MV2009L3-0005

Table 1: Well Completion Details and Field-Measured Parameters
Client: Town of Hay River
Project: Municipal Solid Waste Facility
KBL File #: 16-086

Sampling Information		Depth Measurements and Completion			Field-Measured Parameters					
Sample ID	Date	Depth to Groundwater	Depth to Well Bottom	Casing Height	pH	Electrical Conductivity	Temperature	Dissolved Oxygen	Volatile Organic Compounds	Comments
-	dd-mmm-yy	mbgs	mbgs	m	-	µS/cm	°C	mg/L	ppm	-
Groundwater Monitoring Locations										
SNP0053-5b	29-Jun-17	1.375	8.375	0.785	7.29	`	4.28	0.34	ND	-
	25-Jul-17	1.455	8.375	0.785	6.88	5181	4.40	0.53	ND	-
	29-Aug-17	1.825	8.375	0.785	7.14	4959	4.70	2.65	ND	-
	20-Sep-17	1.515	8.265	0.785	7.33	4180	6.39	4.52	ND	-
SNP0053-5c	29-Jun-17	4.765	8.315	0.785	6.82	1805.6	5.98	0.16	ND	-
	25-Jul-17	4.825	8.315	0.785	6.76	4428	6.10	5.42	ND	-
	29-Aug-17	5.135	8.315	0.785	6.69	4245	6.00	0.81	ND	-
	20-Sep-17	4.965	8.315	0.785	6.84	2270	7.29	0.23	ND	-
SNP0053-5d	29-Jun-17	5.475	6.865	0.785	6.99	2309.2	5.79	0.33	ND	-
	25-Jul-17	5.555	6.865	0.785	6.75	3920	3.50	3.10	ND	-
	29-Aug-17	5.825	6.865	0.785	6.77	3750	3.40	0.46	ND	-
	20-Sep-17	7.565	8.395	0.785	6.72	2113	4.71	0.24	ND	-
SNP0053-5e	29-Jun-17	4.865	7.365	0.785	7.36	1008.2	4.20	0.22	ND	-
	25-Jul-17	4.945	7.365	0.785	7.02	1680	3.90	2.26	ND	-
	29-Aug-17	5.175	7.365	0.785	6.98	1492	4.20	0.36	ND	-
	20-Sep-17	4.515	8.375	0.785	7.28	870	5.25	0.14	ND	-

Legend

°C	Degrees Celsius
m	metres
mbgs	metres below ground surface
mg/L	milligrams per litre
ND	non-detect
ppm	parts per million
µS/cm	micro-Siemens per centimetre

Notes

- Parameters not measured indicated by "-"
- Stick-up heights measured in September 2016 sampling event used to determine depths to groundwater and well bottom in mbgs for both monitoring events

KBL

Table 2: Groundwater Characterization Data – Physical Tests and Anions and Nutrients
Client: Town of Hay River
Project: Municipal Solid Waste Facility
KBL File #: 16-086

Sampling Information			Physical Tests and Anions and Nutrients																Bacterial	
Sample ID	Lab ID	Date	Hardness (as CaCO3)	pH	Conductivity	Total Dissolved Solids	Total Suspended Solids	Alkalinity, Total (as CaCO3)	Bicarbonate (HCO3)	Carbonate (CO3)	Chloride (Cl)	Fluoride (F)	Hydroxide (OH)	Ion Balance	Nitrate and Nitrite (as N)	Nitrate (as N)	Nitrite (as N)	Sulfate (SO4)	MPN-Fecal Coliform	Comments
-	-	dd-mmm-yy	mg/L	-	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	MPN/100mL	
MV2009L3-0005 Water Licence Criteria			-	6.5-9.0	-	3000	20	-	-	-	120	0.12	-	-	100	13	0.06	100	1000	
Groundwater Monitoring Locations																				
SNP0053-5b	RK3772	29-Jun-17	2900	7.43	4900	4400	-	470	570	<0.5	310	0.26	<0.5	5.8	<0.14	<0.10	<0.10	2200	<1	
Dup	RK3776	29-Jun-17	2600	7.4	4800	4300	-	460	570	<0.5	300	0.24	<0.5	2.1	<0.14	<0.1	<0.1	2400	<1	
	Quality Assurance RPD		10.9%	0.4%	2.1%	2.3%	-	2.2%	0.0%	--	3.3%	8.0%	--	93.7%	--	--	--	8.7%	--	
	RP0535	25-Jul-17	2400	7.88	-	4100	-	470	570	<0.5	330	0.27	<0.5	-	-	-	-	2000	<1	
	RV6657	29-Aug-17	2700	7.32	5100	4100	-	440	530	<0.5	390	0.44	<0.5	3.6	<0.071	<0.05	<0.05	2200	<1	
Dup	RV6661	29-Aug-17	2600	7.39	4800	3700	-	450	540	<0.5	330	0.32	<0.5	6.1	0.028	0.028	<0.01	2000	<1	
	Quality Assurance RPD		3.8%	1.0%	6.1%	10.3%	-	2.2%	1.9%	--	16.7%	31.6%	--	51.5%	--	--	--	9.5%	--	
	SA2723	20-Sep-17	2400	7.67	4300	3400	-	460	560	<0.5	310	0.19	<0.5	5.6	0.024	0.024	<0.01	1700	<1	
SNP0053-5c	RK3773	29-Jun-17	890	6.98	2900	1500	-	1000	1300	<0.5	320	0.33	<0.5	2	<0.014	<0.01	<0.01	26	<2	
	RP0536	25-Jul-17	1100	7.52	-	2400	-	1600	1900	<0.5	440	0.56	<0.5	-	-	-	-	190	<2	
Dup	RP0539	25-Jul-17	870	7.38	-	1700	-	1200	1400	<0.5	340	0.4	<0.5	-	-	-	-	65	<2	
	Quality Assurance RPD		23.4%	1.9%	-	34.1%	-	28.6%	30.3%	--	25.6%	33.3%	--	-	-	-	-	98.0%	--	
	RV6658	29-Aug-17	950	7.1	2900	1500	-	970	1200	<0.5	300	0.34	<0.5	1.5	0.086	0.086	<0.01	36	<2	
	SA2724	20-Sep-17	1000	7.35	2900	1400	-	810	990	<0.5	320	0.36	<0.5	9.3	<0.014	<0.01	<0.01	38	<2	
SNP0053-5d	RK3774	29-Jun-17	1100	7.19	4000	2100	-	1600	2000	<0.5	360	0.33	<0.5	5.4	0.016	<0.01	0.016	49	<1	
	RP0537	25-Jul-17	940	7.73	-	1900	-	1600	1900	<0.5	350	0.33	<0.5	-	-	-	-	48	<1	
	RV6659	29-Aug-17	920	7.3	3700	1900	-	1300	1600	<0.5	360	0.34	<0.5	6.4	<0.014	0.012	<0.01	43	<1	
	SA2725	20-Sep-17	930	7.33	3500	1800	-	1300	1600	<0.5	330	0.34	<0.5	4.9	<0.014	<0.01	0.012	44	<1	
SNP0053-5e	RK3775	29-Jun-17	1000	7.49	1800	1300	-	400	480	<0.5	67	0.3	<0.5	5.1	<0.014	<0.01	<0.01	540	<1	
	RP0538	25-Jul-17	950	7.84	-	1200	-	400	480	<0.5	61	0.29	<0.5	-	-	-	-	470	<1	
	RV6660	29-Aug-17	780	7.43	1500	950	-	400	480	<0.5	58	0.29	<0.5	2.2	<0.014	<0.01	<0.01	350	<1	
	SA2726	20-Sep-17	790	7.6	1400	920	-	370	450	<0.5	57	0.3	<0.5	5.7	<0.014	0.011	<0.01	330	<1	
Dup	SA2727	20-Sep-17	800	7.7	1400	920	-	360	430	<0.5	58	0.31	<0.5	7.3	<0.014	<0.01	<0.1	330	<1	
	Quality Assurance RPD		1.3%	1.3%	0.0%	0.0%	-	2.7%	4.5%	--	1.7%	3.3%	--	24.6%	--	--	--	0.0%	--	

