Biannual Groundwater Sampling and Analysis Report October 2018

AMRI - Rensselaer, Inc. Sterling Site 1

CHA Project Number: 21341.2018.44200

Prepared for:

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1.0 INTRODUCTION

CHA was retained by AMRI-Rensselaer, Inc. to perform the Biannual Groundwater Sampling and Analysis Program for Sterling Site 1. This report presents the results of the October 2018 groundwater sampling event, which was conducted on October 15th and 16th, 2018. The Biannual Groundwater Sampling and Analysis Program is conducted in accordance with the existing Agreement and Determination dated 1984 between Albany Molecular Research, Inc. (AMRI) and the New York State Department of Environmental Conservation (NYSDEC) as modified. The Agreement and Determination serves as the sampling and analysis plan.

2.0 OBJECTIVES

The objectives of the Biannual Groundwater Sampling and Analysis Program are to collect data from site-related groundwater monitoring wells and to monitor groundwater quality within and adjacent to the site. Wells monitored as part of this program include on-site wells MW-3, MW-5A, MW-6A, MW-8, MW-12 and MW-14A, and off-site wells OS-1A, OS-3, OS-4A, and OS-5A. In addition to these wells, on-site monitoring wells MW-11A and MW-17 were voluntarily sampled during this event to monitor groundwater quality in the immediate vicinity of these wells. MW-11A was installed as an upgradient monitoring well on the southeastern edge of the property to provide background groundwater quality data for the groundwater that migrates onto and across the site. MW-17 is near the middle of the site and provides groundwater quality data for the southern side of Building 4.

3.0 GROUNDWATER SAMPLING

Prior to sampling, groundwater elevations at Sterling Site 1 were collected. Each well was then purged of approximately three well volumes, or until dry, to obtain representative groundwater samples. During purging, groundwater from all wells was monitored in the field for turbidity, pH, specific conductance, oxidation-reduction potential and temperature using a YSI 556 MPS water quality meter and a Hach 2100-P turbidimeter.

CHA personnel collected groundwater samples using dedicated polyethylene bailers and transferred the samples to pre-preserved bottles provided by Adirondack Environmental Services, Inc. (Adirondack) in Albany, New York. Upon collection, the samples were stored in a cooler with ice and upon completion of sampling activities, were transported by CHA to Adirondack for analysis. Adirondack analyzed all groundwater samples for the site-specific volatile organic compounds (VOCs) benzene, toluene, chlorobenzene and 1,2-dichloroethane by United States

Environmental Protection Agency (EPA) Method 624. Additionally, groundwater samples from wells MW-5A, MW-6A, MW-12 and MW-14A were analyzed for arsenic (EPA Method 206.2), and samples from MW-5A, MW-6A and MW-17 were analyzed for sodium (EPA Method 200.7).

Figure 1 depicts monitoring well locations and the groundwater piezometric surface contours based on the groundwater elevation data recorded on October 15th, 2018. Groundwater flow patterns across the site during the October 2018 monitoring event were generally consistent with those observed during previous monitoring events, exhibiting both northwesterly and southeasterly/southerly components of flow, with an apparent divide extending northeastward across the site from the area of MW-7A, through the area of MW-14A to the area of MW-3.

Table 1 provides a summary of the groundwater laboratory and field data, and Appendix A provides the laboratory reports from the current sampling event. Table 2 presents a summary of historical groundwater analytical data for select parameters in on-site and off-site wells. Graphs 1 and 2 depict concentrations of benzene and chlorobenzene at MW-3 over time, and Graphs 3 and 4 depict concentrations of benzene and chlorobenzene at MW-5/MW-5A over time. A summary of the groundwater field measurements and observations is presented in Table 3.

4.0 FIELD OBSERVATIONS

The following physical descriptions of groundwater were derived from field notes taken during the well purging and sampling activities at each monitoring well. Detailed descriptions for each well are included in Table 3.

- Groundwater from MW-3 was clear and colorless with a mild odor, but no sheen or effervescence. Suspended black particulates were present in water. Well went dry at 4 gallons purged.
- Groundwater from MW-5A was light tan and moderately turbid with a faint odor, but no sheen or effervescence. Well went dry at 5.75 gallons purged.
- Groundwater from MW-6A was light tan/gray and moderately turbid with no odor, sheen or effervescence. Well went dry at 3 gallons purged.
- Groundwater from MW-8 was light tan, moderately turbid (cloudy) with no odor, sheen or effervescence.
- Groundwater from MW-11A was clear and colorless, with no odor, sheen or effervescence. Well went dry at 1.5 gallons purged.
- Groundwater from MW-12 was tan and moderately turbid, with no odor, sheen or effervescence. Well went dry at 1.5 gallons purged.
- Groundwater from MW-14A was clear and colorless with no odor, sheen or effervescence.

- Groundwater from MW-17 was light gray and moderately turbid, with no odor, sheen or effervescence.
- Groundwater from OS-1A was clear and colorless, with no odor, sheen or effervescence.
- Groundwater from OS-3 was tan and moderately turbid with no odor, sheen or effervescence.
- Groundwater from OS-4A was clear and colorless with no odor, sheen or effervescence.
- Groundwater from OS-5A was tan and moderately turbid, with no odor, sheen or effervescence. Well went dry at 7 gallons purged.

5.0 COMPARISON OF ANALYTICAL RESULTS

Analytical results from each monitoring well are presented below and are compared to results from the three most recent sampling events. The New York State Department of Environmental Conservation (NYSDEC) Ambient Water Quality Standards (AWQS), as published in the Division of Water Technical and Operational Guidance Series 1.1.1, June 1998, are also shown for comparison purposes. Concentrations of VOCs are reported in micrograms per liter (μ g/L). Concentrations of sodium and arsenic are reported in milligrams per liter (μ g/L). Values in bold print exceed their respective AWQS.

■ MW-3:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 500	< 1,000	1,400	< 1,000	1
Chlorobenzene	14,000	8,800	30,000	8,800	5
Toluene	< 500	< 1,000	< 1,000	< 1,000	5
1,2-Dichloroethane	< 500	< 1,000	< 1,000	< 1,000	5

■ MW-5A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5
Arsenic	0.021	0.014	0.011	0.015	0.025
Sodium	910	1,379	1,700	1,140	20

MW-6A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5
Arsenic	0.032	0.044	0.026	0.038	0.025
Sodium	366	424	479	278	20

<u>MW-8:</u>

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

MW-11A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

<u>MW-12:</u>

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 250	< 250	< 5.0	< 5.0	1
Chlorobenzene	< 250	< 250	< 5.0	< 5.0	5
Toluene	< 250	< 250	< 5.0	< 5.0	5
1,2-Dichloroethane	5,000	< 250	75	8.6	5
Arsenic	0.013	0.013	0.023	0.064	0.025

MW-14A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5
Arsenic	0.621	1.22	1.19	1.16	0.025

MW-17:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	5.6	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5
Sodium	249	374	225	375	20

OS-1A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

OS-3:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

• <u>OS-4A:</u>

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

OS-5A:

Parameter	April 2017	October 2017	April 2018	October 2018	NYSDEC AWQS
Benzene	< 5.0	< 5.0	< 5.0	< 5.0	1
Chlorobenzene	< 5.0	< 5.0	< 5.0	< 5.0	5
Toluene	< 5.0	< 5.0	< 5.0	< 5.0	5
1,2-Dichloroethane	< 5.0	< 5.0	< 5.0	< 5.0	5

6.0 CONCLUSIONS

The laboratory analytical results for the October 2018 groundwater sampling event show that target VOCs were not detected at concentrations above laboratory reporting limits at on-site monitoring wells except for monitoring wells MW-3 and MW-12. Target VOCs were not detected at concentrations above laboratory reporting limits at any of the four off-site well locations.

The VOC chlorobenzene was detected at the location of MW-3 at a concentration of 8,800 µg/L. This concentration represents a significant *decrease* since the most recent sampling event in April 2018 and is the same concentration detected at MW-3 during the October 2017 sampling event. It should be noted that MW-3 is upgradient of the groundwater collection trench, and neither benzene nor chlorobenzene was detected at the location of monitoring well OS-5A, which is downgradient of MW-3.

