

**Rock Haven Resources Ltd.**

**Klaza Property**

**Baseline Water Quality / Hydrology Survey**

*September, 2016*

*J.Gibson Env. Consulting*

*Whitehorse, Yukon*

### *Klaza Property September 2016*

Rock Haven Resources Ltd. requested baseline water quality / hydrology surveys be conducted quarterly on the surface waters draining the area of the KLAZA Claims. Ground water wells were drilled in November 2015 with quarterly monitoring scheduled in conjunction with surface water monitoring.

The KLAZA Claims are located on tributaries to the Nansen Creek and the Klaza River approx. 75 kilometers east of Carmacks.

The Mt Nansen and upper Klaza River are historic placer mining areas.

Main stem Nansen Creek and tributaries as well as Klaza River tributaries have been equipment mined over the past 3 decades.

An abandoned hard rock gold mine is located approximately 5 kilometers to the east of the Klaza Property.

In September 2016 placer operators on EF Nansen and China Creek were active and sluicing.

All surface waters are tributaries to the Klaza River and the Yukon River.

All sites were accessed by truck or ATV on September 18, 19 and 20, 2016.

### **Monitoring**

The surface water baseline survey consisted of water quality samples for routine chemistry, total metals, dissolved metals, total organic carbon and total cyanide with field measurements for pH, water temperature and flow volumes.

Sediment samples at the upstream (KZ-1) and downstream (KZ-9) Klaza River stations were done in September.

Groundwater monitoring consisted of measurements for standing water levels, purging and sampling wells with sufficient standing water. Wells were sampled for routine chemistry, total and dissolved metals, total Kjeldahl nitrogen, ionic balance and acidity.

Groundwater data loggers were downloaded along with thermistor string readings.

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The ONSET / HOBO weather station logger was downloaded.

An attempt was made to download vibrating wire piezometers but encountered software problems.

**Sample Locations**

Ten potential water quality sample sites were identified for the KLAZA Claims in March 2012.

An additional site was added in July, 2014; Station KZ-11 is located at the effluent discharge point of the "China Creek" placer operation prior to entering the Klaza River.

Groundwater Monitoring wells developed in 2015 are also listed.

Surface water sites are on the attached location map.

KLAZA Claim sample station designations and coordinates are:

<b>Station #</b>	<b>LAT/LONG Coordinates</b>	
<b>Surface Waters</b>		
KLAZA-1	62.132	137.216
KLAZA-2	62.101	137.218
KLAZA-3	62.143	137.242
KLAZA-4	62.126	137.274
KLAZA-5	62.137	137.255
KLAZA-6	62.135	137.273
KLAZA-7	62.088	137.232
KLAZA-8	62.079	137.226
KLAZA-9	62.144	137.286
KLAZA-10	62.129	137.261
KLAZA -11	no data	
<b>Groundwater Monitoring Wells</b>		
MW15-01	383413 E	6888610 N
MW15-02	383355 E	6890004 N
MW15-03	383056 E	6890592 N
MW15-04	382484 E	6891020 N
MW15-05	381552 E	6890347 N
<b>Thermistor String Well</b>		
GTC15-01	382824 E	6890304 N

## **Sample Parameters**

All surface and groundwater wells stations were sampled for total metals, dissolved metals, routine chemistry. Surface waters had the addition of total organic carbon, total cyanide and total mercury; with groundwater having total Kjeldahl nitrogen, acidity and ionic balance added.

Dissolved metals samples were filtered onsite using disposable 60 ml syringes and 0.45 micron filters. New syringes and filters were used for each station.

Total and dissolved metal samples were preserved with nitric acid immediately after sampling.

Total Organic Carbon samples were preserved with HCL immediately after sampling.

Total cyanide samples were preserved with sodium hydroxide immediately after sampling.

All samples were stored in coolers, kept at 4 Celsius and shipped by air cargo to the Exova Canada Inc. laboratory in Surrey B.C. for analysis within recommended holding times.

Field measurements for pH and conductivity were taken with an Oakton PCS TestR 35, water temperatures with a digital thermometer.

Stream flow volumes were measured with a Price Velocity meter and cross sectional area.

Surface water Quality Control samples were taken at Station KZ-9 (lower Klaza River) this survey.

Ground water monitoring wells were located, standing water levels were measured and samples taken of the three wells that were unfrozen and had sufficient standing water, Wells MW15-02S, MW15-03S and Well MW15-04S.

Well MW15-01D had standing water but could not get water to surface.

All other wells were dry or remained frozen.

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The data loggers in Well MW15-01 were download this survey. Data from September 2015 to December 2016 will be submitted after the next survey.

The data logger in MW15-05 remains frozen. The well has been frozen the past three surveys; January, May and September 2016.

Thermistor string measurements were taken at GTC15-01.

## **Analysis Results**

Laboratory analysis and field measurement results are listed in the following tables:

### **Surface Waters**

**Table1.** KLAZA Stations Routine Chemistry – laboratory analysis and field measurements. September 2016.

**Table2.** KLAZA Stations Total Metals ICP–MS laboratory analysis results. September 2016.

**Table3.** KLAZA Stations Dissolved Metals ICP–MS laboratory analysis results. September 2016.

**Table4.** Flow Volume Measurement Summary 2012 – 2016

**Table5.** Quality Control Analysis results for Station KZ-9, September 2016

**Table6.** Surface Station Sediment sample analysis results. September 2016.

### **Groundwater Wells**

**Table7.** Ground water wells standing water levels 2016.

**Table8.** Ground water Routine Chemistry – laboratory analysis and field measurements. September 2016.

**Table9.** Ground water Total Metals ICP–MS laboratory analysis results. September 2016.

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**Table10.** Ground water Dissolved Metals ICP–MS laboratory analysis results. September 2016.

**Table11.** Thermistor String Measurements 2016

As a guide for reviewing site water quality, the Maximum Acceptable Concentration (MAC) according to *Canadian Drinking Water Quality* are listed along with the Aquatic Guidelines for the protection of aquatic life in water with a pH of > 6.5 according to *CCME – Canadian Water Quality Guidelines*.

All water quality *Guideline* concentrations are based on total metal values.

Laboratory Analytical Reports are attached in Appendix 1.

Data Summaries for each surface water station are on the attached disc.

Groundwater Data summaries will be generated when there are three data sets.

## **Discussion**

### **Hydrology**

September 2016 stream flow in Klaza Property channels had volumes reflecting pre freeze up. Volumes at most sites were substantially lower than those measured in August 2015. All channel had surface water flow.

The diversion channel on upper East Fork Nansen (KZ#8) has been returned to the right limit. The left limit continues as an effluent channel through recently mined areas and settling ponds. Flows were split approximately 50/50 between right and left limit channels.

The KZ- 8 sample was taken of flows on the right / west limit channel.

Station KZ-11 is the effluent channel for the placer operation on “China Creek”. The operation was sluicing at the time of sampling. Extensive stripping has been done on lower China Creek – from the access road west to Station KZ-6 and north to within 10 meters of the Klaza River channel. The newly stripped area is estimated at greater than 20 acres.

Table 4 is a summary of flow measurements 2012 -2016. September, 2016 flow volume calculations are attached in Appendix 2.

Table 1. RockHaven Resources - Klaza Property. Surface Waters Routine Chemistry / Field Measurements September 2016

Parameter	Unit	KZ-1	KZ-2	KZ-3	KZ-4	KZ-5	KZ-6	KZ-7	KZ-8	KZ-9	KZ-10	KZ-11	DWQ*	Aquatic**
		G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines	G.Lines
pH (field)	ru			7.75	8.33		8.18	8.24	8.25	7.95		8.23		
pH (lab)	ru	7.31	7.39	7.24	7.39	6.97	7.36	7.31	7.26	7.11	7.11	7.5	6.5-8.5	6.5-9
Conductivity (lab)	us/cm	70	107	129	122	58	132	160	146	95	224	258		
Water Temp	C			2.2	2.9		3.9	0.7	0.6	3.8		4.8		
Flow Volume	cms	0.009	0.001	0.0203	0.0454	0.0576	0.0314	0.0643	0.0554	0.2613	0.0025	0.001		
Organic Carbon Total	mg/L	1.2	2	1.9	3.9	2.4	4.5	5.9	6.9	4.6	2.8	13		
Cyanide Total	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.2	0.005
Phosphorus Total	mg/L	<0.003	<0.003	0.005	0.003	0.006	0.006	0.005	0.06	0.243	0.017	2.53		
Ammonia - N	mg/L	<0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.02	<0.01	0.15		1.37-2.2
Nitrate - N	mg/L	0.1	0.18	0.17	0.01	0.04	<0.01	0.02	<0.01	0.04	0.26	0.09	10	
Nitrite - N	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1	0.06
T-Alkalinity	mg/L	34	50	61	50	28	55	45	41	43	105	121		
Chloride	mg/L	0.12	0.14	0.15	0.13	0.13	0.14	0.13	0.13	0.14	0.16	0.24	<250	
Sulfate (SO4)	mg/L	1.4	3.1	3.9	8.8	3.2	7.8	26.5	22.7	4	7.8	11.4		
Hardness as CaCO3	mg/L	34.8	54	63	58	26	63	75	69	53	110	132	<500	
T.Suspended Solids	mg/L	<4	<4	<4	5	<4	<4	4	28	82	17	1950		
T.Dissolved Solids	mg/L	78	86	92	90	54	110	112	116	114	158	266	500	

All results and limits in mg/L unless otherwise noted

DWQ\* Guidelines are Maximum Acceptable Concentration according to Canadian Drinking Water Quality

Aquatic\*\* Guidelines for Protection of aquatic life in waters with pH>6.5 and hardness as CaCO3>180 mg/L

indicates concentration equal or exceeds Guidelines

**Table 2. RockHaven Resources Klaza Property - Surface Waters Total Metals Analysis Results September 2016.**

Parameter	Unit	KZ-1	KZ-2	KZ-3	KZ-4	KZ-5	KZ-6	KZ-7	KZ-8	KZ-9	KZ-10	KZ-11	DWQ*	Aquatic**
													G.Lines	G.Lines
Calcium	mg/L	10.5	17.6	17.4	18.2	7.8	19.4	22.5	20.2	14.9	31.9	58.8	0.3	0.3
Iron	mg/L	0.004	<0.002	0.064	0.105	0.034	0.794	0.038	0.387	14.4	0.606	122	0.3	0.3
Magnesium	mg/L	2.36	2.92	5.37	3.88	1.95	4.18	5.07	4.66	5.96	10.1	38.8	0.05	
Manganese	mg/L	<0.001	<0.001	0.01	0.09	0.004	0.365	0.033	0.034	0.408	0.036	3.9		
Potassium	mg/L	0.3	0.4	0.5	0.4	0.4	0.5	0.4	0.5	1.9	1	7.9		
Silicon	mg/L	4.52	3.97	6.63	6.25	4.97	6.27	6.12	7.24	18.3	7.83	89		
Sulfur	mg/L	0.8	1.6	1.9	3.9	1.5	3.5	11	10	1.9	3.7	6		
Sodium	mg/L	1.7	1.69	2.86	2.45	1.84	2.59	2.91	2.79	2.85	3.42	6.88	<200	
Titanium	mg/L	<0.002	0.003	0.003	0.004	0.002	0.004	0.004	0.015	0.296	0.019	1.58		
Aluminum	mg/L	0.01	0.007	0.027	0.025	0.034	0.035	0.016	0.295	13.4	0.481	77.5		
Antimony	mg/L	0.00005	0.00011	0.00007	0.00014	0.00006	0.00015	0.00013	0.00024	0.00149	0.0002	0.00196	0.006	
Arsenic	mg/L	<0.0001	0.001	0.0001	0.0009	0.0002	0.002	0.0005	0.0011	0.0344	0.0007	0.151	0.01	
Barium	mg/L	0.0276	0.0768	0.0546	0.098	0.0332	0.111	0.028	0.0297	0.216	0.223	1.61		
Beryllium	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.00033	<0.00005	0.0016		
Bismuth	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0006	<0.0001	0.0038		
Boron	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.005	0.002	0.004	5	
Cadmium	mg/L	<0.00001	0.00003	<0.00001	0.00002	0.00002	0.00003	0.00005	0.00007	0.00062	0.00005	0.00706	0.005	0.0018
Chromium	mg/L	<0.00005	<0.00005	0.00014	<0.00005	0.00011	0.00012	<0.00005	0.0004	0.00995	0.00031	0.0544	0.05	0.002
Cobalt	mg/L	<0.00002	<0.00002	0.00004	0.00008	0.00003	0.00026	0.00004	0.0002	0.00543	0.00021	0.0361		
Copper	mg/L	<0.0002	0.0003	0.0002	0.0008	0.0006	0.0009	0.0007	0.004	0.0171	0.0012	0.124	1	0.004
Lead	mg/L	<0.00001	<0.00001	<0.00001	0.000128	0.000011	0.000205	0.000056	0.000792	0.0385	0.000739	0.253	0.01	0.007
Lithium	mg/L	<0.0005	<0.0005	0.0007	0.0006	<0.0005	0.0006	<0.0005	0.0006	0.0076	0.0022	0.0266		
Mercury	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.0001	0.001	0.1
Molybdenum	mg/L	0.000097	0.000314	0.000315	0.000321	0.00007	0.000423	0.000219	0.000337	0.00156	0.000219	0.00323		
Nickel	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	0.0054	0.0002	0.0368		0.15
Selenium	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0007	<0.0002	0.0062	0.01	0.001
Silver	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000012	0.000334	0.000022	0.00424		0.0001
Strontium	mg/L	0.0676	0.0603	0.142	0.126	0.0513	0.132	0.151	0.138	0.12	0.247	0.567		
Thallium	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000308	0.000014	0.000928		
Tin	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0003	<0.0001	0.0004		
Uranium	mg/L	0.000125	0.000175	0.000923	0.000325	0.000065	0.000543	0.000256	0.000276	0.00189	0.00158	0.018	0.02	
Vanadium	mg/L	0.000122	0.000059	0.000246	0.000145	0.000235	0.000273	0.000189	0.000837	0.0288	0.00107	0.126		
Zinc	mg/L	<0.0005	0.0008	<0.0005	0.0011	<0.0005	0.0011	<0.0005	0.003	0.0721	0.0033	0.547	<5	0.03
Zirconium	mg/L	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	<0.0001	0.0002	0.0067	0.0001	0.0133		