Legend
Dup Blind field duplicate sample
mg/L milligrams per litre
MPN most probable number
µS/cm micro-Siemens per centimetre
RPD relative percent difference (-- indicates incalculable as below detection limits)

Notes
- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Orders #: L1789332 & L1834725) & Maxxam Analytics Inc. (Work Orders #: R2409818, B761885, B773809 & B781755)
- Parameters collected from MW011 wells in the spring were labelled as BH0- (e.g. MW011-01 is the same sampling location as BH01)
- Exceedance of applicable guidelines or background conditions indicated by shading. Where multiple guidelines apply, the most stringent guideline was used; where guidelines were the same, the first to appear was used.
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program

Table 3: Groundwater Characterization Data – Total Metals
Client: Town of Hay River
Project: Municipal Solid Waste Facility
KBL File #: 16-086

Sample ID	Lab ID	Date	Hardness (as CaCO3)	pH	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)
Sampling Information			Physical Tests		Total Metals								
-	-	dd-mmm-yy	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MV2009L3-0005 Water Licence Criteria			-	6.5-9.0	0.1	2	0.005	0.5	0.0053	-	5	0.000017	-
Groundwater Monitoring Locations													
SNP0053-5b	RK3772	29-Jun-17	2900	7.43	0.31	<0.0006	0.0005	0.026	<0.001	-	0.29	0.000084	440
Dup	RK3776	29-Jun-17	2600	7.4	0.3	<0.0006	0.0005	0.023	<0.001	-	0.27	0.000088	430
	Quality Assurance RPD		10.9%	0.4%	3.3%	--	0.0%	12.2%	--	-	7.1%	4.7%	2.3%
	RP0535	25-Jul-17	2400	7.88	0.057	<0.0006	0.00043	0.017	<0.001	-	0.24	0.00011	350
	RV6657	29-Aug-17	2700	7.32	0.19	<0.0006	0.00031	0.022	<0.001	-	0.45	0.000084	450
Dup	RV6661	29-Aug-17	2600	7.39	0.17	<0.0006	0.00037	0.022	<0.001	-	0.45	0.000086	450
	Quality Assurance RPD		3.8%	1.0%	11.1%	--	17.6%	0.0%	--	-	0.0%	2.4%	0.0%
	SA2723	20-Sep-17	2400	7.67	0.49	0.00064	0.00056	0.026	<0.001	-	0.23	0.000056	370
SNP0053-5c	RK3773	29-Jun-17	890	6.98	0.046	<0.0006	0.012	1.2	<0.001	-	1.2	0.000027	150
	RP0536	25-Jul-17	1100	7.52	0.11	0.0012	0.013	0.75	<0.001	-	1.7	0.000039	160
Dup	RP0539	25-Jul-17	870	7.38	0.2	<0.0006	0.013	1.1	<0.001	-	1.3	0.000036	160
	Quality Assurance RPD		23.4%	1.9%	58.1%	--	0.0%	37.8%	--	-	26.7%	8.0%	0.0%
	RV6658	29-Aug-17	950	7.1	0.056	<0.0006	0.012	1.1	<0.001	-	1.2	0.000027	170
	SA2724	20-Sep-17	1000	7.35	0.1	0.00075	0.013	1.1	<0.001	-	1.3	0.000032	180
SNP0053-5d	RK3774	29-Jun-17	1100	7.19	0.042	0.00067	0.0018	0.39	<0.001	-	1.7	0.000037	160
	RP0537	25-Jul-17	940	7.73	0.019	0.00066	0.0018	0.4	<0.001	-	1.8	0.000046	160
	RV6659	29-Aug-17	920	7.3	0.049	0.00063	0.0015	0.39	<0.001	-	1.8	0.000025	150
	SA2725	20-Sep-17	930	7.33	0.16	0.00066	0.0016	0.37	<0.001	-	1.7	0.000033	150
SNP0053-5e	RK3775	29-Jun-17	1000	7.49	0.067	<0.0006	0.00032	0.073	<0.001	-	0.42	0.00019	210
	RP0538	25-Jul-17	950	7.84	0.028	<0.0006	0.00023	0.071	<0.001	-	0.43	0.00019	200
	RV6660	29-Aug-17	780	7.43	0.012	<0.0006	<0.0002	0.059	<0.001	-	0.45	0.00014	170
	SA2726	20-Sep-17	790	7.6	0.1	<0.0006	0.00029	0.059	<0.001	-	0.44	0.00016	170
Dup	SA2727	20-Sep-17	800	7.7	0.059	<0.0006	0.0002	0.055	<0.001	-	0.44	0.00015	170
	Quality Assurance RPD		1.3%	1.3%	51.6%	--	36.7%	7.0%	--	-	0.0%	6.5%	0.0%