The VOC 1,2-Dichloroethane was detected at the location of MW-12, along the southern property boundary, at a concentration of 8.6 µg/L. This concentration represents a significant *decrease* since the most recent sampling event in April 2018. Analytical data for MW-12 from 2012 through 2016, together with analytical data showing the absence of this compound at wells MA-6A, MW-11A and MW-17 (the AMRI wells closest to MW-12) and the well's location along the southern property boundary, suggest potential migration of this contaminant onto the AMRI site from the

adjacent former BASF site to the south. The former BASF site has been the subject of previous investigation/remediation of chlorinated solvent-related contaminants, including 1,2-Dichloroethane.

The parameter arsenic was detected in four monitoring wells. Arsenic concentrations were 0.015 mg/L in MW-5A, 0.038 mg/L in MW-6A, 0.064 mg/L in MW-12, and 1.16 mg/L in MW-14A. The detections in MW-6A, MW-12 and MW-14A were in exceedance of the NYSDEC AWQS of 0.025 mg/L. The concentrations of arsenic detected in these four wells at the time of the October 2018 monitoring event were similar to the concentrations detected during the previous three monitoring events. Arsenic concentrations will be evaluated during the next monitoring event for further exceedances of the AWQS and potential increasing trends.

The parameter sodium was analyzed for and detected in monitoring wells MW-5A, MW-6A and MW-17 at concentrations above the established NYSDEC AWQS value. The detected concentrations of sodium were comparable to historical concentrations and no increasing trends were noted.

7.0 RECOMMENDATIONS

The off-site monitoring well data and the groundwater elevation data indicate that the existing groundwater treatment system is maintaining hydraulic control of the impacted groundwater near Building 30. Based on the Groundwater Elevation Contour Map, impacted groundwater at the location of MW-3, and in its immediate vicinity, flows to the northwest, toward the groundwater collection trench, which captures contaminated water and directs it to the groundwater treatment system.

CHA recommends that AMRI continue to monitor on-site and off-site groundwater quality and continue operation of the groundwater treatment system near Building 30 in accordance with the 1984 Agreement and Determination and the correspondence from the NYSDEC from 2017. AMRI operates a soil vapor extraction (SVE) system in the vicinity of Building 30 on a seasonal basis to remove VOCs from the unsaturated zone. CHA recommends that AMRI continue the operation and maintenance of the SVE system during the warm weather months to reduce VOCs at the site. The next groundwater sampling event is scheduled to occur in April 2019.



FIGURES



TABLES

Table 1

Summary of Groundwater Analytical Results Sterling - Site 1

October 2018

		Location	MW-3	MW-5A	MW-6A	MW-8	MW-11A	MW-12	MW-14A	MW-17	OS-1A	OS-3	OS-4A	OS-5A
		Date	10/16/2018	10/16/2018	10/16/2018	10/15/2018	10/16/2018	10/16/2018	10/16/2018	10/16/2018	10/15/2018	10/15/2018	10/15/2018	10/15/2018
Compound	Units													
Volatiles														
Benzene		μg/L	< 1,000	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		μg/L	8,800	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		μg/L	< 1,000	< 5	< 5	< 5	< 5	8.6	< 5	< 5	< 5	< 5	< 5	< 5
Toluene		μg/L	< 1,000	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Metals														
Arsenic		mg/L	NA	0.015	0.038	NA	NA	0.064	1.16	NA	NA	NA	NA	NA
Sodium		mg/L	NA	1,140	278	NA	NA	NA	NA	375	NA	NA	NA	NA
Field Parameters														
рН			8.01	7.67	8.11	6.99	7.56	7.45	7.41	7.88	7.42	6.89	7.14	7.50
Specific Conductance	ē	mS/cm	2.080	6.435	1.865	2.576	1.699	4.038	0.918	3.059	2.908	0.481	0.963	0.480

μg/L = micrograms per liter

mg/L = milligrams per liter

mS/cm = millisiemans per centimeter

< = Not detected at Laboratory Reporting Limit

NA = Sample was not analyzed for this parameter.

Table 2
MW-3 Historical Groundwater Analytical Results
Sterling - Site 1
October 2018

Date	Benzene (μg/1)	Chlorobenzene (µg/1)
Apr-90	910	5,600
Nov-90	840	15,000
May-91	600	< 300
Oct-91	2,400	44,000
Apr-92	740	22,000
Sep-92	960	34,000
Apr-93	5,000	92,000
Oct-93	2,600	65,000
Apr-94	3,400	74,000
Nov-94	340	51,000
Apr-95	7,000	172,000
Nov-95	2,500	34,000
May-96	< 5,000	28,000
Dec-96	5,200	40,000
May-97	6,000	48,000
Dec-97	3,500	30,000
Jun-98	11,000	21,000
Nov-98	8,000	54,000
Dec-98	9,000	94,500
Apr-99	1,400	23,000
Dec-99	1,500	18,000
Apr-00	2,900	50,000
Oct-00	6,000	30,000
Apr-01	3,600	< 50
Oct-01	9,500	55,000
Apr-02	3,500	30,000
Oct-02	2,500	18,500
Apr-03	3,000	25,000
Nov-03	5,500	35,000
May-04	3,400	46,000
Nov-04	1,900	16,000
May-05	3,000	27,000
Nov-05	11,000	37,000
May-06	1,200	17,000
Nov-06	8,200	66,000
Jun-07 Nov-07	6,900	31,000
	17,000	100,000
May-08 Nov-08	4,200 1,800	68,000 28,000
May-09	6,700	81,000
Nov-09	11,000	51,000
Apr-10	930	14,000
Oct-10	460	9,100
Apr-11	1000	21,000
Oct-11	< 500	13,000
Apr-12	< 250	9,400
Oct-12	< 250	4,100
Apr-13	< 1,200	33,000
Oct-13	< 1,000	12,000
Apr-14	< 500	5,600
Oct-14	< 250	4,500
Apr-15	< 120	4,500
Oct-15	< 120	4,400
Apr-16	< 250	6,800
Oct-16	270	5,800
Apr-17	< 500	14,000
Oct-17	< 1000	8,800
Apr-18	1,400	30,000
Oct-18	< 1,000	8,800
< = Not Detected at	Reporting Limit	

Table 2 MW-5A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1)	1,2 - Dichloroethane (µg/1
Apr-90	< 5	< 5	NA
Nov-90	150	< 5	NA
May-91	71	< 5	NA
Oct-91	37	< 5	NA
May-92	13	< 5	NA
Sep-92	160	<25	NA
Apr-93	32	<25	NA
Oct-93	490	32	NA
Apr-94	< 50	<50	NA
Nov-94	500	<250	NA
Nov-94	270	12	NA
Apr-95	< 5	8	NA
Nov-95	160	<50	NA
May-96	< 5	< 5	NA
Dec-96	16	< 5	NA
May-97	23	< 5	NA
Dec-97	50	< 5	NA
Jun-98	10	< 5	NA
Jul-98	24	1 J	NA
Aug-98	16	ND	NA
Aug-98	16	ND	NA
Sep-98	< 5	< 5	NA
Oct-98	71	35	NA
Nov-98	< 5	< 5	NA
Dec-98	< 5	9	NA
Apr-99	< 5	< 5	NA NA
Dec-99	< 5	< 5	NA NA
Apr-00	< 5	< 5	NA NA
Oct-00	< 5	< 5	NA NA
Apr-01	< 5	< 5	NA
Oct-01	120	< 50	NA
Apr-02	< 130	< 130	NA
Oct-02	80	< 50	NA
Apr-03	< 25	< 25	NA
Nov-03	53	< 10	NA
May-04	270	13	NA
Nov-04	92	< 5	NA
May-05	270	< 10	NA
Nov-05	95	9	NA
May-06	440	< 25	NA
Nov-06	< 10	< 10	NA
Jun-07	< 5	< 5	NA
Nov-07	5.2	< 5	NA
May-08	< 5	< 5	NA
Nov-08	< 5	< 5	NA
May-09	< 5	< 5	NA
Nov-09	< 5	< 5	NA
Apr-10	< 5	< 5	< 5
Oct-10	< 5	< 5	17
Apr-11	< 5	< 5	< 5
Oct-11	< 5	< 5	< 5
Apr-12	8.4	< 5	< 5
_			_
May-12	< 5	< 5	< 5
Oct-12	< 5	6.3	< 5
Apr-13	< 5	< 5	< 5
Oct-13	< 5	< 5	< 5
Apr-14	< 5	< 5	< 5
Oct-14	< 5	< 5	< 5
Apr-15	< 5	< 5	< 5
Oct-15	< 5	< 5	< 5
Apr-16	< 5	< 5	< 5
Oct-16	< 5	< 5	< 5
Apr-17	< 5	< 5	< 5
Oct-17	< 5	< 5	< 5
Apr-18	< 5	< 5	< 5
		1	

