Rock Haven Resources Ltd.

Klaza Property

Baseline Water Quality / Hydrology Survey

January, 2016

J.Gibson Env. Consulting *Whitehorse, Yukon*

Klaza Property January 2016

Rock Haven Resources Ltd. requested a baseline water quality / hydrology survey be conducted on the surface waters draining the area of the KLAZA Claims.

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

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

All sites were accessed by helicopter on January 2, 2016.

The 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.

Groundwater monitoring wells developed in November 2015 were located, accessible data loggers downloaded and standing water levels obtained. No samples were taken of groundwater wells this survey.

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The ONSET / HOBO weather station was downloaded January 2, 2016.

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.

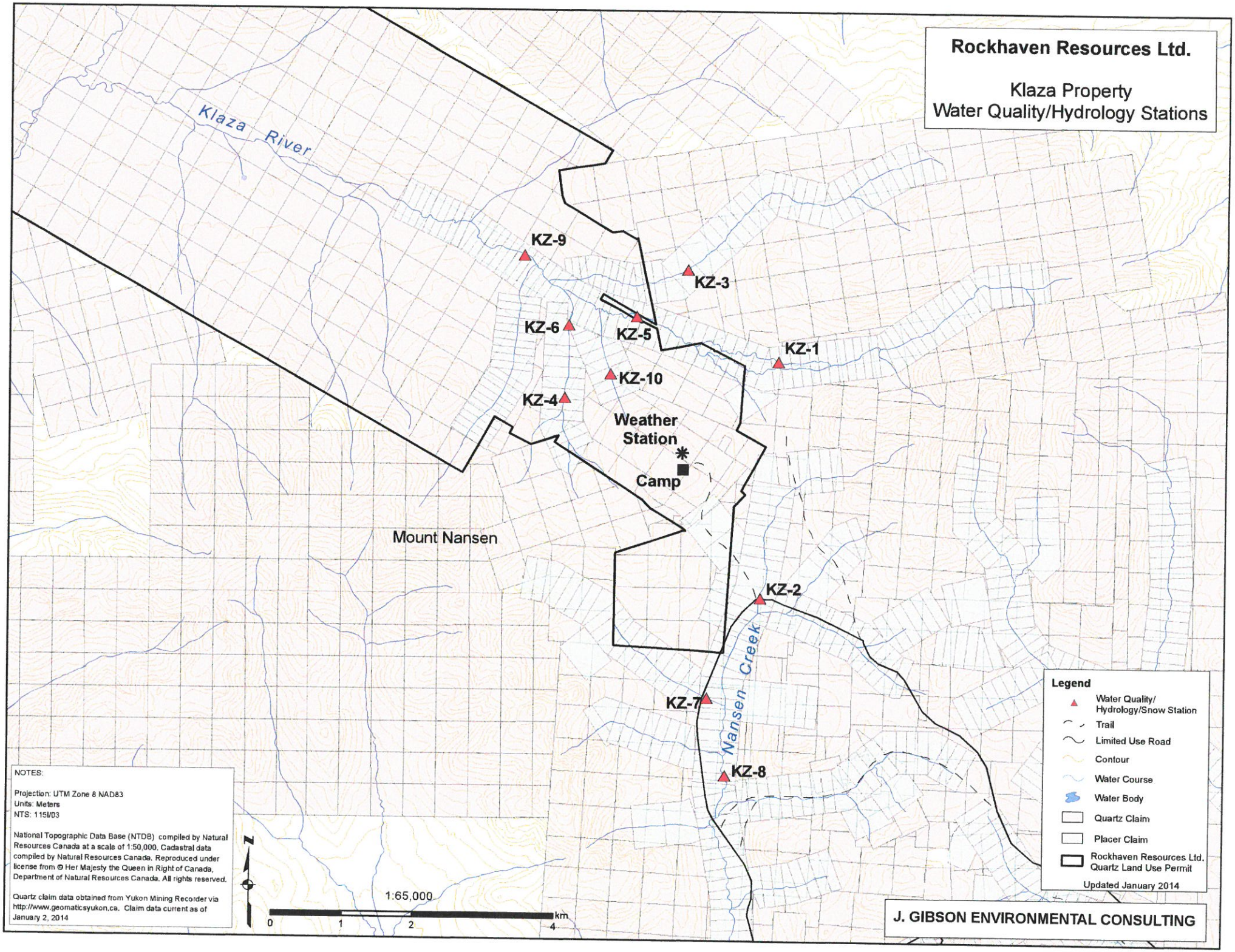
Surface water sites are on the attached location map.

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 January 2016 placer operators on EF Nansen and China Creek were not in operation.


Rockhaven Resources Ltd.
Klaza Property
Water Quality/Hydrology Stations
Klaza River
KZ-9
KZ-3
KZ-6
KZ-5
KZ-1
KZ-10
KZ-4
Weather Station
Camp
Mount Nansen
KZ-2
Nansen Creek
KZ-7
KZ-8
Legend
Water Quality/ Hydrology/Snow Station
Trail
Limited Use Road
Contour
Water Course
Water Body
Quartz Claim
Placer Claim
Rockhaven Resources Ltd. Quartz Land Use Permit
Updated January 2014
NOTES:
Projection: UTM Zone 8 NAD83
Units: Meters
NTS: 115I/03
National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Quartz claim data obtained from Yukon Mining Recorder via http://www.geomaticsyukon.ca. Claim data current as of January 2, 2014
N
1:65,000
0
1
2
km
4
J. GIBSON ENVIRONMENTAL CONSULTING

KLAZA Claim sample station designations and coordinates are:

Station #	LAT/LONG Coordinates	
Surface Waters		
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	
Groundwater Monitoring Wells		
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
Thermistor String Well		
GTC15-01	382824 E	6890304 N

Sample Parameters

All stations with surface water flow were sampled for total metals, dissolved metals, routine chemistry, total organic carbon, total cyanide and total mercury.

