# 2017 Assessment Report on the Keno Silver Project, Yukon

NTS 105 M/13, 14 & 15 Lat. 63°54' N Long. 135°18' W Mayo Mining District

> Claims work applied to: See tables 3 to 8 in report

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# 1 Summary

The Keno Silver Project included in this report ('the Project') is centered approximately 465 km by road northeast of the city of Whitehorse and 60 km by road northeast of the town of Mayo and depending upon the location within the claim block, Keno City is located between 4 and 20 km away. Mayo is situated on the Silver Trail Highway, a paved all-weather highway running from Whitehorse to Mayo. From Mayo, the Silver Trail continues to Keno City, but turns to gravel just east of Mayo. Subsidiary unpaved roads provide access to a large portion of the Project. The Project is located within the Mayo Mining District and the following claim groups were filed on in 2017 and the results of that work is contained within this report.

Claim Group	Claims work filed	Work Filed	Filing Date
	on		
Keno Lightning	626	13 drill holes	December 2017
Silver Queen	20	Prospecting, mapping and soil sampling	September 2017
Murray 11	1	Drone imagery acquisition	December 2017
Murray 1	3	1 drillhole	December 2017
MMG 18Fr	1	Drone imagery acquisition	December 2017
Mac/Vancouver	3	Prospecting and soil sampling	October 2017
Duncan Creek	124	Mapping, prospecting, soil and rock sampling; drone imagery acquisition	December 2017

Between May 8 and Sept 7, 2017 fourteen diamond drill holes (DDH) were drilled on the Keno Silver Project. In addition, mapping, prospecting, soil and rock sampling and the collection of satellite imagery were undertaken on the above claim blocks. Additional work was conducted on the ground, but since it was not filed for assessment credit, it is not included in this report.

The Keno Silver Project is a highly-prospective, district scale, brownfields exploration property consisting of 166 square kilometres in the world-class Keno Hill Silver District of Canada's Yukon Territory, which has produced over 200 million ounces of high-grade silver over the past 100 years at an average grade exceeding 1,300 grams/tonne. The property is adjacent to, and on-trend with, Alexco Resource Corp's operations, one of the highest-grade primary silver operations in the world with an estimated life of mine production grade of 843g/t Ag and 68 million ounces of contained silver (M&I)1. The area features excellent infrastructure, with well-developed and maintained roads, as well as access to the Yukon power grid which supplies Keno City.

The Keno Silver Project land package covers the eastern portion of the district, along with portions on the western and southern sides, and represents a continuation of the same geological structures and host rock associated with the demonstrated mineralization occurring on Alexco's ground to the west. The Keno Silver Project was host to eight historic silver mines with some of the highest-grades in the district and five that had average production grades above 5,000g/t (see table above). However, the eastern portion of the district has seen little modern exploration due to the longstanding, fragmented, private land ownership structure, which has now been largely consolidated by Metallic Minerals.

Metallic Minerals technical team reviewed decades of historic and modern geological data in developing priority exploration targets for the 2017 field program which was completed in September 2017 and consisted of:

- Continuation of compilation and interpretation of historic exploration data from drilling, trenching, and channel sampling along with existing soil and rock sampling.
- Refinement and prioritization of targets using additional geophysical and geochemical surveys, stratigraphic mapping, and trenching.
- Drill testing of highest priority targets to test down-dip and along-strike extensions of previously identified mineralization along the known mineralized trends, including at the historic producing mines on the property, and in areas that show significant potential to host Keno type deposits but that may not have seen historic focus due to soil and vegetation cover.

Results from the 2017 exploration program which were filed for assessment include:

### 1.1 Caribou and Duncan Targets

#### **Diamond Drilling Highlights 2017 Caribou**

Hole	From (m)	To (m)	width (m)	Ag g/t	Pb %	Zn %	Au g/t	Ag EQ g/t
CH17-021	39.35	42.0	2.65	407	3.39	6.35	0.834	972
Including	39.35	39.80	0.45	1,607	15.47	1.70	0.759	2,487
CH017-23	40.7	42.3	1.6	1,405	25.98	3.72	0.282	2,851
Including	40.70	41.50	0.80	2,408	47.30	4.69	0.108	4,898
	41.50	42.30	0.80	402	4.65	2.74	0.456	804
CH17-026	48.62	50.85	2.23	59.1	0.82	4.99	0.960	440
Including	49.90	50.85	0.95	104	1.55	9.76	1.641	828

The Caribou target is the most advanced prospect on the Keno Silver Project. Continued drilling is recommended and could either be infill drilling to produce an inferred resource or exploratory drilling to test open areas for more mineralization. A combination of both is recommended for 2017.

The Duncan target was not fully tested in 2017. Drilling difficulties caused the hole to be stopped early and the thick package of quartzite was not tested.

#### 1.2 Homestake Target

#### Diamond Drilling Highlights 2017 Homestake #1 and #2 Veins

Hole	Vein#	From (m)	To (m)	Width (m)	Ag g/t	Pb %	Zn %	Au g/t	Ag Eq g/t
HS17-024	HS2	31.86	33.14	1.28	8	0.11	0.15	2.460	214
Including		32.69	33.14	0.45	16	0.18	0.12	6.600	547
HS17-027	HS1	74.64	75.60	0.96	207	3.62	0.09	0.002	383
Including		74.64	75.13	0.49	364	6.30	0.06	0.004	665
And		76.48	77.50	1.02	569	1.02	0.03	0.010	620

Drillholes HS17-025, 26, 27 and 28 were step out holes proving the continuation of the upper Homestake Veins northeast of historic drilling. Subsequent vein modelling suggests the veins may converge east of HS17-028. Further drilling on the east side around HS17-028 is recommended.

### 1.3 Vancouver Target

Although some of the soil anomaly on the Vancouver target is likely caused by contamination, due to its location downslope from the Highlander tailings pile and from historic trenching along the southern boundary, the area should not be abandoned. Anomalies in trench material indicates that the trenches did intersect mineralization plus the anomaly covers the inferred location of the Highlander vein extension. Excavator trenching along the inferred location of the Highlander Vein is recommended for this target.

## 1.4 Silver Queen Target

Silver Queen is a lower priority target due to the depth of the Keno Hill Quartzite below the Sourdough Formation but further work is recommended. Soil lines should be continued over the remainder of claim block, followed up by prospecting and mapping in Galena Creek canyon. The canyon is the best place to find outcrop and trace northeast trending veins or structures that may cut through the claim block.

### 1.5 Duncan Creek Target

The strongest multi-element anomaly along Duncan Creek is 1km long by 300m in extent. It is located on trend with the fisher Creek Vein but is also situated on an alluvial fan that has transported material downslope from the same vein. For this reason it is unclear if the anomaly is in place or transported or a combination of both. The smaller open ended multi element anomaly at the southern end of the grid along Duncan Creek should be investigated by trenching and the grid should be extended southward.

# 1.6 Satellite Imagery Acquisition

In 2017, Metallic Minerals commissioned high resolution satellite ortho photo coverage for the Keno Silver Project. Following the imagery collection, digital contours (1m, 5m, 10m and 50m) and corrected orthophotos were produced from the satellite images.

The imagery and contours have proven very useful for many purposes. They have been used to locate and measure previous disturbance, as a prospecting tool to locate gossans and veins, as a planning tool for road and drill pad layout and for geological mapping to locate outcrops for fieldwork.

# 2 Introduction

Between May 8 and Sept 7, 2017 fourteen diamond drill holes (DDH) were drilled on the Keno Silver Project. In addition, mapping, prospecting, soil and rock sampling and the collection of satellite imagery were undertaken on the claim blocks listed in the table below. Additional work was conducted on the ground, but since not all of it was filed for assessment credit, it is not included in this report.

Seven separate assessment filing were conducted on portions of the claims which make up the Keno Silver Project within the Keno Silver District. The assessment filings and type of work filed are summarized in the table below. Sections 1-4 of this report include information relevant to all seven filings, while starting in Section 5 work and results on each filing are discussed separately.

Table 1: Filings Covered by Assessment Report

Claim Group	No of claims work	Work Filed	Filing Date
	filed on		
Keno Lightning	626	13 drill holes	December 2017
Silver Queen	20	Prospecting, mapping and	September 2017
		soil sampling	
Murray 11	1	Satellite imagery acquisition	December 2017
Murray 1	3	1 drillhole	December 2017
MMG 18Fr	1	Satellite imagery acquisition	December 2017
Mac/Vancouver	3*	Prospecting and soil	October 2017
		sampling	
Duncan Creek	124	Mapping, prospecting, soil	December 2017
		and rock sampling; satellite	
		imagery acquisition	

<sup>\*</sup>grouping includes Silver Tip owned by Fred Holway

### 2.1 Property Description and Location

#### 2.1.1 Location and Access

The Keno Silver Project included in this report ('the Project') is centered approximately 465 km by road northeast of the city of Whitehorse and 60 km by road northeast of the town of Mayo (Figure 1) and depending upon the location within the claim block, Keno City is located between 4 to 20 km away. Mayo is reached by the Silver Trail Highway, a paved all-weather highway running from Whitehorse to Mayo, where it continues as an unpaved road to Keno City. From Mayo, the highway and subsidiary unpaved roads provide access to a large portion of the Project. The Project is located within the Mayo Mining District.

Keno City has a population of approximately 25 with a snack bar, hotel, cabins for rent, a small mining oriented labour force and some local heavy equipment availability. The town of Mayo is the main service and supply center for the region. It has a population of approximately 400 and has a gravel airstrip suitable for medium sized aircraft (DC-3, etc.) and a helicopter base. As of July 2018 facilities

include a police station, nursing station, grocery store, hotels, restaurant, and fuel supply. Some heavy equipment is available for contract mining work.

The Project covers parts of NTS map sheets 115M/13, 115M/14, and 115M/15, and is centered approximately at 63°54'N latitude and 135°18'W longitude. The Project is on Crown land, entirely within the traditional territories of the First Nation of Na-cho Nyak Dun which has a settled land claim with the Yukon Territorial Government and the Federal Government.

**Figure 1: Keno Silver Project Location** 

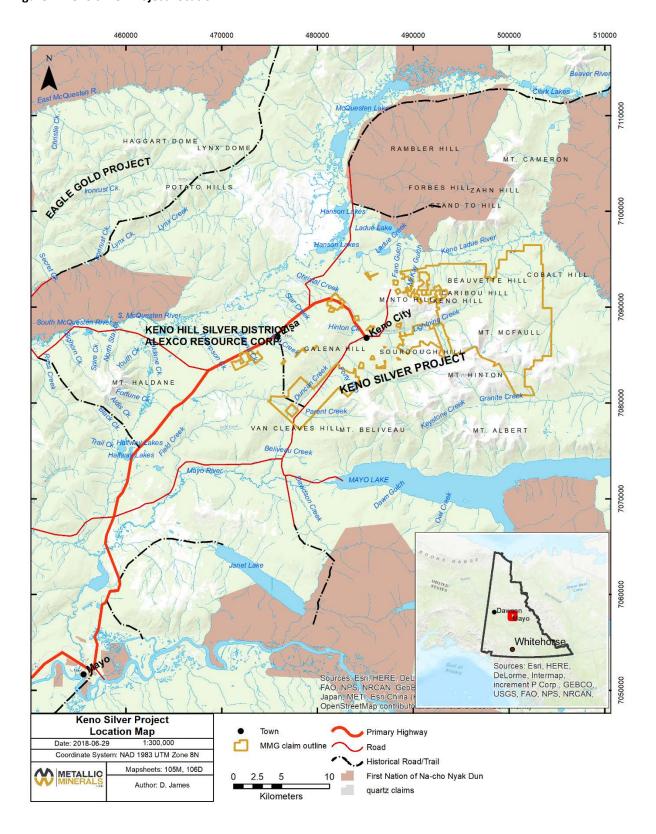
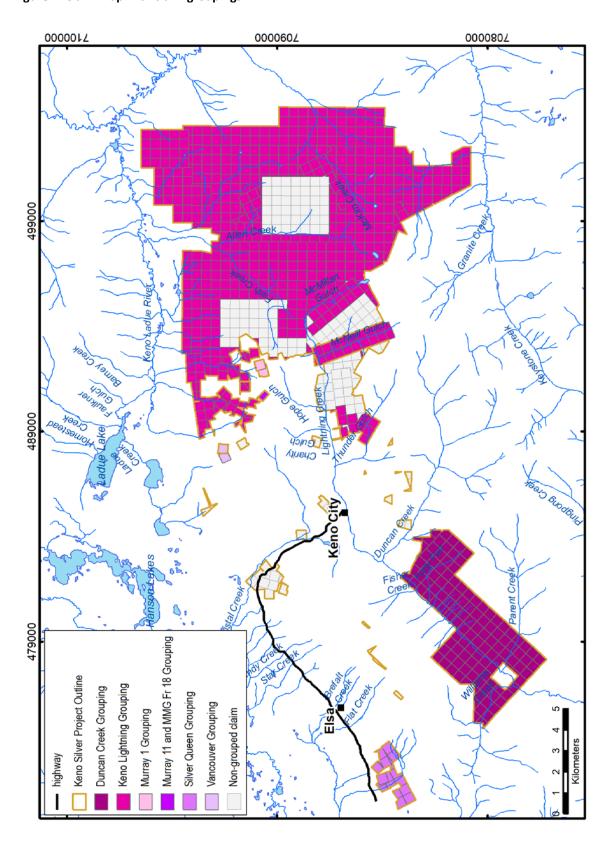


Figure 2: Claim map with claim groupings



#### 2.1.2 Claims and Claim Status

A total of 14 drill holes were filed for assessment work on the project. **Table 2** below summarizes the location of the drill hole and the respective filing. **Table 3** and **Table 4** summarize how the work done on these claims is being applied to the claims listed.

