MINE DEVELOPMENT AND OPERATIONS PLAN

FLAME AND MOTH – KENO HILL SILVER DISTRICT

Revision 2

January 2018

ALEXCO KENO HILL MINING CORP.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

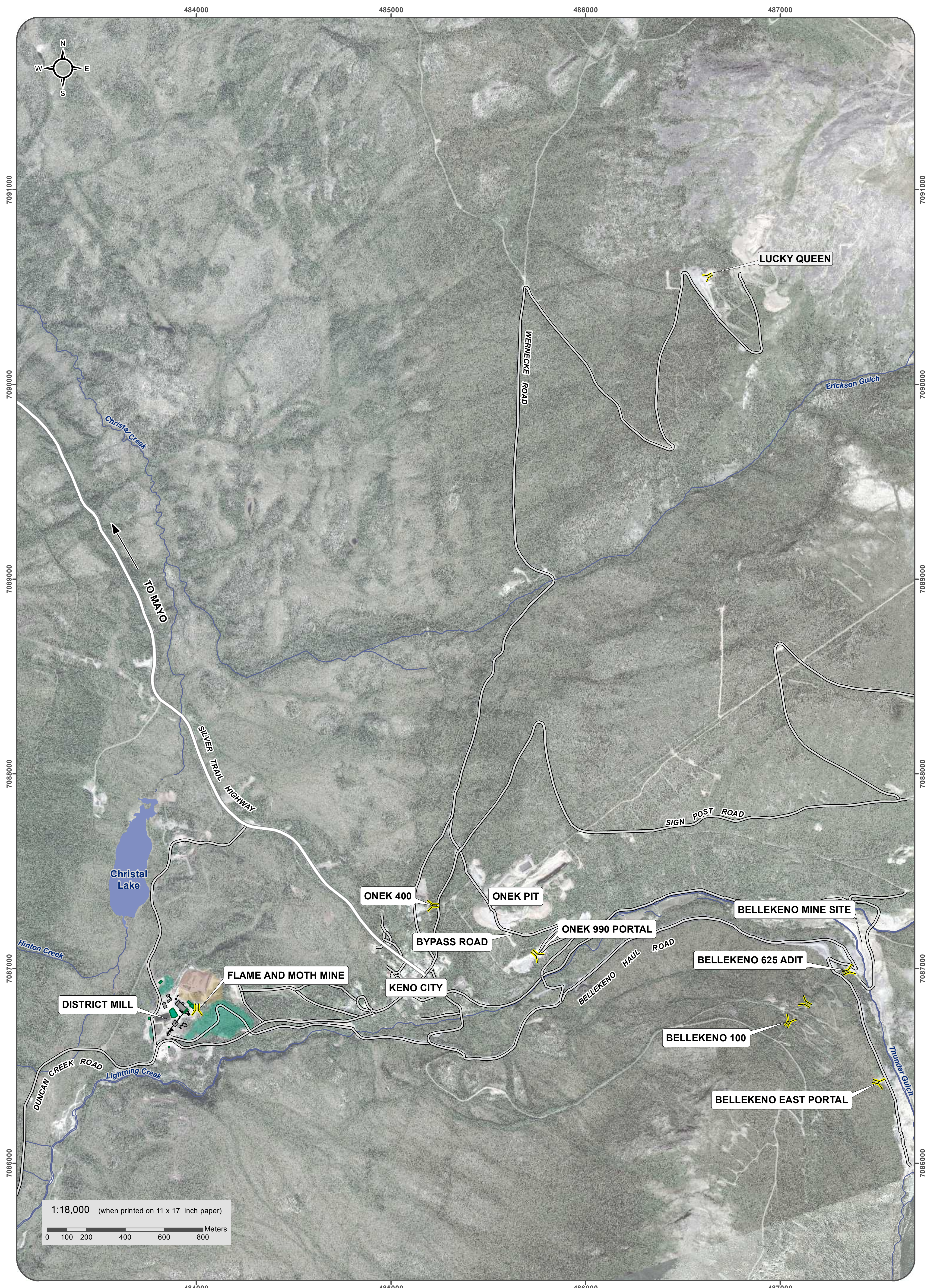
Alexco Keno Hill Mining Corp. (AKHM) continues to develop the mineral resources of the Keno Hill Silver District. Alexco proposes to bring the Flame and Moth deposit into production to provide a sustainable ore feed to the Keno District Mill, supplemented by the additional mines already permitted in the district including Bellekeno, Lucky Queen and Onek. The Flame and Moth deposit is a new discovery situated adjacent to the existing Keno District Mill. This document serves as the Flame and Moth Mine Development and Operations Plan as a requirement for amendment of Alexco Keno Hill Mining Corp. (AKHM) Quartz Mining License.

1.2 PROPERTY LOCATION

The Flame and Moth property is located in the Mayo Mining District approximately 350 kilometres ("km") north of Whitehorse, Yukon within the Keno Hill Silver District (Figure 1-1). The Flame and Moth deposit is located in the vicinity of Keno City (63˚ 55'N, 135˚ 29'W), 354 km (by air) due north of Whitehorse. Access to the property is via a paved, two-lane highway from Whitehorse to Mayo (407 km) and an all-weather gravel road northeast from Mayo to Elsa (45 km); a total distance of 452 km. The area is covered by NTS map sheets 105M/14. The location of the Flame and Moth deposit within the Keno Hill Silver District is shown in Figure 1-1.

1.2.1 Flame and Moth Location

The Flame and Moth proposed adit is located at UTM 7,086,787N and 484,004E zone 8.



DSTF 322k Tonnes Design
Proposed Mill Pond
Current DSTF
To Be Constructed Features
Infrastructure Footprint
Adit
Silver Trail Highway
Other Road

AKHM
AEG

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FIGURE 1-1

OVERVIEW

JANUARY 2018

Satelite imagery obtained from Yukon Geomatics map service http://mapservices.gov.yk.ca/ArcGIS/services on January 2018

Datum: NAD 83; Projection: UTM Zone 8N

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(Last edited by: amatlashevska;10/01/2018/09:00 AM)

2 SITE DESCRIPTION

The Flame and Moth deposit is within the historic Keno Hill Silver District (KHSD), located in central Yukon Territory. The closest town outside of Keno City is Mayo, located on the Stewart River, approximately 55 km to the south. Mayo is accessible from Whitehorse via a 460 km all weather road; the town is also serviced by Mayo airport, which is located just to the north. A gravel road leads from Mayo to the project areas. Historically, the KHSD was linked by river route to the outside world; since 1950 the all-weather Silver Trail Highway, which was also used for transporting the ore, has been the main link.

The central Yukon Territory is characterized by a sub-arctic continental climate with cold winters and warm summers. Average temperatures in the winter are between minus fifteen and minus twenty degrees Celsius but can reach minus sixty degrees Celsius. The summers are moderately warm with average temperatures in July around fifteen degrees Celsius. Mining operations are carried out year-round.

Because of its northern latitude, winter days are short; north-facing slopes experience ten weeks without direct sunlight around the winter solstice. Conversely, summer days are very long, especially in early summer around the summer solstice. Annual precipitation averages twenty eight centimetres (“cm”); half of this amount falls as snow, which starts to accumulate in October and remains into May or June.

Three phase power is available in many parts of the district as well as telephone and internet service. A large number of roads constructed for past mining operations are still serviceable. The old company town of Elsa, located toward the western end of the district, comprises several buildings that are currently being used by AKHM for storage, maintenance work, housing and offices. The main camp and kitchen are located at Flat Creek, just west of Elsa.

