

**2019 GEOLOGICAL AND GEOCHEMICAL EXPLORATION  
ON THE  
WOLF LAKE PROPERTY**

**WHITEHORSE MINING DISTRICT, YUKON**

Grant Numbers: WOLF 3-56 (YF46008-YF46061)

Geographic Coordinates  
60°22' N to 60°25' N  
133°39' W to 133°45' W

NTS Sheet 105C05

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Field Work Completed: August 5-6, 2019

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## **1. INTRODUCTION**

The Wolf Lake quartz claims were staked by Henry Lole in June 2014 and transferred to Jody Dahrouge in April 2019. Dahrouge Geological Consulting (Dahrouge) completed a surface sampling program from August 4-5, 2019. Exploration consisted of collecting 18 carbonate samples, representing approximately 8 m of stratigraphy. A traverse totalling 13.74 km was completed on the Property in order to map geologic units and identify outcrops. The majority of the 2019 work on the Property focused on identifying access routes, mapping geological contacts and identifying high-calcium limestone outcrops on the Wolf Lake Property. This report describes the 2019 exploration and provides an interpretation of the results. Appendix 1 is an itemized cost breakdown of the 2019 work completed on the Wolf Lake Property. The operator for the exploration was Graymont Western Canada Inc (Graymont).

The Wolf Lake Property is comprised of 54 contiguous quartz claims; the Property has been grouped as per Grouping Certificate HW07729.

Structural measurements were obtained at stations throughout the Property. A magnetic declination of 24° 2' E was used. Attitudes of bedding and other planar features are given as A°/B° NW, where A° is the azimuth of the strike (right-hand rule) and B° is the amount of dip in the direction indicated. Where bedding has been obscured by structure, stratigraphic thicknesses were calculated using orientations from adjacent units. Where more than one bedding orientation was measured, the mean orientation was used.

### **1.1 GEOGRAPHIC SETTING**

#### **1.1.1 Location and Access**

The Wolf Lake Property is located approximately 95 km southeast of Whitehorse, Yukon and 35 km east of the small community of Tagish, Yukon. Tagish has a population of approximately 390 with minimal amenities. Access to the Wolf Lake Property from Whitehorse is by driving south, then east along Alaska Highway 1 for approximately 95 km. A left turn off of Highway 1 onto the Property is located directly north of Summit Lake (Fig.'s 3.2 and 4.1). A network of well-maintained ATV trails exist and can be used for access within the Property.

#### **1.1.2 Topography, Vegetation, Wildlife and Climate**

Topography in the Wolf Lake area is characterized by broad U-shaped glacial valleys and ridges of relatively low relief. Elevations on the Property range from 885 m along Highway 1 up to

approximately 1,000 m in the westernmost portion.

Tree cover in the Wolf Lake area is moderate to dense. The most common trees are evergreen (spruce, pine and fir), with common birch, poplar, willow, cottonwood and aspen. There is no evidence of recent clear-cutting and logging in the area.

The abundance of wetlands in the Wolf Lake area make it an ideal habitat for a variety of ungulates, birds and small mammals. The Yukon Government has identified seasonal woodland caribou, riparian raptor and muskrat ranges in the Wolf Lake Property area. To the authors' knowledge, there are no restrictions on the area due to the presence of these animals. During exploration, Dahrouge endeavored to minimize disturbance to local flora and fauna.

The area is part of the Boreal Cordillera Eco-zone with generally dry and cool conditions. Climate is alpine to sub-arctic with average summer temperatures of 20° to 25°C and winter temperatures of -15° to -25°C, with extremes of 32°C and -55°C. Rainfall averages about 15 cm per year and maximum snowfall occurs from November to February with an average total of 128 cm. Snow often falls as early as September and as late as April.

## 1.2 PROPERTY

The Wolf Lake claims are being held in trust for Graymont by Jody Dahrouge of Dahrouge, based out of Edmonton, AB. The claims were staked from June 16<sup>th</sup> to 18<sup>th</sup>, 2014 by a four-person crew based out of Tagish, YT. The Wolf Lake Property consists of 54 quartz claims (WOLF 3-56) with a combined area of 1,128.6 ha.

**TABLE 1.1 LIST OF WOLF LAKE CLAIMS**

<b>Grant Number</b>	<b>Claim Name</b>	<b>Original Size (ha)</b>	<b>Record Date</b>	<b>Current Good To Date</b>	<b>New Good To Date</b>	<b>Required Spending</b>
YF46008	WOLF 3	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46009	WOLF 4	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46010	WOLF 5	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46011	WOLF 6	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46012	WOLF 7	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46013	WOLF 8	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46014	WOLF 9	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46015	WOLF 10	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46016	WOLF 11	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46017	WOLF 12	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46018	WOLF 13	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46019	WOLF 14	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00

YF46020	WOLF 15	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46021	WOLF 16	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46022	WOLF 17	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46023	WOLF 18	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46024	WOLF 19	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46025	WOLF 20	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46026	WOLF 21	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46027	WOLF 22	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46028	WOLF 23	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46029	WOLF 24	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46030	WOLF 25	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46031	WOLF 26	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46032	WOLF 27	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46033	WOLF 28	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46034	WOLF 29	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46035	WOLF 30	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46036	WOLF 31	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46037	WOLF 32	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46038	WOLF 33	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46039	WOLF 34	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46040	WOLF 35	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46041	WOLF 36	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46042	WOLF 37	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46043	WOLF 38	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46044	WOLF 39	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46045	WOLF 40	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46046	WOLF 41	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46047	WOLF 42	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46048	WOLF 43	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46049	WOLF 44	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46050	WOLF 45	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46051	WOLF 46	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46052	WOLF 47	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46053	WOLF 48	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46054	WOLF 49	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46055	WOLF 50	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46056	WOLF 51	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46057	WOLF 52	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46058	WOLF 53	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46039	WOLF 54	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46060	WOLF 55	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
YF46061	WOLF 56	20.9	14-Jul-2014	14-Oct-2020	14-Oct-2021	\$100.00
<b>Total Area:</b>		1128.6	<b>Representation Work Cost:</b>			\$5,400.00

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**Certification Cost:** \$270.00

**Total:** \$5,670.00

### **1.3 HISTORY AND PREVIOUS INVESTIGATIONS**

Initial prospecting of the area was completed by Dahrouge during the summer of 2012 to assess the quality of the limestone; the Wolf Lake Property was later staked in 2014. Dahrouge completed a sampling program in 2014 and 2015 to investigate carbonate quality on the Property. Historic exploration in the Wolf Lake Property area has dominantly been focused on gold and copper.