<= Not Detected at Reporting Limit

J denotes a Laboratory estimated concentration

Table 2 MW-6A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (μg/1)
Oct-91	78	30
Apr-92	29	17
Sep-92	33	39
Apr-93	< 5	< 5
Oct-93	< 5	6
Apr-94	19	< 5
Nov-94	350	59
Apr-95	290	41
Nov-95	100	33
May-96	190	32
Dec-96	240	42
May-97	7	< 5
Dec-97	97	17
Dec-97	120	17
Jun-98	92	11
Jul-98	66	14
Aug-98	78	15
Aug-98	88	15
Sep-98	< 5	< 5
Oct-98	ND	ND
Nov-98	100	21
Dec-98	71	14
Apr-99	15	<5
Dec-99	120	18
Dec-99 (dup)	75	11
Apr-00	51	6.3
Oct-00	41	7
Apr-01	30	< 5
Oct-01	<5	< 5
Apr-02	10	< 5
Oct-02	< 5	< 5
Apr-03	11	< 5
Nov-03	57	9.6
May-04	20	5.6
Nov-04	24	5.8
May-05	16	< 5
Nov-05	29	6.4
May-06	< 5	< 5
Nov-06	< 5	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08	< 5	<5
May-09	< 5	<5
Oct-09	< 5	< 5
Apr-10	< 5	<5
Oct-10	< 5	< 5
Apr-11	< 5	<5
Oct-11	< 5	<5
Apr-12	< 5	<5
Oct-12	< 5	<5
Apr-13	< 5	<5
Oct-13	< 5	<5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15	< 5	< 5
Apr-16	< 5	< 5
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

Table 2 MW-8 Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (μg/1)	Chlorobenzene (µg/1
Apr-90	< 5	< 5
Nov-90	< 5	< 5
May-91	< 5	< 5
Oct-91	< 5	< 5
May-92	< 5	< 5
Sep-92	< 5	< 5
Apr-93	< 5	< 5
Oct-93	< 5	< 5
Apr-94	< 5	< 5
Nov-94	< 5	< 5
Apr-95	< 5	< 5
Nov-95	< 5	< 5
May-96	< 5	< 5
Dec-96	< 5	< 5
May-97	< 5	< 5
Dec-97	< 5	< 5
Jun-98	< 5	< 5
Nov-98	< 5	< 5
Dec-98	NS	NS
Apr-99	< 5	< 5
Dec-99	< 5	< 5
Apr-00	< 5	< 5
Oct-00	< 5	< 5
Apr-01	< 5	< 5
Oct-01	< 5	< 5
Apr-02	< 5	< 5
Oct-02	< 5	< 5
Apr-03	< 5	< 5
Nov-03	< 5	< 5
May-04	< 5	< 5
Nov-04	< 5	< 5
May-05	< 5	< 5
Nov-05	< 5	< 5
May-06	< 5	< 5
Nov-06	< 5	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08	< 5	< 5
May-09	< 5	< 5
Oct-09	< 5	< 5
Apr-10	< 5	< 5
Apr-11	< 5	< 5
Nov-10	< 5	< 5
Apr-11	< 5	< 5
Oct-11	< 5	< 5
Apr-12	< 5	< 5
Oct-12	< 5	< 5
Apr-13	< 5	< 5
Oct-13	< 5	< 5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15	< 5	< 5
	< 5	< 5
Apr-16		
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

Table 2 MW-11 | MW-11A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (μg/1)	Chlorobenzene (µg/1)
Oct-93	< 5	< 5
Apr-94	< 5	< 5
Apr-95	< 5	< 5
Nov-95	< 5	< 5
May-96	< 5	< 5
Dec-96	NS	NS
May-97	< 5	< 5
Dec-97	< 5	< 5
Jun-98	< 5	< 5
Jul-98	< 5	< 5
Aug-98	< 5	< 5
Aug-98	< 5	< 5
Sep-98	< 5	< 5
Oct-98	< 5	< 5
Dec-99	< 5	< 5
Dec-99 (dup)	< 5	< 5
Apr-00	< 5	< 5
Oct-00	< 5	< 5
Apr-10	< 5	< 5
Oct-11	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-10	< 5	<5
Nov-10	< 5	<5
		+
May-10 Nov-10	< 5 < 5	< 5 < 5
	< 5	< 5
May-10	< 5	<5
Nov-10	< 5	
May-10		< 5
Nov-10	< 5	< 5
Jun-10	< 5	< 5
Nov-10	< 5	< 5
May-10	< 5	< 5
Nov-10	< 5	< 5
May-10	< 5	< 5
Oct-10	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-11	< 5	< 5
Oct-11	< 5	< 5
Apr-12	< 5	< 5
Apr-12	< 5	< 5
Oct-12	< 5	< 5
Apr-13	< 5	< 5
Oct-13	< 5	< 5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15	< 5	< 5
Apr-16	< 5	< 5
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

NS = Not Sampled

MW-11 replaced with MW-11A July 1998

Table 2 MW-12 Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1)	1,2-Dichloroethane (μg/1)
Apr-90	< 5	< 5	NA
Nov-90	< 5	< 5	NA
May-91	< 5	< 5	NA
Oct-91	< 5	< 5	NA
May-92	< 5	< 5	NA
Sep-92	< 5	< 5	NA
Apr-93	< 5	< 5	NA
Oct-93	< 5	< 5	NA
Apr-94	< 5	< 5	NA
Nov-94	< 5	<5	NA NA
Apr-95	< 5	< 5	NA NA
Nov-95	< 5 < 5	< 5 < 5	NA NA
May-96 Dec-96	< 5	<5	NA NA
May-97	< 5	< 5	NA NA
Dec-97	< 5	< 5	NA NA
Jun-98	< 5	< 5	NA NA
Jul-98	< 5	< 5	NA NA
Aug-98	< 5	< 5	NA NA
Aug-98	< 5	< 5	NA
Sep-98	< 5	< 5	NA
Oct-98	< 5	< 5	NA
Nov-98	< 5	< 5	NA
Nov-98	< 5	< 5	NA
Dec-98	< 5	2 J	NA
Dec-98	< 5	< 5	NA
Apr-99	< 5	< 5	NA
Dec-99	< 5	< 5	NA
Apr-00	< 5	< 5	NA
Oct-00	< 5	< 5	NA
Apr-01	< 50	< 50	NA
Oct-01	< 50	< 50	NA
Apr-02	< 5	< 5	NA
Oct-02	< 50	< 50	NA
Apr-03	< 5	< 5	NA
Nov-03	< 5	< 5	NA
May-04	< 5	< 5	NA
Nov-04	< 5	< 5	NA
May-05	< 5	< 5	NA
Nov-05	< 5	< 5	NA
May-06	< 5	<5	NA NA
Nov-06	< 5	< 5	NA NA
Jun-07 Nov-07	< 5 < 5	< 5 < 5	NA NA
+	< 5	<5	NA NA
May-08 Nov-08	< 5	< 5	NA NA
May-09	< 5	<5	NA NA
Oct-09	< 5	< 5	NA NA
Apr-10	< 5	< 5	< 5
Oct-10	< 5	< 5	14
Apr-11	< 5	< 5	< 5
Oct-11	< 5	< 5	6.2
Dec-11	< 5	< 5	< 5
Apr-12	< 5	< 5	< 5
Oct-12	< 5	< 5	< 5
Apr-13	< 5	< 5	< 5
Oct-13	< 5	< 5	< 5
Apr-14	< 5	< 5	< 5
Oct-14	< 5	< 5	< 5
Apr-15	< 5	< 5	< 5
Oct-15	< 5	< 5	< 5
Apr-16	< 5	< 5	< 5
Oct-16	< 5	< 5	< 5
Apr-17	< 5	< 5	5,000
Oct-17	< 250	< 250	< 250
Apr-18	< 5	< 5	75
Oct-18	< 5	< 5	8.6

