

GEOPHYSICAL REPORT
on the
Hayes Creek Placer Property

Whitehorse Mining District

FOR
Pure Exploration Inc.

WORK PERFORMED
September 23 - October 2nd, 2019

DATE OF REPORT
November 13, 2019

REPORT PREPARED BY
Nicholas Gust

CENTER OF WORK
Lat 62°40'48"N, Long. 138°08'10"W

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Introduction

From September 23 - October 2nd, 2019 a geophysical survey was conducted on the Hayes Creek property by Pure Exploration.

The purpose of the survey was to map bedrock and subsurface layers to aid in placer exploration. The main goal was to provide evidence for a potential paleo-channel as well as to investigate a previously unexplored part of the claim block.

A passive seismic system was utilized in this survey. The instrument that we used records ambient seismic noise and does not require a source. In processing, we used the Horizontal-to-Vertical Spectral Ratio (HVSr) technique to identify bedrock depth over the survey area. The results of the survey provided clear evidence of the paleo-channel and provided new targets for future exploration and mining.

The survey was conducted by Minconsult Exploration Services with a three man crew led by Nicholas Gust, who is trained in the application and interpretation of this technique. The HVSr seismic technique is new to placer exploration and part of this program was to assess the effectiveness and value of this technique.

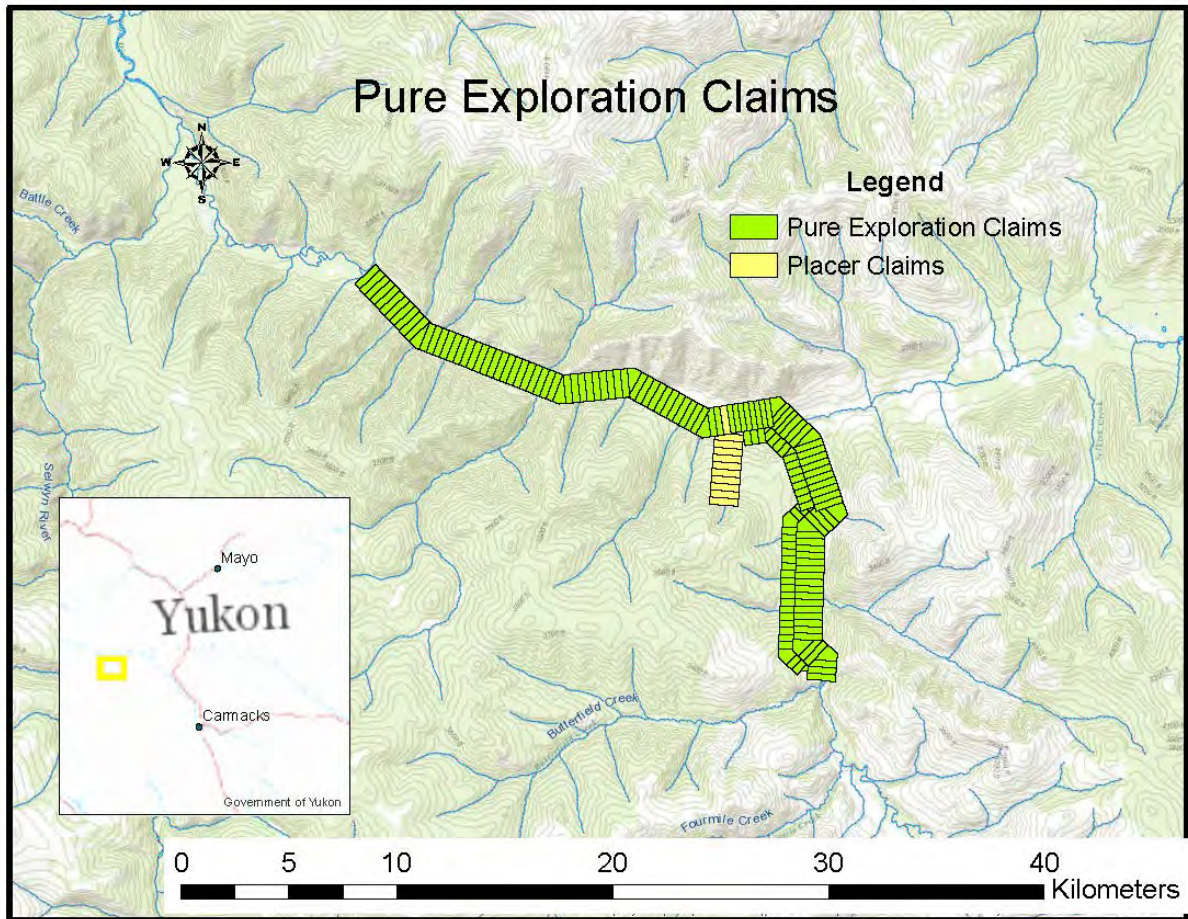
Location and Access

Hayes Creek is located on a tributary to the Selwyn River which in turn is a tributary to the Yukon River.