Sample ID	Lab ID	Date	Cesium (Cs)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)
-	-	dd-mmm-yy	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MV2009L3-0005 Water Licence Criteria			-	0.0089	0.05	0.004	0.3	0.007	-	-	0.2	0.000026	0.073	0.15	-
Groundwater Monitoring Locations															
SNP0053-5b	RK3772	29-Jun-17	-	<0.001	<0.0003	0.0014	0.77	0.00027	0.14	360	0.071	<0.000002	0.00085	0.0055	<0.2
Dup	RK3776	29-Jun-17	-	<0.001	<0.0003	0.0016	0.58	0.00029	0.13	350	0.066	<0.000002	0.00072	0.0056	<0.1
	Quality Assurance RPD		-	--	--	13.3%	28.1%	7.1%	7.4%	2.8%	7.3%	--	16.6%	1.8%	--
	RP0535	25-Jul-17	-	<0.001	<0.0003	0.0013	0.093	<0.0002	0.12	290	0.11	<0.000002	0.0015	0.0044	<0.1
	RV6657	29-Aug-17	-	<0.001	0.001	0.0012	0.34	0.00022	0.18	360	0.51	0.0000036	0.00077	0.011	<0.1
Dup	RV6661	29-Aug-17	-	<0.001	0.00096	0.0011	0.31	<0.0002	0.17	360	0.51	0.0000032	0.00084	0.011	<0.1
	Quality Assurance RPD		-	--	4.1%	8.7%	9.2%	--	5.7%	0.0%	0.0%	11.8%	8.7%	0.0%	--
	SA2723	20-Sep-17	-	0.0014	0.00034	0.0029	0.65	0.00045	0.11	300	0.015	<0.000002	0.0013	0.0035	<0.1
SNP0053-5c	RK3773	29-Jun-17	-	0.0032	0.0045	0.0011	42	0.00077	0.043	100	0.47	0.0000032	0.00093	0.033	<0.2
	RP0536	25-Jul-17	-	0.0074	0.0039	0.00073	28	0.0011	0.09	170	0.32	0.000002	0.0014	0.059	0.22
Dup	RP0539	25-Jul-17	-	0.0043	0.0045	0.0013	38	0.0009	0.053	120	0.47	0.0000023	0.001	0.038	0.15
	Quality Assurance RPD		-	53.0%	14.3%	56.2%	30.3%	20.0%	51.7%	34.5%	38.0%	14.0%	33.3%	43.3%	37.8%
	RV6658	29-Aug-17	-	0.0026	0.0054	0.0012	43	0.00074	0.048	120	0.59	0.0000049	0.001	0.033	0.11
	SA2724	20-Sep-17	-	0.0035	0.007	0.002	42	0.0011	0.056	120	0.63	<0.000002	0.0012	0.041	0.11
SNP0053-5d	RK3774	29-Jun-17	-	0.0037	0.011	0.047	0.22	0.00048	0.053	130	1.3	0.000058	0.0011	0.11	<0.2
	RP0537	25-Jul-17	-	0.0034	0.011	0.04	0.072	0.00041	0.053	140	1.3	0.000048	0.00096	0.11	<0.1
	RV6659	29-Aug-17	-	0.0028	0.011	0.03	0.12	0.0006	0.05	130	1.2	0.000042	0.0011	0.1	<0.1
	SA2725	20-Sep-17	-	0.003	0.011	0.028	0.36	0.00081	0.054	120	1.1	0.00003	0.0012	0.1	<0.1
SNP0053-5e	RK3775	29-Jun-17	-	<0.001	0.0009	0.00095	0.28	<0.0002	0.032	97	0.57	<0.000002	0.00034	0.0055	<0.1
	RP0538	25-Jul-17	-	<0.001	0.00088	0.00065	0.063	<0.0002	0.03	98	0.67	<0.000002	0.00033	0.0052	<0.1
	RV6660	29-Aug-17	-	<0.001	0.00048	0.00088	<0.06	<0.0002	0.026	82	0.41	<0.000002	0.00036	0.0039	<0.1
	SA2726	20-Sep-17	-	<0.001	0.0017	0.0015	0.34	<0.0002	0.032	76	0.76	<0.000002	0.00034	0.005	<0.1
Dup	SA2727	20-Sep-17	-	<0.001	0.00091	0.0012	0.15	<0.0002	0.042	75	0.52	<0.000002	0.0003	0.0042	<0.1
	Quality Assurance RPD		-	--	60.5%	22.2%	77.6%	--	27.0%	1.3%	37.5%	--	12.5%	17.4%	--

