APPENDIX C

Select Site Investigation Reports (Provided on CD)

Attachment A

Table A-1
Field Parameters, Conventional Water Quality, and Metals

			Location	MW-2	MW-2	MW-21	MW-21	MW-20
			Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Sample Date	9/16/2015	2/24/2016	9/15/2015	2/24/2016	9/15/2015
Field Parameters	Ground Surface Elevation	ft msl		313.31	313.31	343.70	343.70	365.20
	Screen Interval Top	ft msl		233.31	185.81	243.70	243.70	--
	Depth to Water	ft bgs		73.16	69.04	104.82	101.32	120.00
	Water Table Elevation	ft msl		240.15	244.27	238.88	242.38	245.20
	Temperature	°C		10.41	9.64	10.38	9.74	12.84
	pH	s.u.		7.02	7.03	6.98	6.9	7.3
	Dissolved Oxygen	mg/L		0.83	0.67	1.19	1.23	1.73
	Oxidation-Reduction Potential	mV		183	365	133	19	195
	Specific Conductance	µmhos/cm		388.7	257.4	320.7	338.8	242.1
Conventional Water Quality Parameters	Alkalinity, Total	mg/L $CaCO_3$		177	168	146	162	94.9
	Chloride	mg/L		3.75	3.72	2.34	2.58	3.31
	Ammonia (as N)	mg/L		< 0.01 U	< 0.01 U	0.0236	0.0195	0.0254
	Nitrate (as N)	mg/L		0.818	1.25	0.076	0.337	< 0.01 U
	Nitrite (as N)	mg/L		< 0.01 U	< 0.01 U	0.01 J	< 0.01 U	< 0.01 U
	Sulfate	mg/L		17.9	16.7	16.4	16.1	17.9
	Sulfide	mg/L		< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
	Total Organic Carbon	mg/L		1.41	< 1 U	1.54	< 1 U	< 1 U
	Total Dissolved Solids	mg/L		225	217	196	207	153
	Total Suspended Solids	mg/L		1.1	< 1 U	9.47	3.2	1.8
	Specific Conductance	µmhos/cm		381	368	320	345	234
Metals[1]	Arsenic	mg/L		< 0.001 U	< 0.001 U	0.00324	0.00224	0.00143
	Barium	mg/L		0.00912	0.00858	0.0109	0.0105	0.00606
	Calcium	mg/L		23.1	21.9	19.6	21.3	14
	Iron	mg/L		< 0.01 U	< 0.01 U	1.12	0.974	0.01
	Iron (total)	mg/L		0.0564	0.022	2.5	1.46	0.031
	Magnesium	mg/L		26.4	26.5	19.4	23	13.7
	Manganese	mg/L		0.106	0.088	0.602	0.585	0.384
	Manganese (total)	mg/L		0.119	0.106	0.654	0.744	0.385
	Potassium	mg/L		2.32	2.12	2.17	2.14	2.14
	Silica	mg/L		30.2	31.5	34.8	36.3	34.9
	Sodium	mg/L		8.99	8.97	10.2	10.8	6.14
Arsenic Speciation	Total Dissolved Arsenic	µg/L		--	--	--	--	1.59
	Arsenic (III)	µg/L		--	--	--	--	0.576
	Arsenic (V)	µg/L		--	--	--	--	1.01
	Inorganic Arsenic	µg/L		--	--	--	--	1.58