The claim block is located approximately 9 km upstream from the confluence of Hayes Creek with Selwyn River. Center coordinates are 62°40'48"N, 138°08'10"W. The property lies approximately 270 km north of Whitehorse and 120 km northwest of the village of Carmacks.

The property can be accessed by air, utilizing the on-site airstrip that was built by Pure Exploration, or by the winter trail that connects to Freegold's property. For this survey, we contracted a Turbo Otter from Alkan Air and flew from Whitehorse to the site.



The survey took place on the following claims:

Grant: P 50661 Name: PURE 20	Grant: P 50662 Name: PURE 21	Grant: P 50663 Name: PURE 22	Grant: P 50664 Name: PURE 23
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Property Description

The property area is located in the Dawson Range, a large area of unglaciated terrain typical of central Yukon characterized by relatively moderate topography with steep-walled stream valleys.

The Hayes Claim block consists of 154 placer claims covering 97.492 sq km in total. A water license (PM15-09) is in good standing at the time of this report. The claims occupy 16km of Hayes Creek. The area was initially staked by Pure Exploration in 2009 and has been expanded from the original block of claims. Exploration and mining has been carried out by Pure Exploration since 2009.

Previous Work

Placer gold was discovered in the Hayes area around the time of the Klondike Gold Rush in 1898. The first placer gold was found in Klines Gulch which is a tributary to Hayes Creek and lies 11km upstream from the current mining activity. By 1899 over 150 claims had been staked on Hayes Creek in the vicinity of the Klines Gulch discovery. The rush was short-lived and most of the claims were allowed to lapse within a year or two.

The Hayes Creek area shows evidence of several periods of placer testing and mining, occurring in the late 1930s, early 1940s, and 1970s. Various placer miners were active on Sonora Gulch in the years from 1934 to 1950, and from 1975 to 1976.

Placer mining has occurred along Sonora Gulch intermittently from 1898 until the 1970s, with minor placer workings and old camps still in existence. Total gold production from placer mining on Sonora Gulch and Klines Gulch is estimated at a minimum of 3,000 ounces.

In 1980, Queenstake Resources Ltd. conducted a churn drilling program across Hayes Creek valley. The drill program showed mixed results.

George Wilson started placer mining on Sonora Gulch in 2000 and had some claims overlapping the current Pure Exploration property. As a solo miner Mr. Wilson didn't have the resources to keep up his claims on Hayes Creek and allowed them to forfeit.

When Pure Exploration arrived on site in 2009 there was evidence of old workings including up to 50 shafts and evidence of ground sluicing channels.

In 2009 Arctic Geophysics Inc performed 2D resistivity and induced polarization (IP) surveys to measure the bedrock depth and characterize the gravels and areas underlain by permafrost. The geophysics lines were placed in several areas along the claim block in three locations. Downstream of Klines Gulch, 6.5km downstream from Sonora Gulch and more extensive measurements near our main prospecting area. The depths from the resistivity surveys were confirmed the following year by excavator testing.

In 2010 work began on a bedrock drain and airstrip. 18 bulk samples were taken that year in the vicinity of the current pit. Each sample was measured at 1 cubic yard.

In the 2012 season, Pure Exploration began staking of new placer claims, prospecting, geological mapping, small scale and bulk sampling. A larger bulk sample was taken that year of 150 cubic yards from a test pit.

In 2016 an extensive drill and excavator sampling program was initiated. Drilling was conducted using a Nodwell mounted 12" auger drill. Drill holes were evenly spaced along several lines throughout the property. Results of the sampling program included 46 auger drill holes from surface to bedrock and 9 excavator test pits.

In 2017 additional equipment was mobilized to the site via the Casino Trail. Two front-end loaders and a large wash plant were brought on site to begin mining. The 2017 pit overlapped the bulk sample pit and covered an area of 6700 square yards. Additional drilling took place in 2017 as well.

Regional Geology

Pure Exploration's property is located within the Yukon-Tanana Terrane (YTT) which is an area of hills and mountains, largely unglaciated, which lies between the Tintina fault zone on the north and the Tanana River on the south. The YTT extends from central Alaska through central Yukon.

The YTT is an accreted terrane that consists predominantly of a mid-Paleozoic volcanic-plutonic assemblage built on continental crust. The composition and tectonic history of the YTT is comparable to that of the Kootenay and Barkerville terranes of southern and central British Columbia from which the YTT may have been displaced.

The Big Creek fault and the east-west trending Hootchekoo Faults, traverse the district. The Big Creek fault, extending northwest from the Prospector Mountain area, intersects the Hootchekoo fault at the junction of Selkirk and Hayes Creeks; the Big Creek fault extends more directly westwards beyond this intersection. The two fault zones merge and split along a complex set of structures that follow a WNW trend (Davidson, 2000).