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.

There were no Quality Control samples taken this survey.

Ground water monitoring wells were not sampled. Wells were located, standing water levels were measured and data loggers were downloaded at MW15-01. Well MW15-05 had a logger installed but was frozen in and could not be downloaded.

Thermistor string measurements were taken at GTC15-01.

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.

Analysis Results

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

Table 1. KLAZA Stations Routine Chemistry – laboratory analysis and field Measurements. January 2016.

Table 2. KLAZA Stations Total Metals ICP–MS laboratory analysis results. January 2016.

Table 3. KLAZA Stations Dissolved Metals ICP–MS laboratory analysis results. January 2016.

Table 4. Flow Volume Measurement Summary 2012 – 2016

Table 5. Ground water well standing water levels. January 2016.

Table 6. Thermistor String Measurements. January 2016

Table 1. RockHaven Resources - Klaza Property. Routine Chemistry / Field Measurements January 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* G.Lines*	*Aquatic** G.Lines*
pH (field)	ru													
pH (lab)	ru	Dry	Dry	7.05	Glacial	6.6	Dry	Glacial	7.14	7.01	Dry	Dry	*6.5-8.5*	*6.5-9*
Conductivity (lab)	us/cm			117	Ice	63		Ice	375	103				
Water Temp	C			0.0		0.0			0.0	0.1				
Flow Volume	cms			0.0292		0.0035			nr	0.0868				
Organic Carbon Total	mg/L			1.7		1.2			3.4	1.6				
Cyanide Total	mg/L			<0.002		<0.002			<0.002	<0.002			*0.2*	*0.005*
Phosphorus Total	mg/L			0.1		0.006			0.006	0.009				
Ammonia - N	mg/L			0.01		<0.01			<0.01	0.01				*1.37-2.2*
Nitrate - N	mg/L			0.35		0.27			0.2	0.18			*10*	
Nitrite - N	mg/L			0.14		0.11			0.13	0.12			*1*	*0.06*
T-Alkalinity	mg/L			59		31			111	55				
Chloride	mg/L			0.17		0.16			0.36	0.54			*<250*	
Sulfate (SO4)	mg/L			4.43		3.04			114	3.75				
Hardness as CaC03	mg/L			59		31			218	56			*<500*	
T.Suspended Solids	mg/L			16		<5			<5	<5				
T.Dissolved Solids	mg/L			40		14			214	66			*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 CaC03>180 mg/L**

indicates concentration equal or exceeds Guidelines

Table 2. RockHaven Resources Klaza Property - Total Metals Analysis Results January 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* G.Lines*	*Aquatic** G.Lines*
Calcium	mg/L			16.5		8.07			60	14.3				
Iron	mg/L	Dry	Dry	0.328	Glacial	0.011	Dry	Glacial	0.062	0.042	Dry	Dry	*0.3*	*0.3*
Magnesium	mg/L			4.82	Ice	2.39		Ice	13.9	4.59				
Manganese	mg/L			0.033		<0.001			0.024	0.024			*0.05*	
Potassium	mg/L			0.51		0.4			1.06	0.5				
Silicon	mg/L			6.38		4.7			7.27	6.17				
Sulfur	mg/L			1.7		1.2			35.8	1.4				
Sodium	mg/L			2.88		1.84			5.84	2.44			*<200*	
Titanium	mg/L			0.005		0.0015			0.01	0.0027				
Aluminum	mg/L			0.086		0.005			0.04	0.019				
Antimony	mg/L			<0.0002		<0.0002			0.0002	<0.0002			*0.006*	
Arsenic	mg/L			<0.0002		<0.0002			0.0011	<0.0002			*0.01*	
Barium	mg/L			0.055		0.025			0.056	0.043				
Beryllium	mg/L			<0.00005		<0.00005			<0.00005	<0.00005				
Bismuth	mg/L			<0.0010		<0.0010			<0.0010	<0.0010				
Boron	mg/L			<0.004		<0.004			<0.004	<0.004			*5*	
Cadmium	mg/L			0.00003		0.00002			0.00005	0.00002			*0.005*	*0.0018*
Chromium	mg/L			<0.0004		<0.0004			<0.0004	<0.0004			*0.05*	*0.002*
Cobalt	mg/L			0.00014		<0.00002			0.00003	0.00005				
Copper	mg/L			<0.001		<0.001			0.002	<0.001			*1*	*0.004*
Lead	mg/L			<0.0001		<0.0001			0.0001	<0.0001			*0.01*	*0.007*
Lithium	mg/L			<0.001		<0.001			0.002	<0.001				
Mercury	mg/L			<0.00001		<0.00001			<0.00001	<0.00001			*0.001*	*0.1*
Molybdenum	mg/L			0.00029		<0.00010			0.00109	0.00018				
Nickel	mg/L			<0.001		<0.001			<0.001	<0.001				*0.15*
Selenium	mg/L			<0.0006		<0.0006			<0.0006	<0.0006			*0.01*	*0.001*
Silver	mg/L			<0.00001		<0.00001			<0.00001	<0.00001				*0.0001*
Strontium	mg/L			0.138		0.069			0.494	0.128				
Thallium	mg/L			<0.00001		<0.00001			<0.00001	<0.00001				
Tin	mg/L			<0.0001		<0.0001			<0.0001	<0.0001				
Uranium	mg/L			0.001		<0.0004			0.0022	<0.0004			*0.02*	
Vanadium	mg/L			0.00064		0.00023			0.00023	0.00023				
Zinc	mg/L			<0.001		<0.001			<0.001	<0.001			*<5*	*0.03*
Zirconium	mg/L			<0.0001		<0.0001			0.0001	<0.0001				