Table 2: Diamond Drill holes utilized for assessment filing

Filing	Claim ID	Hole ID	Max Depth (m)	Date Started	Date Completed
Keno-Lightning	Homestake 2	HS17-023	62.00	08/23/17	08/25/17
Keno-Lightning	Homestake 2	HS17-024	113.00	08/25/17	08/27/17
Keno-Lightning	Homestake 12	HS17-025	89.00	08/28/17	08/30/17
Keno-Lightning	Homestake 12	HS17-026	65.00	08/30/17	09/02/17
Keno-Lightning	Homestake 12	HS17-027	125.00	09/02/17	09/05/17
Keno-Lightning	Homestake 12	HS17-028	119.00	09/05/17	09/07/17
Keno-Lightning	Murray 3	CH17-021	80.00	08/04/07	08/06/17
Keno-Lightning	Murray 3	CH17-022	14.00	08/06/17	08/07/17
Keno-Lightning	Murray 3	Ch-17-023	80.00	08/08/07	08/09/17
Keno-Lightning	Murray 3	CH17-024	131.00	08/10/17	08/12/17
Keno-Lightning	Murray 3	CH17-025	80.00	08/12/17	08/13/17
Keno-Lightning	Murray 3	CH17-026	65.00	08/14/17	08/15/17
Keno-Lightning	Murray 3	CH17-027	86.00	08/15/17	08/16/17
Murray 1	Murray 1	CH17-028	211.00	08/17/17	08/22/17

Soil sampling, mapping, and prospecting were undertaken and utilized for assessment filings for Silver Queen, Vancouver/Mac and Duncan Creek. Table 5-7 summarize how the work on these claims is being applied to the claims listed. Drone imagery acquisition was utilized for filing on Murray 11 and MMG 18 Fr; this is summarized in Table 8.

Table 3: Keno-Lightning Filing (from drilling)

Claim Name	<b>Grant No</b>	No. of claims	<b>Current Expiry</b>	Renewal Period	New Expiry	Owner
Aho 001-017	YC57784-800	17	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Aho 018-20	YC67501-503	3	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Aho 021-030	YD11271-280	10	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Aho 031-042	YD11289-300	12	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Aho 043-054	YD22789-800	12	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Aho 055-056	YD11281-282	2	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Blanche	YC00365	1	1-Dec-23	1.00	1-Dec-24	Metallic Minerals 50%; R. Moriarity 50%
Blanche Fr	YF46472	1	1-Dec-23	1.00	1-Dec-24	Metallic Minerals
Homestake 001-002	YC38987-988	2	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Homestake 003-005	YC38989-991	3	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Homestake 038	YC57032	1	2-Aug-21	3.50	1-Dec-24	Metallic Minerals
Homestake 040	YC68018	1	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Horn Silver	59334	1	3-Aug-22	2.50	1-Dec-24	Metallic Minerals
HS 001-005	YD34912-16	5	1-Dec-20	4.00	1-Dec-24	Metallic Minerals
Isabel	59029	1	21-Aug-18	3.50	1-Dec-21	Metallic Minerals
Isabel 002	62326	1	21-Aug-18	3.50	1-Dec-21	Metallic Minerals
Isabel 003-004	62993-994	2	21-Aug-18	3.50	1-Dec-21	Metallic Minerals
Livi 001-011	YE55981 -991	11	8-May-18	3.75	1-Dec-21	Metallic Minerals
Livi 012-160	YF57312-460	149	8-May-18	3.75	1-Dec-21	Metallic Minerals
Livi 161-211	YF57461-511	51	26-Jul-18	3.50	1-Dec-21	Metallic Minerals
Livi 212-239	YE10712-739	18	26-Jul-18	3.50	1-Dec-21	Metallic Minerals
Louis 001-021	YF46473-493	21	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Louis 022	YF46494	1	1-Dec-23	1.00	1-Dec-24	Metallic Minerals
Louis 023	YF46495	1	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Louis 024	YF46496	1	1-Dec-22	1.00	1-Dec-24	Metallic Minerals
		1				
Louis 025	YF46497	3	1-Dec-22 1-Dec-23	2.00	1-Dec-24	Metallic Minerals
Louis 026-028	YF46498-500			1.00	1-Dec-24	Metallic Minerals
M 041-044	YE41541-544	36	17-Jun-18	3.50	1-Dec-21	Metallic Minerals
M 053-088	YE41553-588	36	17-Jun-18	3.50	1-Dec-21	Metallic Minerals
M Fr. 045-051	YE41545-551	7	17-Jun-18	3.50	1-Dec-21	Metallic Minerals
Maja 001-008	YC38992-999	8	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Maja 009-013	YC39004-008	5	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
MMG 001Fr	YE55801	1	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
MMG 002 Fr	YE55802	1	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
MMG 003	YE55803	1	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
MMG 004	YE55804	1	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
MMG 007-011	YE55807-811	5	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
MMG 154-180	YE55954-980	27	3-Jan-18	4.00	3-Jan-22	Metallic Minerals
Murray 003	YC39002	1	1-Dec-23	1.00	1-Dec-24	Metallic Minerals
Murray 004	YC39003	1	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Murray 005-010	YC39963-968	6	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Murray 012-015	YC56160-163	4	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Murray 016-017	YC56164-165	2	1-Dec-20	4.00	1-Dec-24	Metallic Minerals
Silver Basin #7-#8	55466-67	2	3-Aug-22	2.50	1-Dec-24	Metallic Minerals
Ski 001-011	YC39009-019	11	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Ski 049-058	YC56166-175	10	1-Dec-22	2.00	1-Dec-24	Metallic Minerals
Ski 059-090	YC67504-535	32	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Ski 091-184	YC68194-287	94	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Ski 185-190	YC68328-333	6	1-Dec-21	3.00	1-Dec-24	Metallic Minerals
Taf	YC39574	1	2-Aug-18	3.50	1-Dec-21	Metallic Minerals
Teach 001-009	YE70944-952	9	27-Aug-18	3.50	1-Dec-21	Metallic Minerals
Union	12811	1	21-Aug-18	3.50	1-Dec-21	Metallic Minerals
Adam 001-018	YB65184-201	18	1-Dec-20	2.00	1-Dec-22	Cheryl Klippert
	Total Claims	626				

### Table 4: Murray 1 Filing (from drilling)

Claim Name	<b>Grant No</b>	No. of claims	<b>Current Expiry</b>	<b>Renewal Period</b>	<b>New Expiry</b>	Owner
Murray 001=002	YC39000-01	2	1-Dec-19	4.00	1-Dec-23	Metallic Minerals
MMG 6	YE55806	1	22-Dec-17	5.00	22-Dec-22	Metallic Minerals
	Total Claims	3				

#### Table 5: Silver Queen Filing (from prospecting, mapping and soil sampling)

Claim Name	Grant No	No. of claims	<b>Current Expiry</b>	<b>Renewal Period</b>	New Expiry	Owner
Ft	YF52105	1	29-Sep-17	5.00	29-Sep-22	Metallic Minerals
Jack 1-7	YB03908-914	7	9-Oct-17	5.00	9-Oct-22	Metallic Minerals
John 1-11	YB03897-907	11	9-Oct-17	5.00	9-Oct-22	Metallic Minerals
	Total Claims	19				

### Table 6: Vancouver Filing (from prospecting and soil sampling)

Claim Name	<b>Grant No</b>	No. of claims	<b>Current Expiry</b>	<b>Renewal Period</b>	<b>New Expiry</b>	Owner
MacFr	YF52107	1	29-Sep-17	5.00	29-Sep-22	Metallic Minerals
Vancouver Fr	YF52106	1	29-Sep-17	5.00	29-Sep-22	Metallic Minerals
Silver Tip	YA83004	1	19-Dec-17	5.00	19-Dec-22	Metallic Minerals
	Total Claims	3				

#### Table 7: Duncan Creek Filing (from mapping, prospecting, soil and rock sampling and satellite imagery)

Claim Name	<b>Grant No</b>	No. of claims	<b>Current Expiry</b>	<b>Renewal Period</b>	<b>New Expiry</b>	Owner
MMG 030-104	YE55830-904	75	3-Jan-18	2.00	3-Jan-20	Metallic Minerals
MMG 105-153	YE55905-953	49	3-Jan-18	1.00	3-Jan-19	Metallic Minerals
	Total Claims	124				

### Table 8: Murray and MMG 18Fr Filings (from satellite imagery)

Claim Name	<b>Grant No</b>	No. of claims	<b>Current Expiry</b>	<b>Renewal Period</b>	<b>New Expiry</b>	Owner
Murray 11	YC39969	1	13-Oct-21	0.25	1-Dec-21	Metallic Minerals
MMG18Fr	YE58818	1	29-Dec-17	5.00	29-Dec-22	Metallic Minerals
	Total Claims	2				

#### 2.1.3 Climate, Physiography and Vegetation

The Keno-Silver property is in the historic Keno Silver District on the slopes of Galena, Keno, Sourdough, Beauvette, Caribou and Cobalt Hills south of the McQuesten Valley. Elevations within the claim area range from ~550 m ASL to 1,965 m ASL. Landscape in the region is characterized by gentle rolling hills and mountains forming the northern Gustavus Range which is characterized by heavy talus at elevation and spruce-willow dominated vegetation at lower elevations.

Galena, Duncan and Lightning Creeks, the Keno-Ladue River and several un-named tributaries drain the project area. Flora in the area in the area is elevation controlled and includes, high-alpine meadows and lower-elevation slopes vegetated with willow, black spruce and dwarf birch.

Tree line is located near 1300 ASL with upper slopes consisting of alpine tundra with poorly developed soil, talus, grasses and moss cover. Dwarf willows are common in the sheltered areas. Dense stands of black spruce are widespread below tree line with poplar and alder common on south facing slopes and as second growth where the spruce has been burned or logged out.

Outcrop is sparse, except on steeper slopes and knolls, but amounts to less than 1%. The exceptions are gulches and cirque headwalls, particularly on north slopes. In the remining areas the primary source of geological information is float rock that has been frost-heaved through the overburden cover. Below tree line there is extensive glacial till cover which deepens downslope to depths more than 20 m on the floors of the major valleys.

Permafrost is extensive throughout the region reaching depths up to 50 m on Keno Hill, which hampers prospecting in that the frozen ground masks soil geochemical responses from bedrock, transports soil and soil geochemical anomalies downslope by solifluction, and inhibits trenching by hand or machine.

The area has a northern interior climate with warm summers, long cold winters, and light precipitation (average 313 mm annually), one-third of which is snow. The exploration season last from late May until October. Drilling can be conducted in the winter. Summer daily temperatures average 23°C, 9°C at night and winter temperatures average -20°C, -31°C at night. Mayo has the greatest range of annual temperatures in Northern America, with temperatures reaching over 35°C in summer and below -50°C in winter.

# 3 Regional and Property Geology

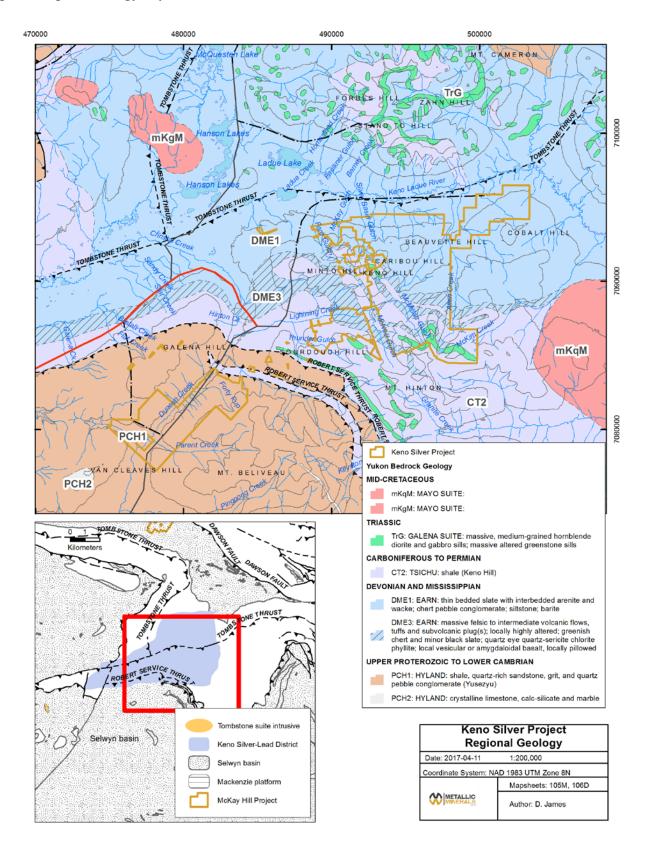
## 3.1 Regional Geology and Tectonic Setting

The Keno Silver District is located within Neoproterozoic to late Paleozoic slope-to-basin facies strata of the epicratonic Selwyn Basin. Selwyn Basin strata are characterized by off-shelf deep water clastic rocks (shale, chert, basinal limestone), and are bound by the Mackenzie Platform, to the northeast and truncated by the Tintina fault to the southwest (Pigage, 2006). See Figure 3.