Table 2 MW-14 | MW-14A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (μg/1
Apr-90	< 5	< 5
Nov-90	< 5	< 5
May-91	< 5	< 5
Oct-91	< 5	< 5
May-92	< 5	< 5
Sep-92	9	< 5
Apr-93	< 5	< 5
Oct-93	11	< 5
Apr-94	86	< 5
Nov-94	35	< 5
Apr-95	19	6
Nov-95	9	7
May-96	< 5	5
Dec-96	36	8
May-97	< 5	< 5
Dec-97	46	< 5
Jun-98	< 5	< 5
Nov-98	280	8
Dec-98	NS	NS
	33	7
Apr-99 Dec-99	12	6
		+
Apr-00	< 5	< 5
Oct-00	< 5	< 5
Apr-01	< 5	< 5
Oct-01	< 5	< 5
Apr-02	< 5	< 5
Oct-02	< 5	< 5
Apr-03	< 5	< 5
Nov-03	< 5	< 5
May-04	< 5	< 5
Nov-04	< 5	< 5
May-05	< 5	< 5
Nov-05	< 5	< 5
May-06	< 5	< 5
Nov-06	< 5	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08	< 5	< 5
May-09	< 5	< 5
Oct-09	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-11	< 5	< 5
Oct-11	< 5	< 5
Apr-12	< 5	< 5
Oct-12	< 5	< 5
Apr-13	< 5	< 5
Oct-13	< 5	< 5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15	< 5	< 5
Apr-16	< 5	< 5
		+
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5

NS = Not Sampled

MW-14 replaced with MW-14A May 1996

Table 2
MW-17 Historical Groundwater Analytical Results
Sterling - Site 1
October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1
Dec-96	63	< 5
Feb-97	57	< 25
May-97	42	< 5
Dec-97	50	< 5
Jun-98	< 5	< 5
Jul-98	38	3 J
Aug-98	29	2 J
Aug-98	35	3 J
Sep-98	37	3 J
Oct-98	35	5 J
Nov-98	29	< 5
Dec-98	13	2 J
Apr-99	< 5	< 5
Dec-99	9	< 5
Oct-00	35	< 5
Apr-01	35	< 5
Oct-01	< 5	<5
	< 5	< 5
Apr-02		
Oct-02	23	< 5
Apr-03	56	< 5
Nov-03	38	< 5
May-04	35	< 5
Nov-04	11	< 5
May-05	13	< 5
Nov-05	22	< 5
May-06	24	< 5
Nov-06	11	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08	< 5	< 5
May-09	< 5	< 5
Oct-09	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-11	6.8	< 5
Oct-11	24	< 5
Apr-12	12	< 5
Oct-12	11	< 5
Apr-13	< 5	< 5
Oct-13	14	< 5
Apr-14	6.6	< 5
Oct-14	6.5	< 5
Apr-15	5.8	< 5
Oct-15	7.3	_
		< 5
Apr-16	7.6	< 5
Oct-16	5.0	< 5
Apr-17	5.6	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

< = Not Detected at Reporting Limit</p>
J denotes a laboratory estimation

Table 2
OS-1A Historical Groundwater Analytical Results
Sterling - Site 1
October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1)
Dec-96	< 5	< 5
May-97	< 5	< 5
Dec-97	< 5	< 5
Jun-98	< 5	< 5
Nov-98	< 5	< 5
Apr-99	< 5	< 5
Dec-99	< 5	< 5
Apr-00	< 5	< 5
Oct-00	< 5	< 5
Apr-01	< 5	< 5
Oct-01	< 5	< 5
Apr-02	< 5	< 5
Oct-02	< 5	< 5
Apr-03	< 5	< 5
Nov-03	< 5	< 5
May-04	< 5	< 5
Nov-04	< 5	< 5
May-05	< 5	< 5
Nov-05	< 5	< 5
May-06	< 5	< 5
Nov-06	< 5	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08	< 5	< 5
May-09	< 5	< 5
Oct-09	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-11	< 5	< 5
Oct-11	< 5	< 5
Apr-12	< 5	< 5
Oct-12	< 5	< 5
Apr-13	< 5	< 5
Oct-13	< 5	< 5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15	< 5	< 5
Apr-16	< 5	< 5
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

NA = Not Available

Table 2 OS-3 Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1
Apr-90	< 5	< 5
Nov-90 Feb-91	< 5 < 5	< 5 < 5
May-91	< 5	< 5
Oct-91	< 5	< 5
Apr-92	< 5	< 5
Sep-92 Apr-93	< 5 < 5	< 5 < 5
Oct-93	< 5	< 5
Apr-94	< 5	< 5
Nov-94	< 5	< 5
Apr-95	< 5	< 5
Nov-95 May-96	< 5 < 5	< 5 < 5
Dec-96	<5	< 5
May-97	< 5	< 5
Dec-97	< 5	< 5
Jun-98	< 5	< 5
Nov-98	< 5 < 5	< 5 < 5
Apr-99 Dec-99	< 5	<5
Apr-00	< 5	< 5
Oct-00	< 5	< 5
Apr-01	< 5	< 5
Oct-01	< 5	< 5
Apr-02 Oct-02	< 5 < 5	< 5 < 5
Apr-03	<5	< 5
Nov-03	< 5	< 5
May-04	< 5	< 5
Nov-04	< 5	< 5
May-05 Nov-05	< 5 < 5	< 5 < 5
May-06	<5	< 5
Nov-06	< 5	< 5
Jun-07	< 5	< 5
Nov-07	< 5	< 5
May-08	< 5	< 5
Nov-08 May-09	< 5 < 5	< 5 < 5
Oct-09	< 5	< 5
Apr-10	< 5	< 5
Oct-10	< 5	< 5
Apr-11	< 5	< 5
Oct-11	< 5	< 5
Apr-12 Oct-12	< 5 < 5	< 5 < 5
Apr-13	< 5	< 5
Oct-13	< 5	< 5
Apr-14	< 5	< 5
Oct-14	< 5	< 5
Apr-15	< 5	< 5
Oct-15 Apr-16	< 5 < 5	< 5 < 5
Oct-16	< 5	< 5
Apr-17	< 5	< 5
Oct-17	< 5	< 5
Apr-18	< 5	< 5
Oct-18	< 5	< 5

Table 2 OS-4 | OS-4A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (µg/1)	Chlorobenzene (µg/1)			
Apr-90	< 5	< 5			
Nov-90	< 5	< 5			
Oct-91	< 5	< 5			
Apr-92	< 5	< 5			
Sep-92	DRY	DRY			
Apr-93	DRY	DRY			
Oct-93	DRY	DRY			
Apr-94	DRY	DRY			
Nov-94	DRY	DRY			
Apr-95	< 5	< 5			
Nov-95	DRY	DRY			
May-96	< 5	< 5			
Dec-96	< 5	< 5			
May-97	< 5	< 5			
Dec-97	< 5	< 5			
Jun-98	< 5	< 5			
Nov-98	< 5	<5			
Apr-99	< 5	<5			
Dec-99	< 5	<5			
		<5			
Apr-00 Oct-00	< 5 < 5	<5			
Apr-01	< 5	< 5			
Oct-01	< 5	< 5			
Apr-02	< 5	< 5			
Oct-02	< 5	< 5			
Apr-03	< 5	< 5			
Nov-03	< 5	< 5			
May-04	< 5	< 5			
Nov-04	< 5	< 5			
May-05	< 5	< 5			
Nov-05	< 5	< 5			
May-06	< 5	< 5			
Nov-06	< 5	< 5			
Jun-07	< 5	< 5			
Nov-07	< 5	< 5			
May-08	< 5	< 5			
Nov-08	< 5	< 5			
May-09	< 5	< 5			
Oct-09	< 5	< 5			
Apr-10	< 5	< 5			
Oct-10	< 5	< 5			
Apr-11	< 5	< 5			
Oct-11	< 5	< 5			
Apr-12	< 5	< 5			
Oct-12	< 5	< 5			
Apr-13	< 5	< 5			
Oct-13	< 5	< 5			
Apr-14	< 5	< 5			
Oct-14	< 5	< 5			
Apr-15	< 5	< 5			
Oct-15	< 5	< 5			
Apr-16	< 5	<5			
Oct-16		+			
	< 5	< 5			
Apr-17	< 5	< 5			
Oct-17	< 5	< 5			
Apr-18	< 5	< 5			
Oct-18	< 5	< 5			