indicates concentration equal or exceeds Guidelines

Table 3. RockHaven Resources - Klaza Property Dissolved Metals Analysis Results January 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			15.7		8.24			62.3	14.3		
Iron	mg/L	Dry	Dry	0.008	Glacial	<0.005	Dry	Glacial	0.009	0.009	Dry	Dry
Magnesium	mg/L			4.84	Ice	2.59		Ice	15.2	4.85		
Manganese	mg/L			0.003		<0.001			0.028	0.026		
Potassium	mg/L			0.5		0.4			1.1	0.5		
Silicon	mg/L			6.25		4.91			7.73	6.35		
Sodium	mg/L			2.7		1.8			6.3	2.5		
Sulfur	mg/L			1.7		1.2			38.4	1.5		
Aluminum	mg/L			0.012		<0.005			<0.005	<0.005		
Antimony	mg/L			<0.0002		<0.0002			0.0003	<0.0002		
Arsenic	mg/L			<0.0002		<0.0002			0.001	<0.0002		
Barium	mg/L			0.052		0.026			0.056	0.044		
Beryllium	mg/L			<0.00004		<0.00004			<0.00004	<0.00004		
Bismuth	mg/L			<0.0010		<0.0010			<0.0010	<0.0010		
Boron	mg/L			<0.004		<0.004			<0.004	<0.004		
Cadmium	mg/L			<0.00001		0.00002			0.00004	0.00002		
Chromium	mg/L			<0.0004		<0.0004			<0.0004	<0.0004		
Cobalt	mg/L			<0.00002		<0.00002			0.00003	0.00006		
Copper	mg/L			<0.001		<0.001			0.002	<0.001		
Lead	mg/L			<0.0001		<0.0001			<0.0001	<0.0001		
Lithium	mg/L			<0.001		<0.001			0.001	<0.001		
Molybdenum	mg/L			0.00032		0.0001			0.00108	0.00022		
Nickel	mg/L			<0.001		<0.001			<0.001	<0.001		
Selenium	mg/L			<0.0006		<0.0006			<0.0006	<0.0006		
Silver	mg/L			<0.00001		<0.00001			<0.00001	<0.00001		
Strontium	mg/L			0.14		0.071			0.511	0.134		
Titanium	mg/L			<0.010		<0.010			<0.010	<0.010		
Tellurium	mg/L			<0.0001		<0.0001			<0.0001	<0.0001		
Thallium	mg/L			<0.00001		<0.00001			<0.00001	<0.00001		
Thorium	mg/L			<0.0004		<0.0004			<0.0004	<0.0004		
Tin	mg/L			<0.0001		<0.0001			<0.0001	<0.0001		
Uranium	mg/L			0.0007		<0.0004			0.0022	<0.0004		
Vanadium	mg/L			0.00024		0.0002			0.00016	0.00019		
Zinc	mg/L			<0.001		<0.001			<0.001	<0.001		
Zirconium	mg/L			<0.00010		<0.00010			<0.00010	<0.00010		

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
KZ#1	0.249	0.262	0.085	Dry	0.1308	0.0248	Dry	Dry	0.0466	0.0232	Dry	nr	0.2706	Dry
KZ#2	0.073	0.091	0.039	nr	0.0079	nr	Dry	Dry	<0.001	Dry	Dry	nr	0.0093	Dry
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
KZ#4	0.170	0.250	0.084	Dry	0.0352	nr	nr	nr	0.0041	0.0372	nr	nr	0.0958	Glacial Ice
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
KZ#6	0.209	0.308	0.075	Dry	0.0471	0.06	Dry	Dry	<0.001	0.0367	Dry	nr	nr	Dry
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
KZ#8	0.423	0.437	0.247	nr	0.1600	0.0764	nr	0.07	nr	0.015*	nr	nr	0.1844	nr
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
KZ#10	0.029	0.009	0.011	Dry	Dry	<0.001	nr	Dry	Dry	Dry	Dry	Dry	0.0014	Dry
KZ#11										Dry	Dry	0.001	0.006	Dry
	(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. Rock Haven Resources - Klaza Project. Groundwater Well Measurements. January 2016.

Well #	Total Drilled Depth (m) Nov-15	Standing Water Level (m) Nov-15	Total Depth (m) 02-Jan-16	Standing Water Level (m) 02-Jan-16	Comments
MW 15-01 D	75.9	18.85	75.9	14.61	Data Logger downloaded
MW 15-01 S		Dry	nr	5.64	MW15-01D not sampled
MW 15-02 D	66.75	59.83	66.00	66.00	moist at soil contact
MW 15-02 S		1.23	5.67	4.44	not sampled
MW 15-03 D	33.32	29.14		28.68	Dry
MW 15-03 S		2.16	5.8	4.95	not sampled
MW 15-04 D	84.43	14.05	nr	14.1	Dry/ Frozen?
MW 15-04 S		2.16	nr	3.42	Dry/ Frozen?
MW 15-05 D	48.46	13.61	nr	13.81	Logger Frozen in @ 13.81 m
MW 15-05 S		1.04	nr	2.67	Dry/ Frozen?