The landscape around the Flame and Moth deposit is characterized by rolling hills and mountains with a relief of up to 1,600 masl. The highest elevation is Keno Hill at 1,975 masl. Slopes are gentle except the north slopes of Keno Hill and Sourdough Hill.

2.1 HISTORY

The Keno Hill Silver District has a rich history of exploration and mining dating back to the beginning of the 1900’s. Earliest prospectors had been working the area around Mayo for gold, especially after the Klondike gold rush of 1898. The first silver was found in 1901; however, interest was low due to the prospector’s interest in gold alone despite an assay from 1905 yielding more than ten kilograms per ton silver. Small-scale mining finally commenced in 1913 with a first shipment of fifty-five tons of ore to a smelter in San Francisco. Due to the shallow depth of the deposit and the First World War, interest in the area had dwindled by 1917. The end of the First World War and high silver prices led to renewed and ultimately successful exploration activity in the area with the Yukon Gold Company and later United Keno Hill Mines Ltd. (UKHM) as the first truly commercial operators. Success at the Keno Mine led to a staking rush, resulting in the discovery of a number of rich deposits.

Claim staking and prospecting began at Flame & Moth in 1920. By 1923, numerous surface workings and a 13-metre inclined shaft had been sunk with a 4.6 m crosscut developed from it on the Moth claim, along with several other small scale underground workings. Acquisition by UKHM just prior to 1950 resulted in small scale underground exploration via a 27.4-metre inclined shaft and limited core drilling, and more extensive intermittent surface exploration using overburden drilling, soil sampling, ground geophysics and limited surface core drill holes. These results led to plans for small scale open pit development.

Alexco acquired the Keno Hill Silver District in 2006 and title was granted in 2007 upon receipt of Type B care and maintenance water use licence. During 2006, Alexco embarked on an aggressive exploration program in the Keno Hill Silver District, targeting the historical resources at Bellekeno as well as Lucky Queen and Onek. Drilling in the Flame and Moth area between 2010 and 2014 totalled 134 holes and 32,974.5 metres.

2.2 GEOLOGICAL

2.2.1 District Geology

The Keno Hill Silver District geology is dominated by the Mississippian Keno Hill Quartzite comprising the Basal Quartzite Member and conformably overlying Sourdough Hill Member. The unit is overthrust in the south by the Upper Proterozoic Hyland Group Yusezyu Formation and is conformably underlain in the north by the Devonian Earn Group (McOnie and Read, 2009) as shown in the local stratigraphic column in Figure 2-1.

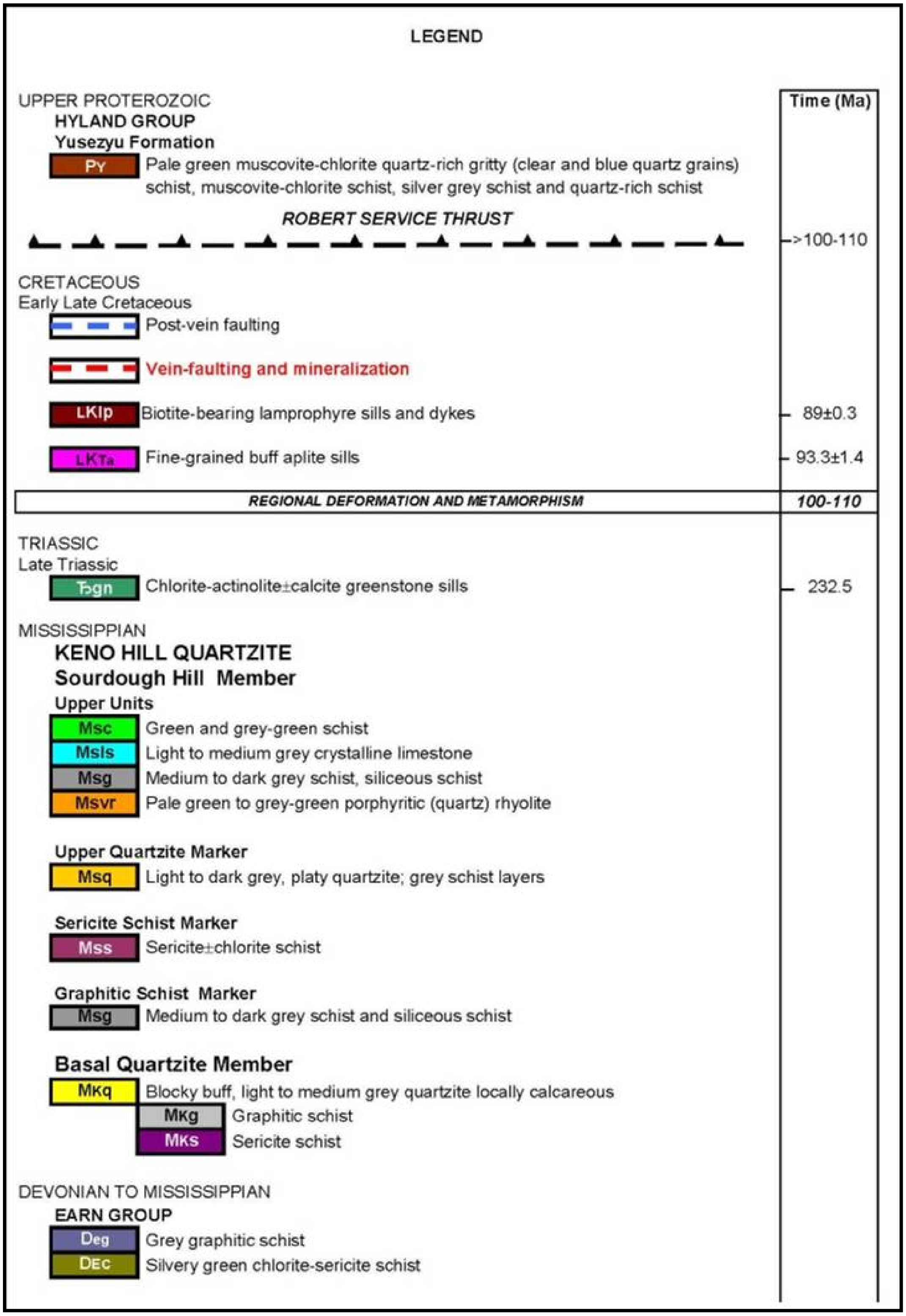


Figure 2-1 Keno Hill Silver District Simplified Stratigraphy (light yellow is alluvial cover)

The Yusezyu Formation of the Precambrian Hyland Group that comprises greenish quartz-rich chlorite-muscovite schist with locally clear and blue quartz-grain gritty schist is separated from the Keno Hill sequence by the Robert Service Thrust Fault.

The Earn Group formerly mapped as the "lower schist formation" (Boyle, 1965) is typically composed of recessive weathering grey graphitic schist and green chlorite-sericite schist with an upper siliceous graphitic schist found locally.

Within the Keno Hill Quartzite, the Basal Quartzite Member is up to 1,100 m thick where structurally thickened and comprises thick to thin-bedded quartzite and graphitic phyllite (schist). This is the dominant host to the silver mineralization in the Keno Hill Silver District. The overlying Sourdough Hill Member, formerly mapped as the "upper schist formation" (Boyle, 1965) is up to approximately 900 m in thickness and comprises predominantly graphitic and sericitic phyllite, chloritic quartz augen phyllite, and minor thin limestone.