The TOG Property is adjacent to the northeast of the Wolf Lake Property and has been explored over the years for vein-hosted gold deposits. The TOG claims were first staked in 1972 by prospector Gord McLeod and are currently held by Dunvegan Exploration Ltd. The Property is now comprised of the TOG and GOT claims. Investigations have been done in 1979 by Archer Cathro and Associates, in 1982 by Noranda Exploration Co. Ltd. From 1985-1988 several geologists and companies sampled the site and reported values of 0.244 ounce/ton gold and higher. Newman Exploration also sampled pits on the Property, but reported low gold values. Dunvegan Exploration began their investigations of the Property in 1989 with road construction, sampling, magnetometer and VLF-EM surveys, as well as detailed mapping. In 1990, they ran an 8-hole (262.5 m) drill program and bulk sampling of the main showing vein. The bulk sample analysis returned values of 3.16 ounce/ton gold. Dunvegan's 2003 exploration program consisted of one day of trench sampling.

The historic MUNG claims, staked in 1971, were located southeast of the Wolf Lake Property, south of the Alaska Highway and west of Wolf Lake. These claims were held by the Wolf Lake Joint Venture Group, who performed an induced polarization survey in 1972 and found trace copper and molybdenum mineralization.

Adjacent to the northwest corner of the Summit Lake Property and extending around the TOG/GOT claims is the MAG Property, which was staked by Sourdough Resources (Sourdough) in 2011. Sourdough performed reconnaissance geological mapping, sampling and a ground magnetometer survey in 2011. The claims expired in June 2017.

### **1.4 PURPOSE OF WORK**

The work described herein was undertaken to accurately identify the location and extent of limestone units throughout the Wolf Lake Property and consisted of mapping and sampling. The

2019 exploration program is a follow-up to work completed in 2014 and 2015 by Dahrouge (Lole and Krueger, 2015, Krueger and Lole, 2016).

## **1.5 SUMMARY OF WORK**

In August 2019, Dahrouge completed a two-day geologic mapping and sampling program on the Wolf Lake Property.

A total of 18 carbonate samples were obtained within the Wolf Lake Property, three in-situ samples representing approximately 8 m of stratigraphy and 15 grab samples (Fig. 4.2). Samples were collected by chipping outcrops or boulders perpendicular to defined or assumed bedding. Bedding was commonly difficult to identify due to the nondescript and cryptocrystalline nature of the limestone. Where bedding was uncertain or had been obscured by structure, stratigraphic thicknesses were calculated using the best estimated orientation from adjacent units. Where more than one bedding orientation was measured, the mean orientation was used.

Geological observations were recorded, including lithologic information, measurements of structural elements, and other pertinent details (App. 4). A solution of 10% HCl was used to assess carbonate quality in the field. Samples were shipped from Whitehorse, YT to Graymont's lab in Sandy, Utah for preparation and analyses by standard ICP techniques, and LOI. Analytical procedures are described in Appendix 2 and assay sheets are provided in Appendix 3.

Personnel were based in a hotel in Whitehorse, Yukon, and access to and from the Property was by rented four-wheel-drive vehicle. Access throughout the Property was by extensive hiking.

## **2. REGIONAL GEOLOGY**

### **2.1 STRATIGRAPHY**

The Wolf Lake Property is underlain by Carboniferous to Jurassic Cache Creek Group rocks. The Cache Creek Group is located within the central part of the morpho-tectonic Intermontane Belt of the Canadian Cordillera (Fig. 4.3). It extends almost continuously over a distance of more than 1,000 km, from south-central Yukon Territory, through the Stuart Lake Belt of Armstrong in central British Columbia, to the type area near the village of Cache Creek in the Interior Plateau of south-central British Columbia (Beyers and Orchard, 1991). The Cache Creek Group consists of oceanic shale, siltstone chert, carbonates and ultramafic rocks. These are overlain by Upper Triassic rocks of the Aksala Group northwest of the Property. The Aksala Group consists of mixed clastic and carbonate rocks that are divisible into three dominant facies: calcareous greywacke;

thick carbonate; and red-colored clastics (Shaw, 1989).

In the Atlin Terrane of southern Yukon and northern British Columbia, Monger (1969, 1975) included the Kedahda, French Range, Teslin, Nakina, and Horsefeed formations as part of the Cache Creek Group.

### **2.1.1 Horsefeed Formation**

The Late Mississippian to Late Permian Horsefeed Formation generally consists of a basal, massive, pale grey-weathering calcarenite overlain by a thick succession of pale grey, porcelaneous, crinoidal, and foraminiferal calcarenite. This member grades upwards into dark grey, very fine grained detrital limestone and dolomitic limestone. The uppermost member of the Horsefeed Formation is an aggregate of foraminiferal calcarenite and, in the lower part, locally breccia. Between Koshin and Nahlin rivers the most common lithology is pale grey, unsorted, massive limestone breccia (Monger, 1975) (Gabielse, 1998).

### **2.1.2 Nakina Formation**

The Mississippian to Permian Nakina Formation is tan or brown to green weathering, grey green or rarely maroon, very fine grained altered basalt, in places with small chlorite-filled amygdules and calcite veins. The rocks are generally massive and the only planar structures recognizable are fractures and faults with slickensides. Other less common rock types are diabase and fine-grained basalt porphyry with small feldspar phenocrysts and very rarely, fine-grained gabbro, basaltic flow breccia and tuff (Monger, 1975).

### **2.1.3 Intrusives**

The nearest known intrusive rocks occur 4 km east of the Property and are Early Cretaceous intrusions of the Teslin Suite. They are comprised of leucocratic, fine to coarse-grained, equigranular, hornblende-biotite granite, granodiorite, quartz monzonite and quartz monzodiorite (Shaw, 1989).

## **2.2 STRUCTURE**

The structural geology of the area is dominated by two major sub-parallel, north-northwest trending faults that divide and define the boundaries between the Cache Creek Terrane (to the east) and the Whitehorse Trough and between the Whitehorse Trough and the Yukon-Tanana Terrane (to the west). The Nahlin Fault more or less marks the western extent of the Cache Creek

Terrane and eastern extent of the Whitehorse Trough. It is a steeply dipping to vertical fault, or series of faults and has seen intermittent activity from the Late Triassic to Tertiary time. The Llewellyn fault marks the boundary between the regionally metamorphosed Yukon-Tanana Terrane and the Whitehorse Trough. It is also steeply dipping and appears to have been active from Late Triassic to Tertiary time (Shaw, 1989).