Table A-1
Field Parameters, Conventional Water Quality, and Metals

			Location	MW-20	MW-33	MW-33	MW-35	MW-35
			Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Sample Date	2/24/2016	9/15/2015	2/25/2016	9/15/2015	2/24/2016
Field Parameters	Ground Surface Elevation	ft msl		365.20	357.07	357.07	358.75	358.75
	Screen Interval Top	ft msl		--	--	--	244.25	244.25
	Depth to Water	ft bgs		116.52	110.43	110.22	115.94	115.69
	Water Table Elevation	ft msl		248.68	246.64	246.85	242.81	243.06
	Temperature	°C		11.17	12.88	12.15	10.97	10.58
	pH	s.u.		7.24	6.87	6.87	6.89	6.91
	Dissolved Oxygen	mg/L		1.42	0.65	0.41	0.18	0.54
	Oxidation-Reduction Potential	mV		28	-61	81	-82	26
	Specific Conductance	µmhos/cm		227.6	877	835	783.2	587.6
Conventional Water Quality Parameters	Alkalinity, Total	mg/L $CaCO_3$		86.2	469	496	406	400
	Chloride	mg/L		3.29	5.54	5	5.47	5.4
	Ammonia (as N)	mg/L		0.0196	0.0366	0.0338	0.0702	0.0688
	Nitrate (as N)	mg/L		< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
	Nitrite (as N)	mg/L		< 0.01 U	0.015 J	< 0.01 U	0.022 J	0.025 J
	Sulfate	mg/L		16.9	15.4	16.5	18.4	19.7
	Sulfide	mg/L		< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	0.012
	Total Organic Carbon	mg/L		< 1 U	3.62	1.83	6.37	3.35
	Total Dissolved Solids	mg/L		145	507	485	465	483
	Total Suspended Solids	mg/L		< 1 U	12.8	7.4	62.2	22
	Specific Conductance	µmhos/cm		218	857	840	761	770
Metals[1]	Arsenic	mg/L		0.00149	0.0518	0.0436	0.0312	0.0295
	Barium	mg/L		0.00668	0.0324	0.0286	0.0289	0.028
	Calcium	mg/L		12.7	71.5	64.3	62.5	59.8
	Iron	mg/L		0.0506	8.11	7.08	12.2	12.3
	Iron (total)	mg/L		0.138	7.98	7.71	13	13.9
	Magnesium	mg/L		13.6	55.6	55.6	40.6	45.2
	Manganese	mg/L		0.344	1.12	0.959	2.03	2.02
	Manganese (total)	mg/L		0.426	1.12	1.22	2.02	2.65
	Potassium	mg/L		1.91	3.43	3.19	3.26	3.19
	Silica	mg/L		36.2	36.2	35.1	50	52.1
	Sodium	mg/L		6.07	19.2	17.5	15.1	15.6
Arsenic Speciation	Total Dissolved Arsenic	µg/L		--	55	--	34.7	--
	Arsenic (III)	µg/L		1.15	32.4	36.4	28	25.9
	Arsenic (V)	µg/L		< 1.00 U	13.1	< 1.00 U	6.47	< 1.00 U
	Inorganic Arsenic	µg/L		1.64	45.5	37.6	34.5	24.9

Table A-1
Field Parameters, Conventional Water Quality, and Metals

		Location	SW-1	SW-1	SW-2	SW-2	SW-3	SW-3	LS-B
		Sample Type	Seep	Seep	Seep	Seep	Seep	Seep	Leachate
		Sample Date	9/16/2015	2/25/2016	9/16/2015	2/25/2016	9/16/2015	2/25/2016	9/16/2015
Field Parameters	Ground Surface Elevation	ft msl	239.33	239.33	224.78	224.78	195.38	195.38	--
	Screen Interval Top	ft msl	--	--	--	--	--	--	--
	Depth to Water	ft bgs	--	--	--	--	--	--	--
	Water Table Elevation	ft msl	239.33	239.33	224.78	224.78	195.38	195.38	--
	Temperature	°C	12.47	8.28	11.7	7.58	11.59	8.87	17.7
	pH	s.u.	7.56	7.9	8.34	8.27	7.97	7.79	7.87
	Dissolved Oxygen	mg/L	7.2	9.45	10.45	11.84	10.46	11.13	9.11
	Oxidation-Reduction Potential	mV	124	--	218	--	90	--	179
	Specific Conductance	µmhos/cm	235.8	209.9	705.8	608.6	340.3	283.7	2314
Conventional Water Quality Parameters	Alkalinity, Total	mg/L $CaCO_3$	--	69.4	352	297	148	119	234
	Chloride	mg/L	--	5.62	21.9	19.2	10.3	7.95	271
	Ammonia (as N)	mg/L	--	0.0166	0.0252	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
	Nitrate (as N)	mg/L	--	4.26	0.131	0.385	0.219	0.985	44.8
	Nitrite (as N)	mg/L	--	<0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
	Sulfate	mg/L	--	7.82	10.4	12.2	14	11.1	471
	Sulfide	mg/L	--	<0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
	Total Organic Carbon	mg/L	--	3.08	6.57	4.9	4.53	3.71	19.8
	Total Dissolved Solids	mg/L	--	152	428	388	216	189	--
	Total Suspended Solids	mg/L	--	8.85	11.1	21	14	28.9	1.62
	Specific Conductance	µmhos/cm	--	209	700	619	339	291	2290
Metals[1]	Arsenic	mg/L	0.00138	<0.001 U	0.00159	0.016	0.00392	0.00274	< 0.001 U
	Barium	mg/L	< 0.001 U	0.00417	0.00373	0.0354	0.00571	0.00436	0.0575
	Calcium	mg/L	16.8	15.4	59.6	74.3	26.3	17.8	185
	Iron	mg/L	< 0.01 U	0.03 J	0.021 J	8.97	0.03	0.215	< 0.01 U
	Iron (total)	mg/L	8.59	0.877	9.98	2.1	0.764	1.41	0.13
	Magnesium	mg/L	12.8	13.7	45.8	61.3	20.4	11.7	111
	Manganese	mg/L	0.0113	0.0137	0.057	2.4	0.449	0.24	< 0.001 U
	Manganese (total)	mg/L	1.52	0.325	4.56	0.354	0.692	0.597	0.0255
	Potassium	mg/L	1.25	1.23	3.35	3.78	2.45	1.36	14.5
	Silica	mg/L	--	37	41.1	41	40.8	39.3	20
	Sodium	mg/L	6.62	6.84	14.9	19.3	8.88	7.79	136
Arsenic Speciation	Total Dissolved Arsenic	µg/L	4.24	--	2.75	--	5.94	--	--
	Arsenic (III)	µg/L	0.02 J	0.019 J	0.08	24.1	0.55	1.29	--
	Arsenic (V)	µg/L	3.27	< 0.025 U	2.08	< 1.00 U	4.27	< 1.00 U	--
	Inorganic Arsenic	µg/L	3.29	0.496	2.16	34.4	4.82	7.38	--

