attached).

2.5 Assessment Monitoring Program Results

The NC2 Ash Disposal Area remained in the detection monitoring program throughout 2018.

2.6 Statistical Analysis Results

A summary of the statistically-derived BTVs for the Appendix III constituents for detection monitoring, and the results of testing for statistically significant increases (SSIs) above background at designated in-network downgradient monitoring wells is provided in Appendix C.

2.7 Transition of Monitoring Programs

The NC2 Ash Disposal Area remained in the detection monitoring program throughout 2018; therefore, there was no transition of monitoring programs.

2.8 Other Information Required under §257.90 through §257.98

No other information is required under Sections 257.90 through 257.98 at this time.

2.9 Key Activities for Upcoming Year

The NC2 Ash Disposal Area will continue semi-annual sampling for Appendix III constituents, as required by Section 257.94(a) and (b). The next semi-annual sampling event is expected to occur in May 2019. OPPD will also revise the Groundwater Monitoring System Certification for the NC2 Ash Disposal Area due to the installation of a new monitoring well (NC2-MW-8).

Figures

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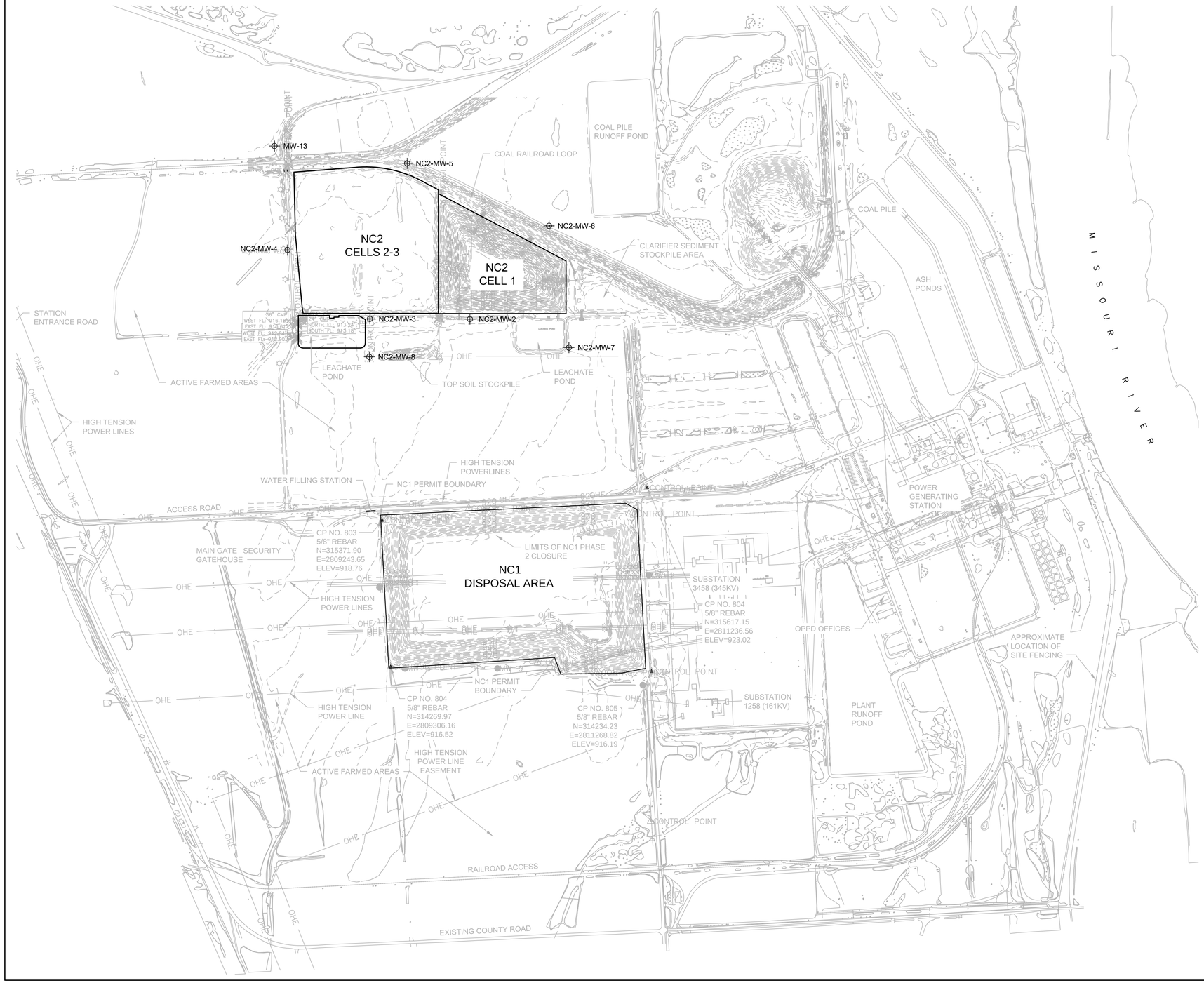

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MONITORING WELL NETWORK					
Monitoring Well	Northing	Easting	Elevation (Top of Casing)	Well Depth (Feet BGS)	Location with Respect to Temporary Ash Disposal Area
MW-13	318188.13	2808432.22	917.69	13	Background/Up-gradient
NC2-MW-2	316885.02	2809902.77	922.35	17	Down-gradient
NC2-MW-3	316887.00	2809149.99	916.01	16	Down-gradient
NC2-MW-4	317405.00	2808530.00	919.40	14	Up-gradient/Cross-gradient
NC2-MW-5	318057.01	2809429.99	922.93	16	Up-gradient/Cross-gradient
NC2-MW-6	317587.54	2810497.93	919.66	14	Cross-gradient
NC2-MW-7	316671.52	2810647.37	917.97	24	Down-gradient/Cross-Gradient
NC2-MW-8	316602.10	2809145.47	916.54	15	Down-gradient

NOTES:
BGS = BELOW GROUND SURFACE

ISSUE	DATE	DESCRIPTION
0	01/2019	ISSUED FOR NDEQ REVIEW

PROJECT MANAGER	G. WILLIAMS
ENVIRONMENTAL	M. SEYMOUR
CAD	L. CUNNINGHAM
PROJECT NUMBER	10111074

Omaha Public Power District

OPPD Nebraska City Ash Landfill
2018 NC1/NC2 CCR Landfill Annual Groundwater Monitoring and Corrective Action Report

MONITORING WELL LOCATION MAP

0 1" 2"

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SCALE: 1" = 400'
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Tables

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Table 1 - Groundwater Monitoring System
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

Monitoring Well ID	Date Installed	Well Depth (feet bgs)	Location w/ respect to Temporary Ash Disposal Area	Top of Well Casing Elevation (ft AMSL)
NC2-MW-2	9/8/2004	17	Down-gradient	922.35
NC2-MW-3	9/8/2004	16	Down-gradient	916.01
NC2-MW-4	9/8/2004	14	Up-gradient / Cross-gradient	919.40
NC2-MW-5	9/16/2004	16	Up-gradient / Cross-gradient	922.93
NC2-MW-6	9/7/2004	14	Cross-gradient	919.66
NC2-MW-7	11/6/2013	24	Down-gradient / Cross-gradient	917.97
MW-13	1/26/2016	13	Up-gradient / Background	917.69
NC2-MW-8 [1]	7/9/2018	15	Down-gradient	916.54

[1] NC2-MW-8 was installed July 9, 2018 and is not officially part of the groundwater monitoring network. OPPD will update the Groundwater Monitoring System Certification in 2019 and add it to the groundwater monitoring network.

Table 2 - Groundwater Sampling Event Summary
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

Monitoring Well ID	# of Initial Background Samples	Initial Background Sample Dates	# of Detection Monitoring Samples [1]	Detection Monitoring Sample Dates
Current background Monitoring Wells				
NC2-MW-4	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
NC2-MW-5	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
MW-13	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
Downgradient Monitoring Wells				
NC2-MW-2	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
NC2-MW-3	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
NC2-MW-6	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
NC2-MW-7	8	3/14/2016, 6/3/2016, 8/31/2016, 11/17/2016, 2/15/2017, 4/24/2017, 6/15/2017, 7/12/2017	4	11/9/2017, 3/12/2018, 6/6/2018, 10/3/2018
NC2-MW-8 [2]	1	10/3/2018	0	NA

[1] The number of detection monitoring samples includes the 3/12/2018 event which occurred as part of an Alternative Source Demonstration. Only Appendix III constituents were sampled in this event; results are presented in Table 4.

[2] NC2-MW-8 was installed July 9, 2018 and is not officially part of the groundwater monitoring network. OPPD will update the Groundwater Monitoring System Certification in 2019 and add it to the groundwater monitoring network.

Table 3 - Groundwater Elevations

Annual Groundwater Monitoring and Corrective Action Report

Omaha Public Power District - NC2 Ash Disposal Area

January 2019

	NC2-MW-4		NC2-MW-5		MW-13		NC2-MW-2		NC2-MW-3		NC2-MW-6		NC2-MW-7		NC2-MW-8 [1]	
	TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation		TOC Elevation	
	919.40		922.93		917.69		922.35		916.01		919.66		917.97		916.54	
Date	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)	Measured Depth to Water (ft)	GW Elevation (AMSL)
3/14/2016	6.91	912.49	6.98	915.95	4.75	912.94	10.80	911.55	4.05	911.96	7.95	911.71	7.04	910.93		
6/3/2016	5.62	913.78	7.67	915.26	3.51	914.18	8.96	913.39	2.55	913.46	6.02	913.64	4.80	913.17		
8/31/2016	5.05	914.35	5.30	917.63	2.85	914.84	8.91	913.44	2.31	913.70	5.95	913.71	5.40	912.57		
11/17/2016	6.80	912.60	9.25	913.68	4.40	913.29	10.90	911.45	4.10	911.91	8.10	911.56	7.20	910.77		
2/15/2017	7.50	911.90	10.20	912.73	5.21	912.48	11.70	910.65	4.95	911.06	9.00	910.66	8.15	909.82		
4/24/2017	6.11	913.29	8.48	914.45	4.00	913.69	9.85	912.50	3.21	912.80	7.00	912.66	5.96	912.01	*Well Installed 7/9/2018*	
6/15/2017	6.75	912.65	9.82	913.11	4.70	912.99	10.30	912.05	3.42	912.59	7.35	912.31	6.35	911.62		
7/12/2017	7.11	912.29	10.15	912.78	5.02	912.67	10.76	911.59	4.25	911.76	7.90	911.76	6.80	911.17		
11/9/2017	12.20	907.20	14.20	908.73	8.25	909.44	15.10	907.25	12.10	903.91	11.20	908.46	10.50	907.47		
3/12/2018	10.18	909.22	12.95	909.98	8.10	909.59	13.90	908.45	7.15	908.86	10.88	908.78	10.00	907.97		
6/6/2018	6.80	912.60	9.70	913.23	4.65	913.04	10.35	912.00	3.70	912.31	7.25	912.41	6.35	911.62		
10/3/2018	4.14	915.26	4.95	917.98	1.63	916.06	7.39	914.96	0.80	915.21	4.30	915.36	3.20	914.77	3.15	913.39

TOC: Top of PVC well casing

N.M. = not measured

AMSL = above mean sea level

[1] NC2-MW-8 was installed July 9, 2018 and is not officially part of the groundwater monitoring network. OPPD will update the Groundwater Monitoring System Certification in 2019 and add it to the groundwater monitoring network.

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Table 4 - Appendix III Constituents in Groundwater
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

		Appendix III Constituents						
	Constituent	Boron	Calcium	Chloride	Fluoride*	pH	Sulfate	TDS
	Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L
NC2-MW-4	3/14/2016	<0.200	126	6.27	0.213	6.84	48.3	536
	6/3/2016	<0.200	130	<5.00	<0.500	6.90	46.8	668
	8/31/2016	<0.200	91.1	7.13	0.646	7.20	29.7	574
	11/17/2016	<0.200	130	<5.00	1.28	7.19	34.0	548
	2/15/2017	<0.200	142	10.8	2.43	7.63	39.7	526
	4/24/2017	<0.200	126	<5.00	1.08	7.08	38.6	574
	6/15/2017	<0.200	122	<5.00	<0.500	7.09	32.2	552
	7/12/2017	<0.200	104	<5.00	<0.500	7.88	32.7	580
	11/9/2017	<0.200	134	<5.00	<0.500	7.18	42.8	568
	3/12/2018	<0.200	141	<5.00	<0.500	6.32 / 7.28 [1]	42.6	562
	6/6/2018	<0.200	140	<5.00	<0.500	7.15	44.1	542
	10/3/2018	<0.200	117	<5.00	<0.500	6.81	42.4	520
NC2-MW-5	3/14/2016	3.73	210	51	<0.500	7.12	611.0	1310
	6/3/2016	3.98	217	36.6	<0.500	7.01	590.0	1390
	8/31/2016	4.08	159	21.5	<0.500	7.11	455.0	1280
	11/17/2016	4.27	228	21.6	1.89	7.54	414.0	1170
	2/15/2017	2.94	217	13.3	0.59	7.30	531.0	1210
	4/24/2017	2.85	183	12.5	1.25	7.55	331.0	1060
	6/15/2017	3.82	190	10.6	<0.500	7.17	243.0	1090
	7/12/2017	4.63	191	7.93	<0.500	7.45	369.0	1190
	11/9/2017	2.91	168	13.2	<0.500	7.20	404.0	1260
	3/12/2018	2	160	34.2	<0.500	6.90 / 7.56 [1]	318.0	826
	6/6/2018	3.81	198	14	<0.500	7.02	353.0	1060
	10/3/2018	4.01	227	8.65	<0.500	7.00	503	1230
MW-13	3/14/2016	<0.200	90.6	11.4	<0.500	6.97	47.7	438
	6/3/2016	<0.200	87.9	12	<0.500	7.11	37.6	360
	8/31/2016	<0.200	66.6	11.1	<0.500	7.71	31.3	414
	11/17/2016	<0.200	84.2	9.33	0.803	7.79	34.7	430
	2/15/2017	<0.200	94.9	11.2	<0.500	7.21	40.9	448
	4/24/2017	<0.200	94.1	12	0.79	7.27	39.5	520
	6/15/2017	<0.200	91.1	12.4	<0.500	7.28	34.2	454
	7/12/2017	<0.200	95.8	16.8	<0.500	8.10	42.0	676
	11/9/2017	<0.200	95.2	12.4	0.55	7.12	36.4	488
	3/12/2018	<0.200	99.8	12.9	<0.500	6.45 / 7.51 [1]	37.0	412
	6/6/2018	0.203	102	12.5	<0.500	6.84	71.0	504
	10/3/2018	<0.200	87.3	14.1	0.738	6.88	33.6	410
NC2-MW-2	3/14/2016	<0.200	277	<5.00	0.371	6.80	388.0	1120
	6/3/2016	0.301	196	<5.00	<0.500	6.79	336.0	972
	8/31/2016	0.511	130	<5.00	<0.500	7.04	151.0	696
	11/17/2016	0.302	236	<5.00	<0.500	7.23	298.0	1030
	2/15/2017	0.219	269	13.2	2.51	7.28	290.0	1070
	4/24/2017	0.264	158	5.4	1.38	7.21	135.0	652
	6/15/2017	0.304	165	<5.00	<0.500	7.04	139.0	780
	7/12/2017	0.325	127	<5.00	<0.500	7.03	73.0	592
	11/9/2017	0.25	131	<5.00	<0.500	7.19	130.0	662
	3/12/2018	<0.200	176	5.08	<0.500	6.26 / 6.96 [1]	258.0	656
	6/6/2018	0.353	220	15.7	<0.500	6.45 / 6.71 [2]	281.0	1180
	10/3/2018	0.438	167	<5.00	<0.500	6.86	164	668
NC2-MW-3	3/14/2016	<0.200	85.3	<5.00	0.168	7.05	21.0	334
	6/3/2016	<0.200	121	<5.00	<0.500	7.14	19.6	500
	8/31/2016	<0.200	51.3	<5.00	<0.500	7.18	7.4	296
	11/17/2016	<0.200	91	<5.00	1.28	7.32	5.6	354
	2/15/2017	<0.200	74.2	15.6	5.11	7.09	49.6	378
	4/24/2017	<0.200	63.3	9	2.87	7.68	10.5	324
	6/15/2017	<0.200	89.4	<5.00	<0.500	7.32	<5.00	386
	7/12/2017	<0.200	92.8	<5.00	<0.500	7.99	8.9	528
	11/9/2017	<0.200	148	<5.00	<0.500	7.33	185.0	604
	3/12/2018	<0.200	167	11.7	0.723	6.61 / 7.41 [1]	371.0	792
	6/6/2018	0.654	198	22.9	<0.500	4.40 / 6.91 [2]	491.0	978
	10/3/2018	<0.200	127	8.74	0.523	6.94	31.2	478

Table 4 - Appendix III Constituents in Groundwater
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

		Appendix III Constituents						
	Constituent	Boron	Calcium	Chloride	Fluoride*	pH	Sulfate	TDS
	Reporting Unit	mg/L	mg/L	mg/L	mg/L	S.U.	mg/L	mg/L
NC2-MW-6	3/14/2016	3.83	134	16.5	<0.500	7.21	314.0	728
	6/3/2016	4.14	93	6.16	<0.500	7.27	171.0	608
	8/31/2016	4.79	90.4	<5.00	<0.500	7.43	149.0	592
	11/17/2016	5.11	125	15	6.53	7.63	165.0	588
	2/15/2017	4.11	132	<5.00	<0.500	7.77	136.0	602
	4/24/2017	3.08	96.5	10.2	1.71	7.68	99.1	530
	6/15/2017	3.58	119	6.26	<0.500	7.35	196.0	636
	7/12/2017	3.92	102	<5.00	<0.500	7.25	155.0	596
	11/9/2017	4.39	128	6.75	<0.500	7.24	195.0	872
	3/12/2018	3.06	145	7.14	<0.500	6.64 / 7.38 [1]	194.0	644
	6/6/2018	3.58	133	5.53	<0.500	7.19	174.0	694
	10/3/2018	4.18	129	<5.00	<0.500	6.97	200	660
NC2-MW-7	3/14/2016	<0.200	134	6.55	0.312	6.92	6.9	496
	6/3/2016	<0.200	128	7.63	<0.500	7.28	<5.00	690
	8/31/2016	<0.200	100	6.68	<0.500	7.55	<5.00	534
	11/17/2016	<0.200	138	5.73	0.544	7.77	<5.00	510
	2/15/2017	<0.200	143	9.96	<0.500	7.55	<5.00	552
	4/24/2017	<0.200	139	11.3	1.35	7.83	<5.00	576
	6/15/2017	<0.200	128	9.81	<0.500	7.40	<5.00	688
	7/12/2017	<0.200	125	8.07	<0.500	7.25	<5.00	636
	11/9/2017	0.201	131	7.79	<0.500	7.40	17.8	580
	3/12/2018	<0.200	144.0	9.04	<0.500	6.72 / 7.42 [1]	25.7	496
	6/6/2018	<0.200	119	9.41	<0.500	7.21	12.0	528
	10/3/2018	<0.200	122	9.19	0.519	7.31	11.6	494
NC2-MW-8	3/14/2016	*NC2-MW-8 was installed on 7/9/2018 [3]*						
	6/3/2016							
	8/31/2016							
	11/17/2016							
	2/15/2017							
	4/24/2017							
	6/15/2017							
	7/12/2017							
	11/9/2017							
	3/12/2018							
	6/6/2018							
	10/3/2018	<0.200	142	7.05	0.566	7.14	10.7	526

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

[1] The first pH value obtained in the field on March 13, 2018 was found to be inaccurate due to equipment errors. The second pH value was a verification sample obtained in the field on March 19, 2018.

[2] Verification sampling for pH was completed on August 7, 2018 and determined the June 5, 2018 reading was inaccurate.

[3] NC2-MW-8 is a new well installed after the initial eight rounds of background sampling in 2016 and 2017. Eight background samples will be obtained for the full Appendix III list.

Table 5 - Appendix IV Constituents in Groundwater
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

	Constituent	Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
	Reporting Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
NC2-MW-4	3/14/2016	<0.001	<0.002	0.276	<0.001	<0.0005	<0.005	<0.0005	0.213	0.00065	<0.05	<0.0002	0.00507	0.563	<0.005	<0.001
	6/3/2016	<0.001	<0.002	0.288	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000737	<0.05	<0.0002	0.00239	0.739	<0.005	<0.001
	8/31/2016	<0.001	<0.002	0.296	<0.001	<0.0005	<0.005	<0.0005	0.646	0.00162	<0.05	<0.0002	0.00252	1.04	<0.005	<0.001
	11/17/2016	<0.001	<0.002	0.284	<0.001	<0.0005	<0.005	<0.0005	1.28	0.000536	<0.05	<0.0002	0.00597	1.03	<0.005	<0.001
	2/15/2017	<0.001	<0.002	0.272	<0.001	<0.0005	<0.005	0.000584	2.43	0.00196	<0.05	<0.0002	0.00393	0.647	<0.005	<0.001
	4/24/2017	<0.001	<0.002	0.287	<0.001	<0.0005	<0.005	<0.0005	1.08	0.000802	<0.05	<0.0002	0.00224	1.08	<0.005	<0.001
	6/15/2017	<0.001	<0.002	0.249	<0.001	<0.0005	<0.005	0.000521	<0.5	0.00165	<0.05	<0.0002	0.00422	1.29	<0.005	<0.001
	7/12/2017	<0.001	<0.002	0.232	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000549	<0.05	<0.0002	0.00233	1.42	<0.005	<0.001
	3/12/2018	<0.001	<0.002	0.302	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000884	0.031	<0.0002	<0.002	1.33	0.0139	<0.001
NC2-MW-5	3/14/2016	<0.001	<0.002	0.0295	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00587	0.318	<0.005	<0.001
	6/3/2016	<0.001	0.00291	0.0384	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0237	0.354	<0.005	<0.001
	8/31/2016	<0.001	<0.002	0.0414	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0243	0.365	<0.005	<0.001
	11/17/2016	<0.001	0.00218	0.0558	<0.001	<0.0005	<0.005	<0.0005	1.89	<0.0005	<0.05	<0.0002	0.0204	0.476	<0.005	<0.001
	2/15/2017	<0.001	<0.002	0.0335	<0.001	<0.0005	<0.005	<0.0005	0.59	0.00088	<0.05	<0.0002	0.0168	0.106	<0.005	<0.001
	4/24/2017	<0.001	0.00236	0.0366	<0.001	<0.0005	<0.005	<0.0005	1.25	0.000734	<0.05	<0.0002	0.00818	0.136	<0.005	<0.001
	6/15/2017	<0.001	0.00207	0.0416	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000601	<0.05	0.0002	0.0125	0.265	<0.005	<0.001
	7/12/2017	<0.001	0.0022	0.0484	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000584	<0.05	<0.0002	0.012	0.507	<0.005	<0.001
	3/12/2018	<0.001	0.0026	0.0395	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000562	<0.01	<0.0002	0.0145	0.236 U	0.0238	<0.001
MW-13	3/14/2016	<0.001	0.00545	0.288	<0.001	<0.0005	<0.005	0.00105	<0.5	<0.0005	<0.05	<0.0002	0.0167	0.741	<0.005	<0.001
	6/3/2016	<0.001	0.00607	0.324	<0.001	<0.0005	<0.005	0.00122	<0.5	0.000704	<0.05	<0.0002	<0.002	1.01	<0.005	<0.001
	8/31/2016	<0.001	0.00623	0.342	<0.001	<0.0005	<0.005	0.00107	<0.5	<0.0005	<0.05	<0.0002	0.00216	1.09	<0.005	<0.001
	11/17/2016	<0.001	0.00515	0.322	<0.001	<0.0005	<0.005	0.000873	0.803	0.00089	<0.05	<0.0002	0.00258	1.37	<0.005	<0.001
	2/15/2017	<0.001	0.00289	0.321	<0.001	<0.0005	<0.005	0.000883	<0.5	<0.0005	<0.05	<0.0002	0.00221	0.407	<0.005	<0.001
	4/24/2017	<0.001	0.0024	0.336	<0.001	<0.0005	<0.005	0.00135	0.79	0.000516	<0.05	<0.0002	0.00207	0.579	<0.005	<0.001
	6/15/2017	<0.001	0.00371	0.318	<0.001	<0.0005	<0.005	0.00127	<0.5	<0.0005	<0.05	<0.0002	<0.002	0.8	<0.005	<0.001
	7/12/2017	<0.001	0.00263	0.328	<0.001	<0.0005	<0.005	0.00112	<0.5	<0.0005	<0.05	<0.0002	0.0021	1.56	<0.005	<0.001
	3/12/2018	<0.001	0.00295	0.306	<0.001	<0.0005	<0.005	0.00189	<0.5	0.00086	0.0297	<0.0002	<0.002	0.492	<0.005	<0.001
NC2-MW-2	3/14/2016	0.00188	<0.002	0.0679	<0.001	<0.0005	<0.005	<0.0005	0.371	<0.0005	0.0512	<0.0002	0.00207	0.967	<0.005	<0.001
	6/3/2016	0.00944	<0.002	0.136	<0.001	<0.0005	0.0153	<0.0005	<0.5	0.000538	<0.05	<0.0002	0.00368	0.535	<0.005	<0.001
	8/31/2016	0.00812	<0.002	0.0814	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000872	<0.05	<0.0002	0.00757	0.996	<0.005	<0.001
	11/17/2016	0.00452	<0.002	0.122	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00519	1.39	<0.005	<0.001
	2/15/2017	0.00331	<0.002	0.144	<0.001	<0.0005	<0.005	<0.0005	2.51	0.000671	<0.05	<0.0002	0.0093	0.304	<0.005	<0.001
	4/24/2017	0.00303	<0.002	0.076	<0.001	<0.0005	<0.005	<0.0005	1.38	<0.0005	<0.05	<0.0002	0.0158	0.518	<0.005	<0.001
	6/15/2017	0.00282	<0.002	0.0828	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000721	<0.05	<0.0002	0.0106	0.48	<0.005	<0.001
	7/12/2017	0.00266	<0.002	0.0837	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000949	<0.05	<0.0002	0.0174	0.721	<0.005	<0.001
	3/12/2018	0.00261	<0.002	0.12	<0.001	<0.0005	<0.005	0.000626	<0.5	0.000604	0.0165	<0.0002	0.0402	0.882	<0.005	<0.001
NC2-MW-3	3/14/2016	<0.001	0.00762	0.253	<0.001	<0.0005	<0.005	<0.0005	0.168	<0.0005	<0.05	<0.0002	0.00293	0.948	<0.005	<0.001
	6/3/2016	<0.001	0.0191	0.362	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.00377	0.924	<0.005	<0.001
	8/31/2016	<0.001	0.0103	0.211	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000692	<0.05	<0.0002	0.00301	0.446	<0.005	<0.001
	11/17/2016	<0.001	0.0113	0.234	<0.001	<0.0005	<0.005	<0.0005	1.28	<0.0005	<0.05	<0.0002	<0.002	0.616	<0.005	<0.001
	2/15/2017	0.00111	0.0066	0.281	<0.001	<0.0005	<0.005	0.00051	5.11	<0.0005	<0.05	<0.0002	0.0176	0.381	<0.005	<0.001
	4/24/2017	<0.001	0.00892	0.174	<0.001	<0.0005	<0.005	0.00216	2.87	0.000691	<0.05	<0.0002	0.00677	0.521	<0.005	<0.001
	6/15/2017	<0.001	0.0101	0.225	<0.001	<0.0005	<0.005	0.00103	<0.5	0.00103	<0.05	<0.0002	0.00298	0.928	<0.005	<0.001
	7/12/2017	<0.001	0.00286	0.267	<0.001	<0.0005	<0.005	0.000806	<0.5	0.000913	<0.05	<0.0002	0.00206	0.479	<0.005	<0.001
	3/12/2018	<0.001	0.0027	0.125	<0.001	<0.0005	<0.005	0.000997	0.723	0.00178	0.0128	<0.0002	0.00454	0.600	<0.005	<0.001