Northeast directed compression during the Jurassic and early Cretaceous resulted in thrust faulting, the development of open to tight similar folds within relatively incompetent Selwyn Basin strata (compared to the bounding carbonate platforms), and greenschist facies metamorphism. Widespread granitic magmatism during the early to mid-Cretaceous led to the formation of at least five main intrusive suites between 112 and 90 Ma and a younger suite at 65 Ma. Strike-slip faulting along the Tintina Fault zone during the late Cretaceous and early Tertiary displaced the western margin of the Selwyn Basin at least 450 km west into what is now Alaska.

The project is underlain by highly deformed rocks of Mississippian Keno Hill Quartzite and dominantly clastic metasedimentary rocks of the Devono-Mississippian Earn Group, with lesser Mississippian felsic volcanic schist, all of which are intruded by Triassic dolerites (greenstones) and Cretaceous aplite dykes and sills. Deformation of the host rocks, which is characterized by intense foliation, appears to be related to displacement along the Tombstone thrust fault, located northeast of the property. North- to northeast-and northwest-trending faults are evident throughout the area.

Figure 3: Regional Geology Map



#### 3.1.1 Mineralization

Keno Hill type silver deposits consist of high-grade silver veins typically 1-5 metres in width grading from 200 g/t to >5,000 g/t silver, with associated lead and zinc sulphides. The largest individual deposits in the district, which range from 10 million to 100 million ounces of contained silver (Cathro, 2006), are associated with northeast trending, southeast dipping fault/vein structures which form major ore shoots in the preferred host rocks: quartzite and greenstone. To date, there are twelve known mineralized trends in the Keno Hill silver district, eight of which continue through the eastern portion of the district, which hosts Metallic Minerals' Keno Silver Project (see Figure 4 below)

The schematic cross sections shown below (Figures 5-7) show the geology and deposits from 3 of the 12 known mineralized trends in the Keno Hill silver district, ten of which transverse across Metallic Minerals' Keno Silver Project. Figure 5 highlights the major historic producers as well as recent discoveries along the Bermingham – Calumet Trend and provides evidence of Keno-type mineralization occurring where the above-noted geological conditions are present. The major, new high-grade Bermingham discovery demonstrates the potential for significant new finds along trend and down dip from past producing mines in this prolific, historic district.

Lesser explored parts of the district, particularly the eastern portion of the Metallic Minerals ground, have similar geologic settings and host historic producing mines and mineralized prospects with the potential to host significant new mineral resources. Figure 6 and Figure 7 show the continuity of these key structural trends across the eastern portion of the Keno Hill silver district and identify former operations which represent priority exploration targets.

>10 Moz Producer/Resource Historic Production Ag oz/t Ag g/t 744.3 25,455 305.8 Vanguard 10,458 177.1 6,057 Caribou Hill 12 Known Mineralized Trends Silver Basin 167.8 5,739 Formo (Yukeno) 148.9 5,092 10 of which traverse MMG land Cobalt Hill Past Po Hyland Group (Upper Schist) sediments Galena Suite Greenstone Alexco Keno Hill Quartzite - Soundough Member MMG Keno Hill Basal Quartz te Earn Group (Lower Schist) phyllits

Figure 4: Keno Hill Silver District Geological Trends and Deposits

Figure 5: Bermingham-Calumet Trend

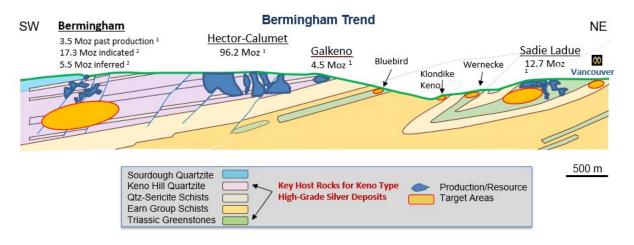


Figure 6: Silver Queen-Elsa-Formo Trend

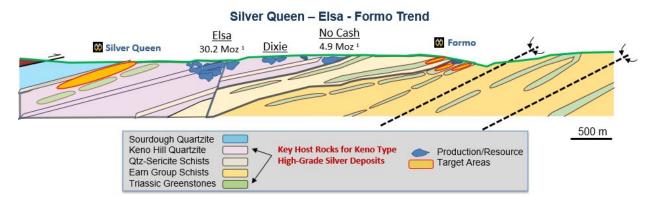
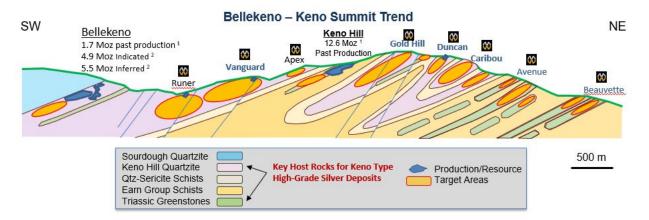


Figure 7: Bellekeno-Keno Summit Trend



## 3.2 Keno Silver Property Geology & Mineralization

Locally, stratigraphy within the Keno mining camp has been divided into three units; the Upper Proterozoic to Lower Cambrian Hyland Group (often called Upper Schist), Mississippian Keno Hill Quartzite (Central Quartzite) and Devono-Mississippian Earn Group (Lower Schist). The Hyland Group comprises graphitic schist and phyllite, thin bedded quartzite, quartz-mica schist, calcareous schist and minor limestone, and quartz-sericite metavolcanic schist. It was thrust over the Keno Hill Quartzite during Jurassic and early Cretaceous compression along the Robert Service Thrust (Figure 8).

The Keno Hill Quartzite contains thick and thin-bedded quartzite, massive quartzite, minor graphitic phyllite, schist and calcareous schist. This unit is up to 700m in thickness and hosts many of the principal silver deposits of the camp. In the Keno Hill District it is divided into two units; the upper Sourdough Member and the lower Basal Quartzite. The latter is the more productive of the two units and on the Project is thickest at Homestake, with narrower bands underlying the Silver Basin, Caribou, Faith and Duncan areas. The Earn Group includes graphitic schist and phyllite, argillite, thin-bedded quartzite, calcareous schist, slate and sericite schist and two bands of thick and thin-bedded quartzite with lesser phyllite and graphitic schist. The stratigraphy principally strikes east-west and dips 20° to 30° south. Metamorphosed diorite and gabbro (greenstone) sills and lenses are conformable with stratigraphy.

Silver mineralization is the dominant economic target in the district, but around the periphery of the silver deposits and in the overlying Hyland Group rocks, gold +/- silver, tungsten, and tin deposits are the targets.

Silver mineralization in the Keno district is representative of clastic metasediment hosted silver-lead-zinc enriched polymetallic vein deposits, examples of which include the Coeur d'Alene district of Idaho and the Freiberg district of Germany. Typically, mineralization is expressed as quartz-carbonate (siderite±ankerite, calcite)-sulfide (sphalerite, galena, pyrite, tetrahedrite-tennantite, chalcopyrite, arsenopyrite, stibnite) veins, with silver minerals most commonly hosted as inclusions in galena. Wall-rock alteration, which generally consists of sericitization, silicification and pyritization, is typically of limited extent (< 1 m). Regional faults, fault sets and fractures are an important ore control, although veins are typically associated with second order structures and postdate deformation and metamorphism. Significant deposits are restricted to competent lithologies.

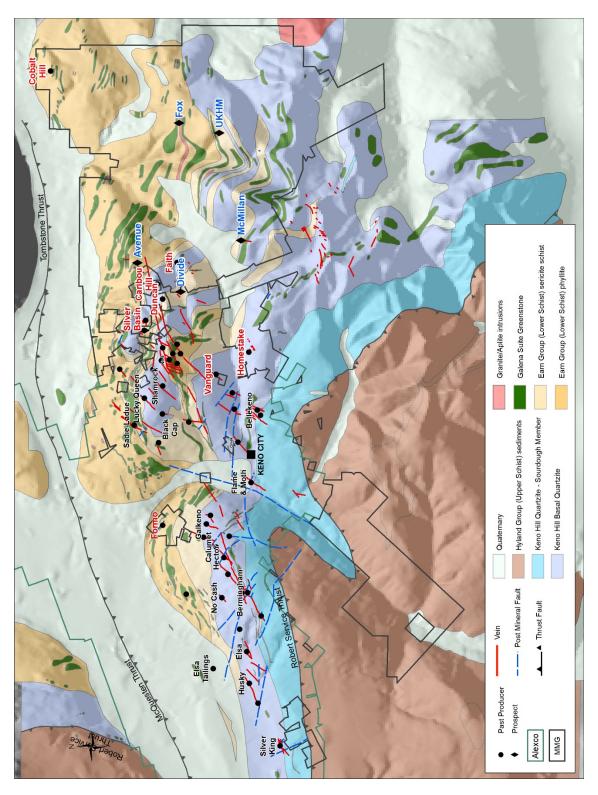
Two stages of vein mineralization have been recognized in the district. The first stage deposited quartz, pyrite and some arsenopyrite with trace gold and some sulphosalts in the vein faults. A second stage deposited siderite, galena, sphalerite, pyrite, freibergite and pyrargyrite, more typical in the central part of the Keno Hill district

Within the Keno Hill district, silver mineralization is hosted by two sets of vein faults; longitudinal veins, which strike between 035° and 080° and transverse veins, which strike between 000° and 035°. Both sets dip between 50° and 80° to the southeast. Longitudinal veins were the main producers of silver in the Keno camp, and have significant strike extent, whereas transverse veins represent dilational zones between en-echelon longitudinal faults and are generally limited in strike but locally contain very high grades.

Gold mineralization is hosted within quartz-arsenopyrite veins in quartzite and schist and is interpreted to be associated with the emplacement of Cretaceous-age Tombstone suite granitoid intrusions. This style of mineralization is characteristic of intrusion related gold systems (IRGS) and is found elsewhere in the

Tintina gold belt. In the overlying Hyland Group, gold mineralization is associated with limey beds, aplite dykes and appears to follow the same northeast trending structures as the silver veins.

Figure 8: District Geology Map



# 4 Work History

### 4.1 Keno Hill Silver District

The legendary Keno Hill Camp in the Yukon Territory was host to Canada's second largest primary silver producer and one of the richest Ag-Pb-Zn vein deposits ever mined in the world. Following a small amount of hand mining between 1913 and 1917, larger scale production was almost continuous from 1919 to 1989 with over 200 million ounces of silver produced at an average grade of 1373 grams per tonne. The district continues to host some of the highest silver grades in the world. In their 2017 Preliminary Economic Assessment, Alexco Resources estimate an average production grade of 843 grams per tonne (www.alexcoresources.com).

Keno Hill produced more wealth than the Klondike, one of the richest placer gold districts in the world and became one of the mainstays of the Yukon economy from the 1920s to 1960s, following the end of the gold rush. Larger scale and mechanized production was virtually continuous from 1919 to 1989, with Treadwell Yukon Corp. Ltd. and United Keno Hill Mines Ltd. (UKHM) producing most of ore. Both companies went bankrupt due to a period of sustained low silver prices.

In 2006, Alexco Resource Corp purchased the United Keno Hill Mines claims, which encompassed the western portion of the district, and commenced exploration which initially focused on the area associated with the Bellekeno Mine. Work on additional project areas since that time has established an overall life of mine production profile consisting of 1,021,000 tonnes grading 843g/t Ag, 3.31% Pb and 4.2% Zn (www.alexcoresources.com).

The eastern portion of the district (Keno Hill, Caribou Hill and Cobalt Hill), which hosted eight former producing mines and five with the highest-grade, was never acquired by UKHM, but remained held by numerous, disparate private groups and families who maintained their claims in good standing for decades. Metallic Minerals has consolidated most of this area and currently holds the second largest land package in the district at 166 square kilometres.

Although staked for its silver mineralization, the Keno Hill district is located within the Tintina gold belt, a zone of gold deposits associated with Cretaceous Tombstone suite granitic intrusions. Significant deposits hosted within the Tintina gold belt include Victoria Gold's nearby Eagle Gold & Dublin Gulch, and Golden Predator's Brewery Creek, in addition to numerous prospects including Gold Dome, Clear Creek and Red Mountain and others.

# 4.2 History of the Keno Hill Silver District

1898	Placer gold discovery in Duncan Creek brought prospectors from the Klondike goldfields.	
1902	Mayo township established	
1903	Argentiferous galena discovered at Silver King and mined 1913-1917.	