The Earn Group and Keno Hill Quartzite are locally intruded by Middle Triassic greenstone sills. The sequence was metamorphosed to greenschist facies assemblages during Cretaceous regional deformation, and later intruded by quartz-feldspar aplite sills or dikes that are correlated with the 92 My Tombstone intrusive suite found elsewhere in the Keno Hill Silver District.

Three phases of folding are identified in the Keno Hill Silver District. The two earliest phases consist of isoclinal folding with subhorizontal, east- or west-trending fold axes. The later phase consists of a subvertical axial plane and moderate southeast-trending and plunging fold axis. In the Keno Hill Silver District, the first phases of folding formed structurally dismembered isoclinal folds of which the Basal Quartzite Member outlines synforms at Monument Hill where the Lucky Queen mine is located and at Caribou Hill, while between Galena Hill and Sourdough Hill the Bellekeno mine and the Flame & Moth prospect are located on the upper limb of a large scale anticline that closes to the north.

Within the Keno Hill Silver District, up to four main periods of faulting are recognized. The oldest fault set consists of south-dipping foliation-parallel structures that developed contemporaneously with the first phase folding. The Robert Service Thrust Fault truncates the top of the Keno Hill Quartzite and sets the Precambrian schist of the Yusezyu Formation above the Mississippian Sourdough Hill Member. The silver mineralization in the Keno Hill Silver District is hosted by a series of north-east–trending pre- and syn- mineral vein-faults that display apparent left lateral normal displacement locally referred to as longitudinal veins that, depending on the competency of the host rock, can be up to 30 m wide with an anastomosing system of subveins. A related set of faults, known as transverse faults that strike north-northeast and dip moderately to the southeast, can reach up to 5 m in thickness.

High angle cross faults, low angle faults, and bedding faults offset veins and comprise post-mineralization faults. Most commonly, these comprise northwest-striking cross faults recognized by offset veins that show apparent right-lateral displacement. The geology of the KHSD area is shown in Figure 2-2.

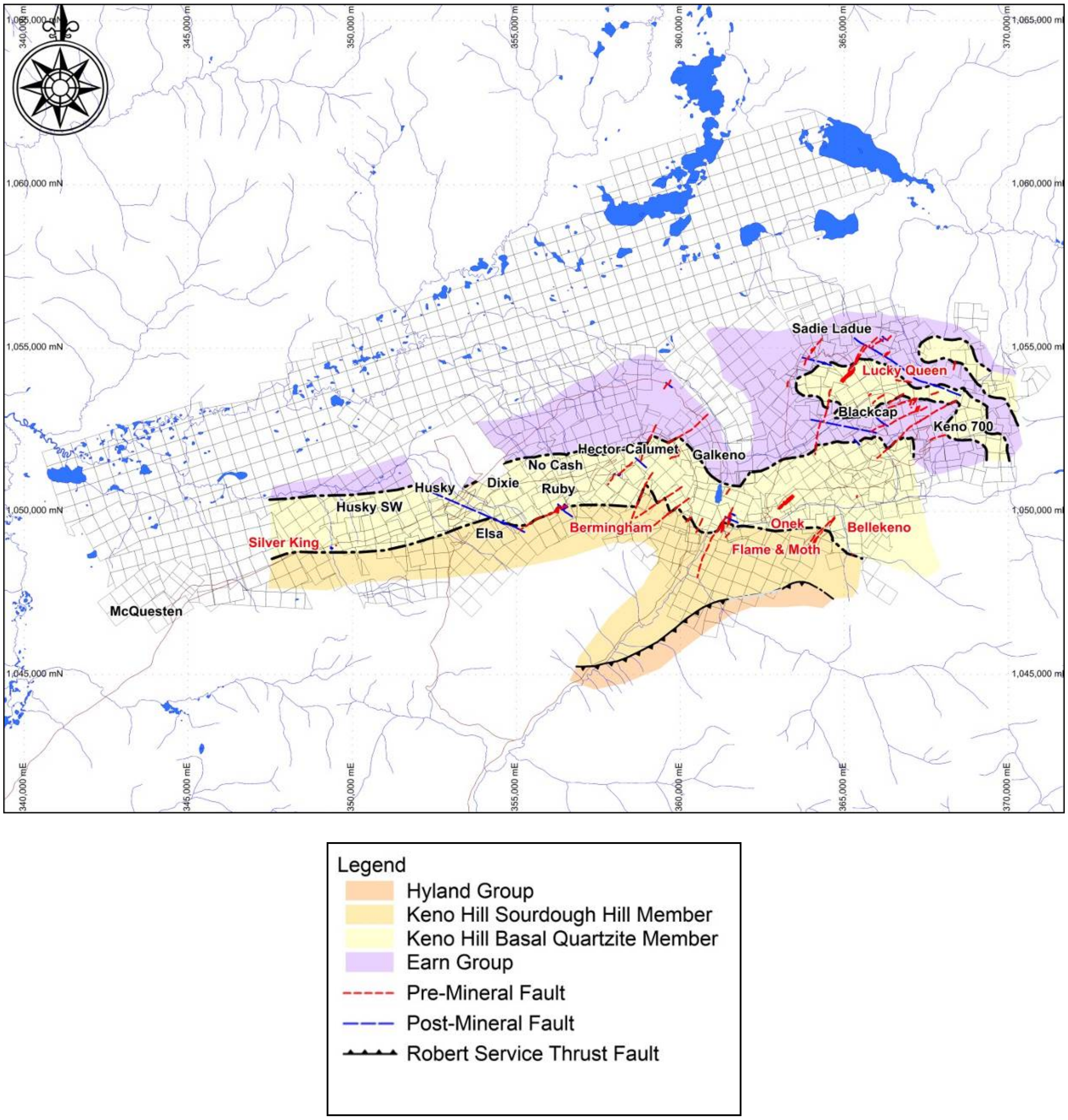


Figure 2-2 Geology of the Keno Hill Silver District

2.2.2 Mineralization

Mineralization in the Keno Hill Silver District is of the polymetallic silver-lead-zinc vein type. Mineralization of this type ideally exhibits a succession of hydrothermally precipitated minerals from the vein wall towards the vein center. However; in the KHSD, multiple pulses of hydrothermal fluids traveling through the same structure are very likely to modify the original succession of precipitated minerals by recrystallization and/or repetition of the original succession. Supergene alteration can further change the mineralogy in a vein. In the Keno Hill area, supergene alteration reached a maximum depth of about 200 m shortly after vein emplacement. Due to glacial erosion, much of the supergene zone has been removed.

In general, common gangue minerals include manganiferous siderite and to a lesser extent quartz and quartz breccia as well as calcite. Silver occurs in argentiferous galena and argentiferous tetrahedrite (freibergite). In supergene assemblages, silver is further found as native silver, in polybasite, stephanite, and pyrargyrite. Lead occurs in galena and zinc in sphalerite, which is iron-rich. This type of sphalerite is also known as marmatite and contains approximately seven per cent less zinc than “normal” sphalerite. Furthermore, sphalerite can contain approximately 7,000 to 10,000 grams (“g”) of cadmium per tonne and up to 800 g of tin per tonne (non-recoverable). Other sulphides include pyrite, arsenopyrite, and chalcopyrite. Pyrite and arsenopyrite are locally gold-bearing.