Table 6.Rock Haven Resources - Klaza Project. Thermistor String Measurements.

Well # GTC 15-01 Channel #	Nov-15 (k ohm)	Jan-16 (k ohm)
1	16.45	16.83
2	16.52	17.02
3	16.63	17.91
4	16.75	16.97
5	16.77	17.34
6	16.76	16.88
7	16.62	16.93
8	16.56	16.67
9	16.39	16.48
10	16.27	16.32

Note: Thermistor readings require conversion by EBA / Tetra Tech

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 station are on the attached disc.

Discussion

Hydrology

January 2016 stream flow in Klaza Property channels had volumes similar to January 2014 and February 2015. Station KZ#3 had higher measured volumes than the two previous winter low flow measurements.

Stations KZ#1, KZ#2, KZ#6, KZ#10 and KZ#11 were dry, consistent with past winter surveys.

Stations KZ#4 and KZ#7 were heavily glaciated and were not sampled. The diversion channel on upper East Fork Nansen (KZ#8) was completely full of glacial ice to an estimated 3 meter depth. The KZ#8 sample was taken of flows on the left / east limit which during mining operations is the effluent channel.

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

Laboratory Analytical Results

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

Stations KZ-1, KZ-2, KZ-6, KZ-10 and KZ-11 were dry channels and not sampled.

Stations KZ-4 and KZ-7 had heavy glacial ice and were not sampled.

Station KZ-3 exceeds the ***Drinking Water Guidelines*** for iron and the ***Aquatic Guidelines*** for iron and nitrite.

Stations KZ-5 exceeds the ***Aquatic Guidelines*** for nitrite.

Station KZ-8 exceeds the ***Aquatic Guidelines*** for nitrite.

Station KZ-9 exceeds the ***Aquatic Guidelines*** for nitrite.

All stations sampled reported total cyanide at less than laboratory detection limits (0.002 mg/L).
All stations sampled reported total mercury at less than detection limit (0.00001 mg/L).

As a result of placer activity on China Creek (effluent at KZ-11), sediment loading in the Klaza River downstream had increase significantly, in May 2015 an estimated 40% of original stream bed rocks and cobbles were visible and in August 2015 the original stream bed was reduced to an estimated 20%. In January 2016 a large percentage of the sediment had been "flushed" with an estimated 80% of the original stream bed material being visible.

Quality Control

No Quality Control samples were taken this survey.

Onset Weather Station

The **Onset / Hobo** weather station installed near camp on June, 2013 was downloaded on January 2, 2016. All parameter sensors with exception of solar radiation were operating.

The 2015 final weather data report for period January 1 to December 31 is attached.

APPENDIX 1

LABORATORY ANALYTICAL REPORTS

Water Quality Analysis

KLAZA PROPERTY

January, 2016

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Exova

Report Transmission Cover Page

Bill To:	J. Gibson & Associates	Project:		Lot ID:	**1114472**
Report To:	J. Gibson & Associates	ID:	Rock Haven Res.	Control Number:	C0049858
	Box 20913	Name:	Klaza	Date Received:	Jan 4, 2016
	Whitehorse, YT, Canada	Location:		Date Reported:	Jan 7, 2016
	Y1A 6P2	LSD:		Report Number:	2072629
Attn:	John Gibson	P.O.:			
Sampled By:	J.Gibson	Acct code:			
Company:					

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: ludditegibson@gmail.com	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:

- Some total metal results were less than dissolved metal results for samples lot #1114472. The results were verified and are within expected measurement uncertainty.

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Exova

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 Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

			Reference Number	1114472-1	1114472-2	1114472-3	
			Sample Date	Jan 02, 2016	Jan 02, 2016	Jan 02, 2016	
			Sample Time	10:10	10:45	11:20	
			Sample Location				
			Sample Description	KZ-3	KZ-5	KZ-8	
			Matrix	Water	Water	Water	
Analyte		**Units**		**Results**	**Results**	**Results**	Nominal Detection Limit
Inorganic Nonmetallic Parameters							
Organic Carbon	Total Nonpurgeable	mg/L		1.7	1.2	3.4	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		0.100	0.006	0.006	0.003
Metals Total							
Calcium	Total	mg/L		16.5	8.07	60.0	0.05
Magnesium	Total	mg/L		4.82	2.39	13.9	0.05
Potassium	Total	mg/L		0.51	0.40	1.06	0.1
Silicon	Total	mg/L		6.38	4.70	7.27	0.05
Sulfur	Total	mg/L		1.7	1.2	35.8	0.1
Sodium	Total	mg/L		2.88	1.84	5.84	0.02
Titanium	Total	mg/L		0.0050	0.0015	0.0100	0.001
Mercury	Total	mg/L		<0.00001	<0.00001	<0.00001	0.00001
Physical and Aggregate Properties							
Solids	Total Suspended	mg/L		16	<5	<5	5
Solids	Total Dissolved	mg/L		40	14	214	5
Routine Water							
pH - Holding Time				Exceeded	Exceeded	Exceeded	
pH	at 25 °C			7.05	6.60	7.14	
Electrical Conductivity		µS/cm at 25 C		117	63	375	1
Calcium	Dissolved	mg/L		15.7	8.24	62.3	0.1
Iron	Dissolved	mg/L		0.008	<0.005	0.009	0.005
Magnesium	Dissolved	mg/L		4.84	2.59	15.2	0.1
Manganese	Dissolved	mg/L		0.003	<0.001	0.028	0.001
Potassium	Dissolved	mg/L		0.5	0.4	1.1	0.1
Silicon	Dissolved	mg/L		6.25	4.91	7.73	0.05
Sodium	Dissolved	mg/L		2.7	1.8	6.3	0.1
Sulfur	Dissolved	mg/L		1.7	1.2	38.4	0.2
Bicarbonate		mg/L		72	38	135	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		59	31	111	5
Chloride	Dissolved	mg/L		0.17	0.16	0.36	0.05
Nitrate - N	Dissolved	mg/L		0.35	0.27	0.20	0.01
Nitrite - N	Dissolved	mg/L		0.14	0.11	0.13	0.01