Sample ID	Lab ID	Date	Potassium (K)	Rubidium (Rb)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulfur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)
-	-	dd-mmm-yy	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MV2009L3-0005 Water Licence Criteria			-	-	0.001	-	0.0001	-	-	-	-	0.0008	-	-	0.1	-	0.015	0.1	0.1	-
Groundwater Monitoring Locations																				
SNP0053-5b	RK3772	29-Jun-17	6.9	-	<0.0002	6.8	<0.0001	310	3	760	-	<0.0002	-	<0.001	0.012	-	0.058	0.0013	0.0031	-
Dup	RK3776	29-Jun-17	6.9	-	<0.0002	6.4	<0.0001	300	2.9	810	-	<0.0002	-	<0.001	0.013	-	0.059	0.0012	<0.003	-
	Quality Assurance RPD		0.0%	-	--	6.1%	--	3.3%	3.4%	6.4%	-	--	-	--	8.0%	-	1.7%	8.0%	--	-
	RP0535	25-Jul-17	6	-	0.00034	5.9	<0.0001	330	2.2	570	-	<0.0002	-	<0.001	0.027	-	0.061	0.0017	<0.003	-
	RV6657	29-Aug-17	7.7	-	0.00025	5.8	<0.0001	460	3.5	890	-	<0.0002	-	<0.001	0.0057	-	0.031	0.001	0.0036	-
Dup	RV6661	29-Aug-17	7.7	-	<0.0002	5.8	<0.0001	450	3.5	910	-	<0.0002	-	<0.001	0.0076	-	0.031	<0.001	<0.003	-
	Quality Assurance RPD		0.0%	-	--	0.0%	--	2.2%	0.0%	2.2%	-	--	-	--	28.6%	-	0.0%	--	--	-
	SA2723	20-Sep-17	6.2	-	0.0011	7.9	<0.0001	280	2.2	610	-	<0.0002	-	<0.001	0.017	-	0.068	0.0022	0.0043	-
SNP0053-5c	RK3773	29-Jun-17	47	-	0.00043	13	<0.0001	200	0.84	9.3	-	<0.0002	-	<0.001	0.0022	-	0.00022	0.0037	0.012	-
	RP0536	25-Jul-17	74	-	0.00052	13	<0.0001	430	1.4	71	-	<0.0002	-	<0.001	0.0054	-	0.00044	0.007	0.01	-
Dup	RP0539	25-Jul-17	50	-	0.00043	13	<0.0001	250	0.95	21	-	<0.0002	-	<0.001	0.0071	-	0.00029	0.0047	0.011	-
	Quality Assurance RPD		38.7%	-	18.9%	0.0%	--	52.9%	38.3%	108.7%	-	--	-	--	27.2%	-	41.1%	39.3%	9.5%	-
	RV6658	29-Aug-17	39	-	0.00036	14	<0.0001	190	0.85	7.2	-	<0.0002	-	<0.001	0.0022	-	0.00032	0.0028	0.013	-
	SA2724	20-Sep-17	43	-	0.00048	14	<0.0001	210	1	14	-	<0.0002	-	<0.001	0.0039	-	0.00049	0.0037	0.016	-
SNP0053-5d	RK3774	29-Jun-17	92	-	0.0013	7.8	0.00015	300	1.1	17	-	0.00068	-	<0.001	0.0027	-	0.0099	<0.001	0.026	-
	RP0537	25-Jul-17	93	-	0.0012	7.9	0.00014	320	0.99	18	-	0.00062	-	<0.001	<0.001	-	0.0098	0.0018	0.022	-
	RV6659	29-Aug-17	86	-	0.0013	8.1	0.00011	290	0.92	16	-	0.00061	-	<0.001	0.0023	-	0.0084	<0.001	0.027	-
	SA2725	20-Sep-17	84	-	0.0012	8	0.0001	260	0.95	16	-	0.00061	-	<0.001	0.0043	-	0.0081	0.0014	0.03	-
SNP0053-5e	RK3775	29-Jun-17	10	-	<0.0002	4.2	<0.0001	40	0.74	170	-	<0.0002	-	<0.001	0.0019	-	0.0084	<0.001	<0.003	-
	RP0538	25-Jul-17	11	-	<0.0002	4.1	<0.0001	44	0.65	170	-	<0.0002	-	<0.001	<0.001	-	0.0075	0.0022	<0.003	-
	RV6660	29-Aug-17	9.7	-	<0.0002	4.1	<0.0001	39	0.53	130	-	<0.0002	-	<0.001	<0.001	-	0.007	<0.001	<0.003	-
	SA2726	20-Sep-17	9.6	-	<0.0002	4.3	<0.0001	38	0.56	110	-	<0.0002	-	<0.001	0.0033	-	0.0064	0.0017	<0.003	-
Dup	SA2727	20-Sep-17	9.5	-	<0.0002	4.1	<0.0001	38	0.56	110	-	<0.0002	-	<0.001	0.0017	-	0.0064	0.0015	<0.003	-
	Quality Assurance RPD		1.0%	-	--	4.8%	--	0.0%	0.0%	0.0%	-	--	-	--	64.0%	-	0.0%	12.5%	--	-

Legend
Dup — Blind field duplicate sample
mg/L — milligrams per litre
RPD — relative percent difference (-- indicates incalculable as below detection limits)

Notes
- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Orders #: L1789332 & L1834725) & Maxxam Analytics Inc. (Work Orders #: R2409818, B761885, B773809 & B781755)
- Parameters collected from MW011 wells in the spring were labelled as BH0- (e.g. MW011-01 is the same sampling location as BH01)
- Exceedance of applicable guidelines or background conditions indicated by shading. Where multiple guidelines apply, the most stringent guideline was used; where guidelines were the same, the first to appear was used.
- Hardness-dependent guidelines (Cu, Pb and Ni) were developed using site-specific details
- pH-dependent guideline (Al) was developed using site-specific details
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program

Table 4: Groundwater Characterization Data – Dissolved Metals
Client: Town of Hay River
Project: Municipal Solid Waste Facility
KBL File #: 16-086

Sampling Information			Physical Tests		Dissolved Metals																	
Sample ID	Lab ID	Date	Hardness (as CaCO3)	pH	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Cesium (Cs)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
-	-	dd-mmm-yy	mg/L	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MV2009L3-0005 Water Licence Criteria			-	6.5-9.0	0.1	2	0.005	0.5	0.0053	-	5	0.000017	-	-	0.0089	0.05	0.004	0.3	0.007	-	-	0.2
Groundwater Monitoring Locations																						
SNP0053-5b	RK3772	29-Jun-17	2900	7.43	-	-	-	-	-	-	-	-	480	-	-	-	-	0.14	-	-	410	0.056
Dup	RK3776	29-Jun-17	2600	7.4	-	-	-	-	-	-	-	-	460	-	-	-	-	<0.06	-	-	360	0.085
	Quality Assurance RPD		10.9%	0.4%	-	-	-	-	-	-	-	-	4.3%	-	-	-	-	--	-	-	13.0%	41.1%
	RP0535	25-Jul-17	2400	7.88	-	-	-	-	-	-	-	-	410	-	-	-	-	-	-	-	340	-
	RV6657	29-Aug-17	2700	7.32	-	-	-	-	-	-	-	-	470	-	-	-	-	<0.06	-	-	360	0.23
Dup	RV6661	29-Aug-17	2600	7.39	-	-	-	-	-	-	-	-	460	-	-	-	-	<0.06	-	-	350	0.13
	Quality Assurance RPD		3.8%	1.0%	-	-	-	-	-	-	-	-	2.2%	-	-	-	-	--	-	-	2.8%	55.6%
	SA2723	20-Sep-17	2400	7.67	-	-	-	-	-	-	-	-	430	-	-	-	-	<0.06	-	-	320	0.004
SNP0053-5c	RK3773	29-Jun-17	890	6.98	-	-	-	-	-	-	-	-	160	-	-	-	-	0.65	-	-	120	0.51
	RP0536	25-Jul-17	1100	7.52	-	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	160	-
Dup	RP0539	25-Jul-17	870	7.38	-	-	-	-	-	-	-	-	150	-	-	-	-	-	-	-	120	-
	Quality Assurance RPD		23.4%	1.9%	-	-	-	-	-	-	-	-	6.5%	-	-	-	-	-	-	-	28.6%	-
	RV6658	29-Aug-17	950	7.1	-	-	-	-	-	-	-	-	170	-	-	-	-	1.5	-	-	130	0.59
	SA2724	20-Sep-17	1000	7.35	-	-	-	-	-	-	-	-	200	-	-	-	-	0.27	-	-	130	0.65
SNP0053-5d	RK3774	29-Jun-17	1100	7.19	-	-	-	-	-	-	-	-	170	-	-	-	-	0.13	-	-	150	1.5
	RP0537	25-Jul-17	940	7.73	-	-	-	-	-	-	-	-	160	-	-	-	-	-	-	-	130	-
	RV6659	29-Aug-17	920	7.3	-	-	-	-	-	-	-	-	160	-	-	-	-	<0.06	-	-	130	1.3
	SA2725	20-Sep-17	930	7.33	-	-	-	-	-	-	-	-	170	-	-	-	-	0.1	-	-	130	1.3
SNP0053-5e	RK3775	29-Jun-17	1000	7.49	-	-	-	-	-	-	-	-	230	-	-	-	-	<0.06	-	-	110	0.57
	RP0538	25-Jul-17	950	7.84	-	-	-	-	-	-	-	-	210	-	-	-	-	-	-	-	100	-
	RV6660	29-Aug-17	780	7.43	-	-	-	-	-	-	-	-	180	-	-	-	-	<0.06	-	-	81	0.4
	SA2726	20-Sep-17	790	7.6	-	-	-	-	-	-	-	-	180	-	-	-	-	<0.06	-	-	80	0.37
Dup	SA2727	20-Sep-17	800	7.7	-	-	-	-	-	-	-	-	190	-	-	-	-	<0.06	-	-	82	0.41
	Quality Assurance RPD		1.3%	1.3%	-	-	-	-	-	-	-	-	5.4%	-	-	-	-	--	-	-	2.5%	10.3%
Quality Assurance																						
FIELD BLANK	RK3777	29-Jun-17	-	-	<0.003	<0.0006	<0.0002	0.066	<0.001	-	<0.02	<0.00002	36	-	0.0011	<0.0003	0.02	<0.06	<0.0002	<0.02	11	<0.0040