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Table 5 - Appendix IV Constituents in Groundwater
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

	Constituent	Appendix IV Constituents														
		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride*	Lead	Lithium	Mercury	Molybdenum	Combined Radium (Ra 226 + Ra 228)	Selenium	Thallium
	Reporting Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	pCi/L	mg/L	mg/L
NC2-MW-6	3/14/2016	<0.001	<0.002	0.0818	<0.001	<0.0005	0.00629	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0210	0.392	0.00645	<0.001
	6/3/2016	<0.001	<0.002	0.0823	<0.001	<0.0005	0.00535	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0593	0.603	<0.005	<0.001
	8/31/2016	<0.001	<0.002	0.122	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0677	1.03	<0.005	<0.001
	11/17/2016	<0.001	<0.002	0.109	<0.001	<0.0005	<0.005	<0.0005	6.53	<0.0005	<0.05	<0.0002	0.0455	1.48	<0.005	<0.001
	2/15/2017	<0.001	<0.002	0.0948	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.000901	<0.05	<0.0002	0.0265	0.429	<0.005	<0.001
	4/24/2017	<0.001	<0.002	0.0791	<0.001	<0.0005	<0.005	<0.0005	1.71	<0.0005	<0.05	<0.0002	0.041	0.425	<0.005	<0.001
	6/15/2017	<0.001	<0.002	0.105	<0.001	<0.0005	0.00501	<0.0005	<0.5	0.00329	<0.05	<0.0002	0.0354	0.641	<0.005	<0.001
	7/12/2017	<0.001	<0.002	0.0916	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	<0.05	<0.0002	0.0419	0.949	<0.005	<0.001
	3/12/2018	<0.001	<0.002	0.107	<0.001	<0.0005	<0.005	0.000505	<0.5	0.00258	0.0371	<0.0002	0.00672	0.530	<0.005	<0.001
NC2-MW-7	3/14/2016	<0.001	0.0994	0.687	<0.001	<0.0005	<0.005	0.000794	0.312	<0.0005	0.0602	<0.0002	<0.002	1.43	<0.005	<0.001
	6/3/2016	<0.001	0.0529	0.591	<0.001	<0.0005	<0.005	<0.0005	<0.5	0.00166	0.0542	<0.0002	<0.002	1.14	<0.005	<0.001
	8/31/2016	<0.001	0.0418	0.526	<0.001	<0.0005	<0.005	0.000681	<0.5	<0.0005	0.0581	<0.0002	<0.002	0.847	<0.005	<0.001
	11/17/2016	<0.001	0.0473	0.544	<0.001	<0.0005	<0.005	<0.0005	0.544	<0.0005	0.0613	<0.0002	<0.002	0.851	<0.005	<0.001
	2/15/2017	<0.001	0.0608	0.558	<0.001	<0.0005	<0.005	0.000639	<0.5	<0.0005	0.0638	<0.0002	<0.002	0.745	<0.005	<0.001
	4/24/2017	<0.001	0.0592	0.614	<0.001	<0.0005	<0.005	0.000629	1.35	<0.0005	0.0624	<0.0002	<0.002	1.04	<0.005	<0.001
	6/15/2017	<0.001	0.0469	0.538	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	0.0579	<0.0002	<0.002	0.815	<0.005	<0.001
	7/12/2017	<0.001	0.041	0.501	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	0.0602	<0.0002	<0.002	1.15	<0.005	<0.001
	3/12/2018	<0.001	0.0387	0.473	<0.001	<0.0005	<0.005	<0.0005	<0.5	<0.0005	0.0546	<0.0002	<0.002	1.06	<0.005	<0.001
NC2-MW-8	*NC2-MW-8 was installed on 7/9/2018* [1]															
	10/3/2018	<0.001	0.0223	0.617	<0.001	<0.0005	<0.005	0.0025	0.566	0.00125	0.0347	<0.0002	0.00307	1.7	<0.005	<0.001

[1] NC2-MW-8 is a new well installed after the initial eight rounds of background sampling in 2016 and 2017. Eight background samples will be obtained for the full Appendix IV list.

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

< symbol indicates analyte not detected above the reporting limit, which is the value shown following the "<" symbol.

"U" data qualifier (radium) indicates parameter was analyzed for but not detected above limiting critieria (such as, but not limited to: minimum detectable concentration; total uncertainty; reporting limit) as defined in the analytical laboratory data package.

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Table 6 - Background Threshold Values for Detection Monitoring
Annual Groundwater Monitoring and Corrective Action Report
Omaha Public Power District - NC2 Ash Disposal Area
January 2019

Constituents	Units	Background Threshold Values (UPLs)
Appendix III		
Boron	mg/l	4.63
Calcium	mg/l	223
Chloride	mg/l	34.2
Fluoride*	mg/l	2.43
pH (LPL)**	SU	6.51
pH (UPL)***	SU	7.93
Sulfate	mg/l	611
TDS	mg/l	1390

* Fluoride is listed in both Appendix III and Appendix IV of the CCR Final Rule (40 CFR Part 257).

** Indicates the lower bound of the range is the lower prediction limit (LPL).

*** Indicates the upper bound is the upper prediction limit (UPL).

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Appendix A

Field Sampling Forms

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NEBRASKA CITY UNIT #2

Water Levels Prior to Sampling

	Time	Water Level
MW-2	9:40	13.88
MW-3	9:36	7.23
MW-4	9:11	10.18
MW-5	9:25	12.79
MW-6	9:28	10.87
MW-7	9:46	9.96
MW-13	9:03	8.08

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-2	Date: March 12, 2018
Sample Number: MW-2	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)		8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	17.61	10.) Purge Rate (mL/min)	100
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	30
5.) Casing Volume (L)	10.8735	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	5:35 PM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
5:40 PM	0.50	12.98	2.44	48.39	6.35	974	14.00
5:45 PM	1.00	12.81	1.42	36.98	6.30	989	14.00
5:50 PM	1.50	12.60	1.19	32.36	6.27	991	14.00
5:55 PM	2.00	12.41	1.09	24.49	6.26	996	14.00
6:00 PM	2.50	12.37	1.07	20.53	6.26	996	14.00
6:05 PM	3.00	12.22	1.00	20.45	6.26	996	14.00

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-2	6:05 PM	12.22	1.00	20.45	6.26	996	14.00

1.) Sample Equipment Used	Pump	Other Information	CPM-2 28/2 30 psi
2.) Pump Rate (mL/Min)	100 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance Clearity	Clear	Instrument Calibration Prior to sampling by:	R. Layman, B. Lorence
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-3	Date: March 12, 2018
Sample Number: MW-3	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	7.15	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	16	10.) Purge Rate (mL/min)	100
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	70
5.) Casing Volume (L)	5.4646	12.) Immiscole Layers observed?	p
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	4:05 PM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
4:10 PM	0.50	11.26	3.45	70.27	6.95	1011	7.48
4:15 PM	1.00	10.83	1.21	104.4	6.82	1039	7.78
4:20 PM	1.50	10.94	0.89	97.76	6.75	1039	7.45
4:25 PM	2.00	10.90	0.80	91.33	6.72	1040	7.45
4:30 PM	2.50	10.9	0.67	80.2	6.67	1044	7.45
4:35 PM	3.00	10.74	0.66	74.93	6.6	1049	7.45
4:40 PM	3.50	10.23	0.64	65.83	6.64	1049	7.45
4:45 PM	4.00	10.24	0.61	52.38	6.62	1054	7.45
4:50 PM	4.50	10.21	0.6	40.2	6.61	1055	7.45
4:55 PM	5.00	10.26	0.58	45.5	6.6	1061	7.45
5:00 PM	5.50	9.05	0.59	43	6.6	1062	7.45
5:05 PM	6.00	8.96	0.54	35.4	6.6	1062	7.45
5:10 PM	6.50	8.7	0.54	24.27	6.6	1065	7.45
5:15 PM	7.00	8.7	0.62	23.2	6.6	1065	7.45
5:20 PM	7.50	8.6	0.62	23.3	6.6	1065	7.45

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-3	4:50 PM	8.6	0.62	23.3	6.6	1065	7.45

1.) Sample Equipment Used	Pump	Other Information	CPM-2 28/2 30 psi
2.) Pump Rate (mL/Min)	100 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance Clearity	Clear	Instrument Calibration Prior to sampling by:	R. Layman, B. Lorence
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-4	Date: March 12, 2018
Sample Number: MW-4	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	10.18	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	14.5	10.) Purge Rate (mL/min)	200
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	35
5.) Casing Volume (L)	2.6674	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	11:10 AM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
11:15 AM	1.0	7.40	5.57	49.9	6.32	900	10.50
11:20 AM	2.0	6.58	5.64	50.33	6.30	898	10.50
11:25 AM	3.0	6.32	5.68	38.75	6.31	878	10.55
11:30 AM	4.0	5.56	583.00	30.94	6.30	896	10.55
11:35 AM	5.0	5.54	5.89	25.0	6.31	894	10.55
11:40 AM	6.0	5.75	6.01	24.31	6.32	894	10.55
11:45 AM	7.0	5.8	6.01	24.21	6.32	892	10.55

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-4	11:45 AM	5.88	6.01	24.21	6.32	892	10.55

1.) Sample Equipment Used	Pump	Other Information	CPM-2 27/3 30 psi
2.) Pump Rate (mL/Min)	200 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance Clearity	Clear	Instrument Calibration Prior to sampling by:	R. Layman, B. Lorence
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-5	Date: March 12, 2018
Sample Number: MW-5	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	12.95	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	15.8	10.) Purge Rate (mL/min)	50
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	15
5.) Casing Volume (L)	1.7598	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	12:50 PM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
12:53 PM	0.55	9.21	10.56	33.34	6.87	1240	13.40
12:58 PM	0.65	9.70	9.96	21.54	6.88	1240	13.40
1:02 PM	0.80	9.70	9.93	31.69	6.90	1237	13.40
1:05 PM	0.95	9.69	9.78	22.56	6.90	1237	13.40

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-5	1:05 PM	.9.69	9.78	22.56	6.90	1237	13.40

1.) Sample Equipment Used	Pump	Other Information	CPM-2 27/3 30 psi
2.) Pump Rate (mL/Min)	50 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance Clearity	Clear	Instrument Calibration Prior to sampling by:	R. Layman, B. Lorence
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-6	Date: March 12, 2018
Sample Number: MW-6	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	10.88	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	14.5	10.) Purge Rate (mL/min)	50
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	50
5.) Casing Volume (L)	2.2352	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	1:45 PM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
1:50 PM	0.50	10.61	3.01	53.6	6.80	982.000	11.00
1:55 PM	0.75	1.52	2.44	92.9	6.69	975.000	11.00
2:00 PM	1.00	10.51	2.39	75.5	6.69	976.000	11.10
2:05 PM	1.25	10.61	3.29	66.1	6.67	978.000	11.20
2:10 PM	1.50	10.7	3.97	54.0	6.66	9.77	11.30
2:15 PM	1.75	10.65	4.59	38.12	6.66	976	11.30
2:20 PM	2	10.86	4.7	30.6	6.66	975	11.30
2:25 PM	2.25	10.84	4.49	24.07	6.66	972	11.30
2:30 PM	2.5	10.76	4.32	22.08	6.65	972	11.30
2:35 PM	2.75	10.79	4.36	21.48	6.64	972	11.30

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-6	2:35 PM	10.79	4.36	21.48	6.64	972	11.30

1.) Sample Equipment Used	Pump	Other Information	CPM-2 28/2 30 psi
2.) Pump Rate (mL/Min)	50 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance		Instrument Calibration	R. Layman, B. Lorence
Clearity	Clear	Prior to sampling by:	
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-7	Date: March 12, 2018
Sample Number: MW-7	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	10	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	24.1	10.) Purge Rate (mL/min)	100
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	45
5.) Casing Volume (L)	8.7062	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	6:50 PM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
6:50 PM	0.50	9.19	1.74	277.70	6.74	944	10.00
6:55 PM	1.00	9.49	0.80	178.20	6.73	953	10.00
7:00 PM	1.50	9.64	0.61	147.10	6.74	956	10.00
7:05 PM	2.00	9.69	0.63	106.70	6.74	961	10.00
7:10 PM	2.50	9.53	0.36	89.70	6.74	964	10.00
7:15 PM	3.00	9.49	0.31	56.49	6.74	964	10.00
7:20 PM	3.50	9.49	0.26	45.56	6.74	968	10.00
7:25 PM	4.00	9.26	0.29	24.96	6.74	972	10.00
7:30 PM	4.50	9.46	0.35	23.44	6.72	967	10.00
7:35 PM	5.00	9.46	0.29	24.50	6.72	967	10.00

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-7	7:35 PM	9.46	0.29	24.50	6.72	967	10.00

1.) Sample Equipment Used	Pump	Other Information	CPM-2 27/3 30 psi
2.) Pump Rate (mL/Min)	100 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance		Instrument Calibration	R. Layman, B. Lorence
Clearity	Clear	Prior to sampling by:	
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City II	Sampler Name(s): Ryan Layman (#79647)
Monitoring Well Identification Number: MW-13	Date: March 12, 2018
Sample Number: MW-13	Weather Condition: High of 50° and Low of 26°, Partly Cloudy with no Precipitation
OVA Readings: N/A	Wellhead Inspection (Note Conditions) Compliant

Groundwater Measurements and Purge Data

1.) Static Water Level (+/- 0.01ft) (ft)	8.1	8.) Purge Equipment Used	Pump
2.) Time of Water Level Measurement		9.) Dedicated?	**Yes**
3.) Bottom of Casing (+/- 0.01 ft) (ft)	15.19	10.) Purge Rate (mL/min)	200
4.) Casing Diameter (in)	2	11.) Time to purge Well (min)	30
5.) Casing Volume (L)	4.3778	12.) Immiscole Layers observed?	No
6.) Actual Volume of Water Purged (L)		13.) Thickness of immiscole Layer (if present)	N/A
7.) Water Level Measuring Equipment	Electronic	14.) Pump Start	10:10 AM

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
10:15 AM	1.00	9.33	1.58	17.7	6.58	656	8.10
10:20 AM	2.00	9.44	1.03	16.23	6.50	656	8.10
10:25 AM	3.00	9.48	0.92	15.51	6.47	656	8.10
10:30 AM	4.00	9.53	0.77	7.96	6.46	656	8.10
10:35 AM	5.00	9.7	0.68	7.20	6.46	659	8.10
10:40 AM	6.00	9.59	0.62	5.87	6.45	657	8.10

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-13	10:40 AM	9.59	0.62	5.87	6.45	657	8.10

1.) Sample Equipment Used	Pump	Other Information	CPM-2 27/3 30 psi
2.) Pump Rate (mL/Min)	200 mL/Min	Decontamination Procedure	Alconex, DI Rinse
3.) Sample Appearance Clearity	Clear	Instrument Calibration Prior to sampling by:	R. Layman, B. Lorence
Color	Colorless	Unusual Occurences	
4.) Odor	Odorless		
5.) Method or Sample Preservation	Cool/HNO_3		

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-2**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:59 AM	Pump Start	1:50 PM
Static Water Level (+/- 0.01ft) (ft)	10.35	Purge Rate (mL/min)	250
Bottom of Casing (+/- 0.01 ft) (ft)	17.61	Time to purge Well (min)	0:27
Casing Volume (L)	4.4828	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	6.75		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
1:56 PM	1.50	24.40	1.00	400	6.39	1.020	10.60
1:59 PM	0.75	24.06	0.48	395	6.40	1.010	10.60
2:02 PM	0.75	24.08	0.34	281	6.44	0.999	10.60
2:05 PM	0.75	25.38	0.25	157	6.44	0.995	10.60
2:08 PM	0.75	25.65	0.10	86	6.45	0.991	10.60
2:11 PM	0.75	25.78	0.02	85.4	6.45	0.992	10.60
2:14 PM	0.75	25.89	0.00	30.4	6.46	0.991	10.60
2:17 PM	0.75	25.99	0.00	21.2	6.45	0.992	10.60

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-2	2:17 PM	25.99	0.00	21.20	6.45	0.99	10.60
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-3**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:54 AM	Pump Start	1:02 PM
Static Water Level (+/- 0.01ft) (ft)	3.70	Purge Rate (mL/min)	100
Bottom of Casing (+/- 0.01 ft) (ft)	16	Time to purge Well (min)	0:34
Casing Volume (L)	7.5948	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	3.40		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
1:15 PM	1.30	19.25	0.30	600	4.40	1.160	4.90
1:18 PM	0.30	17.60	0.00	271	4.24	1.150	4.90
1:21 PM	0.30	17.60	0.00	164	4.22	1.200	4.90
1:24 PM	0.30	17.59	0.00	90	4.28	1.200	4.90
1:27 PM	0.30	17.50	0.00	65	4.34	1.200	4.90
1:30 PM	0.30	17.40	0.00	46.5	4.36	1.200	4.90
1:33 PM	0.30	17.37	0.00	37	4.38	1.210	4.90
1:36 PM	0.30	17.29	0.00	24	4.40	1.210	4.90

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-3	1:36:00 PM	17.29	0.00	24.00	4.40	1.210	4.90
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-4**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:28 AM	Pump Start	9:40 AM
Static Water Level (+/- 0.01ft) (ft)	6.80	Purge Rate (mL/min)	100
Bottom of Casing (+/- 0.01 ft) (ft)	14.4	Time to purge Well (min)	0:46
Casing Volume (L)	4.6927	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	4.50		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
9:43 AM	0.30	21.31	1.67	1000	7.15	0.894	7.50
9:46 AM	0.30	21.30	1.53	1000	7.15	0.899	7.50
9:49 AM	0.30	21.35	1.38	1000	7.16	0.903	7.50
9:52 AM	0.30	21.50	1.68	1000	7.18	0.885	7.50
9:55 AM	0.30	21.60	1.96	998	7.17	0.888	7.50
9:58 AM	0.30	21.50	2.04	893	7.16	0.894	7.60
10:01 AM	0.30	21.68	2.23	716	7.16	0.895	7.70
10:04 AM	0.30	21.96	2.45	540	7.16	0.892	7.70
10:08 AM	0.30	22.15	2.91	380	7.16	0.890	7.70
10:11 AM	0.30	22.19	2.84	340	7.15	0.888	7.80
10:14 AM	0.30	22.50	3.18	238	7.15	0.886	7.80
10:17 AM	0.30	22.50	3.25	229	7.15	0.888	7.80
10:20 AM	0.30	22.50	3.30	174	7.15	0.884	7.80
10:23 AM	0.30	22.58	3.30	158	7.15	0.881	7.80
10:26 AM	0.30	22.58	3.39	160	7.15	0.882	7.80

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-4	10:26:00 AM	22.58	3.39	160.00	7.15	0.88	7.80
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-5**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95°F low of 70°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:37 AM	Pump Start	11:07 AM
Static Water Level (+/- 0.01ft) (ft)	9.70	Purge Rate (mL/min)	100
Bottom of Casing (+/- 0.01 ft) (ft)	15.8	Time to purge Well (min)	0:09
Casing Volume (L)	3.7665	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	0.90		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
11:10 AM	0.30	22.79	4.18	54.06	7.05	1.350	10.10
11:13 AM	0.30	23.05	4.11	34.02	7.00	1.370	10.10
11:16 AM	0.30	23.05	4.01	20.00	7.02	1.370	10.10

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-5	11:16 AM	23.05	4.01	20.00	7.02	1.37	10.10
Duplicate	Yes						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-6**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:44 AM	Pump Start	11:47 AM
Static Water Level (+/- 0.01ft) (ft)	7.25	Purge Rate (mL/min)	250
Bottom of Casing (+/- 0.01 ft) (ft)	15.6	Time to purge Well (min)	0:32
Casing Volume (L)	5.1558	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	3.20		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
11:58 AM	1.10	27.60	2.84	558	7.35	0.953	7.40
12:01 PM	0.30	24.60	2.35	547	7.28	0.971	7.40
12:04 PM	0.30	24.80	1.98	461	7.23	0.973	7.40
12:07 PM	0.30	26.40	1.68	433	7.22	0.971	7.40
12:10 PM	0.30	26.50	1.60	419	7.24	0.988	7.40
12:13 PM	0.30	26.55	1.21	405	7.27	0.981	7.40
12:16 PM	0.30	26.75	1.22	390	7.21	0.981	7.40
12:19 PM	0.30	26.71	1.20	387	7.19	0.981	7.40

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-6	12:19:00 PM	26.71	1.20	387.00	7.19	0.98	7.40
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-7**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	9:06 AM	Pump Start	3:05 PM
Static Water Level (+/- 0.01ft) (ft)	6.35	Purge Rate (mL/min)	300
Bottom of Casing (+/- 0.01 ft) (ft)	24.1	Time to purge Well (min)	0:30
Casing Volume (L)	10.96	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	9.00		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
3:11 PM	1.80	19.72	7.93	2.89	4.30	0.879	6.30
3:14 PM	0.90	18.54	8.90	235	5.96	0.882	6.30
3:17 PM	0.90	18.02	8.91	180	6.14	0.884	6.30
3:20 PM	0.90	17.82	8.90	152	6.31	0.885	6.30
3:23 PM	0.90	17.51	8.80	138	6.46	0.892	6.30
3:26 PM	0.90	17.08	8.60	106	6.71	0.889	6.30
3:29 PM	0.90	17.26	8.32	96.3	7.13	0.893	6.30
3:32 PM	0.90	17.23	8.04	90.1	7.19	0.892	6.30
3:35 PM	0.90	17.25	7.80	88.7	7.21	0.854	6.30

Well Evacuated to Dryness? No Time to recharge?