Table A-1
Field Parameters, Conventional Water Quality, and Metals

			Location	LS-B	LS-CT
			Sample Type	Leachate	LFG Condensate
			Sample Date	2/25/2016	2/25/2016
Field Parameters	Ground Surface Elevation	ft msl		--	--
	Screen Interval Top	ft msl		--	--
	Depth to Water	ft bgs		--	--
	Water Table Elevation	ft msl		--	--
	Temperature	°C		15.58	11.52
	pH	s.u.		8.11	7.3
	Dissolved Oxygen	mg/L		9.46	7.12
	Oxidation-Reduction Potential	mV		--	--
	Specific Conductance	µmhos/cm		387	224.5
Conventional Water Quality Parameters	Alkalinity, Total	mg/L $CaCO_3$		52.6	--
	Chloride	mg/L		26.1	--
	Ammonia (as N)	mg/L		< 0.01 U	--
	Nitrate (as N)	mg/L		7.43	--
	Nitrite (as N)	mg/L		< 0.01 U	--
	Sulfate	mg/L		50.5	--
	Sulfide	mg/L		< 0.01 U	--
	Total Organic Carbon	mg/L		5.89	--
	Total Dissolved Solids	mg/L		--	--
	Total Suspended Solids	mg/L		< 1 U	--
	Specific Conductance	µmhos/cm		358	--
Metals[1]	Arsenic	mg/L		< 0.001 U	--
	Barium	mg/L		0.00989	--
	Calcium	mg/L		29.3	--
	Iron	mg/L		< 0.01 U	--
	Iron (total)	mg/L		0.752	--
	Magnesium	mg/L		14.7	--
	Manganese	mg/L		< 0.001 U	--
	Manganese (total)	mg/L		0.0976	--
	Potassium	mg/L		3.82	--
	Silica	mg/L		19	--
	Sodium	mg/L		16.4	--
Arsenic Speciation	Total Dissolved Arsenic	µg/L		--	--
	Arsenic (III)	µg/L		--	--
	Arsenic (V)	µg/L		--	--
	Inorganic Arsenic	µg/L		--	--

Table A-1
Field Parameters, Conventional Water Quality, and Metals

Notes:

Surface water sampling point (weir) elevations of seeps SW-1, SW-2, and SW-3 are 230.59, 189.89, and 187.23 ft msl, respectively

1. Dissolved except where noted

-- : not measured

µg/L: micrograms per liter

µmhos/cm: micromhos per centimeter

bgs: below ground surface

$CaCO_3$: calcium carbonate

ft: foot

mg/L: milligrams per liter

s.u.: standard units

J: estimated value

LFG: landfill gas

msl: mean sea level

mV: millivolt

U: non detect

Table A-2

Volatile Organic Compounds, Dissolved Gases, Compound-Specific Isotope Analyses, and Microbiological Data