indicates concentration equal or exceeds Guidelines



**Table 3. RockHaven Resources - Klaza Property Surface Waters Dissolved Metals Analysis Results September 2016**

Parameter	Unit	KZ-1	KZ-2	KZ-3	KZ-4	KZ-5	KZ-6	KZ-7	KZ-8	KZ-9	KZ-10	KZ-11
Calcium	mg/L	10.2	17.1	16.8	17.4	7.5	18.8	22.1	20.2	14.4	29.7	36
Iron	mg/L	<0.002	<0.002	0.011	0.047	0.012	0.575	0.029	0.075	2.17	0.038	<0.002
Magnesium	mg/L	2.2	2.8	5.1	3.6	1.8	3.9	4.8	4.4	4.1	8.9	10.3
Manganese	mg/L	<0.001	<0.001	0.004	0.081	0.003	0.356	0.033	0.031	0.197	0.012	0.625
Potassium	mg/L	0.3	0.4	0.5	0.4	0.4	0.5	0.4	0.4	1.1	0.7	1.1
Silicon	mg/L	4.24	3.73	6.11	5.76	4.6	5.78	5.75	6.33	9.78	6.61	5.77
Sodium	mg/L	1.5	1.3	2.6	2.2	1.6	2.2	2.7	2.6	2.4	2.9	4.9
Sulfur	mg/L	0.7	1.5	1.8	3.6	1.4	3.3	10.5	9.4	2.1	3.1	4.8
Aluminum	mg/L	0.008726	0.006318	0.01272	0.008367	0.0141	0.008671	0.01134	0.04239	1.469	0.002637	0.005578
Antimony	mg/L	0.000049	0.00011	0.000058	0.000134	0.000057	0.000139	0.000119	0.00018	0.000304	0.000114	0.000223
Arsenic	mg/L	<0.0001	0.001	<0.0001	0.0008	0.0002	0.0019	0.0005	0.0006	0.0046	0.0001	0.0013
Barium	mg/L	0.0259	0.0719	0.0524	0.0922	0.032	0.1056	0.0266	0.0261	0.0672	0.1963	0.0857
Beryllium	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000056	<0.000050	<0.000050
Bismuth	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Boron	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Cadmium	mg/L	<0.00001	0.000021	<0.00001	0.000015	0.000012	0.000026	0.000038	0.000045	0.000173	<0.00001	0.000166
Chromium	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000134	0.000056	<0.000050	0.000108	0.001042	<0.000050	<0.000050
Cobalt	mg/L	<0.000020	<0.000020	<0.000020	0.000057	0.000024	0.000233	0.000028	0.000091	0.000718	0.000033	0.000304
Copper	mg/L	<0.0005	<0.0005	<0.0005	0.0007	0.0005	0.0007	0.0007	0.0024	0.0029	<0.0005	0.0012
Lead	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	0.000084	0.00007	<0.00001	0.000059	0.006252	<0.00001	<0.00001
Lithium	mg/L	<0.0005	<0.0005	0.0007	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.0014	0.0018	0.0007
Molybdenum	mg/L	0.000099	0.000295	0.000301	0.00029	0.000082	0.000411	0.000203	0.000259	0.00076	0.000191	0.002646
Nickel	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0003
Selenium	mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Silver	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000024	<0.00001	<0.00001
Strontium	mg/L	0.0696	0.064	0.1487	0.132	0.054	0.1418	0.1576	0.1434	0.1314	0.2546	0.3697
Titanium	mg/L	0.002	0.003	0.003	0.003	0.002	0.004	0.004	0.005	0.067	0.006	0.007
Tellurium	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Thallium	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000028	<0.00001	<0.00001
Thorium	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Tin	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Uranium	mg/L	0.000123	0.000163	0.000873	0.000309	0.000057	0.000535	0.00025	0.000248	0.000871	0.001425	0.01044
Vanadium	mg/L	0.000084	<0.000050	0.000118	<0.000050	0.000121	0.000132	0.000139	0.000241	0.003739	<0.000050	0.00052
Zinc	mg/L	<0.0005	0.0009	<0.0005	0.0006	0.001	0.0013	0.0005	0.0011	0.0078	0.0006	<0.0005
Zirconium	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	0.001	<0.0001	<0.0001

**Table 4. Klaza Project - Flow Volume Measurement Summary 2012-2016**

Station	Date																
	Jun-12	Jul-12	Sep-12	Apr-13	Jun-13	Oct-13	Jan-14	Apr-14	Jul-14	Oct-14	Feb-15	May-15	Aug-15	Jan-16	May-16	Sep-16	
KZ#1	0.249	0.262	0.085	Dry	0.1308	0.0248	Dry	Dry	0.0466	0.0232	Dry	nr	0.2706	Dry	0.0854	0.009	
KZ#2	0.073	0.091	0.039	nr	0.0079	nr	Dry	Dry	<0.001	Dry	Dry	nr	0.0093	Dry	0.0144	<0.001	
KZ#3	0.243	0.084	0.073	nr	0.0142	nr	0.007	0.005	0.0077	0.0246	0.003*	nr	0.1005	0.0292	0.0955	0.0203	
KZ#4	0.170	0.250	0.084	Dry	0.0352	nr	nr	nr	0.0041	0.0372	nr	nr	0.0958	Glacial Ice	0.1241	0.0454	
KZ#5	0.328	0.494	0.150	nr	0.0957	nr	0.003	nr	0.0262	0.0316	0.002*	nr	0.2213	0.0035	0.1873	0.0576	
KZ#6	0.209	0.308	0.075	Dry	0.0471	0.06	Dry	Dry	<0.001	0.0367	Dry	nr	nr	Dry	nr	0.0314	
KZ#7	0.233	0.179	0.065	nr	0.0723	0.0423	nr	nr	0.0158	0.01*	Glaciated	nr	0.1391	Glacial Ice	0.0847	0.0643	
KZ#8	0.423	0.437	0.247	nr	0.1600	0.0764	nr	0.07	nr	0.015*	nr	nr	0.1844	nr	nr	0.0554	
KZ#9	1.848	1.146	0.428	0.0206	0.2528	0.2365	0.0765	0.0335	0.0849	0.1684	0.064	nr	0.4566	0.0868	0.3246	0.2613	
KZ#10	0.029	0.009	0.011	Dry	Dry	<0.001	nr	Dry	Dry	Dry	Dry	Dry	0.0014	Dry	0.0162	0.0025	
KZ#11													0.006	Dry	No Flow	<0.001	
	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)	(cms)

\* = slush and/or anchor ice - unable to measure. Volumes estimated.

**Table 5. Quality Control Samples - Lab Analysis Results September 2016**

Parameter	Unit	Total Metals		Dissolved Metals	
		KZ - 9	KZ-9 Duplicate	KZ - 9	KZ-9 Duplicate
Calcium	mg/L	14.9	16.3	14.4	14.4
Iron	mg/L	14.4	21.3	2.17	0.011
Magnesium	mg/L	5.96	7.41	4.1	3.9
Manganese	mg/L	0.408	0.591	0.197	0.143
Potassium	mg/L	1.9	2.4	1.1	0.6
Silicon	mg/L	18.3	25	9.78	5.47
Sulfur	mg/L	1.9	2.1	2.1	2.1
Sodium	mg/L	2.85	2.95	2.4	2.4
Titanium	mg/L	0.296	0.402	0.067	0.003
Aluminum	mg/L	13.4	17.9	1.469	0.005104
Antimony	mg/L	0.00149	0.00186	0.000304	0.000137
Arsenic	mg/L	0.0344	0.0444	0.0046	0.001
Barium	mg/L	0.216	0.29	0.0672	0.052
Beryllium	mg/L	0.00033	0.00049	0.000056	<0.000050
Bismuth	mg/L	0.0006	0.001	<0.0001	<0.0001
Boron	mg/L	0.005	0.005	<0.002	<0.002
Cadmium	mg/L	0.00062	0.001	0.000173	0.000078
Chromium	mg/L	0.00995	0.0143	0.001042	<0.000050
Cobalt	mg/L	0.00543	0.00825	0.000718	0.000147
Copper	mg/L	0.0171	0.0264	0.0029	0.001
Lead	mg/L	0.0385	0.0601	0.006252	0.000049
Lithium	mg/L	0.0076	0.0101	0.0014	<0.0005
Mercury	mg/L	<0.00001	nr	nr	nr
Molybdenum	mg/L	0.00156	0.00196	0.00076	0.000875
Nickel	mg/L	0.0054	0.008	0.0007	<0.0002
Selenium	mg/L	0.0007	0.001	<0.0002	<0.0002
Silver	mg/L	0.000334	0.000556	0.000024	<0.00001
Strontium	mg/L	0.12	0.134	0.1314	0.1299
Thallium	mg/L	0.000308	0.000417	0.000028	<0.00001
Tin	mg/L	0.0003	0.0004	<0.0001	<0.0001
Uranium	mg/L	0.00189	0.00303	0.000871	0.000593
Vanadium	mg/L	0.0288	0.042	0.003739	0.000472
Zinc	mg/L	0.0721	0.112	0.0078	<0.0005
Zirconium	mg/L	0.0067	0.0101	0.001	<0.0001

denotes >10% variation between samples

**Note: TSS at KZ-9 is 82 mg/L**

**Table 6 . Rock Haven Resources. Klaza Project - Stream Sediment Analysis. September 2016**

Parameter	Units	KZ-1			KZ-9		
		REP#1	REP#2	REP#3	REP#1	REP#2	REP#3
<i>Sieve 75 micron</i>	%Ret	67	58.5	62.4	53.6	53.4	57.4
<i>Texture</i>		Coarse-Grained	Coarse-Grained	Coarse-Grained	Coarse-Grained	Coarse-Grained	Coarse-Grained
Aluminum	ug/g	13000	10400	9860	9460	9100	8580
Antimony	ug/g	3.2	2.5	2.1	2.1	1.8	2
Arsenic	ug/g	7	7.76	6.34	11.8	11.9	9.77
Barium	ug/g	105	96.1	91.2	157	157	141
Beryllium	ug/g	0.405	0.356	0.319	0.274	0.262	0.239
Bismuth	ug/g	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	ug/g	0.4	0.4	0.3	0.69	0.7	0.55
Calcium	ug/g	3270	2830	3080	3760	3490	3380
Chromium	ug/g	20	16.3	16.5	14.4	14	13.4
Cobalt	ug/g	7.27	7.14	6.31	5.57	5.52	5.15
Copper	ug/g	9.19	11.8	8.64	10.3	10.3	8.47
Iron	ug/g	39600	31300	26800	17300	17300	15700
Lead	ug/g	9.56	9.13	7.8	15.8	16.2	13.8
Lithium	ug/g	9.73	8.17	7.7	7.55	7.47	7.03
Magnesium	ug/g	4170	3890	3500	3070	3030	2900
Manganese	ug/g	402	418	346	293	291	251
Molybdenum	ug/g	0.2	0.3	0.2	0.5	0.5	0.3
Nickel	ug/g	8.7	7.7	7.6	6.6	6.3	6.3
Phosphorus	ug/g	793	631	698	667	618	639
Potassium	ug/g	534	500	480	629	614	577
Selenium	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	ug/g	<0.1	<0.1	<0.1	0.76	<0.1	<0.1
Sodium	ug/g	138	135	149	203	189	180
Strontium	ug/g	23.9	22	22.1	27.4	26	23.9
Sulfur	ug/g	121	106	99	169	158	124
Thallium	ug/g	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Tin	ug/g	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Titanium	ug/g	390	331	354	506	491	480
Vanadium	ug/g	56.7	50.4	49.1	37.4	36.6	34.7
Zinc	ug/g	50.6	46.5	43.7	59.4	60.5	53.2
Zirconium	ug/g	1.2	0.98	1	1.5	1.3	1.3