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-7	3:35:00 PM	17.25	7.80	88.70	7.21	0.85	6.30
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 28/2 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Field Notes For Monitoring Well Sampling

Facility Name: Nebraska City Station NC2	Sampler Name(s): Ryan Layman
Monitoring Well Id #/ Sample #: **MW-13**	Date: 6/6/2018
Wellhead Inspection (Condition) Compliant	Weather Conditions: Clear, Sunny, high of 95?F low of 70?F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:20 AM	Pump Start	8:40 AM
Static Water Level (+/- 0.01ft) (ft)	4.65	Purge Rate (mL/min)	300
Bottom of Casing (+/- 0.01 ft) (ft)	15.19	Time to purge Well (min)	0:20
Casing Volume (L)	6.5081	Purge Equipment Dedicated Pump with Nitrogen Gas	
Actual Volume of Water Purged (L)	6.30		

*Measured from a defined point on the edge of casing (surveyed top of casing)

Time	Volume Purged (L)	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
8:43 AM	0.90	16.00	0.00	445	6.89	0.826	4.78
8:46 AM	0.90	15.99	0.00	974	6.85	0.828	4.70
8:49 AM	0.90	15.45	0.00	871	6.86	0.810	4.70
8:52 AM	0.90	15.38	0.00	780	6.84	0.804	4.70
8:54 AM	0.90	15.38	0.00	702	6.84	0.797	4.70
8:57 AM	0.90	15.28	0.00	685	6.84	0.786	4.70
9:00 AM	0.90	15.27	0.00	680	6.84	0.785	4.70

Well Evacuated to Dryness? _____ Time to recharge? _____

Ground Sample Information

Well #	Time	Temperature C°	DO (mg/l)	Turb (Ntu)	pH	Conductivity (mS/cm)	Water Level (ft)
MW-13	9:00:00 AM	15.27	0.00	680.00	6.84	0.79	4.70
Duplicate	No						

Physical Characteristics

Sample Clearity	Clear	Pump Control Information	CPM-2 27/3 20 psi
Sample Color	Clear	Decontamination Liquids	Alconex, DI Rinse
Sample Odor	Odorless	Instrument Calibration By	Ryan Layman
Sample immiscole Layer	No	Time and Date of Calibration	6/5/2018 8:00:00 AM
Unusual Occurences:			

Nebraska City Station NC2 Landfill

Water Levels Prior to Purging

MW-2	Date of Sampling	6/6/2018	Time of Sampling	8:59 AM	Static Water Level	10.35
MW-3	Date of Sampling	6/6/2018	Time of Sampling	8:54 AM	Static Water Level	3.7
MW-4	Date of Sampling	6/6/2018	Time of Sampling	8:28 AM	Static Water Level	6.8
MW-5	Date of Sampling	6/6/2018	Time of Sampling	8:37 AM	Static Water Level	9.7
MW-6	Date of Sampling	6/6/2018	Time of Sampling	8:44 AM	Static Water Level	7.25
MW-7	Date of Sampling	6/6/2018	Time of Sampling	9:06 AM	Static Water Level	6.35
MW-13	Date of Sampling	6/6/2018	Time of Sampling	8:20 AM	Static Water Level	4.65

Equipment Calibration Sheet

Date: 6/5/2018
Time: 8:00 AM

Person Calibrating Instrument: Ryan Layman

Instrument Type	Instrument Brand	Instrument Model	Instrument Serial Number
Multiparameter Water Meter	Horiba	52	Unit 4519

Parameter:	Reading			Temp	Units
pH 7	7.04	to	7.02		
pH 4	4.02	to	4.01	22.31°C	N/A
pH 10	10.09	to	10.03		N/A
Conductivity	0.97	to	1.000		µS
DO (Start)	99.8%	Saturation	9.40mg/L		mg/L
DO (Cal)	99.2%	Saturation	9.01mg/L		mg/L

Comments:

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NEBRASKA CITY STATION

Water Levels Prior to Purging

NC1MW2	Date of Sampling	10/4/2018	Time of Sampling	8:44	Static Water Level	5.78
NC1MW3	Date of Sampling	10/4/2018	Time of Sampling	8:24	Static Water Level	6.60
NC1MW3D	Date of Sampling	10/4/2018	Time of Sampling	8:26	Static Water Level	8.31
NC1MW4	Date of Sampling	10/4/2018	Time of Sampling	8:36	Static Water Level	6.66
NC1MW4D	Date of Sampling	10/4/2018	Time of Sampling	8:38	Static Water Level	5.65
NC1MW5	Date of Sampling	10/4/2018	Time of Sampling	9:06	Static Water Level	8.85
NC1MW6	Date of Sampling	10/4/2018	Time of Sampling	8:53	Static Water Level	5.41
NC1MW6D	Date of Sampling	10/4/2018	Time of Sampling	8:54	Static Water Level	6.46
NC1MW7	Date of Sampling	10/4/2018	Time of Sampling	8:02	Static Water Level	4.84
NC1MW8	Date of Sampling	10/4/2018	Time of Sampling	8:04	Static Water Level	5.14
NC1MW9	Date of Sampling	10/4/2018	Time of Sampling	8:30	Static Water Level	6.87
NC1MW9D	Date of Sampling	10/4/2018	Time of Sampling	8:32	Static Water Level	8.34
NC1MW11	Date of Sampling	10/4/2018	Time of Sampling	8:15	Static Water Level	4.45
NC1MW12	Date of Sampling	10/4/2018	Time of Sampling	8:20	Static Water Level	6.55
NC1MW14	Date of Sampling	10/4/2018	Time of Sampling	7:55	Static Water Level	7.35
NC1MW16	Date of Sampling	10/4/2018	Time of Sampling	8:49	Static Water Level	6.06
NC1MW17	Date of Sampling	10/4/2018	Time of Sampling	8:59	Static Water Level	2.44
NC2MW4	Date of Sampling	10/4/2018	Time of Sampling	7:50	Static Water Level	4.48
NC2MW13	Date of Sampling	10/4/2018	Time of Sampling	7:45	Static Water Level	1.81
NC2MW2	Date of Sampling	10/3/2018	Time of Sampling	8:14	Static Water Level	7.35
NC2MW3	Date of Sampling	10/3/2018	Time of Sampling	8:07	Static Water Level	0.80
NC2MW4	Date of Sampling	10/3/2018	Time of Sampling	7:11	Static Water Level	4.14
NC2MW5	Date of Sampling	10/3/2018	Time of Sampling	7:52	Static Water Level	4.95
NC2MW6	Date of Sampling	10/3/2018	Time of Sampling	7:56	Static Water Level	4.30
NC2MW7	Date of Sampling	10/3/2018	Time of Sampling	8:20	Static Water Level	3.20
NC2MW8	Date of Sampling	10/3/2018	Time of Sampling	8:10	Static Water Level	3.15
NC2MW13	Date of Sampling	10/3/2018	Time of Sampling	7:05	Static Water Level	1.63

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW2 - 7**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Cloudy, 83°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:14	Pump Start Time	14:09
Static Water Level (+/- 0.01 feet)*	7.35	Purge Rate (mL/minute)	200
Bottom of Well Casing (+/- 0.01 feet)*	17.61	Time to Purge Well (hours:minutes)	0:38
2" Well Casing Volume (L)	6.34	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	7,600		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
14:14	1,000	20.62	1.13	227	6.85	1.04	7.90
14:17	1,600	20.97	0.89	185	6.85	1.04	7.85
14:20	2,200	21.16	0.75	142	6.84	1.04	7.80
14:23	2,800	21.21	0.67	119	6.84	1.03	7.77
14:26	3,400	21.14	0.59	83.7	6.85	1.03	7.78
14:29	4,000	21.30	0.53	107	6.84	1.04	7.77
14:32	4,600	21.21	0.48	77.0	6.84	1.04	7.77
14:35	5,200	21.40	0.44	63.9	6.84	1.03	7.77
14:38	5,800	21.46	0.41	55.5	6.84	1.02	7.75
14:41	6,400	21.51	0.38	44.3	6.86	1.02	7.75
14:44	7,000	21.53	0.36	40.4	6.86	1.01	7.75
14:47	7,600	21.60	0.35	40.0	6.86	1.01	7.75

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
14:47	7,600	21.60	0.35	40.0	6.86	1.01	7.75
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100-200

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03
Notes / Unusual Occurrences: None			

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW3 - 5**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant (See Notes)	Weather Conditions: Partly Cloudy, Windy, 85°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:07	Pump Start Time	12:00
Static Water Level (+/- 0.01 feet)*	0.80	Purge Rate (mL/minute)	400
Bottom of Well Casing (+/- 0.01 feet)*	16.00	Time to Purge Well (hours:minutes)	0:18
2" Well Casing Volume (L)	9.39	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	7,200		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:06	2,400	19.77	1.76	140	6.95	0.884	0.80
12:09	3,600	19.57	1.53	46.3	6.94	0.872	0.80
12:12	4,800	19.27	1.40	34.6	6.94	0.864	0.80
12:15	6,000	19.16	1.37	32.3	6.93	0.858	0.80
12:18	7,200	19.16	1.32	33.7	6.94	0.849	0.80

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:18	7,200	19.16	1.32	33.7	6.94	0.85	0.80
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: Concrete pad was submerged under water.

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW4 - 2**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Windy, 75°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:11	Pump Start Time	9:05
Static Water Level (+/- 0.01 feet)*	4.14	Purge Rate (mL/minute)	100
Bottom of Well Casing (+/- 0.01 feet)*	14.50	Time to Purge Well (hours:minutes)	0:43
2" Well Casing Volume (L)	6.40	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	4,200		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
9:10	500	17.36	0.72	357	6.78	0.910	4.42
9:13	800	18.37	0.62	181	6.76	0.913	4.62
9:16	1,100	18.70	0.78	116	6.78	0.910	4.70
9:19	1,400	18.81	0.74	93.3	6.78	0.912	5.33
9:22	1,700	18.91	0.72	62.5	6.77	0.909	5.75
9:27	2,200	19.03	0.74	49.0	6.75	0.908	6.30
9:33	2,700	19.17	0.90	32.9	6.78	0.901	6.25
9:36	3,000	19.15	0.99	29.2	6.78	0.892	6.30
9:39	3,300	19.17	1.12	23.1	6.79	0.888	6.35
9:42	3,600	19.22	1.28	31.1	6.80	0.885	6.40
9:45	3,900	19.30	1.30	26.1	6.80	0.881	6.44
9:48	4,200	19.35	1.31	18.1	6.81	0.879	6.50

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
9:48	4,200	19.35	1.31	18.1	6.81	0.88	6.50
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW5 - 3**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Windy, 77°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:52	Pump Start Time	10:15
Static Water Level (+/- 0.01 feet)*	4.95	Purge Rate (mL/minute)	300
Bottom of Well Casing (+/- 0.01 feet)*	15.80	Time to Purge Well (hours:minutes)	0:31
2" Well Casing Volume (L)	6.70	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	9,300		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:25	3,000	21.72	6.66	61.2	7.10	1.58	5.45
10:28	3,900	20.48	6.51	37.7	7.05	1.59	5.43
10:31	4,800	20.28	5.90	21.2	7.03	1.58	5.47
10:34	5,700	20.22	0.86	13.8	7.01	1.58	5.45
10:37	6,600	20.18	0.88	8.7	7.02	1.57	5.45
10:40	7,500	20.20	0.65	6.2	7.01	1.60	5.45
10:43	8,400	20.16	0.55	4.3	7.01	1.60	5.45
10:46	9,300	20.20	0.49	2.7	7.00	1.60	5.45

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:46	9,300	20.20	0.49	2.7	7.00	1.60	5.45
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03
Notes / Unusual Occurrences: None			

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW6 - 4**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Windy, 80°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:56	Pump Start Time	10:55
Static Water Level (+/- 0.01 feet)*	4.30	Purge Rate (mL/minute)	200
Bottom of Well Casing (+/- 0.01 feet)*	14.50	Time to Purge Well (hours:minutes)	0:43
2" Well Casing Volume (L)	6.30	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	8,800		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
10:59	1,000	20.89	3.79	144	6.97	0.972	4.43
11:02	1,600	20.91	4.90	117	6.93	0.971	4.46
11:05	2,200	21.17	4.51	90.4	6.93	0.969	4.46
11:08	2,800	21.30	0.84	62.5	6.94	0.965	4.46
11:11	3,400	21.44	0.84	88.2	6.93	0.964	4.45
11:14	4,000	21.47	0.75	62.1	6.95	0.953	4.46
11:17	4,600	21.57	0.67	48.1	6.96	0.951	4.46
11:20	5,200	21.54	0.72	47.1	6.96	0.948	4.46
11:23	5,800	21.68	0.68	40.0	6.97	0.943	4.45
11:26	6,400	21.72	1.04	41.8	6.97	0.950	4.47
11:29	7,000	21.81	0.92	31.2	6.97	0.946	4.50
11:32	7,600	22.00	0.64	29.1	6.97	0.941	4.47
11:35	8,200	22.14	0.61	29.1	6.95	0.950	4.48
11:38	8,800	22.07	0.66	24.3	6.97	0.948	4.48

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
11:38	8,800	22.07	0.66	24.3	6.97	0.95	4.48
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: Dedicated pump tubing needs to be checked for leaks.

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW7 - 8**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Windy, 85°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:20	Pump Start Time	15:02
Static Water Level (+/- 0.01 feet)*	3.20	Purge Rate (mL/minute)	250
Bottom of Well Casing (+/- 0.01 feet)*	24.10	Time to Purge Well (hours:minutes)	0:23
2" Well Casing Volume (L)	12.90	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	5,750		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
15:07	1,250	22.51	2.08	207	7.29	0.951	3.23
15:10	2,000	21.22	2.51	158	7.32	0.939	3.23
15:13	2,750	20.99	1.62	146	7.30	0.938	3.23
15:16	3,500	20.80	1.63	127	7.30	0.937	3.23
15:19	4,250	20.69	1.65	115	7.30	0.935	3.23
15:22	5,000	20.68	1.67	113	7.30	0.935	3.23
15:25	5,750	20.74	1.68	115	7.31	0.935	3.23

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
15:25	5,750	20.74	1.68	115	7.31	0.94	3.23
Duplicate?	Yes, DUP 1	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100-250

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: None

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW8 - 6**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant	Weather Conditions: Partly Cloudy, Windy, 86°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	8:10	Pump Start Time	12:46
Static Water Level (+/- 0.01 feet)*	3.15	Purge Rate (mL/minute)	200
Bottom of Well Casing (+/- 0.01 feet)*	15.60	Time to Purge Well (hours:minutes)	0:29
2" Well Casing Volume (L)	7.69	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	5,800		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
12:51	1,000	19.70	2.55	184	7.21	0.898	3.09
12:54	1,600	19.76	2.21	163	7.20	0.901	3.07
12:57	2,200	19.41	2.06	149	7.18	0.893	3.10
13:00	2,800	19.24	1.99	134	7.18	0.896	3.10
13:03	3,400	19.28	2.03	132	7.17	0.902	3.09
13:06	4,000	18.85	1.94	119	7.17	0.909	3.10
13:09	4,600	18.89	1.49	122.0	7.16	0.890	3.10
13:12	5,200	18.69	1.48	119	7.15	0.879	3.12
13:15	5,800	18.77	1.44	113	7.14	0.860	3.12

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
13:15	5,800	18.77	1.44	113	7.14	0.86	3.12
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		100-200

Physical Characteristics

Sample Clarity	Clear	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Clear	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: Installed new dedicated bladder pump.

Field Notes For Monitoring Well Sampling

Facility Name: OPPD Nebraska City Station 2	Sampler Name(s): Kyle Uhing (79776), Mark Hansen
Monitoring Well Identification - Sample Number: **MW13 - 1**	Date: 10/3/2018
Wellhead Inspection (Condition): Compliant (See Notes)	Weather Conditions: Partly Cloudy, Slight Wind, 75°F

Groundwater Measurements and Purge Data

Time of Water Level Measurement	7:05	Pump Start Time	8:26
Static Water Level (+/- 0.01 feet)*	1.63	Purge Rate (mL/minute)	125
Bottom of Well Casing (+/- 0.01 feet)*	15.19	Time to Purge Well (hours:minutes)	0:17
2" Well Casing Volume (L)	8.37	Purge and Sample Equipment: Dedicated Bladder Pump with QED Flow Controller and Nitrogen Gas	
Actual Volume of Water Purged (mL)	2,125		

*Measurement collected from a defined point on the edge of the surveyed top of monitoring well casing using an electronic water level indicator.

Groundwater Parameter Data

Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
8:28	250	19.56	2.78	279	6.86	0.660	1.72
8:33	875	18.93	2.14	253	6.90	0.652	1.74
8:38	1,500	18.88	2.20	275	6.89	0.651	1.76
8:43	2,125	18.92	2.10	235	6.88	0.652	1.77

Well Evacuated to Dryness? No

Recharge time? Not Measured

Groundwater Sample Information

Sample Time	Volume Purged (mL)	Temperature (°C)	DO (mg/L)	Turbidity (NTU)	pH	Conductivity (mS/cm)	Water Level (feet)
8:43	2,125	18.92	2.10	235	6.88	0.65	1.77
Duplicate?	No	Preservation?	Cool on Ice, HNO_3 for Metals		Pump Rate (mL/minute)		125

Physical Characteristics

Sample Clarity	Very Turbid	QED Pump Control Information	CPM-2, 27/3, ~20 psi
Sample Color	Light Brown	Decontamination Procedure	Alconox and DI Water Rinse
Sample Odor	Odorless	Instrument Calibration By	Kyle Uhing
Immiscible Layer Observed? If so, thickness?	No	Date and Time of Calibration	10/3/2018, 6:03

Notes / Unusual Occurrences: Concrete pad was submerged under water.

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Appendix B

Laboratory Analytical Reports

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-125893-1
Client Project/Site: Nebraska City Unit 2 Landfill CCR
Sampling Event: CCR Parameters Q1 and Q3

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Bryan Lorence

Authorized for release by:
3/29/2018 1:22:19 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Job ID: 310-125893-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-125893-1

Comments
No additional comments.

Receipt
The samples were received on 3/15/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.2º C.

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

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

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-125893-1	MW7	Ground Water	03/12/18 19:35	03/15/18 09:25
310-125893-2	MW2	Ground Water	03/12/18 18:05	03/15/18 09:25
310-125893-3	MW3	Ground Water	03/12/18 16:50	03/15/18 09:25
310-125893-4	MW4	Ground Water	03/12/18 11:45	03/15/18 09:25
310-125893-5	MW5	Ground Water	03/12/18 13:05	03/15/18 09:25
310-125893-6	MW6	Ground Water	03/12/18 14:35	03/15/18 09:25
310-125893-7	MW13	Ground Water	03/12/18 10:40	03/15/18 09:25
310-125893-8	DUP	Ground Water	03/12/18 00:00	03/15/18 09:25

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW7 — Lab Sample ID: 310-125893-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.04		5.00		mg/L	5		9056A	Total/NA
Sulfate	25.7		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0387		0.00200		mg/L	1		6020A	Total/NA
Barium	0.473		0.00200		mg/L	1		6020A	Total/NA
Calcium	144		0.200		mg/L	1		6020A	Total/NA
Lithium	0.0546		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	496		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW2 — Lab Sample ID: 310-125893-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.08		5.00		mg/L	5		9056A	Total/NA
Sulfate	258		10.0		mg/L	10		9056A	Total/NA
Antimony	0.00261		0.00100		mg/L	1		6020A	Total/NA
Barium	0.120		0.00200		mg/L	1		6020A	Total/NA
Calcium	176		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.000626		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0165		0.0100		mg/L	1		6020A	Total/NA
Lead	0.000604		0.000500		mg/L	1		6020A	Total/NA
Molybdenum	0.0402		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	656		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW3 — Lab Sample ID: 310-125893-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	11.7		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.723		0.500		mg/L	5		9056A	Total/NA
Sulfate	371		10.0		mg/L	10		9056A	Total/NA
Arsenic	0.00270		0.00200		mg/L	1		6020A	Total/NA
Barium	0.125		0.00200		mg/L	1		6020A	Total/NA
Calcium	167		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.000997		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0128		0.0100		mg/L	1		6020A	Total/NA
Lead	0.00178		0.000500		mg/L	1		6020A	Total/NA
Molybdenum	0.00454		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	792		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW4 — Lab Sample ID: 310-125893-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	42.6		5.00		mg/L	5		9056A	Total/NA
Barium	0.302		0.00200		mg/L	1		6020A	Total/NA
Calcium	141		0.200		mg/L	1		6020A	Total/NA
Lithium	0.0310		0.0100		mg/L	1		6020A	Total/NA
Lead	0.000884		0.000500		mg/L	1		6020A	Total/NA
Selenium	0.0139		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	562		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW5 — Lab Sample ID: 310-125893-5

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW5 (Continued) — Lab Sample ID: 310-125893-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	34.2		20.0		mg/L	20		9056A	Total/NA
Sulfate	318		20.0		mg/L	20		9056A	Total/NA
Arsenic	0.00260		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0395		0.00200		mg/L	1		6020A	Total/NA
Boron	2.00		0.200		mg/L	1		6020A	Total/NA
Calcium	160		0.200		mg/L	1		6020A	Total/NA
Lead	0.000562		0.000500		mg/L	1		6020A	Total/NA
Molybdenum	0.0145		0.00200		mg/L	1		6020A	Total/NA
Selenium	0.0238		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	826		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW6 — Lab Sample ID: 310-125893-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.14		5.00		mg/L	5		9056A	Total/NA
Sulfate	194		5.00		mg/L	5		9056A	Total/NA
Barium	0.107		0.00200		mg/L	1		6020A	Total/NA
Boron	3.06		0.200		mg/L	1		6020A	Total/NA
Calcium	145		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.000505		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0371		0.0100		mg/L	1		6020A	Total/NA
Lead	0.00258		0.000500		mg/L	1		6020A	Total/NA
Molybdenum	0.00672		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	644		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW13 — Lab Sample ID: 310-125893-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12.9		5.00		mg/L	5		9056A	Total/NA
Sulfate	37.0		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00295		0.00200		mg/L	1		6020A	Total/NA
Barium	0.306		0.00200		mg/L	1		6020A	Total/NA
Calcium	99.8		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.00189		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0297		0.0100		mg/L	1		6020A	Total/NA
Lead	0.000860		0.000500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	412		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP — Lab Sample ID: 310-125893-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.16		5.00		mg/L	5		9056A	Total/NA
Sulfate	26.8		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0391		0.00200		mg/L	1		6020A	Total/NA
Barium	0.480		0.00200		mg/L	1		6020A	Total/NA
Calcium	137		0.200		mg/L	1		6020A	Total/NA
Lithium	0.0580		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	476		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW7
Date Collected: 03/12/18 19:35
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.04**		5.00		mg/L			03/20/18 23:08	5
Fluoride	<0.500		0.500		mg/L			03/20/18 23:08	5
Sulfate	**25.7**		5.00		mg/L			03/20/18 23:08	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:15	1
Arsenic	**0.0387**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:15	1
Barium	**0.473**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:15	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:15	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:15	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:18	1
Calcium	**144**		0.200		mg/L		03/19/18 09:53	03/28/18 14:18	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:15	1
Cobalt	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 20:15	1
Lithium	**0.0546**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:15	1
Lead	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 20:15	1
Molybdenum	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:15	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:15	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:15	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200	F1	0.000200		mg/L		03/22/18 10:00	03/22/18 21:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**496**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW2
Date Collected: 03/12/18 18:05
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-2
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.08**		5.00		mg/L			03/20/18 23:23	5
Fluoride	<0.500		0.500		mg/L			03/20/18 23:23	5
Sulfate	**258**		10.0		mg/L			03/21/18 09:24	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00261**		0.00100		mg/L		03/19/18 09:53	03/27/18 20:18	1
Arsenic	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:18	1
Barium	**0.120**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:18	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:18	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:18	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:31	1
Calcium	**176**		0.200		mg/L		03/19/18 09:53	03/28/18 14:31	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:18	1
Cobalt	**0.000626**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:18	1
Lithium	**0.0165**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:18	1
Lead	**0.000604**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:18	1
Molybdenum	**0.0402**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:18	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:18	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:18	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 22:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**656**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW3
Date Collected: 03/12/18 16:50
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-3
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11.7**		5.00		mg/L			03/20/18 23:39	5
Fluoride	**0.723**		0.500		mg/L			03/20/18 23:39	5
Sulfate	**371**		10.0		mg/L			03/21/18 09:39	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:21	1
Arsenic	**0.00270**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:21	1
Barium	**0.125**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:21	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:21	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:21	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:34	1
Calcium	**167**		0.200		mg/L		03/19/18 09:53	03/28/18 14:34	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:21	1
Cobalt	**0.000997**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:21	1
Lithium	**0.0128**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:21	1
Lead	**0.00178**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:21	1
Molybdenum	**0.00454**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:21	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:21	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 22:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**792**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW4
Date Collected: 03/12/18 11:45
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-4
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			03/20/18 23:54	5
Fluoride	<0.500		0.500		mg/L			03/20/18 23:54	5
Sulfate	**42.6**		5.00		mg/L			03/20/18 23:54	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:24	1
Arsenic	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:24	1
Barium	**0.302**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:24	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:24	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:24	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:37	1
Calcium	**141**		0.200		mg/L		03/19/18 09:53	03/28/18 14:37	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:24	1
Cobalt	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 20:24	1
Lithium	**0.0310**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:24	1
Lead	**0.000884**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:24	1
Molybdenum	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:24	1
Selenium	**0.0139**		0.00500		mg/L		03/19/18 09:53	03/27/18 20:24	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:24	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 22:03	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**562**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW5
Date Collected: 03/12/18 13:05
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-5
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**34.2**		20.0		mg/L			03/21/18 00:09	20
Fluoride	<0.500		0.500		mg/L			03/21/18 00:25	5
Sulfate	**318**		20.0		mg/L			03/21/18 00:09	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:37	1
Arsenic	**0.00260**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:37	1
Barium	**0.0395**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:37	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:37	1
Boron	**2.00**		0.200		mg/L		03/19/18 09:53	03/27/18 20:37	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:40	1
Calcium	**160**		0.200		mg/L		03/19/18 09:53	03/28/18 14:40	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:37	1
Cobalt	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 20:37	1
Lithium	<0.0100		0.0100		mg/L		03/19/18 09:53	03/27/18 20:37	1
Lead	**0.000562**		0.000500		mg/L		03/19/18 09:53	03/28/18 14:40	1
Molybdenum	**0.0145**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:37	1
Selenium	**0.0238**		0.00500		mg/L		03/19/18 09:53	03/27/18 20:37	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:37	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 22:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**826**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW6
Date Collected: 03/12/18 14:35
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-6
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7.14**		5.00		mg/L			03/21/18 01:11	5
Fluoride	<0.500		0.500		mg/L			03/21/18 01:11	5
Sulfate	**194**		5.00		mg/L			03/21/18 01:11	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:40	1
Arsenic	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:40	1
Barium	**0.107**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:40	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:40	1
Boron	**3.06**		0.200		mg/L		03/19/18 09:53	03/27/18 20:40	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:44	1
Calcium	**145**		0.200		mg/L		03/19/18 09:53	03/28/18 14:44	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:40	1
Cobalt	**0.000505**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:40	1
Lithium	**0.0371**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:40	1
Lead	**0.00258**		0.000500		mg/L		03/19/18 09:53	03/28/18 14:44	1
Molybdenum	**0.00672**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:40	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:40	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:40	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 22:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**644**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW13
Date Collected: 03/12/18 10:40
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-7
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12.9**		5.00		mg/L			03/21/18 01:26	5
Fluoride	<0.500		0.500		mg/L			03/21/18 01:26	5
Sulfate	**37.0**		5.00		mg/L			03/21/18 01:26	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:43	1
Arsenic	**0.00295**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:43	1
Barium	**0.306**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:43	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:43	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:43	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:47	1
Calcium	**99.8**		0.200		mg/L		03/19/18 09:53	03/28/18 14:47	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:43	1
Cobalt	**0.00189**		0.000500		mg/L		03/19/18 09:53	03/27/18 20:43	1
Lithium	**0.0297**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:43	1
Lead	**0.000860**		0.000500		mg/L		03/19/18 09:53	03/28/18 14:47	1
Molybdenum	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:43	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:43	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:43	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/23/18 07:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**412**		30.0		mg/L			03/16/18 11:40	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: DUP
Date Collected: 03/12/18 00:00
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-8
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.16**		5.00		mg/L			03/21/18 01:42	5
Fluoride	<0.500		0.500		mg/L			03/21/18 01:42	5
Sulfate	**26.8**		5.00		mg/L			03/21/18 01:42	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:47	1
Arsenic	**0.0391**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:47	1
Barium	**0.480**		0.00200		mg/L		03/19/18 09:53	03/27/18 20:47	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:47	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 20:47	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:50	1
Calcium	**137**		0.200		mg/L		03/19/18 09:53	03/28/18 14:50	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:47	1
Cobalt	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 20:47	1
Lithium	**0.0580**		0.0100		mg/L		03/19/18 09:53	03/27/18 20:47	1
Lead	<0.000500		0.000500		mg/L		03/19/18 09:53	03/28/18 14:50	1
Molybdenum	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 20:47	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 20:47	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 20:47	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/23/18 07:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**476**		30.0		mg/L			03/16/18 11:40	1