Sampling Information		Dissolved Metals																						
Sample ID	Lab ID	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Rubidium (Rb)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulfur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Comments
-	-	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
MV2009L3-0005 Water Licence Criteria		0.000026	0.073	0.15	-	-	-	0.001	-	0.0001	-	-	-	-	0.0008	-	-	0.1	-	0.015	0.1	0.1	-	-
Groundwater Monitoring Locations																								
SNP0053-5b	RK3772	-	-	-	-	7.3	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	
Dup	RK3776	-	-	-	-	7	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	
	Quality Assurance RPD	-	-	-	-	4.2%	-	-	-	-	12.5%	-	-	-	-	-	-	-	-	-	-	-	-	
	RP0535	-	-	-	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	
	RV6657	-	-	-	-	7.7	-	-	-	-	380	-	-	-	-	-	-	-	-	-	-	-	-	
Dup	RV6661	-	-	-		7.3	-	-	-	-	340	-	-	-	-	-	-	-	-	-	-	-	-	
	Quality Assurance RPD	-	-	-	-	5.3%	-	-	-	-	11.1%	-	-	-	-	-	-	-	-	-	-	-	-	
	SA2723	-	-	-	-	6.9	-	-	-	-	300	-	-	-	-	-	-	-	-	-	-	-	-	
SNP0053-5c	RK3773	-	-	-	-	53	-	-	-	-	230	-	-	-	-	-	-	-	-	-	-	-	-	
	RP0536	-	-	-	-	-	-	-	-	-	420	-	-	-	-	-	-	-	-	-	-	-	-	
Dup	RP0539	-	-	-	-	-	-	-	-	-	270	-	-	-	-	-	-	-	-	-	-	-	-	
	Quality Assurance RPD	-	-	-	-	-	-	-	-	-	43.5%	-	-	-	-	-	-	-	-	-	-	-	-	
	RV6658	-	-	-	-	45	-	-	-	-	210	-	-	-	-	-	-	-	-	-	-	-	-	
	SA2724	-	-	-	-	47	-	-	-	-	210	-	-	-	-	-	-	-	-	-	-	-	-	
SNP0053-5d	RK3774	-	-	-	-	100	-	-	-	-	350	-	-	-	-	-	-	-	-	-	-	-	-	
	RP0537	-	-	-	-	-	-	-	-	-	320	-	-	-	-	-	-	-	-	-	-	-	-	
	RV6659	-	-	-	-	91	-	-	-	-	290	-	-	-	-	-	-	-	-	-	-	-	-	
	SA2725	-	-	-	-	92	-	-	-	-	280	-	-	-	-	-	-	-	-	-	-	-	-	
SNP0053-5e	RK3775	-	-	-	-	11	-	-	-	-	46	-	-	-	-	-	-	-	-	-	-	-	-	
	RP0538	-	-	-	-	-	-	-	-	-	46	-	-	-	-	-	-	-	-	-	-	-	-	
	RV6660	-	-	-	-	10	-	-	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	
	SA2726	-	-	-	-	11	-	-	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	
Dup	SA2727	-	-	-	-	11	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	
	Quality Assurance RPD	--	-	-	-	0.0%	-	-	-	-	2.5%	-	-	-	-	-	-	-	-	-	-	-	-	-
Quality Assurance																								
FIELD BLANK	RK3777	-	<0.0002	0.0041	<0.1	0.44	-	0.00039	1.6	<0.0001	3.9	0.14	17	-	<0.0002	-	<0.001	<0.001	-	<0.0001	<0.001	0.053	-	

Legend
Dup — Blind field duplicate sample
mg/L — milligrams per litre
RPD — relative percent difference (-- indicates incalculable as below detection limits)

Notes
- Samples analyzed for dissolved metal parameters were lab filtered prior to processing
- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Orders #: L1789332 & L1834725) & Maxxam Analytics Inc. (Work Orders #: R2409818, B761885, B773809 & B781755)
- Parameters collected from MW011 wells in the fall were labelled as BH0- (e.g. MW011-01 is the same sampling location as BH01)
- Exceedance of applicable guidelines or background conditions indicated by shading. Where multiple guidelines apply, the most stringent guideline was used; where guidelines were the same, the first to appear was used.
- Hardness-dependent guidelines (Cu, Pb and Ni) were developed using site-specific details
- pH-dependent guideline (Al) was developed using site-specific details
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program

KBL

Table 5: Groundwater Characterization Data – Petroleum Hydrocarbon Parameters and Aggregate Organics
Client: Town of Hay River
Project: Municipal Solid Waste Facility
KBL File #: 16-086