**Table 7. Rock Haven Resources - Klaza Project. Groundwater Well Measurements to September 2016.**

Well #	Total Drilled Depth (m)	Standing		Standing		Standing		Comments 18-Sep-16
		Water Level (m) Nov-15	Water Level (m) 02-Jan-16	Water Level (m) 12-May-16	Water Level (m) 18-Sep-16	Water Level (m) 18-Sep-16	Water Level (m) 18-Sep-16	
MW 15-01 D	75.9	18.85	14.61	18.38	9.94	9.94	Not Sampled	
MW 15-01 S		Dry	5.64	5.64	5.66	5.66	Dry	
MW 15-02 D	66.75	59.83	66.00	66.00	65.92	65.92	moist at soil contact	
MW 15-02 S	5.67	1.23	4.44	4.44	1.92	1.92	Sampled	
MW 15-03 D	33.32	29.14	28.68	29.7	29.1	29.1	Dry/ Frozen	
MW 15-03 S	5.8	2.16	4.95	3.66	3.19	3.19	Sampled	
MW 15-04 D	84.43	14.05	14.1	14.09	14.13	14.13	Dry/ Frozen	
MW 15-04 S	4.20	2.16	3.42	3.42	3.91	3.91	Sampled/ice crystals present	
MW 15-05 D	48.46	13.61	13.81	13.81	5.21	5.21	Logger Frozen in @ 5.21 m	
MW 15-05 S	3.65	1.04	2.67	2.67	3.65	3.65	Dry/ Frozen	

**Table 8 . RockHaven Resources - Klaza Property. Groundwater Wells Routine Chemistry / Field Measurements September 2016**

Parameter	Unit	MW15-01D	MW15-01S	MW15-02D	MW15-02S	MW15-03D	MW15-03S	MW15-04D	MW15-04S	MW15-05D	MW15-05S	DWQ * Guidelines
Total Depth	meters	75.9	5.66	66.75	5.67	33.32	5.80	84.43	4.20	48.46	3.65	
Standing Water Level	meters	9.94	5.66	65.72	1.92	29.1	3.19	14.13	3.91	5.21	3.65	
Volume Purged (L)	liters	0	Dry	Dry	12	Dry / Frozen	8	Frozen	2	Frozen	Frozen	
pH (field)	ru				7.11		7.67		7.98			
pH (lab)	ru				6.31		7.08		7.55			6.5-8.5
Conductivity (lab)	us/cm	Not			219		465		410			
Water Temp	C	Sampled			1.4		2.1		1.1			
Organic Carbon (Diss)	mg/L				4		3.2		6			
Phosphorus Total	mg/L	could not			0.21		0.13		<0.05			
OrthoPhosphate (Diss)	mg/L	get			<0.01		<0.01		<0.01			
Ammonia - N	mg/L	water to			0.064		<0.025		<0.025			
Nitrate + Nitrite	mg/L	surface			0.57		0.49		0.31			10
Sulfate (SO4)	mg/L				38		65.1		22.2			
T-Alkalinity	mg/L				60		172		195			
P-Alkalinity	mg/L				<5		<5		<5			
BiCarbonate	mg/L				73		210		238			
Carbonate	mg/L				<6		<6		<6			
Chloride	mg/L				0.79		0.49		0.28			<250
Flouride	mg/L				<0.01		<0.01		0.06			
T.Hardness as CaCO3	mg/L				91		259		229			<500
T.Dissolved Solids	mg/L				230		314		280			500
T.Kjeldahl Nitrogen	mg/L				1.71		0.4		0.35			
Acidity	mg/L CaCo3				54		38		14			
Ionic Balance (Diss)	%											

DWQ\* Guidelines are Maximum Acceptable Concentration according to Canadian Drinking Water Quality

indicates concentration equal or exceeds Guidelines

**Table 9. RockHaven Resources - Klaza Property. Groundwater Wells Total Metals Analysis September 2016**

Parameter	Unit	MW15-01D	MW15-01S	MW15-02D	MW15-02S	MW15-03D	MW15-03S	MW15-04D	MW15-04S	MW15-05D	MW15-05S	DWQ *
Calcium	mg/L	Dry	Dry	Dry	26.9	Dry / Frozen	57.2	Frozen	67.6	Frozen	Frozen	
Iron	mg/L				0.917		5.69		0.648			0.3
Magnesium	mg/L				6.25		9.2		17.1			
Manganese	mg/L				1.05		0.101		0.048			0.05
Potassium	mg/L				4.6		2.2		1.1			
Silicon	mg/L				9.29		7.22		6.25			
Sodium	mg/L				6.93		2.54		4.17			<200
Sulfur	mg/L				15		17.3		8.9			
Aluminum	mg/L				0.478		1.82		0.394			
Antimony	mg/L				0.00045		0.00087		0.00063			0.006
Arsenic	mg/L				0.0047		0.0068		0.0011			0.01
Barium	mg/L				0.453		0.129		0.135			
Beryllium	mg/L				<0.00005		0.00017		<0.00005			
Bismuth	mg/L				<0.0001		<0.0001		<0.0001			
Boron	mg/L				0.003		0.003		0.003			5
Cadmium	mg/L				0.0147		0.0011		0.00148			0.005
Chromium	mg/L				0.00377		0.00307		0.00163			0.05
Cobalt	mg/L				0.00223		0.00082		0.00039			
Copper	mg/L				0.0162		0.0106		0.0044			1
Lead	mg/L				0.00833		0.00877		0.00179			0.01
Lithium	mg/L				0.0025		0.003		0.0035			
Mercury	mg/L				<0.00001		<0.00001		<0.00001			0.001
Molybdenum	mg/L				0.000292		0.000557		0.00066			
Nickel	mg/L				0.0042		0.0024		0.0015			
Selenium	mg/L				<0.0002		<0.0002		<0.0002			0.01
Silver	mg/L				0.00018		0.00231		0.000097			
Strontium	mg/L				0.129		0.169		0.234			
Titanium	mg/L				0.656		0.072		0.024			
Tellurium	mg/L				<0.000050		<0.000050		<0.000050			
Thallium	mg/L				0.000029		0.000076		0.000014			
Thorium	mg/L				0.000103		0.000651		0.000065			
Tin	mg/L				0.001		0.0018		0.0031			
Uranium	mg/L				0.000236		0.00513		0.00551			0.02
Vanadium	mg/L				0.00121		0.00314		0.0009			
Zinc	mg/L				3.58		0.435		0.0267			<5
Zirconium	mg/L				0.0022		0.0005		<0.0001			

indicates concentration equal or exceeds Guidelines

**Table 10. RockHaven Resources - Klaza Property. Groundwater Wells Dissolved Metals Analysis September 2016**

Parameter	Unit	MW15-01D	MW15-01S	MW15-02D	MW15-02S	MW15-03D	MW15-03S	MW15-04D	MW15-04S	MW15-05D	MW15-05S
Calcium	mg/L	Dry									
Iron	mg/L		26.5				83		64.8		
Magnesium	mg/L		0.336				0.057		<0.002		
Manganese	mg/L		6				12.6		16.3		
Potassium	mg/L		1.01				0.092		0.009		
Silicon	mg/L		6.1				1.6		1.1		
Sodium	mg/L		8.04				4.49		5.23		
Sulfur	mg/L		6.7				3.3		3.5		
Aluminum	mg/L		14.2				24.2		8.5		
Antimony	mg/L		0.1091				0.007074		0.002589		
Arsenic	mg/L		0.00255				0.000536		0.000438		
Barium	mg/L		0.0025				0.0003		0.0002		
Beryllium	mg/L		0.4078				0.0541		0.1031		
Bismuth	mg/L		<0.000050				<0.000050		<0.000050		
Boron	mg/L		<0.0001				<0.0001		<0.0001		
Cadmium	mg/L		0.004				0.003		0.002		
Chromium	mg/L		0.005838				0.000404		0.000462		
Cobalt	mg/L		0.001543				0.0007		<0.000050		
Copper	mg/L		0.001928				0.00032		0.000064		
Lead	mg/L		0.0088				0.003		0.0012		
Lithium	mg/L		0.002586				0.000056		0.00003		
Molybdenum	mg/L		0.0022				0.0021		0.0031		
Nickel	mg/L		0.000283				0.000388		0.000413		
Selenium	mg/L		0.0038				0.0012		<0.0002		
Silver	mg/L		<0.0002				<0.0002		<0.0002		
Strontium	mg/L		<0.00001				<0.00001		<0.00001		
Titanium	mg/L		0.1353				0.2535		0.2434		
Tellurium	mg/L		0.099				0.015		0.011		
Thallium	mg/L		<0.000050				<0.000050		<0.000050		
Thorium	mg/L		0.000011				<0.00001		<0.00001		
Tin	mg/L		<0.000050				<0.000050		<0.000050		
Uranium	mg/L		0.0003				0.0003		0.0004		
Vanadium	mg/L		0.000151				0.007196		0.005619		
Zinc	mg/L		0.0004				<0.000050		<0.000050		
Zirconium	mg/L		4.321				0.193		0.0158		
			0.0006				<0.0001		<0.0001		



**Table 11. Rock Haven Resources - Klaza Project. Thermistor String Measurements.**

<b>Well # GTC 15-01</b>	<b>Nov-15</b>	<b>Jan-16</b>	<b>May-16</b>	<b>Sep-16</b>
<b>Channel #</b>	<b>(k ohm)</b>	<b>(k ohm)</b>	<b>(k ohm)</b>	<b>(k ohm)</b>
<b>1</b>	16.45	16.83	17.53	16.24
<b>2</b>	16.52	17.02	17.1	16.63
<b>3</b>	16.63	17.91	16.89	16.92
<b>4</b>	16.75	16.97	16.88	16.87
<b>5</b>	16.77	17.34	16.87	16.88
<b>6</b>	16.76	16.88	16.87	16.87
<b>7</b>	16.62	16.93	16.76	16.76
<b>8</b>	16.56	16.67	16.66	16.66
<b>9</b>	16.39	16.48	16.45	16.45
<b>10</b>	16.27	16.32	16.31	16.31

Note: Thermistor readings require conversion by EBA / Tetra Tech

## **Laboratory Analytical Results**

### **Surface Waters**

Parameters that equal or exceed either *Drinking Water or Aquatic Guidelines* are highlighted in yellow in Tables 1 and 2. All Guideline metals values are Totals.

All Stations had surface water flow and were sampled.

**Stations KZ-1, 2, 3, 5, and 7** meet all *Drinking Water Guidelines* and *Aquatic Guidelines*.

**Station KZ-4** exceeds the *Drinking Water Guidelines* for manganese.

**Stations KZ-6** exceeds the *Drinking Water Guidelines* for iron and manganese and the *Aquatic Guidelines* for iron.

**Station KZ-8 and KZ-10** exceed the *Drinking Water Guidelines* and *Aquatic Guidelines* for iron.

**Stations KZ-11** (placer effluent) and **KZ-9** (Klaza River downstream) exceed both Guidelines for parameters iron, manganese, arsenic, copper, lead and zinc. **Station KZ-11** also exceeds guidelines for cadmium, chromium, selenium and silver.

Station KZ-9 had a high sediment load with high turbidity.

All stations sampled reported total cyanide at less than laboratory detection limits (0.002 mg/L).

All stations sampled (KZ-1, 8 and 9) reported total mercury at less than detection limit (0.00001 mg/L).

### **Quality Control**

Quality Control samples were taken at Station KZ-9. Results are listed in Table 5. There was a high degree of variation between samples – likely due to the high sediment load.

### **Groundwater Wells**

Groundwater wells MW15-01D, MW15-02S, MW15-03S and MW15-04S were the only wells not dry or frozen in September.

Wells MW15-01S and MW15-02D were dry; the other wells were frozen.

Analysis results and field measurements are listed in Tables 6, 7, 8 and 9.

Laboratory analytical results are compared to Drinking Water Quality Guidelines.

### *Klaza Property September 2016*

Well MW15-02S exceeded Guidelines for pH, iron, manganese and cadmium.

Well MW15-03S exceeded Guidelines for iron and manganese.

Well MW15-04S exceeded Guidelines for iron.

### **Thermistor**

Thermistor string readings were taken at Well GTC15-01. Results for January, May and September 2016 are listed in Table 10. Site readings require conversion.

### **Vibrating Wire Piezometers**

The three vibrating wire piezometers were located but attempts to download data were unsuccessful – likely due to a soft ware problem.

### **Onset Weather Station**

The **Onset / Hobo** weather station installed near camp on June, 2013 was downloaded on September 19, 2016.

A 2016 weather data report will be issued at the end of 2016.

**APPENDIX 1**

**LABORATORY ANALYTICAL REPORTS**

**KLAZA PROPERTY**

**September, 2016**

## Report Transmission Cover Page

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162096</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059205
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Surface Water	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2134014
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

Contact & Affiliation	Address	Delivery Commitments
John Gibson J. Gibson & Associates	Box 20913, Whitehorse, Yukon Territory Y1A 6P2 Phone: (867) 633-4522 Fax: (867) 668-6895 Email: <a href="mailto:ludditegibson@gmail.com">ludditegibson@gmail.com</a>	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (Test Report) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report On [Lot Creation] send (COR) by Email - Single Report

### Notes To Clients:

- Reduction of analytical volume was necessary for Total Suspended Solids analysis due to matrix effects in 1162096, sample 12. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Total Suspended Solids analysis due to limited sample volume for lot 1162096, samples 1 through 11. Detection limits are adjusted accordingly.
- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1162096-9, 10, and 12. Detection limits are adjusted accordingly.
- Sample 1162096-12; 5515840 Reduction of analytical volume was necessary for TP to bring results within the analytical range for sample 1162096-12. Detection limits are adjusted accordingly.