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-197462/3
Matrix: Water
Analysis Batch: 197462

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			03/20/18 16:57	1
Fluoride	<0.100		0.100		mg/L			03/20/18 16:57	1
Sulfate	<1.00		1.00		mg/L			03/20/18 16:57	1

Lab Sample ID: LCS 310-197462/4
Matrix: Water
Analysis Batch: 197462

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.601		mg/L		101	90 - 110
Fluoride	1.50	1.601		mg/L		107	90 - 110
Sulfate	7.50	7.652		mg/L		102	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-197119/1-A
Matrix: Water
Analysis Batch: 198125

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 197119

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 14:36	1
Arsenic	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 14:36	1
Barium	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 14:36	1
Beryllium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 14:36	1
Boron	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 14:36	1
Cadmium	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 14:36	1
Calcium	<0.200		0.200		mg/L		03/19/18 09:53	03/27/18 14:36	1
Chromium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 14:36	1
Cobalt	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 14:36	1
Lithium	<0.0100		0.0100		mg/L		03/19/18 09:53	03/27/18 14:36	1
Lead	<0.000500		0.000500		mg/L		03/19/18 09:53	03/27/18 14:36	1
Molybdenum	<0.00200		0.00200		mg/L		03/19/18 09:53	03/27/18 14:36	1
Selenium	<0.00500		0.00500		mg/L		03/19/18 09:53	03/27/18 14:36	1
Thallium	<0.00100		0.00100		mg/L		03/19/18 09:53	03/27/18 14:36	1

Lab Sample ID: LCS 310-197119/2-A
Matrix: Water
Analysis Batch: 198125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 197119

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0200	0.02261		mg/L		113	80 - 120
Arsenic	0.0400	0.04275		mg/L		107	80 - 120
Barium	0.0400	0.04319		mg/L		108	80 - 120
Beryllium	0.0200	0.02101		mg/L		105	80 - 120
Boron	0.880	0.9252		mg/L		105	80 - 120
Cadmium	0.0200	0.01991		mg/L		100	80 - 120
Calcium	2.00	2.224		mg/L		111	80 - 120
Chromium	0.0400	0.04063		mg/L		102	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-197119/2-A
Matrix: Water
Analysis Batch: 198125

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 197119

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cobalt	0.0200	0.02144		mg/L		107	80 - 120
Lithium	0.100	0.09911		mg/L		99	80 - 120
Lead	0.0200	0.02020		mg/L		101	80 - 120
Molybdenum	0.0400	0.03977		mg/L		99	80 - 120
Selenium	0.0400	0.04065		mg/L		102	80 - 120
Thallium	0.0160	0.01751		mg/L		109	80 - 120

Lab Sample ID: 310-125893-8 DU
Matrix: Ground Water
Analysis Batch: 198125

Client Sample ID: DUP
Prep Type: Total/NA
Prep Batch: 197119

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.00100		<0.00100		mg/L		NC	20
Arsenic	0.0391		0.03991		mg/L		2	20
Barium	0.480		0.5055		mg/L		5	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Boron	<0.200		<0.200		mg/L		NC	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	<0.000500		<0.000500		mg/L		NC	20
Lithium	0.0580		0.06013		mg/L		4	20
Molybdenum	<0.00200		<0.00200		mg/L		NC	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20

Lab Sample ID: 310-125893-8 DU
Matrix: Ground Water
Analysis Batch: 198290

Client Sample ID: DUP
Prep Type: Total/NA
Prep Batch: 197119

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Cadmium	<0.000500		<0.000500		mg/L		NC	20
Calcium	137		136.3		mg/L		0.6	20
Lead	<0.000500		<0.000500		mg/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-197307/1-A
Matrix: Water
Analysis Batch: 197721

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 197307

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		03/22/18 10:00	03/22/18 21:52	1

Lab Sample ID: LCS 310-197307/2-A
Matrix: Water
Analysis Batch: 197721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 197307

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001760		mg/L		106	80 - 120

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: 310-125893-1 MS
Matrix: Ground Water
Analysis Batch: 197721

Client Sample ID: MW7
Prep Type: Total/NA
Prep Batch: 197307

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	<0.000200	F1	0.00167	0.002060	F1	mg/L		124	80 - 120

Lab Sample ID: 310-125893-1 MSD
Matrix: Ground Water
Analysis Batch: 197721

Client Sample ID: MW7
Prep Type: Total/NA
Prep Batch: 197307

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	<0.000200	F1	0.00167	0.002095	F1	mg/L		126	80 - 120	2	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-196975/1
Matrix: Water
Analysis Batch: 196975

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			03/16/18 11:40	1

Lab Sample ID: LCS 310-196975/2
Matrix: Water
Analysis Batch: 196975

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	928.0		mg/L		93	90 - 110

Lab Sample ID: 310-125893-3 DU
Matrix: Ground Water
Analysis Batch: 196975

Client Sample ID: MW3
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	792		796.0		mg/L		0.5	24

HPLC/IC

Analysis Batch: 197462

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	9056A	
310-125893-2	MW2	Total/NA	Ground Water	9056A	
310-125893-2	MW2	Total/NA	Ground Water	9056A	
310-125893-3	MW3	Total/NA	Ground Water	9056A	
310-125893-3	MW3	Total/NA	Ground Water	9056A	
310-125893-4	MW4	Total/NA	Ground Water	9056A	
310-125893-5	MW5	Total/NA	Ground Water	9056A	
310-125893-5	MW5	Total/NA	Ground Water	9056A	
310-125893-6	MW6	Total/NA	Ground Water	9056A	
310-125893-7	MW13	Total/NA	Ground Water	9056A	
310-125893-8	DUP	Total/NA	Ground Water	9056A	
MB 310-197462/3	Method Blank	Total/NA	Water	9056A	
LCS 310-197462/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 197119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	3010A	
310-125893-2	MW2	Total/NA	Ground Water	3010A	
310-125893-3	MW3	Total/NA	Ground Water	3010A	
310-125893-4	MW4	Total/NA	Ground Water	3010A	
310-125893-5	MW5	Total/NA	Ground Water	3010A	
310-125893-6	MW6	Total/NA	Ground Water	3010A	
310-125893-7	MW13	Total/NA	Ground Water	3010A	
310-125893-8	DUP	Total/NA	Ground Water	3010A	
MB 310-197119/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-197119/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-125893-8 DU	DUP	Total/NA	Ground Water	3010A	

Prep Batch: 197307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	7470A	
310-125893-2	MW2	Total/NA	Ground Water	7470A	
310-125893-3	MW3	Total/NA	Ground Water	7470A	
310-125893-4	MW4	Total/NA	Ground Water	7470A	
310-125893-5	MW5	Total/NA	Ground Water	7470A	
310-125893-6	MW6	Total/NA	Ground Water	7470A	
310-125893-7	MW13	Total/NA	Ground Water	7470A	
310-125893-8	DUP	Total/NA	Ground Water	7470A	
MB 310-197307/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-197307/2-A	Lab Control Sample	Total/NA	Water	7470A	
310-125893-1 MS	MW7	Total/NA	Ground Water	7470A	
310-125893-1 MSD	MW7	Total/NA	Ground Water	7470A	

Analysis Batch: 197721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	7470A	197307
310-125893-2	MW2	Total/NA	Ground Water	7470A	197307
310-125893-3	MW3	Total/NA	Ground Water	7470A	197307

Metals (Continued)

Analysis Batch: 197721 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-4	MW4	Total/NA	Ground Water	7470A	197307
310-125893-5	MW5	Total/NA	Ground Water	7470A	197307
310-125893-6	MW6	Total/NA	Ground Water	7470A	197307
310-125893-7	MW13	Total/NA	Ground Water	7470A	197307
310-125893-8	DUP	Total/NA	Ground Water	7470A	197307
MB 310-197307/1-A	Method Blank	Total/NA	Water	7470A	197307
LCS 310-197307/2-A	Lab Control Sample	Total/NA	Water	7470A	197307
310-125893-1 MS	MW7	Total/NA	Ground Water	7470A	197307
310-125893-1 MSD	MW7	Total/NA	Ground Water	7470A	197307

Analysis Batch: 198125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	6020A	197119
310-125893-2	MW2	Total/NA	Ground Water	6020A	197119
310-125893-3	MW3	Total/NA	Ground Water	6020A	197119
310-125893-4	MW4	Total/NA	Ground Water	6020A	197119
310-125893-5	MW5	Total/NA	Ground Water	6020A	197119
310-125893-6	MW6	Total/NA	Ground Water	6020A	197119
310-125893-7	MW13	Total/NA	Ground Water	6020A	197119
310-125893-8	DUP	Total/NA	Ground Water	6020A	197119
MB 310-197119/1-A	Method Blank	Total/NA	Water	6020A	197119
LCS 310-197119/2-A	Lab Control Sample	Total/NA	Water	6020A	197119
310-125893-8 DU	DUP	Total/NA	Ground Water	6020A	197119

Analysis Batch: 198290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	6020A	197119
310-125893-2	MW2	Total/NA	Ground Water	6020A	197119
310-125893-3	MW3	Total/NA	Ground Water	6020A	197119
310-125893-4	MW4	Total/NA	Ground Water	6020A	197119
310-125893-5	MW5	Total/NA	Ground Water	6020A	197119
310-125893-6	MW6	Total/NA	Ground Water	6020A	197119
310-125893-7	MW13	Total/NA	Ground Water	6020A	197119
310-125893-8	DUP	Total/NA	Ground Water	6020A	197119
310-125893-8 DU	DUP	Total/NA	Ground Water	6020A	197119

General Chemistry

Analysis Batch: 196975

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	SM 2540C	
310-125893-2	MW2	Total/NA	Ground Water	SM 2540C	
310-125893-3	MW3	Total/NA	Ground Water	SM 2540C	
310-125893-4	MW4	Total/NA	Ground Water	SM 2540C	
310-125893-5	MW5	Total/NA	Ground Water	SM 2540C	
310-125893-6	MW6	Total/NA	Ground Water	SM 2540C	
310-125893-7	MW13	Total/NA	Ground Water	SM 2540C	
310-125893-8	DUP	Total/NA	Ground Water	SM 2540C	
MB 310-196975/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-196975/2	Lab Control Sample	Total/NA	Water	SM 2540C	

General Chemistry (Continued)

Analysis Batch: 196975 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-3 DU	MW3	Total/NA	Ground Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW7

Lab Sample ID: 310-125893-1

Date Collected: 03/12/18 19:35

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/20/18 23:08	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:15	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:18	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 21:55	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Client Sample ID: MW2

Lab Sample ID: 310-125893-2

Date Collected: 03/12/18 18:05

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/20/18 23:23	CJT	TAL CF
Total/NA	Analysis	9056A		10	197462	03/21/18 09:24	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:18	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:31	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 22:00	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Client Sample ID: MW3

Lab Sample ID: 310-125893-3

Date Collected: 03/12/18 16:50

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/20/18 23:39	CJT	TAL CF
Total/NA	Analysis	9056A		10	197462	03/21/18 09:39	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:21	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:34	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 22:02	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW4

Date Collected: 03/12/18 11:45
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/20/18 23:54	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:24	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:37	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 22:03	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Client Sample ID: MW5

Date Collected: 03/12/18 13:05
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-5
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20	197462	03/21/18 00:09	CJT	TAL CF
Total/NA	Analysis	9056A		5	197462	03/21/18 00:25	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:37	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:40	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 22:05	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Client Sample ID: MW6

Date Collected: 03/12/18 14:35
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-6
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/21/18 01:11	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:40	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:44	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/22/18 22:06	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Client Sample ID: MW13

Lab Sample ID: 310-125893-7

Date Collected: 03/12/18 10:40
Matrix: Ground Water
Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/21/18 01:26	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:43	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:47	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/23/18 07:42	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Client Sample ID: DUP

Lab Sample ID: 310-125893-8

Date Collected: 03/12/18 00:00
Matrix: Ground Water
Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	197462	03/21/18 01:42	CJT	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198125	03/27/18 20:47	SAD	TAL CF
Total/NA	Prep	3010A			197119	03/19/18 09:53	JNR	TAL CF
Total/NA	Analysis	6020A		1	198290	03/28/18 14:50	SAD	TAL CF
Total/NA	Prep	7470A			197307	03/22/18 10:00	CJT	TAL CF
Total/NA	Analysis	7470A		1	197721	03/23/18 07:44	CJT	TAL CF
Total/NA	Analysis	SM 2540C		1	196975	03/16/18 11:40	SAS	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-18
Georgia	State Program	4	IA100001 (OR)	09-29-18
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-18
North Dakota	State Program	8	R-186	09-29-18
Oregon	NELAP	10	IA100001	09-29-18

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 Landfill CCR

TestAmerica Job ID: 310-125893-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater",

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-125893 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: OPPD

City/State: Omaha, NE | Project: 29279 / Nebraska City Unit 2

Receipt Information

Date/Time Received: 3/5/18 925 | Received By: TD

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID: PT.8
Multiple Coolers?	☑ Yes	☐ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☑ Yes	☐ No	*If yes:* Cooler custody seals intact? ☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☑ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: J | Correction Factor (°C): +0.1

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 4.1 | Corrected Temp (°C): 4.2

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: OPPD

City/State: Omaha, NE | Project: 29279 / Nebraska City Unit 2

Receipt Information

Date/Time Received: 3/5/18 925 | Received By: TD

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes ☐ No	*If yes:* Cooler ID:	721
Multiple Coolers?	☑ Yes ☐ No	*If yes:* Cooler # 2 of 2	
Cooler Custody Seals Present?	☑ Yes ☐ No	*If yes:* Cooler custody seals intact?	☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes ☑ No	*If yes:* Sample custody seals intact?	☐ Yes ☑ No
Trip Blank Present?	☐ Yes ☑ No	*If yes:* Which VOA samples are in cooler?	↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: J | Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 2.8 | Corrected Temp (°C): 2.9

• Sample Container Temperature

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica

Client Information	Sampler: R. Layman	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No
Client Contact: Bryan Lorence	Phone:	E-Mail: shawn.hayes@testamericainc.com		Page
Company: Omaha Public Power District				Job #

Address: 444 South 16th Street Mail 9E/EP1	Due Date Requested:
City: Omaha	TAT Requested (days):
State, Zip: NE, 68102-2247	
Phone: 402-636-2515(Tel)	PO #:
Email: balorence@oppd.com	WO #:
Project Name: Nebraska City Unit 2 Landfill CCR	TestAmerica Project #: 31007559
Site: Neb City	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Combined Ra226 and Ra228	6020A CCR List, 7470A Mercury	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW7	3-12-18	19:35	G	GW			X	X	X		
MW2	3-12-18	18:05	G	GW			X	X	X		
MW3	3-12-18	16:50	G	GW			X	X	X		
MW4	3-12-18	11:45	G	GW			X	X	X		
MW5	3-12-18	13:05	G	GW			X	X	X		
MW6	3-12-18	14:35	G	GW			X	X	X		
MW13	3-12-18	10:40	G	GW			X	X	X		
DUP	3-12-18		G	GW			X	X	X		

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-14-18 15:00	Company: OPPD	Received by: Kathryn Dale	Date/Time: 3-15-18 925	Company: TACF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

3/29/2018

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW7	310-125893-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW7	310-125893-B-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW7	310-125893-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-125893-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW2	310-125893-B-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW2	310-125893-C-2	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-125893-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW3	310-125893-B-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW3	310-125893-C-3	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4	310-125893-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW4	310-125893-B-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW4	310-125893-C-4	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW5	310-125893-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW5	310-125893-B-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW5	310-125893-C-5	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW6	310-125893-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW6	310-125893-B-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW6	310-125893-C-6	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW13	310-125893-A-7	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW13	310-125893-B-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW13	310-125893-C-7	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-125893-A-8	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP	310-125893-B-8	Plastic 1 liter - Nitric Acid	<2	_____	_____
DUP	310-125893-C-8	Plastic 1 liter - Nitric Acid	<2	_____	_____

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-125893-1

Login Number: 125893

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Patrick, Kathryn E

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-125893-2
Client Project/Site: Nebraska City Unit 2 CCR
Sampling Event: CCR Parameters Q1 and Q3

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Bryan Lorence

Authorized for release by:
4/12/2018 5:56:56 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Job ID: 310-125893-2

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-125893-2

Comments
No additional comments.

Receipt
The samples were received on 3/15/2018 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.9º C and 4.2º C.

RAD
Method(s) PrecSep_0: Radium 228 Prep Batch 160-356739:
Sample aliquot reduced due to potential matrix interference. Sample was cloudy and had undissolved particulates: MW3 (310-125893-3)

Method(s) PrecSep-21: Radium 226 Prep Batch 160-356733:
Sample aliquot reduced due to potential matrix interference. Sample was cloudy and had undissolved particulates: MW3 (310-125893-3)

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-125893-1	MW7	Ground Water	03/12/18 19:35	03/15/18 09:25
310-125893-2	MW2	Ground Water	03/12/18 18:05	03/15/18 09:25
310-125893-3	MW3	Ground Water	03/12/18 16:50	03/15/18 09:25
310-125893-4	MW4	Ground Water	03/12/18 11:45	03/15/18 09:25
310-125893-5	MW5	Ground Water	03/12/18 13:05	03/15/18 09:25
310-125893-6	MW6	Ground Water	03/12/18 14:35	03/15/18 09:25
310-125893-7	MW13	Ground Water	03/12/18 10:40	03/15/18 09:25
310-125893-8	DUP	Ground Water	03/12/18 00:00	03/15/18 09:25

Client Sample ID: MW7
Date Collected: 03/12/18 19:35
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-1
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.331		0.0926	0.0973	1.00	0.0661	pCi/L	03/20/18 14:39	04/11/18 08:17	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:17*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.731		0.229	0.239	1.00	0.289	pCi/L	03/20/18 15:16	03/28/18 16:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*
Y Carrier	*87.9*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.06		0.247	0.258	5.00	0.289	pCi/L		04/12/18 14:16	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Client Sample ID: MW2
Date Collected: 03/12/18 18:05
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-2
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.206		0.0783	0.0804	1.00	0.0762	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.677		0.263	0.270	1.00	0.366	pCi/L	03/20/18 15:16	03/28/18 16:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.7*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*
Y Carrier	*86.0*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.882		0.274	0.282	5.00	0.366	pCi/L		04/12/18 14:16	1

Client Sample ID: MW3

Date Collected: 03/12/18 16:50
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-3

Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.202**		0.104	0.105	1.00	0.124	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.4*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.398	U	0.343	0.345	1.00	0.548	pCi/L	03/20/18 15:16	03/28/18 16:42	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*86.4*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*
Y Carrier	*82.6*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:42*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.600**		0.358	0.361	5.00	0.548	pCi/L		04/12/18 14:16	1

Client Sample ID: MW4
Date Collected: 03/12/18 11:45
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-4
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.430		0.108	0.115	1.00	0.0754	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.900		0.276	0.288	1.00	0.355	pCi/L	03/20/18 15:16	03/28/18 16:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*
Y Carrier	*81.9*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.33		0.296	0.310	5.00	0.355	pCi/L		04/12/18 14:16	1

Client Sample ID: MW5

Date Collected: 03/12/18 13:05
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-5

Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0634	U	0.0523	0.0526	1.00	0.0751	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.173	U	0.202	0.203	1.00	0.333	pCi/L	03/20/18 15:16	03/28/18 16:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*99.4*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*
Y Carrier	*83.7*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.236	U	0.209	0.210	5.00	0.333	pCi/L		04/12/18 14:16	1

Client Sample ID: MW6
Date Collected: 03/12/18 14:35
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-6
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.240**		0.0834	0.0861	1.00	0.0826	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.290	U	0.241	0.242	1.00	0.384	pCi/L	03/20/18 15:16	03/28/18 16:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*
Y Carrier	*82.2*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.530**		0.255	0.257	5.00	0.384	pCi/L		04/12/18 14:16	1

Client Sample ID: MW13
Date Collected: 03/12/18 10:40
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-7
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.294**		0.0870	0.0910	1.00	0.0692	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.198	U	0.204	0.205	1.00	0.333	pCi/L	03/20/18 15:16	03/28/18 16:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*
Y Carrier	*84.9*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	**0.492**		0.222	0.224	5.00	0.333	pCi/L		04/12/18 14:16	1

Client Sample ID: DUP

Date Collected: 03/12/18 00:00
Date Received: 03/15/18 09:25

Lab Sample ID: 310-125893-8

Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.398		0.102	0.108	1.00	0.0676	pCi/L	03/20/18 14:39	04/11/18 08:18	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:18*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.748		0.237	0.247	1.00	0.294	pCi/L	03/20/18 15:16	03/28/18 16:43	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*
Y Carrier	*85.6*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:43*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.15		0.258	0.270	5.00	0.294	pCi/L		04/12/18 14:16	1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-356733/23-A
Matrix: Water
Analysis Batch: 360147

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356733

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.04111	U	0.0409	0.0411	1.00	0.0616	pCi/L	03/20/18 14:39	04/11/18 08:22	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/20/18 14:39*	*04/11/18 08:22*	*1*

Lab Sample ID: LCS 160-356733/1-A
Matrix: Water
Analysis Batch: 360146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356733

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	10.11		1.02	1.00	0.0693	pCi/L	86	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*

Lab Sample ID: LCSD 160-356733/2-A
Matrix: Water
Analysis Batch: 360146

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 356733

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.99		1.11	1.00	0.0845	pCi/L	93	68 - 137	0.41	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*105*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-356739/23-A
Matrix: Water
Analysis Batch: 357969

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 356739

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2130	U	0.204	0.205	1.00	0.329	pCi/L	03/20/18 15:16	03/28/18 16:44	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*106*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:44*	*1*
Y Carrier	*79.6*		*40 - 110*	*03/20/18 15:16*	*03/28/18 16:44*	*1*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-356739/1-A
Matrix: Water
Analysis Batch: 357969

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 356739

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.44	7.625		0.896	1.00	0.334	pCi/L	90	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*
Y Carrier	*88.2*		*40 - 110*

Lab Sample ID: LCSD 160-356739/2-A
Matrix: Water
Analysis Batch: 357969

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 356739

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.44	8.148		0.951	1.00	0.330	pCi/L	97	56 - 140	0.28	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*105*		*40 - 110*
Y Carrier	*85.6*		*40 - 110*

Rad

Prep Batch: 356733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	PrecSep-21	
310-125893-2	MW2	Total/NA	Ground Water	PrecSep-21	
310-125893-3	MW3	Total/NA	Ground Water	PrecSep-21	
310-125893-4	MW4	Total/NA	Ground Water	PrecSep-21	
310-125893-5	MW5	Total/NA	Ground Water	PrecSep-21	
310-125893-6	MW6	Total/NA	Ground Water	PrecSep-21	
310-125893-7	MW13	Total/NA	Ground Water	PrecSep-21	
310-125893-8	DUP	Total/NA	Ground Water	PrecSep-21	
MB 160-356733/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-356733/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-356733/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 356739

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-125893-1	MW7	Total/NA	Ground Water	PrecSep_0	
310-125893-2	MW2	Total/NA	Ground Water	PrecSep_0	
310-125893-3	MW3	Total/NA	Ground Water	PrecSep_0	
310-125893-4	MW4	Total/NA	Ground Water	PrecSep_0	
310-125893-5	MW5	Total/NA	Ground Water	PrecSep_0	
310-125893-6	MW6	Total/NA	Ground Water	PrecSep_0	
310-125893-7	MW13	Total/NA	Ground Water	PrecSep_0	
310-125893-8	DUP	Total/NA	Ground Water	PrecSep_0	
MB 160-356739/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-356739/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-356739/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Client Sample ID: MW7

Lab Sample ID: 310-125893-1

Date Collected: 03/12/18 19:35

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:17	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:42	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW2

Lab Sample ID: 310-125893-2

Date Collected: 03/12/18 18:05

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:42	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW3

Lab Sample ID: 310-125893-3

Date Collected: 03/12/18 16:50

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:42	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW4

Lab Sample ID: 310-125893-4

Date Collected: 03/12/18 11:45

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW5

Lab Sample ID: 310-125893-5

Date Collected: 03/12/18 13:05

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW6

Lab Sample ID: 310-125893-6

Date Collected: 03/12/18 14:35

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: MW13

Lab Sample ID: 310-125893-7

Date Collected: 03/12/18 10:40

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Client Sample ID: DUP

Lab Sample ID: 310-125893-8

Date Collected: 03/12/18 00:00

Matrix: Ground Water

Date Received: 03/15/18 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			356733	03/20/18 14:39	TJT	TAL SL
Total/NA	Analysis	9315		1	360146	04/11/18 08:18	ALD	TAL SL
Total/NA	Prep	PrecSep_0			356739	03/20/18 15:16	TJT	TAL SL
Total/NA	Analysis	9320		1	357969	03/28/18 16:43	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	360617	04/12/18 14:16	RTM	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-18
Georgia	State Program	4	IA100001 (OR)	09-29-18
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-18
North Dakota	State Program	8	R-186	09-29-18
Oregon	NELAP	10	IA100001	09-29-18