Sampling Information			Volatile Organic Compounds						Petroleum Hydrocarbons			Aggregate Organics			
Sample ID	Lab ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	MTBE	F1-BTEX (C6-C10)	F2 (>C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Biochemical Oxygen Demand	Oil and Grease	Phenols (4AAP)	Comments
-	-	dd-mmm-yy	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
MV2009L3-0005 Water Licence Criteria			0.014	0.083	11	3.9	0.34	0.81	1.3	-	-	-	lo visible shee	0.004	
Groundwater Monitoring Locations															
SNP0053-5b	RK3772	29-Jun-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	<2.0	4	<0.002	
Dup	RK3776	29-Jun-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	<2.0	6	<0.002	
	Quality Assurance RPD		-	-	-	-	-	--	--	--	--	--	40.0%	--	
	RP0535	25-Jul-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	<2.0	<2.0	0.0032	
	RV6657	29-Aug-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	2.2	3	0.0028	
Dup	RV6661	29-Aug-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<2.0	<2.0	0.0024	
	Quality Assurance RPD		--	--	--	--	-	--	--	--	--	--	--	15.4%	
	SA2723	20-Sep-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<2.0	4	<0.002	
SNP0053-5c	RK3773	29-Jun-17	-	-	-	-	-	<0.1	0.2	<0.1	<0.2	17	6	0.033	
	RP0536	25-Jul-17	-	-	-	-	-	<0.1	0.2	0.11	<0.2	17	<2.0	0.056	
Dup	RP0539	25-Jul-17	-	-	-	-	-	<0.1	0.18	<0.1	<0.2	15	<2.0	0.039	
	Quality Assurance RPD		-	-	-	-	-	--	10.5%	--	--	12.5%	--	35.8%	
	RV6658	29-Aug-17	0.0042	0.0013	0.0029	0.001	-	<0.1	0.19	<0.1	<0.2	13	4	0.022	
	SA2724	20-Sep-17	0.011	0.0019	0.022	0.0047	-	<0.1	0.24	<0.1	<0.2	11	4	0.021	
SNP0053-5d	RK3774	29-Jun-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	14	6	0.053	
	RP0537	25-Jul-17	-	-	-	-	-	<0.1	<0.1	0.13	<0.2	13	<2.0	0.042	
	RV6659	29-Aug-17	0.0079	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<10	3	0.038	
	SA2725	20-Sep-17	0.0095	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	12	4	0.021	
SNP0053-5e	RK3775	29-Jun-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	<2.0	4	0.0021	
	RP0538	25-Jul-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	<2.0	<2.0	<0.002	
	RV6660	29-Aug-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<2.0	2	<0.002	
	SA2726	20-Sep-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<2.0	<2.0	0.0022	
Dup	SA2727	20-Sep-17	<0.0004	<0.0004	<0.0004	<0.0008	-	<0.1	<0.1	<0.1	<0.2	<2.0	<2.0	<0.002	
	Quality Assurance RPD		--	--	--	--	-	--	--	--	--	--	--	--	
Quality Assurance															
FIELD BLANK	RK3777	29-Jun-17	-	-	-	-	-	<0.1	<0.1	<0.1	<0.2	-	-	-	

Legend

Dup	Blind field duplicate sample
mg/L	milligrams per litre
MTBE	methyl-t-butyl-ether
RPD	relative percent difference (-- indicates incalculable as below detection limits)

Notes

- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Orders #: L1789332 & L1834725) & Maxxam Analytics Inc. (Work Orders #: R2409818, B761885, B773809 & B781755)
- Parameters collected from MW011 wells in the spring were labelled as BH0- (e.g. MW011-01 is the same sampling location as BH01)
- Exceedance of applicable guidelines or background conditions indicated by shading; where multiple guidelines apply, the most stringent guideline was used
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program

Table 1: Well Completion Details and Field-Measured Parameters
Client: KBL Environmental
Project: Groundwater Monitoring
KBL File #: 16-022

Sampling Information		Depth Measurements and Completion			Field-Measured Parameters					
Sample ID	Date	Depth to Groundwater	Depth to Well Bottom	Casing Height	pH	Electrical Conductivity	Temperature	Dissolved Oxygen	Volatile Organic Compounds	Comments
-	dd-mmm-yy	mbgs	mbgs	m	-	µS/cm	°C	mg/L	ppm	-
Groundwater Monitoring Locations										
SNP0053-7a	28-May-14	4.070	5.520	0.72	7.11	860	17.60	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	11-Sep-14	4.080	5.600	0.72	6.47	-	6.40	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	30-Jun-15	4.500	5.500	0.72	10.35	322	5.74	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	29-Sep-15	4.080	5.610	0.73	7.1	540	7.00	-	-	Performed by Dillon Consulting, brown turbid water
	22-Jun-16	3.656	4.867	-	6.58	1469	7.44	0.19	ND	
	24-Sep-16	3.314	4.893	0.713	7.14	1280	11.04	0.38	ND	
	28-Jun-17	4.090	5.550	-	7.23	900.2	8.01	0.21	ND	
	20-Sep-17	4.420	5.580	-	7.16	1499	8.61	0.34	ND	
SNP0053-7b	28-May-14	4.130	5.360	0.65	6.87	1159	14.90	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	11-Sep-14	4.210	5.540	0.65	6.74	-	14.70	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	30-Jun-15	4.460	5.360	0.65	9.57	700	8.45	-	-	Performed by Dillon Consulting
	29-Sep-15	4.160	5.600	0.67	6.6	882	7.20	-	-	Performed by Dillon Consulting, brown turbid water
	22-Jun-16	3.774	4.937	-	6.63	1559	7.25	0.09	ND	
	24-Sep-16	3.402	4.930	0.638	6.87	1595	10.19	0.26	25	
	28-Jun-17	4.110	5.550	-	6.94	1031.1	8.49	0.13	ND	
	20-Sep-17	4.520	5.550	-	6.93	1615	8.53	0.08	ND	
SNP0053-7c	28-May-14	2.040	3.700	0.66	6.84	2586	12.90	-	-	Performed by Dillon Consulting, dyr, did not recharge after purging
	11-Sep-14	dry	3.710	0.66	-	-	-	-	-	Performed by Dillon Consulting, dry
	30-Jun-15	3.230	3.700	0.66	10.2	2190	6.88	-	-	Performed by Dillon Consulting, dry, did not recharge after purging, parameters may be inaccurate due to minimal water
	29-Sep-15	1.390	3.770	0.66	6.57	2384	9.60	-	-	Performed by Dillon Consulting, observed scheen during purging
	22-Jun-16	1.246	4.035	-	6.51	2550	9.62	0.22	ND	
	24-Sep-16	1.188	3.040	0.669	6.83	1856	10.94	0.11	1500	
	28-Jun-17	2.060	3.750	-	6.86	2021.1	8.51	0.24	ND	
	20-Sep-17	1.900	3.700	-	6.87	2814	10.97	0.12	ND	
SNP0053-7d	28-May-14	3.810	5.500	0.69	6.9	5235	14.30	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	11-Sep-14	3.790	5.480	0.69	6.56	-	6.60	-	-	Performed by Dillon Consulting, no odour, light brown, some silt present
	30-Jun-15	4.440	5.500	0.69	10.97	5736	3.50	-	-	Performed by Dillon Consulting
	29-Sep-15	4.800	5.510	0.71	6.61	4202	5.80		-	Performed by Dillon Consulting, well dry, cloudy water
	22-Jun-16	3.243	4.787	-	6.84	5817	5.78	1.57	ND	
	24-Sep-16	2.820	4.790	0.723	7.03	6040	8.96	0.29	ND	
	28-Jun-17	3.550	5.500	-	6.99	3453	5.65	0.17	ND	
	20-Sep-17	3.850	5.500	-	6.97	6020	6.91	1.09	ND	