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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 Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

			Reference Number	1114472-1	1114472-2	1114472-3	
			Sample Date	Jan 02, 2016	Jan 02, 2016	Jan 02, 2016	
			Sample Time	10:10	10:45	11:20	
			Sample Location				
			Sample Description	KZ-3	KZ-5	KZ-8	
			Matrix	Water	Water	Water	
Analyte		**Units**		**Results**	**Results**	**Results**	Nominal Detection Limit
Routine Water - Continued							
Sulfate (SO4)	Dissolved	mg/L		4.43	3.04	114	0.5
Hardness	as CaCO3	mg/L		59	31	218	5
Hardness	Total	mg CaCO3/L		60.9	30.0	207	1
Trace Metals Dissolved							
Digestion	Dissolved			Field Filtered	Field Filtered	Field Filtered	
Titanium	Dissolved	mg/L		<0.010	<0.010	<0.010	0.01
Aluminum	Dissolved	mg/L		0.012	<0.005	<0.005	0.005
Antimony	Dissolved	mg/L		<0.0002	<0.0002	0.0003	0.0002
Arsenic	Dissolved	mg/L		<0.0002	<0.0002	0.0010	0.0002
Barium	Dissolved	mg/L		0.052	0.026	0.056	0.001
Beryllium	Dissolved	mg/L		<0.00004	<0.00004	<0.00004	0.00004
Bismuth	Dissolved	mg/L		<0.0010	<0.0010	<0.0010	0.001
Boron	Dissolved	mg/L		<0.004	<0.004	<0.004	0.004
Cadmium	Dissolved	mg/L		<0.00001	0.00002	0.00004	0.00001
Chromium	Dissolved	mg/L		<0.0004	<0.0004	<0.0004	0.0004
Cobalt	Dissolved	mg/L		<0.00002	<0.00002	0.00003	0.00002
Copper	Dissolved	mg/L		<0.001	<0.001	0.002	0.001
Lead	Dissolved	mg/L		<0.0001	<0.0001	<0.0001	0.0001
Lithium	Dissolved	mg/L		<0.001	<0.001	0.001	0.001
Molybdenum	Dissolved	mg/L		0.00032	0.00010	0.00108	0.0001
Nickel	Dissolved	mg/L		<0.001	<0.001	<0.001	0.001
Selenium	Dissolved	mg/L		<0.0006	<0.0006	<0.0006	0.0006
Silver	Dissolved	mg/L		<0.00001	<0.00001	<0.00001	0.00001
Strontium	Dissolved	mg/L		0.140	0.071	0.511	0.001
Tellurium	Dissolved	mg/L		<0.0001	<0.0001	<0.0001	0.0001
Thallium	Dissolved	mg/L		<0.00001	<0.00001	<0.00001	0.00001
Thorium	Dissolved	mg/L		<0.0004	<0.0004	<0.0004	0.0004
Tin	Dissolved	mg/L		<0.0001	<0.0001	<0.0001	0.0001
Uranium	Dissolved	mg/L		0.0007	<0.0004	0.0022	0.0004
Vanadium	Dissolved	mg/L		0.00024	0.00020	0.00016	0.0001
Zinc	Dissolved	mg/L		<0.001	<0.001	<0.001	0.001
Zirconium	Dissolved	mg/L		<0.00010	<0.00010	<0.00010	0.0001
Trace Metals Total							
Aluminum	Total	mg/L		0.086	0.005	0.040	0.001
Antimony	Total	mg/L		<0.0002	<0.0002	0.0002	0.00002
Arsenic	Total	mg/L		<0.0002	<0.0002	0.0011	0.0001

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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 Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