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542018-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-125893 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: OPPD

City/State: Omaha, NE | Project: 29279 / Nebraska City Unit 2

Receipt Information

Date/Time Received: 3/5/18 925 | Received By: TD

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID: PT.8
Multiple Coolers?	☑ Yes	☐ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☑ Yes	☐ No	*If yes:* Cooler custody seals intact? ☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☑ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: J | Correction Factor (°C): +0.1

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 4.1 | Corrected Temp (°C): 4.2

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: OPPD

City/State: Omaha, NE | Project: 29279 / Nebraska City Unit 2

Receipt Information

Date/Time Received: 3/5/18 925 | Received By: TD

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes ☐ No	*If yes:* Cooler ID:	721
Multiple Coolers?	☑ Yes ☐ No	*If yes:* Cooler # 2 of 2	
Cooler Custody Seals Present?	☑ Yes ☐ No	*If yes:* Cooler custody seals intact?	☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes ☑ No	*If yes:* Sample custody seals intact?	☐ Yes ☑ No
Trip Blank Present?	☐ Yes ☑ No	*If yes:* Which VOA samples are in cooler?	↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: J | Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 2.8 | Corrected Temp (°C): 2.9

• Sample Container Temperature

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica

Client Information	Sampler: R. Layman	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No
Client Contact: Bryan Lorence	Phone:	E-Mail: shawn.hayes@testamericainc.com		Page
Company: Omaha Public Power District				Job #

Address: 444 South 16th Street Mail 9E/EP1	Due Date Requested:
City: Omaha	TAT Requested (days):
State, Zip: NE, 68102-2247	
Phone: 402-636-2515(Tel)	PO #:
Email: balorence@oppd.com	WO #:
Project Name: Nebraska City Unit 2 Landfill CCR	TestAmerica Project #: 31007559
Site: Neb City	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Combined Ra226 and Ra228	6020A CCR List, 7470A Mercury	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW7	3-12-18	19:35	G	GW			X	X	X		
MW2	3-12-18	18:05	G	GW			X	X	X		
MW3	3-12-18	16:50	G	GW			X	X	X		
MW4	3-12-18	11:45	G	GW			X	X	X		
MW5	3-12-18	13:05	G	GW			X	X	X		
MW6	3-12-18	14:35	G	GW			X	X	X		
MW13	3-12-18	10:40	G	GW			X	X	X		
DUP	3-12-18		G	GW			X	X	X		

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time: 3-14-18 15:00	Company: OPPD	Received by: Kathryn Dale	Date/Time: 3-15-18 925	Company: TACF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

4/12/2018

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW7	310-125893-A-1	Plastic 250ml - with Nitric Acid	<2		
MW7	310-125893-B-1	Plastic 1 liter - Nitric Acid	<2		
MW7	310-125893-C-1	Plastic 1 liter - Nitric Acid	<2		
MW2	310-125893-A-2	Plastic 250ml - with Nitric Acid	<2		
MW2	310-125893-B-2	Plastic 1 liter - Nitric Acid	<2		
MW2	310-125893-C-2	Plastic 1 liter - Nitric Acid	<2		
MW3	310-125893-A-3	Plastic 250ml - with Nitric Acid	<2		
MW3	310-125893-B-3	Plastic 1 liter - Nitric Acid	<2		
MW3	310-125893-C-3	Plastic 1 liter - Nitric Acid	<2		
MW4	310-125893-A-4	Plastic 250ml - with Nitric Acid	<2		
MW4	310-125893-B-4	Plastic 1 liter - Nitric Acid	<2		
MW4	310-125893-C-4	Plastic 1 liter - Nitric Acid	<2		
MW5	310-125893-A-5	Plastic 250ml - with Nitric Acid	<2		
MW5	310-125893-B-5	Plastic 1 liter - Nitric Acid	<2		
MW5	310-125893-C-5	Plastic 1 liter - Nitric Acid	<2		
MW6	310-125893-A-6	Plastic 250ml - with Nitric Acid	<2		
MW6	310-125893-B-6	Plastic 1 liter - Nitric Acid	<2		
MW6	310-125893-C-6	Plastic 1 liter - Nitric Acid	<2		
MW13	310-125893-A-7	Plastic 250ml - with Nitric Acid	<2		
MW13	310-125893-B-7	Plastic 1 liter - Nitric Acid	<2		
MW13	310-125893-C-7	Plastic 1 liter - Nitric Acid	<2		
DUP	310-125893-A-8	Plastic 250ml - with Nitric Acid	<2		
DUP	310-125893-B-8	Plastic 1 liter - Nitric Acid	<2		
DUP	310-125893-C-8	Plastic 1 liter - Nitric Acid	<2		

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-125893-2

Login Number: 125893

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Patrick, Kathryn E

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-125893-2

Login Number: 125893
List Number: 2
Creator: Daniels, Brian J

List Source: TestAmerica St. Louis
List Creation: 03/16/18 02:31 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	18,18
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-125893-1	MW7	104
310-125893-2	MW2	99.7
310-125893-3	MW3	86.4
310-125893-4	MW4	100
310-125893-5	MW5	99.4
310-125893-6	MW6	100
310-125893-7	MW13	109
310-125893-8	DUP	104

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
LCS 160-356733/1-A	Lab Control Sample	108
LCSD 160-356733/2-A	Lab Control Sample Dup	105
MB 160-356733/23-A	Method Blank	106

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-125893-1	MW7	104	87.9
310-125893-2	MW2	99.7	86.0
310-125893-3	MW3	86.4	82.6
310-125893-4	MW4	100	81.9
310-125893-5	MW5	99.4	83.7
310-125893-6	MW6	100	82.2
310-125893-7	MW13	109	84.9
310-125893-8	DUP	104	85.6

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2 CCR

TestAmerica Job ID: 310-125893-2

Method: 9320 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)									
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)								
LCS 160-356739/1-A	Lab Control Sample	108	88.2								
LCSD 160-356739/2-A	Lab Control Sample Dup	105	85.6								
MB 160-356739/23-A	Method Blank	106	79.6								

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-132097-1
Client Project/Site: Nebraska City Unit 2
Sampling Event: CCR and Landfill Parameters Q2 and Q4

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Bryan Lorence

Authorized for release by:
7/12/2018 5:02:15 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Job ID: 310-132097-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-132097-1

Comments
No additional comments.

Receipt
The samples were received on 6/8/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.9º C and 3.6º C.

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

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

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

Job ID: 310-132097-2

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-132097-2

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-132097-1	MW7	Ground Water	06/06/18 15:35	06/08/18 09:30
310-132097-2	MW2	Ground Water	06/06/18 14:17	06/08/18 09:30
310-132097-3	MW3	Ground Water	06/06/18 13:36	06/08/18 09:30
310-132097-4	MW4	Ground Water	06/06/18 10:08	06/08/18 09:30
310-132097-5	MW5	Ground Water	06/05/18 11:16	06/08/18 09:30
310-132097-6	MW6	Ground Water	06/06/18 12:19	06/08/18 09:30
310-132097-7	MW13	Ground Water	06/06/18 09:00	06/08/18 09:30
310-132097-8	DUP	Ground Water	06/06/18 00:00	06/08/18 09:30

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW7 — Lab Sample ID: 310-132097-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.41		5.00		mg/L	5		9056A	Total/NA
Sulfate	12.0		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0418		0.00200		mg/L	1		6020A	Total/NA
Barium	0.624		0.00200		mg/L	1		6020A	Total/NA
Calcium	119		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.000876		0.000500		mg/L	1		6020A	Total/NA
Lead	0.000690		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0535		0.0100		mg/L	1		6020A	Total/NA
Total Dissolved Solids	528		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW2 — Lab Sample ID: 310-132097-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15.7		5.00		mg/L	5		9056A	Total/NA
Sulfate	281		10.0		mg/L	10		9056A	Total/NA
Antimony	0.00345		0.00100		mg/L	1		6020A	Total/NA
Barium	0.179		0.00200		mg/L	1		6020A	Total/NA
Boron	0.353		0.200		mg/L	1		6020A	Total/NA
Calcium	220		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.00132		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0201		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.137		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	1180		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW3 — Lab Sample ID: 310-132097-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	22.9		5.00		mg/L	5		9056A	Total/NA
Sulfate	491		10.0		mg/L	10		9056A	Total/NA
Arsenic	0.00835		0.00200		mg/L	1		6020A	Total/NA
Barium	0.163		0.00200		mg/L	1		6020A	Total/NA
Boron	0.654		0.200		mg/L	1		6020A	Total/NA
Calcium	198		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.00768		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0182		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0628		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	978		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW4 — Lab Sample ID: 310-132097-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	44.1		5.00		mg/L	5		9056A	Total/NA
Barium	0.368		0.00200		mg/L	1		6020A	Total/NA
Calcium	140		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.000723		0.000500		mg/L	1		6020A	Total/NA
Lead	0.00186		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0309		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.00693		0.00200		mg/L	1		6020A	Total/NA
Selenium	0.00848		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	542		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW5 — Lab Sample ID: 310-132097-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.0		5.00		mg/L	5		9056A	Total/NA
Sulfate	353		20.0		mg/L	20		9056A	Total/NA
Arsenic	0.00325		0.00200		mg/L	1		6020A	Total/NA
Barium	0.0713		0.00200		mg/L	1		6020A	Total/NA
Boron	3.81		0.200		mg/L	1		6020A	Total/NA
Calcium	198		0.200		mg/L	1		6020A	Total/NA
Lead	0.00159		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0129		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0205		0.00200		mg/L	1		6020A	Total/NA
Selenium	0.0144		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	1060		150		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW6 — Lab Sample ID: 310-132097-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.53		5.00		mg/L	5		9056A	Total/NA
Sulfate	174		5.00		mg/L	5		9056A	Total/NA
Barium	0.120		0.00200		mg/L	1		6020A	Total/NA
Boron	3.58		0.200		mg/L	1		6020A	Total/NA
Calcium	133		0.200		mg/L	1		6020A	Total/NA
Lead	0.00193		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0321		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.0108		0.00200		mg/L	1		6020A	Total/NA
Selenium	0.00679		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	694		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW13 — Lab Sample ID: 310-132097-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12.5		5.00		mg/L	5		9056A	Total/NA
Sulfate	71.0		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.00269		0.00200		mg/L	1		6020A	Total/NA
Barium	0.295		0.00200		mg/L	1		6020A	Total/NA
Boron	0.203		0.200		mg/L	1		6020A	Total/NA
Calcium	102		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.00251		0.000500		mg/L	1		6020A	Total/NA
Lead	0.00623		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0438		0.0100		mg/L	1		6020A	Total/NA
Selenium	0.00535		0.00500		mg/L	1		6020A	Total/NA
Total Dissolved Solids	504		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP — Lab Sample ID: 310-132097-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15.9		5.00		mg/L	5		9056A	Total/NA
Sulfate	275		10.0		mg/L	10		9056A	Total/NA
Antimony	0.00345		0.00100		mg/L	1		6020A	Total/NA
Barium	0.183		0.00200		mg/L	1		6020A	Total/NA
Boron	0.389		0.200		mg/L	1		6020A	Total/NA
Calcium	223		0.200		mg/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: DUP (Continued)

Lab Sample ID: 310-132097-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00127		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0205		0.0100		mg/L	1		6020A	Total/NA
Molybdenum	0.136		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	900		60.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW7
Date Collected: 06/06/18 15:35
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.41**		5.00		mg/L			06/14/18 17:04	5
Fluoride	<0.500		0.500		mg/L			06/14/18 17:04	5
Sulfate	**12.0**		5.00		mg/L			06/14/18 17:04	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:38	1
Arsenic	**0.0418**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:38	1
Barium	**0.624**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:38	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:38	1
Boron	<0.200		0.200		mg/L		06/18/18 10:00	06/26/18 15:38	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:38	1
Calcium	**119**		0.200		mg/L		06/18/18 10:00	06/26/18 15:38	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:38	1
Cobalt	**0.000876**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:38	1
Lead	**0.000690**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:38	1
Lithium	**0.0535**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:38	1
Molybdenum	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 15:38	1
Selenium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:38	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:38	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**528**		30.0		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.389**		0.164	0.168	1.00	0.164	pCi/L	06/14/18 09:54	07/06/18 20:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*06/14/18 09:54*	*07/06/18 20:07*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.597**		0.251	0.257	1.00	0.353	pCi/L	06/14/18 10:34	07/05/18 13:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*
Y Carrier	*91.6*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW7
Date Collected: 06/06/18 15:35
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-1
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.986		0.300	0.307	5.00	0.353	pCi/L		07/12/18 15:51	1

Client Sample ID: MW2

Date Collected: 06/06/18 14:17
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-2

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15.7**		5.00		mg/L			06/14/18 17:20	5
Fluoride	<0.500		0.500		mg/L			06/14/18 17:20	5
Sulfate	**281**		10.0		mg/L			06/15/18 06:09	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00345**		0.00100		mg/L		06/18/18 10:00	06/26/18 15:41	1
Arsenic	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 15:41	1
Barium	**0.179**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:41	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:41	1
Boron	**0.353**		0.200		mg/L		06/18/18 10:00	06/26/18 15:41	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:41	1
Calcium	**220**		0.200		mg/L		06/18/18 10:00	06/26/18 15:41	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:41	1
Cobalt	**0.00132**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:41	1
Lead	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:41	1
Lithium	**0.0201**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:41	1
Molybdenum	**0.137**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:41	1
Selenium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:41	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:41	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1180**		60.0		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.253**		0.141	0.143	1.00	0.165	pCi/L	06/14/18 09:54	07/06/18 20:07	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*06/14/18 09:54*	*07/06/18 20:07*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.901**		0.281	0.293	1.00	0.365	pCi/L	06/14/18 10:34	07/05/18 13:57	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.3*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*
Y Carrier	*90.1*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW2
Date Collected: 06/06/18 14:17
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-2
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.15		0.314	0.326	5.00	0.365	pCi/L		07/12/18 15:51	1

Client Sample ID: MW3

Date Collected: 06/06/18 13:36
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-3

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**22.9**		5.00		mg/L			06/14/18 17:35	5
Fluoride	<0.500		0.500		mg/L			06/14/18 17:35	5
Sulfate	**491**		10.0		mg/L			06/15/18 06:26	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:45	1
Arsenic	**0.00835**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:45	1
Barium	**0.163**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:45	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:45	1
Boron	**0.654**		0.200		mg/L		06/18/18 10:00	06/26/18 15:45	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:45	1
Calcium	**198**		0.200		mg/L		06/18/18 10:00	06/26/18 15:45	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:45	1
Cobalt	**0.00768**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:45	1
Lead	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:45	1
Lithium	**0.0182**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:45	1
Molybdenum	**0.0628**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:45	1
Selenium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:45	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:45	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**978**		30.0		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.616**		0.212	0.219	1.00	0.188	pCi/L	06/15/18 10:05	07/10/18 16:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*06/15/18 10:05*	*07/10/18 16:38*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.606**		0.267	0.273	1.00	0.380	pCi/L	06/15/18 11:02	07/09/18 09:33	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*06/15/18 11:02*	*07/09/18 09:33*	*1*
Y Carrier	*80.0*		*40 - 110*	*06/15/18 11:02*	*07/09/18 09:33*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW3
Date Collected: 06/06/18 13:36
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-3
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.22		0.341	0.350	5.00	0.380	pCi/L		07/12/18 15:51	1

Client Sample ID: MW4
Date Collected: 06/06/18 10:08
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-4
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			06/14/18 17:51	5
Fluoride	<0.500		0.500		mg/L			06/14/18 17:51	5
Sulfate	**44.1**		5.00		mg/L			06/14/18 17:51	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:51	1
Arsenic	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 15:51	1
Barium	**0.368**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:51	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:51	1
Boron	<0.200		0.200		mg/L		06/18/18 10:00	06/26/18 15:51	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:51	1
Calcium	**140**		0.200		mg/L		06/18/18 10:00	06/26/18 15:51	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:51	1
Cobalt	**0.000723**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:51	1
Lead	**0.00186**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:51	1
Lithium	**0.0309**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:51	1
Molybdenum	**0.00693**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:51	1
Selenium	**0.00848**		0.00500		mg/L		06/18/18 10:00	06/26/18 15:51	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:51	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**542**		30.0		mg/L			06/11/18 09:27	1

Client Sample ID: MW5

Date Collected: 06/05/18 11:16
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-5

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**14.0**		5.00		mg/L			06/14/18 18:22	5
Fluoride	<0.500		0.500		mg/L			06/14/18 18:22	5
Sulfate	**353**		20.0		mg/L			06/14/18 18:07	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:54	1
Arsenic	**0.00325**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:54	1
Barium	**0.0713**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:54	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:54	1
Boron	**3.81**		0.200		mg/L		06/18/18 10:00	06/26/18 15:54	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:54	1
Calcium	**198**		0.200		mg/L		06/18/18 10:00	06/26/18 15:54	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:54	1
Cobalt	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:54	1
Lead	**0.00159**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:54	1
Lithium	**0.0129**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:54	1
Molybdenum	**0.0205**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:54	1
Selenium	**0.0144**		0.00500		mg/L		06/18/18 10:00	06/26/18 15:54	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:54	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1060**		150		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.187	U	0.140	0.141	1.00	0.192	pCi/L	06/16/18 12:16	07/11/18 05:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*06/16/18 12:16*	*07/11/18 05:45*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.185	U	0.221	0.222	1.00	0.421	pCi/L	06/16/18 13:10	07/10/18 14:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:39*	*1*
Y Carrier	*92.0*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:39*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW5
Date Collected: 06/05/18 11:16
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-5
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.00238	U	0.262	0.263	5.00	0.421	pCi/L		07/12/18 15:51	1

Client Sample ID: MW6

Date Collected: 06/06/18 12:19
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-6

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.53**		5.00		mg/L			06/14/18 18:38	5
Fluoride	<0.500		0.500		mg/L			06/14/18 18:38	5
Sulfate	**174**		5.00		mg/L			06/14/18 18:38	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:57	1
Arsenic	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 15:57	1
Barium	**0.120**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:57	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:57	1
Boron	**3.58**		0.200		mg/L		06/18/18 10:00	06/26/18 15:57	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:57	1
Calcium	**133**		0.200		mg/L		06/18/18 10:00	06/26/18 15:57	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 15:57	1
Cobalt	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 15:57	1
Lead	**0.00193**		0.000500		mg/L		06/18/18 10:00	06/26/18 15:57	1
Lithium	**0.0321**		0.0100		mg/L		06/18/18 10:00	06/26/18 15:57	1
Molybdenum	**0.0108**		0.00200		mg/L		06/18/18 10:00	06/26/18 15:57	1
Selenium	**0.00679**		0.00500		mg/L		06/18/18 10:00	06/26/18 15:57	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 15:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**694**		30.0		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.435**		0.224	0.228	1.00	0.245	pCi/L	06/16/18 12:16	07/11/18 05:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*06/16/18 12:16*	*07/11/18 05:45*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.584**		0.306	0.311	1.00	0.450	pCi/L	06/16/18 13:10	07/10/18 14:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:39*	*1*
Y Carrier	*89.7*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:39*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW6
Date Collected: 06/06/18 12:19
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-6
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.02		0.379	0.386	5.00	0.450	pCi/L		07/12/18 15:51	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW13
Date Collected: 06/06/18 09:00
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-7
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12.5**		5.00		mg/L			06/14/18 18:53	5
Fluoride	<0.500		0.500		mg/L			06/14/18 18:53	5
Sulfate	**71.0**		5.00		mg/L			06/14/18 18:53	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 16:00	1
Arsenic	**0.00269**		0.00200		mg/L		06/18/18 10:00	06/26/18 16:00	1
Barium	**0.295**		0.00200		mg/L		06/18/18 10:00	06/26/18 16:00	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 16:00	1
Boron	**0.203**		0.200		mg/L		06/18/18 10:00	06/26/18 16:00	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 16:00	1
Calcium	**102**		0.200		mg/L		06/18/18 10:00	06/26/18 16:00	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 16:00	1
Cobalt	**0.00251**		0.000500		mg/L		06/18/18 10:00	06/26/18 16:00	1
Lead	**0.00623**		0.000500		mg/L		06/18/18 10:00	06/26/18 16:00	1
Lithium	**0.0438**		0.0100		mg/L		06/18/18 10:00	06/26/18 16:00	1
Molybdenum	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 16:00	1
Selenium	**0.00535**		0.00500		mg/L		06/18/18 10:00	06/26/18 16:00	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 16:00	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**504**		30.0		mg/L			06/11/18 09:27	1

Client Sample ID: DUP

Date Collected: 06/06/18 00:00
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-8

Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15.9**		5.00		mg/L			06/14/18 19:40	5
Fluoride	<0.500		0.500		mg/L			06/14/18 19:40	5
Sulfate	**275**		10.0		mg/L			06/15/18 10:28	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00345**		0.00100		mg/L		06/18/18 10:00	06/26/18 16:03	1
Arsenic	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 16:03	1
Barium	**0.183**		0.00200		mg/L		06/18/18 10:00	06/26/18 16:03	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 16:03	1
Boron	**0.389**		0.200		mg/L		06/18/18 10:00	06/26/18 16:03	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 16:03	1
Calcium	**223**		0.200		mg/L		06/18/18 10:00	06/26/18 16:03	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 16:03	1
Cobalt	**0.00127**		0.000500		mg/L		06/18/18 10:00	06/26/18 16:03	1
Lead	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 16:03	1
Lithium	**0.0205**		0.0100		mg/L		06/18/18 10:00	06/26/18 16:03	1
Molybdenum	**0.136**		0.00200		mg/L		06/18/18 10:00	06/26/18 16:03	1
Selenium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 16:03	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 16:03	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**900**		60.0		mg/L			06/11/18 09:27	1

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.317**		0.160	0.163	1.00	0.157	pCi/L	06/16/18 12:16	07/11/18 05:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*06/16/18 12:16*	*07/11/18 05:45*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.758**		0.253	0.263	1.00	0.334	pCi/L	06/16/18 13:10	07/10/18 14:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*100*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:40*	*1*
Y Carrier	*93.5*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:40*	*1*

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: DUP
Date Collected: 06/06/18 00:00
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-8
Matrix: Ground Water

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.07		0.299	0.309	5.00	0.334	pCi/L		07/12/18 15:51	1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-206685/3
Matrix: Water
Analysis Batch: 206685

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			06/14/18 11:27	1
Fluoride	<0.100		0.100		mg/L			06/14/18 11:27	1
Sulfate	<1.00		1.00		mg/L			06/14/18 11:27	1

Lab Sample ID: LCS 310-206685/4
Matrix: Water
Analysis Batch: 206685

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.532		mg/L		100	90 - 110
Fluoride	1.50	1.527		mg/L		102	90 - 110
Sulfate	7.50	7.609		mg/L		101	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-206582/1-A
Matrix: Water
Analysis Batch: 207740

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 206582

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 14:37	1
Arsenic	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 14:37	1
Barium	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 14:37	1
Beryllium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 14:37	1
Boron	<0.200		0.200		mg/L		06/18/18 10:00	06/26/18 14:37	1
Cadmium	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 14:37	1
Calcium	<0.200		0.200		mg/L		06/18/18 10:00	06/26/18 14:37	1
Chromium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 14:37	1
Cobalt	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 14:37	1
Lead	<0.000500		0.000500		mg/L		06/18/18 10:00	06/26/18 14:37	1
Lithium	<0.0100		0.0100		mg/L		06/18/18 10:00	06/26/18 14:37	1
Molybdenum	<0.00200		0.00200		mg/L		06/18/18 10:00	06/26/18 14:37	1
Selenium	<0.00500		0.00500		mg/L		06/18/18 10:00	06/26/18 14:37	1
Thallium	<0.00100		0.00100		mg/L		06/18/18 10:00	06/26/18 14:37	1

Lab Sample ID: LCS 310-206582/2-A
Matrix: Water
Analysis Batch: 207740

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 206582

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0200	0.02071		mg/L		104	80 - 120
Arsenic	0.0400	0.03875		mg/L		97	80 - 120
Barium	0.0400	0.04256		mg/L		106	80 - 120
Beryllium	0.0200	0.02281		mg/L		114	80 - 120
Boron	0.880	0.8984		mg/L		102	80 - 120
Cadmium	0.0200	0.02170		mg/L		108	80 - 120
Calcium	2.00	2.049		mg/L		102	80 - 120
Chromium	0.0400	0.04340		mg/L		108	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-206582/2-A
Matrix: Water
Analysis Batch: 207740

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 206582

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cobalt			0.0200	0.02132		mg/L		107	80 - 120		
Lead			0.0200	0.02174		mg/L		109	80 - 120		
Lithium			0.100	0.09872		mg/L		99	80 - 120		
Molybdenum			0.0400	0.04197		mg/L		105	80 - 120		
Selenium			0.0400	0.03824		mg/L		96	80 - 120		
Thallium			0.0160	0.01748		mg/L		109	80 - 120		

Lab Sample ID: 310-132097-3 DU
Matrix: Ground Water
Analysis Batch: 207740

Client Sample ID: MW3
Prep Type: Total/NA
Prep Batch: 206582

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	<0.00100			<0.00100		mg/L				NC	20
Arsenic	0.00835			0.008512		mg/L				2	20
Barium	0.163			0.1713		mg/L				5	20
Beryllium	<0.00100			<0.00100		mg/L				NC	20
Boron	0.654			0.6906		mg/L				5	20
Cadmium	<0.000500			<0.000500		mg/L				NC	20
Calcium	198			204.7		mg/L				3	20
Chromium	<0.00500			<0.00500		mg/L				NC	20
Cobalt	0.00768			0.007882		mg/L				3	20
Lead	<0.000500			<0.000500		mg/L				NC	20
Lithium	0.0182			0.01848		mg/L				2	20
Molybdenum	0.0628			0.06477		mg/L				3	20
Selenium	<0.00500			<0.00500		mg/L				NC	20
Thallium	<0.00100			<0.00100		mg/L				NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-206100/1-A
Matrix: Water
Analysis Batch: 206448