Legend

°C	Degrees celcius
m	metres
mbgs	metres below ground surface
mg/L	milligrams per litre
ND	non-detect
ppm	parts per million
µS/cm	micro-Siemens per centimetre

Notes

- Parameters not measured indicated by "-"
- Stick-up heights mesured in September 2016 sampling event used to determine depths to groundwater and well bottom in mbgs for both monitoring events

Table 2: Groundwater Characterization Data – Physical Tests and Metal Parameters
Client: KBL Environmental
Project: Groundwater Monitoring
KBL File #: 16-022

Sampling Information			Physical Tests				Total Metals																	
Sample ID	Lab ID	Date	Hardness (as CaCO3)	pH	Conductivity	Total Suspended Solids	Aluminum (Al)	Antimony (Sb)	Arsenic (As)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Boron (B)	Cadmium (Cd)	Calcium (Ca)	Cesium (Cs)	Chromium (Cr)	Cobalt (Co)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
-	-	dd-mmm-yy	mg/L	-	µS/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Water Licence Criteria (WMP V1.1)			-	6.0-9.0	-	-	0.1	2	0.005	0.5	0.0053	-	5	0.000017	-	-	0.0089	0.05	0.004	0.3	0.007	-	-	0.2
Groundwater Monitoring Locations																								
SNP0053-7a	RK3356	27-Jun-17	650	7.42	1400	-	0.5	<0.00060	0.0007	0.068	<0.0010	-	0.14	0.000048	150	-	<0.0010	0.00056	0.0036	1	0.00044	0.023	56	0.19
	SA3945	20-Sep-17	750	7.63	1500	-	0.055	<0.00060	0.00024	0.073	<0.0010	-	0.17	0.000031	160	-	<0.0010	0.00045	0.0015	0.27	<0.00020	0.027	61	0.19
SNP0053-7b	RK3355	27-Jun-17	810	7.17	1600	-	0.022	<0.00060	0.00049	0.061	<0.0010	-	0.19	0.00011	190	-	<0.0010	0.0014	0.0024	0.42	<0.00020	0.025	61	0.25
Dup	RK3357	27-Jun-17	810	7.12	1600	-	0.026	<0.00060	0.00044	0.063	<0.0010	-	0.2	0.00011	190	-	<0.0010	0.0013	0.0022	0.43	<0.00020	<0.020	63	0.26
	Quality Assurance RPD		0.0%	0.7%	0.0%	-	16.7%	--	10.8%	3.2%	--	-	5.1%	0.0%	0.0%	-	--	7.4%	8.7%	2.4%	--	--	3.2%	3.9%
	SA3946	20-Sep-17	820	7.27	1600	-	0.046	<0.00060	0.00043	0.07	<0.0010	-	0.21	0.000096	180	-	<0.0010	0.00073	0.0017	0.25	<0.00020	0.025	60	0.26
Dup	SA3949	20-Sep-17	830	7.32	1600	-	0.071	<0.00060	0.00055	0.071	<0.0010	-	0.22	0.00011	190	-	<0.0010	0.00067	0.0033	0.26	<0.00020	0.027	61	0.26
	Quality Assurance RPD		1.2%	0.7%	0.0%	-	42.7%	--	24.5%	1.4%	--	-	4.7%	13.6%	5.4%	-	--	8.6%	64.0%	3.9%	--	7.7%	1.7%	0.0%
SNP0053-7c	RK3354	27-Jun-17	1400	6.92	2800	-	0.059	0.0012	0.02	0.48	<0.0010	-	0.34	0.000049	280	-	0.0012	0.019	0.0063	140	0.0009	<0.020	150	1.7
	SA3947	20-Sep-17	1300	7.00	2500	-	0.063	0.00065	0.0053	0.36	<0.0010	-	0.57	<0.00002	260	-	0.0014	0.0024	0.0015	100	0.00024	0.023	130	1.3
SNP0053-7d	RK3353	27-Jun-17	2000	7.13	5800	-	0.035	<0.00060	0.0005	0.028	<0.0010	-	0.52	0.00025	260	-	<0.0010	0.00068	0.0073	0.26	<0.00020	0.17	300	0.075
	SA3948	20-Sep-17	2000	7.29	5900	-	0.17	<0.00060	0.00061	0.028	<0.0010	-	0.57	0.00042	280	-	<0.0010	0.0011	0.0043	0.41	<0.00020	0.2	300	0.21