NA = Not Available OS-4 replaced with OS-4A May 1996

Table 2 OS-5 | OS-5A Historical Groundwater Analytical Results Sterling - Site 1 October 2018

Date	Benzene (μg/1)	Chlorobenzene (µg/		
Apr-90	< 5	< 5		
Nov-90	< 5	< 5		
May-91	< 5	< 5		
Oct-91	< 5	< 5		
Apr-92	< 5	< 5		
Sep-92	DRY	DRY		
Apr-93	DRY	DRY		
Apr-94	< 5	< 5		
Nov-94	DRY	DRY		
Apr-95	< 5	< 5		
Nov-95	< 5	< 5		
May-96	< 5	< 5		
Dec-96	< 5	< 5		
May-97	< 5	< 5		
Dec-97	< 5	< 5		
Jun-98	< 5	< 5		
Nov-98	< 5	< 5		
Apr-99	< 5	< 5		
Dec-99	< 5	< 5		
Apr-00	< 5	< 5		
Oct-00	< 5	< 5		
Apr-01	< 5	< 5		
Oct-01	< 5	< 5		
Apr-02	< 5	< 5		
Oct-02	< 5	< 5		
Apr-03	< 5	< 5		
Nov-03	< 5	< 5		
May-04	< 5	< 5		
Nov-04	< 5	< 5		
May-05	< 5	< 5		
Nov-05	< 5	54		
Dec-05	< 5	< 5		
May-06	< 5	< 5		
Nov-06	< 5	< 5		
Jun-07	< 5	< 5		
Nov-07	< 5	< 5		
May-08	< 5	< 5		
Nov-08	< 5	< 5		
May-09	< 5	< 5		
Oct-09	< 5	< 5		
Apr-10	< 5	< 5		
Oct-10	< 5	< 5		
Apr-11	< 5	< 5		
Oct-11	< 5	< 5		
Apr-12	< 5	< 5		
Oct-12	< 5	< 5		
Apr-13	< 5	< 5		
Oct-13	< 5	< 5		
Apr-14	< 5	< 5		
Oct-14	< 5	< 5		
	< 5	< 5		
Apr-15 Oct-15	< 5	< 5		
		< 5		
Apr-16	< 5			
Oct-16	< 5	< 5		
Apr-17	< 5	< 5		
Oct-17 Apr-18	< 5	< 5 < 5		
Apr IX	< 5	< 5		

NA = Not Available

OS-5 replaced with OS-5A May 1996

Table 3

Field Data Summary Sterling - Site 1

October 15 and 16, 2018

Well ID	Date	Well Depth (ft.)	Water Depth (ft.)	Vol. Water (gal.)	Purge Method	Temp. (°C)	Turbidity (NTU)	ORP/EH (mV)	pН	Conductivity (mS/cm)	Field Notes				
MW-3 10/15/2018			4.00		18.45	121	52.8	8.01	2.080						
	10/15/2018	11.70	6.50	NA	Bailer	-	-	-	-	-	Water was clear and colorless with a mild odor, but no sheen or effervescence. Suspended black particulates present in water. Well went dry at 4 gallons purged.				
				NA		-	-	-	-	-					
		15.10	6.20	5.75	Bailer	18.13	135	49.6	7.67	6.435	Water was light tan and moderately turbid with a faint odor, but no sheen or effervescence. Well went dry at 5.75 gallons purged.				
MW-5A 1	10/15/2018			NA		-	-	-	-	-					
				NA		-	-	-	-	-					
				2.00		19.96	687	135.6	8.13	1.576					
MW-6A	10/15/2018	13.10	10.25	3.00	Bailer	19.73	846	125.2	8.11	1.865	Water was light tan/gray and moderately turbid with no odor, sheen or effervescence. Well went dry at 3 gallons purged.				
				NA		-	-	-	-	-					
						2.50		20.04	770	223.8	6.81	2.528			
MW-8	10/15/2018	17.75	14.04	4.00	Bailer	19.97	> 1,000	212.9	6.99	2.576	Water was light tan, moderately turbid (cloudy) with no odor, sheen or effervescence.				
				NA		-	-	-	-	-					
		10.00	0.00 8.45	1.00	Bailer	18.78	40.9	25.7	7.50	1.801	Water was clear and colorless with no odor, sheen or effervescence. Well went dry at 1.5 gallons purged.				
MW-11A	10/15/2018			1.50		19.44	48	52.2	7.56	1.699					
				NA		-	-	-	-	-					
		12.90					1.50		20.16	381	46.1	7.45	4.038		
MW-12	10/15/2018		10.48	NA	Bailer	-	-	-	-	-	Water was tan and moderately turbid with no odor, sheen or effervescence. Well went dry at 1.5 gallons purged.				
				NA		-	-	-	-	-					
		12.20						2.50		16.12	13.4	-1.4	7.96	0.926	
MW-14A	10/15/2018		12.20 8.51	5.00	Bailer	16.10	49.7	-10.8	7.58	0.942	Water was clear and colorless with no odor, sheen or effervescence.				
				7.50		15.82	80.1	-11.7	7.41	0.918					
			4.70 5.70	5.75	Bailer	18.95	174.0	90.7	7.84	3.123					
MW-17	10/15/2018	14.70		11.00		18.46	193.0	83.5	8.01	3.126	Water was light gray and moderately turbid, with no odor, sheen or effervescence.				
				18.00		19.48	149	92.0	7.88	3.059					

Table 3

Field Data Summary Sterling - Site 1

October 15 and 16, 2018

Well ID	Date	Well Depth (ft.)	Water Depth (ft.)	Vol. Water (gal.)	Purge Method	Temp. (°C)	Turbidity (NTU)	ORP/EH (mV)	pН	Conductivity (mS/cm)	Field Notes
OS-1A 10/15/		15.00	13.11	2.75	Bailer	17.53	141	203.4	7.47	2.673	Water was clear and colorless with no odor, sheen or effervescence
	10/15/2018			5.50		17.59	107	209.2	7.42	2.908	
				NA		-	-	-	-	-	
		10.70	7.63	2.00	Bailer	18.42	211	216	7.26	0.531	Water was tan and moderately turbid with no odor, sheen or effervescence.
OS-3	10/15/2018			4.00		18.68	>1,000	223.8	7.10		
				6.00		18.18	>1,000	232.5	6.89	0.481	
		10.00	0 6.10	2.50	Bailer	19.02	11.9	242.5	7.27	1.064	Water was clear and colorless with no odor, sheen or effervescence.
OS-4A 10/15	10/15/2018			5.00		19.22	16.2	235.0	7.14	1 072	
				7.50		18.95	49.2	237.1	7.14	0.963	
		13.00	13.00 3.05	5.50	17.82	113	207.3	7.99	0.468		
OS-5A	10/15/2018			7.00	Bailer	17.68	>1,000	231.5	7.50		Water was tan and moderately turbid with no odor, sheen or effervescence. Well went dry at 7 gallons purged.
				NA		-	-	-	-	-	