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**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-1	1162096-2	1162096-3
Sample Date	Sep 18, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	14:40	14:40	18:20
Sample Location	Surface	Surface	Surface
Sample Description	KZ-1	KZ-2	KZ-3
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Inorganic Nonmetallic Parameters</b>						
Organic Carbon	Total Nonpurgeable	mg/L	1.2	2.0	1.9	0.5
Cyanide	Total	mg/L	<0.002	<0.002	<0.002	0.002
Ammonia - N		mg/L	<0.01	0.01	<0.01	0.01
Phosphorus	Total	mg/L	<0.003	<0.003	0.005	0.003
<b>Metals Total</b>						
Calcium	Total	mg/L	10.5	17.6	17.4	0.01
Magnesium	Total	mg/L	2.36	2.92	5.37	0.02
Potassium	Total	mg/L	0.3	0.4	0.5	0.04
Silicon	Total	mg/L	4.52	3.97	6.63	0.005
Sulfur	Total	mg/L	0.8	1.6	1.9	0.02
Sodium	Total	mg/L	1.70	1.69	2.86	0.1
Titanium	Total	mg/L	<0.002	0.003	0.003	0.002
Mercury	Total	mg/L	<0.00001			0.00001
<b>Physical and Aggregate Properties</b>						
Solids	Total Suspended	mg/L	<4	<4	<4	2
Solids	Total Dissolved	mg/L	78	86	92	5
<b>Routine Water</b>						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.31	7.39	7.24	
Electrical Conductivity		µS/cm at 25 C	70	107	129	1
Calcium	Dissolved	mg/L	10.2	17.1	16.8	0.01
Magnesium	Dissolved	mg/L	2.2	2.8	5.1	0.02
Potassium	Dissolved	mg/L	0.3	0.4	0.5	0.04
Silicon	Dissolved	mg/L	4.24	3.73	6.11	0.005
Sodium	Dissolved	mg/L	1.5	1.3	2.6	0.1
Sulfur	Dissolved	mg/L	0.7	1.5	1.8	0.02
Bicarbonate		mg/L	42	61	74	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	34	50	61	5
Chloride	Dissolved	mg/L	0.12	0.14	0.15	0.05
Nitrate - N	Dissolved	mg/L	0.10	0.18	0.17	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	1.4	3.1	3.9	0.5
Hardness	as CaCO3 (dissolved)	mg/L	34.8	54	63	5



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-1	1162096-2	1162096-3
Sample Date	Sep 18, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	14:40	14:40	18:20
Sample Location	Surface	Surface	Surface
Sample Description	KZ-1	KZ-2	KZ-3
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Routine Water - Continued</b>						
Hardness	Total	mg CaCO3/L	36.0	55.9	65.6	1
<b>Trace Metals Dissolved</b>						
Digestion	Dissolved		Field Filtered	Field Filtered	Field Filtered	
Titanium	Dissolved	mg/L	0.002	0.003	0.003	0.002
Aluminum	Dissolved	mg/L	0.008726	0.006318	0.01272	0.001
Antimony	Dissolved	mg/L	0.000049	0.000110	0.000058	0.00002
Arsenic	Dissolved	mg/L	<0.0001	0.001	<0.0001	0.0001
Barium	Dissolved	mg/L	0.0259	0.0719	0.0524	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	<0.002	<0.002	<0.002	0.002
Cadmium	Dissolved	mg/L	<0.00001	0.000021	<0.00001	0.00001
Chromium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Cobalt	Dissolved	mg/L	<0.000020	<0.000020	<0.000020	0.00002
Copper	Dissolved	mg/L	<0.0005	<0.0005	<0.0005	0.0005
Iron	Dissolved	mg/L	<0.002	<0.002	0.011	0.002
Lead	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Lithium	Dissolved	mg/L	<0.0005	<0.0005	0.0007	0.0005
Manganese	Dissolved	mg/L	<0.001	<0.001	0.004	0.001
Molybdenum	Dissolved	mg/L	0.000099	0.000295	0.000301	0.00002
Nickel	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.0696	0.0640	0.1487	0.0001
Tellurium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.000123	0.000163	0.000873	0.00001
Vanadium	Dissolved	mg/L	0.000084	<0.000050	0.000118	0.00005
Zinc	Dissolved	mg/L	<0.0005	0.0009	<0.0005	0.0005
Zirconium	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
<b>Trace Metals Total</b>						
Aluminum	Total	mg/L	0.010	0.007	0.027	0.001
Antimony	Total	mg/L	0.00005	0.00011	0.00007	0.00002
Arsenic	Total	mg/L	<0.0001	0.001	0.0001	0.0001



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-1	1162096-2	1162096-3
Sample Date	Sep 18, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	14:40	14:40	18:20
Sample Location	Surface	Surface	Surface
Sample Description	KZ-1	KZ-2	KZ-3
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Trace Metals Total - Continued</b>						
Barium	Total	mg/L	0.0276	0.0768	0.0546	0.0001
Beryllium	Total	mg/L	<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	<0.002	<0.002	<0.002	0.002
Cadmium	Total	mg/L	<0.00001	0.00003	<0.00001	0.00001
Chromium	Total	mg/L	<0.00005	<0.00005	0.00014	0.00005
Cobalt	Total	mg/L	<0.00002	<0.00002	0.00004	0.00002
Copper	Total	mg/L	<0.0002	0.0003	0.0002	0.0002
Iron	Total	mg/L	0.004	<0.002	0.064	0.002
Lead	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Lithium	Total	mg/L	<0.0005	<0.0005	0.0007	0.0005
Manganese	Total	mg/L	<0.001	<0.001	0.01	0.001
Molybdenum	Total	mg/L	0.000097	0.000314	0.000315	0.00002
Nickel	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.0676	0.0603	0.142	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Total	mg/L	0.000125	0.000175	0.000923	0.00001
Vanadium	Total	mg/L	0.000122	0.000059	0.000246	0.00005
Zinc	Total	mg/L	<0.0005	0.0008	<0.0005	0.0005
Zirconium	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001





**Analytical Report**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162096</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059205
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Surface Water	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2134014
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

		Reference Number	1162096-4	1162096-5	1162096-6	
		Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016	
		Sample Time	17:35	15:50	15:55	
		Sample Location	Surface	Surface	Surface	
		Sample Description	KZ-4	KZ-5	KZ-6	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Inorganic Nonmetallic Parameters</b>						
Organic Carbon	Total Nonpurgeable	mg/L	3.9	2.4	4.5	0.5
Cyanide	Total	mg/L	<0.002	<0.002	<0.002	0.002
Ammonia - N		mg/L	<0.01	<0.01	0.01	0.01
Phosphorus	Total	mg/L	0.003	0.006	0.006	0.003
<b>Metals Total</b>						
Calcium	Total	mg/L	18.2	7.80	19.4	0.01
Magnesium	Total	mg/L	3.88	1.95	4.18	0.02
Potassium	Total	mg/L	0.4	0.4	0.5	0.04
Silicon	Total	mg/L	6.25	4.97	6.27	0.005
Sulfur	Total	mg/L	3.9	1.5	3.5	0.02
Sodium	Total	mg/L	2.45	1.84	2.59	0.1
Titanium	Total	mg/L	0.004	0.002	0.004	0.002
<b>Physical and Aggregate Properties</b>						
Solids	Total Suspended	mg/L	5	<4	<4	2
Solids	Total Dissolved	mg/L	90	54	110	5
<b>Routine Water</b>						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.39	6.97	7.36	
Electrical Conductivity		µS/cm at 25 C	122	58	132	1
Calcium	Dissolved	mg/L	17.4	7.5	18.8	0.01
Magnesium	Dissolved	mg/L	3.6	1.8	3.9	0.02
Potassium	Dissolved	mg/L	0.4	0.4	0.5	0.04
Silicon	Dissolved	mg/L	5.76	4.60	5.78	0.005
Sodium	Dissolved	mg/L	2.2	1.6	2.2	0.1
Sulfur	Dissolved	mg/L	3.6	1.4	3.3	0.02
Bicarbonate		mg/L	61	34	67	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	50	28	55	5
Chloride	Dissolved	mg/L	0.13	0.13	0.14	0.05
Nitrate - N	Dissolved	mg/L	0.01	0.04	<0.01	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	8.8	3.2	7.8	0.5
Hardness	as CaCO3 (dissolved)	mg/L	58	26	63	5
Hardness	Total	mg CaCO3/L	61.3	27.5	65.7	1



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-4	1162096-5	1162096-6
Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	17:35	15:50	15:55
Sample Location	Surface	Surface	Surface
Sample Description	KZ-4	KZ-5	KZ-6
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Trace Metals Dissolved</b>					
Digestion	Dissolved	Field Filtered	Field Filtered	Field Filtered	
Titanium	Dissolved	mg/L	0.003	0.002	0.004
Aluminum	Dissolved	mg/L	0.008367	0.01410	0.008671
Antimony	Dissolved	mg/L	0.000134	0.000057	0.000139
Arsenic	Dissolved	mg/L	0.0008	0.0002	0.0019
Barium	Dissolved	mg/L	0.0922	0.0320	0.1056
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001
Boron	Dissolved	mg/L	<0.002	<0.002	<0.002
Cadmium	Dissolved	mg/L	0.000015	0.000012	0.000026
Chromium	Dissolved	mg/L	<0.000050	0.000134	0.000056
Cobalt	Dissolved	mg/L	0.000057	0.000024	0.000233
Copper	Dissolved	mg/L	0.0007	0.0005	0.0007
Iron	Dissolved	mg/L	0.047	0.012	0.575
Lead	Dissolved	mg/L	<0.00001	0.000084	0.000070
Lithium	Dissolved	mg/L	<0.0005	<0.0005	<0.0005
Manganese	Dissolved	mg/L	0.081	0.003	0.356
Molybdenum	Dissolved	mg/L	0.000290	0.000082	0.000411
Nickel	Dissolved	mg/L	<0.0002	<0.0002	<0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	<0.00001
Strontium	Dissolved	mg/L	0.1320	0.0540	0.1418
Tellurium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050
Thallium	Dissolved	mg/L	<0.00001	<0.00001	<0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001
Uranium	Dissolved	mg/L	0.000309	0.000057	0.000535
Vanadium	Dissolved	mg/L	<0.000050	0.000121	0.000132
Zinc	Dissolved	mg/L	0.0006	0.001	0.0013
Zirconium	Dissolved	mg/L	<0.0001	<0.0001	<0.0001
<b>Trace Metals Total</b>					
Aluminum	Total	mg/L	0.025	0.034	0.035
Antimony	Total	mg/L	0.00014	0.00006	0.00015
Arsenic	Total	mg/L	0.0009	0.0002	0.0020
Barium	Total	mg/L	0.0980	0.0332	0.111
Beryllium	Total	mg/L	<0.00005	<0.00005	<0.00005



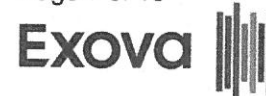
**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

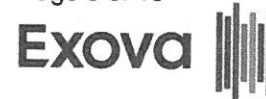
		Reference Number	1162096-4	1162096-5	1162096-6	
		Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016	
		Sample Time	17:35	15:50	15:55	
		Sample Location	Surface	Surface	Surface	
		Sample Description	KZ-4	KZ-5	KZ-6	
		Matrix	Water	Water	Water	
Analyte		Units	Results	Results	Results	Nominal Detection Limit
<b>Trace Metals Total - Continued</b>						
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	<0.002	<0.002	<0.002	0.002
Cadmium	Total	mg/L	0.00002	0.00002	0.00003	0.00001
Chromium	Total	mg/L	<0.00005	0.00011	0.00012	0.00005
Cobalt	Total	mg/L	0.00008	0.00003	0.00026	0.00002
Copper	Total	mg/L	0.0008	0.0006	0.0009	0.0002
Iron	Total	mg/L	0.105	0.034	0.794	0.002
Lead	Total	mg/L	0.000128	0.000011	0.000205	0.00001
Lithium	Total	mg/L	0.0006	<0.0005	0.0006	0.0005
Manganese	Total	mg/L	0.090	0.004	0.365	0.001
Molybdenum	Total	mg/L	0.000321	0.000070	0.000423	0.00002
Nickel	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L	0.126	0.0513	0.132	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Total	mg/L	0.000325	0.000065	0.000543	0.00001
Vanadium	Total	mg/L	0.000145	0.000235	0.000273	0.00005
Zinc	Total	mg/L	0.0011	<0.0005	0.0011	0.0005
Zirconium	Total	mg/L	0.0002	<0.0001	<0.0001	0.0001



**Analytical Report**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162096</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059205
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Surface Water	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2134014
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