			Reference Number	1114472-1	1114472-2	1114472-3	
			Sample Date	Jan 02, 2016	Jan 02, 2016	Jan 02, 2016	
			Sample Time	10:10	10:45	11:20	
			Sample Location				
			Sample Description	KZ-3	KZ-5	KZ-8	
			Matrix	Water	Water	Water	
Analyte		**Units**		**Results**	**Results**	**Results**	Nominal Detection Limit
Trace Metals Total - Continued							
Barium	Total	mg/L		0.055	0.025	0.056	0.0001
Beryllium	Total	mg/L		<0.00005	<0.00005	<0.00005	0.00005
Bismuth	Total	mg/L		<0.0010	<0.0010	<0.0010	0.0001
Boron	Total	mg/L		<0.004	<0.004	<0.004	0.002
Cadmium	Total	mg/L		0.00003	0.00002	0.00005	0.00001
Chromium	Total	mg/L		<0.0004	<0.0004	<0.0004	0.00005
Cobalt	Total	mg/L		0.00014	<0.00002	0.00003	0.00002
Copper	Total	mg/L		<0.001	<0.001	0.002	0.0005
Iron	Total	mg/L		0.328	0.011	0.062	0.002
Lead	Total	mg/L		<0.0001	<0.0001	0.0001	0.00001
Lithium	Total	mg/L		<0.001	<0.001	0.002	0.0005
Manganese	Total	mg/L		0.033	<0.001	0.024	0.001
Molybdenum	Total	mg/L		0.00029	<0.00010	0.00109	0.00002
Nickel	Total	mg/L		<0.001	<0.001	<0.001	0.0002
Selenium	Total	mg/L		<0.0006	<0.0006	<0.0006	0.0002
Silver	Total	mg/L		<0.00001	<0.00001	<0.00001	0.00001
Strontium	Total	mg/L		0.138	0.069	0.494	0.0001
Tellurium	Total	mg/L		<0.0001	<0.0001	<0.0001	0.00005
Thallium	Total	mg/L		<0.00001	<0.00001	<0.00001	0.00001
Thorium	Total	mg/L		<0.0004	<0.0004	<0.0004	0.00005
Tin	Total	mg/L		<0.0001	<0.0001	<0.0001	0.0001
Uranium	Total	mg/L		0.0010	<0.0004	0.0022	0.00001
Vanadium	Total	mg/L		0.00064	0.00023	0.00023	0.00005
Zinc	Total	mg/L		<0.001	<0.001	<0.001	0.0005
Zirconium	Total	mg/L		<0.0001	<0.0001	0.0001	0.0001

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Attn: John Gibson
Sampled By: J.Gibson
Company:

Project:
ID: Rock Haven Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

Reference Number	1114472-4
Sample Date	Jan 02, 2016
Sample Time	12:50
Sample Location	
Sample Description	KZ-9
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Inorganic Nonmetallic Parameters						
Organic Carbon	Total Nonpurgeable	mg/L	1.6			0.5
Cyanide	Total	mg/L	<0.002			0.002
Ammonia - N		mg/L	0.01			0.01
Phosphorus	Total	mg/L	0.009			0.003
Metals Total						
Calcium	Total	mg/L	14.3			0.05
Magnesium	Total	mg/L	4.59			0.05
Potassium	Total	mg/L	0.50			0.1
Silicon	Total	mg/L	6.17			0.05
Sulfur	Total	mg/L	1.4			0.1
Sodium	Total	mg/L	2.44			0.02
Titanium	Total	mg/L	0.0027			0.001
Mercury	Total	mg/L	<0.00001			0.00001
Physical and Aggregate Properties						
Solids	Total Suspended	mg/L	<5			5
Solids	Total Dissolved	mg/L	66			5
Routine Water						
pH - Holding Time			Exceeded			
pH	at 25 °C		7.01			
Electrical Conductivity		µS/cm at 25 C	103			1
Calcium	Dissolved	mg/L	14.3			0.1
Iron	Dissolved	mg/L	0.009			0.005
Magnesium	Dissolved	mg/L	4.85			0.1
Manganese	Dissolved	mg/L	0.026			0.001
Potassium	Dissolved	mg/L	0.5			0.1
Silicon	Dissolved	mg/L	6.35			0.05
Sodium	Dissolved	mg/L	2.5			0.1
Sulfur	Dissolved	mg/L	1.5			0.2
Bicarbonate		mg/L	67			5
Carbonate		mg/L	<6			6
Hydroxide		mg/L	<5			5
P-Alkalinity	as CaCO3	mg/L	<5			5
T-Alkalinity	as CaCO3	mg/L	55			5
Chloride	Dissolved	mg/L	0.54			0.05
Nitrate - N	Dissolved	mg/L	0.18			0.01
Nitrite - N	Dissolved	mg/L	0.12			0.01

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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 Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

Reference Number	1114472-4
Sample Date	Jan 02, 2016
Sample Time	12:50
Sample Location	
Sample Description	KZ-9
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Routine Water - Continued						
Sulfate (SO4)	Dissolved	mg/L	3.75			0.5
Hardness	as CaCO3	mg/L	56			5
Hardness	Total	mg CaCO3/L	54.5			1
Trace Metals Dissolved						
Digestion	Dissolved		Field Filtered			
Titanium	Dissolved	mg/L	<0.010			0.01
Aluminum	Dissolved	mg/L	<0.005			0.005
Antimony	Dissolved	mg/L	<0.0002			0.0002
Arsenic	Dissolved	mg/L	<0.0002			0.0002
Barium	Dissolved	mg/L	0.044			0.001
Beryllium	Dissolved	mg/L	<0.00004			0.00004
Bismuth	Dissolved	mg/L	<0.0010			0.001
Boron	Dissolved	mg/L	<0.004			0.004
Cadmium	Dissolved	mg/L	0.00002			0.00001
Chromium	Dissolved	mg/L	<0.0004			0.0004
Cobalt	Dissolved	mg/L	0.00006			0.00002
Copper	Dissolved	mg/L	<0.001			0.001
Lead	Dissolved	mg/L	<0.0001			0.0001
Lithium	Dissolved	mg/L	<0.001			0.001
Molybdenum	Dissolved	mg/L	0.00022			0.0001
Nickel	Dissolved	mg/L	<0.001			0.001
Selenium	Dissolved	mg/L	<0.0006			0.0006
Silver	Dissolved	mg/L	<0.00001			0.00001
Strontium	Dissolved	mg/L	0.134			0.001
Tellurium	Dissolved	mg/L	<0.0001			0.0001
Thallium	Dissolved	mg/L	<0.00001			0.00001
Thorium	Dissolved	mg/L	<0.0004			0.0004
Tin	Dissolved	mg/L	<0.0001			0.0001
Uranium	Dissolved	mg/L	<0.0004			0.0004
Vanadium	Dissolved	mg/L	0.00019			0.0001
Zinc	Dissolved	mg/L	<0.001			0.001
Zirconium	Dissolved	mg/L	<0.00010			0.0001
Trace Metals Total						
Aluminum	Total	mg/L	0.019			0.001
Antimony	Total	mg/L	<0.0002			0.00002
Arsenic	Total	mg/L	<0.0002			0.0001