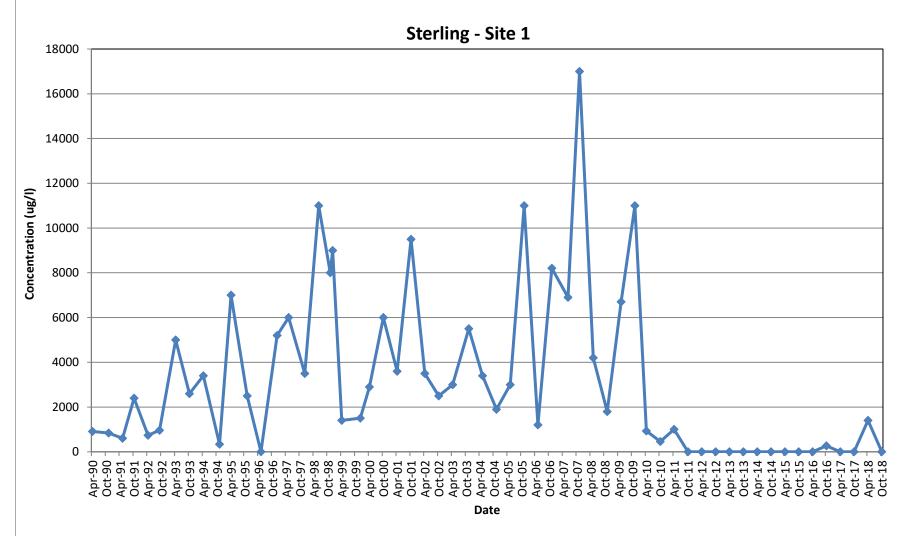
NA = Not Applicable



GRAPHS

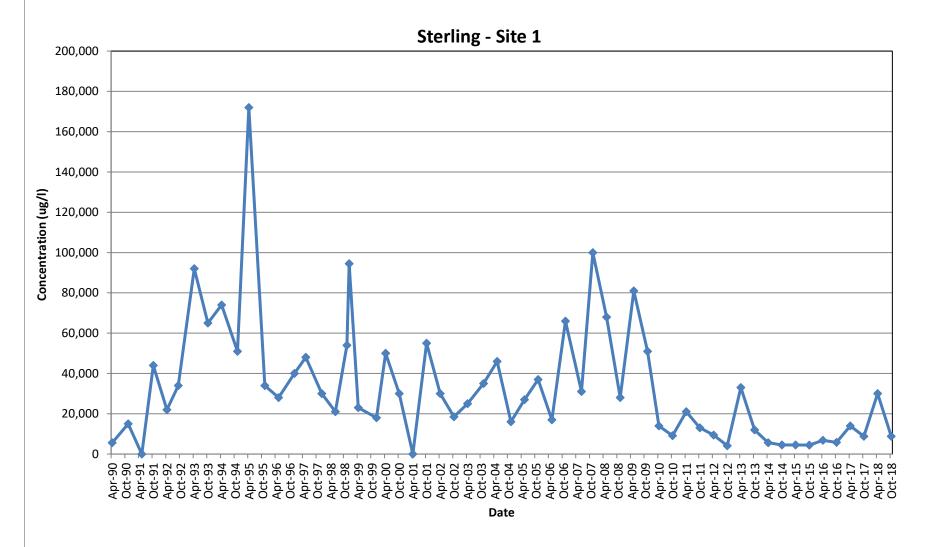
Graph 1

MW-3 Benzene Concentrations vs. Time

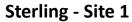


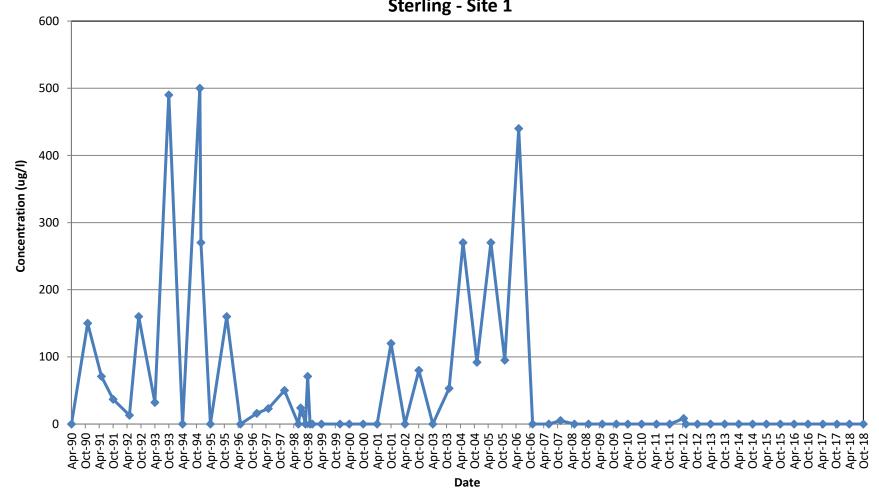
Graph 2

MW-3 Chlorobenzene Concentrations vs. Time



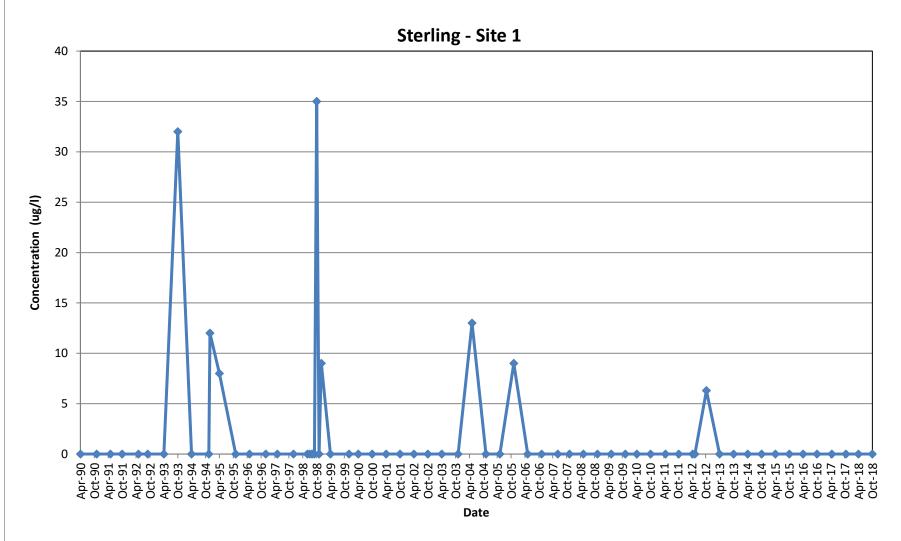
Graph 3 MW-5/MW-5A Benzene Concentrations vs. Time





Graph 4

MW-5/MW-5A Chlorobenzene Concentrations vs. Time





APPENDIX A LABORATORY ANALYTICAL REPORTS



Experience is the solution

Work Order No: 181015051

ELAP#: 10709

314 North Pearl Street ♦ Albany, New York 12207 (800) 848-4983 ♦ (518) 434-4546 ♦ Fax (518) 434-0891

October 19, 2018

David Orton AMRI-Rensselaer, Inc 33 Riverside Avenue Rensselaer, NY 12144

TEL: (518)433-7772

RE: Sterling Site 1

Semi-Annual GW Monitoring

Dear David Orton:

Adirondack Environmental Services, Inc received 5 samples on 10/15/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels

Laboratory Director

Adirondack Environmental Services, Inc

CASE NARRATIVE

CLIENT: AMRI-Rensselaer, Inc Date: 19-Oct-18

Project: Sterling Site 1 **Lab Order:** 181015051

The sampling was performed in accordance with the AES field sampling procedures and/or the client specified sampling procedures. Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers: ND: Not Detected at reporting limit C: CCV below acceptable Limits

J: Analyte detected below quantitation limit C+: CCV above acceptable Limits

B: Analyte detected in Blank S: LCS Spike recovery is below acceptable limits

X : Exceeds maximum contamination limit S+: LCS Spike recovery is above acceptable limits

H: Hold time exceeded Z: Duplication outside acceptable limits

N: Matrix Spike below acceptable limits T: Tentatively Identified Compound-Estimated