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 206100

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		06/12/18 10:00	06/13/18 12:26	1

Lab Sample ID: LCS 310-206100/2-A
Matrix: Water
Analysis Batch: 206448

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 206100

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.00167	0.001638		mg/L		98	80 - 120		

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-206090/1
Matrix: Water
Analysis Batch: 206090

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			06/11/18 09:27	1

Lab Sample ID: LCS 310-206090/2
Matrix: Water
Analysis Batch: 206090

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	1024		mg/L		102	90 - 110

Lab Sample ID: 310-132097-1 DU
Matrix: Ground Water
Analysis Batch: 206090

Client Sample ID: MW7
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	528		540.0		mg/L		2	24

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-370361/21-A
Matrix: Water
Analysis Batch: 374349

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370361

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.08753	U	0.109	0.109	1.00	0.178	pCi/L	06/14/18 09:54	07/06/18 20:02	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*06/14/18 09:54*	*07/06/18 20:02*	*1*

Lab Sample ID: LCS 160-370361/1-A
Matrix: Water
Analysis Batch: 374218

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370361

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Radium-226	11.8	10.33		1.19	1.00	0.199	pCi/L	88	68 - 137

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*

Lab Sample ID: LCSD 160-370361/2-A
Matrix: Water
Analysis Batch: 374349

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370361

Analyte	Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	11.8	11.00		1.27	1.00	0.166	pCi/L	93	68 - 137	0.27	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCSD 160-370361/2-A
Matrix: Water
Analysis Batch: 374349

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370361

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	103		40 - 110

Lab Sample ID: MB 160-370636/23-A
Matrix: Water
Analysis Batch: 374666

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370636

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.08653	U	0.0978	0.0981	1.00	0.155	pCi/L	06/15/18 10:05	07/10/18 08:35	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	109		40 - 110	06/15/18 10:05	07/10/18 08:35	1

Lab Sample ID: LCS 160-370636/1-A
Matrix: Water
Analysis Batch: 374666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370636

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	10.09		1.18	1.00	0.170	pCi/L	85	68 - 137		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	108		40 - 110

Lab Sample ID: LCSD 160-370636/2-A
Matrix: Water
Analysis Batch: 374666

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370636

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.35		1.21	1.00	0.161	pCi/L	88	68 - 137	0.11	1

Carrier	LCSD %Yield	LCSD Qualifier	Limits
Ba Carrier	109		40 - 110

Lab Sample ID: MB 160-370790/23-A
Matrix: Water
Analysis Batch: 374837

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370790

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1626	U	0.143	0.143	1.00	0.207	pCi/L	06/16/18 12:16	07/11/18 05:50	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	105		40 - 110	06/16/18 12:16	07/11/18 05:50	1

Method: 9315 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-370790/1-A
Matrix: Water
Analysis Batch: 374834

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370790

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	10.78		1.31	1.00	0.170	pCi/L	91	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Lab Sample ID: LCSD 160-370790/2-A
Matrix: Water
Analysis Batch: 374834

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370790

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.8	10.52		1.26	1.00	0.174	pCi/L	89	68 - 137	0.10	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-370435/21-A
Matrix: Water
Analysis Batch: 374200

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370435

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1112	U	0.224	0.225	1.00	0.382	pCi/L	06/14/18 10:34	07/05/18 13:57	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*103*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*
Y Carrier	*92.7*		*40 - 110*	*06/14/18 10:34*	*07/05/18 13:57*	*1*

Lab Sample ID: LCS 160-370435/1-A
Matrix: Water
Analysis Batch: 374195

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370435

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.17	9.740		1.10	1.00	0.297	pCi/L	119	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*101*		*40 - 110*
Y Carrier	*91.2*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCSD 160-370435/2-A
Matrix: Water
Analysis Batch: 374195

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370435

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.17	9.392		1.06	1.00	0.323	pCi/L	115	56 - 140	0.16	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*91.2*		*40 - 110*

Lab Sample ID: MB 160-370639/23-A
Matrix: Water
Analysis Batch: 374497

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370639

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.05544	U	0.180	0.180	1.00	0.336	pCi/L	06/15/18 11:02	07/09/18 09:30	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*06/15/18 11:02*	*07/09/18 09:30*	*1*
Y Carrier	*82.6*		*40 - 110*	*06/15/18 11:02*	*07/09/18 09:30*	*1*

Lab Sample ID: LCS 160-370639/1-A
Matrix: Water
Analysis Batch: 374440

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370639

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.16	9.040		1.04	1.00	0.356	pCi/L	111	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*108*		*40 - 110*
Y Carrier	*83.4*		*40 - 110*

Lab Sample ID: LCSD 160-370639/2-A
Matrix: Water
Analysis Batch: 374440

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370639

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.16	9.007		1.04	1.00	0.378	pCi/L	110	56 - 140	0.02	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*109*		*40 - 110*
Y Carrier	*84.1*		*40 - 110*

Method: 9320 - Radium-228 (GFPC) (Continued)

Lab Sample ID: MB 160-370793/23-A
Matrix: Water
Analysis Batch: 374561

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 370793

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2117	U	0.207	0.208	1.00	0.336	pCi/L	06/16/18 13:10	07/10/18 14:44	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*105*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:44*	*1*
Y Carrier	*88.2*		*40 - 110*	*06/16/18 13:10*	*07/10/18 14:44*	*1*

Lab Sample ID: LCS 160-370793/1-A
Matrix: Water
Analysis Batch: 374666

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 370793

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.16	8.143		0.955	1.00	0.347	pCi/L	100	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*93.5*		*40 - 110*

Lab Sample ID: LCSD 160-370793/2-A
Matrix: Water
Analysis Batch: 374666

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 370793

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.16	8.321		0.965	1.00	0.310	pCi/L	102	56 - 140	0.09	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*106*		*40 - 110*
Y Carrier	*91.6*		*40 - 110*

HPLC/IC

Analysis Batch: 206685

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	9056A	
310-132097-2	MW2	Total/NA	Ground Water	9056A	
310-132097-2	MW2	Total/NA	Ground Water	9056A	
310-132097-3	MW3	Total/NA	Ground Water	9056A	
310-132097-3	MW3	Total/NA	Ground Water	9056A	
310-132097-4	MW4	Total/NA	Ground Water	9056A	
310-132097-5	MW5	Total/NA	Ground Water	9056A	
310-132097-5	MW5	Total/NA	Ground Water	9056A	
310-132097-6	MW6	Total/NA	Ground Water	9056A	
310-132097-7	MW13	Total/NA	Ground Water	9056A	
310-132097-8	DUP	Total/NA	Ground Water	9056A	
310-132097-8	DUP	Total/NA	Ground Water	9056A	
MB 310-206685/3	Method Blank	Total/NA	Water	9056A	
LCS 310-206685/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 206100

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	7470A	
310-132097-2	MW2	Total/NA	Ground Water	7470A	
310-132097-3	MW3	Total/NA	Ground Water	7470A	
310-132097-4	MW4	Total/NA	Ground Water	7470A	
310-132097-5	MW5	Total/NA	Ground Water	7470A	
310-132097-6	MW6	Total/NA	Ground Water	7470A	
310-132097-7	MW13	Total/NA	Ground Water	7470A	
310-132097-8	DUP	Total/NA	Ground Water	7470A	
MB 310-206100/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-206100/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 206448

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	7470A	206100
310-132097-2	MW2	Total/NA	Ground Water	7470A	206100
310-132097-3	MW3	Total/NA	Ground Water	7470A	206100
310-132097-4	MW4	Total/NA	Ground Water	7470A	206100
310-132097-5	MW5	Total/NA	Ground Water	7470A	206100
310-132097-6	MW6	Total/NA	Ground Water	7470A	206100
310-132097-7	MW13	Total/NA	Ground Water	7470A	206100
310-132097-8	DUP	Total/NA	Ground Water	7470A	206100
MB 310-206100/1-A	Method Blank	Total/NA	Water	7470A	206100
LCS 310-206100/2-A	Lab Control Sample	Total/NA	Water	7470A	206100

Prep Batch: 206582

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	3010A	
310-132097-2	MW2	Total/NA	Ground Water	3010A	
310-132097-3	MW3	Total/NA	Ground Water	3010A	
310-132097-4	MW4	Total/NA	Ground Water	3010A	
310-132097-5	MW5	Total/NA	Ground Water	3010A	

Metals (Continued)

Prep Batch: 206582 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-6	MW6	Total/NA	Ground Water	3010A	
310-132097-7	MW13	Total/NA	Ground Water	3010A	
310-132097-8	DUP	Total/NA	Ground Water	3010A	
MB 310-206582/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-206582/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-132097-3 DU	MW3	Total/NA	Ground Water	3010A	

Analysis Batch: 207740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	6020A	206582
310-132097-2	MW2	Total/NA	Ground Water	6020A	206582
310-132097-3	MW3	Total/NA	Ground Water	6020A	206582
310-132097-4	MW4	Total/NA	Ground Water	6020A	206582
310-132097-5	MW5	Total/NA	Ground Water	6020A	206582
310-132097-6	MW6	Total/NA	Ground Water	6020A	206582
310-132097-7	MW13	Total/NA	Ground Water	6020A	206582
310-132097-8	DUP	Total/NA	Ground Water	6020A	206582
MB 310-206582/1-A	Method Blank	Total/NA	Water	6020A	206582
LCS 310-206582/2-A	Lab Control Sample	Total/NA	Water	6020A	206582
310-132097-3 DU	MW3	Total/NA	Ground Water	6020A	206582

General Chemistry

Analysis Batch: 206090

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	SM 2540C	
310-132097-2	MW2	Total/NA	Ground Water	SM 2540C	
310-132097-3	MW3	Total/NA	Ground Water	SM 2540C	
310-132097-4	MW4	Total/NA	Ground Water	SM 2540C	
310-132097-5	MW5	Total/NA	Ground Water	SM 2540C	
310-132097-6	MW6	Total/NA	Ground Water	SM 2540C	
310-132097-7	MW13	Total/NA	Ground Water	SM 2540C	
310-132097-8	DUP	Total/NA	Ground Water	SM 2540C	
MB 310-206090/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-206090/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-132097-1 DU	MW7	Total/NA	Ground Water	SM 2540C	

Rad

Prep Batch: 370361

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	PrecSep-21	
310-132097-2	MW2	Total/NA	Ground Water	PrecSep-21	
MB 160-370361/21-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-370361/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-370361/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 370435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-1	MW7	Total/NA	Ground Water	PrecSep_0	

Rad (Continued)

Prep Batch: 370435 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-2	MW2	Total/NA	Ground Water	PrecSep_0	
MB 160-370435/21-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-370435/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-370435/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 370636

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-3	MW3	Total/NA	Ground Water	PrecSep-21	
MB 160-370636/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-370636/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-370636/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 370639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-3	MW3	Total/NA	Ground Water	PrecSep_0	
MB 160-370639/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-370639/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-370639/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Prep Batch: 370790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-5	MW5	Total/NA	Ground Water	PrecSep-21	
310-132097-6	MW6	Total/NA	Ground Water	PrecSep-21	
310-132097-8	DUP	Total/NA	Ground Water	PrecSep-21	
MB 160-370790/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-370790/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-370790/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 370793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-132097-5	MW5	Total/NA	Ground Water	PrecSep_0	
310-132097-6	MW6	Total/NA	Ground Water	PrecSep_0	
310-132097-8	DUP	Total/NA	Ground Water	PrecSep_0	
MB 160-370793/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-370793/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-370793/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Client Sample ID: MW7

Lab Sample ID: 310-132097-1

Date Collected: 06/06/18 15:35

Matrix: Ground Water

Date Received: 06/08/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 17:04	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:38	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:45	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF
Total/NA	Prep	PrecSep-21			370361	06/14/18 09:54	JLC	TAL SL
Total/NA	Analysis	9315		1	374218	07/06/18 20:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370435	06/14/18 10:34	JLC	TAL SL
Total/NA	Analysis	9320		1	374200	07/05/18 13:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Client Sample ID: MW2

Lab Sample ID: 310-132097-2

Date Collected: 06/06/18 14:17

Matrix: Ground Water

Date Received: 06/08/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 17:20	HED	TAL CF
Total/NA	Analysis	9056A		10	206685	06/15/18 06:09	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:41	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:47	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF
Total/NA	Prep	PrecSep-21			370361	06/14/18 09:54	JLC	TAL SL
Total/NA	Analysis	9315		1	374218	07/06/18 20:07	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370435	06/14/18 10:34	JLC	TAL SL
Total/NA	Analysis	9320		1	374200	07/05/18 13:57	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Client Sample ID: MW3

Lab Sample ID: 310-132097-3

Date Collected: 06/06/18 13:36

Matrix: Ground Water

Date Received: 06/08/18 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 17:35	HED	TAL CF
Total/NA	Analysis	9056A		10	206685	06/15/18 06:26	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:45	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:48	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW3

Date Collected: 06/06/18 13:36
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			370636	06/15/18 10:05	JLC	TAL SL
Total/NA	Analysis	9315		1	374667	07/10/18 16:38	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370639	06/15/18 11:02	JLC	TAL SL
Total/NA	Analysis	9320		1	374440	07/09/18 09:33	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Client Sample ID: MW4

Date Collected: 06/06/18 10:08
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 17:51	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:51	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:50	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF

Client Sample ID: MW5

Date Collected: 06/05/18 11:16
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		20	206685	06/14/18 18:07	HED	TAL CF
Total/NA	Analysis	9056A		5	206685	06/14/18 18:22	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:54	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:52	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF
Total/NA	Prep	PrecSep-21			370790	06/16/18 12:16	JLC	TAL SL
Total/NA	Analysis	9315		1	374836	07/11/18 05:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370793	06/16/18 13:10	JLC	TAL SL
Total/NA	Analysis	9320		1	374666	07/10/18 14:39	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Client Sample ID: MW6

Date Collected: 06/06/18 12:19
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 18:38	HED	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Client Sample ID: MW6

Date Collected: 06/06/18 12:19
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 15:57	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:53	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF
Total/NA	Prep	PrecSep-21			370790	06/16/18 12:16	JLC	TAL SL
Total/NA	Analysis	9315		1	374836	07/11/18 05:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370793	06/16/18 13:10	JLC	TAL SL
Total/NA	Analysis	9320		1	374666	07/10/18 14:39	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Client Sample ID: MW13

Date Collected: 06/06/18 09:00
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-7

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 18:53	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 16:00	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:55	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF

Client Sample ID: DUP

Date Collected: 06/06/18 00:00
Date Received: 06/08/18 09:30

Lab Sample ID: 310-132097-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	206685	06/14/18 19:40	HED	TAL CF
Total/NA	Analysis	9056A		10	206685	06/15/18 10:28	HED	TAL CF
Total/NA	Prep	3010A			206582	06/18/18 10:00	CJT	TAL CF
Total/NA	Analysis	6020A		1	207740	06/26/18 16:03	SAD	TAL CF
Total/NA	Prep	7470A			206100	06/12/18 10:00	JNR	TAL CF
Total/NA	Analysis	7470A		1	206448	06/13/18 12:56	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	206090	06/11/18 09:27	SAS	TAL CF
Total/NA	Prep	PrecSep-21			370790	06/16/18 12:16	JLC	TAL SL
Total/NA	Analysis	9315		1	374836	07/11/18 05:45	RTM	TAL SL
Total/NA	Prep	PrecSep_0			370793	06/16/18 13:10	JLC	TAL SL
Total/NA	Analysis	9320		1	374666	07/10/18 14:40	RTM	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	375032	07/12/18 15:51	RTM	TAL SL

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-18
Georgia	State Program	4	IA100001 (OR)	09-29-18
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-18
North Dakota	State Program	8	R-186	09-29-18
Oregon	NELAP	10	IA100001	09-29-18

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-18 *
Nevada	State Program	9	MO000542018-1	07-31-18 *
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18 *
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18 *
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18 *
Texas	NELAP	6	T104704193-17-11	07-31-18 *
US Fish & Wildlife	Federal		058448	07-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18 *
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

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

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None
SM = "Standard Methods For The Examination Of Water And Wastewater"
SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401
TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-132097 Chain of Custody

Cooler/Sample Receipt and Temperature

Client Information

Client: Omaha Public Power District

City/State: Omaha NF | Project: Nebraska City Unit 2 Landfill

Receipt Information

Date/Time Received: 6/8/18 0930 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☒ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: H | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 3.6 | Corrected Temp (°C): 3.6

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Des Moines
310503

Cooler/Sample Receipt and Temperature Lo

Client Information

Client: Omaha Public Power District

City/State: Omaha NE | Project: Nebraska City Unit 2 Landfill

Receipt Information

Date/Time Received: 6/8/18 0930 | Received By: LAB

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☒ Yes	☐ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: IT | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.9 | Corrected Temp (°C): 1.9

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

#31077

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Chain of Custody Record

Client Information	Sampler:	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No:
Client Contact: Bryan Lorence	Phone:	E-Mail: shawn.hayes@testamericainc.com		Page:
Company: Omaha Public Power District				Job #:
Address: 444 South 16th Street Mall 9E/EP1	Due Date Requested:			
City: Omaha	TAT Requested (days):			
State, Zip: NE, 68102-2247				
Phone: 402-636-2515(Tel)	PO #			
Email: balorence@oppd.com	WO #:			
Project Name: Nebraska City Unit 2 Landfill CCR	TestAmerica Project #: 31007559			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra226, Combined Ra226 and Ra228	6020A CCR List, 7470A Mercury	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW7	6/6/2018	15 35	G	GW			X	X	X		
MW2	6/6/2018	14 17	G	GW			X	X	X		
MW3	6/6/2018	13 36	G	GW			X	X	X		
MW4	6/6/2018	11 55	G	GW			X	X	X		use in NCl Report as NC2 + MW4
MW5	6/6/2018	14 16	G	GW			X	X	X		
MW6	6/6/2018	12:19	G	GW			X	X	X		
MW13	6/6/2018	9:00	G	GW			X	X	X		use in NCl Report
DUP	6/6/2018		G	GW			X	X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6/7/2018 13:00	Company: OPPD	Received by:	Date/Time: 6/8/18 0930	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

7/12/2018

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW7	310-132097-A-1	Plastic 250ml - with Nitric Acid	<2		
MW7	310-132097-C-1	Plastic 1 liter - Nitric Acid	<2		
MW7	310-132097-D-1	Plastic 1 liter - Nitric Acid	<2		
MW2	310-132097-A-2	Plastic 250ml - with Nitric Acid	<2		
MW2	310-132097-C-2	Plastic 1 liter - Nitric Acid	<2		
MW2	310-132097-D-2	Plastic 1 liter - Nitric Acid	<2		
MW3	310-132097-A-3	Plastic 250ml - with Nitric Acid	<2		
MW3	310-132097-C-3	Plastic 1 liter - Nitric Acid	<2		
MW3	310-132097-D-3	Plastic 1 liter - Nitric Acid	<2		
MW4	310-132097-A-4	Plastic 250ml - with Nitric Acid	<2		
MW4	310-132097-C-4	Plastic 1 liter - Nitric Acid	<2		
MW4	310-132097-D-4	Plastic 1 liter - Nitric Acid	<2		
MW5	310-132097-A-5	Plastic 250ml - with Nitric Acid	<2		
MW5	310-132097-C-5	Plastic 1 liter - Nitric Acid	<2		
MW5	310-132097-D-5	Plastic 1 liter - Nitric Acid	<2		
MW6	310-132097-A-6	Plastic 250ml - with Nitric Acid	<2		
MW6	310-132097-C-6	Plastic 1 liter - Nitric Acid	<2		
MW6	310-132097-D-6	Plastic 1 liter - Nitric Acid	<2		
MW13	310-132097-A-7	Plastic 250ml - with Nitric Acid	<2		
MW13	310-132097-C-7	Plastic 1 liter - Nitric Acid	<2		
MW13	310-132097-D-7	Plastic 1 liter - Nitric Acid	<2		
DUP	310-132097-A-8	Plastic 250ml - with Nitric Acid	<2		
DUP	310-132097-C-8	Plastic 1 liter - Nitric Acid	<2		
DUP	310-132097-D-8	Plastic 1 liter - Nitric Acid	<2		

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-132097-1

Login Number: 132097
List Number: 1
Creator: Hummel, Matt R

List Source: TestAmerica Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
310-132097-1	MW7	97.3
310-132097-2	MW2	97.3
310-132097-3	MW3	101
310-132097-5	MW5	101
310-132097-6	MW6	100
310-132097-8	DUP	100

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)
LCS 160-370361/1-A	Lab Control Sample	101
LCS 160-370636/1-A	Lab Control Sample	108
LCS 160-370790/1-A	Lab Control Sample	103
LCSD 160-370361/2-A	Lab Control Sample Dup	103
LCSD 160-370636/2-A	Lab Control Sample Dup	109
LCSD 160-370790/2-A	Lab Control Sample Dup	106
MB 160-370361/21-A	Method Blank	103
MB 160-370636/23-A	Method Blank	109
MB 160-370790/23-A	Method Blank	105

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits) Ba Carrier (40-110)	Y Carrier (40-110)
310-132097-1	MW7	97.3	91.6
310-132097-2	MW2	97.3	90.1
310-132097-3	MW3	101	80.0
310-132097-5	MW5	101	92.0
310-132097-6	MW6	100	89.7
310-132097-8	DUP	100	93.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-132097-1

Method: 9320 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-370435/1-A	Lab Control Sample	101	91.2
LCS 160-370639/1-A	Lab Control Sample	108	83.4
LCS 160-370793/1-A	Lab Control Sample	103	93.5
LCSD 160-370435/2-A	Lab Control Sample Dup	103	91.2
LCSD 160-370639/2-A	Lab Control Sample Dup	109	84.1
LCSD 160-370793/2-A	Lab Control Sample Dup	106	91.6
MB 160-370435/21-A	Method Blank	103	92.7
MB 160-370639/23-A	Method Blank	109	82.6
MB 160-370793/23-A	Method Blank	105	88.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-141082-1
Client Project/Site: Nebraska City Unit 2

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing

Authorized for release by:
10/25/2018 10:49:35 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Job ID: 310-141082-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-141082-1

Comments
No additional comments.

Receipt
The samples were received on 10/6/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.4º C.

HPLC/IC
Method(s) 9056A: The following samples were diluted due to the nature of the sample matrix: MW2 (310-141082-1), MW5 (310-141082-3), MW6 (310-141082-4) and DUP (310-141082-6). Elevated reporting limits (RLs) are provided.

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

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

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

Job ID: 310-141085-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-141085-1

Comments
No additional comments.

Receipt
The samples were received on 10/6/2018 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 0.2º C, 0.8º C, 1.1º C, 1.4º C and 2.0º C.