In addition to a lateral zoning mentioned above, veins exhibit a vertical change in mineralogy. A typical oreshoot displays a predictable vertical zoning from lead-rich at the top to zinc-rich at the bottom. Mineralogically, the ore changes with increasing depth from galena to galena-freibergite, to galena-freibergite-sphalerite-siderite, to sphalerite-freibergite-galena-siderite, to sphalerite-siderite, to siderite-pyrite-sphalerite (Cathro, 2006). Due to this zonation, individual veins have historically been interpreted to have a silver-poor sphalerite-rich lower zone. Historically, it was also believed that economic mineralization in the Keno Hill camp was restricted to a shallow zone of about 120 metres thickness; the discovery of the Number 3 Vein below the 400 level in the Hector-Calumet mine in 1948 showed that silver-rich veins exist deeper than historically believed and that known veins exhibit depth potential.

In addition to the local changes in mineralogy, a camp-scale zonation from high gold to copper and iron to zinc ratios of tetrahedrite in the west of the camp to lower ratios in the east has been recognized. It is believed that the Roop Lakes Granite, located ten to fifteen km west of the camp, acted as a heat source for the hydrothermal system that resulted in the precipitation of the vein minerals. With increasing distance from the granite, hydrothermal fluids would have experienced a general decrease in temperature, leading to the observed change in metal ratios. Murphy (1997) points out, however; that the geometry between intrusion and mineralized veins might not reflect the geometry during the time of hydrothermal activity. Since the timing of mineralizing events and deformation is poorly constrained, the apparent zoning could be the result of other, as of yet unknown, factors.

Despite the above mentioned uncertainties, a generally lower fluid temperature along the western edge of the camp could be responsible for the epithermal character of the ore from the Husky, Husky Southwest, and possibly the higher levels of the Bellekeno deposits. These deposits contained higher gold grades than other deposits of the camp. Gold occurs as electrum, in pyrite, and in arsenopyrite. Sulphide mineralogy at Husky and Husky Southwest is also different from the bulk of the mines; the main sulphide is pyrite, which amounts for one to five per cent. Galena is rare and not argentiferous; instead silver occurs as microscopic crystals of native silver and argentite.

2.2.3 Flame and Moth Geology

Much of the Flame & Moth area is blanketed by a thick cover of fluvio-glacial overburden deposited on an irregular erosional surface that is in places up to 50 m in depth.

Alexco conducted surface diamond drilling programs within the resource area at Flame & Moth in 2010, 2011 and 2012 initiating 89 core holes (19,887.5 m), of which 76 drill holes were completed to target, for a total of 19,291.83 m and used in the geological modelling to develop the wireframes for the 2013 resource estimate. An additional 45 holes were drilled in 2013 and 2014, for a total of 13,087 metres, to further delineate the known resource and provide necessary information for mine planning design and production decision purposes.

The mineralization occurs within the upper section of the Basal Quartzite Member of the Keno Hill Quartzite. The host rocks predominantly comprise medium to thick bedded quartzite with interbedded graphitic schist. Within this sequence, two distinctive horizons of sericite schist, up to 10 m in thickness, occur 65 m and 90 m respectively below the top of the unit. Up to five greenstone sills that may be up to 50 m in thickness are found within the quartzite sequence below these horizons (Figure 2-2).

The mineralized sequence is overlain by the Upper Quartzite, Sericite Schist and Graphitic Schist Marker Units of the Sourdough Hill Member that outcrop on the Duncan Creek Road and along Lightning Creek to the south of the area.

The sequence generally strikes to the east to east-southeast and dips moderately to the southwest.

The north-northeast striking Flame Vein shown in Figure 2-3 developed in an environment of competency contrasts caused by juxtaposition of quartzite, schist, and greenstone along the left lateral Flame vein-fault that has now been traced by drilling along a strike length of approximately 1,150 m to a depth of at least 450 m. The structure dips moderately steeply to the east-southeast and, in the vicinity of the District Mill, is offset at surface by approximately 95 m of apparent right lateral oblique slip movement along the west-northwest trending post-mineral Mill Fault. The Mill Fault dips approximately 66° to the southwest with the mineralization in the hangingwall section referred to as the Lightning Zone and that in the footwall section referred to as the Christal Zone. The Christal Zone appears to be cut at its northern end by another smaller post-mineral fault, but any offset on this is not yet resolved.

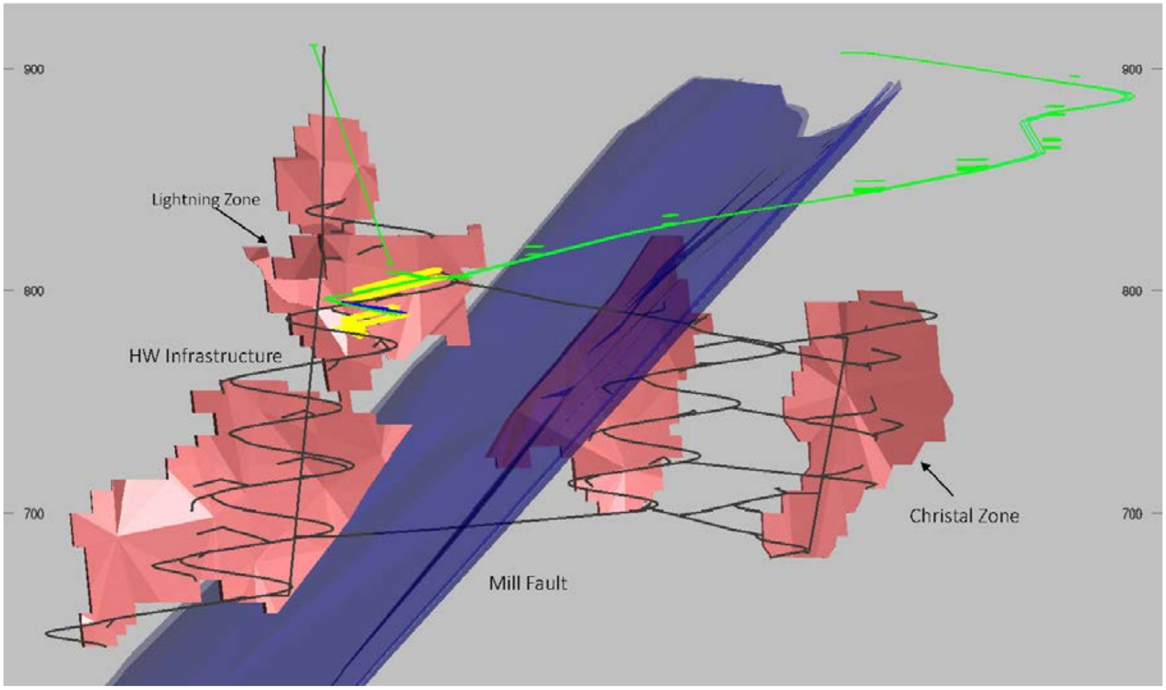


Figure 2-3 Flame and Moth Deposit Longsection (Isometric view looking northwest)

In the Christal Zone, the Flame Vein has an average strike of 025° and an average dip of 66° southeast over a strike length of 380 m to a depth of 340 m. In the Lightning Zone, the Flame vein has an average strike of 027° with a dip of 62° southeast, and extends over a strike length of 830 m and to a depth of 400 m. Recent drilling in the upper part of the Lightning Zone has identified a mineralized hangingwall vein to the Flame Vein developed along about 140 metres strike length over 160 metres depth. The Mill fault is primarily composed of very poor quality rock, with gouge and breccia materials. The fault thickness varies along strike, but near the proposed development locations the fault is approximately 2 to 4 m wide. Rock in the immediate hangingwall and footwall to the fault is considered to be of poor quality and exhibits conditions similar to those within the fault.