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Box 20913
Whitehorse, YT, Canada
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Attn: John Gibson
Sampled By: J.Gibson
Company:

Project:
ID: Rock Haven Res.
Name: Klaza
Location:
LSD:
P.O.:
Acct code:

Lot ID: **1114472**
Control Number: C0049858
Date Received: Jan 4, 2016
Date Reported: Jan 7, 2016
Report Number: 2072629

Reference Number	1114472-4
Sample Date	Jan 02, 2016
Sample Time	12:50
Sample Location	
Sample Description	KZ-9
Matrix	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Trace Metals Total - Continued						
Barium	Total	mg/L	0.043			0.0001
Beryllium	Total	mg/L	<0.00005			0.00005
Bismuth	Total	mg/L	<0.0010			0.0001
Boron	Total	mg/L	<0.004			0.002
Cadmium	Total	mg/L	0.00002			0.00001
Chromium	Total	mg/L	<0.0004			0.00005
Cobalt	Total	mg/L	0.00005			0.00002
Copper	Total	mg/L	<0.001			0.0005
Iron	Total	mg/L	0.042			0.002
Lead	Total	mg/L	<0.0001			0.00001
Lithium	Total	mg/L	<0.001			0.0005
Manganese	Total	mg/L	0.024			0.001
Molybdenum	Total	mg/L	0.00018			0.00002
Nickel	Total	mg/L	<0.001			0.0002
Selenium	Total	mg/L	<0.0006			0.0002
Silver	Total	mg/L	<0.00001			0.00001
Strontium	Total	mg/L	0.128			0.0001
Tellurium	Total	mg/L	<0.0001			0.00005
Thallium	Total	mg/L	<0.00001			0.00001
Thorium	Total	mg/L	<0.0004			0.00005
Tin	Total	mg/L	<0.0001			0.0001
Uranium	Total	mg/L	<0.0004			0.00001
Vanadium	Total	mg/L	0.00023			0.00005
Zinc	Total	mg/L	<0.001			0.0005
Zirconium	Total	mg/L	<0.0001			0.0001

Approved by:

Randy Neumann, BSc
Vice President

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.

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Methodology and Notes

Bill To:	J. Gibson & Associates	Project:		Lot ID:	**1114472**
Report To:	J. Gibson & Associates	ID:	Rock Haven Res.	Control Number:	C0049858
	Box 20913	Name:	Klaza	Date Received:	Jan 4, 2016
	Whitehorse, YT, Canada	Location:		Date Reported:	Jan 7, 2016
	Y1A 6P2	LSD:		Report Number:	2072629
Attn:	John Gibson	P.O.:			
Sampled By:	J.Gibson	Acct code:			
Company:					

Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Alk, pH, EC, Turb in water (Surrey)	APHA	* Alkalinity - Titration Method, 2320 B	05-Jan-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* Conductivity, 2510 B	05-Jan-16	Exova Surrey
Alk, pH, EC, Turb in water (Surrey)	APHA	* pH - Electrometric Method, 4500-H+ B	05-Jan-16	Exova Surrey
Ammonia-N in Water (Surrey)	APHA	* Flow Injection Analysis, 4500-NH3 H	06-Jan-16	Exova Surrey
Anions by IEC in water (Surrey)	APHA	* Ion Chromatography with Chemical Suppression of Eluent Cond., 4110 B	05-Jan-16	Exova Surrey
Carbon Organic (Total) in water (TOC)	APHA	High-Temperature Combustion Method, 5310 B	06-Jan-16	Exova Edmonton
Cyanide (Total) in water	US EPA	* US EPA method, 335.3	06-Jan-16	Exova Edmonton
Mercury Low Level (Total) in water (Surrey)	EPA	* Mercury in Water by Cold Vapor Atomic Fluorescence Spectrometry, 245.7	07-Jan-16	Exova Surrey
Metals SemiTrace (Dissolved) in water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	06-Jan-16	Exova Surrey
Metals SemiTrace (Total) in Water (Surrey)	US EPA	* Metals & Trace Elements by ICP-AES, 6010C	05-Jan-16	Exova Surrey
Phosphorus - total by Smartchem (Surrey)	APHA	* Preliminary Acid Hydrolysis, Ascorbic Acid Reduction Method, 4500-P B,E	05-Jan-16	Exova Surrey
Solids Dissolved (Total, Fixed and Volatile) - Surrey	APHA	* Total Dissolved Solids Dried at 180 C, 2540 C	04-Jan-16	Exova Surrey
Solids Suspended (Total, Fixed and Volatile) - Surrey	APHA	* Total Suspended Solids Dried at 103-105'C, 2540 D	05-Jan-16	Exova Surrey
Trace Metals (dissolved) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	06-Jan-16	Exova Surrey
Trace Metals (Total) in Water (Surrey)	US EPA	* Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8	05-Jan-16	Exova Surrey

** Reference Method Modified*

References

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

Comments:

- Some total metal results were less than dissolved metal results for samples lot #1114472. The results were verified and are within expected measurement uncertainty.