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

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

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-141082-1	MW2	Ground Water	10/03/18 14:47	10/06/18 09:30
310-141082-2	MW3	Ground Water	10/03/18 12:18	10/06/18 09:30
310-141082-3	MW5	Ground Water	10/03/18 09:48	10/06/18 09:30
310-141082-4	MW6	Ground Water	10/03/18 10:46	10/06/18 09:30
310-141082-5	MW7	Ground Water	10/03/18 11:38	10/06/18 09:30
310-141082-6	DUP	Ground Water	10/03/18 00:00	10/06/18 09:30
310-141085-1	MW4/MW4NC2	Ground Water	10/03/18 09:48	10/06/18 13:48
310-141085-2	MW13	Ground Water	10/03/18 08:43	10/06/18 13:48

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW2 — Lab Sample ID: 310-141082-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	164		5.00		mg/L	5		9056A	Total/NA
Boron	0.438		0.200		mg/L	1		6020A	Total/NA
Calcium	167		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	668		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW3 — Lab Sample ID: 310-141082-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.74		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.523		0.500		mg/L	5		9056A	Total/NA
Sulfate	31.2		5.00		mg/L	5		9056A	Total/NA
Calcium	127		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	478		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW5 — Lab Sample ID: 310-141082-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.65		5.00		mg/L	5		9056A	Total/NA
Sulfate	503		20.0		mg/L	20		9056A	Total/NA
Boron	4.01		0.200		mg/L	1		6020A	Total/NA
Calcium	227		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	1230		60.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW6 — Lab Sample ID: 310-141082-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	200		5.00		mg/L	5		9056A	Total/NA
Boron	4.18		0.200		mg/L	1		6020A	Total/NA
Calcium	129		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	660		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW7 — Lab Sample ID: 310-141082-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.19		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.519		0.500		mg/L	5		9056A	Total/NA
Sulfate	11.6		5.00		mg/L	5		9056A	Total/NA
Calcium	122		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	494		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP — Lab Sample ID: 310-141082-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.15		5.00		mg/L	5		9056A	Total/NA
Sulfate	12.8		5.00		mg/L	5		9056A	Total/NA
Calcium	126		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	508		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW4/MW4NC2 — Lab Sample ID: 310-141085-1

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW4/MW4NC2 (Continued) — Lab Sample ID: 310-141085-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	42.4		5.00		mg/L	5		9056A	Total/NA
Calcium	117		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	520		30.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW13 — Lab Sample ID: 310-141085-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14.1		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.738		0.500		mg/L	5		9056A	Total/NA
Sulfate	33.6		5.00		mg/L	5		9056A	Total/NA
Calcium	87.3		0.200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	410		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW2
Date Collected: 10/03/18 14:47
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			10/13/18 04:10	5
Fluoride	<0.500		0.500		mg/L			10/13/18 04:10	5
Sulfate	**164**		5.00		mg/L			10/13/18 04:10	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**0.438**		0.200		mg/L		10/10/18 08:08	10/12/18 12:53	1
Calcium	**167**		0.200		mg/L		10/10/18 08:08	10/11/18 23:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**668**		30.0		mg/L			10/09/18 12:27	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW3
Date Collected: 10/03/18 12:18
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-2
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.74		5.00		mg/L			10/13/18 04:41	5
Fluoride	0.523		0.500		mg/L			10/13/18 04:41	5
Sulfate	31.2		5.00		mg/L			10/13/18 04:41	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 12:56	1
Calcium	127		0.200		mg/L		10/10/18 08:08	10/11/18 23:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	478		30.0		mg/L			10/09/18 12:27	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW5
Date Collected: 10/03/18 09:48
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-3
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**8.65**		5.00		mg/L			10/13/18 05:12	5
Fluoride	<0.500		0.500		mg/L			10/13/18 05:12	5
Sulfate	**503**		20.0		mg/L			10/13/18 05:27	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4.01**		0.200		mg/L		10/10/18 08:08	10/12/18 12:59	1
Calcium	**227**		0.200		mg/L		10/10/18 08:08	10/11/18 23:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**1230**		60.0		mg/L			10/09/18 12:27	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW6
Date Collected: 10/03/18 10:46
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-4
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			10/13/18 06:14	5
Fluoride	<0.500		0.500		mg/L			10/13/18 06:14	5
Sulfate	**200**		5.00		mg/L			10/13/18 06:14	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	**4.18**		0.200		mg/L		10/10/18 08:08	10/12/18 13:02	1
Calcium	**129**		0.200		mg/L		10/10/18 08:08	10/11/18 23:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**660**		30.0		mg/L			10/09/18 12:27	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW7
Date Collected: 10/03/18 11:38
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-5
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.19		5.00		mg/L			10/13/18 06:30	5
Fluoride	0.519		0.500		mg/L			10/13/18 06:30	5
Sulfate	11.6		5.00		mg/L			10/13/18 06:30	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 13:15	1
Calcium	122		0.200		mg/L		10/10/18 08:08	10/11/18 23:30	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	494		30.0		mg/L			10/09/18 12:27	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: DUP
Date Collected: 10/03/18 00:00
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-6
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**9.15**		5.00		mg/L			10/13/18 06:45	5
Fluoride	<0.500		0.500		mg/L			10/13/18 06:45	5
Sulfate	**12.8**		5.00		mg/L			10/13/18 06:45	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 13:18	1
Calcium	**126**		0.200		mg/L		10/10/18 08:08	10/11/18 23:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**508**		30.0		mg/L			10/09/18 12:27	1

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW4/MW4NC2
Date Collected: 10/03/18 09:48
Date Received: 10/06/18 13:48

Lab Sample ID: 310-141085-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<5.00		5.00		mg/L			10/13/18 07:32	5
Fluoride	<0.500		0.500		mg/L			10/13/18 07:32	5
Sulfate	**42.4**		5.00		mg/L			10/13/18 07:32	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 13:24	1
Calcium	**117**		0.200		mg/L		10/10/18 08:08	10/11/18 23:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**520**		30.0		mg/L			10/09/18 12:27	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW13
Date Collected: 10/03/18 08:43
Date Received: 10/06/18 13:48

Lab Sample ID: 310-141085-2
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14.1		5.00		mg/L			10/13/18 07:48	5
Fluoride	0.738		0.500		mg/L			10/13/18 07:48	5
Sulfate	33.6		5.00		mg/L			10/13/18 07:48	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 13:27	1
Calcium	87.3		0.200		mg/L		10/10/18 08:08	10/11/18 23:55	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	410		30.0		mg/L			10/09/18 12:27	1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-219062/3
Matrix: Water
Analysis Batch: 219062

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/13/18 01:49	1
Fluoride	<0.100		0.100		mg/L			10/13/18 01:49	1
Sulfate	<1.00		1.00		mg/L			10/13/18 01:49	1

Lab Sample ID: LCS 310-219062/4
Matrix: Water
Analysis Batch: 219062

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.783		mg/L		104	90 - 110
Fluoride	1.50	1.609		mg/L		107	90 - 110
Sulfate	7.50	7.731		mg/L		103	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-218356/1-A
Matrix: Water
Analysis Batch: 218768

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218356

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	<0.200		0.200		mg/L		10/10/18 08:08	10/11/18 22:37	1

Lab Sample ID: MB 310-218356/1-A
Matrix: Water
Analysis Batch: 218941

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218356

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 12:34	1

Lab Sample ID: LCS 310-218356/2-A
Matrix: Water
Analysis Batch: 218768

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Calcium	4.00	4.001		mg/L		100	80 - 120

Lab Sample ID: LCS 310-218356/2-A
Matrix: Water
Analysis Batch: 218941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Boron	0.900	0.8644		mg/L		96	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-218417/1
Matrix: Water
Analysis Batch: 218417

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/09/18 12:27	1

Lab Sample ID: LCS 310-218417/2
Matrix: Water
Analysis Batch: 218417

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	978.0		mg/L		98	90 - 110

Lab Sample ID: 310-141082-1 DU
Matrix: Ground Water
Analysis Batch: 218417

Client Sample ID: MW2
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	668		676.0		mg/L		1	24

HPLC/IC

Analysis Batch: 219062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141082-1	MW2	Total/NA	Ground Water	9056A	
310-141082-2	MW3	Total/NA	Ground Water	9056A	
310-141082-3	MW5	Total/NA	Ground Water	9056A	
310-141082-3	MW5	Total/NA	Ground Water	9056A	
310-141082-4	MW6	Total/NA	Ground Water	9056A	
310-141082-5	MW7	Total/NA	Ground Water	9056A	
310-141082-6	DUP	Total/NA	Ground Water	9056A	
310-141085-1	MW4/MW4NC2	Total/NA	Ground Water	9056A	
310-141085-2	MW13	Total/NA	Ground Water	9056A	
MB 310-219062/3	Method Blank	Total/NA	Water	9056A	
LCS 310-219062/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 218356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141082-1	MW2	Total/NA	Ground Water	3010A	
310-141082-2	MW3	Total/NA	Ground Water	3010A	
310-141082-3	MW5	Total/NA	Ground Water	3010A	
310-141082-4	MW6	Total/NA	Ground Water	3010A	
310-141082-5	MW7	Total/NA	Ground Water	3010A	
310-141082-6	DUP	Total/NA	Ground Water	3010A	
310-141085-1	MW4/MW4NC2	Total/NA	Ground Water	3010A	
310-141085-2	MW13	Total/NA	Ground Water	3010A	
MB 310-218356/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 218768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141082-1	MW2	Total/NA	Ground Water	6020A	218356
310-141082-2	MW3	Total/NA	Ground Water	6020A	218356
310-141082-3	MW5	Total/NA	Ground Water	6020A	218356
310-141082-4	MW6	Total/NA	Ground Water	6020A	218356
310-141082-5	MW7	Total/NA	Ground Water	6020A	218356
310-141082-6	DUP	Total/NA	Ground Water	6020A	218356
310-141085-1	MW4/MW4NC2	Total/NA	Ground Water	6020A	218356
310-141085-2	MW13	Total/NA	Ground Water	6020A	218356
MB 310-218356/1-A	Method Blank	Total/NA	Water	6020A	218356
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	6020A	218356

Analysis Batch: 218941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141082-1	MW2	Total/NA	Ground Water	6020A	218356
310-141082-2	MW3	Total/NA	Ground Water	6020A	218356
310-141082-3	MW5	Total/NA	Ground Water	6020A	218356
310-141082-4	MW6	Total/NA	Ground Water	6020A	218356
310-141082-5	MW7	Total/NA	Ground Water	6020A	218356
310-141082-6	DUP	Total/NA	Ground Water	6020A	218356
310-141085-1	MW4/MW4NC2	Total/NA	Ground Water	6020A	218356
310-141085-2	MW13	Total/NA	Ground Water	6020A	218356

Metals (Continued)

Analysis Batch: 218941 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-218356/1-A	Method Blank	Total/NA	Water	6020A	218356
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	6020A	218356

General Chemistry

Analysis Batch: 218417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141082-1	MW2	Total/NA	Ground Water	SM 2540C	
310-141082-2	MW3	Total/NA	Ground Water	SM 2540C	
310-141082-3	MW5	Total/NA	Ground Water	SM 2540C	
310-141082-4	MW6	Total/NA	Ground Water	SM 2540C	
310-141082-5	MW7	Total/NA	Ground Water	SM 2540C	
310-141082-6	DUP	Total/NA	Ground Water	SM 2540C	
310-141085-1	MW4/MW4NC2	Total/NA	Ground Water	SM 2540C	
310-141085-2	MW13	Total/NA	Ground Water	SM 2540C	
MB 310-218417/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-218417/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-141082-1 DU	MW2	Total/NA	Ground Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW2

Date Collected: 10/03/18 14:47
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 04:10	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:18	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 12:53	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: MW3

Date Collected: 10/03/18 12:18
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 04:41	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:21	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 12:56	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: MW5

Date Collected: 10/03/18 09:48
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-3
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 05:12	SAD	TAL CF
Total/NA	Analysis	9056A		20	219062	10/13/18 05:27	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:24	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 12:59	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: MW6

Date Collected: 10/03/18 10:46
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-4
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 06:14	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:27	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:02	SAD	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW6

Date Collected: 10/03/18 10:46
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: MW7

Date Collected: 10/03/18 11:38
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 06:30	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:30	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:15	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: DUP

Date Collected: 10/03/18 00:00
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141082-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 06:45	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:43	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:18	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Client Sample ID: MW4/MW4NC2

Date Collected: 10/03/18 09:48
Date Received: 10/06/18 13:48

Lab Sample ID: 310-141085-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 07:32	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:52	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:24	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Client Sample ID: MW13
Date Collected: 10/03/18 08:43
Date Received: 10/06/18 13:48

Lab Sample ID: 310-141085-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 07:48	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:55	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:27	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-18 *
Oregon	NELAP	10	IA100001	09-29-19

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

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141082-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica
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310-141082 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Omaha Public Power District

City/State: Omaha NE | Project: Unit 2 CCR Landfill

Receipt Information

Date/Time Received: 10/6/18 0930 | Received By: MRH

Delivery Type: ☐ UPS ☒ FedEx Sat ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID: 04

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # ____ of ____

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.4 | Corrected Temp (°C): 1.4

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica Omaha SC
268

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Kyle K. Uhing	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No:
Client Contact: Kyle Uhing	Phone: (402) 636-2515	E-Mail: shawn.hayes@testamericainc.com		Page:
Company: Omaha Public Power District				Job #:

Address: 444 South 16th Street Mall 9E/EP1	Due Date Requested:
City: Omaha	TAT Requested (days):
State, Zip: NE, 68102-2247	
Phone: 402-636-2515	PO #:
Email: kkuhing@oppd.com	WO #:
Project Name: Nebraska City Station Unit 2 CCR	TestAmerica Project #: 31007559
Site: Nebraska City Station Unit 2	SSOW#:

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total 6020A CCR List, B, Ca, see attached list	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	N		
MW2	10/3/18	14:47	G	W	N		X	X	2	See attached list for specific analysis.
MW3		12:18	G	W	N		X	X	2	See attached list for specific analysis.
MW4		9:48	G	W	N		X	X	2	See attached list for specific analysis.
MW5		10:46	G	W	N		X	X	2	See attached list for specific analysis.
MW6		11:38	G	W	N		X	X	2	See attached list for specific analysis.
MW7		15:25	G	W	N		X	X	2	See attached list for specific analysis.
MW13		8:43	G	W	N		X	X	2	See attached list for specific analysis.
DUP1 (MW2)		--	G	W	N		X	X	2	See attached list for specific analysis.

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Kyle K. Uhing	10/5/18 1504	OPPD		10/5/18 1504	TestA
2		10/5/18 1700	TestA		10/6/18 0930	TACF
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW2	310-141082-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW3	310-141082-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW5	310-141082-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW6	310-141082-A-4	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW7	310-141082-A-5	Plastic 250ml - with Nitric Acid	<2	_____	_____
DUP	310-141082-A-6	Plastic 250ml - with Nitric Acid	<2	_____	_____

Groundwater Sampling October 2018

Nebraska City 2

CCR

MW13 – boron, calcium, chloride, fluoride, sulfate, TDS

MW4 – boron, calcium, chloride, fluoride, sulfate, TDS

MW5 – boron, calcium, chloride, fluoride, sulfate, TDS

MW6 – boron, calcium, chloride, fluoride, sulfate, TDS

MW3 – boron, calcium, chloride, fluoride, sulfate, TDS

MW2 – boron, calcium, chloride, fluoride, sulfate, TDS

MW7 – boron, calcium, chloride, fluoride, sulfate, TDS

DUP1 – boron, calcium, chloride, fluoride, sulfate, TDS

Title 132 Landfill

MW13 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW4 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW5 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW6 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW3 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW2 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW7 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

DUP1 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

New Monitoring Wells / CCR

MW8 – boron, calcium, chloride, fluoride, sulfate, TDS, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226+228

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-141082-1

Login Number: 141082
List Number: 1
Creator: Homolar, Dana J

List Source: TestAmerica Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-141084-1
Client Project/Site: Nebraska City Unit 2

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing

Authorized for release by:
10/25/2018 8:29:52 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Job ID: 310-141084-1

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-141084-1

Comments
No additional comments.

Receipt
The sample was received on 10/6/2018 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.0º C.

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

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

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-141084-1	MW8	Ground Water	10/03/18 13:15	10/06/18 09:30

Detection Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Client Sample ID: MW8

Lab Sample ID: 310-141084-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.05		5.00		mg/L	5		9056A	Total/NA
Fluoride	0.566		0.500		mg/L	5		9056A	Total/NA
Sulfate	10.7		5.00		mg/L	5		9056A	Total/NA
Arsenic	0.0223		0.00200		mg/L	1		6020A	Total/NA
Barium	0.617		0.00200		mg/L	1		6020A	Total/NA
Calcium	142		0.200		mg/L	1		6020A	Total/NA
Cobalt	0.00250		0.000500		mg/L	1		6020A	Total/NA
Lithium	0.0347		0.0100		mg/L	1		6020A	Total/NA
Lead	0.00125		0.000500		mg/L	1		6020A	Total/NA
Molybdenum	0.00307		0.00200		mg/L	1		6020A	Total/NA
Total Dissolved Solids	526		30.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Client Sample ID: MW8
Date Collected: 10/03/18 13:15
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141084-1
Matrix: Ground Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**7.05**		5.00		mg/L			10/13/18 07:16	5
Fluoride	**0.566**		0.500		mg/L			10/13/18 07:16	5
Sulfate	**10.7**		5.00		mg/L			10/13/18 07:16	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/10/18 08:08	10/11/18 23:46	1
Arsenic	**0.0223**		0.00200		mg/L		10/10/18 08:08	10/11/18 23:46	1
Barium	**0.617**		0.00200		mg/L		10/10/18 08:08	10/11/18 23:46	1
Beryllium	<0.00100		0.00100		mg/L		10/10/18 08:08	10/12/18 13:21	1
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 13:21	1
Cadmium	<0.000500		0.000500		mg/L		10/10/18 08:08	10/11/18 23:46	1
Calcium	**142**		0.200		mg/L		10/10/18 08:08	10/11/18 23:46	1
Chromium	<0.00500		0.00500		mg/L		10/10/18 08:08	10/11/18 23:46	1
Cobalt	**0.00250**		0.000500		mg/L		10/10/18 08:08	10/11/18 23:46	1
Lithium	**0.0347**		0.0100		mg/L		10/10/18 08:08	10/12/18 13:21	1
Lead	**0.00125**		0.000500		mg/L		10/10/18 08:08	10/11/18 23:46	1
Molybdenum	**0.00307**		0.00200		mg/L		10/10/18 08:08	10/11/18 23:46	1
Selenium	<0.00500		0.00500		mg/L		10/10/18 08:08	10/11/18 23:46	1
Thallium	<0.00100		0.00100		mg/L		10/10/18 08:08	10/11/18 23:46	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/11/18 09:14	10/12/18 11:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**526**		30.0		mg/L			10/09/18 12:27	1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-219062/3
Matrix: Water
Analysis Batch: 219062

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/13/18 01:49	1
Fluoride	<0.100		0.100		mg/L			10/13/18 01:49	1
Sulfate	<1.00		1.00		mg/L			10/13/18 01:49	1

Lab Sample ID: LCS 310-219062/4
Matrix: Water
Analysis Batch: 219062

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	7.50	7.783		mg/L		104	90 - 110
Fluoride	1.50	1.609		mg/L		107	90 - 110
Sulfate	7.50	7.731		mg/L		103	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-218356/1-A
Matrix: Water
Analysis Batch: 218768

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218356

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00100		mg/L		10/10/18 08:08	10/11/18 22:37	1
Arsenic	<0.00200		0.00200		mg/L		10/10/18 08:08	10/11/18 22:37	1
Barium	<0.00200		0.00200		mg/L		10/10/18 08:08	10/11/18 22:37	1
Cadmium	<0.000500		0.000500		mg/L		10/10/18 08:08	10/11/18 22:37	1
Calcium	<0.200		0.200		mg/L		10/10/18 08:08	10/11/18 22:37	1
Chromium	<0.00500		0.00500		mg/L		10/10/18 08:08	10/11/18 22:37	1
Cobalt	<0.000500		0.000500		mg/L		10/10/18 08:08	10/11/18 22:37	1
Lithium	<0.0100		0.0100		mg/L		10/10/18 08:08	10/11/18 22:37	1
Lead	<0.000500		0.000500		mg/L		10/10/18 08:08	10/11/18 22:37	1
Molybdenum	<0.00200		0.00200		mg/L		10/10/18 08:08	10/11/18 22:37	1
Selenium	<0.00500		0.00500		mg/L		10/10/18 08:08	10/11/18 22:37	1
Thallium	<0.00100		0.00100		mg/L		10/10/18 08:08	10/11/18 22:37	1

Lab Sample ID: MB 310-218356/1-A
Matrix: Water
Analysis Batch: 218941

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218356

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.00100		0.00100		mg/L		10/10/18 08:08	10/12/18 12:34	1
Boron	<0.200		0.200		mg/L		10/10/18 08:08	10/12/18 12:34	1

Lab Sample ID: LCS 310-218356/2-A
Matrix: Water
Analysis Batch: 218768

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	0.0400	0.03891		mg/L		97	80 - 120
Arsenic	0.0400	0.04127		mg/L		103	80 - 120
Barium	0.0400	0.04056		mg/L		101	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-218356/2-A
Matrix: Water
Analysis Batch: 218768

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	0.0400	0.04082		mg/L		102	80 - 120
Calcium	4.00	4.001		mg/L		100	80 - 120
Chromium	0.0400	0.03949		mg/L		99	80 - 120
Cobalt	0.0400	0.03819		mg/L		95	80 - 120
Lithium	0.100	0.09387		mg/L		94	80 - 120
Lead	0.0400	0.03987		mg/L		100	80 - 120
Molybdenum	0.0400	0.03999		mg/L		100	80 - 120
Selenium	0.0400	0.03784		mg/L		95	80 - 120
Thallium	0.00800	0.008765		mg/L		110	80 - 120

Lab Sample ID: LCS 310-218356/2-A
Matrix: Water
Analysis Batch: 218941

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218356

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Beryllium	0.0400	0.03993		mg/L		100	80 - 120
Boron	0.900	0.8644		mg/L		96	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-218656/1-A
Matrix: Water
Analysis Batch: 218873

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 218656

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.000200		0.000200		mg/L		10/11/18 09:14	10/12/18 11:33	1

Lab Sample ID: LCS 310-218656/2-A
Matrix: Water
Analysis Batch: 218873

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 218656

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.00167	0.001810		mg/L		109	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-218417/1
Matrix: Water
Analysis Batch: 218417

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<30.0		30.0		mg/L			10/09/18 12:27	1

Lab Sample ID: LCS 310-218417/2
Matrix: Water
Analysis Batch: 218417

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids	1000	978.0		mg/L		98	90 - 110

HPLC/IC

Analysis Batch: 219062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	9056A	
MB 310-219062/3	Method Blank	Total/NA	Water	9056A	
LCS 310-219062/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 218356

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	3010A	
MB 310-218356/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 218656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	7470A	
MB 310-218656/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-218656/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 218768

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	6020A	218356
MB 310-218356/1-A	Method Blank	Total/NA	Water	6020A	218356
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	6020A	218356

Analysis Batch: 218873

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	7470A	218656
MB 310-218656/1-A	Method Blank	Total/NA	Water	7470A	218656
LCS 310-218656/2-A	Lab Control Sample	Total/NA	Water	7470A	218656

Analysis Batch: 218941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	6020A	218356
MB 310-218356/1-A	Method Blank	Total/NA	Water	6020A	218356
LCS 310-218356/2-A	Lab Control Sample	Total/NA	Water	6020A	218356

General Chemistry

Analysis Batch: 218417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	SM 2540C	
MB 310-218417/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-218417/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Client Sample ID: MW8
Date Collected: 10/03/18 13:15
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141084-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	219062	10/13/18 07:16	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218768	10/11/18 23:46	SAD	TAL CF
Total/NA	Prep	3010A			218356	10/10/18 08:08	JNR	TAL CF
Total/NA	Analysis	6020A		1	218941	10/12/18 13:21	SAD	TAL CF
Total/NA	Prep	7470A			218656	10/11/18 09:14	JNR	TAL CF
Total/NA	Analysis	7470A		1	218873	10/12/18 11:58	JNR	TAL CF
Total/NA	Analysis	SM 2540C		1	218417	10/09/18 12:27	SAS	TAL CF

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-18 *
Oregon	NELAP	10	IA100001	09-29-19

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

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = TestAmerica Cedar Falls, 704 Enterprise Drive, Cedar Falls, IA 50613, TEL (319)277-2401

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-141084 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Omaha Public Power District

City/State: Omaha NE | Project: NE City Station Unit 2 CCR

Receipt Information

Date/Time Received: 10/6/18 0930 | Received By: MRH

Delivery Type: ☐ UPS ☒ FedEx Sat ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID: 02
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # ____ of ____
Cooler Custody Seals Present?	☒ Yes	☐ No	*If yes:* Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 2.0 | Corrected Temp (°C): 2.0

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Omaha SC
268

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Kyle K. Uhing	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No:
Client Contact: Kyle Uhing	Phone: (402) 636-2515	E-Mail: shawn.hayes@testamericainc.com		Page:
Company: Omaha Public Power District				Job #:
Address: 444 South 16th Street Mall 9E/EP1	Due Date Requested:			
City: Omaha	TAT Requested (days):			
State, Zip: NE, 68102-2247				
Phone: 402-636-2515	PO #:			
Email: kkuhing@oppd.com	WO #:			
Project Name: Nebraska City Station Unit 2 CCR	TestAmerica Project #: 31007559			
Site: Nebraska City Station Unit 2	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Combined Ra226 and Ra228	Total 6020A CCR List, 7470A Mercury, see attached list	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW8	10/3/18	13:15	G	W	N		X	X	X	4	See attached list for specific analysis.

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Kyle K. Uhing	10/5/18 1504	OPPD		10/5/18 1504	TestA
Relinquished by:	10/5/18 1700	TestA	Matt Zd	10/6/18 0930	TA-CF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

10/25/2018

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW8	310-141084-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW8	310-141084-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW8	310-141084-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____

Groundwater Sampling October 2018

Nebraska City 2

CCR

MW13 – boron, calcium, chloride, fluoride, sulfate, TDS

MW4 – boron, calcium, chloride, fluoride, sulfate, TDS

MW5 – boron, calcium, chloride, fluoride, sulfate, TDS

MW6 – boron, calcium, chloride, fluoride, sulfate, TDS

MW3 – boron, calcium, chloride, fluoride, sulfate, TDS

MW2 – boron, calcium, chloride, fluoride, sulfate, TDS

MW7 – boron, calcium, chloride, fluoride, sulfate, TDS

DUP1 – boron, calcium, chloride, fluoride, sulfate, TDS

Title 132 Landfill

MW13 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW4 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW5 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW6 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW3 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW2 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW7 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

DUP1 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

New Monitoring Wells / CCR

MW8 – boron, calcium, chloride, fluoride, sulfate, TDS, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226+228

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-141084-1

Login Number: 141084
List Number: 1
Creator: Homolar, Dana J

List Source: TestAmerica Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Tel: (319)277-2401

TestAmerica Job ID: 310-141084-2
Client Project/Site: Nebraska City Unit 2

For:
Omaha Public Power District
Attn: Accounts Payable, 4E/EP-5
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

Attn: Kyle Uhing

Authorized for release by:
11/8/2018 5:10:30 PM

Shawn Hayes, Senior Project Manager
(319)229-8211
shawn.hayes@testamericainc.com

Table of Contents

Case Narrative

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Job ID: 310-141084-2

Laboratory: TestAmerica Cedar Falls

Narrative

Job Narrative
310-141084-2

Comments
No additional comments.

Receipt
The sample was received on 10/6/2018 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 2.0º C.