2.3 GENERAL ENVIRONMENTAL CONDITIONS

Table 2-1 summarizes existing environmental conditions in the Keno Hill project area. The Keno Hill Silver District lies within the Yukon Plateau – North Ecoregion, just south of the Wernecke Mountains. The terrain consists of concordant, rolling, upland areas separated by wide valleys. Alpine mountain peaks extend above the uplands locally. Many valleys include peatlands, palsas, fens and meadows of sedge tussocks. Upper slopes may be covered with scree material, with treeline occurring at 1,350 to 1,500 m. The area has been influenced by the latest glaciation but shows more subtle evidence of an earlier event as well.

Table 2-1 Keno Hill District Environmental Setting Summary

Drainage Region	Stewart River drainage region
Significant Watersheds	McQuesten River, Lightning Creek and Stewart River Watershed, Mayo River
Ecoregion	Yukon Plateau (North)
Study Area Elevation	900-1350 masl (metres above sea level)
Vegetation Communities	Northern boreal forests occupy lower slopes and valley bottom; spruce, pine and alder; grasses and sedges, mosses occupy forest floor; heavy moss and lichen growth resident as ground cover understory of shrub willow; open and forest fringe areas of willow and scrub birch, and various flowering plant species.
Wildlife Species	Moose, grizzly and black bear, caribou, beaver, wolf, lynx, marten, wolverine, western tanager, magnolia warbler, white-throated sparrow, bald eagle, furbearers and small animals. Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed species include: Common Nighthawk (Threatened); Rusty Blackbird and Olive-Sided Flycatcher (Special Concern).
Fish Species	Bering and Beaufort Sea salmonids and freshwater species, including: Arctic grayling, Arctic char, lake trout, trout perch, lake whitefish, broad whitefish, burbot, inconnu, Arctic Cisco, Northern pike, slimy sculpin

2.4 HYDROLOGY

The Keno Hill Silver District contains two main watersheds: Lightning Creek water shed and the Christal Creek watershed which is a sub-watershed of the South McQuesten River.

Christal Creek flows northwest from Christal Lake for approximately 22 km before it flows into the South McQuesten River. Water chemistry and aquatic resources in the creek have been influenced by previous mine and milling operations including tailings deposition and adit discharge. Christal Creek receives input from treated water from Galkeno 900 adit, Galkeno 300 adit, and seepages (surface and groundwater) from workings on the west face of Keno Hill. Christal Lake has been a receptor for effluent from various mines including Galkeno 900 and the Mackeno Mill area and Mackeno tailings, contributing to metal loading in Christal Creek.

Lightning Creek is situated within a narrow valley with a steep gradient flowing from the north side of Sourdough Hill into Duncan Creek, which drains into the Mayo River. Hope and Thunder Gulches flow into Lightning Creek within the bounds of the KHSD. Lightning Creek has also been the site of extensive placer mining upstream of Keno City both historically and at present time. Treated mine adit discharge (QZ09-092-2) from Bellekeno 625 (north side of Sourdough Hill) eventually reports to the Lightning Creek drainage.

2.5 CLIMATE

2.5.1 Meteorological Monitoring

An automated meteorological station (Calumet Weather Station) was installed on Galena Hill above the Hector adit at 1,380 masl in June 2007. The station measures air temperature, relative humidity, barometric pressure, rainfall, wind speed and direction, solar radiation, and soil temperature. Average monthly temperatures range from a low of approximately -19^{o}C in January to a high of approximately 12^{o}C in July. Table 2-2 summarizes total rainfall and average temperatures recorded at the Galena Hill meteorological station from 2007 to date.

Table 2-2 Calumet Weather Station Temperature and Rainfall 2007-2014

	Average Temperature (°C)								Total Rainfall (mm)							
	2007	2008	2009	2010	2011	2012	2013	2014	2007	2008	2009	2010	2011	2012	2013	2014
January	-	-17.18	-18.84	-14.08	-16.78[3]	-18.71[4]	-16.90	[6]	-	-	-	-	-	-	-	[6]
February	-	-16.99	-16.95	-9.09	-15.88[3]	-9.94[4]	-10.81	-15.69	-	-	-	-	1.8[3]	[9]	-	-
March	-	-11.04	-16.39	-9.21	-12.92[3]	-12.92[4]	-14.45	-11.95	-	-	-	-	0.5[3]	[9]	0.6	-
April	-	-4.93	-4.75	-2.01	-3.77[3]	-1.88[4]	-12.32	-4.39	-	1	-	1.3[3]	2.8[3]	[9]	0.2	6.2
May	-	3.31	3.66	5.35	4.41[3]	1.61[4]	n/a	4.17	-	25.4	21.8	32.3[3]	15.5[3]	[9]	n/a	17.2
June	*11.25*[1]	8.70	9.58	8.68	8.82[3]	7.76[4]	11.59	*7.31*[11]	*55.2*[1]	44.6	*11.8*[7]	56.7[3]	121.8[3]	[9]	45.2	*69.8*[11]
July	11.80	8.17	12.45	10.50	3.80[3]	7.84[4]	11.11	[11]	108.8	108.4	*22.8*[8]	137.7[3]	135.9[3]	*27.8*[10]	39.2	[11]
August	9.63	5.54	7.47	9.61	[2]	8.33[5]	10.58		54.8	110.2	89.4	140.0[3]	[9]	45.0	35.6	
September	1.12	2.27	3.58	2.40	[2]	3.39	3.33		57.6	61.4	50.4	78.0[3]	[9]	17.4	64.6	
October	-6.53	-7.20	-4.73	-4.86	[2]	-8.16	-2.52		-	12.6	-	16.0[3]	[9]	1.6	14.6	
November	-9.41	-10.17	-11.94	-11.19	-17.39[4]	-18.44	-15.50		-	-	-	-	-	0.2	0.0	
December	-16.19	-18.34	-11.16	-17.72	-11.78[4]	-18.83	*-14.55*[6]		-	-	-	-	-	0	*0.0*[6]	

Notes:

1 Station Commissioned June 15, 2007: calculations for last half of June.

2 Temperature probe malfunction

3 Rainfall gauge malfunction on June 11; total rainfall provided for June 1-11

4 Rainfall gauge back online July 7; total rainfall provided for July 7-31

5 Tipping bucket malfunction

6 Calculated from MAYO A data

A Campbell Scientific meteorological station located above the District Mill near Keno City (at an elevation of 935 masl) was commissioned and installed in June 2011. The sensors on this station include air temperature, relative humidity, rainfall and wind speed and direction. Note that the wind sensor is at a height of 10 m, which is the standard height for use of the data in air dispersion models. Table 2-3 summarizes data collected to date at the Keno District Mill.