The Big Creek Fault is a well-mineralized belt extending from Freegold Mountain to the Casino deposit. Copper porphyry and structurally hosted gold deposits are found along the fault zones with associated placer gold deposits in the drainages. Placer gold has been mined periodically from many creeks in the district including Hayes Creek, Sonora Gulch and Klines Gulch

The Hayes Creek area is underlain by the Devonian-Mississippian age Wolverine Creek Metamorphic Suite (Johnston, 1995). Observed bedrock in the survey area consists primarily of quartz-mica schist, gneiss and diorite.

The gravels range from 1 - 8 meters thick over the survey area. The stratigraphy in the 2017 pit consists of three main layers consisting of a thin organic, silty layer approx 0.5m thick, a gravel layer consisting of stratified pebbly sand with larger boulders (approx 4 - 6m thick) and the layer in contact with bedrock which is made up of compacted muddy cobble-pebble gravel, sometimes containing clay (0.5 to 0.75) metres in thickness.

In the pit area mined in 2017 the bedrock is exposed and consists of weathered mafic schist and competent blocky quartzite, foliation is nearly vertical and undulates by about 0.5m.

Pure Exploration's property sits on the unglaciated terrain near the all-time limit of glaciation in Yukon. The pre-Reid glacial limit is located less than 1 km to the east and the pre-Reid glaciation deposited a thick package of a glaciofluvial outwash gravel in lower Hayes Creek. (Van Loon and Bond, 2018)

Survey Method and Theory

The passive seismic HVSR method consists of recording ambient or natural seismic energy vibrations using a seismometer. The seismometer must be able to record ground motion in three axes (XYZ), over a broad range of frequencies (0-128 Hz), and over a long time period (1 min to 60 min, usually 20 min).

Traditional seismic surveys use an energy source such as dynamite, or a dropped weight. The HVSR method is very different in that it utilizes ambient vibrations in the surface of the earth. These are considered noise in traditional surveys but in this case, provides the source energy.

The ambient signal consists primarily of surface Rayleigh and Love waves, which are generated from natural sources. Sources of ambient vibration are ongoing crustal microtremors, rain, and wind. In more populated areas sources can come from human activities such as traffic movement, construction and factories.

The ambient seismic energy creates seismic resonance within the near-surface strata and regolith. This resonance is a function of the thickness and the shear-wave velocity of the subsurface layers, and is particularly amplified when layers have a strong and sharp acoustic impedance contrast boundary. Acoustic impedance is a function of the density multiplied by the shear wave velocity of a layer. That impedance is how we can identify different layers and their depth.

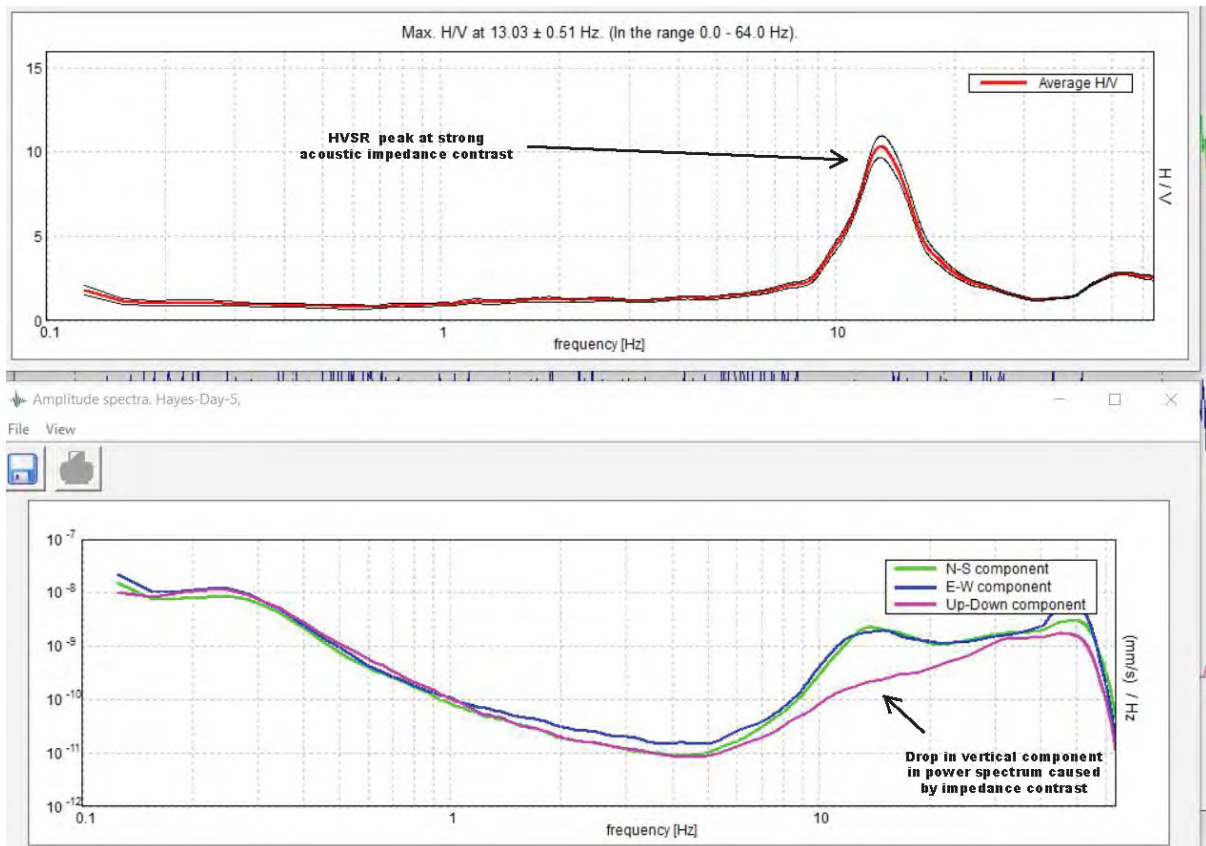
In processing with proprietary software the recorded time-series data (X, Y and Z) is converted to the frequency domain using a Fast Fourier Transform (FFT), and the two components are displayed as a power spectrum.