**TABLE 2.1 STRATIGRAPHY OF THE WOLF LAKE AREA**

Period	Stage/Age	Stratigraphic Unit			Lithological Description	Approx. Thickness (m)
		Group	Formation/ Member			
Triassic	Norian	Lewes River Gp.	Aksala Fm.	Casca Mbr.	Sandstones, conglomerates and mudstones, limestone	unknown
					Hancock Mbr.	Massive to thick-bedded limestone
	Carnian		Povoas Fm.		Volcanics including basalts and andesites, minor carbonates	
Devonian to Permian		Cache Creek Gp.	Horsefeed Fm.		Massive to thick-bedded limestone, dolomitic limestone	Up to 1,500
			Nakina Fm.		Massive altered basalts, minor diabase	unknown

\*Adapted from Clapham et al., 2002.

### 3. PROPERTY GEOLOGY

#### 3.1 STRATIGRAPHY AND LITHOLOGY

As only initial prospecting work has been performed on the Wolf Lake Property, a detailed description of the property geology is not yet possible. As only the Horsefeed Formation is seen at the Wolf Lake Property, other formation descriptions will not be included in this report. During 2019 exploration, the Horsefeed Formation was the only unit encountered on the Wolf Lake Property.

##### 3.1.1 Horsefeed Formation

Exposures of the Horsefeed Formation were mapped and sampled in 2012 from between 2,900 m to 3,100 m, south of the Alaska Hwy within the Wolf Lake Property. During the 2019

exploration program, several scarce outcrops of Horsefeed Formation were encountered. The member consists of light-grey weathered, medium-grey to dark-grey fresh, micritic to coarse-grained lime mudstones with rare amounts of carbonaceous material. Horsefeed Member limestones are typically massive and somewhat resistant with minor calcite veining and rare oxide alteration.

### **3.2 STRUCTURE**

Given the early stage of exploration on the Property, the structure is currently largely unknown. Mapping in the northeast of the Property indicate steeply dipping beds up to  $68^\circ$  to the southeast (Fig. 4.2).

## **4. RESULTS OF 2019 EXPLORATION**

The 2019 exploration program was completed in order to further assess the quality of the Mississippian to Permian Horsefeed Formation limestones and provide more constraint on geologic contacts with other units in the area. A total of 18 samples were collected from the Horsefeed Formation in the north-eastern and south-western extents of the Property.

The groundwork involved sampling at 17 locations on the Property and completing a 13.74 km traverse to map geologic units and identify outcrops (Fig. 4.2).

During the program, geological observations were recorded, including lithologic information, measurements of structural elements, and other pertinent details (App. 4). A solution of 10% HCl was used to assess carbonate quality in the field. In some instances, interval thicknesses were determined by measuring outcrops perpendicular to bedding, where it could be identified. In many cases the interval thickness can only be considered approximate due to the lack of reliable bedding surfaces. Samples were shipped from Whitehorse, YT to Graymont's lab in Sandy, Utah for preparation and analyses by standard ICP techniques, and LOI. Samples collected from the Horsefeed Formation in 2019 varied in quality. The best in-situ sample (132688) averaged 95.40%  $\text{CaCO}_3$ , 3.43%  $\text{MgCO}_3$  and 0.34%  $\text{SiO}_2$  over an estimated 3 m. Of the samples which were not in situ, the best result was from 132716 which resulted in 98.66%  $\text{CaCO}_3$ , 0.86%  $\text{MgCO}_3$  and 0.42%  $\text{SiO}_2$ . Favourable results of 98.49%  $\text{CaCO}_3$ , 1.05%  $\text{MgCO}_3$  and 0.37%  $\text{SiO}_2$  resulted from assays of sample 132691. The variability in quality of samples (Fig. 4.2) may indicate abrupt compositional changes between interbeds of the Horsefeed Formation or that samples were transported from a different location.

## 5. DISCUSSIONS AND CONCLUSIONS

Within the Wolf Lake Property, limestones of the Horsefeed Formation of the Cache Creek Group were mapped and tested by measuring and sampling stratigraphic sections and float samples. Unfortunately, limited time and outcrop exposure prevented a conclusive analysis of the quality of the Horsefeed Formation throughout the Property. The best in-situ sample was 132688 that averaged 95.40% CaCO<sub>3</sub>, 3.43% MgCO<sub>3</sub> and 0.34% SiO<sub>2</sub> over approximately 3 m. The best grab sample (132716) returned 98.66% CaCO<sub>3</sub>, 0.86% MgCO<sub>3</sub> and 0.42% SiO<sub>2</sub>. Based on the 2019 exploration, the north-eastern-most portion of the Wolf Lake Property is the most attractive target for future exploration of Horsefeed limestone deposits.

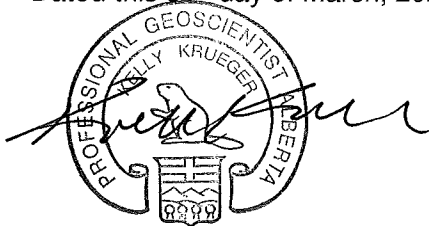
The next phase of exploration on the Wolf Lake Property should consist of additional mapping and sampling, focusing on the northern and middle portions of the Property. Identifying and mapping the contact between the Horsefeed Formation and other geological units should also be a priority.

**6. STATEMENT OF QUALIFICATIONS**

I, Kelly Krueger, residing at 10550 Ellerslie Rd. SW, Edmonton, Alberta, do hereby certify that:

- I am a geologist of Dahrouge Geological Consulting Ltd., Suite 103, 10183 - 112 St., Edmonton, Alberta, T5K 1M1.
- I am a 2012 graduate of the University of Alberta, Edmonton, Alberta with a B.Sc. in Geology.
- I have practiced my profession as a geologist continuously since 2012.
- I am a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta, member M96506.
- I managed the 2019 work described in this report.
- I am co-author of the report entitled "2019 Geological and Geochemical Exploration on the Wolf Lake Property" and accept responsibility for the veracity of technical data and results.
- I hereby consent to the copying or reproduction of this Assessment Report following the confidentiality period.

Dated this 31<sup>st</sup> day of March, 2020.

The image shows a circular professional seal for the Association of Professional Engineers and Geoscientists of Alberta. The seal contains the text "PROFESSIONAL GEOSCIENTIST ALBERTA" around the perimeter and "KELLY KRUEGER" in the center. Below the name is a crest featuring a bird and a shield. A handwritten signature in black ink is written across the seal.

Kelly Krueger, B.Sc., P. Geo.

APEGA M96506

I, Andrew Shumilak, residing at 7446 Ellesmere Way, Sherwood Park, Alberta, do hereby certify that:

- I am a geologist of Dahrouge Geological Consulting Ltd., Suite 103, 10183 - 112 St., Edmonton, Alberta, T5K 1M1.
- I am a 2016 graduate of the University of Alberta, Edmonton, Alberta with a B.Sc. in Geology.
- I am a registered Geologist in Training with the Association of Professional Engineers and Geoscientists of Alberta, member 214310
- I co-managed the 2019 work described in this report.
- I am co-author of the report entitled "2019 Geological and Geochemical Exploration on the Wolf Lake Property" and accept responsibility for the veracity of technical data and results.
- I hereby consent to the copying or reproduction of this Assessment Report following the confidentiality period.