N+: Matrix Spike is above acceptable limits E :Above quantitation range-Estimated

Note: All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181015051

Date: 19-Oct-18

Project: Sterling Site 1 **PO#:**

Semi-Annual GW Monitoring

Lab SampleID: 181015051-001 **Collection Date:** 10/15/2018

Client Sample ID: OS-4A Matrix: GROUNDWATER

Analyses	Result	RL Qu	al Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/16/2018 10:00:00 PM
Benzene	ND	5.0	μg/L	1	10/16/2018 10:00:00 PM
Toluene	ND	5.0	μg/L	1	10/16/2018 10:00:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/16/2018 10:00:00 PM
Surr: 1,2-Dichloroethane-d4	92.8	80.9-126	%REC	1	10/16/2018 10:00:00 PM
Surr: 4-Bromofluorobenzene	99.6	84.5-119	%REC	1	10/16/2018 10:00:00 PM
Surr: Toluene-d8	100	79.4-124	%REC	1	10/16/2018 10:00:00 PM

Lab SampleID: 181015051-002 **Collection Date:** 10/15/2018

Matrix: GROUNDWATER Client Sample ID: OS-3

Analyses	Result	RL Qua	al Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/16/2018 10:22:00 PM
Benzene	ND	5.0	μg/L	1	10/16/2018 10:22:00 PM
Toluene	ND	5.0	μg/L	1	10/16/2018 10:22:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/16/2018 10:22:00 PM
Surr: 1,2-Dichloroethane-d4	94.2	80.9-126	%REC	1	10/16/2018 10:22:00 PM
Surr: 4-Bromofluorobenzene	92.0	84.5-119	%REC	1	10/16/2018 10:22:00 PM
Surr: Toluene-d8	95.5	79.4-124	%REC	1	10/16/2018 10:22:00 PM

Lab SampleID: 181015051-003 **Collection Date:** 10/15/2018

Client Sample ID: OS-5A Matrix: GROUNDWATER

Analyses	Result	RL Qu	ual Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/16/2018 10:43:00 PM
Benzene	ND	5.0	μg/L	1	10/16/2018 10:43:00 PM
Toluene	ND	5.0	μg/L	1	10/16/2018 10:43:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/16/2018 10:43:00 PM
Surr: 1,2-Dichloroethane-d4	94.4	80.9-126	%REC	1	10/16/2018 10:43:00 PM
Surr: 4-Bromofluorobenzene	94.8	84.5-119	%REC	1	10/16/2018 10:43:00 PM
Surr: Toluene-d8	102	79.4-124	%REC	1	10/16/2018 10:43:00 PM

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181015051

Project: Sterling Site 1

Semi-Annual GW Monitoring

Lab SampleID: 181015051-004 **Collection Date:** 10/15/2018

Client Sample ID: MW-8 Matrix: GROUNDWATER

Analyses	Result	RL	Qual Unit	s DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/16/2018 11:05:00 PM
Benzene	ND	5.0	μg/L	1	10/16/2018 11:05:00 PM
Toluene	ND	5.0	μg/L	1	10/16/2018 11:05:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/16/2018 11:05:00 PM
Surr: 1,2-Dichloroethane-d4	91.5	80.9-126	%RE	C 1	10/16/2018 11:05:00 PM
Surr: 4-Bromofluorobenzene	97.5	84.5-119	%RE	C 1	10/16/2018 11:05:00 PM
Surr: Toluene-d8	99.5	79.4-124	%RE	C 1	10/16/2018 11:05:00 PM

Date: 19-Oct-18

Lab SampleID: 181015051-005 **Collection Date:** 10/15/2018

Client Sample ID: OS-1A Matrix: GROUNDWATER

Analyses	Result	RL Q	ual Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/16/2018 11:26:00 PM
Benzene	ND	5.0	μg/L	1	10/16/2018 11:26:00 PM
Toluene	ND	5.0	μg/L	1	10/16/2018 11:26:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/16/2018 11:26:00 PM
Surr: 1,2-Dichloroethane-d4	94.4	80.9-126	%REC	1	10/16/2018 11:26:00 PM
Surr: 4-Bromofluorobenzene	101	84.5-119	%REC	1	10/16/2018 11:26:00 PM
Surr: Toluene-d8	95.4	79.4-124	%REC	1	10/16/2018 11:26:00 PM



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CHAIN OF CUSTODY RECORD

AES Work Order #

Experience	is	the	Solution

A full service analytical r

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Adirondack Environmental Services





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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services**, **Inc**. are undertaken and all rates are based upon the following terms:

- (a) Neither Adirondack Environmental Services, Inc., nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of Adirondack Environmental Services, Inc.'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against Adirondack Environmental Services, Inc. arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) Adirondack Environmental Services, Inc. reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an Adirondack Environmental Services, Inc. report by other than our customer does not constitute a representation of Adirondack Environmental Services, Inc. as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
- (f) Results pertain only to items analyzed. Information supplied by client is assumed to be correct. This information may be used on reports and in calculations and Adirondack Environmental Services, Inc. is not responsible for the accuracy of this information.
- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.



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Work Order No: 181016043

ELAP#: 10709

October 29, 2018

David Orton AMRI-Rensselaer, Inc 33 Riverside Avenue Rensselaer, NY 12144

TEL: (518)433-7772

RE: Sterling Site 1 AMRI-Renss.

Dear David Orton:

Adirondack Environmental Services, Inc received 7 samples on 10/16/2018 for the analyses presented in the following report.

Please see case narrative for specifics on analysis.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Tara Daniels

Laboratory Director

Town Donal

CASE NARRATIVE

CLIENT: AMRI-Rensselaer, Inc Date: 29-Oct-18

Project: Sterling Site 1 **Lab Order:** 181016043

Sample containers were supplied by Adirondack Environmental Services.

Definitions - RL: Reporting Limit DF: Dilution factor

Qualifiers: ND: Not Detected at reporting limit C: CCV below acceptable Limits

J: Analyte detected below quantitation limit C+: CCV above acceptable Limits

B: Analyte detected in Blank S: LCS Spike recovery is below acceptable limits

X : Exceeds maximum contamination limit S+: LCS Spike recovery is above acceptable limits

H: Hold time exceeded Z: Duplication outside acceptable limits

N: Matrix Spike below acceptable limits T: Tentatively Identified Compound-Estimated

N+: Matrix Spike is above acceptable limits E :Above quantitation range-Estimated

Note: All Results are reported as wet weight unless noted

The results relate only to the items tested. Information supplied by the client is assumed to be correct.

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181016043

Date: 29-Oct-18

Project: Sterling Site 1
PO#:

AMRI-Renss.

Lab SampleID: 181016043-001 Collection Date: 10/16/2018						2018
Client Sample ID:	MW-6A				Matrix: GROU	NDWATER
Analyses		Result	RL	Qual Units	DF	Date Analyzed
ICP METALS - EPA	200.7 REV 4.4					Analyst: SM
	(Prep: - 10/16/2	2018)				
Arsenic		0.038	0.005	mg/L	1	10/24/2018
Sodium		278	0.500	mg/L	10	10/24/2018
VOLATILE ORGAN	ICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane		ND	5.0	μg/L	1	10/18/2018 9:44:00 PM
Benzene		ND	5.0	μg/L	1	10/18/2018 9:44:00 PM
Toluene		ND	5.0	μg/L	1	10/18/2018 9:44:00 PM
Chlorobenzene		ND	5.0	μg/L	1	10/18/2018 9:44:00 PM
Surr: 1,2-Dichloroe	ethane-d4	88.2	80.9-126	%REC	1	10/18/2018 9:44:00 PM
Surr: 4-Bromofluo	robenzene	104	84.5-119	%REC	1	10/18/2018 9:44:00 PM
Surr: Toluene-d8		106	79.4-124	%REC	1	10/18/2018 9:44:00 PM
Lab SampleID:	181016043-002			Collecti	on Date: 10/16/2	2018

Lab SampleID: 181016043-002 **Collection Date:** 10/16/2018

Client Sample ID: MW-12 Matrix: GROUNDWATER

Analyses	Result	RL Qu	ual Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4 (Prep: - 10/1	6/2018)				Analyst: SM
Arsenic	0.064	0.005	mg/L	1	10/24/2018
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	8.6	5.0	μg/L	1	10/18/2018 11:32:00 PM
Benzene	ND	5.0	μg/L	1	10/18/2018 11:32:00 PM
Toluene	ND	5.0	μg/L	1	10/18/2018 11:32:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/18/2018 11:32:00 PM
Surr: 1,2-Dichloroethane-d4	95.6	80.9-126	%REC	1	10/18/2018 11:32:00 PM
Surr: 4-Bromofluorobenzene	106	84.5-119	%REC	1	10/18/2018 11:32:00 PM
Surr: Toluene-d8	99.2	79.4-124	%REC	1	10/18/2018 11:32:00 PM

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181016043

Date: 29-Oct-18

Project: Sterling Site 1
PO#:

AMRI-Renss.