		Reference Number	1162096-7	1162096-8	1162096-9	
		Sample Date	Sep 20, 2016	Sep 20, 2016	Sep 19, 2016	
		Sample Time	09:30	09:55	10:40	
		Sample Location	Surface	Surface	Surface	
		Sample Description	KZ-7	KZ-8	KZ-9	
		Matrix	Water	Water	Water	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Inorganic Nonmetallic Parameters</b>						
Organic Carbon	Total Nonpurgeable	mg/L	5.9	6.9	4.6	0.5
Cyanide	Total	mg/L	<0.002	<0.002	<0.002	0.002
Ammonia - N		mg/L	<0.01	<0.01	0.02	0.01
Phosphorus	Total	mg/L	0.005	0.060	0.243	0.003
<b>Metals Total</b>						
Calcium	Total	mg/L	22.5	20.2	14.9	0.01
Magnesium	Total	mg/L	5.07	4.66	5.96	0.02
Potassium	Total	mg/L	0.4	0.5	1.9	0.04
Silicon	Total	mg/L	6.12	7.24	18.3	0.005
Sulfur	Total	mg/L	11.0	10.0	1.9	0.02
Sodium	Total	mg/L	2.91	2.79	2.85	0.1
Titanium	Total	mg/L	0.004	0.015	0.296	0.002
Mercury	Total	mg/L		<0.00001	<0.00001	0.00001
<b>Physical and Aggregate Properties</b>						
Solids	Total Suspended	mg/L	4	28	82	2
Solids	Total Dissolved	mg/L	112	116	114	5
<b>Routine Water</b>						
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		7.31	7.26	7.11	
Electrical Conductivity		µS/cm at 25 C	160	146	95	1
Calcium	Dissolved	mg/L	22.1	20.2	14.4	0.01
Magnesium	Dissolved	mg/L	4.8	4.4	4.1	0.02
Potassium	Dissolved	mg/L	0.4	0.4	1.1	0.04
Silicon	Dissolved	mg/L	5.75	6.33	9.78	0.005
Sodium	Dissolved	mg/L	2.7	2.6	2.4	0.1
Sulfur	Dissolved	mg/L	10.5	9.4	2.1	0.02
Bicarbonate		mg/L	54	50	52	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	45	41	43	5
Chloride	Dissolved	mg/L	0.13	0.13	0.14	0.05
Nitrate - N	Dissolved	mg/L	0.02	<0.01	0.04	0.01
Nitrite - N	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L	26.5	22.7	4.0	0.5
Hardness	as CaCO3 (dissolved)	mg/L	75	69	53	5



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-7	1162096-8	1162096-9
Sample Date	Sep 20, 2016	Sep 20, 2016	Sep 19, 2016
Sample Time	09:30	09:55	10:40
Sample Location	Surface	Surface	Surface
Sample Description	KZ-7	KZ-8	KZ-9
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Routine Water - Continued</b>						
Hardness	Total	mg CaCO3/L	77.0	69.7	61.7	1
<b>Trace Metals Dissolved</b>						
Digestion	Dissolved		Field Filtered	Field Filtered	Lab filtered & preserved	
Titanium	Dissolved	mg/L	0.004	0.005	0.067	0.002
Aluminum	Dissolved	mg/L	0.01134	0.04239	1.469	0.001
Antimony	Dissolved	mg/L	0.000119	0.000180	0.000304	0.00002
Arsenic	Dissolved	mg/L	0.0005	0.0006	0.0046	0.0001
Barium	Dissolved	mg/L	0.0266	0.0261	0.0672	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	0.000056	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	<0.002	<0.002	<0.002	0.002
Cadmium	Dissolved	mg/L	0.000038	0.000045	0.000173	0.00001
Chromium	Dissolved	mg/L	<0.000050	0.000108	0.001042	0.00005
Cobalt	Dissolved	mg/L	0.000028	0.000091	0.000718	0.00002
Copper	Dissolved	mg/L	0.0007	0.0024	0.0029	0.0005
Iron	Dissolved	mg/L	0.029	0.075	2.17	0.002
Lead	Dissolved	mg/L	<0.00001	0.000059	0.006252	0.00001
Lithium	Dissolved	mg/L	<0.0005	<0.0005	0.0014	0.0005
Manganese	Dissolved	mg/L	0.033	0.031	0.197	0.001
Molybdenum	Dissolved	mg/L	0.000203	0.000259	0.000760	0.00002
Nickel	Dissolved	mg/L	<0.0002	0.0002	0.0007	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	0.000024	0.00001
Strontium	Dissolved	mg/L	0.1576	0.1434	0.1314	0.0001
Tellurium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Dissolved	mg/L	<0.00001	<0.00001	0.000028	0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L	0.000250	0.000248	0.000871	0.00001
Vanadium	Dissolved	mg/L	0.000139	0.000241	0.003739	0.00005
Zinc	Dissolved	mg/L	0.0005	0.0011	0.0078	0.0005
Zirconium	Dissolved	mg/L	<0.0001	0.0002	0.0010	0.0001
<b>Trace Metals Total</b>						
Aluminum	Total	mg/L	0.016	0.295	13.4	0.001
Antimony	Total	mg/L	0.00013	0.00024	0.00149	0.00002



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-7	1162096-8	1162096-9
Sample Date	Sep 20, 2016	Sep 20, 2016	Sep 19, 2016
Sample Time	09:30	09:55	10:40
Sample Location	Surface	Surface	Surface
Sample Description	KZ-7	KZ-8	KZ-9
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Trace Metals Total - Continued</b>						
Arsenic	Total	mg/L	0.0005	0.0011	0.0344	0.0001
Barium	Total	mg/L	0.0280	0.0297	0.216	0.0001
Beryllium	Total	mg/L	<0.00005	<0.00005	0.00033	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	0.0006	0.0001
Boron	Total	mg/L	<0.002	<0.002	0.005	0.002
Cadmium	Total	mg/L	0.00005	0.00007	0.00062	0.00001
Chromium	Total	mg/L	<0.00005	0.00040	0.00995	0.00005
Cobalt	Total	mg/L	0.00004	0.00020	0.00543	0.00002
Copper	Total	mg/L	0.0007	0.0040	0.0171	0.0002
Iron	Total	mg/L	0.038	0.387	14.4	0.002
Lead	Total	mg/L	0.000056	0.000792	0.0385	0.00001
Lithium	Total	mg/L	<0.0005	0.0006	0.0076	0.0005
Manganese	Total	mg/L	0.033	0.034	0.408	0.001
Molybdenum	Total	mg/L	0.000219	0.000337	0.00156	0.00002
Nickel	Total	mg/L	<0.0002	0.0003	0.0054	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	0.0007	0.0002
Silver	Total	mg/L	<0.00001	0.000012	0.000334	0.00001
Strontium	Total	mg/L	0.151	0.138	0.120	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	<0.00001	<0.00001	0.000308	0.00001
Thorium	Total	mg/L	<0.000050	<0.000050	0.00312	0.00005
Tin	Total	mg/L	<0.0001	<0.0001	0.0003	0.0001
Uranium	Total	mg/L	0.000256	0.000276	0.00189	0.00001
Vanadium	Total	mg/L	0.000189	0.000837	0.0288	0.00005
Zinc	Total	mg/L	<0.0005	0.0030	0.0721	0.0005
Zirconium	Total	mg/L	<0.0001	0.0002	0.0067	0.0001



**Analytical Report**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162096</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059205
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Surface Water	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2134014
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

		Reference Number	1162096-10	1162096-11	1162096-12	
		Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016	
		Sample Time	10:45	16:30	11:10	
		Sample Location	Surface	Surface	Surface	
		Sample Description	KZ-9 duplicate	KZ-10	KZ-11	
		Matrix	Water	Water	Water	
Analyte		Units	Results	Results	Results	Nominal Detection Limit
<b>Metals Total</b>						
Calcium	Total	mg/L	16.3	31.9	58.8	0.01
Magnesium	Total	mg/L	7.41	10.1	38.8	0.02
Potassium	Total	mg/L	2.4	1.0	7.9	0.04
Silicon	Total	mg/L	25.0	7.83	89.0	0.005
Sulfur	Total	mg/L	2.1	3.7	6.0	0.02
Sodium	Total	mg/L	2.95	3.42	6.88	0.1
Titanium	Total	mg/L	0.402	0.019	1.58	0.002
<b>Routine Water</b>						
pH - Holding Time				Exceeded	Exceeded	
pH	at 25 °C			7.11	7.50	
Electrical Conductivity		µS/cm at 25 C		224	258	1
Calcium	Dissolved	mg/L	14.4	29.7	36.0	0.01
Magnesium	Dissolved	mg/L	3.9	8.9	10.3	0.02
Potassium	Dissolved	mg/L	0.6	0.7	1.1	0.04
Silicon	Dissolved	mg/L	5.47	6.61	5.77	0.005
Sodium	Dissolved	mg/L	2.4	2.9	4.9	0.1
Sulfur	Dissolved	mg/L	2.1	3.1	4.8	0.02
Bicarbonate		mg/L		128	147	5
Carbonate		mg/L		<6	<6	6
Hydroxide		mg/L		<5	<5	5
P-Alkalinity	as CaCO3	mg/L		<5	<5	5
T-Alkalinity	as CaCO3	mg/L		105	121	5
Chloride	Dissolved	mg/L		0.16	0.24	0.05
Nitrate - N	Dissolved	mg/L		0.26	0.09	0.01
Nitrite - N	Dissolved	mg/L		<0.01	<0.01	0.01
Sulfate (SO4)	Dissolved	mg/L		7.8	11.4	0.5
Hardness	as CaCO3 (dissolved)	mg/L	52	110	132	5
Hardness	Total	mg CaCO3/L		121	307	1
<b>Trace Metals Dissolved</b>						
Digestion	Dissolved		Lab filtered & preserved	Field Filtered	Lab filtered & preserved	
Titanium	Dissolved	mg/L	0.003	0.006	0.007	0.002
Aluminum	Dissolved	mg/L	0.005104	0.002637	0.005578	0.001
Antimony	Dissolved	mg/L	0.000137	0.000114	0.000223	0.00002
Arsenic	Dissolved	mg/L	0.001	0.0001	0.0013	0.0001
Barium	Dissolved	mg/L	0.0520	0.1963	0.0857	0.0001



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-10	1162096-11	1162096-12
Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	10:45	16:30	11:10
Sample Location	Surface	Surface	Surface
Sample Description	KZ-9 duplicate	KZ-10	KZ-11
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Trace Metals Dissolved - Continued</b>					
Beryllium	Dissolved mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved mg/L	<0.002	<0.002	<0.002	0.002
Cadmium	Dissolved mg/L	0.000078	<0.00001	0.000166	0.00001
Chromium	Dissolved mg/L	<0.000050	<0.000050	<0.000050	0.00005
Cobalt	Dissolved mg/L	0.000147	0.000033	0.000304	0.00002
Copper	Dissolved mg/L	0.0010	<0.0005	0.0012	0.0005
Iron	Dissolved mg/L	0.011	0.038	<0.002	0.002
Lead	Dissolved mg/L	0.000049	<0.00001	<0.00001	0.00001
Lithium	Dissolved mg/L	<0.0005	0.0018	0.0007	0.0005
Manganese	Dissolved mg/L	0.143	0.012	0.625	0.001
Molybdenum	Dissolved mg/L	0.000875	0.000191	0.002646	0.00002
Nickel	Dissolved mg/L	<0.0002	<0.0002	0.0003	0.0002
Selenium	Dissolved mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved mg/L	0.1299	0.2546	0.3697	0.0001
Tellurium	Dissolved mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Dissolved mg/L	<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved mg/L	0.000593	0.001425	0.01044	0.00001
Vanadium	Dissolved mg/L	0.000472	<0.000050	0.000520	0.00005
Zinc	Dissolved mg/L	<0.0005	0.0006	<0.0005	0.0005
Zirconium	Dissolved mg/L	<0.0001	<0.0001	<0.0001	0.0001
<b>Trace Metals Total</b>					
Aluminum	Total mg/L	17.9	0.481	77.5	0.001
Antimony	Total mg/L	0.00186	0.00020	0.00196	0.00002
Arsenic	Total mg/L	0.0444	0.0007	0.151	0.0001
Barium	Total mg/L	0.290	0.223	1.61	0.0001
Beryllium	Total mg/L	0.00049	<0.00005	0.00160	0.00005
Bismuth	Total mg/L	0.001	<0.0001	0.0038	0.0001
Boron	Total mg/L	0.005	0.002	0.004	0.002
Cadmium	Total mg/L	0.00100	0.00005	0.00706	0.00001
Chromium	Total mg/L	0.0143	0.00031	0.0544	0.00005
Cobalt	Total mg/L	0.00825	0.00021	0.0361	0.00002
Copper	Total mg/L	0.0264	0.0012	0.124	0.0002





**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-10	1162096-11	1162096-12
Sample Date	Sep 19, 2016	Sep 18, 2016	Sep 19, 2016
Sample Time	10:45	16:30	11:10
Sample Location	Surface	Surface	Surface
Sample Description	KZ-9 duplicate	KZ-10	KZ-11
Matrix	Water	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Trace Metals Total - Continued</b>						
Iron	Total	mg/L	21.3	0.606	122	0.002
Lead	Total	mg/L	0.0601	0.000739	0.253	0.00001
Lithium	Total	mg/L	0.0101	0.0022	0.0266	0.0005
Manganese	Total	mg/L	0.591	0.036	3.9	0.001
Molybdenum	Total	mg/L	0.00196	0.000219	0.00323	0.00002
Nickel	Total	mg/L	0.0080	0.0002	0.0368	0.0002
Selenium	Total	mg/L	0.001	<0.0002	0.0062	0.0002
Silver	Total	mg/L	0.000556	0.000022	0.00424	0.00001
Strontium	Total	mg/L	0.134	0.247	0.567	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	0.000172	0.00005
Thallium	Total	mg/L	0.000417	0.000014	0.000928	0.00001
Thorium	Total	mg/L	0.00544	0.000177	0.0199	0.00005
Tin	Total	mg/L	0.0004	<0.0001	0.0004	0.0001
Uranium	Total	mg/L	0.00303	0.00158	0.0180	0.00001
Vanadium	Total	mg/L	0.0420	0.00107	0.126	0.00005
Zinc	Total	mg/L	0.112	0.0033	0.547	0.0005
Zirconium	Total	mg/L	0.0101	0.0001	0.0133	0.0001



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Surface Water  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162096**  
 Control Number: C0059205  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2134014

Reference Number	1162096-11	1162096-12
Sample Date	Sep 18, 2016	Sep 19, 2016
Sample Time	16:30	11:10
Sample Location	Surface	Surface
Sample Description	KZ-10	KZ-11
Matrix	Water	Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Inorganic Nonmetallic Parameters</b>					
Organic Carbon	Total Nonpurgeable	mg/L	2.8	13	0.5
Cyanide	Total	mg/L	<0.002	<0.002	0.002
Ammonia - N		mg/L	<0.01	0.15	0.01
Phosphorus	Total	mg/L	0.017	2.53	0.003
<b>Physical and Aggregate Properties</b>					
Solids	Total Suspended	mg/L	17	1950	2
Solids	Total Dissolved	mg/L	158	266	5

Approved by:   
 Mathieu Simoneau  
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).  
 Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.