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Methodology and Notes

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	Box 20913	Name:	Klaza
	Whitehorse, YT, Canada	Location:	
	Y1A 6P2	LSD:	
Attn:	John Gibson	P.O.:	
Sampled By:	J.Gibson	Acct code:	
Company:			

Lot ID:	**1114472**
Control Number:	C0049858
Date Received:	Jan 4, 2016
Date Reported:	Jan 7, 2016
Report Number:	2072629

Please direct any inquiries regarding this report to our Client Services group.
Results relate only to samples as submitted.

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Invoice to:
Company: J GIBSON ENV CONSULTING
Address:
Attention: JOHN.
Phone:
Cell:
Fax:
E-mail: joddie.gibson@gmail.com
Agreement ID: 6646
Copy of report:

Report To:
Company:
Address: same.
Attention:
Phone:
Cell:
Fax:
E-mail 1:
E-mail 2:
Copy of invoice:

Report Results		Regulatory Requirement	
E-Mail	✓	HCDWQG	
Mail		Ab Tier 1	
Online		SPIGEC	
Fax		BCCSR	
PDF		Other (list below)	
Excel	✓		
QA/QC			

Project Information
Project ID: ROCKHAVEN RES.
Project Name: KLAZA
Project Location:
Legal Location:
PO/AFE#:
Proj. Acct. Code:
Quote #

Sample Custody (please print)
Sampled by: J GIBSON
Company:

This section for Lab use only
Date/Time stamp: RECEIVED JAN 04 2016

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).
RCHEM = EC, pH, TP, N_2, N_3, TALK, HARDT, Cl, SO_4, TSS, TDS.

	Site I.D.	Sample Description	Depth start	Depth end	Date/Time Sampled	Matrix	Sampling Method	Number of Containers ↓	RCHEM	NH4	TOC	TCN	TW24 ew	TW23 ew (F)	Enter tests above (√ relevant samples below)
1															
2	KZ-3	SURFACE H2O	—		JAN 2 1010	H2O	GRAB	7							
3															
4	KZ-5	"	—		" 1045	"	"	7							
5															
6	KZ-8	"	—		" 1120	"	"	7							
7															
8	KZ-9	"	—		" 1250	"	"	7							
9															
10															
11															
12															
13	NOTES: TW23 Field filtered														
14	METALS + NITRIC, TCN + NaOH, THg + TOC + HCL														
15	NH4 + SULFURIC														

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

Submission of this form acknowledges acceptance of Exova's Standard Terms and Conditions (http://www.exova.com/about/terms-and-conditions/)

Please indicate any potentially hazardous samples

Page ___ of ___ Control # C 0049858

Lot: 1114472 COC

Shipping: COD Y/ N
and size of coolers
Temp. received: 0.5°C
Delivery Method:
Waybill:
Received by:

ED 120-02

APPENDIX 2

STREAM FLOW VOLUME CALCULATIONS

January 2, 2016

Stage Discharge Calculations

Project: RockHaven-Klaza **Date:** 02-Jan-16

Site: KZ-9 Mainstem Klaza River

Point *(m)*	Depth *(meters)*	Width *(meters)*	Velocity *(m/sec)*	Area *(m sq)*	Volume *(cms)*
1.7	0	0.15	0	0	0.000
2	0.07	0.3	0	0.021	0.000
2.3	0.12	0.3	0.135	0.036	0.005
2.6	0.14	0.3	0.391	0.042	0.016
2.9	0.09	0.3	0.254	0.027	0.007
3.2	0.14	0.3	0.262	0.042	0.011
3.5	0.2	0.3	0.272	0.06	0.016
3.8	0.15	1.8	0.116	0.27	0.031
7.1	0	1.65	0	0	0.000
5.4		5.4			**0.0868**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Channel under ice? n Yes

Method: Price Velocity meter#2/ TS Wading Rod

Measurement By: J.Gibson

Stage Discharge Calculations

Project: RockHaven-Klaza **Date:** 02-Jan-16

Site: KZ-5 Upper Klaza River

Point *(m)*	Depth *(meters)*	Width *(meters)*	Velocity *(m/sec)*	Area *(m sq)*	Volume *(cms)*
1.3	0	0.15	0	0	0.000
1.6	0.08	0.25	0.047	0.020	0.001
1.8	0.09	0.2	0.072	0.018	0.001
2	0	0.2	0	0	0.000
2.2	0.07	0.2	0.089	0.014	0.001
2.4	0	0.1	0	0	0.000
1.1		1.1			**0.0035**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Ice Conditions: Yes

Method: Price Velocity meter#2/ TS Wading Rod

Measurement By: J.Gibson

Stage Discharge Calculations

Project: RockHaven-Klaza **Date:** 02-Jan-16

Site: KZ-3

Point (m)	Depth (meters)	Width (meters)	Velocity (m/sec)	Area (m sq)	Volume (cms)
2	0	0.1	0	0	0.000
2.2	0.05	0.2	0.05	0.010	0.001
2.4	0.07	0.2	0.203	0.014	0.003
2.6	0.09	0.2	0.203	0.018	0.004
2.8	0.11	0.2	0.324	0.022	0.007
3	0.12	0.2	0.616	0.024	0.015
3.2	0.05	0.2	0.027	0.01	0.000
3.4	0	0.1	0	0	0.000
1.4		1.4			**0.0292**

All velocity readings at 0.6 depth

No Staff Gauge

Data logger reading: No logger

Method: Price Velocity meter#1/ TS Wading Rod

Measurement By: J.Gibson