Dated this 31<sup>st</sup> day of March, 2020.



Andrew Shumilak, B.Sc., G.I.T.

APEGA 214310

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- Shaw, D., Taylor, W. and Copeland, D. (1989) Geological Report on the Bug, Phil and TOG-GOT-POT Group of Claims.

## APPENDIX 1: ITEMIZED COST STATEMENT FOR THE 2019 EXPLORATION

a) **Personnel**

K. Krueger, geologist							
13.20	hrs		project management, field work and travel				
<u>4.22</u>	hrs		project planning & preparations, reporting				
17.42	hrs	@	\$ 80.00		\$	1,393.68	
A. Shumilak, geologist							
17.47	hrs		field work and travel				
<u>7.59</u>	hrs		project preparations, data entry				
25.06	hrs	@	\$ 59.00		\$	1,478.80	
P. Mickelsen, student							
15.88	hrs		field work and travel				
<u>0.50</u>	hrs		project preparations, data entry				
16.38	hrs	@	\$ 45.00		\$	737.04	
T. Anderson, student							
<u>17.47</u>	hrs		field work and travel				
17.47	hrs	@	\$ 45.00		\$	786.18	
J. Kerr, receptionist							
<u>0.65</u>	hrs		logistics, prepare shipments				
0.65	hrs	@	\$ 39.38		\$	25.41	
					\$	4,421.10	

b) **Food and Accommodation**

5.36	man-days	@	\$ 156.45	accommodations (hotel rooms)	\$	838.62	
6.54	man-days	@	\$ 70.00	meals	\$	457.61	
					\$	1,296.23	

c) **Transportation**

Vehicles:		Truck rental	Driving Force (Whitehorse)	\$	285.28	
		Fuel		\$	46.06	
				\$	331.34	

d) **Analyses**

		Central Lab of Graymont Western U.S. Inc.				
		(18 rock samples)				
18	samples	@	\$ 4.50	Preparation fee	\$	81.00
18	samples	@	\$ 25.00	Sample analysis	\$	450.00
					\$	531.00

e) **Other**

	Shipping	\$	72.74	
	Disposable Supplies	\$	27.86	
		\$	100.60	

**Total**

		\$	<u>6,680.26</u>
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Edmonton, Alberta  
March 31, 2020

  
Kelly Krueger, B.Sc., P. Geo.

## APPENDIX 2: ANALYTICAL LABORATORY INFORMATION AND TECHNIQUES

### Name and Address of the Lab:

Graymont Western US Inc., Western Region Office  
585 W Southridge Way  
Sandy, Utah, 84070

### Statement of Qualifications:

Jared Leikam, Graymont Central Lab Supervisor, obtained a B.S. in Chemistry from the University of Utah in the class of 2003. Jared started working for Graymont in February of 2004 and has been working with the ICP Spectrometer for 14 years.

### Sample Preparation, Procedures, Reagents, Equipment, etc.:

For the ICP sample preparation, 0.5 grams of the sample is mixed with 3 g of lithium carbonate. The sample and the lithium carbonate are then fused together in a muffle furnace at 850°C. Following the fusion process, the samples are dissolved in 1:1 HCl; a total of 40 mL 1:1 HCl is used in the dissolving process. The samples are then diluted to 200 mL and spiked with 10 ppm Co. Cobalt is used as an internal standard. At this point the samples are ready for analysis on the Perkin Elmer, Optima 7300V.

### Mesh Size Fraction, Split and Weight of Sample:

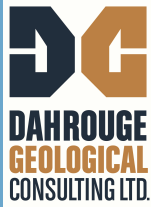
Upon receiving the samples, the prep room technician crushes the stone down to a -3/8-inch sizing. The technician then riffles and splits the stone down to a manageable size (roughly 200 g). The stone is then dried in an oven at 105°C. Once the samples have been dried, they get pulverized in a Bico Disc Mill, so that 90% of the powder is passing a 75µm screen. A split of this pulverized material is bagged up, given a barcode label and then set to the analytical lab for testing.

### Quality Control Procedures:

The ICP spectrometer is calibrated with two certified reference materials prior to analyzing a batch of samples. A batch typically contains 96 samples. Every 12<sup>th</sup> sample in a batch is a certified limestone reference sample. In addition to the 8 reference samples imbedded in the batch, there are 2 limestone reference samples analyzed at the beginning and at the end of each batch. Every element being analyzed in a sample is backed up by data that we collect from the certified reference materials being analyzed within each batch of samples. We also use an internal standard (10 ppm Co) to further ensure the quality and accuracy of the analysis.

**APPENDIX 3: ASSAY RESULTS – CENTRAL ANALYTICAL LABORATORY OF  
GRAYMONT WESTERN U.S. INC**

See Data Folder  
for Assay Results



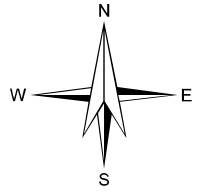
## APPENDIX 4: 2019 SAMPLE DESCRIPTIONS AND ASSAY RESULTS FROM THE WOLF LAKE PROPERTY