Table 2-3 Monthly statistic for meteorological parameters collected at Keno District Mill Station

Month	Extreme Maximum Temperature (ºC)	Average Maximum Temperature (ºC)	Average Temperature (ºC)	Average Minimum Temperature (ºC)	Extreme Minimum Temperature (ºC)	Average Relative Humidity (%)	Total Precip (mm)	Average Wind Speed (m/s)[1]	Extreme Maximum Wind Speed (m/s)[1]	Average Solar Radiation (W/m^2)	Total Evapo-transpiration (mm)[8]
Jun -11[2]	24.72	18.59	11.96	6.30	-2.56	n/a	n/a	1.35	9.14	n/a	n/a
Jul-11	25.67	18.50	12.91	8.00	5.09	n/a	n/a	1.15	8.02	n/a	n/a
Aug-11	22.32	15.58	9.78	5.37	1.93	n/a	n/a	1.18	9.15	n/a	n/a
Sep-11	17.97	11.29	6.07	1.85	-2.47	n/a	n/a	1.43	11.36	n/a	n/a
Oct-11	7.20	0.20	-2.74	-5.41	-9.84	n/a	*2.60*[3]	0.94	13.12	n/a	n/a
Nov-11	-4.23	-16.79	-19.54	-22.47	-34.99	n/a	0.00	0.58	12.05	n/a	n/a
Jan-12	-0.96	-19.10	-23.13	-26.79	-37.32	n/a	0.00	*0.59*	*9.51*	n/a	n/a
Feb-12	2.77	-6.77	-10.00	-13.07	-26.78	n/a	0.10[4]	*1.38*	*15.62*	n/a	n/a
Mar-12	5.33	-7.69	-13.37	-18.00	-27.80	n/a	0.00	*0.97*	*9.24*	n/a	n/a
Apr-12	9.69	6.13	0.96	-3.87	-15.92	n/a	0.60[4]	1.37	10.27	n/a	n/a
May-12	17.78	10.73	6.31	1.91	-3.47	*51.81*[5]	18.30	1.78	10.60	n/a	n/a
Jun-12	27.62	18.41	13.46	8.29	4.42	56.35	21.70	1.44	10.26	n/a	n/a
Jul-12	25.14	18.07	12.75	7.73	1.64	69.26	85.80	1.36	12.99	n/a	n/a
Aug-12	21.72	16.31	11.25	6.56	-0.89	67.79	47.00	1.62	9.41	n/a	n/a
Sep-12	20.24	10.33	5.90	2.08	-5.22	69.51	36.40	1.84	14.27	n/a	n/a
Oct-12	7.60	-3.95	-7.35	-10.32	-20.62	79.54	7.60	1.13	10.37	n/a	n/a
Nov-12	-8.98	-19.55	-21.90	-24.32	-33.36	81.43	0.00	0.94	9.36	n/a	n/a
Dec-12	-3.36	-21.30	-23.44	-25.58	-36.32	81.34	0.00	*0.26*	*5.93*	*1.01*[6]	*0.05*[7]
Jan-13	-1.59	-17.06	-20.01	-23.08	-41.48	82.92	0.00	*0.76*	*14.48*	1.06	0.81
Feb-13	1.54	-9.10	-12.52	-15.46	-23.74	88.36	0.30[4]	*0.85*	*12.25*	10.26	1.27
Mar-13	3.26	-7.52	-13.16	-17.99	-29.96	64.08	3.90	1.59	12.47	95.82	6.33
Apr-13	6.07	-2.76	-7.94	-13.69	-25.07	54.50	8.20	2.44	12.93	190.02	14.48
May-13	23.31	10.20	5.27	0.23	-9.46	61.83	39.60	1.77	11.76	215.44	21.70
Jun-13	30.51	19.97	14.27	8.30	1.84	58.72	57.30	1.82	12.87	234.69	29.79
Jul-13	24.93	19.40	14.01	8.60	2.25	62.67	46.90	1.75	16.14	211.00	27.10
Aug-13	27.34	18.54	12.98	8.01	-0.38	66.30	51.90	1.49	11.05	156.25	21.38
Sep-13	16.11	9.69	5.81	2.26	-3.74	77.52	59.70	1.54	10.99	79.69	10.88
Oct-13	8.25	1.61	-1.32	-4.21	-10.10	86.75	44.60	1.11	11.62	35.75	4.26
Nov-13	0.18	-13.41	-16.68	-20.08	-37.96	84.26	10.60	*1.02*	*10.96*	4.93	*1.08*
Dec-13	-1.73	-21.23	-23.91	-26.70	-35.29	78.77	4.90	*0.75*	*9.47*	0.57	*0.62*
Jan-14	3.74	-9.33	-12.16	-15.10	-32.22	89.44	24.9	*0.72*	*10.03*	2.42	*0.641*
Feb-14	-1.93	-15.25	-19.40	-23.02	-33.55	75.20	2.9	0.87	10.85	31.34	1.988
Mar-14	4.57	-5.31	-11.29	-16.16	-26.79	54.77	0.7	1.57	11.98	115.54	9.174
Apr-14	10.93	4.09	-0.96	-5.78	-17.33	57.54	5.1	1.64	12.05	171.28	15.77

Month	Extreme Maximum Temperature (ºC)	Average Maximum Temperature (ºC)	Average Temperature (ºC)	Average Minimum Temperature (ºC)	Extreme Minimum Temperature (ºC)	Average Relative Humidity (%)	Total Precip (mm)	Average Wind Speed (m/s) [1]	Extreme Maximum Wind Speed (m/s) [1]	Average Solar Radiation (W/m^2)	Total Evapo-transpiration (mm)[8]
May-14	21.30	12.70	7.64	2.03	-3.03	52.18	12.8	2.09	19.21	217.91	29.81
Jun-14	24.93	16.21	11.39	5.95	-0.13	56.14	40.4	1.78	10.43	217.90	28.58
Jul-14	23.44	18.49	13.68	8.73	-0.04	65.01	31	1.63	13.38	187.31	23.84
Aug-14	22.09	15.57	10.87	6.93	0.06	74.59	67.7	1.44	11.85	139.84	15.72
Sep-14	17.70	8.76	4.28	0.49	-6.74	70.54	36.4	1.37	11.32	93.38	11.56
Oct-14	7.47	-0.91	-3.79	-6.33	-15.42	88.21	15.7	1.24	12.80	24.83	3.39
Nov-14	-2.21	-12.15	-14.34	-16.59	-30.16	88.64	1.40	*0.59*	*6.27*	3.12	*0.60*
Dec-14	-0.09	-11.05	-13.67	-16.31	-26.66	89.06	1.40 [9]	*0.51*	*8.87*	0.33	*0.40*
Jan-15	-0.34	-13.74	-16.50	-16.50	-34.86	85.85	1.9	*0.49*	*5.488*	1.30	*0.431*
Feb-15	2.87	-12.95	-15.93	-15.93	-39.39	84.95	12.7	0.75	10.36	9.06	0.86
Mar-15	5.54	-4.76	-9.83	-9.83	-28.70	70.52	4.1	1.45	12.6	86.48	6.29
Apr-15	10.90	5.36	0.56	0.56	-10.48	61.71	4.2	1.75	12.37	163.45	16.03
May-15	26.51	16.95	10.96	10.96	-7.00	45.35	1.4	1.89	10.64	246.80	34.67

[1] 29 complete days – station was commissioned on June 2

[2] Partial month (16 complete days) - also some rainfall was recorded at temperatures below 0 °C and may be due to snowmelt

[3] Rainfall recorded at temperatures below 0 °C may be due to snowmelt

A Yukon Government monitored snow course station located at the following coordinates: 63°55'N, 135°24'W and at an elevation of 1,310 masl also exists in the area and has been monitored regularly for over 30 years. Table 2-4 provides data collected by YG during snow surveys conducted between 2006 and 2015.