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

Sample Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-141084-1	MW8	Ground Water	10/03/18 13:15	10/06/18 09:30

Client Sample ID: MW8
Date Collected: 10/03/18 13:15
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141084-1
Matrix: Ground Water

Method: 9315 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.733		0.167	0.180	1.00	0.0860	pCi/L	10/11/18 11:13	11/04/18 09:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/11/18 11:13*	*11/04/18 09:35*	*1*

Method: 9320 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.965		0.304	0.317	1.00	0.413	pCi/L	10/11/18 11:43	10/31/18 10:04	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*101*		*40 - 110*	*10/11/18 11:43*	*10/31/18 10:04*	*1*
Y Carrier	*86.7*		*40 - 110*	*10/11/18 11:43*	*10/31/18 10:04*	*1*

Method: Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.70		0.347	0.365	5.00	0.413	pCi/L		11/08/18 16:41	1

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Method: 9315 - Radium-226 (GFPC)

Lab Sample ID: MB 160-394396/23-A
Matrix: Water
Analysis Batch: 399193

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394396

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.1648		0.115	0.115	1.00	0.148	pCi/L	10/11/18 11:13	11/04/18 09:46	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*10/11/18 11:13*	*11/04/18 09:46*	*1*

Lab Sample ID: LCS 160-394396/1-A
Matrix: Water
Analysis Batch: 399190

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394396

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			15.1	13.95		1.48	1.00	0.148	pCi/L	92	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*

Method: 9320 - Radium-228 (GFPC)

Lab Sample ID: MB 160-394403/23-A
Matrix: Water
Analysis Batch: 398411

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 394403

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2625	U	0.295	0.296	1.00	0.484	pCi/L	10/11/18 11:43	10/31/18 10:06	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*102*		*40 - 110*	*10/11/18 11:43*	*10/31/18 10:06*	*1*
Y Carrier	*81.5*		*40 - 110*	*10/11/18 11:43*	*10/31/18 10:06*	*1*

Lab Sample ID: LCS 160-394403/1-A
Matrix: Water
Analysis Batch: 398411

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 394403

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			14.4	15.33		1.70	1.00	0.469	pCi/L	106	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*103*		*40 - 110*
Y Carrier	*81.9*		*40 - 110*

QC Association Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Rad

Prep Batch: 394396

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	PrecSep-21	
MB 160-394396/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-394396/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 394403

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-141084-1	MW8	Total/NA	Ground Water	PrecSep_0	
MB 160-394403/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-394403/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Client Sample ID: MW8
Date Collected: 10/03/18 13:15
Date Received: 10/06/18 09:30

Lab Sample ID: 310-141084-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			394396	10/11/18 11:13	JLC	TAL SL
Total/NA	Analysis	9315		1	399190	11/04/18 09:35	MAR	TAL SL
Total/NA	Prep	PrecSep_0			394403	10/11/18 11:43	JLC	TAL SL
Total/NA	Analysis	9320		1	398411	10/31/18 10:04	CDR	TAL SL
Total/NA	Analysis	Ra226_Ra228		1	400041	11/08/18 16:41	RTM	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Laboratory: TestAmerica Cedar Falls

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

Authority	Program	EPA Region	Identification Number	Expiration Date
AIHA-LAP, LLC	IHLAP		101044	11-01-20
Georgia	State Program	4	IA100001 (OR)	09-29-19
Illinois	NELAP	5	200024	11-29-18
Iowa	State Program	7	007	12-01-19
Kansas	NELAP	7	E-10341	01-31-19
Minnesota	NELAP	5	019-999-319	12-31-18
Minnesota (Petrofund)	State Program	1	3349	08-22-19
North Dakota	State Program	8	R-186	09-29-18 *
Oregon	NELAP	10	IA100001	09-29-19

Laboratory: TestAmerica St. Louis

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

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-19
ANAB	DoD ELAP		L2305	04-06-19
Arizona	State Program	9	AZ0813	12-08-18 *
California	State Program	9	2886	06-30-19
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-19
Illinois	NELAP	5	200023	11-30-18 *
Iowa	State Program	7	373	12-01-18 *
Kansas	NELAP	7	E-10236	10-31-18 *
Kentucky (DW)	State Program	4	90125	12-31-18
Louisiana	NELAP	6	04080	06-30-19
Louisiana (DW)	NELAP	6	LA180017	12-31-18 *
Maryland	State Program	3	310	09-30-19
Michigan	State Program	5	9005	06-30-18 *
Missouri	State Program	7	780	06-30-19
Nevada	State Program	9	MO000542018-1	07-31-19
New Jersey	NELAP	2	MO002	06-30-19
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-19
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-19
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-19
Texas	NELAP	6	T104704193-18-12	07-31-19
US Fish & Wildlife	Federal		058448	07-31-19
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542018-10	07-31-19
Virginia	NELAP	3	460230	06-14-19
Washington	State Program	10	C592	08-30-19
West Virginia DEP	State Program	3	381	08-31-19

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

Method Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Method	Method Description	Protocol	Laboratory
9315	Radium-226 (GFPC)	SW846	TAL SL
9320	Radium-228 (GFPC)	SW846	TAL SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

310-141084 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Omaha Public Power District

City/State: Omaha NE | Project: NE City Station Unit 2 CCR

Receipt Information

Date/Time Received: 10/6/18 0930 | Received By: MRH

Delivery Type: ☐ UPS ☒ FedEx Sat ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ TA Courier ☐ TA Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes ☐ No	*If yes:* Cooler ID:	02
Multiple Coolers?	☐ Yes ☒ No	*If yes:* Cooler # ____ of ____	
Cooler Custody Seals Present?	☒ Yes ☐ No	*If yes:* Cooler custody seals intact?	☒ Yes ☐ No
Sample Custody Seals Present?	☐ Yes ☒ No	*If yes:* Sample custody seals intact?	☐ Yes ☐ No
Trip Blank Present?	☐ Yes ☒ No	*If yes:* Which VOA samples are in cooler? ↓	

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): 0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 2.0 | Corrected Temp (°C): 2.0

• **Sample Container Temperature**

Container type(s) used:

Uncorrected Temp (°C): | Corrected Temp (°C):

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

TestAmerica Cedar Falls
704 Enterprise Drive
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Omaha SC
268

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Kyle K. Uhing	Lab PM: Hayes, Shawn M	Carrier Tracking No(s):	COC No:
Client Contact: Kyle Uhing	Phone: (402) 636-2515	E-Mail: shawn.hayes@testamericainc.com		Page:
Company: Omaha Public Power District				Job #:
Address: 444 South 16th Street Mall 9E/EP1	Due Date Requested:			
City: Omaha	TAT Requested (days):			
State, Zip: NE, 68102-2247				
Phone: 402-636-2515	PO #:			
Email: kkuhing@oppd.com	WO #:			
Project Name: Nebraska City Station Unit 2 CCR	TestAmerica Project #: 31007559			
Site: Nebraska City Station Unit 2	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9315_Ra226, 9320_Ra228, Combined Ra226 and Ra228	Total 6020A CCR List, 7470A Mercury, see attached list	2540C TDS, 9056A Chloride, Fluoride, Sulfate	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW8	10/3/18	13:15	G	W	N		X	X	X	4	See attached list for specific analysis.

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by: Kyle K. Uhing	10/5/18 1504	OPPD		10/5/18 1504	TestA
Relinquished by:	10/5/18 1700	TestA	Matt Zd	10/6/18 0930	TA-CF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

11/8/2018

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
MW8	310-141084-A-1	Plastic 250ml - with Nitric Acid	<2	_____	_____
MW8	310-141084-C-1	Plastic 1 liter - Nitric Acid	<2	_____	_____
MW8	310-141084-D-1	Plastic 1 liter - Nitric Acid	<2	_____	_____

Groundwater Sampling October 2018

Nebraska City 2

CCR

MW13 – boron, calcium, chloride, fluoride, sulfate, TDS

MW4 – boron, calcium, chloride, fluoride, sulfate, TDS

MW5 – boron, calcium, chloride, fluoride, sulfate, TDS

MW6 – boron, calcium, chloride, fluoride, sulfate, TDS

MW3 – boron, calcium, chloride, fluoride, sulfate, TDS

MW2 – boron, calcium, chloride, fluoride, sulfate, TDS

MW7 – boron, calcium, chloride, fluoride, sulfate, TDS

DUP1 – boron, calcium, chloride, fluoride, sulfate, TDS

Title 132 Landfill

MW13 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW4 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW5 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW6 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW3 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW2 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

MW7 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

DUP1 – sulfate, arsenic, barium, cadmium, chromium, iron, lead, mercury, selenium, silver

New Monitoring Wells / CCR

MW8 – boron, calcium, chloride, fluoride, sulfate, TDS, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, lead, lithium, mercury, molybdenum, selenium, thallium, radium 226+228

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-141084-2

Login Number: 141084

List Source: TestAmerica Cedar Falls

List Number: 1

Creator: Homolar, Dana J

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Omaha Public Power District

Job Number: 310-141084-2

Login Number: 141084
List Number: 2
Creator: Dupart, Lacee S

List Source: TestAmerica St. Louis
List Creation: 10/09/18 12:37 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	False	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	19.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Omaha Public Power District
Project/Site: Nebraska City Unit 2

TestAmerica Job ID: 310-141084-2

Method: 9315 - Radium-226 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-141084-1	MW8	101

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9315 - Radium-226 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
LCS 160-394396/1-A	Lab Control Sample	103
MB 160-394396/23-A	Method Blank	102

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-141084-1	MW8	101	86.7

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

Method: 9320 - Radium-228 (GFPC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
LCS 160-394403/1-A	Lab Control Sample	103	81.9
MB 160-394403/23-A	Method Blank	102	81.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

Appendix C

Statistical Results

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Memo

Date:	Wednesday, January 16, 2019
To:	Omaha Public Power District (OPPD)
From:	HDR Engineering, Inc.
Subject:	Summary of Statistical Analysis and Evaluation for SSIs Nebraska City Station NC2 Ash Disposal Area CCR Groundwater Monitoring Network

Omaha Public Power District (OPPD) operates a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. The Station has two existing Coal Combustion Residuals (CCR) landfills for fossil fuel combustion ash disposal; the NC1 Ash Disposal Area and the NC2 Ash Disposal Area. Both NC1 and NC2 Ash Disposal Areas are subject to the U.S. Environmental Protection Agency's (USEPA's) final CCR Rule. This memorandum provides a discussion and evaluation of the NC2 Ash Disposal Area. The NC2 Ash Disposal Area is an existing CCR landfill permitted under NDEQ Title 132 regulations for 40.7 acres; Cell 1 was constructed in 2008/2009 with a composite liner and leachate collection system. Construction for NC2 Ash Disposal Area Cells 2 and 3 started before the effective date of the CCR rule – October 19, 2015. The construction of Cells 2 and 3 base liner and West Leachate Pond base liner was substantially completed January 23, 2018.

On January 31, 2018, OPPD published statistically significant increases (SSIs) in downgradient monitoring wells at the NC2 Ash Disposal Area (OPPD, 2018). An alternative source demonstration (ASD) evaluation was conducted for the published SSIs (dated May 1, 2018). Re-analysis of the analytical data completed during the ASD evaluation showed that the published SSIs were due to error in statistical analysis/methodology and spatial variation, as discussed in Appendix D.

As required by the CCR Rule, the owner or operator of a CCR unit shall accurately establish background groundwater quality for the detection monitoring program and determine if an SSI over background has occurred in downgradient monitoring wells. This memorandum reports on the statistically-derived background threshold values (BTVs) calculated for the Appendix III constituents during the ASD, and summarizes the results of testing for SSIs for the Appendix III constituents collected during the two semi-annual detection monitoring rounds at designated in-network downgradient monitoring wells completed in 2018.

The statistical analysis was performed in accordance with the methods described in the *Groundwater Monitoring Statistical Certification* for the Nebraska City Station – NC2 Combustion Ash Landfill, dated July 31, 2018. The calculated BTVs and the evaluation for SSIs over background for the Appendix III constituents are provided in Table 1 and Table 2. Downgradient sampling results from the first semi-annual detection monitoring event (June 2018) were used to

evaluate for SSIs in Table 1. Downgradient sampling results from the second semi-annual detection monitoring event (October 2018) were used to evaluate for SSIs in Table 2.

Table 1. Summary of Evaluation for SSIs over Background for Appendix III Constituents June 2018

Constituent:	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS
Unit	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*SU*	*mg/L*	*mg/L*
BTV (UPL)[1]:	*4.63*	*223*	*34.2*	*2.43*	*6.51 – 7.93**	*611*	*1,390*
Well ID	*First Detection Monitoring Event – June 2018*						
NC2-MW-2	0.353	220	15.7	<0.500	**6.45** / 6.71[2]	281	1,180
NC2-MW-3	0.654	198	22.9	<0.500	**4.40** / 6.91[2]	491	978
NC2-MW-6	3.58	133	5.53	<0.500	7.19	174	694
NC2-MW-7	<0.200	119	9.41	<0.500	7.21	12	528

Bold and underlined concentration indicates an SSI over background.
* indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).
[1] BTVs have been reported to three significant figures to maintain the same level of precision as the results reported by the lab.
[2] Verification sampling for pH at MW-2 and MW-3 was completed on August 7, 2018. The June 5, 2018 SSIs were not considered a confirmed SSI; therefore, the wells remained in detection monitoring.

Table 2. Summary of Evaluation for SSIs over Background for Appendix III Constituents October 2018

Constituent:	Boron	Calcium	Chloride	Fluoride	pH	Sulfate	TDS
Unit	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*SU*	*mg/L*	*mg/L*
BTV (UPL)[1]:	*4.63*	*223*	*34.2*	*2.43*	*6.51 – 7.93**	*611*	*1,390*
Well ID	*First Detection Monitoring Event – October 2018*						
NC2-MW-2	0.438	167	<5.00	<0.500	6.86	164	668
NC2-MW-3	<0.200	127	8.74	0.523	6.94	31.2	478
NC2-MW-6	4.18	129	<5.00	<0.500	6.97	200	660
NC2-MW-7	<0.200	122	9.19	0.519	7.31	11.6	494

Bold and underlined concentration indicates an SSI over background.
* indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).
[1] BTVs have been reported to three significant figures to maintain the same level of precision as the results reported by the lab.

Appendix D

Alternative Source Demonstration

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Memo

Date:	Tuesday, May 01, 2018
To:	Omaha Public Power District (OPPD)
From:	HDR Engineering, Inc.
Subject:	Alternative Source Demonstration Evaluation for SSIs Nebraska City Station NC2 Ash Disposal Area CCR Groundwater Monitoring

Omaha Public Power District (OPPD) operates a two-unit (Unit 1 and Unit 2) fossil fuel-fired generating plant at the Nebraska City Station (Station) southeast of Nebraska City, Nebraska. The Station has two existing Coal Combustion Residuals (CCR) landfills for fossil fuel combustion ash disposal; the NC1 Ash Disposal Area and the NC2 Ash Disposal Area. Both NC1 and NC2 Ash Disposal Areas are subject to the U.S. Environmental Protection Agency's (USEPA's) final CCR Rule. This memorandum provides a discussion and evaluation of the NC2 Ash Disposal Area. The NC2 Ash Disposal Area is a CCR landfill with a composite liner and leachate collection system and encompasses a total area of 40.7 acres.

On January 31, 2018, OPPD published statistically significant increases (SSIs) in downgradient monitoring wells at the NC2 Ash Disposal Area (OPPD, 2018). The statistical evaluation for SSIs over background for the November 2017 detection monitoring data indicated the following SSIs:

- Calcium: NC2-MW-2
- pH: NC2-MW-2

As required by the CCR Rule, the owner must establish an assessment monitoring program or pursue a demonstration that a source other than the CCR unit caused SSIs, or that the SSIs resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Due to the complexities of hydrogeological conditions and the nature of statistical testing, there are numerous reasons why a statistically significant result may not be an indication of an actual release from the regulated unit. It is reasonable to allow for a separate demonstration, including statistical factors, once an SSI occurs to determine whether the increase is actually due to a contaminant release.

The objective of this memorandum is to document an alternative source demonstration (ASD) for the SSIs detected during the November 2017 detection monitoring event at the NC2 Ash Disposal Area. The Appendix III constituents identified above as SSIs are referenced as the constituents of interest (COIs) for this ASD. The NC2 monitoring network wells were resampled and evaluated in this memorandum to evaluate if the SSIs observed during the November 2017 detection monitoring event resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Groundwater Sample Collection

To evaluate a potential error in sampling, analysis, statistical evaluation, or natural variation, groundwater samples from the NC2 Ash Disposal Area monitoring network were resampled and analyzed for the Appendix III constituents that were detected as SSIs (i.e. COIs, as specified above). Groundwater samples were collected by OPPD personnel on March 12, 2018 for each of the NC2 Ash Disposal Area monitoring well network wells, as defined in Table 1. Groundwater samples were analyzed by Test America Laboratories, Inc. in Cedar Falls, Iowa.

Table 1. NC2 Ash Disposal Area monitoring network

Monitoring Well ID	Date Installed	Well Depth	Location w/ respect to NC2 Ash Disposal Area	Top of Well Casing Elevation
		(feet bgs)		(feet AMSL)
NC2-MW4	09/08/2004	14.0	Background/Upgradient	919.40
NC2-MW-5	09/16/2004	15.2	Background/Upgradient	922.93
MW-13	01/26/2016	13.0	Background/Upgradient	917.69
NC2- MW-6	09/07/2004	11.0	Crossgradient	919.66
NC2-MW-2	09/08/2004	15.0	Downgradient	922.35
NC2-MW-3	09/08/2004	12.0	Downgradient	916.01
NC2-MW-7	11/06/2013	21.0	Downgradient/Crossgradient	917.69

Following groundwater sampling completed on March 12, 2018, OPPD believed groundwater readings (including pH) being obtained in the field using the Station's YSI multi-meter were not thought to be representative of site conditions. In order to verify pH readings from the YSI multi-meter, a third-party was contracted to collect pH readings utilizing their calibrated Horiba multi-meter on March 19, 2018. Readings were collected at each monitoring well from both the YSI and Horiba on March 19, 2018. Data obtained on March 19th indicated pH readings were inconsistent when compared between the Horiba and YSI; pH readings from the YSI were recorded lower than Horiba readings and anticipated site conditions. Both pH readings form March 12th and March 19th were statistically evaluated and are discussed in the following sections of this memorandum.

Analytical results for the Appendix III COIs analyzed for the NC2 Ash Disposal Area monitoring wells are provided in Table 2. The results of the ASD sampling event are discussed in the Statistical Re-evaluation section of this memorandum.

Table 2. Appendix III COIs – Verification Sampling Events

Monitoring Well ID	Gradient (in respect to NC2 Ash Disposal Area)	3/12/2018	3/12/2018	3/19/2018
		Calcium (mg/L)	pH (S.U.)	pH (S.U.)
NC2-MW-4	Upgradient	141	6.32	7.28
NC2-MW-5	Upgradient	160	6.90	7.56
MW-13	Upgradient	99.8	6.45	7.51
NC2-MW-2	Downgradient	176	6.26	6.96
NC2-MW-3	Downgradient	167	6.61	7.41
NC2-MW-6	Downgradient	145	6.64	7.38
NC2-MW-7	Downgradient/Crossgradient	144	6.72	7.42

Statistical Re-evaluation

Statistical analyses completed for the NC2 Ash Disposal Area in the 2017 Annual Groundwater Monitoring Report utilized the analysis of variance (ANOVA) methodology. ANOVA is an interwell analysis that compares the mean (parametric) or median (non-parametric) values of upgradient versus downgradient groundwater observations. ANOVA is expected to have limited applicability to detection monitoring since many monitoring constituents exhibit spatial well variability which can result in false positives. Due to the high site-wide false positive rate associated with the ANOVA when performing the test on numerous constituents, it is generally not recommended as a primary method for assessing whether contamination is present in downgradient wells as described in the Unified Guidance (U.S. EPA, 2009).

Prediction limits using retesting is usually a more appropriate methodology for detection monitoring while meeting the false positive and statistical power targets recommended by the Unified Guidance. This statistical re-evaluation utilizes interwell upper prediction limits (UPLs) for detection monitoring and to calculate the background threshold values (BTVs) for the NC2 Ash Disposal Area. Natural variation must account for differences over time such that the effects of seasonality, changes in weather, and natural changes in water quality are fully captured over multiple years. By increasing the background sample size over seasonal cycles, a more accurate depiction of actual background occurs. A larger background sample size can impact what is identified as an SSI at a downgradient well. In anticipation of the possible impact of natural variation on the background samples taken up to the November 2017 sampling event, UPLs were derived as part of this ASD such that if verification samples were available, a 1-of-m pass method could be applied to validate if the initial SSI is an actual SSI or a result of natural variation.

The 1-of-*m* pass method (i.e., resampling method) as described in the Unified Guidance (Chapter 19 of U.S. EPA, 2009) allows for an efficient plan to confirm if an SSI over background identified during detection monitoring resulted from the CCR unit. If the initial groundwater observation (*m value*) is in-bounds (i.e. below the BTV), the test is complete and no resamples need to be collected. Only when the first value exceeds the BTV, an additional sample becomes necessary; therefore, all *m* values must be larger than the BTV to be declared an SSI. The purpose of the resampling scheme is to avoid unnecessary false positives when multiple statistical tests are involved. A higher number of resamples provides greater confidence and hence a lower false positive error rate. Either a 1-of-2 or 1-of-3 pass method is recommended depending on the characteristics of the background samples and given the available time period in which to do the resampling.

To evaluate a potential error in the statistical analysis completed as part of the November 2017 detection monitoring event, groundwater samples from the NC2 Ash Disposal Area monitoring network were statistically re-evaluated for BTVs by utilizing interwell UPLs. The UPLs for each constituent were calculated for the November 2017 detection monitoring event using the pooled data from the upgradient monitoring wells from the previous nine sampling events (March 2016 to November 2017). The UPLs for the ASD evaluation was calculated using the pooled data from the upgradient monitoring wells from the ten previous sampling events (March 2016 to March 2018). The BTVs for both events are presented in Table 3. A comparison of the resulting UPLs in Table 3 shows different, yet comparable values for calcium, chloride and pH; as expected from the modest

increase in sample sizes. The UPLs for boron, fluoride, sulfate, and TDS did not change with the additional samples. The UPLs for these constituents follow a nonparametric distribution; therefore, the UPL is set as the maximum observed background value (i.e. 611 mg/L for sulfate on 3-14-2016). The change in the UPL values with the additional data does indicate that natural variation influences the determination of whether an SSI has occurred.

Table 3. Background Threshold Values (UPLs[1,2]) for Appendix III Constituents

Monitoring Event	Event Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
Detection Monitoring	11/09/2017	4.63	227	32.3	2.43	7.88 - 6.70[1]	611	1390
ASD Evaluation	03/12/2018	4.63	223	34.2	2.43	7.93 - 6.51[1]	611	1390

Notes:
[1]Indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).
[2]BTVs have been reported to three significant figures to maintain the same level of precision as the results reported by the laboratory.

The constituent/well pairs that were noted as SSIs in the first round of detection monitoring in November 2017 (calcium and pH at NC2-MW-2) are listed in Table 4 along with the resampling plan, calculated UPLs and detected concentrations from the November 2017 and March 2018 analyses.

The pH detection in NC2-MW-2 during the March 12, 2018 reading was detected outside of the bounds of the BTV. As previously discussed, OPPD indicated a potential analysis error, and the pH detections were believed to be outliers (i.e. not representative of site conditions). Statistical tests for outliers were conducted for the March 12, 2018 data and indicated that the pH readings at NC2-MW-2 and NC2-MW-6 were potential outliers. The March 19, 2018 reanalysis of pH was completed to determine if the previous readings were representative pH readings. The March 19, 2018 data did not indicate an outlier and all data was retained in the NC2 groundwater database. A 1-of-2 sampling plan was utilized for pH at NC2-MW-2 and indicated resampling data collected on March 19, 2018 was within the bounds of the BTV; therefore the SSI was not validated.

The calcium detections in NC2-MW-2 resampled as part of this ASD were within the bounds of the BTV. In summary, the ASD evaluation shows the constituent/well pairs have observations within the bounds of the BTV for the NC2 Ash Disposal Area. As previously mentioned, use of prediction limits is a more appropriate methodology for future statistical analysis at the NC2 Ash Disposal Area. The NC2 statistical method certification will be updated to reflect the prediction limit methodology with calculation of UPLs as the BTVs.

Table 4. Background Threshold Values (UPL) Evaluation for Appendix III COIs

Monitoring Well ID	Constituent	BTVs – (UPLs[1])	Verification Resampling plan	Monitoring Event Detections		
				Detection Monitoring (11-9-2017)	ASD Evaluation (3-12-2018)	ASD Evaluation (3-19-2018)
NC2-MW2	Calcium (mg/l)	223	1-of-2	131[2]	176	N/A
	pH (S.U.)	7.93 - 6.51	1-of-2	7.19[2]	**6.26[3]**	6.96

Notes:

Bold/Underlined = Indicates an exceedance of the UPL has occurred. Additional samples were analyzed according to the 1-of-2 pass method to determine the outcome of the initial SSI.
[1]Indicates the lower bound of the range is the lower prediction limit (LPL). The upper bound is the upper prediction limit (UPL).
[2]Detections were indicated as SSIs during the November 2017 statistical analysis utilizing the ANOVA methodology. The detections are not considered SSIs as evaluated with UPLs.
[3]A verification sample was collected on March 19, 2018 to evaluate the initial SSI.

Summary

The statistical re-evaluation of the monitoring data, including the samples taken in March 2018 from the background and downgradient CCR monitoring wells, uncovered errors related to the statistical analysis and methodology used to assess the quality of the data for each constituent/well pair. This ASD demonstration has shown that statistical analysis using ANOVA may falsely attribute a regulated release from the unit (i.e. false positive) due to spatial well variation. As previously mentioned, the use of prediction limits is a more appropriate methodology for future statistical analysis at the NC2 Ash Disposal Area. The ASD evaluation shows that all of the constituent/ well pairs associated with SSIs during the November 2017 detection monitoring event appear to be due to spatial well variation and are not considered SSIs with statistical analysis using interwell UPLs.

Key Upcoming Activities

As a result of this ASD, OPPD intends to conduct the following activities:

- Update the NC2 statistical method certification to reflect the prediction limit methodology with calculation of UPLs as the BTVs.
- Return the NC2 Ash Disposal Area to detection monitoring, in accordance with §257.95(e)(2).

References

OPPD, 2018. (Omaha Public Power District). *2017 NC2 CCR Landfill Annual Groundwater Monitoring and Corrective Action Report*. Nebraska City, Nebraska, January, 2018.

U.S. EPA, 2009. (United States Environmental Protection Agency). *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance*. Washington, DC, March 2009.

Certification

Professional Engineer Certification

I hereby certify to the best of my knowledge that the information contained in this document is appropriate for evaluating the groundwater monitoring data and verify its use for an alternative source demonstration at the Nebraska City Station's NC2 Ash Disposal Area.

I am duly licensed Professional Engineer under the laws of the State of Nebraska.

Print Name: Megan B. Seymour

Signature: Megan Seymour

Date: 5/01/2018

License #: E-15931

My license renewal date is December 31, 2018.