1918	Argentiferous galena discovered on Keno Hill	
1919	Keno Hill Ltd staked claims on Keno Hill. Grades had to be more than 125 oz/t to	
	be economic, cost of horse transport to Mayo the same as to smelters in US.	
1920	Keno City established.	
1921	Treadwell Yukon Company acquired claims at Sadie Ladue on Keno Hill.	
1925	Treadwell established mill at Sadie Ladue. Bulldozers significantly reduced the cost	
	of ore haulage.	
1927	Treadwell acquired Lucky Queen high grade mine	
1932	All operations suspended during Depression	
1934	Treadwell Yukon acquired all the Keno Hill Ltd properties.	
	The same of the sa	
1924	Elsa vein discovered on Galena Hill, re-opening of Silver King and discovery of	
	Hector–Calumet, and optioned by Treadwell Yukon.	
1935	Mill moved to Elsa and mining continued until 1941 when all work ceased and	
	equipment was sold to US Army for construction of Alaska Highway during World	
	War II. Livingstone Wernecke had led Yukon Treadwell and produced 44 Moz	
	silver with 80% milled at 60 oz/t and 20% hand-sorted at 340 oz/t. 60% of	
	production came from Keno Hill.	
	F	
1946	Treadwell Yukon assets purchased by Keno Hill Mining Company, later named	
	United Keno Hill Mines (UKHM), and mill began re-operating. Power was	
	generated from coal mine purchased in Carmacks, and transport was improved by	
	the government building the Whitehorse – Mayo road.	
1951	New discoveries at Hector-Calumet led to construction of a town and a new mill	
	built at Elsa, with power supplied from a new hydro plant in Mayo. UKHM's	
	success bought new companies to the district and another mill was built at	
	Mackeno near Christal Lake.	
1950	Zinc recovery became economic.	
1963	New exploration	
1970	Discovery of the Husky deposit just as the Hector-Calumet was closing.	
1972	Husky Mine commenced production.	
	,	
1977	Economics became uncertain due to fluctuations in silver price, open pit mining	
	commenced unsuccessfully.	
1982 -	Small scale tribute mining continued until UKHM closed.	
1989		
1990 -	Dominion Mineral Resources and Sterling Frontier Properties acquired 32% of	
1998	UKHM, conducted exploration but were unsuccessful in reopening mines; rights	
	reverted to UKHM but environmental liabilities and site maintenance drove UKHM	
	bankrupt. Federal government inherited assets.	
2006	Alexco Resource Corp purchased the UKHM property.	
2010	Metallic Minerals predecessor Monster Mining acquired Keno Hill claims.	
	and a second sec	1

2017	Metallic Minerals added to its land position, nearly tripling its total Keno Hill Silver	
	District holdings to 166 square kilometres.	

At peak in 1960's UKHM had 600 employees, and with families, supported about 20% of the Yukon population. The operation also kept the White Pass Railway going and was responsible for the development of the Mayo airport.

# 5 2018 Exploration - Caribou and Duncan Targets

The Caribou and Duncan Targets are part of the Keno-Lightning and Murray 1 filings (see Figure 9). Between August 6 and August 22, 207, 8 diamond drill holes totaling 747m were completed on these targets by one diamond drill rig. Other work was done in this area, but only the drilling is discussed because it is the only work filed.

Table 9: Caribou and Duncan Drill Holes

Filing	Claim ID	Hole ID	Max Depth (m)	Date Started	Date Completed
Keno-Lightning	Murray 3	CH17-021	80.00	08/04/07	08/06/17
Keno-Lightning	Murray 3	CH17-022	14.00	08/06/17	08/07/17
Keno-Lightning	Murray 3	Ch-17-023	80.00	08/08/07	08/09/17
Keno-Lightning	Murray 3	CH17-024	131.00	08/10/17	08/12/17
Keno-Lightning	Murray 3	CH17-025	80.00	08/12/17	08/13/17
Keno-Lightning	Murray 3	CH17-026	65.00	08/14/17	08/15/17
Keno-Lightning	Murray 3	CH17-027	86.00	08/15/17	08/16/17
Murray 1	Murray 1	CH17-028	211.00	08/17/17	08/22/17

The diamond drilling contractor was New Age Drilling Solutions Inc. of Whitehorse who drilled with a Zinex A5 core drill using HQ core size. A 230 excavator and 2 D7 bulldozers were used to build drill sites and access roads as well as to move the drills. Equipment was provided on contract from J & B Contracting of Mayo, Yukon.

The co-ordinates for the drill holes are listed in Table 10 and the locations shown in Figure 10. Drill logs are in Appendix 1.

Table 10: Caribou and Duncan Drill Coordinates (NAD 83, UTM Z8)

Hole ID	Easting	Northing	Elevation	Total Depth (m)	UTM Azimuth	Dip°
CH17-021	492872	7091172	1801	80	275	-70
CH17-022	492865	7091116	1794	14	275	-70
CH17-023	492865	7091116	1794	80	275	-70
CH17-024	492862	7091061	1806	131	260	-70
CH17-025	492854	7090961	1784	80	275	-70
CH17-026	492870	7091170	1801	65	0	-90
CH17-027	492867	7091116	1794	86.0	0	-90
CH17-028	492086	7090704	1704	211	305	-70

Figure 9: Caribou and Duncan Claims and Showings

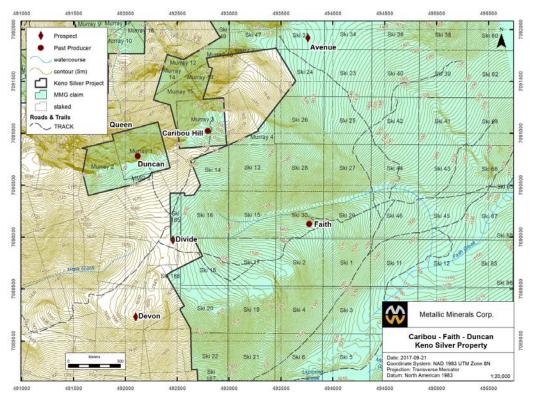
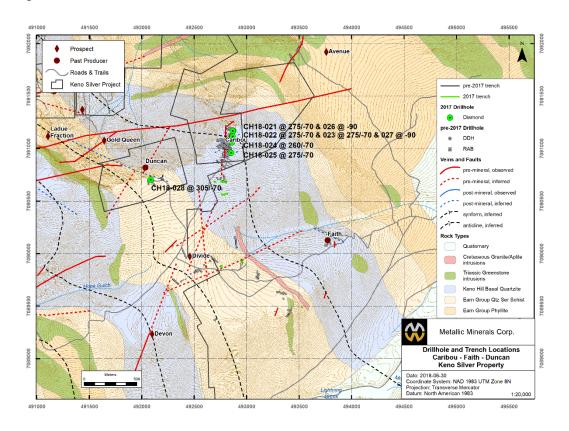


Figure 10: Caribou and Duncan 2017 Drill Hole Locations



The drill core from all holes was cleaned, photographed and measured for core recovery and RQD. The core was logged and marked by the logging geologist for sampling by sawing or splitting. Sample intervals were chosen based on changes in mineralization, alteration and lithology. Each sample was split with one half of the core being sent for analysis and the other half returned to the core box for future reference and/or resampling. The core boxes are stored at Homestake in core racks.

All sample batches included commercial standards and limestone blanks which were inserted at the geologists' discretion.

Analytical work in 2017 was done by Bureau Veritas (BV) Commodities Canada Ltd. with sample preparation in Whitehorse, Yukon and geochemical analysis in Vancouver, British Columbia. Samples were transported by company vehicle to the BV preparation facility in Whitehorse. From there, the pulps were shipped to Vancouver for analysis.

A 30g split of each crushed, sieved, and split sample was analyzed for 36 elements using an Aqua Regia digestion with inductively coupled plasma-atomic emission spectroscopy (ICP-AES) and inductively coupled Plasma-mass spectrometry (ICP-MS) (method AQ202). Samples with over limit silver and gold were re-analyzed using a 30-gram fire assay fusion with a gravimetric finish (FA530-Ag, Au). Over-limit lead and zinc samples were analyzed by multi-acid digestion and atomic absorption spectrometry (MA404) or titration (GC516, GC8917). All results have passed the QAQC screening by the lab.

#### 5.1 Drill Hole Summaries

#### 5.1.1 Caribou Hill CH17-021 to CH17-027

Six holes were drilled on the east side of the Caribou Vein behind and deeper than previous drilling. The purpose of the holes was to intersect the vein in a thick section of competent quartzite below the schist contact. Previous drilling had intersected the vein in schists and phyllites above the contact.

#### CH17-021, 026

These holes were drilled from the same pad. CH17-026 was drilled vertically hole behind and deeper than CH17-021. Both holes were mostly in schist, with competent quartzite around the intersection. CH17-021 intersected the Caribou Vein from 39.35-42.0m. From 39.35-39.8 the vein was composed of banded, fine grained galena, and from 39.8-42m brecciated quartzite and vein material with galena, lesser pyrite and sphalerite. CH17-026 intersected the Caribou Vein from 48.62 to 50.85m. The vein was a partially oxidized, brecciated quartzite with 2% blebby galena. In both holes the intersections were of a similar width (2.65 and 2.23m) but were higher grade in 021.

#### CH17-022 and 023, 027

These 3 holes were drilled off the same pad. Hole CH17-022 was stopped at 14m due to drilling difficulties. The drill was moved over and CH17-023 was drilled parallel. No samples were collected from 022. CH17-027 was drilled vertically behind and deeper than 023. CH17-023 intercepted a brecciated and strongly oxidized Caribou Vein from 40.6-42.4. From 40.7-41.5m the mineralization is semi-massive galena veins, transitioning into locally massive acanthite-stephanite over 12 cm. CH17-027 was a vertical hole targeting a deeper intersection than CH17-023. It intersected the Caribou Vein in the form of brecciated quartzite from 51.66 to 53.55m and a foliated quartzite with pyrite veins from 53.5 to 56.0m. 027 has the lowest grade intersection in all elements of interest except for zinc, where it had the highest grade of 6.58%.

#### CH17-024

Hole CH17-024 intersected brecciated veins with quartz clasts cemented with limonite and manganese oxides at 52.85 - 53.0 and 54.4 - 55m. The deeper intersection appears to be the Caribou Vein and produced higher grades although values were lower than in all holes except 027.

#### CH17-025

CH17-025 did not have a definitive intersection with the Caribou Vein, instead three mineralized intervals were intersected. The third and lowest interval had the highest values and is assumed to be the Caribou Vein.

- 1. 31.05-31.15m a fault breccia with no sulphides or other mineralization.
- 2. 45.3-45.7m fault gouge with brecciated quartzite.
- 3. 53.15-54.9m a folded quartz vein with arsenopyrite and lesser pyrite fill. Possible scorodite coating in lower 30cm of interval.

The results show that the Caribou target is a classic Keno-type high-grade system with bonanza grades, such as hole CH017-023, which intercepted 1.6 meters grading 2,851 g/t silver equivalent (1,405 Ag g/t, 26% Pb, 3.7% Zinc and 0.28 g/t Au), and that the system is open to further expansion down dip to the north and south. Results for the 2017 drilling are included in Table 11. Figures 11-14 show a plan map and subsequent cross and long sections through the Caribou Target.

**Table 11: Caribou 2017 Results** 

Hole	From (m)	To (m)	Width (m)	Ag g/t	Pb %	Zn %	Au g/t	Ag EQ g/t
CH17-021	39.35	42.0	2.65	407	3.39	6.35	0.834	972
including	39.35	39.80	0.45	1,607	15.47	1.70	0.759	2,487
	39.80	40.85	1.05	194	0.94	9.95	0.718	827
	40.85	42.00	1.15	132	0.89	4.89	0.971	512
CH017-23	40.7	42.3	1.6	1,405	25.98	3.72	0.282	2,851
including	40.70	41.50	0.80	2,408	47.30	4.69	0.108	4,898
	41.50	42.30	0.80	402	4.65	2.74	0.456	804
CH17-024	54.40	55.00	0.60	15.2	0.06	0.42	0.380	70
CH17-025	53.15	55.2	2.05	52.3	0.44	0.02	0.125	84
including	54.9	55.2	0.3	247	1.38	0.09	0.331	343
CH17-026	48.62	50.85	2.23	59.1	0.82	4.99	0.960	440
including	49.90	50.85	0.95	104	1.55	9.76	1.641	828
CH17-027	51.66	54.43	2.77	0.07	0.49	6.58	0.412	57

Silver Equivalent (Ag Eq g/t) values assume Ag \$16/oz, Pb \$1.10/lb, Zn \$1.25/lb, Au \$1,250/oz, and 100% recovery. Widths believed to approximate true width.