			Location	MW-2	MW-2	MW-20	MW-20	MW-21	MW-21	MW-33
			Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Sample Date	9/16/2015	2/24/2016	9/15/2015	2/24/2016	9/15/2015	2/24/2016	9/15/2015
Volatile Organic Compounds[1]	Benzene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.55
	1,1-Dichloroethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	2.05
	1,1-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.28
	1,2-Dichloropropane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	10.3
	Chloroethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.947
	cis-1,2-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.11	0.887	47.2
	Dichlorodifluoromethane	µg/L		12.2	4.65	1.75	0.549	4.13	2.55	8.82
	trans-1,2-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	1.14
	Trichloroethylene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Trichlorofluoromethane	µg/L		3.97	3.11	< 0.2 U	< 0.2 U	0.858	1.02	< 0.2 U
	Vinyl Chloride	µg/L		0.129 J	0.0655	< 0.02 U	< 0.02 U	0.14 J	0.0993	53.1 J
Dissolved Gases	Methane	µg/L		--	4	--	0.33 J	--	11	--
	Ethene	µg/L		--	0.016 J	--	0.013 J	--	0.033 J	--
	Ethane	µg/L		--	0.011 J	--	0.0078 J	--	0.0095 J	--
CSIA	$\delta^{13}C$ of cis-1,2-DCE	per mil PDB		--	--	--	--	--	--	-23.2
	$\delta^{37}Cl$ of cis-1,2-DCE	per mil SMOC		--	--	--	--	--	--	5.7
	$\delta^{13}C$ of vinyl chloride	per mil PDB		--	--	--	--	--	--	-17.4
	$\delta^{37}Cl$ of vinyl chloride	per mil SMOC		--	--	--	--	--	--	NR
	$\delta^{13}C$ of methane	per mil PDB		--	--	--	--	--	--	-34.8
qPCR CENSUS	Dehalococcoides	cells/mL		--	0.5 J	--	--	--	5.3	142
	tceA Reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	< 0.5
	BAV1 vinyl chloride reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	< 0.5
	Vinyl chloride reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	< 0.5
	Phenol Hydroxylase	cells/mL		--	1.8 J	--	--	--	10	541
	Toluene Monooxygenase 2	cells/mL		--	11.2	--	--	--	50.1	22.9
	Benzene Carboxylase	cells/mL		--	<5	--	--	--	<5	0.6 J

Table A-2

Volatile Organic Compounds, Dissolved Gases, Compound-Specific Isotope Analyses, and Microbiological Data

			Location	MW-33	MW-35	MW-35	SW-1	SW-1	SW-2	SW-2	SW-3
			Sample Type	Groundwater	Groundwater	Groundwater	Seep	Seep	Seep	Seep	Seep
			Sample Date	2/25/2016	9/15/2015	2/24/2016	9/16/2015	2/25/2016	9/16/2015	2/25/2016	9/16/2015
Volatile Organic Compounds[1]	Benzene	µg/L		1.35	1.08	0.784	< 0.2 U	<0.2 U	< 0.2 U	<0.2 U	< 0.2 U
	1,1-Dichloroethane	µg/L		2.04	0.412	0.33	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	1,1-Dichloroethene	µg/L		0.25	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	1,2-Dichloropropane	µg/L		9.82	1.15	0.701	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Chloroethane	µg/L		0.55	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	cis-1,2-Dichloroethene	µg/L		42.2	10.2	6.02	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Dichlorodifluoromethane	µg/L		5.32	1.13	0.844	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	trans-1,2-Dichloroethene	µg/L		1.04	0.37	0.29	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Trichloroethylene	µg/L		< 0.2 U	1.05	0.989	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Trichlorofluoromethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
	Vinyl Chloride	µg/L		34.2	8.15 J	6.06	0.0408 J	<0.02 U	< 0.02 U	<0.02 U	0.0642 J
Dissolved Gases	Methane	µg/L		710	--	650	--	0.5 J	--	980	--
	Ethene	µg/L		1.2	--	0.48	--	0.017 J	--	1.2	--
	Ethane	µg/L		0.098 J	--	0.081 J	--	0.0033 J	--	0.27	--
CSIA	$\delta^{13}C$ of cis-1,2-DCE	per mil PDB		-23.6	NR	NR	--	--	--	--	--
	$\delta^{37}Cl$ of cis-1,2-DCE	per mil SMOC		6.0	6.4	6.5	--	--	--	--	--
	$\delta^{13}C$ of vinyl chloride	per mil PDB		-43.1	NR	NR	--	--	--	--	--
	$\delta^{37}Cl$ of vinyl chloride	per mil SMOC		8.9	NR	7.1	--	--	--	--	--
	$\delta^{13}C$ of methane	per mil PDB		-61.7	-36.6	-64.9	--	--	--	--	--
qPCR CENSUS	Dehalococcoides	cells/mL		--	949	--	--	--	26.2	--	38.3
	tceA Reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	--	< 0.5
	BAV1 vinyl chloride reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	--	< 0.5
	Vinyl chloride reductase	cells/mL		--	< 0.5	--	--	--	< 0.5	--	< 0.5
	Phenol Hydroxylase	cells/mL		--	513	--	--	--	1,100	--	1,820
	Toluene Monooxygenase 2	cells/mL		--	123	--	--	--	757	--	618
	Benzene Carboxylase	cells/mL		--	<5	--	--	--	<5	--	<5