After the transforming the data to the frequency domain, the horizontal components are usually very similar unless there is strong anisotropy in the near-surface. The vertical component dips where resonance occurs from trapping by underlying layers. Where the vertical component deviates from the two horizontal components a H/V peak is interpreted. The frequency at which the peak occurs can be used to calculate the depth from surface.

This resonant frequency is related to the thickness and shear wave velocity of the resonant layer by the following equation from Nakamura (2000):

$$f_0 = V_s/4h$$

where f_0 = peak resonant frequency (Hz), V_s = shear wave velocity (m/s), and h = layer thickness (m). In a two-layered earth model, resonance frequency (f_0) can be used in estimating the overburden thickness (h) using the above equation.



From processing the data we know the peak resonant frequency but there are still two unknowns. V_s and the thickness (h). In order to accurately calculate the thickness for each location, we need to know the shear wave velocity of the overburden layers. That can be acquired by running a test station at an area of known depth such as a drill hole. Once the velocity is known it is simple to calculate the thickness.

Equipment

The Tromino 3G BLU Seismograph, manufactured by MoHo Science & Technology from Italy was used on this survey. The Tromino works on the HVSR principle, is a very light and portable instrument that records seismic noise in the frequency range of 0.1 to 1024 Hz.

The Tromino is a small (1 dm³, < 1 kg) all-in-one instrument, equipped with:

- 3 velocimetric channels (adjustable dynamic range)
- 3 accelerometric channels
- 1 analog channel
- GPS receiver

A handheld Garmin 60CX GPS was used in favor of the onboard GPS on the seismic instrument. The Tromino does not require cables or a source and acts as a standalone geophysical instrument.

Survey Procedure

Station spacing was set at 15m, a chain was used to layout the survey lines using two people. Line locations were chosen in advance in GIS software and layed out in the field using a handheld GPS. Each station was marked with an orange pin flag and recorded on the GPS for processing.

Each reading takes 20 minutes, that allows for sufficient data collection to be modeled in the interpretation software. It is important for the seismometer to have good contact with the ground. At most stations, it was necessary to remove the vegetative mat and expose soil/subsoil that the instrument can be planted into.

The seismometer used in this survey is extremely sensitive since it's designed for picking up faint, ambient energy in the earth. The trade-off is that it is also sensitive to sources of noise. In locations near the camp, we had to shut off the diesel generator while taking readings to prevent noise on the instrument. We also found that it was necessary to prevent the running of equipment or driving vehicles within 200m of the survey station.

The total survey consisted of 5 seismic lines and a total of 73 individual stations.

Station data is stored on the device and downloaded twice per day to check for data quality. Initial processing was completed in the evening each day.

To estimate the shear wave velocities seismic data was recorded at several of the drill hole locations that were completed in previous years. Those velocities were used to satisfy the equation above and calculate the layer thicknesses.

Processing and Interpretation

Each station is processed independently on-site using proprietary software that utilizes the HVSR method described above. Each trace is analyzed for quality and if necessary noisy sections can be removed using a windowing technique. There were two stations that had too much noise and had to be repeated but most were below the noise threshold or able to be cleaned up.

The coordinates and calculated bedrock depth are populated into a CSV file to be gridded. Surfer software was used for gridding, and the resulting surface can be used in GIS software such as ArcMap.

The final data is presented as a topographical map showing the difference between surface and bedrock elevations.

Conclusion

The seismic survey was very successful in mapping the surface to bedrock depths and proving the existence of a paleo-channel that was indicated from a bedrock anomaly discovered in the 2017 pit. The resulting bedrock map shows bedrock lows consistent with a paleo-channel that extends over the entire survey area. Some deeper bedrock lows are indicated which provide exploration targets for future exploration.