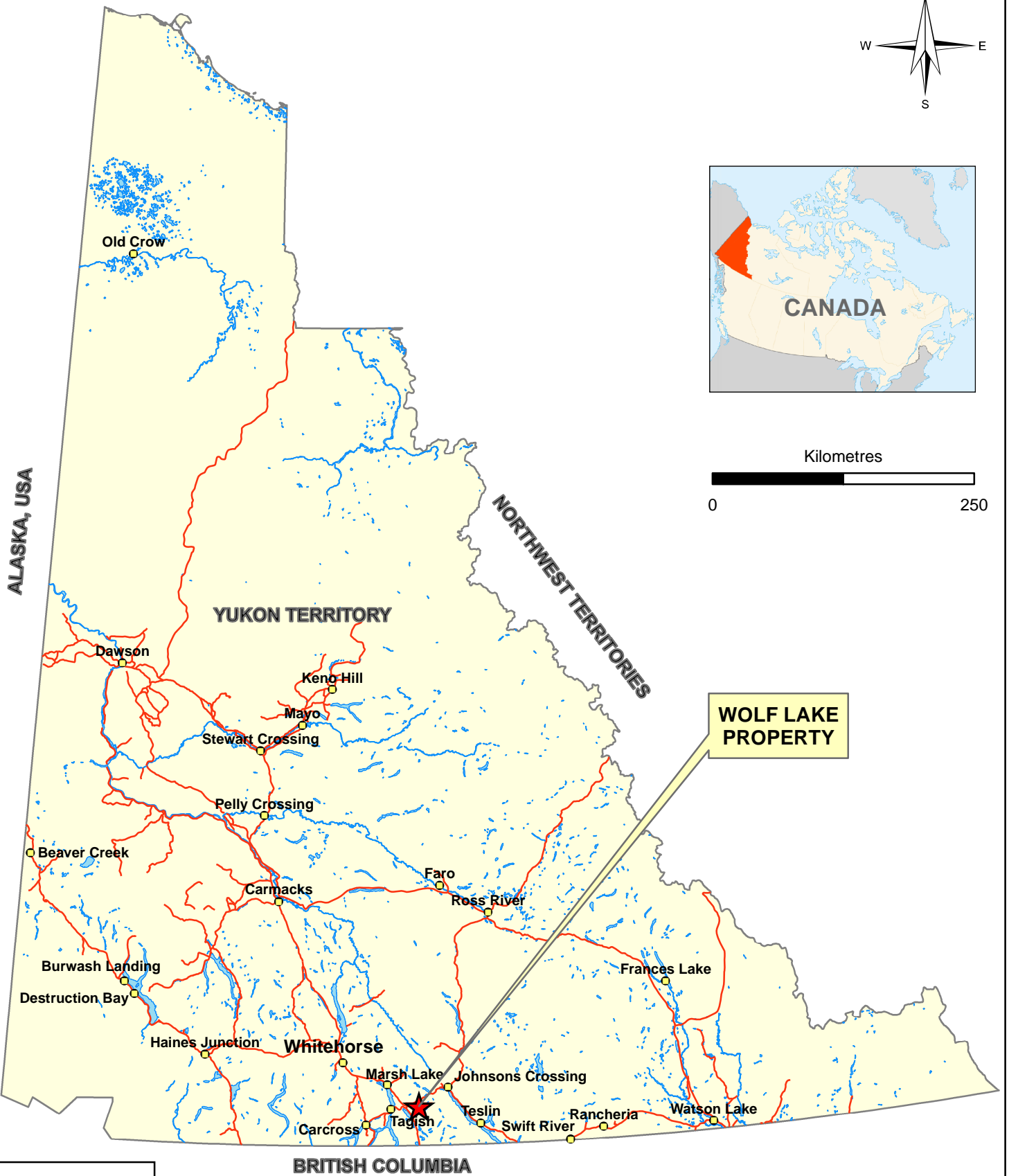
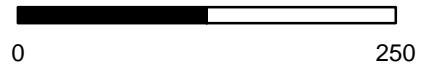
Notes: Stratigraphic thicknesses are based on measured attitudes of bedding listed below, with appropriate interpolations. Attitudes are strike and dip (right-hand rule). Sections are listed in numerical order of samples, which does not necessarily represent stratigraphic order. Most samples consist of chips at 30 cm intervals. UTM coordinates are NAD83, Zone 8N. Sample locations are shown in Figure 4.2. Stratigraphy Abbreviations: Mh - Mississippian Horsefeed Formation

Sample	Strat Unit	Strat Tkns (m)	Description	CaCO <sub>3</sub> (%)	MgCO <sub>3</sub> (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	SrO (ppm)	MnO (ppm)	P <sub>2</sub> O <sub>5</sub> (ppm)
132687 UTM 573564E, 6698037N	Mh	grab	<b>Lime Mudstone</b> , light grey weathered and fresh, micritic, resistant, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	98.65	0.84	0.17	0.071	0.018	285	10	50
132688 UTM 573414E, 6697994N	Mh	3	<b>Slightly Dolomitic Lime Wackestone</b> , light grey weathered and fresh, micritic, resistant, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	95.40	3.43	0.34	0.084	0.017	346	10	50
132689 UTM 573420E, 6697973N	Mh	3	<b>Dolomitic Lime Mudstone</b> , very-light grey weathered and fresh, cryptocrystalline to micritic, massive, resistant, moderate HCl reaction	94.40	4.98	0.29	0.097	0.031	348	19	50
132690 UTM 573408E, 6697939N	Mh	2	<b>Strongly Dolomitic Lime Mudstone</b> , very-light grey weathered and fresh, cryptocrystalline to micritic, massive, resistant, weak HCl reaction	86.13	12.55	0.24	0.133	0.030	358	11	50
132691 UTM 573380E, 6697860N	Mh	grab	<b>Lime Mudstone</b> , light grey weathered and fresh, cryptocrystalline to micritic, weak HCl reaction	98.49	1.05	0.37	0.136	0.028	560	5	50
132692 UTM 573378E, 6697828N	Mh	grab	<b>Slightly Dolomitic Lime Mudstone</b> , light grey weathered and fresh, cryptocrystalline to micritic, moderate HCl reaction	90.95	3.24	4.82	0.214	0.066	2018	23	50
132693 UTM 573221E, 6697253N	Mh	grab	<b>Lime Mudstone</b> , light grey weathered, medium grey to dark grey fresh, micritic, resistant, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	97.37	1.09	0.40	0.082	0.027	2916	10	106
132709 UTM 569006E, 6694101N	Mh	grab	<b>Calcareous Mudstone</b> , medium grey weathered, light grey to dark grey fresh, micritic to very fine-grained, massive, hard, heterogeneous, alteration: silica; oxide, localized, weak intensity, very weak HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	69.95	1.40	21.96	1.102	1.027	206	995	328
132710 UTM 569420E, 6693749N	Mh	grab	<b>Dolomitic Mudstone</b> , medium grey weathered, dark grey fresh, micritic, massive, hard, nodular, alteration: silica, weak HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	57.33	34.04	8.64	0.091	0.254	154	433	260
132711 UTM 570082E, 6694202N	Mh	grab	<b>Slightly Dolomitic Lime Mudstone</b> , rust to tan weathered, medium grey to dark grey fresh, micritic, massive, hard, nodular, alteration: oxide, fracture-related, weak intensity, strong HCl reaction, structure(s): calcite veinlet, outcrop-scale, strong; calcite veinlet, outcrop-scale, moderate	95.83	2.99	1.01	0.100	0.040	1378	35	50
132712 UTM 570145E, 6694236N	Mh	grab	<b>Calcareous Mudstone</b> , medium grey to rust weathered, medium grey to dark grey fresh, micritic, massive, hard, alteration: silica, strong HCl reaction, structure(s): calcite veinlet, outcrop-scale, moderate	80.60	0.65	18.66	0.056	0.116	326	129	179
132713 UTM 570267E, 6694300N	Mh	grab	<b>Lime Mudstone</b> , medium grey to rust weathered, medium grey to dark grey fresh, cryptocrystalline to micritic, massive, alteration: oxide, fracture-related, weak intensity, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, moderate	98.29	0.54	0.44	0.059	0.010	897	33	428