Figure 11: 2017 Caribou Section Locations

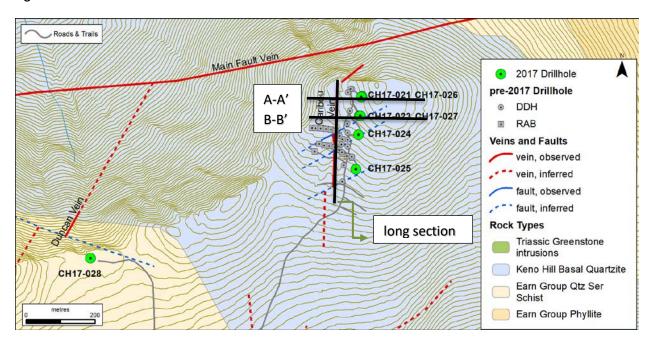


Figure 12: Caribou Cross Section A-A'

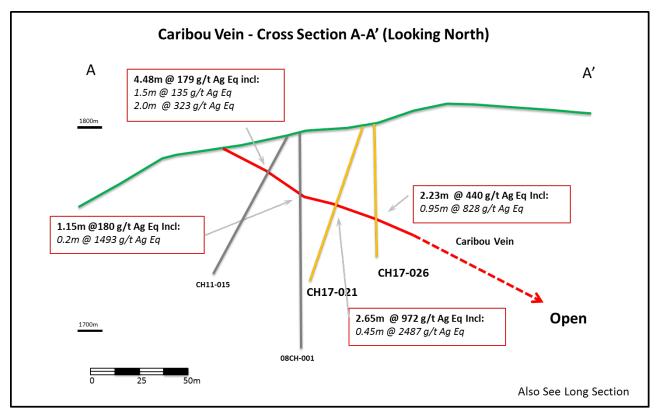
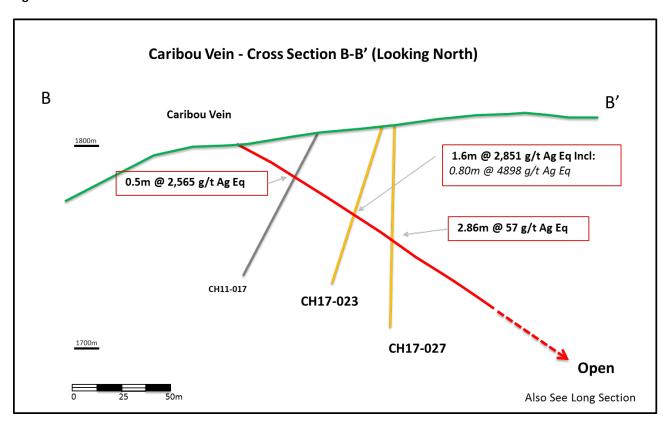


Figure 13: Caribou Cross Section B-B'



Caribou Vein Long Section Caribou Hill Looking West (34° dip / 110° dip-direction) Ag Equivalent **Grade Contours**  0 - 300 g/t
 301 - 800 g/t CH17-021 CH17-023 >801 g/t 2017 Drill Intercent CH17-026 CH17-02 CH17-025 Open Open Open

Figure 14: Caribou Vein Long Section

#### 5.1.2 Duncan CH17-028

One hole was drilled at the Duncan target that intersected three mineralized structural zones within Keno Hill quartzite, down dip from the historic mine confirming the presence of the main structural corridor. The first known drill hole on the target was drilled from the plateau south of the prospect. This down dip test confirmed the presence of a broad window of prospective quartzite and intersected three anomalously mineralized structural zones within the Keno Hill quartzite ending in 70 g/t silver equivalent material. Drilling difficulties limited the further continuation of the hole, falling short of testing the full quartzite package. However, these results confirm the presence of the Duncan target structure, which may have up to 200 vertical meters of Keno Hill Quartzite host rock positioned down dip from the high-grade Duncan shaft.

Mineralization is present between 160-163 m down hole and consists of oxidized stockwork veining transitioning to a massive schistose quartzite breccia with limonitic cement in 5 cm wide intervals. Trace galena is present. The highest result from this section was the breccia with 0.30% Zn and anomalous silver and lead. At 177.40 - 179.0m a mineralized aplite ran 0.19% Pb, 0.1% Zn, and 20.8 ppm Ag. The highest results were from 189.8 - 190m where galena in a deformed quartz-carbonate vein ran 0.6% Pb, 0.5% Zn, 0.9% Mn and 16.9 ppm Ag.

# 6 Homestake Target

The Homestake ground was part of the Keno-Lightning filing (see Figure 15). Between August 25 and September 7, 2017, 6 diamond drill holes totaling 576m were completed on the Homestake ground by one diamond drill rig.

**Table 12: Homestake Drill Holes** 

Filing	Claim ID	Hole ID	Max Depth	Date Started	Date
			(m)		Completed
Keno-Lightning	Homestake 2	HS17-023	62.00	08/23/17	08/25/17
Keno-Lightning	Homestake 2	HS17-024	116.00	08/25/17	08/27/17
Keno-Lightning	Homestake 12	HS17-025	89.00	08/28/17	08/30/17
Keno-Lightning	Homestake 12	HS17-026	65.00	08/30/17	09/02/17
Keno-Lightning	Homestake 12	HS17-027	125.00	09/02/17	09/05/17
Keno-Lightning	Homestake 12	HS17-028	119.00	09/05/17	09/07/17

The diamond drilling contractor was New Age Drilling Solutions Inc. of Whitehorse who drilled with a Zinex A5 core drill using HQ core size. A 230 excavator and 2 D7 bulldozers were used to build drill sites and access roads as well as to move the drills. Equipment was provided on contract from J&B Contracting of Mayo, Yukon.

The co-ordinates for the reported drill holes are listed in Table 13 and the locations shown in Figure 16. Drill logs are in Appendix 1.

**Table 13: Homestake Drill Coordinates** 

Hole ID	Easting	Northing	Elevation	Total Depth (m)	UTM Azimuth	Dip <sup>o</sup>
HS17-023	490120	7086808	1396	62	330	-60
HS17-024	490120	7086808	1396	113	330	-75
HS17-025	490344	7087031	1302	89	325	-60
HS17-026	490344	7087031	1302	65	145	-46
HS17-027	490344	7087031	1302	125	0	-90
HS17-028	490488	7087008	1302	119	285	-70

The drill core from all holes was cleaned, photographed and measured for core recovery and RQD. The core was logged and marked by the logging geologist for sampling by sawing or splitting. Sample intervals were chosen based on changes in mineralization, alteration and lithology. Each sample was split with one half of the core being sent for analysis and the other half returned to the core box for future reference and/or resampling. The core boxes are stored at Homestake in core racks.

All sample batches included commercial standards and limestone blanks which were inserted at the geologists' discretion.

Analytical work in 2017 was done by Bureau Veritas Commodities Canada Ltd. with sample preparation in Whitehorse, Yukon and geochemical analysis in Vancouver, British Columbia. Samples were transported by

company vehicle to the BV preparation facility in Whitehorse. From there, the pulps were shipped to Vancouver for analysis.

A 30g split of each crushed, sieved, and split sample was analyzed for 36 elements using an Aqua Regia digestion with inductively coupled plasma-atomic emission spectroscopy (ICP-AES) and inductively coupled Plasma-mass spectrometry (ICP-MS) (method AQ202). Samples with over limit silver and gold were re-analyzed using a 30-gram fire assay fusion with a gravimetric finish (FA530-Ag, Au). Over-limit lead and zinc samples were analyzed by multi-acid digestion and atomic absorption spectrometry (MA404) or titration (GC516, GC8917). All results have passed the QAQC screening by the lab.

Figure 15: Homestake Claims

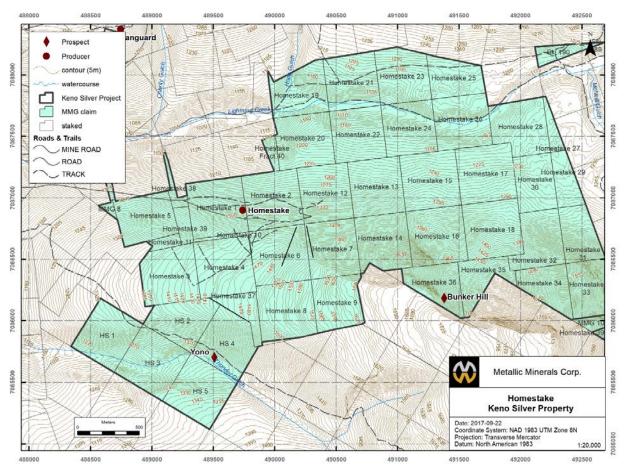
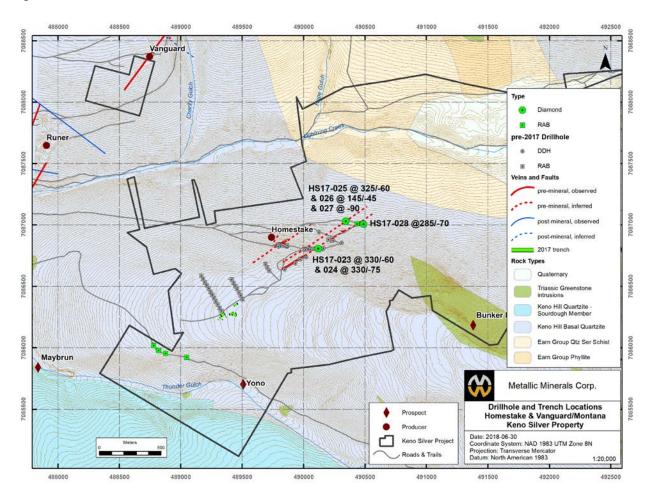


Figure 16: Homestake Drill Hole Locations



#### 6.1 Drill Hole Summaries

#### 6.1.1 Homestake HS17-023 to HS17-028

All Homestake holes are discussed, although the filing was only done on HS17-025, -026 and -027.

HS17-023 and 024 were scissor holes drilled off the same pad on the Upper Homestake Veins. The purpose of the holes was to test a gap in historic drilling. HS17-023 at 60° intersected a vein from 27.65-29.15m with 21.2 g/t silver, 0.29 g/t gold, 0.19% Pb and anomalous copper and zinc. Recovery was poor at 62%. The steeper hole HS17-024 drilled at -75° intersected 8 g/t Ag, 2.46 g/t Au, 0.11% Pb and 0.15% Zn from 31.86 to 33.14m. Average recovery was 77%, better than 023. The intersection was iron stained, massive quartz veins with a gouge at the downhole end. Manganese staining present on fractures. No sulphides noted in the log.

HS17-025, 026 and 027 were step out holes drilled from the same pad to test the Upper Homestake Veins in an area with no previous drilling, 200m northwest of historic holes. The holes successfully intersected the Homestake Veins in their projected location. HS17-028 was drilled a further 200m each of these holes.

HS17-025 encountered major drilling issues probably due to drilling down slope, as there is extensive felsenmeer cover on the north facing slopes. Hole HS17-025 intercepted two, potentially three mineralization types:

- 1. Breccia zones in quartzite consisting of semi-massive limonite and oxides with subrounded 2-20 mm clasts. Trace galena and sphalerite observed. Poor recovery in those intervals. The best result from this type of mineralization was 11 g/t Ag, 0.21% Pb from 62.9-63.9m. These are the silver bearing Keno Hill veins.
- 2. Quartz-arsenopyrite +/-galena veins in a brittle stockwork, with veins less than 10 cm wide and mostly oriented 15 degrees to core axis. No oxides present. The best result in the hole was from one of these zones at 54.1-54.6 with 3.8 g/t Ag and 0.217g/t Au. This could be an example of the early quartz veins found in the Keno District which often carry higher gold grades.
- 3. The third type consists of fault gouge and breccia hosted in quartzite with ground 10-20 cm wide, foliation-parallel quartz-limonite veins. Dark grey coloured, the rock is seemingly dense and might contain sulphides.

HS17-026 was drilled at a shallow angle (45°) and encountered difficult drilling conditions due to the shallow angle. Recovery was poor, averaging 33% over the entire hole. No samples were collected.

Hole 17-027 intersected silver + lead (+/- Zn and Cu ) veins at 74.64-75.6, and from 76.48-77.5 and 80-82. Zinc values increased from 0.06% to 0.23% while Pb decreased from 6.3% down to 0.202% and Cu decreased from 0.03% to 0.007%.

HS17-028 had higher gold values than silver. In 5 intervals from 101 down to 119 the hole intersected gold grades in the 0.150-1.905 g/t range. An increase in gold and zinc values in the last 19m of the hole suggests that it was close to an intersection with a vein but was stopped short.

Significant results for the 2017 drilling are included in Table 14. Figure 17 and 18 show plans and long sections through the Homestake Veins.