In addition the bedrock, two other layers of gravel were identified in most areas. The sub layers didn't show up at every station but did provide information about the makeup of the gravel and silt layers in the survey area.

The passive seismic HVSR technique has proven to be a cost-effective and accurate exploration tool for placer exploration. Along with drilling and excavator sampling the seismic technique has proven to be a valuable part of the placer exploration program.

Costs

Cost Description	Cost
Air Transport to Site - Alkan Air	\$4,648.88
Air Transport from Site to Whitehorse - Alkan Air	\$4,648.88
Minconsult Invoice - Crew, camp, survey (see invoice)	\$32,182.50
Crew Accommodation - Whitehorse	\$448.35
Truck Rental	\$277.25
Fuel for rental truck	\$107.79
Crew Flights to/from Whitehorse	\$2,493.22
Total	\$44,806.87

References

Nakamura, Y., 2000, Clear identification of fundamental idea of Nakamura's technique and its applications, Proc. 12WCEE, No. 2656, 177–402.

Davidson, G.S. 2000: Summary Report on the Sonora Gulch Property, Private report for Engineer Mining Corporation

Bond, J.D. and van Loon, S., 2018. Yukon Placer Mining Industry 2015 to 2017. Yukon Geological Survey

Johnston, S. T., 1995. Geological compilation with interpretation from geophysical surveys of the northern Dawson Range, central Yukon (115J09, 115J10, 115I12). 1: 100 000 scale map. Exploration and Geological Services Division, Yukon, Indian and Northern Affairs Canada, Open File 1995-2 (G).

Statement of Qualifications

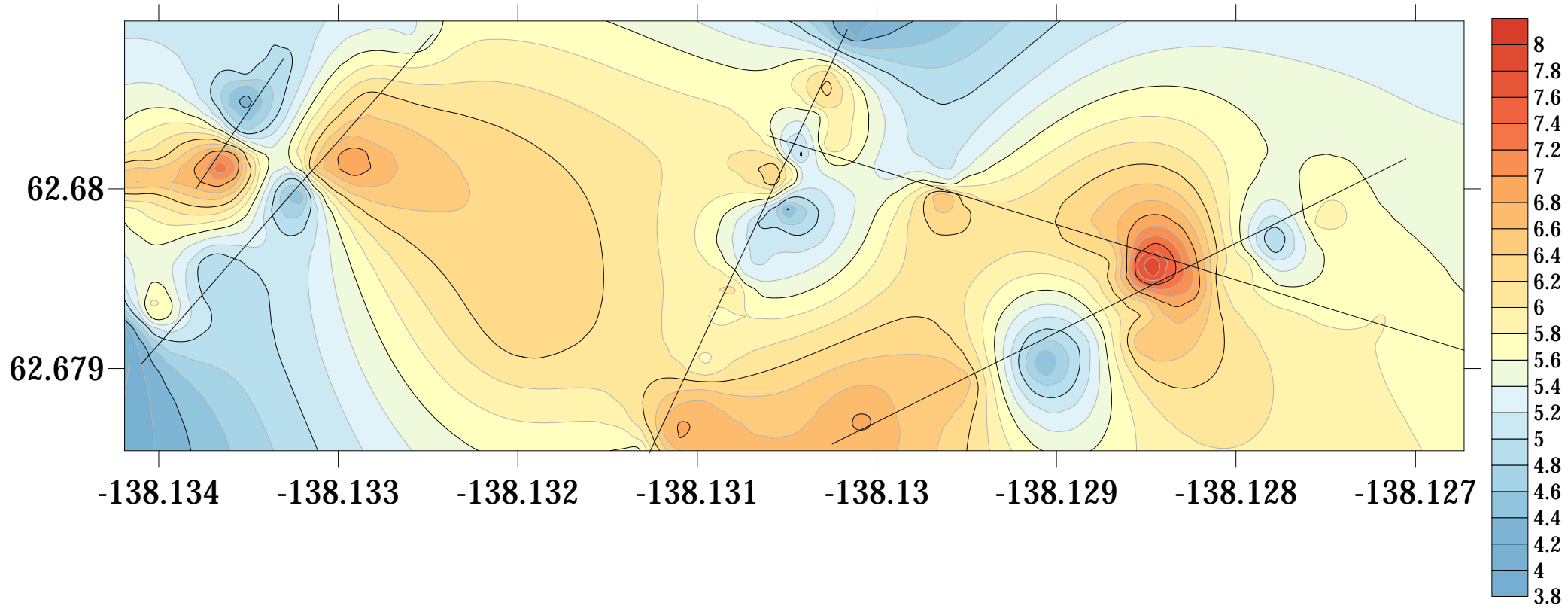
I, Nicholas Gust, of the city of Mission, in the province of British Columbia do hereby certify that:

1. I am a graduate of the Southern Alberta Institute of Technology (2008) and hold a diploma in Exploration Technology.
2. I have received training from the manufacturer of the instrument used in this survey in the application of field techniques and interpretation.
3. I have worked in the exploration industry and have been conducting geophysical surveys since 2008.
4. This report is compiled and interpreted from data obtained from a passive seismic survey carried out under my field supervision during the period of September 23 - October 2nd, 2019.
5. I have based conclusions and recommendations contained in this report on my knowledge of geophysics, my previous experience and the results of the field work conducted on the property.
6. This report has not been prepared for the purposes, nor in full compliance with, National Instrument 43-101.