Sample	Strat Unit	Strat Tkns (m)	Description	CaCO <sub>3</sub> (%)	MgCO <sub>3</sub> (%)	SiO <sub>2</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	SrO (ppm)	MnO (ppm)	P <sub>2</sub> O <sub>5</sub> (ppm)
132714 UTM 570600E, 6694458N	Mh	grab	<b><u>Lime Mudstone to Recrystallized Limestone</u></b> , very-dark grey to very-dark grey weathered, light grey to medium grey fresh, cryptocrystalline to micritic, massive, hard, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, moderate	98.07	0.75	0.13	0.069	0.022	246	38	148
132715 UTM 572659E, 6697440N	Mh	grab	<b><u>Lime Mudstone</u></b> , tan to medium grey weathered, dark grey fresh, cryptocrystalline to micritic, massive, alteration: oxide, fracture-related, weak intensity, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	96.11	0.90	2.21	0.263	0.104	2899	139	306
132716 UTM 572513E, 6697315N	Mh	grab	<b><u>Lime Mudstone</u></b> , medium grey to rust weathered, dark grey fresh, micritic to fine-grained, massive, alteration: oxide, fracture-related, weak to moderate intensity, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	98.66	0.86	0.42	0.149	0.049	3016	22	130
132717 UTM 572477E, 6697283N	Mh	grab	<b><u>Lime Mudstone</u></b> , light grey to rust weathered, dark grey fresh, micritic, massive, alteration: oxide, fracture-related, weak intensity, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	95.93	1.23	1.70	0.378	0.145	4490	20	154
132718 UTM 572408E, 6697215N	Mh	grab	<b><u>Slightly Dolomitic Lime Mudstone to Recrystallized Limestone</u></b> , light grey to tan weathered, medium grey fresh, cryptocrystalline to micritic, massive, hard, weak fetid odour, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, very weak	97.68	2.84	0.18	0.069	0.016	282	15	165
132719 UTM 572332E, 6697187N	Mh	grab	<b><u>Lime Mudstone</u></b> , light grey to medium grey weathered, dark grey fresh, micritic, massive, alteration: oxide, fracture-related, weak intensity, weak fetid odour, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	96.58	1.09	1.00	0.193	0.059	4362	30	170








Kilometres



**WOLF LAKE  
PROPERTY**

### Legend

-  Cities/Towns
-  Highway
-  Rivers
-  Lakes
-  Territorial Boundary

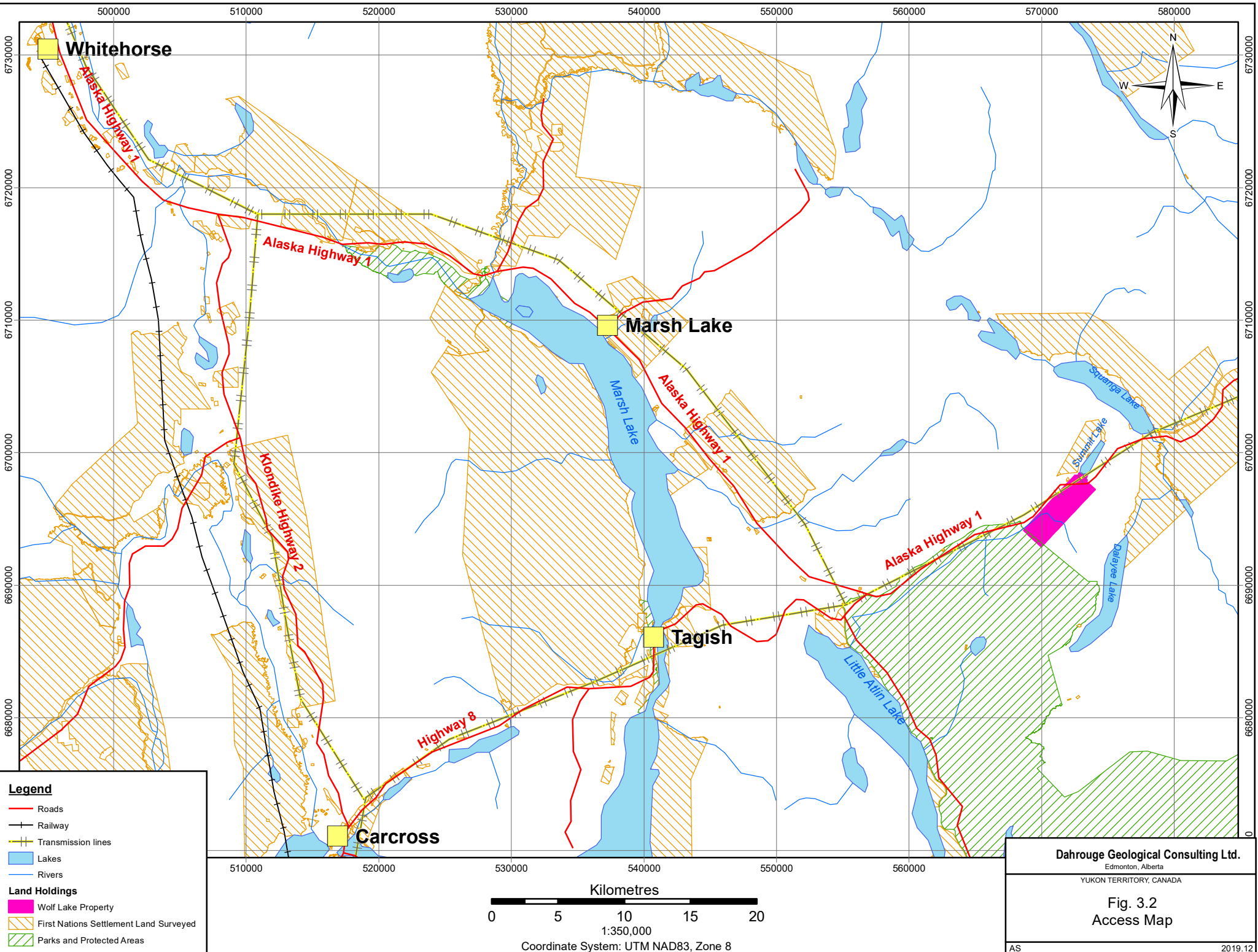
**DG** Dahrouge Geological Consulting Ltd.  
Edmonton, Alberta