**Methodology and Notes**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162096</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059205
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Surface Water	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2134014
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

**Method of Analysis**

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	24-Sep-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	24-Sep-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	24-Sep-16	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	26-Sep-16	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	22-Sep-16	Exova Surrey
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	26-Sep-16	Exova Edmonton
Cyanide (Total) in water	US EPA	* US EPA method, 335.3	27-Sep-16	Exova Edmonton
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	24-Sep-16	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	23-Sep-16	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	22-Sep-16	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Persulfate digestion method, 4500-P B5	23-Sep-16	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	23-Sep-16	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105°C, 2540 D	23-Sep-16	Exova Surrey
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	23-Sep-16	Exova Surrey
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	23-Sep-16	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	22-Sep-16	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	22-Sep-16	Exova Surrey

\* Reference Method Modified

**References**

APHA Standard Methods for the Examination of Water and Wastewater  
 EPA Environmental Protection Agency Test Methods - US  
 US EPA US Environmental Protection Agency Test Methods

**Comments:**

## Methodology and Notes

Bill To:	J. Gibson & Associates	Project:		Lot ID:	<b>1162096</b>
Report To:	J. Gibson & Associates	ID:	Rockhaven Resources	Control Number:	C0059205
	Box 20913	Name:	Klaza	Date Received:	Sep 21, 2016
	Whitehorse, YT, Canada	Location:	Surface Water	Date Reported:	Sep 28, 2016
	Y1A 6P2	LSD:		Report Number:	2134014
Attn:	John Gibson	P.O.:			
Sampled By:	J.Gibson	Acct code:			
Company:					

- 
- Reduction of analytical volume was necessary for Total Suspended Solids analysis due to matrix effects in 1162096, sample 12. Detection limits are adjusted accordingly.
  - Reduction of analytical volume was necessary for Total Suspended Solids analysis due to limited sample volume for lot 1162096, samples 1 through 11. Detection limits are adjusted accordingly.
  - Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1162096-9, 10, and 12. Detection limits are adjusted accordingly.
  - Sample 1162096-12; 5515840 Reduction of analytical volume was necessary for TP to bring results within the analytical range for sample 1162096-12. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

**Project Information**  
 Project ID: **ROCKWELL RESOURCES**  
 Project Name: **KLAZA**  
 Project Location: **SURFACE W/O**  
 Legal Location:  
 PO/A/E#: **KLAZA**  
 Proj. Acct. Code:  
 Quote #

**Invoice to:**  
 Company: J. Gibson & Associates  
 Address: Box 20913  
 Attention: John Gibson  
 Phone: (867) 633-4522  
 Cell:  
 Fax: (867) 668-6895  
 E-mail: judditegibson@gmail.com  
 Agreement ID: 6645  
 Copy of report:  X

**Report To:**  
 Company: J. Gibson & Associates  
 Address: Box 20913  
 Attention: John Gibson  
 Phone: (867) 633-4522  
 Cell:  
 Fax: (867) 668-6895  
 E-mail: judditegibson@gmail.com  
 E-mail 2:  
 Copy of invoice:

**Regulatory Requirement**  
 HCDWQG  
 Ab Tier 1  
 SPIGEC  
 BCCSR  
 Other (list below)  
 E-Mail  
 Mail  
 Online  
 Fax  
 PDF  
 Excel  
 QA/QC  
 Sample Custody (please print)  
 Sampled by: **J. Gibson / G. Ford**

**RUSH Priority**  
 Emergency (contact lab for turnaround and pricing)  
 Priority 1-2 working days (100% surcharge)  
 Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required:  
 Special Instructions/Comments (please include contact information including ph. # if different from above):  
**RUSH = PH, EC, TP, N, N3, TALK, C4, S04, HARD, T, 135, TDS.**

Date Required:  
 Signature:  
 Special Instructions/Comments (please include contact information including ph. # if different from above):  
**RUSH = PH, EC, TP, N, N3, TALK, C4, S04, HARD, T, 135, TDS.**

Site I.D.	Sample Description	Depth start in cm	end in cm	Date/Time Sampled	Matrix	Sampling Method	Enter tests above (✓ relevant samples below)	Number of Containers
1 KZ-1	SURFACE			SEPT 18 @ 1440	ALO	GRAB	✓	7
2 KZ-2				"		✓	✓	6
3 KZ-3				SEPT 19 @ 1820	✓	✓	✓	10
4 KZ-4				" @ 1735		✓	✓	8
5 KZ-5				SEPT 18 @ 1550		✓	✓	6
6 KZ-6				SEPT 19 @ 1555		✓	✓	6
7 KZ-7				SEPT 20 @ 0930		✓	✓	7
8 KZ-8				SEPT 20 @ 0955		✓	✓	7
9 KZ-9				SEPT 19 @ 1040		✓	✓	7
10 KZ-9 DUPLICATE				SEPT 19 @ 1045		✓	✓	2
11 KZ-10				SEPT 18 @ 1630		✓	✓	6
12 KZ-11				SEPT 19 @ 1110		✓	✓	6
13								
14	NOTES: TW23 FOR KZ-9, KZ-9 DUPLICATE + KZ-11							
15								

Indicate in the space allotted any deficiencies by the corresponding number.  
 1. Indicate any samples that were not packaged well  
 2. Indicate any samples not received in Exova supplies  
 3. Indicate any samples that were not clearly labeled  
 4. Indicate any samples not received within the required hold time or temp.  
 5. Indicate any missing or extra samples  
 6. Indicate any samples that were received broken  
 7. Indicate any samples where sufficient volume was not received  
 8. Indicate any samples received in an inappropriate container

Shipping: COD Y/ N  
 # and size of coolers  
 Temp. received: 6.1°C  
 Delivery Method: Curve  
 Waybill:  
 Received by: GFL

Lot: 1162096 COC

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Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0059205

**Report Transmission Cover Page**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162112</b>
Report To: J. Gibson & Associates	ID: Rock Haven Resources	Control Number: C0059180
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Stream Seds	Date Reported: Sep 27, 2016
Y1A 6P2	Location:	Report Number: 2134025
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

---

Contact & Affiliation	Address	Delivery Commitments
John Gibson J. Gibson & Associates	Box 20913, Whitehorse, Yukon Territory Y1A 6P2 Phone: (867) 633-4522 Fax: (867) 668-6895 Email: <a href="mailto:ludditegibson@gmail.com">ludditegibson@gmail.com</a>	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report On [Lot Creation] send (COR) by Email - Single Report

---

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**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rock Haven Resources  
 Klaza  
 Name: Stream Seds  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162112**  
 Control Number: C0059180  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 27, 2016  
 Report Number: 2134025

	Reference Number	1162112-1	1162112-2	1162112-3	
	Sample Date	Sep 19, 2016	Sep 19, 2016	Sep 19, 2016	
	Sample Time	16:55	16:55	16:55	
	Sample Location				
	Sample Description	KZ-1 / Rep #1	KZ-1 / Rep #2	KZ-1 / Rep #3	
	Matrix	Soil	Soil	Soil	
Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Particle Size Analysis - Wet Sieve</b>					
Texture		Coarse-Grained	Coarse-Grained	Coarse-Grained	
75 micron sieve	% Retained	% by weight	67.0	58.5	62.4
					0.1
<b>Metals</b>					
Aluminum	ug/g	13000	10400	9860	1
Antimony	ug/g	3.2	2.5	2.1	0.5
Arsenic	ug/g	7.00	7.76	6.34	0.2
Barium	ug/g	105	96.1	91.2	0.03
Beryllium	ug/g	0.405	0.356	0.319	0.02
Bismuth	ug/g	<0.5	<0.5	<0.5	0.5
Cadmium	ug/g	0.4	0.4	0.3	0.05
Calcium	ug/g	3270	2830	3080	2
Chromium	ug/g	20.0	16.3	16.5	0.04
Cobalt	ug/g	7.27	7.14	6.31	0.05
Copper	ug/g	9.19	11.8	8.64	0.05
Iron	ug/g	39600	31300	26800	1
Lead	ug/g	9.56	9.13	7.80	0.3
Lithium	ug/g	9.73	8.17	7.70	0.1
Magnesium	ug/g	4170	3890	3500	1
Manganese	ug/g	402	418	346	0.3
Molybdenum	ug/g	0.2	0.3	0.2	0.05
Nickel	ug/g	8.7	7.7	7.6	0.1
Phosphorus	ug/g	793	631	698	0.5
Potassium	ug/g	534	500	480	5
Selenium	ug/g	<0.2	<0.2	<0.2	0.3
Silver	ug/g	<0.1	<0.1	<0.1	0.2
Sodium	ug/g	138	135	149	1
Strontium	ug/g	23.9	22.0	22.1	0.02
Sulfur	ug/g	121	106	99.0	1
Thallium	ug/g	<0.2	<0.2	<0.2	0.3
Tin	ug/g	0.2	<0.2	<0.2	0.2
Titanium	ug/g	390	331	354	0.05
Vanadium	ug/g	56.7	50.4	49.1	0.2
Zinc	ug/g	50.6	46.5	43.7	0.1
Zirconium	ug/g	1.2	0.98	1.0	0.05



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J.Gibson  
 Company:

Project:  
 ID: Rock Haven Resources  
 Klaza  
 Name: Stream Seds  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162112**  
 Control Number: C0059180  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 27, 2016  
 Report Number: 2134025

Reference Number	1162112-4	1162112-5	1162112-6
Sample Date	Sep 19, 2016	Sep 19, 2016	Sep 19, 2016
Sample Time	10:55	10:55	10:55
Sample Location			
Sample Description	KZ-9 / Rep #1	KZ-9 / Rep #2	KZ-9 / Rep #3
Matrix	Soil	Soil	Soil

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Particle Size Analysis - Wet Sieve</b>					
Texture		Coarse-Grained	Coarse-Grained	Coarse-Grained	
75 micron sieve	% Retained	% by weight	53.6	53.4	57.4
<b>Metals</b>					
Aluminum	ug/g	9460	9100	8580	1
Antimony	ug/g	2.1	1.8	2.0	0.5
Arsenic	ug/g	11.8	11.9	9.77	0.2
Barium	ug/g	157	157	141	0.03
Beryllium	ug/g	0.274	0.262	0.239	0.02
Bismuth	ug/g	<0.5	<0.5	<0.5	0.5
Cadmium	ug/g	0.69	0.70	0.55	0.05
Calcium	ug/g	3760	3490	3380	2
Chromium	ug/g	14.4	14.0	13.4	0.04
Cobalt	ug/g	5.57	5.52	5.15	0.05
Copper	ug/g	10.3	10.3	8.47	0.05
Iron	ug/g	17300	17300	15700	1
Lead	ug/g	15.8	16.2	13.8	0.3
Lithium	ug/g	7.55	7.47	7.03	0.1
Magnesium	ug/g	3070	3030	2900	1
Manganese	ug/g	293	291	251	0.3
Molybdenum	ug/g	0.5	0.5	0.3	0.05
Nickel	ug/g	6.6	6.3	6.3	0.1
Phosphorus	ug/g	667	618	639	0.5
Potassium	ug/g	629	614	577	5
Selenium	ug/g	<0.2	<0.2	<0.2	0.3
Silver	ug/g	0.76	<0.1	<0.1	0.2
Sodium	ug/g	203	189	180	1
Strontium	ug/g	27.4	26.0	23.9	0.02
Sulfur	ug/g	169	158	124	1
Thallium	ug/g	<0.2	<0.2	<0.2	0.3
Tin	ug/g	<0.2	<0.2	<0.2	0.2
Titanium	ug/g	506	491	480	0.05
Vanadium	ug/g	37.4	36.6	34.7	0.2
Zinc	ug/g	59.4	60.5	53.2	0.1
Zirconium	ug/g	1.5	1.3	1.3	0.05



**Analytical Report**

Bill To:	J. Gibson & Associates	Project:		Lot ID:	<b>1162112</b>
Report To:	J. Gibson & Associates	ID:	Rock Haven Resources	Control Number:	C0059180
	Box 20913	Name:	Klaza	Date Received:	Sep 21, 2016
	Whitehorse, YT, Canada	Location:	Stream Seds	Date Reported:	Sep 27, 2016
	Y1A 6P2	LSD:		Report Number:	2134025
Attn:	John Gibson	P.O.:			
Sampled By:	J.Gibson	Acct code:			
Company:					

---

Approved by:



Mathieu Simoneau  
Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).  
Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

## Methodology and Notes

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162112</b>
Report To: J. Gibson & Associates	ID: Rock Haven Resources	Control Number: C0059180
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Stream Seds	Date Reported: Sep 27, 2016
Y1A 6P2	Location:	Report Number: 2134025
Attn: John Gibson	LSD:	
Sampled By: J.Gibson	P.O.:	
Company:	Acct code:	

---

## Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Metals in solids (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	23-Sep-16	Exova Surrey
Particle Size by Wet Sieve	Carter	* Procedure for Particle Size Separation, 55.2.3	26-Sep-16	Exova Edmonton

*\* Reference Method Modified*

## References

ASTM	Annual Book of ASTM Standards
Carter	Soil Sampling and Methods of Analysis.
US EPA	US Environmental Protection Agency Test Methods

## Comments:

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.