**Table 14: Homestake Highlighted Drill Results** 

HOLE-ID	Vein#	From	То	Interval	Ag	Pb	Zn	Au
		(m)	(m)	(m)	(g/t)	(%)	(%)	(g/t)
HS17-024	HS2	31.86	33.14	1.28	8	0.11	0.15	2.460
Incl.		32.69	33.14	0.45	16	0.18	0.12	6.600
HS17-027	HS1	74.64	75.60	0.96	207	3.62	0.09	0.002
Incl.		74.64	75.13	0.49	364	6.30	0.06	0.004
and		76.48	77.50	1.02	569	1.02	0.03	0.010

Figure 17: Homestake Selected Results

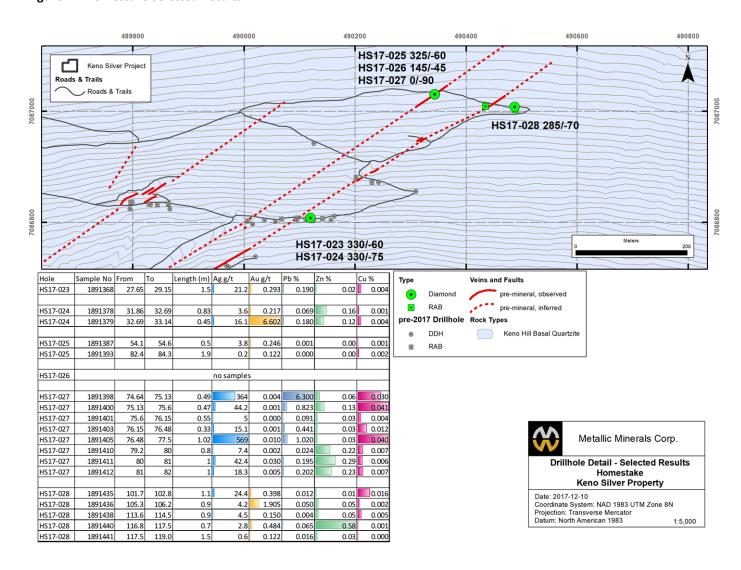
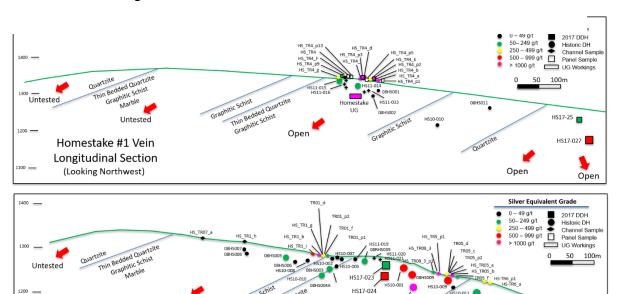


Figure 18: Homestake Vein Long Sections

Homestake #2 Vein Longitudinal Section

(Looking Northwest)



Open

HS17-028

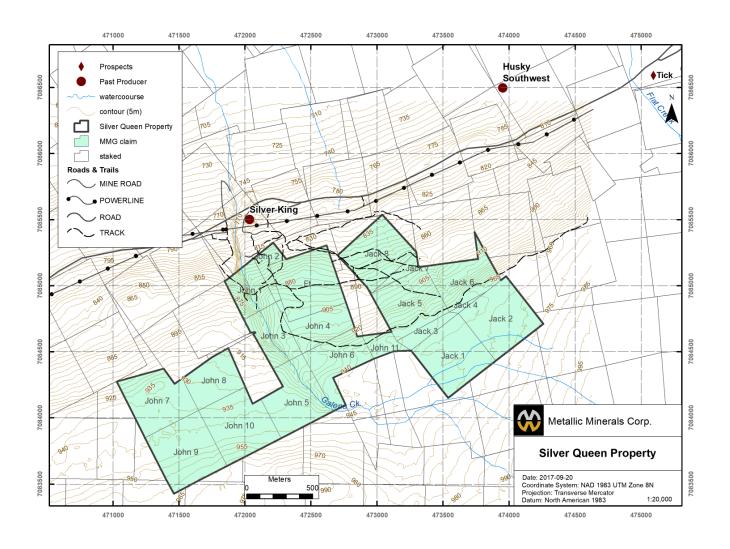
Open

Open

## 7 Silver Queen Target

The Silver Queen ground (see figure 19) was filed on in September 2017. A total of 222 soil samples (for location see figure 19), as well as mapping and prospecting were filed for assessment work.

Figure 19: Silver Queen Claim Group



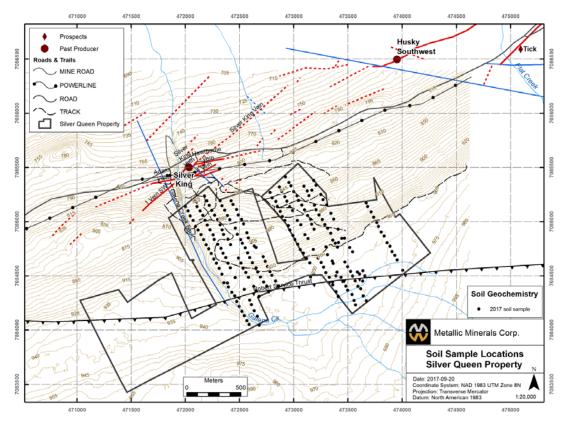


Figure 20: Soil Sample Locations at Silver Queen

#### 7.1 Geology and Mineralization

Geology of the claim block can be seen in Figure 21 and has been described in section 3. Locally, the south dipping Robert Service thrust fault places Proterozoic-Lower Cambrian Hyland Group over Mississippian Keno Hill Quartzite. There are 2 targets at Silver Queen. The first is the typical Keno Hill style Ag-Pb veins. The northern edge of the claim block may contain either the downdip extension of the Silver King veins or additional veins parallel to the Silver King deposit. Further, the projected extension of the Elsa vein trend traverses the southern half of the property. At surface it intersects the Sourdough member of the Keno Hill Quartzite, but at depth, the more favourable mineralization host, the Basal Quartzite dips gently southward underneath the claim block. Further south, the Elsa Vein trend is projected to intersect the Robert Service Thrust. These northeast trending structures continue through the thrust and into the overlying Hyland Group rocks

Along the south side of the claim block above the Robert Service Thrust in the Hyland Group, the target changes to intrusion related gold mineralization currently being explored by Banyan Gold's at the Aurex-McQuesten property. There are at 2 types of mineralization:

- 1) Sheeted quartz arsenopyrite veinlets and fault/vein breccias with anomalous Au, As, Bi, Sb and W.
- 2) Stratabound silicified skarn horizons with anomalous Au, As, Bi, Sb and W. Often found along the margins of felsic dykes.

Outcrop is sparse over the Silver Queen claims. Soil sampling was undertaken to provide geochemical information about the subsurface and to trace anomalies. Half a day was spent on the property on June 8 inspecting the Silver King open pit close to the north side of the property to familiarize MMG staff with the

mineralization in the area. This was followed by traverses onto the Silver Queen claims to map roads, determine if there was trenching on the claims, and search for outcrop. Any previous trenching on the claims had been reclaimed, the roads were mostly overgrown and the ground underfoot wet and swampy. Outcrop was found along the Galena Creek canyon. A thick quartz vein oriented 070/55 (RHR) was located at UTM N8 472024E, 7084878N hosted in quartzose schist. and an outcrop of aplite intruding schist was found at UTM N8 472084E, 7084816N. No samples were collected for geochemical analysis.

### 7.2 Soil Sampling

There is no record of previous soil sampling on the claims. Sixty-two samples on 4 small grids were collected by Alexco close to the claims and are shown along with MMG results on the figures below. The area is difficult to soil sample because of the depth of overburden, swampy areas and permafrost which has developed under a thick layer of insulating moss.

Two hundred and twenty-two samples were collected at an average depth of 0.45 m (range 0.2 to 0.95m) in July. Most samples were collected from the B horizon, with a few C horizon or mixed B and C and B and A. Gaps in sampling were caused by permafrost or swamps where sample could not be collected. See figure 20 for sample locations.

Sample locations and numbers were laid out in advance along lines spaced 100m apart in the northwest-southeast directions with sample points at 50m intervals along the lines in the northwest-southeast direction. Samplers used soil augers or mattocks to collect samples and handheld GPS units to navigate to sample locations and record sample locations. Information was collected at each sample site included: easting and northing, depth, horizon, colour, texture, % organics, % fragments, slope angle, and vegetation type.

The largest anomaly is an approximately 400m by 300m irregular shaped Pb+Zn+Cu anomaly centered on the east side of Galena Creek at 472600E 708470N. It is surrounded and partially overlapped by smaller single element Au and Cu and Sb and As anomalies on the north and south. It is open to the southwest and northeast. It covers the area where the projection of the Elsa Vein trend cuts through the claims.

Another line of anomalies is associated with the Robert Service Thrust On the east the thrust is marked with a multi-element Ag+Pb+Cu and Zn+Ag+Pb. To the west, the thrust anomaly merges with the large anomaly described in the preceding paragraph.

Close to the Silver King deposit, an Ag+Pb+Sb anomaly overlaps an As+Cu anomaly close to the claim boundary. Other single and multi-element anomalies occur over the soil grid that require follow-up (see figures 22-25 below).

Figure 21: Silver Queen Geology

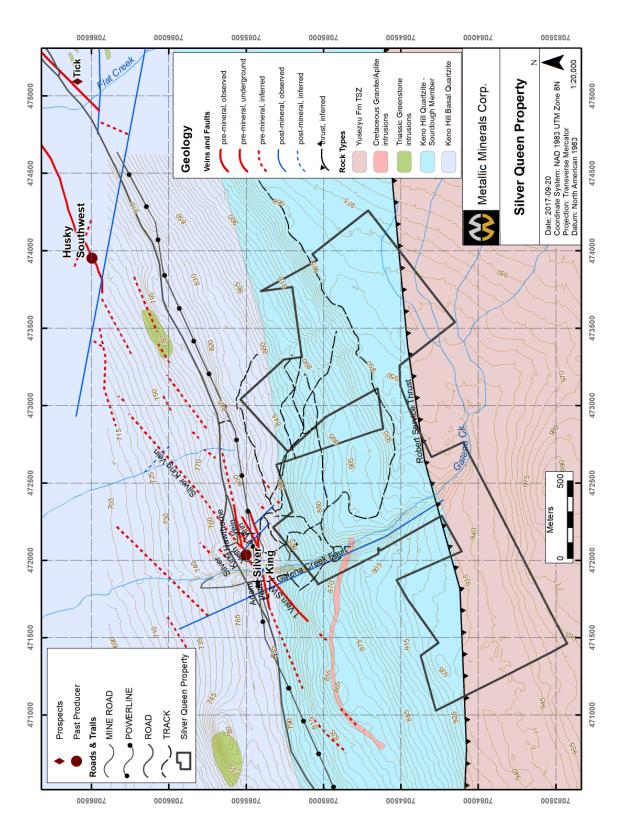


Figure 22: Silver Queen Silver Soil Sampling Results

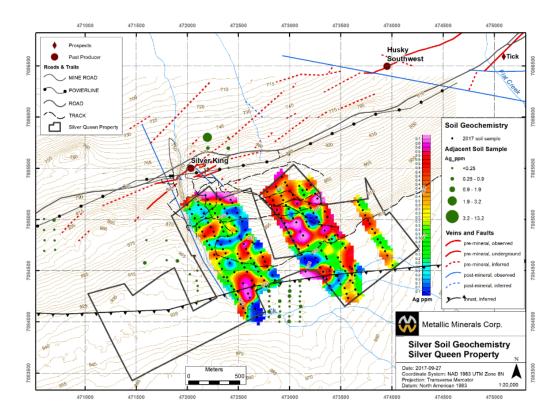


Figure 23: Silver Queen Lead Soil Sampling Results

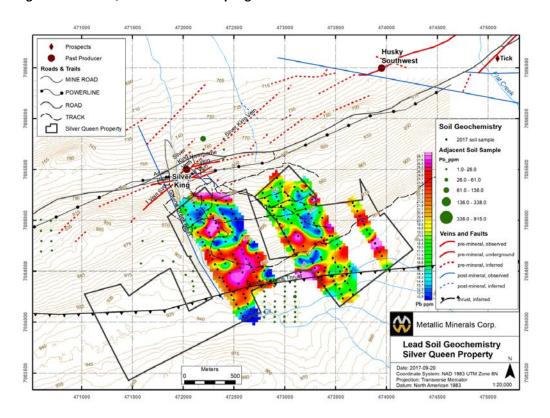


Figure 24: Silver Queen Zinc Soil Sampling Results

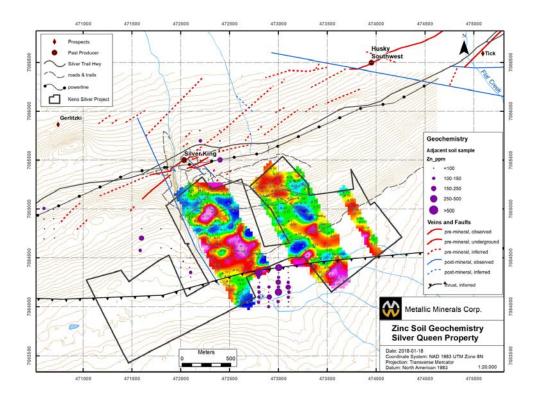
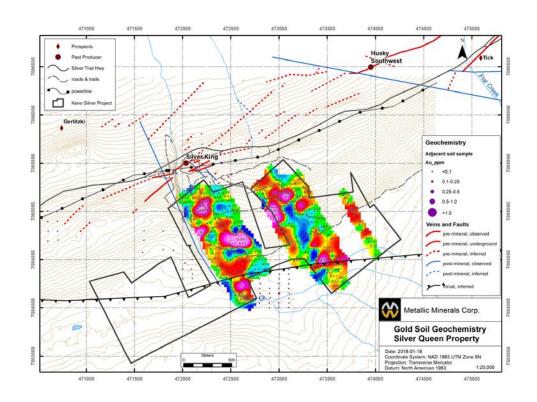


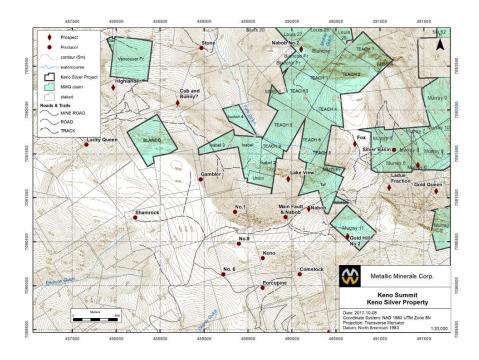
Figure 25: Silver Queen Gold Soil Sampling Results



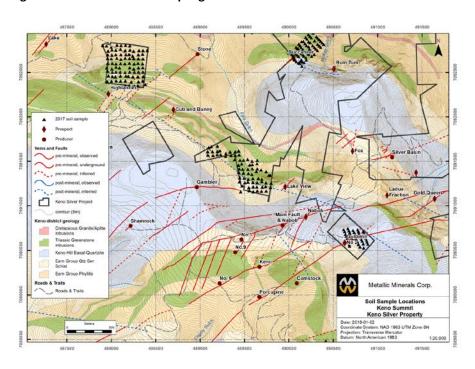
## 8 Vancouver Target

Prospecting and soil sampling conducted on the Vancouver Fr and Mac Fr claims was filed in October 2017 (Figure 26). Eighty-six soil samples and seven rock samples were collected in August.