Table 2-4 Calumet - YG Snow Course Station Data 2006-2015

Date of Survey	Snow Depth (cm)	Water Content (mm)	Average Water Content* (mm)
28/2/2006	87	196	180
28/3/2006	90	186	202
1/5/2006	113.6	275 E	199
No survey	-	-	180
30/3/2007	93	186	201
27/4/2007	80	134	199
2/3/2008	63	104	180
1/4/2008	71	110	201
1/5/2008	60	158	196
24/2/2009	86	161	178
1/4/2009	103	242	198
28/4/2009	98	235 E	195
24/2/2010	68	110	177
29/3/2010	77	154	199
26/4/2010	57	133	196
23/2/2011	88	139	175
28/3/2011	84	146	198
27/4/2011	61	148	194
27/2/2012	94	151	174
26/3/2012	99	180	196
25/4/2012	92	236	193
25/2/2013	87	158	173
26/3/2013	77.2	186	196
29/4/2013	77	192	194
28/2/2014	82	189	173
31/3/2014	80	207	195
30/4/2014	80	173	197
25/2/2015	86.9	184	173
31/3/2015	93	232	196
27/4/2015	64	184	194

Note:
E=Estimate
*Average for reporting period (March/April/May) with approximately 30 years on record.

2.6 ORE RESERVES

2.6.1 Flame and Moth

Mineral reserves are currently not stated for the Flame and Moth deposit as mineral reserves are to be known to be economically feasible for extraction. The most recent Preliminary Economic Assessment completed on the Flame and Moth deposit was entitled "Updated Preliminary Economic Assessment for the Keno Hill Silver District Project – Phase 2, Yukon, Canada" with a report date of December 10, 2014.

Mineral Resources for the Flame and Moth deposit have been further updated in April 2015 to incorporate additional surface exploration results completed since the previous estimate, and announced in the press release, "Alexco Announces Indicated Silver Resource Estimate Increases of 17% at Flame & Moth and 37% at Bermingham, Resulting in a 10% Increase Overall for Keno Hill Silver District" dated April 30, 2015. The updated mineral resource estimates were prepared by SRK Consulting (Canada) Inc. ("SRK") and are summarized in Table 2-5. A longsection showing the Flame and Moth mineral resource is presented in Figure 2-4.

Table 2-5 Mineral Resource Statement for the Flame and Moth Deposit, April 28, 2015

Deposit	Class 1,2,3	Tonnes	Ag (g/t)	Au (g/t)	Pb (%)	Zn (%)	Ag (Troy ounces)
Flame & Moth	Indicated	1,638,000	506	0.43	1.89	5.4	26,650,000
	Inferred	348,000	366	0.26	0.47	4.37	4,095,000

Notes:

1. The effective date of these mineral resource estimates is April 28, 2015.
2. Mineral resources are not mineral reserves and do not have demonstrated economic viability. All numbers have been rounded to reflect the relative accuracy of the estimates.
3. Reported at a contained metal value cut-off grade of CAD $185.00/t (US$0.85=C$1) using consensus long term metal prices (US$) and recoveries developed for the nearby Bellekeno deposit (Ag US$20.00/oz, recovery 96%; Pb US$0.94/lb, recovery 97%; Zn US$1.00/lb, recovery 88%; Au US$1,300/oz, recovery 72%).
4. Ag grades capped at 7,500 g/t; Zn capped at 30%; limited influence of high grade intersections during estimation.

The additional claims associated with the Flame and Moth deposit are shown in Table 2-6.

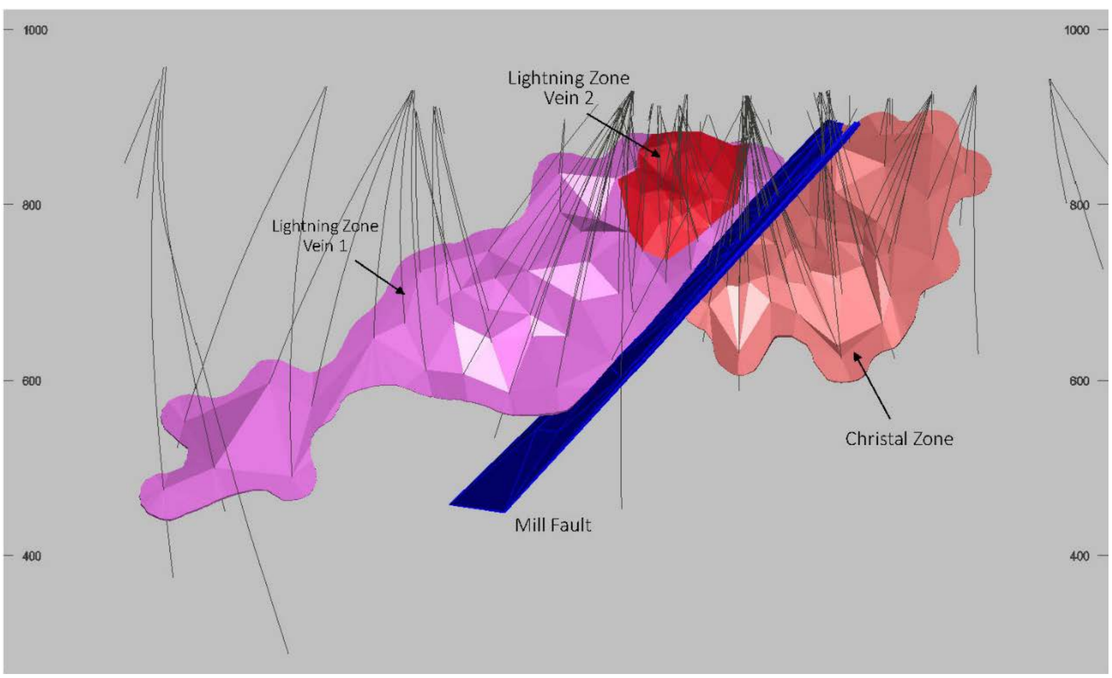


Figure 2-4 Flame and Moth Resource Longsection, view North-northwest

Table 2-6 Additional claims for Flame and Moth Property for QML amendment

Grant Number	Claim Name
56404	Frances 8
YC01993	Blue
YC90545	Blue Fr. 2
12915	Siwash
56405	Louis 1
56406	Louis 2
56581	Overtime 1

3 UNDERGROUND MINE DESIGN AND METHODS

3.1 MINE DESIGN

The Flame and Moth portal collar is located ~50 metres from the Keno District Mill at elevation 906 masl (Figure 3-1). Figure 3-1 shows the location of the Flame and Moth portal in relation to the mill as well as the surface projected centerline of the decline. Given the proximity to the mill the development project will utilize as much common infrastructure as possible.