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ED 120-02

**Project Information**

Project ID: ROCK HAVEN RESOURCES  
 Project Name: KLAZA  
 Project Location: STREAM SEDS  
 Legal Location:  
 PO/REF#:  
 Proj. Acct. Code:  
 Quote #

**Invoice to:**  
 Company: J. Gibson & Associates  
 Address: BOX 20913  
 Whitehorse, VT VLA 6P2  
 Attention: John Gibson  
 Phone: (867) 633-4522  
 Cell:  
 Fax: (867) 668-6895  
 E-mail:  
 Agreement ID: 6646  
 Copy of report:  X

**Report To:**  
 Company: J. Gibson & Associates  
 Address: BOX 20913  
 Whitehorse, VT VLA 6P2  
 Attention: John Gibson  
 Phone: (867) 633-4522  
 Cell:  
 Fax: (867) 668-6895  
 E-mail:  
 E-mail 2:  
 Copy of invoice:

**Regulatory Requirement**  
 HCDWQG  
 Ab Tier 1  
 SPIGEC  
 BCCSR  
 Other (list below)  
 E-Mail  
 Mail  
 Online  
 Fax  
 PDF  
 Excel  
 CA/QC  
 Sample Custody (please print)  
 Sampled by: J. Gibson  
 Company:

**RUSH Priority**

Emergency (contact lab for turnaround and pricing)  
 Priority 1-2 working days (100% surcharge)  
 Urgent 2-3 working days (50% surcharge)

When "ASAP" is requested, turn around will default to a 100% RUSH priority, with pricing and turn around time to match. Please contact the lab prior to submitting RUSH samples. If not all samples require RUSH, please indicate in the special instructions.

Date Required:  
 Signature:  
 Special Instructions/Comments (please include contact information including ph. # if different from above):  
STREAM SEDIMENTS.

This section for Lab use only  
 Date/Time RECEIVED  
SEP 11 2016  
 Indicate in the space allotted any deficiencies by the corresponding number.

Site I.D.	Sample Description	Depth start in cm	Depth end in cm	Date/Time Sampled	Matrix	Sampling Method	Number of Containers
1							
2	K2-1 REP #1			8/29/16	SED	GRAB	1
3	#2			"	"		1
4	#3			"	"		1
5							
6	K2-9 REP #1			8/29/16	SED	GRAB	1
7	#2			"	"		1
8	#3			"	"		1
9							
10							
11							
12							
13							
14							
15							

Lot: 1162112 COC



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Please indicate any potentially hazardous samples

Page 1 of 1 Control # C 0059180

Shipping: COD Y/ N  
 # and size of coolers  
 Temp. received: 5.6°C  
 Delivery Method: Carve  
 Waybill:  
 Received by: GA

## Report Transmission Cover Page

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162078</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059181
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Groundwater	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2133990
Attn: John Gibson	LSD:	
Sampled By: J. Gibson	P.O.:	
Company:	Acct code:	

Contact & Affiliation	Address	Delivery Commitments
John Gibson J. Gibson & Associates	Box 20913, Whitehorse, Yukon Territory Y1A 6P2 Phone: (867) 633-4522 Fax: (867) 668-6895 Email: <a href="mailto:ludditegibson@gmail.com">ludditegibson@gmail.com</a>	On [Lot Verification] send (COA) by Email - Single Report On [Report Approval] send (COC, Test Report) by Email - Merge Reports On [Report Approval] send (Test Report) by Email - Single Report On [Lot Approval and Final Test Report Approval] send (Invoice) by Email - Single Report On [Lot Creation] send (COR) by Email - Single Report

### Notes To Clients:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1162078-1 and 2. Detection limits are adjusted accordingly.

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**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J. Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Groundwater  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162078**  
 Control Number: C0059181  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2133990

Reference Number	1162078-1	1162078-2	1162078-3
Sample Date	Sep 18, 2016	Sep 19, 2016	Sep 19, 2016
Sample Time	14:15	18:10	14:10
Sample Location	Groundwater	Groundwater	Groundwater
Sample Description	MW15-02S / 1.92 / m	MW15-03S / 3.19 / m	MW15-04S / 3.91 / m

Analyte	Matrix	Units	Results	Results	Results	Nominal Detection Limit
<b>Inorganic Nonmetallic Parameters</b>						
Ammonium - N		mg/L	0.064	<0.025	<0.025	0.025
Kjeldahl Nitrogen	Total	mg/L	1.71	0.40	0.35	0.07
Phosphorus	Total	mg/L	0.21	0.13	<0.05	0.05
Orthophosphate-P	Dissolved	mg/L	<0.01	<0.01	<0.01	0.01
Organic Carbon	Dissolved Nonpurgeable	mg/L	4.0	3.2	6.0	0.5
<b>Metals Total</b>						
Calcium	Total	mg/L	26.9	57.2	67.6	0.01
Magnesium	Total	mg/L	6.25	9.20	17.1	0.02
Potassium	Total	mg/L	4.6	2.2	1.1	0.04
Silicon	Total	mg/L	9.29	7.22	6.25	0.005
Sulfur	Total	mg/L	15.0	17.3	8.9	0.02
Sodium	Total	mg/L	6.93	2.54	4.17	0.1
Titanium	Total	mg/L	0.656	0.072	0.024	0.002
Mercury	Total	mg/L	<0.00001	<0.00001	<0.00001	0.00001
<b>Physical and Aggregate Properties</b>						
Solids	Total Dissolved	mg/L	230	314	280	5
<b>Routine Water</b>						
Nitrate and Nitrite - N		mg/L	0.57	0.49	0.31	0.01
Acidity	titrate to pH of 8.3	mg/L as CaCO3	54	38	14	5
pH - Holding Time			Exceeded	Exceeded	Exceeded	
pH	at 25 °C		6.31	7.08	7.55	
Electrical Conductivity		µS/cm at 25 C	219	465	410	1
Calcium	Dissolved	mg/L	26.5	83.0	64.8	0.01
Magnesium	Dissolved	mg/L	6.0	12.6	16.3	0.02
Potassium	Dissolved	mg/L	6.1	1.6	1.1	0.04
Silicon	Dissolved	mg/L	8.04	4.49	5.23	0.005
Sodium	Dissolved	mg/L	6.7	3.3	3.5	0.1
Sulfur	Dissolved	mg/L	14.2	24.2	8.5	0.02
Bicarbonate		mg/L	73	210	238	5
Carbonate		mg/L	<6	<6	<6	6
Hydroxide		mg/L	<5	<5	<5	5
P-Alkalinity	as CaCO3	mg/L	<5	<5	<5	5
T-Alkalinity	as CaCO3	mg/L	60	172	195	5
Chloride	Dissolved	mg/L	0.79	0.49	0.28	0.05
Fluoride	Dissolved	mg/L	<0.01	<0.01	0.06	0.01



**Analytical Report**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162078</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059181
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Groundwater	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2133990
Attn: John Gibson	LSD:	
Sampled By: J. Gibson	P.O.:	
Company:	Acct code:	

Reference Number	1162078-1	1162078-2	1162078-3
Sample Date	Sep 18, 2016	Sep 19, 2016	Sep 19, 2016
Sample Time	14:15	18:10	14:10
Sample Location	Groundwater	Groundwater	Groundwater
Sample Description	MW15-02S / 1.92 / m	MW15-03S / 3.19 / m	MW15-04S / 3.91 / m

Analyte	Matrix	Units	Water	Water	Water	Nominal Detection Limit
			Results	Results	Results	
<b>Routine Water - Continued</b>						
Sulfate (SO4)	Dissolved	mg/L	38.0	65.1	22.2	0.5
Hardness	as CaCO3 (dissolved)	mg/L	91	259	229	5
<b>Trace Metals Dissolved</b>						
Digestion	Dissolved		Field Filtered	Field Filtered	Field Filtered	
Titanium	Dissolved	mg/L	0.099	0.015	0.011	0.002
Aluminum	Dissolved	mg/L	0.1091	0.007074	0.002589	0.001
Antimony	Dissolved	mg/L	0.000255	0.000536	0.000438	0.00002
Arsenic	Dissolved	mg/L	0.0025	0.0003	0.0002	0.0001
Barium	Dissolved	mg/L	0.4078	0.0541	0.1031	0.0001
Beryllium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Bismuth	Dissolved	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Dissolved	mg/L	0.004	0.003	0.002	0.002
Cadmium	Dissolved	mg/L	0.005838	0.000404	0.000462	0.00001
Chromium	Dissolved	mg/L	0.001543	0.000070	<0.000050	0.00005
Cobalt	Dissolved	mg/L	0.001928	0.000320	0.000064	0.00002
Copper	Dissolved	mg/L	0.0088	0.0030	0.0012	0.0005
Iron	Dissolved	mg/L	0.336	0.057	<0.002	0.002
Lead	Dissolved	mg/L	0.002586	0.000056	0.000030	0.00001
Lithium	Dissolved	mg/L	0.0022	0.0021	0.0031	0.0005
Manganese	Dissolved	mg/L	1.01	0.092	0.009	0.001
Molybdenum	Dissolved	mg/L	0.000283	0.000388	0.000413	0.00002
Nickel	Dissolved	mg/L	0.0038	0.0012	<0.0002	0.0002
Selenium	Dissolved	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Dissolved	mg/L	<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L	0.1353	0.2535	0.2434	0.0001
Tellurium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Dissolved	mg/L	0.000011	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Tin	Dissolved	mg/L	0.0003	0.0003	0.0004	0.0001
Uranium	Dissolved	mg/L	0.000151	0.007196	0.005619	0.00001
Vanadium	Dissolved	mg/L	0.000400	<0.000050	<0.000050	0.00005
Zinc	Dissolved	mg/L	4.321	0.1930	0.0158	0.0005
Zirconium	Dissolved	mg/L	0.0006	<0.0001	<0.0001	0.0001
<b>Trace Metals Total</b>						
Aluminum	Total	mg/L	0.478	1.82	0.394	0.001
Antimony	Total	mg/L	0.00045	0.00087	0.00063	0.00002



**Analytical Report**

Bill To: J. Gibson & Associates  
 Report To: J. Gibson & Associates  
 Box 20913  
 Whitehorse, YT, Canada  
 Y1A 6P2  
 Attn: John Gibson  
 Sampled By: J. Gibson  
 Company:

Project:  
 ID: Rockhaven Resources  
 Klaza  
 Name: Groundwater  
 Location:  
 LSD:  
 P.O.:  
 Acct code:

Lot ID: **1162078**  
 Control Number: C0059181  
 Date Received: Sep 21, 2016  
 Date Reported: Sep 28, 2016  
 Report Number: 2133990

Reference Number	1162078-1	1162078-2	1162078-3
Sample Date	Sep 18, 2016	Sep 19, 2016	Sep 19, 2016
Sample Time	14:15	18:10	14:10
Sample Location	Groundwater	Groundwater	Groundwater
Sample Description	MW15-02S / 1.92 / m	MW15-03S / 3.19 / m	MW15-04S / 3.91 / m

Matrix Water Water Water

Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Trace Metals Total - Continued</b>						
Arsenic	Total	mg/L	0.0047	0.0068	0.0011	0.0001
Barium	Total	mg/L	0.453	0.129	0.135	0.0001
Beryllium	Total	mg/L	<0.00005	0.00017	<0.00005	0.00005
Bismuth	Total	mg/L	<0.0001	<0.0001	<0.0001	0.0001
Boron	Total	mg/L	0.003	0.003	0.003	0.002
Cadmium	Total	mg/L	0.0147	0.00110	0.00148	0.00001
Chromium	Total	mg/L	0.00377	0.00307	0.00163	0.00005
Cobalt	Total	mg/L	0.00223	0.00082	0.00039	0.00002
Copper	Total	mg/L	0.0162	0.0106	0.0044	0.0002
Iron	Total	mg/L	0.917	5.69	0.648	0.002
Lead	Total	mg/L	0.00833	0.00877	0.00179	0.00001
Lithium	Total	mg/L	0.0025	0.0030	0.0035	0.0005
Manganese	Total	mg/L	1.05	0.101	0.048	0.001
Molybdenum	Total	mg/L	0.000292	0.000557	0.000660	0.00002
Nickel	Total	mg/L	0.0042	0.0024	0.0015	0.0002
Selenium	Total	mg/L	<0.0002	<0.0002	<0.0002	0.0002
Silver	Total	mg/L	0.000180	0.00231	0.000097	0.00001
Strontium	Total	mg/L	0.129	0.169	0.234	0.0001
Tellurium	Total	mg/L	<0.000050	<0.000050	<0.000050	0.00005
Thallium	Total	mg/L	0.000029	0.000076	0.000014	0.00001
Thorium	Total	mg/L	0.000103	0.000651	0.000065	0.00005
Tin	Total	mg/L	0.001	0.0018	0.0031	0.0001
Uranium	Total	mg/L	0.000236	0.00513	0.00551	0.00001
Vanadium	Total	mg/L	0.00121	0.00314	0.000900	0.00005
Zinc	Total	mg/L	3.58	0.435	0.0267	0.0005
Zirconium	Total	mg/L	0.0022	0.0005	<0.0001	0.0001

Approved by:   
 Mathieu Simoneau  
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).  
 Generation and distribution of the report, and approval by the digitized signature above, are performed through a secure and controlled automatic process.