Table A-2

Volatile Organic Compounds, Dissolved Gases, Compound-Specific Isotope Analyses, and Microbiological Data

			Location	SW-3	LS-B	LS-B
			Sample Type	Seep	Leachate	Leachate
			Sample Date	2/25/2016	9/16/2015	2/25/2016
Volatile Organic Compounds[1]	Benzene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	1,1-Dichloroethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	1,1-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	1,2-Dichloropropane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	Chloroethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	cis-1,2-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	Dichlorodifluoromethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	trans-1,2-Dichloroethene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	Trichloroethylene	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	Trichlorofluoromethane	µg/L		< 0.2 U	< 0.2 U	< 0.2 U
	Vinyl Chloride	µg/L		0.0472	< 0.02 U	< 0.02 U
Dissolved Gases	Methane	µg/L		1.5	--	0.29 J
	Ethene	µg/L		0.024 J	--	0.017 J
	Ethane	µg/L		0.0092 J	--	0.0029 J
CSIA	$\delta^{13}C$ of cis-1,2-DCE	per mil PDB		--	--	--
	$\delta^{37}Cl$ of cis-1,2-DCE	per mil SMOC		--	--	--
	$\delta^{13}C$ of vinyl chloride	per mil PDB		--	--	--
	$\delta^{37}Cl$ of vinyl chloride	per mil SMOC		--	--	--
	$\delta^{13}C$ of methane	per mil PDB		--	--	--
qPCR CENSUS	Dehalococcoides	cells/mL		--	--	--
	tceA Reductase	cells/mL		--	--	--
	BAV1 vinyl chloride reductase	cells/mL		--	--	--
	Vinyl chloride reductase	cells/mL		--	--	--
	Phenol Hydroxylase	cells/mL		--	--	--
	Toluene Monooxygenase 2	cells/mL		--	--	--
	Benzene Carboxylase	cells/mL		--	--	--

Table A-2
Volatile Organic Compounds, Dissolved Gases, Compound-Specific Isotope Analyses, and Microbiological Data

Notes:

1. Only VOCs detected in at least one geochemical investigation sample are reported.

-- : not measured

µg/L: micrograms per liter

CSIA: compound-specific isotope analysis

mL: milliliter

DCE: dichloroethene

J: estimated value

NR: not measured due to concentration below the minimum required for analysis or insufficient sample