Lab SampleID: 181016043-003 **Collection Date:** 10/16/2018

Client Sample ID: MW-11A Matrix: GROUNDWATER

Analyses	Result	RL Q	ual Units	DF	Date Analyzed
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/18/2018 10:06:00 PM
Benzene	ND	5.0	μg/L	1	10/18/2018 10:06:00 PM
Toluene	ND	5.0	μg/L	1	10/18/2018 10:06:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/18/2018 10:06:00 PM
Surr: 1,2-Dichloroethane-d4	98.6	80.9-126	%REC	1	10/18/2018 10:06:00 PM
Surr: 4-Bromofluorobenzene	97.2	84.5-119	%REC	1	10/18/2018 10:06:00 PM
Surr: Toluene-d8	95.8	79.4-124	%REC	1	10/18/2018 10:06:00 PM

Lab SampleID: 181016043-004 **Collection Date:** 10/16/2018

Client Sample ID: MW-17 Matrix: GROUNDWATER

Analyses	Result	RL Q	ual Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4 (Prep: - 10)/16/2018)				Analyst: SM
Sodium	375	0.500	mg/L	10	10/24/2018
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/18/2018 10:27:00 PM
Benzene	ND	5.0	μg/L	1	10/18/2018 10:27:00 PM
Toluene	ND	5.0	μg/L	1	10/18/2018 10:27:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/18/2018 10:27:00 PM
Surr: 1,2-Dichloroethane-d4	93.9	80.9-126	%REC	1	10/18/2018 10:27:00 PM
Surr: 4-Bromofluorobenzene	103	84.5-119	%REC	1	10/18/2018 10:27:00 PM
Surr: Toluene-d8	96.2	79.4-124	%REC	1	10/18/2018 10:27:00 PM

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181016043

Date: 29-Oct-18

Project: Sterling Site 1 PO#:

AMRI-Renss.

Lab SampleID:	181016043-005			Collec	tion Date: 1	0/16/2	2018
Client Sample ID:	MW-5A				Matrix: (GROU	NDWATER
Analyses		Result	RL	Qual Units	s :	DF	Date Analyzed
ICP METALS - EPA	200.7 REV 4.4						Analyst: SM
	(Prep: - 10/16/2	2018)					
Arsenic		0.015	0.005	mg/L		1	10/24/2018
Sodium		1140	5.00	mg/L		100	10/25/2018
VOLATILE ORGAN	ICS EPA 624.1						Analyst: SMD
1,2-Dichloroethane		ND	5.0	μg/L		1	10/18/2018 10:49:00 PM
Benzene		ND	5.0	μg/L		1	10/18/2018 10:49:00 PM
Toluene		ND	5.0	μg/L		1	10/18/2018 10:49:00 PM
Chlorobenzene		ND	5.0	μg/L		1	10/18/2018 10:49:00 PM
Surr: 1,2-Dichloroe	ethane-d4	101	80.9-126	%RE0	0	1	10/18/2018 10:49:00 PM
Surr: 4-Bromofluor	robenzene	95.3	84.5-119	%RE0		1	10/18/2018 10:49:00 PM
Surr: Toluene-d8		97.9	79.4-124	%RE0	3	1	10/18/2018 10:49:00 PM

Lab SampleID: 181016043-006 **Collection Date:** 10/16/2018

Client Sample ID: MW-14A Matrix: GROUNDWATER

Analyses	Result		ual Units	DF	Date Analyzed
ICP METALS - EPA 200.7 REV 4.4 (Prep: - 10/				Analyst: SM	
Arsenic	1.16	0.005	mg/L	1	10/24/2018
VOLATILE ORGANICS EPA 624.1					Analyst: SMD
1,2-Dichloroethane	ND	5.0	μg/L	1	10/18/2018 11:10:00 PM
Benzene	ND	5.0	μg/L	1	10/18/2018 11:10:00 PM
Toluene	ND	5.0	μg/L	1	10/18/2018 11:10:00 PM
Chlorobenzene	ND	5.0	μg/L	1	10/18/2018 11:10:00 PM
Surr: 1,2-Dichloroethane-d4	97.0	80.9-126	%REC	1	10/18/2018 11:10:00 PM
Surr: 4-Bromofluorobenzene	98.5	84.5-119	%REC	1	10/18/2018 11:10:00 PM
Surr: Toluene-d8	97.2	79.4-124	%REC	1	10/18/2018 11:10:00 PM

CLIENT: AMRI-Rensselaer, Inc LabWork Order: 181016043

Project: Sterling Site 1 PO#:

AMRI-Renss.

Lab SampleID: 181016043-007 **Collection Date:** 10/16/2018

Client Sample ID: MW-3 Matrix: GROUNDWATER

Client Sample ID: MW-3		Matrix: GROUNDWATER					
Analyses	Result RL Q		Qual Units	DF	Date Analyzed		
VOLATILE ORGANICS EPA 624.1					Analyst: SMD		
1,2-Dichloroethane	ND	1000	μg/L	200	10/19/2018 12:36:00 AM		
Benzene	ND	1000	μg/L	200	10/19/2018 12:36:00 AM		
Toluene	ND	1000	μg/L	200	10/19/2018 12:36:00 AM		
Chlorobenzene	8800	1000	μg/L	200	10/19/2018 12:36:00 AM		
Surr: 1,2-Dichloroethane-d4	94.0	80.9-126	%REC	200	10/19/2018 12:36:00 AM		
Surr: 4-Bromofluorobenzene	105	84.5-119	%REC	200	10/19/2018 12:36:00 AM		
Surr: Toluene-d8	97.1	79.4-124	%REC	200	10/19/2018 12:36:00 AM		

Date: 29-Oct-18



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AES Work Order # 7 10/16/18
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TERMS, CONDITIONS & LIMITATIONS

All service rendered by the **Adirondack Environmental Services**, **Inc**. are undertaken and all rates are based upon the following terms:

- (a) Neither Adirondack Environmental Services, Inc., nor any of its employees, agents or sub-contractors shall be liable for any loss or damage arising out of Adirondack Environmental Services, Inc.'s performance or nonperformance, whether by way of negligence or breach of contract, or otherwise, in any amount greater than twice the amount billed to the customer for the work leading to the claim of the customer. Said remedy shall be the sole and exclusive remedy against Adirondack Environmental Services, Inc. arising out of its work.
- (b) All claims made must be in writing within forty-five (45) days after delivery of the **Adirondack Environmental Services, Inc.** report regarding said work or such claim shall be deemed or irrevocably waived.
- (c) Adirondack Environmental Services, Inc. reports are submitted in writing and are for our customers only. Our customers are considered to be only those entities being billed for our services. Acquisition of an Adirondack Environmental Services, Inc. report by other than our customer does not constitute a representation of Adirondack Environmental Services, Inc. as to the accuracy of the contents thereof.
- (d) In no event shall **Adirondack Environmental Services, Inc.**, its employees, agents or sub-contractors be responsible for consequential or special damages of any kind or in any amount.
- (e) No deviation from the terms set forth herein shall bind **Adirondack Environmental Services, Inc.** unless in writing and signed by a Director of **Adirondack Environmental Services, Inc.**
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- (g) Payments by Credit Card/Purchase Cards are subject to a 3% additional charge.