YUKON TERRITORY, CANADA

Fig. 3.1  
Property Location

1:5,000,000

Coordinate System: UTM NAD83, Zone 8

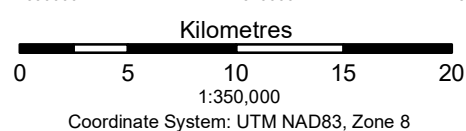


**Legend**

- Roads
- +— Railway
- +— Transmission lines
- █ Lakes
- Rivers

**Land Holdings**

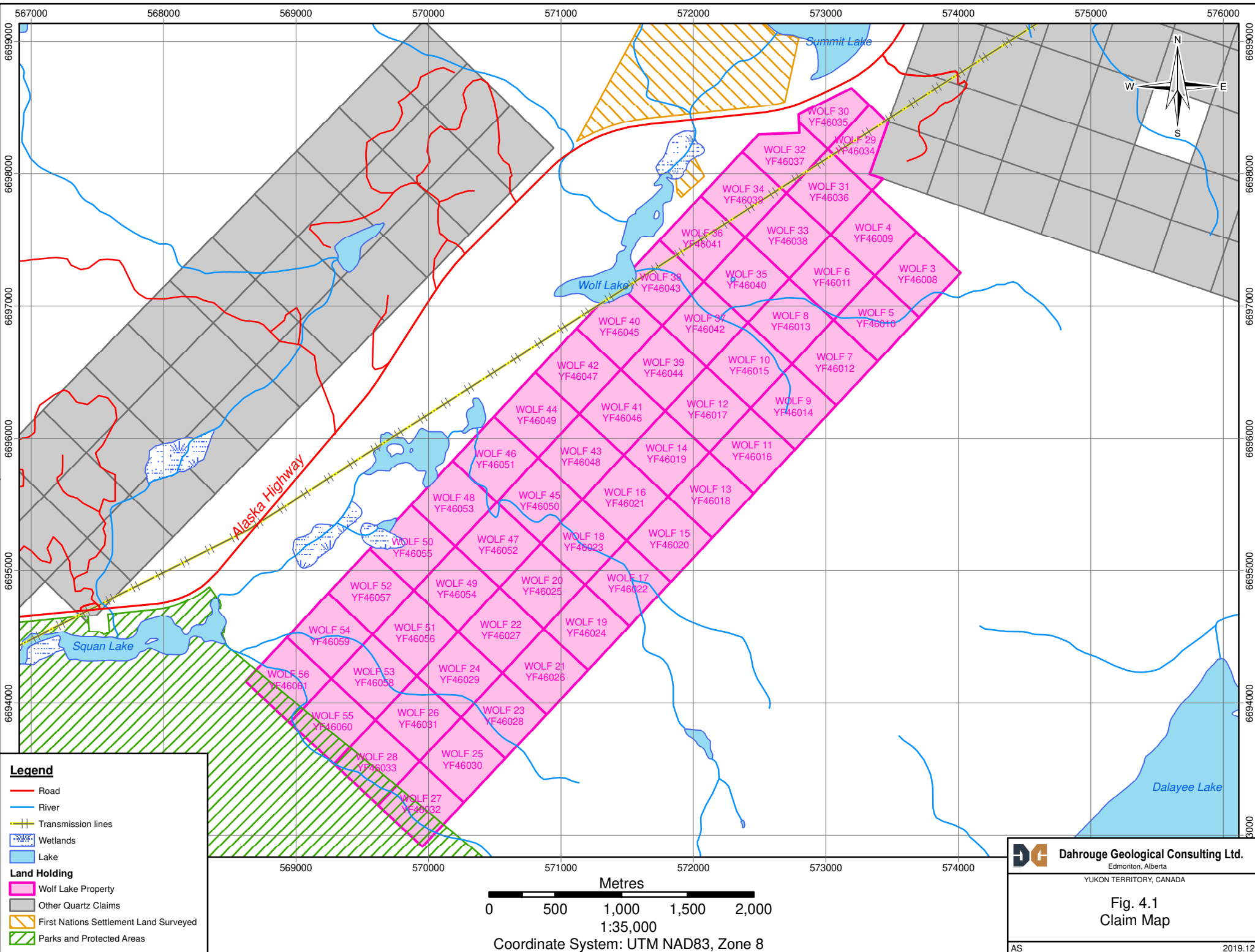
- █ Wolf Lake Property
- █ First Nations Settlement Land Surveyed
- █ Parks and Protected Areas



**Dahrouge Geological Consulting Ltd.**  
 Edmonton, Alberta  
 YUKON TERRITORY, CANADA

**Fig. 3.2**  
**Access Map**

AS      2019.12



**Legend**

- Road
- River
- +— Transmission lines
- Wetlands
- Lake

**Land Holding**

- Wolf Lake Property
- Other Quartz Claims
- First Nations Settlement Land Surveyed
- Parks and Protected Areas