**Methodology and Notes**

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162078</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059181
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Groundwater	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2133990
Attn: John Gibson	LSD:	
Sampled By: J. Gibson	P.O.:	
Company:	Acct code:	

**Method of Analysis**

Method Name	Reference	Method	Date Analysis Started	Location
Acidity in water (Surrey)	APHA	* Acidity - Titration Method, 2310 B	27-Sep-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	24-Sep-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	24-Sep-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	24-Sep-16	Exova Surrey
Ammonium-N in Water	APHA	* Automated Phenate Method, 4500-NH3 G	26-Sep-16	Exova Edmonton
Anions (Routine) by Ion Chromatography	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	27-Sep-16	Exova Edmonton
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	24-Sep-16	Exova Surrey
Carbon Organic (Dissolved) in water (DOC)	APHA	High-Temperature Combustion Method, 5310 B	27-Sep-16	Exova Edmonton
Filtration of water for dissolved analysis	APHA	* Filtration for Dissolved and Suspended Metals / Total Organic Carbon, 3030 B / 5310 A	27-Sep-16	Exova Edmonton
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	24-Sep-16	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	23-Sep-16	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	22-Sep-16	Exova Surrey
Orthophosphate-P in Water	APHA	* Automated Ascorbic Acid Reduction Method, 4500-P F	27-Sep-16	Exova Edmonton
Phosphorus - Total in Water	APHA	* Automated Ascorbic Acid Reduction Method, 4500-P F	26-Sep-16	Exova Edmonton
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	23-Sep-16	Exova Surrey
Total and Kjeldahl Nitrogen (Total) in Water	ISO	* Water Quality - Determination of nitrogen, ISO/TR 11905-2	27-Sep-16	Exova Edmonton
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	23-Sep-16	Exova Surrey
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	23-Sep-16	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	22-Sep-16	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	22-Sep-16	Exova Surrey

\* Reference Method Modified

**References**

APHA Standard Methods for the Examination of Water and Wastewater  
 EPA Environmental Protection Agency Test Methods - US  
 ISO International Organization for Standardization  
 US EPA US Environmental Protection Agency Test Methods





## Methodology and Notes

Bill To: J. Gibson & Associates	Project:	Lot ID: <b>1162078</b>
Report To: J. Gibson & Associates	ID: Rockhaven Resources	Control Number: C0059181
Box 20913	Klaza	Date Received: Sep 21, 2016
Whitehorse, YT, Canada	Name: Groundwater	Date Reported: Sep 28, 2016
Y1A 6P2	Location:	Report Number: 2133990
Attn: John Gibson	LSD:	
Sampled By: J. Gibson	P.O.:	
Company:	Acct code:	

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## References

APHA	Standard Methods for the Examination of Water and Wastewater
EPA	Environmental Protection Agency Test Methods - US
ISO	International Organization for Standardization
US EPA	US Environmental Protection Agency Test Methods

## Comments:

- Reduction of analytical volume was necessary for Trace Metals analysis to bring results within the analytical range for samples #1162078-1 and 2. Detection limits are adjusted accordingly.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.



**APPENDIX 2**  
**STREAM FLOW VOLUME CALCULATIONS**  
**September, 2016**

### Stage Discharge Calculations

**Project:** RockHaven-Klaza

**Date:** 18-Sep-16

**Site:** KZ-1 Upper Klaza River

<b>Point (m)</b>	<b>Depth (meters)</b>	<b>Width (meters)</b>	<b>Velocity (m/sec)</b>	<b>Area (m sq)</b>	<b>Volume (cms)</b>
3.1	0	0.05	0	0.000	0.000
3.2	0.08	0.1	0.049	0.008	0.0004
3.3	0.14	0.1	0.061	0.014	0.0009
3.4	0.14	0.1	0.059	0.014	0.0008
3.5	0.14	0.1	0.032	0.014	0.0004
3.6	0.1	0.1	0.033	0.01	0.0003
3.7	0.1	0.1	0.014	0.01	0.0001
3.8	0.17	0.1	0.038	0.017	0.0006
3.9	0.17	0.1	0.074	0.017	0.0013
4	0.12	0.1	0.081	0.012	0.0010
4.1	0.12	0.1	0.113	0.012	0.0014
4.2	0.12	0.1	0.133	0.012	0.0016
4.3	0.04	0.15	0.085	0.006	0.0005
4.5	0	0.1	0	0	0.0000
1.40		1.4			<b>0.009</b>

All velocity readings at 0.6 depth

No Staff Gauge

**Data logger reading:** No logger

**Channel under ice?** No

**Method:** Price Velocity meter#1/ TS Wading Rod

**Measurement By:** G.Ford

### Stage Discharge Calculations

**Project:** RockHaven-Klaza

**Date:** 19-Sep-16

**Site:** KZ-3

<b>Point (m)</b>	<b>Depth (meters)</b>	<b>Width (meters)</b>	<b>Velocity (m/sec)</b>	<b>Area (m sq)</b>	<b>Volume (cms)</b>
1.5	0	0.1	0	0	0.000
1.7	0.04	0.2	0.301	0.008	0.002
1.9	0.12	0.2	0.308	0.024	0.007
2.1	0.1	0.2	0.114	0.02	0.002
2.3	0.06	0.2	0.108	0.012	0.001
2.5	0.11	0.2	0.17	0.022	0.004
2.7	0.13	0.2	0.124	0.026	0.003
2.9	0	0.1	0	0	0.000

1.4

1.4

**0.0203**

All velocity readings at 0.6 depth

No Staff Gauge

**Data logger reading:** No logger

**Ice Conditions:** No Ice

**Method:** Price Velocity meter#1/ TS Wading Rod

**Measurement By:** G.Ford

### Stage Discharge Calculations

Project: RockHaven-Klaza

Date: 19-Sep-16

Site: KZ-4 trib to Klaza River

Point (m)	Depth (meters)	Width (meters)	Velocity (m/sec)	Area (m sq)	Volume (cms)
0.9	0	0.1	0	0	0.000
1.1	0.1	0.2	0.208	0.020	0.004
1.3	0.13	0.2	0.196	0.026	0.005
1.5	0.17	0.2	0.368	0.034	0.013
1.7	0.15	0.2	0.323	0.030	0.010
1.9	0.1	0.2	0.345	0.02	0.007
2.1	0.08	0.2	0.277	0.016	0.004
2.3	0.09	0.25	0.117	0.0225	0.003
2.6	0	0.15	0	0	0.000
1.7		1.7			

**0.0454**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Channel under ice?  No

Method: Price Velocity meter#1/ TS Wading Rod

Measurement By: G.Ford

### Stage Discharge Calculations

Project: RockHaven-Klaza

Date: 18-Sep-16

Site: KZ-5 Upper Klaza River

Point (m)	Depth (meters)	Width (meters)	Velocity (m/sec)	Area (m sq)	Volume (cms)
1.9	0	0.1	0	0	0.0000
2.1	0.07	0.2	0.081	0.014	0.0011
2.3	0.1	0.2	0.085	0.02	0.0017
2.5	0.13	0.2	0.111	0.026	0.0029
2.7	0.13	0.2	0.131	0.026	0.0034
2.9	0.14	0.2	0.185	0.028	0.0052
3.1	0.13	0.2	0.204	0.026	0.0053
3.3	0.14	0.2	0.192	0.028	0.0054
3.5	0.14	0.2	0.162	0.028	0.0045
3.7	0.15	0.2	0.162	0.03	0.0049
3.9	0.17	0.2	0.155	0.034	0.0053
4.1	0.18	0.2	0.145	0.036	0.0052
4.3	0.08	0.2	0.057	0.016	0.0009
4.5	0.04	0.2	0.103	0.008	0.0008
4.7	0.16	0.2	0.111	0.032	0.0036
4.9	0.12	0.2	0.127	0.024	0.0030
5.1	0.1	0.2	0.155	0.02	0.0031
5.3	0.07	0.25	0.073	0.018	0.0013
5.6	0	0.15	0	0.000	0.0000
3.7		3.7			<b>0.0576</b>

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Ice Conditions: No Ice

Method: Price Velocity meter#1/ TS Wading Rod

Measurement By: G.Ford

### Stage Discharge Calculations

**Project:** RockHaven-Klaza

**Date:** 19-Sep-16

**Site:** KZ-6 trib to Klaza River

<b>Point (m)</b>	<b>Depth (meters)</b>	<b>Width (meters)</b>	<b>Velocity (m/sec)</b>	<b>Area (m sq)</b>	<b>Volume (cms)</b>
1.7	0	0.05	0	0	0.000
1.8	0.22	0.1	0.151	0.022	0.003
1.9	0.26	0.1	0.136	0.026	0.004
2	0.3	0.1	0.139	0.03	0.004
2.1	0.3	0.1	0.142	0.030	0.004
2.2	0.26	0.1	0.203	0.026	0.005
2.3	0.26	0.1	0.17	0.026	0.004
2.4	0.32	0.1	0.155	0.032	0.005
2.5	0.36	0.125	0.032	0.045	0.001
2.65	0	0.075	0	0	0.000

0.95

0.95

**0.0314**

All velocity readings at 0.6 depth

No Staff Gauge

**Data logger reading:** No logger

**Channel under ice?** No Ice

**Method:** Price Velocity meter#1/ TS Wading Rod

**Measurement By:** G.Ford



### Stage Discharge Calculations

Project: RockHaven-Klaza Date: 20-Sep-16

Site: KZ-7 Slate Creek - trib to Nansen Creek

Point (m)	Depth (meters)	Width (meters)	Velocity (m/sec)	Area (m sq)	Volume (cms)
1.6	0	0.1	0	0	0.000
1.8	0.11	0.2	0.212	0.022	0.005
2	0.11	0.2	0.308	0.022	0.007
2.2	0.14	0.2	0.451	0.028	0.013
2.4	0.14	0.2	0.266	0.028	0.007
2.6	0.18	0.2	0.221	0.036	0.008
2.8	0.19	0.2	0.074	0.038	0.003
3	2.0	0.2	0.055	0.4	0.022
3.2	2.0	0.35	0	0.7	0.000
3.7	0	0.25	0	0	0.000

2.1 2.1 **0.0643**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Channel under ice?  No Ice in cross section

Method: Price Velocity meter#1/ TS Wading Rod

Measurement By: G.Ford

## Stage Discharge Calculations

Project: RockHaven-Klaza

Date: 20-Sep-16

Site: KZ-8 Nansen Creek d/s Slate Creek

Point (m)	Depth (meters)	Width (meters)	Velocity (m/sec)	Area (m sq)	Volume (cms)
1.1	0	0.1	0	0	0.000
1.3	0.09	0.2	0.179	0.018	0.003
1.5	0.07	0.2	0.282	0.014	0.004
1.7	0.14	0.2	0.394	0.028	0.011
1.9	0.09	0.2	0.442	0.018	0.008
2.1	0.13	0.2	0.423	0.026	0.011
2.3	0.1	0.2	0.166	0.02	0.003
2.5	0.1	0.2	0.412	0.02	0.008
2.7	0.12	0.2	0.097	0.024	0.002
2.9	0.1	0.2	0.155	0.020	0.003
3.1	0.1	0.25	0.051	0.025	0.001
<u>3.4</u>	0	0.15	0	0.000	<u>0.000</u>

2.3

2.3

**0.0554**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Channel under ice?  No

Method: Price Velocity meter#1/ TS Wading Rod

Measurement By: G.Ford