Appendix I: Maps and Data

Surface to Bedrock Depth in Meters

Hayes Creek 2019

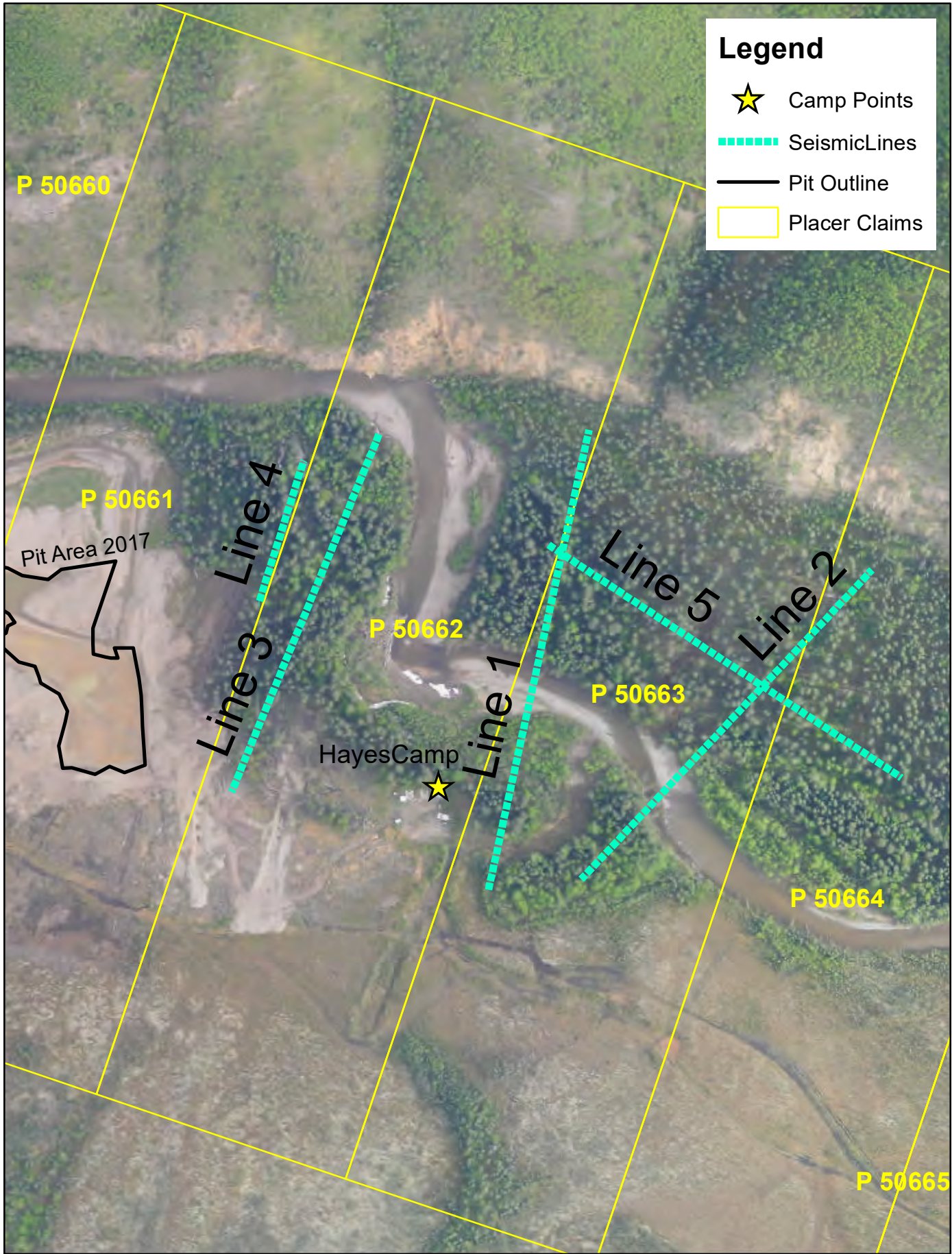


2019 Seismic Survey - Hayes Creek Seismic Lines



Legend





- ★ Camp Points
- ▬ SeismicLines
- ▬ Pit Outline
- ▭ Placer Claims

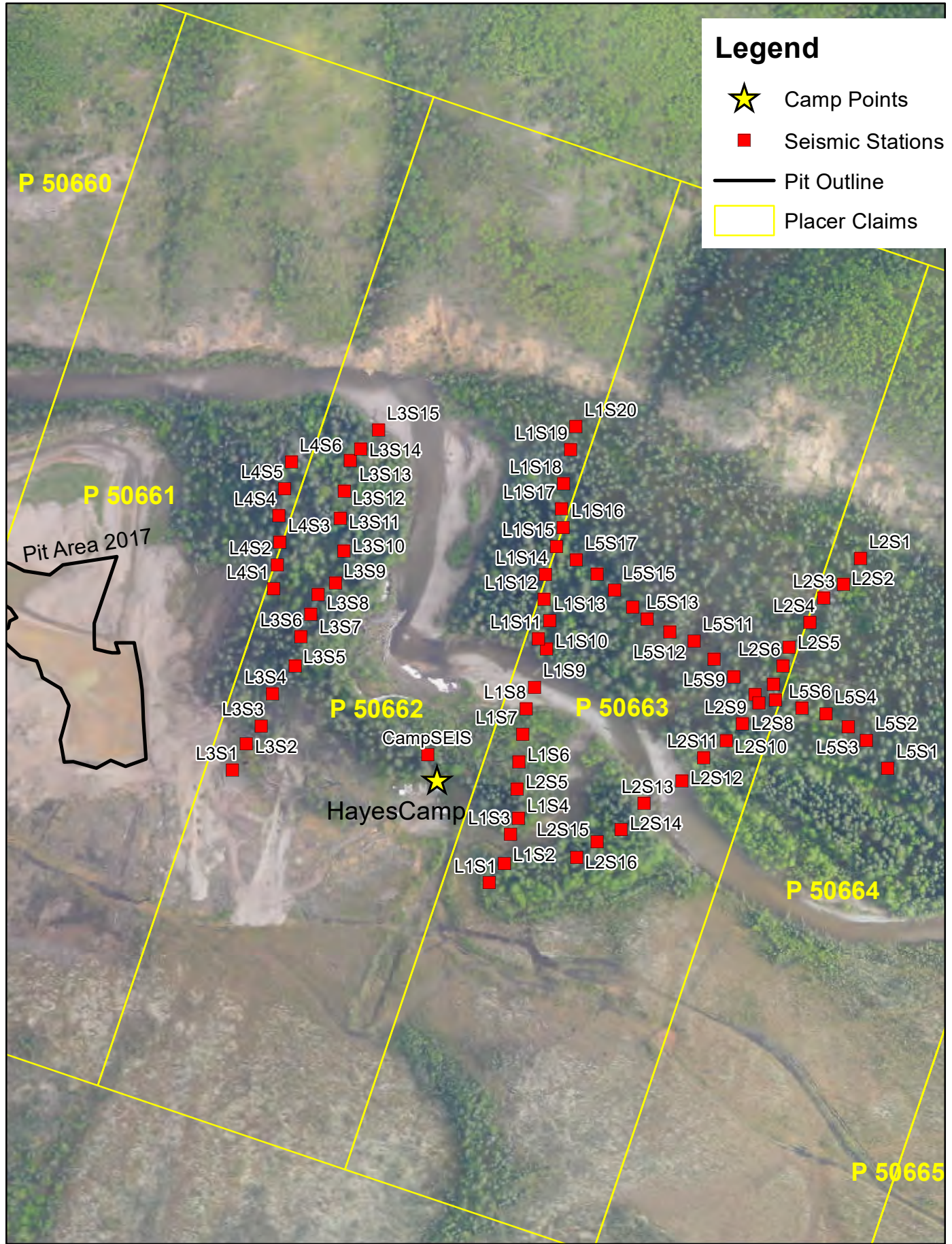


2019 Seismic Survey - Hayes Creek Seismic Stations



Legend

-  Camp Points
-  Seismic Stations
-  Pit Outline
-  Placer Claims



Appendix II: Receipts

INVOICE

2019



10107 Coldstream Creek Rd.
Coldstream, B.C.
V1B 1C8
gst # 120917216RP0001

PURE EXPLORATION CORP.
Hayes Creek
Yukon

923 - 1002 - 19assess
cdn

costs per Hayes Creek Seismic

email: valerie_dunning@shaw.ca

code	employee	description	km	days	hrs	OT	rate	total
		sep 23 - oct 2						
# 1	N. Gust	Geologist		10			750.00	7,500.00
		travel subsistance		2			75.00	150.00
		camp cost		8			150.00	1,200.00
# 2	T. Bissett	crew		10			650.00	6,500.00
		travel subsistance		2			75.00	75.00
		camp cost		8			150.00	1,200.00
# 3	J. Clarke	crew / mechanic		10			550.00	5,500.00
		travel subsistance		2			75.00	75.00
		camp cost		8			150.00	1,200.00
		report for submission						3,000.00
		radios (3)		10			75.00	750.00
		satellite phone		10			100.00	1,000.00
		equipment(1 fly basket)		10	1.0		220.00	2,200.00
							sub total pg. 2	30,350.00
								30,350.00
							gst # 120917216	1,517.50
					total			31,867.50