PDB: Pee Dee Belemnite

qPCR: quantitative polymerase chain reaction

SMOC: standard mean ocean chloride

U: not detected at the specified detection limit

Table A-3
Isotopic and Groundwater Age Tracer Data

			Location	MW-2	MW-2	MW-20	MW-20	MW-21	MW-21	MW-33
			Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
			Sample Date	9/16/2015	2/24/2016	9/15/2015	2/24/2016	9/15/2015	2/24/2016	9/15/2015
Isotope Tracers	δD of water	per mil VSMOW		-67.3	-68.4	-70.0	-71	-69.1	-69.3	-70.4
	$\delta^{18}O$ of water	per mil VSMOW		-9.40	-9.38	-9.93	-9.86	-9.54	-9.4	-9.94
	^{14}C of DIC	percent Modern		112.41	111.90	96.09	92.00	108.02	109.50	119.63
	$\delta^{13}C$ of DIC	per mil VPDB		-28.3	-29.1	-25.3	-25.1	-25.4	-25.7	-11.1
	^{14}C of DOC	percent Modern		--	--	--	--	--	--	--
	$\delta^{13}C$ of DOC	per mil VPDB		--	--	--	--	--	--	--
	^{14}C of methane	percent Modern		--	--	--	--	--	--	--
	$\delta^{13}C$ of methane	per mil VPDB		--	--	--	--	--	--	--
	$\delta^{34}S$ of sulfate	per mil VCDT		--	0.2	--	0.6	--	2.9	20.3
Groundwater Age Tracers	Tritium	TU		1.77	1.82	3.05	3.70	1.99	1.94	2.15
	Tritiogenic ^{3}He (Ne model)	TU		--	3.2	--	13.25	--	0.35	--
	Tritium-Helium Age (Ne model)	years		--	18.2	--	27.3	--	3.0	--
	Tritiogenic ^{3}He (EA model)	TU		--	2.99	--	13.1	--	0.44	--
	Tritium-Helium Age (EA model)	years		--	17.4	--	27.1	--	3.7	--
	CFC-11	pmol/kg		--	--	6.483	--	--	--	6.271
	CFC-11 Age	years		--	--	NR	--	--	--	NR
	CFC-12	pmol/kg		--	--	14,776	--	--	--	22,850
	CFC-12 Age	years		--	--	NR	--	--	--	NR
	CFC-113	pmol/kg		--	--	0.182	--	--	--	3.638
	CFC-113 Age	years		--	--	34.0	--	--	--	NR
	SF_6	fmol/kg		--	0.55	0.54	0.30	--	1.38	1.49
	SF_6 Age	years		--	36.2	34.7	38.9	--	26.9	23.2
	Methane	mg/L		--	0.0069	0.0010	0.0003	--	0.0203	1.50
	Carbon Dioxide	mg/L		--	38.3	3.77	5.05	--	40.5	137
	Nitrogen	mg/L		--	24.4	22.0	22.1	--	23.5	20.3
	Oxygen	mg/L		--	0.326	0.286	0.301	--	0.456	0.280
	Argon	mg/L		--	0.776	0.742	0.753	--	0.782	0.705
	Excess Air	cc/kg		--	7.4	4.4	4.2	--	5.2	3.2

Table A-3
Isotopic and Groundwater Age Tracer Data

			Location	MW-33	MW-35	MW-35	SW-1	SW-1	SW-2	SW-2
			Sample Type	Groundwater	Groundwater	Groundwater	Seep	Seep	Seep	Seep
			Sample Date	2/25/2016	9/15/2015	2/24/2016	9/16/2015	2/25/2016	9/16/2015	2/25/2016
Isotope Tracers	δD of water	per mil VSMOW		-71	-71.6	-72.4	-68.2	-68.3	-70.0	-70
	$\delta^{18}O$ of water	per mil VSMOW		-9.81	-9.88	-9.96	-9.63	-9.42	-9.85	-9.88
	^{14}C of DIC	percent Modern		118.60	115.25	116.10	108.02	106.40	117.71	115.80
	$\delta^{13}C$ of DIC	per mil VPDB		-12.1	-13.7	-13.7	-16.3	-16.7	-9.3	-10
	^{14}C of DOC	percent Modern		78.39	--	86.75	--	--	--	--
	$\delta^{13}C$ of DOC	per mil VPDB		-26.97	--	-26.93	--	--	--	--
	^{14}C of methane	percent Modern		119.53	--	119.41	--	--	--	--
	$\delta^{13}C$ of methane	per mil VPDB		-57.94	--	-58.51	--	--	--	--
	$\delta^{34}S$ of sulfate	per mil VCDT		20.4	20.7	19.8	--	7.5	21.6	19.2
Groundwater Age Tracers	Tritium	TU		1.85	2.35	2.12	2.35	2.40	5.63	4.67
	Tritiogenic ^{3}He (Ne model)	TU		--	--	--	--	--	--	--
	Tritium-Helium Age (Ne model)	years		--	--	--	--	--	--	--
	Tritiogenic ^{3}He (EA model)	TU		--	--	--	--	--	--	--
	Tritium-Helium Age (EA model)	years		--	--	--	--	--	--	--
	CFC-11	pmol/kg		--	0.260	--	--	--	4.482	--
	CFC-11 Age	years		--	54.2	--	--	--	28.0	--
	CFC-12	pmol/kg		--	14,120	--	--	--	3.909	--
	CFC-12 Age	years		--	NR	--	--	--	NR	--
	CFC-113	pmol/kg		--	1.035	--	--	--	0.384	--
	CFC-113 Age	years		--	27.7	--	--	--	26.7	--
	SF_6	fmol/kg		0.86	1.17	1.10	--	--	2.74	1.15
	SF_6 Age	years		29.2	25.5	26.9	--	--	4.7	25.7
	Methane	mg/L		1.29	0.924	1.04	--	--	0.0010	2.61
	Carbon Dioxide	mg/L		149	116	133	--	--	5.28	118
	Nitrogen	mg/L		20.5	19.9	19.9	--	--	17.4	19.4
	Oxygen	mg/L		0.295	0.264	0.269	--	--	0.28	0.29
	Argon	mg/L		0.720	0.695	0.690	--	--	0.65	0.71
	Excess Air	cc/kg		2.7	2.8	3.0	--	--	0.4	1.3