Figure 26: Vancouver Claim



**Figure 27: Vancouver Soil Sampling Locations** 



### 8.1 Geology and Mineralization

Geology of the claim block can be seen in figure 29 and has been described in section 3. Locally, the southern 2/3 of the claims are dominated by greenstone sills and the rest of the claim is underlain by Earn Group phyllite and quartz sericite schist. The targets at Vancouver are typical Keno Hill style Ag-Pb veins that are projected to run across the southeast corner of the claim block. Geological mapping of the claim shows offset on the greenstone sills by vein faults trending northeast.

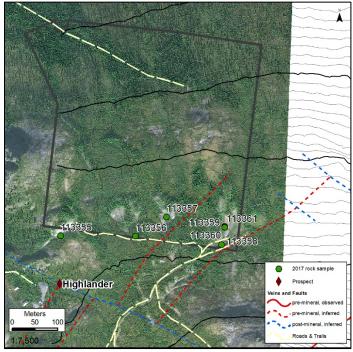


Figure 28: Vancouver rock sample location map

Soil sampling was undertaken to provide geochemical information about the subsurface and to trace extensions of the Highlander structure across the claim block. A day was spent inspecting the historic trenching along the southern boundary at the same time as the soil sampling. Seven rock samples were collected, all from historic trenches. Results are listed in the table below and locations shown on figure 28. Although only 2 of the samples contained significant silver grades, all were high in manganese an important indicator mineral for Keno Hill veins; forming a halo around the veins that can be used to vector towards mineralization.

**Table 15: Vancouver Rock Samples** 

Sample	Description	Ag (g/t)	Au (ppb)	Pb (ppm)	Zn (ppm)	Cu (ppm)	Mn (ppm)
113355	Quartz vein (050/70)	0.2	10	31.7	132	1.4	5611
113356	Schist-quartzite contact with pyrite	58	33.8	341.9	2182	192.2	>10000
113357	Massive quartz-lim vein	0.2	1.2	10	392	1.2	>10000
113358	Vein breccia with Mn oxide+limonit+pyrite	0.2	0.8	12.2	530	2.6	>10000
113359	7m chip across siderite and sphalerite vein footwall	0.6	1.8	21	154	2.5	>10000

Sample	Description	Ag (g/t)	Au (ppb)	Pb (ppm)	Zn (ppm)	Cu (ppm)	Mn (ppm)
113360	Intensely altered, limonite rich vein breccia	0.2	<0.5	10.5	134	1.1	>10000
113361	Vein breccia with massive sphalerite	130	13.4	22.3	83	140.5	>10000

## 8.2 Soil Sampling

There is no record of previous soil sampling on the claims. Seventy samples on 10 lines were collected by Alexco close to the claims (Lippoth, 2008). MMG collected 86 samples at an average depth of 0.50 m (range 0.2 to 0.80 m) on August 19-21, 2017. Most samples were collected from the B horizon, with a few mixed B and A horizons. See figure 27 for sample locations and 30-33 for results.

Sample locations and numbers were laid out in advance on a 50 m by 50m north-south and east-west grid. Samplers used soil augers or mattocks to collect samples and handheld GPS units to navigate to sample locations and record sample locations. Information was collected at each sample site included: easting and northing, depth, horizon, colour, texture, % organics, % fragments, slope angle, and vegetation type.

The largest anomaly covers an area 300m long by 125m along the south side of the Vancouver claim. It consists of a coincidental Ag + Zn anomaly with overlapping smaller single element Mn, Sb, Au, Pb and As anomalies. Some of this anomaly is likely caused by contamination, because it is downslope from the Highlander tailings pile and from historic trenching along the southern boundary. However, anomalies in trench material indicates that the trenches did intersect mineralization and anomaly covers the inferred location of the Highlander vein extension. Smaller, spotty single element anomalies occur in the north half of the claim on either side of an old road

Figure 29: Vancouver Geology

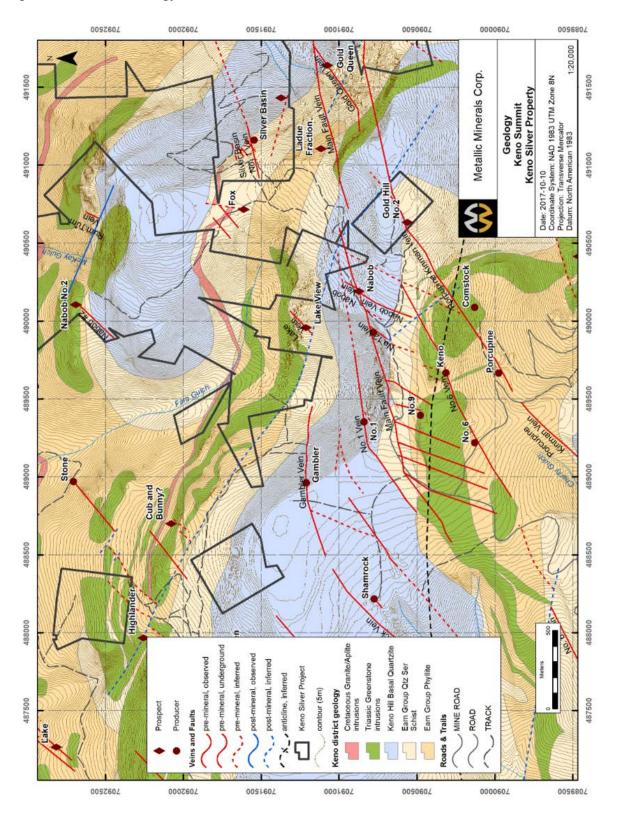


Figure 30: Vancouver Silver Soil Sampling Results

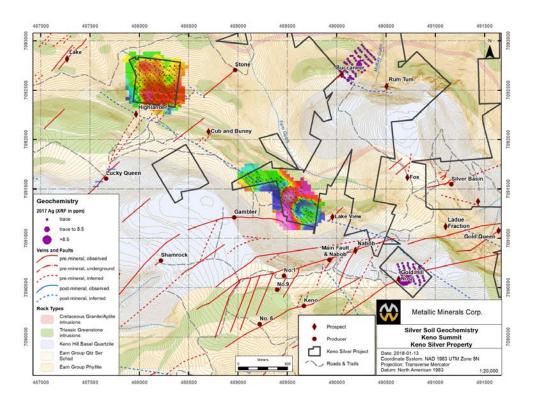


Figure 31: Vancouver Lead Soil Sampling Results

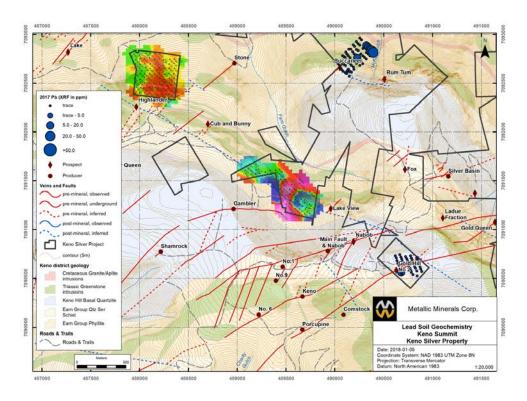


Figure 32: Vancouver Zinc Soil Sampling Results

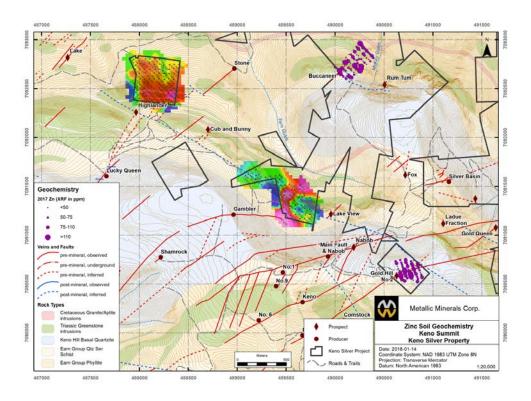
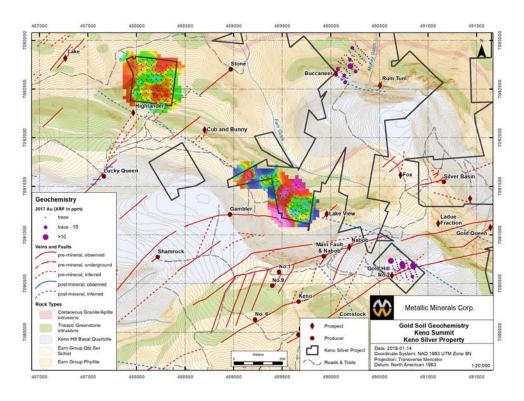


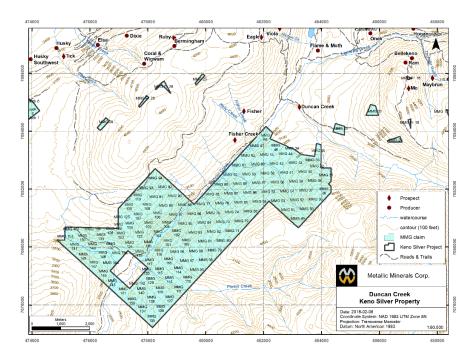
Figure 33: Vancouver Gold Soil Sampling Results



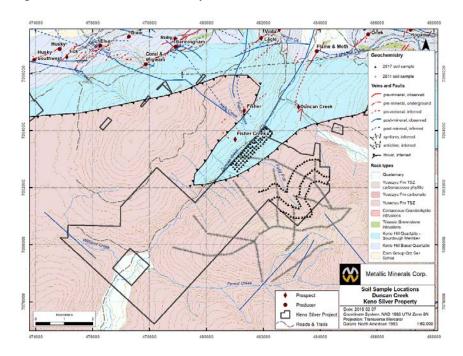
## 9 Duncan Creek Target

Mapping, prospecting, soil samples (176), rock samples (5) and surveyed references sites for satellite imagery on the Duncan Creek claims (Figure 34) were filed in December 2017. The satellite imagery is discussed in Section 10.

Figure 34: Duncan Creek Claims



**Figure 35: Duncan Creek Soil Sample Locations** 



### 9.1 Geology and Mineralization

Geology of the claim block can be seen in Figure 35 and has been described in Section 3. Locally, the claims are underlain almost entirely by Proterozoic-Lower Cambrian Yusezyu Formation (Hyland Group), thrust over the Sourdough Member of the Keno Hill Quartzite by the south dipping Robert Service Trust Fault.

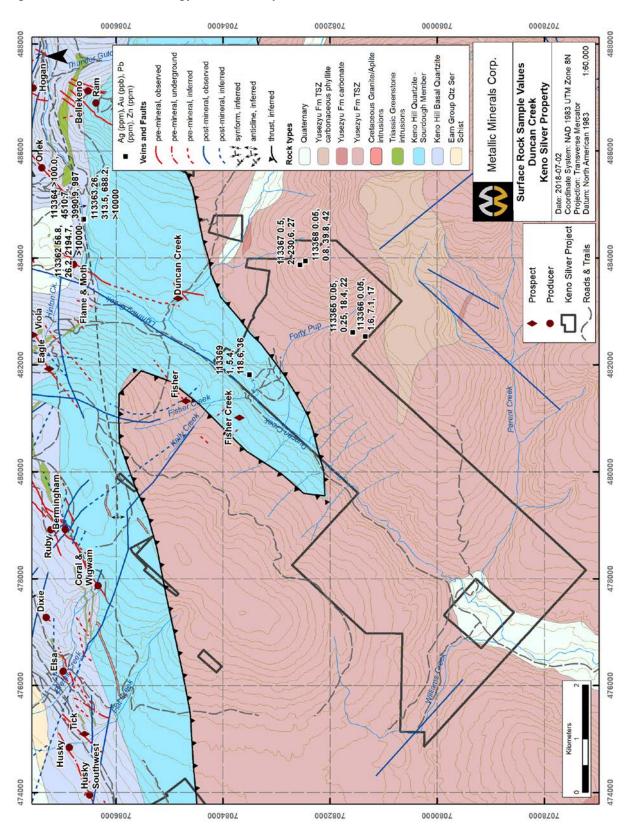
There are two targets at Duncan Creek. The first are Keno Hill style style Ag-Pb-Zn veins. Projected extensions of the Fisher and Duncan Creek prospects may extend onto the claims in the northeast section of the claim block where it is underlain by Sourdough Member rocks. In the rest of the claim block, above the Robert Service Thrust, the target changes to intrusion related gold mineralization like that being explored for on Banyan Gold's Aurex-McQuesten property to the west.