Sampling Information			Total Metals																						Dissolved Metals	
Sample ID	Lab ID	Date	Mercury (Hg)	Molybdenum (Mo)	Nickel (Ni)	Phosphorus (P)	Potassium (K)	Rubidium (Rb)	Selenium (Se)	Silicon (Si)	Silver (Ag)	Sodium (Na)	Strontium (Sr)	Sulfur (S)	Tellurium (Te)	Thallium (Tl)	Thorium (Th)	Tin (Sn)	Titanium (Ti)	Tungsten (W)	Uranium (U)	Vanadium (V)	Zinc (Zn)	Zirconium (Zr)	Calcium (Ca)	Magnesium (Mg)
-	-	dd-mmm-yy	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Water Licence Criteria (WMP V1.1)			0.000026	0.073	0.15	-	-	-	0.001	-	0.0001	-	-	-	-	0.0008	-	-	0.1	-	0.015	0.1	0.1	-	-	-
Groundwater Monitoring Locations																										
SNP0053-7a	RK3356	27-Jun-17	<0.000002	0.00071	0.0027	<0.10	5.7	-	0.00053	4.3	<0.00010	61	0.48	57	-	<0.00020	-	<0.0010	0.016	-	0.0044	0.0017	0.0065	-	160	60
	SA3945	20-Sep-17	<0.000002	0.00056	0.002	<0.10	6.6	-	0.00068	4.7	<0.00010	65	0.54	42	-	<0.00020	-	<0.0010	0.0022	-	0.0043	<0.0010	<0.0030	-	190	66
SNP0053-7b	RK3355	27-Jun-17	<0.000002	0.00024	0.0051	<0.10	4.1	-	<0.00020	5.1	<0.00010	57	0.49	33	-	<0.00020	-	<0.0010	<0.0010	-	0.0039	<0.0010	<0.0030	-	210	69
Dup	RK3357	27-Jun-17	<0.000002	0.0002	0.0053	<0.10	4.2	-	<0.00020	5.2	<0.00010	58	0.51	34	-	<0.00020	-	<0.0010	<0.0010	-	0.0039	<0.0010	<0.0030	-	210	69
	Quality Assurance RPD		--	18.2%	3.8%	--	2.4%	-	--	1.9%	--	1.7%	4.0%	3.0%	-	--	-	--	--	-	0.0%	--	--	-	0.0%	0.0%
	SA3946	20-Sep-17	<0.000002	0.00029	0.0052	<0.10	5.5	-	<0.00020	6	<0.00010	66	0.51	33	-	<0.00020	-	<0.0010	0.0011	-	0.0034	0.0012	<0.0030	-	220	66
Dup	SA3949	20-Sep-17	<0.000002	0.0003	0.0055	<0.10	5.6	-	<0.00020	6.1	<0.00010	67	0.52	33	-	<0.00020	-	<0.0010	0.001	-	0.0035	0.0016	<0.0030	-	220	67
	Quality Assurance RPD		--	3.4%	5.6%	--	1.8%	-	--	1.7%	--	1.5%	1.9%	0.0%	-	--	-	--	9.5%	-	2.9%	28.6%	--	-	0.0%	1.5%
SNP0053-7c	RK3354	27-Jun-17	0.0000063	0.0017	0.029	0.11	19	-	0.00064	8.1	<0.00010	140	0.8	41	-	<0.00020	-	<0.0010	0.0014	-	0.01	0.0018	0.027	-	290	160
	SA3947	20-Sep-17	0.0000022	0.00031	0.0094	0.41	20	-	0.00063	10	<0.00010	130	0.66	9.2	-	<0.00020	-	0.0012	0.0024	-	0.0018	0.0012	0.02	-	290	140
SNP0053-7d	RK3353	27-Jun-17	<0.000002	0.00055	0.017	<0.10	8.9	-	0.0016	5.5	<0.00010	660	2	230	-	<0.00020	-	<0.0010	0.0018	-	0.05	0.0011	0.013	-	280	330
	SA3948	20-Sep-17	<0.000002	0.00066	0.021	<0.10	9.1	-	0.00047	6.9	<0.00010	680	2.1	280	-	<0.00020	-	<0.0010	0.0043	-	0.042	0.0017	0.0033	-	310	300

Legend

Dup — Blind field duplicate sample
mg/L — milligrams per litre
RPD — relative percent difference (-- indicates incalculable as below detection limits)

Applicable Guidelines

- *TOHR WMP V1.1 which utilizes Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites (CCME FCSAP Guidelines; CCME, 2012); residential parkland use, coarse soil*

Notes

- Samples analyzed for dissolved metal parameters were lab filtered prior to processing
- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Order #s: L1789298 & L1835070) and Maxxax Analytics (Work Order #s: B753156 & B782013)
- Exceedance of applicable guidelines or background conditions indicated by shading. Where multiple guidelines apply, the most stringent guideline was used; where guidelines were the same, the first to appear was used.
- Hardness-dependent guidelines (Cu, Pb and Ni) were developed using site-specific details
- pH-dependent guideline (Al) was developed using site-specific details
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program:
  - A duplicate sample for MW010-C was submitted under the title MW010-E on the COC for the spring sampling event
  - A duplicate sample for MW010-C was submitted under the title MW010-E on the COC for the fall sampling event

Table 3: Groundwater Characterization Data – Petroleum Hydrocarbon Parameters
Client: KBL Environmental
Project: Groundwater Monitoring
KBL File #: 16-022

Sampling Information			Volatile Organic Compounds						Petroleum Hydrocarbons		
Sample ID	Lab ID	Date	Benzene	Toluene	Ethylbenzene	Xylenes (Total)	MTBE	F1-BTEX (C6-C10)	F2 (>C10-C16)	F3 (C16-C34)	F4 (C34-C50)
-	-	dd-mmm-yy	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
CCME FCSAP Guidelines			0.14	0.083	11	3.9	-	0.81	1.3	-	-
Groundwater Monitoring Locations											
SNP0053-7a	RK3356	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
	SA3945	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
SNP0053-7b	RK3355	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
Dup	RK3357	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
	Quality Assurance RPD		--	--	--	--	--	--	--	--	--
	SA3946	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
Dup	SA3949	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
	Quality Assurance RPD		--	--	--	--	--	--	--	--	--
SNP0053-7c	RK3354	27-Jun-17	0.0005	0.0017	<0.00040	<0.00080	<0.00050	<0.10	0.12	0.16	<0.20
	SA3947	20-Sep-17	0.00075	0.005	0.00074	0.0027	<0.00050	<0.10	0.13	0.16	<0.20
SNP0053-7d	RK3353	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
	SA3948	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	<0.00050	<0.10	<0.10	<0.10	<0.20
Quality Assurance											
Field Blank	RK3358	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	<0.10	<0.20
	SA3950	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	-
Trip Blank	RK3359	27-Jun-17	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	<0.10	<0.20
	SA3951	20-Sep-17	<0.00040	<0.00040	<0.00040	<0.00080	-	<0.10	<0.10	-	-

Legend

Dup	Blind field duplicate sample
mg/L	milligrams per litre
MTBE	methyl-t-butyl-ether
RPD	relative percent difference (-- indicates incalculable as below detection limits)

Applicable Guidelines

- *TOHR WMP V1.1 which utilizes Guidance Document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites* (CCME FCSAP Guidelines; CCME, 2012); residential parkland use, coarse soil

Notes

- Parameters not measured and absence of applicable guideline indicated by "-"
- Analytical data reported by ALS Environmental (Work Order #s: L1789298 & L1835070) and Maxxax Analytics (Work Order #s: B753156 & B782013)
- Exceedance of applicable guidelines or background conditions indicated by shading; where multiple guidelines apply, the most stringent guideline was used
- Trip and field blank source water was laboratory supplied
- Blind field duplicates were submitted as part of the quality assurance program:
  - A duplicate sample for MW010-C was submitted under the title MW010-E on the COC for the spring sampling event
  - A duplicate sample for MW010-C was submitted under the title MW010-E on the COC for the fall sampling event