Table A-3
Isotopic and Groundwater Age Tracer Data

			Location	SW-3	SW-3	LS-B	LS-B	LS-CT
			Sample Type	Seep	Seep	Leachate	Leachate	Condensate
			Sample Date	9/16/2015	2/25/2016	9/16/2015	2/25/2016	2/25/2016
Isotope Tracers	δD of water	per mil VSMOW		-69.9	-69.5	-59.0	-66.9	-65.5
	$\delta^{18}O$ of water	per mil VSMOW		-9.92	-9.87	-9.01	-9.26	-9.14
	^{14}C of DIC	percent Modern		108.70	109.10	103.03	101.50	--
	$\delta^{13}C$ of DIC	per mil VPDB		-15.5	-15.7	-13.8	-14.8	--
	^{14}C of DOC	percent Modern		--	--	--	97.45	--
	$\delta^{13}C$ of DOC	per mil VPDB		--	--	--	-45.05	--
	^{14}C of methane	percent Modern		--	--	--	--	--
	$\delta^{13}C$ of methane	per mil VPDB		--	--	--	--	--
	$\delta^{34}S$ of sulfate	per mil VCDT		7.5	7.7	17.6	15.9	5.9
Groundwater Age Tracers	Tritium	TU		4.06	3.58	122	13	--
	Tritiogenic ^{3}He (Ne model)	TU		--	--	--	--	--
	Tritium-Helium Age (Ne model)	years		--	--	--	--	--
	Tritiogenic ^{3}He (EA model)	TU		--	--	--	--	--
	Tritium-Helium Age (EA model)	years		--	--	--	--	--
	CFC-11	pmol/kg		5.442	--	--	--	--
	CFC-11 Age	years		--	--	--	--	--
	CFC-12	pmol/kg		249.9	--	--	--	--
	CFC-12 Age	years		NR	--	--	--	--
	CFC-113	pmol/kg		0.527	--	--	--	--
	CFC-113 Age	years		NR	--	--	--	--
	SF_6	fmol/kg		2.50	3.36	--	--	--
	SF_6 Age	years		7.7	5.2	--	--	--
	Methane	mg/L		0.0040	0.0000	--	--	--
	Carbon Dioxide	mg/L		5.97	9.66	--	--	--
	Nitrogen	mg/L		17.5	19.4	--	--	--
	Oxygen	mg/L		0.27	2.91	--	--	--
	Argon	mg/L		0.65	0.72	--	--	--
	Excess Air	cc/kg		0.6	0.7	--	--	--

Table A-3
Isotopic and Groundwater Age Tracer Data

Notes:

-- : not measured

cc/kg: cubic centimeters per kilogram

CFC: chlorofluorocarbon

DIC: dissolved inorganic carbon

DOC: dissolved organic carbon

EA: excess air

fmol/kg: femtomoles per kilogram

Ne: neon

NR: not calculated due to groundwater contamination

per mil: the isotope ratio of the sample compared to a reference standard

pmol/kg: picomoles per kilogram

SF_6: sulfur hexafluoride

TU: tritium unit

VCDT: Vienna Canyon Diablo Troilite

VPDB: Vienna Pee Dee Belemnite

VSMOW: Vienna Standard Mean Ocean Water