Soil sampling was undertaken to provide geochemical information about the subsurface and to search for extensions of the Fisher Creek and Duncan Creek veins across the claim block. A prospector accompanied the soil samplers and collected 5 rock samples. All were outcrop grab samples. None of the samples had significant results although galena was found in three of them. See table 20 and figure 35 for results and locations.

**Table 20: Duncan Creek Rock Samples** 

Sample	Description	Ag (g/t)	Au (ppb)	Pb (ppm)	Zn (ppm)	Cu (ppm)	Mn (ppm)
113365	Strongly foliated, mica-schist + limonite, minor pyrite and trace galena	<0.1	<0.5	18.4	22	4.3	351
113366	White rusty quartz vein + limonite + trace galena	<0.1	1.6	7.1	17	3.1	351
113367	Quartz-sericite schist + white rusty quartz vein + limonite and trace galena	0.5	2	230.6	27	14.8	564
113368	Quartz sericite schist, folded, blebs of white rusty limonitic quartz vein	<0.1	0.8	39.8	42	11.5	439
113369	Phyllite-graphitic schist + pyr + rusty quartz. Foliation 120/10 (?). 120/80 fractures with quartz veinlets. Sample from limonitic/rusty quartz vein + pyrite + arsenopyrite (?).	1	5.4	118.6	36	27.6	793

Figure 35: Duncan Creek Geology and Rock Sample Results



### 9.2 Soil Sampling

The claims were previously sampled on a widespread ridge and spur campaign in 2011 when owned by Fekete and Ziehe (Fekete and Dubois, 2012). The results from the 2011 campaign are shown along with 2017 results on figures 36-39.

One hundred and seventy-six samples on two different layouts were collected in August and September 2017. Seventy-six samples were collected on a 100m by 100m grid on a bench along Duncan Creek. The purpose of the grid was to test for extension of the Fisher Creek veins. The remaining samples were collected along 3 contour lines at 1100m 1200m and 1300m upslope from the grid.

The average depth of sampling was 0.55 m (range 0.3 to 0.90 m). Most samples were collected from the B horizon, with a few mixed B and A horizons. See figure 35 for sample locations and 36-39 for results.

Sample locations and numbers were laid out in advance on both the grid and contour lines. Samplers used soil augers or mattocks to collect samples and handheld GPS units to navigate to sample locations and record sample locations. Information was collected at each sample site included: easting and northing, depth, horizon, colour, texture, % organics, % fragments, slope angle, and vegetation type.

The strongest anomalies were on the grid along Duncan Creek. At the northwest end of the claim block a 1km by 300m multielement anomaly was uncovered. A smaller 400m by 300m multielement open-ended anomaly covers the southern part of the same grid. The northwest anomaly is located along the extension of the Fisher Creek and Fisher veins but is also on an alluvial fan that has transported material downslope from the same veins. The anomaly may be transported and not in place. Both anomalies should be investigated through trenching.

Less significant anomalies were found along the contour lines in the same area as the rock samples. They are roughly coincident with anomalous ridge and spur soils collected in 2011.

Figure 36: Duncan Creek Silver Soil Sampling Results

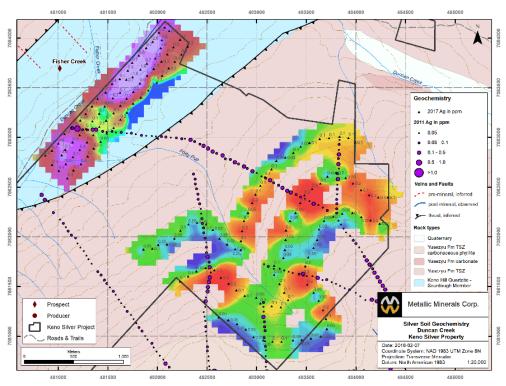


Figure 37: Duncan Creek Gold Soil Sampling Results

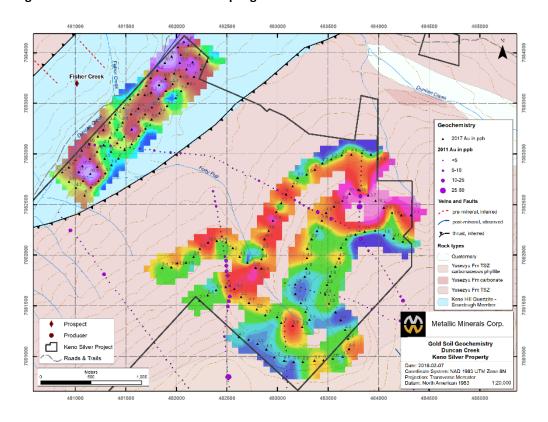


Figure 38: Duncan Creek Lead Soil Sampling Results

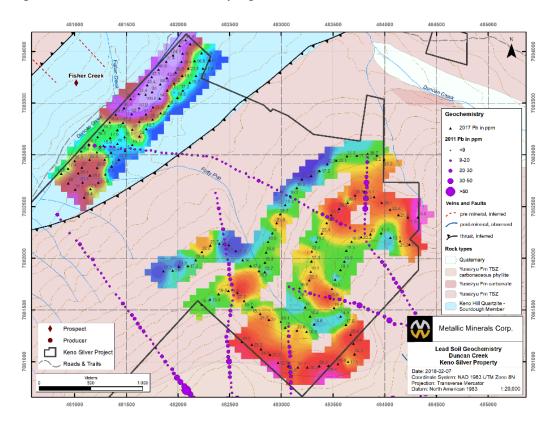
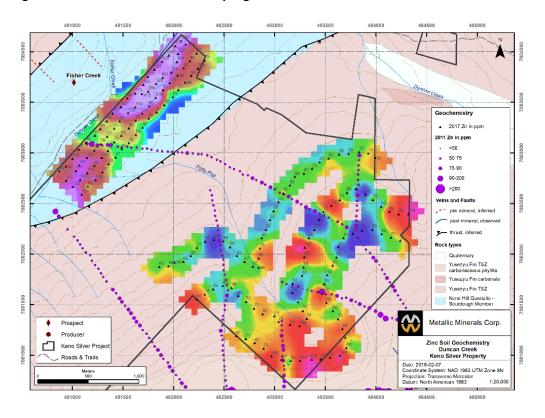


Figure 39: Duncan Creek Zinc Soil Sampling Results



## 10 Satellite Imagery Acquisition

In 2017, Metallic Minerals commissioned high resolution satellite ortho photo coverage for the Keno Silver Project. The satellite imagery was collected by PhotoSat of Vancouver B.C. and the survey control target positions were surveyed by Underhill Geomatics Ltd. of Whitehorse, YT. After the imagery collection, Photosat produced contours (1m, 5m, 10m and 50m) from the satellite images. The project report is in Appendix 3 and a digital copy of the orthophoto has been supplied separately due to the large file size.

As can be seen from the image below, several of the targets fell on claims in the Duncan group, as well as Murray 11 and MMG 18Fr. This work was filed on these claims in separate filings in December of 2017.

Metallic Minerals Corp. Keno- Lightning Project
High Resolution Satellite Ortho Photo Coverage
Survey Control Target Locations

Murray 11

Murray 11

Murray 11

Murray 11

Murray 11

Fold Assa Units Apartition fold Total State S

**Figure 40: Survey Control Target Locations** 

The imagery and contours have proven very useful for many purposes. They have been used to locate and measure previous disturbance, as a prospecting tool to locate gossans and veins, as a planning tool for road and drill pad layout and for geological mapping to locate outcrops for fieldwork. The contours are detailed enough that drill pads, roads and trenches can be seen.

## 11 Conclusions and Recommendations for Future Work

#### 11.1 Caribou and Duncan

The Caribou target is the most advanced prospect on the Keno Silver Project. Continued drilling is recommended and could either be infill drilling to produce an inferred resource or exploratory drilling to test open areas for more mineralization. A combination of both is recommended for 2017.

The Duncan target was not fully tested in 2017. Drilling difficulties caused the the hole to be stopped early and the thick package of quartzite was not tested.

#### 11.2 Homestake

Drillholes HS17-025, 26, 27 and 28 were step out holes proving the continuation of the upper Homestake Veins northeast of historic drilling. Subsequent vein modelling suggests the veins may converge east of HS17-028. Further drilling on the east side around HS17-028 is recommended.

#### 11.3 Vancouver

Although some of the soil anomaly on the Vancouver target is likely caused by contamination, due to its location downslope from the Highlander tailings pile and from historic trenching along the southern boundary, the area should not be abandoned. Anomalies in trench material indicates that the trenches did intersect mineralization plus the anomaly covers the inferred location of the Highlander vein extension. Excavator trenching along the inferred location of the Highlander Vein is recommended for this target.

## 11.4 Silver Queen

Silver Queen is a lower priority target due to the depth of the Keno Hill Quartzite below the Sourdough Formation but further work is recommended. Soil lines should be continued over the remainder of claim block, followed up by prospecting and mapping in Galena Creek canyon. The canyon is the best place to find outcrop and trace northeast trending veins or structures that may cut through the claim block.

#### 11.5 Duncan Creek

The strongest multi-element anomaly along Duncan Creek is 1km long by 300m in extent. It is located on trend with the fisher Creek Vein but is also situated on an alluvial fan that has transported material downslope from the same vein. For this reason it is unclear if the anomaly is in place or transported or a combination of both. The smaller open ended multi element anomaly at the southern end of the grid along Duncan Creek should be investigated by trenching and the grid should be extended southward.

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## 13 Certificate

- I, Deborah Ann Rachel James, do hereby certify that:
  - 1) I, Deborah Ann Rachel James of 11-3194 Gibbins Road, Duncan, British Columbia am self-employed as a consultant geologist and have authored this report.
  - 2) I am a graduate of the University of British Columbia with a B.Sc. degree in Geological Sciences
  - I am a geologist with more than fifteen years of experience in the Canadian Cordillera and thirteen years of experience in Yukon.
  - 4) I am registered as a professional geoscientist with the Association of Professional Engineers and Geoscientists of B.C. #094996.
  - 5) I have done GIS compilation and field work on the Keno Silver Project since 2016.
  - 6) I have worked on other vein deposits in the Yukon, including the Mt. Skukum epithermal gold and silver property near Carcross and veins peripheral to porphyry centres at the Freegold Mountain project near Carmacks.
  - 7) I hold shares of Metallic Minerals Corp.

yelow

DATED at Duncan, British Columbia, this 2th day of July 2018

**Debbie James** 

Unit 11, 3194 Gibbins Road

Duncan, BC, V9L 1G8

## **14 Statement of Costs**

**Table 17: Statement of Costs** 

Claim ID	Grouping	Activity	Metres Drilled	Cost
Murray 1	Murray 1	CH17-028	211.00	\$61,456.45
Total:			211.00	\$61,456.45
Murray 3	Keno Lightning	CH17-021	80.00	\$23,687.50
Murray 3	Keno Lightning	CH17-022	14.00	\$6,285.00
Murray 3	Keno Lightning	CH17-023	80.00	\$20,474.85
Murray 3	Keno Lightning	CH17-024	131.00	\$29,712.00
Murray 3	Keno Lightning	CH17-025	80.00	\$9,930.00
Murray 3	Keno Lightning	CH17-026	65.00	\$19,780.00
Murray 3	Keno Lightning	CH17-027	86.00	\$11,040.70
		Mobilization, fuel, tank rental, 3%	S Dena Neziddi	
		benefit, GST		\$40,069.23
Total:			536.00	\$120,910.05
Homestake 2	Keno Lightning	HS17-023	62.00	\$18,536.66
Homestake 2	Keno Lightning	HS17-024	116.00	\$32,495.20
Homestake 12	Keno Lightning	HS17-025	89.00	\$19,140.70
Homestake 12	Keno Lightning	HS17-026	65.00	\$15,455.95
Homestake 12	Keno Lightning	HS17-027	125.00	\$22,286.90
Homestake 12	Keno Lightning	HS17-028	119.00	\$31,744.70
		Mobilization, fuel, tank rental, 3%	Dena Neziddi	\$34,853.95
		benefit, GST		
Total:			576.00	\$174,514.06
TOtal.			370.00	3174,314.00
Ft, Jack 1-8,	Silver Queen	Soil sampling, prospecting,		\$21,138.60
John 1-11	onver queen	mapping		Ψ21,130.00
Total:		2449		\$21,138.60
Murray 11	Murray 11 and	Survey control for satellite		\$2,250.70
-	MMG 18 Fr	orthophoto		
Total:				\$2,250.70
Vancouver,	Vancouver	Soil sampling, prospecting		\$5,076.40
Mac Fr				
Total:				\$5,076.40
	Duncan Creek	Soil sampling, prospecting, satellite		\$19,953.78
MMG 30-153	2 0001. 0. 001.			
MMG 30-153 Total:		imagery		\$19,953.78

# Appendix 1: Drill Logs

digital

# **Appendix 2: Sample Sheets and Assay Certificates**

Digital and hard copy

# **Appendix 3: Satellite Photography Project Report**

# **Digital orthophotos**