RENTAL AGREEMENT NUMBER: 976919112

RECEIPT

Your Information

Customer Name: TIM BISSETT
 Method of Payment: VISA XX4490

Your Vehicle Information

Vehicle Number: 33267555
 Vehicle Group Rented: Full-Size
 Vehicle Group Charged: Cool Cars
 Vehicle Description: WHI FORD CREWCAB XLT
 License Plate Number: YTRGA70
 Odometer Out: 53507
 Odometer In: 53934
 Total Driven: 427
 Fuel Reading: Out 8/8 | In 8/8

Your Rental

Pickup Date/Time: SEP 22,2019@5:32PM
 Pickup Location: 75 BARKLEY GROW CRESCENT
 WHITEHORSE AIRPORT
 WHITEHORSE, YT, Y1A 6E6, CA
 867-667-6200

Return Date/Time: SEP 24,2019@12:30PM
 Return Location: 75 BARKLEY GROW CRESCENT
 WHITEHORSE AIRPORT
 WHITEHORSE, YT, Y1A 6E6, CA
 867-667-6200

Additional fees may apply if changes are made to your return date, time and/or location.

Your Vehicle Charges (MIN 1 DAY / MAX 5 DAY)

Rate Chart:	Free Kilometres:	Time and Kilometres:
Kilometres:	Hourly: 100	Your Discount:
Hourly:	97.50	Daily: 200 27 KM @ .30 = 8.10
Daily:	129.99	Weekly: 1400 2 Ad'l Day @ 129.99 = 259.98
Ad'l day:	0.00	
Weekly:		
Monthly:	.00	Time and Kilometres: 268.08

Your Optional Products/Services

Optional Services Total: 0.00

Your Taxable Fees

ENVIRO FEE 1.14/DY 2.28
 MAINTENANCE FAC FEE 2.95/DY 2.95
 VEH LIC FEE 3.94

Sub-total-Charges: 277.25

Your Non-Taxable Products/Services

9.10% Concession Recovery Fee 25.02
 GST TAX 5.00 % 13.86

Your Total Charges paid: 316.13
 Prepayment: 0.00

Net Charges: CAD 316.13
Your Total Due: 0.00

Thank you for renting with Budget.
 For all other inquiries, please contact us at 1-800-352-7900. or www.budget.com.
 Your vehicle was rented to you by 17001. Your vehicle was checked in by 17005.

ALKAN AIR LTD.

105 LODESTAR LANE WHITEHORSE YT Y1A 6E6

Phone - Whitehorse 867-668-2107 | Nanaimo 250-924-2107 Email - accounting@alkanair.com

PURE EXPLORATION C/O MINCONSULT EXPLORATION
10107 COLDSTREAM CR. RD
COLDSTREAM, BC V1B 1C8

Contact:
Phone:

Customer PO:
Invoice Num: 010777
Invoice Date: September 30, 2019

Flight Date: September 30, 2019
Quoted Aircraft: DHC3

Aircraft	Departure	Time	Arrival	Time	ATE
CFDDX	YXY Whitehorse, YT	15:32	UX Purex	16:50	1:18
CFDDX	UX Purex	17:10	YXY Whitehorse, YT	18:30	1:20

Comments

Itemized Charges	PST	HST	Prov	GST	Charge
Mileage Charges of 330 Miles @ \$13.25/mile				✓	\$4372.50
Nav Can Fees				✓	\$55.00
				Sub Total:	\$4,427.50
				PST:	\$0.00
				HST:	\$0.00
				GST (5%):	\$221.38
				Total:	\$4,648.88

GST/HST# R100139625

Terms: Net 30 Days

PAYABLE ON RECEIPT

** INVOICES OVER 30 DAYS SUBJECTED TO 2% MONTHLY INTEREST CHARGE

FUEL MILEAGE INCREASE DUE TO MARKET PRICES

**ALKAN AIR LTD. Passenger Manifest
CFDDX - DHC3**

Flight No: 13975
Flight Date: Sep 30, 2019

Customer	
PURE EXPLORATION C/O MINCONSULT EXPLORATION	

Flight Leg Details						
Leg #	Departure Airport	Arrival Airport	ETE	Local Dep/Arr	UTC Dep/Arr	Pax #
1	YXY - Whitehorse, YT 2019-09-30	UX - Purex	0:00	15:32 -	15:32 -	0
2	UX - Purex 2019-09-30	YXY - Whitehorse, YT	1:16	17:10 -	17:10 -	3

Passenger Details						
Passenger Name	Company	YXY PUX		TOTAL:	0	0
		PUX	YXY			