Metres

0    500    1,000    1,500    2,000

1:35,000

Coordinate System: UTM NAD83, Zone 8

**DG Dahrouge Geological Consulting Ltd.**  
 Edmonton, Alberta  
 YUKON TERRITORY, CANADA

**Fig. 4.1**  
**Claim Map**

AS 2019.12

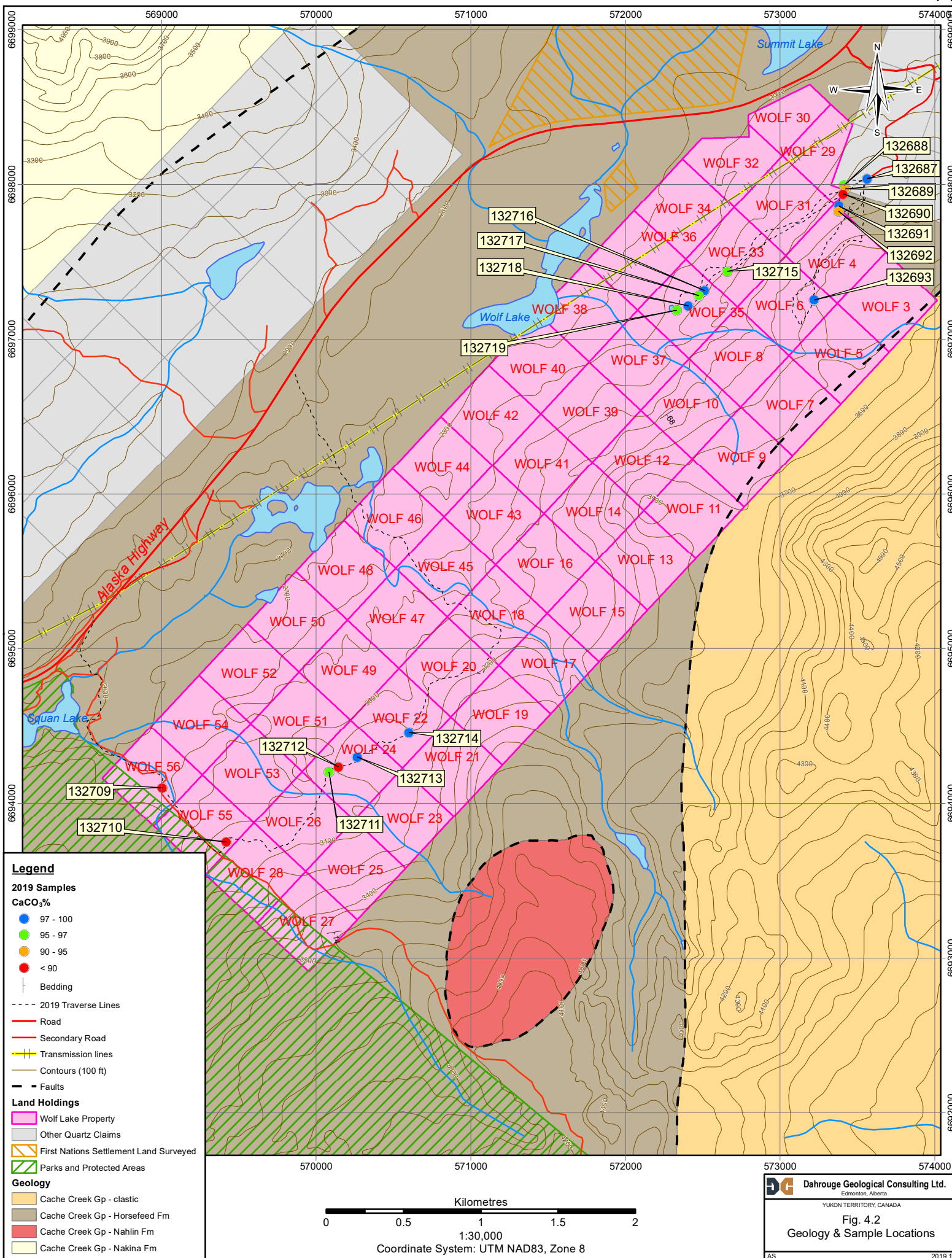
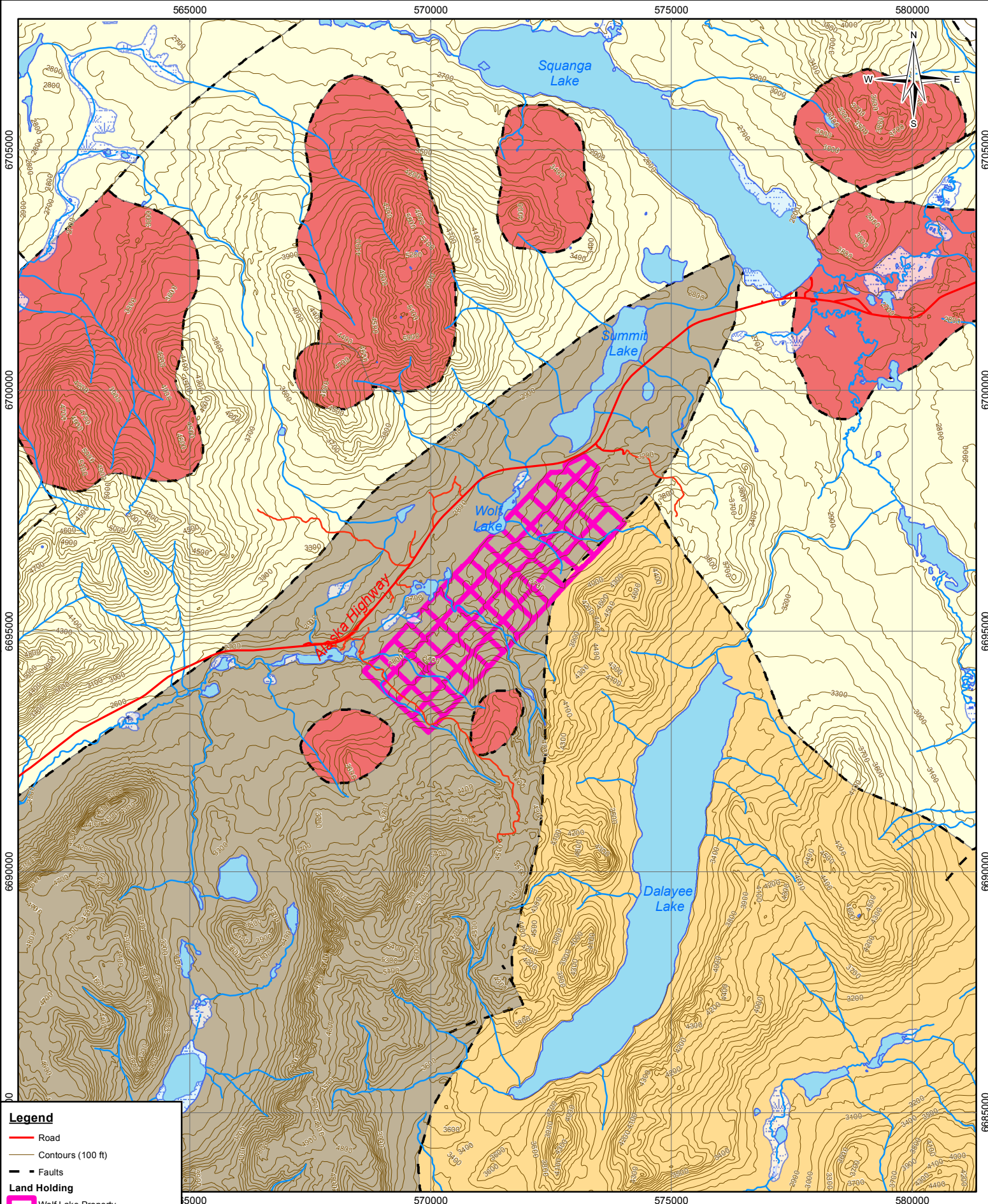


Fig. 4.2  
 Geology & Sample Locations



**Legend**

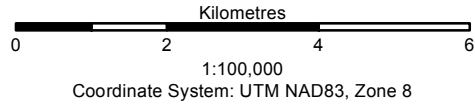
- Road
- Contours (100 ft)
- Faults

**Land Holding**

- Wolf Lake Property

**Geology**

- Cache Creek Gp - clastic
- Cache Creek Gp - Horsefeed Fm
- Cache Creek Gp - Nahlin Fm
- Cache Creek Gp - Nakina Fm



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YUKON TERRITORY, CANADA

**Fig. 4.3**  
**Regional Geology Map**

AS 2019.12