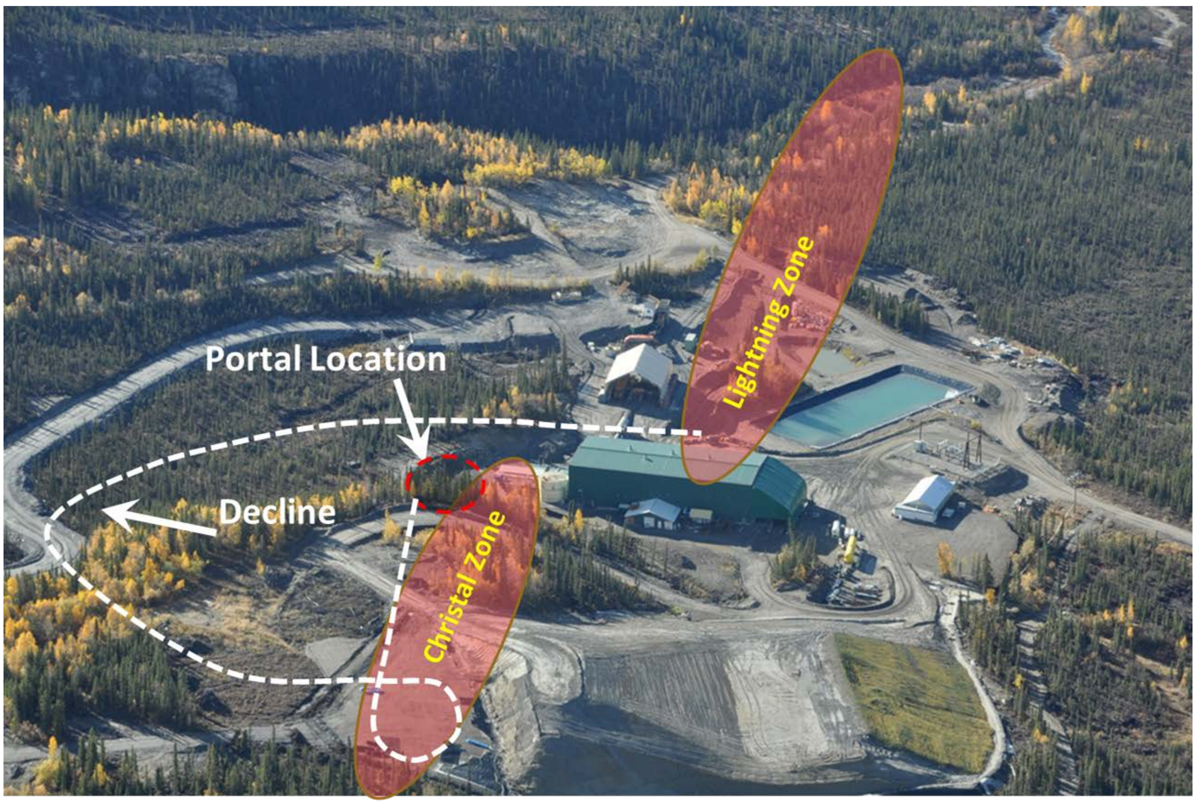
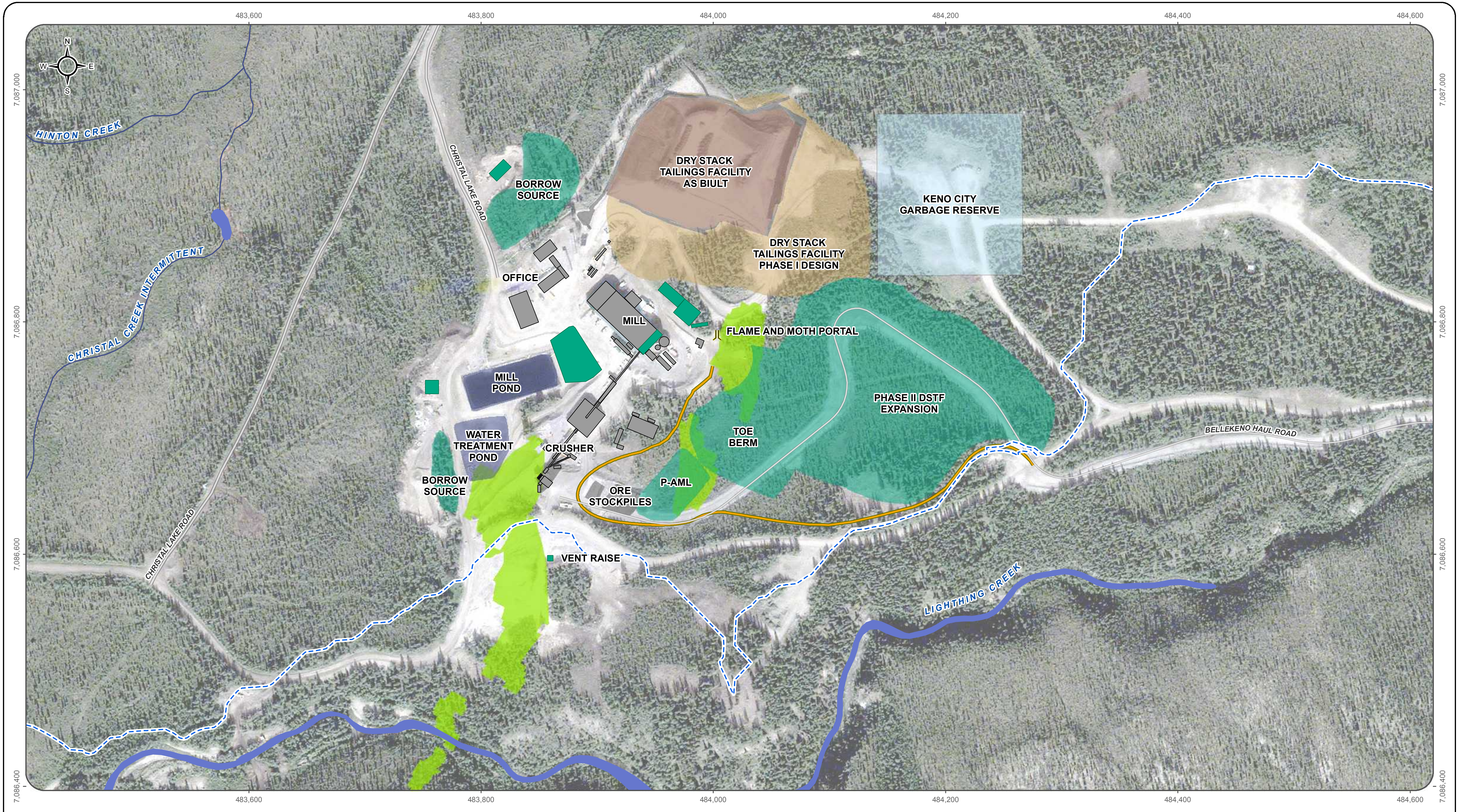


Figure 3-1 Flame and Moth Resource Portal Location

The site layout for Flame and Moth mine is shown in Figure 3-2. The proposed Flame and Moth underground workings are shown on Figure 3-3.



Satelite imagery obtained from Yukon Geomatics map service http://mapservices.gov.yk.ca/ArcGIS/services on January 2018

Datum: NAD 83; Projection: UTM Zone 8N

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1:3,000 *(when printed on 11 x17 inch paper)*

0 25 50 100 150 Meters

- DSTF 322k Tonnes Design
- Current DSTF
- Existing Features Footprint
- Mill Pond
- To Be Constructed Features
- Adit
- Land Disposition
- Flame and Moth Vein
- Watershed Boundaries
- Proposed Road
- Road

AKHM

AEG

KENO HILL SILVER DISTRICT MINING OPERATIONS

FIGURE 3-2
FLAME AND MOTH PROJECT OVERVIEW

JANUARY 2018

The major features of the surface infrastructure for the Flame and Moth mine design includes the following facilities;

- Shop, office and dry;
- Ore and waste handling/storage facilities;
- Electrical power distribution;
- Compressed air generation;
- Supplies storage;
- Ventilation fans and heaters; and
- Water handling.

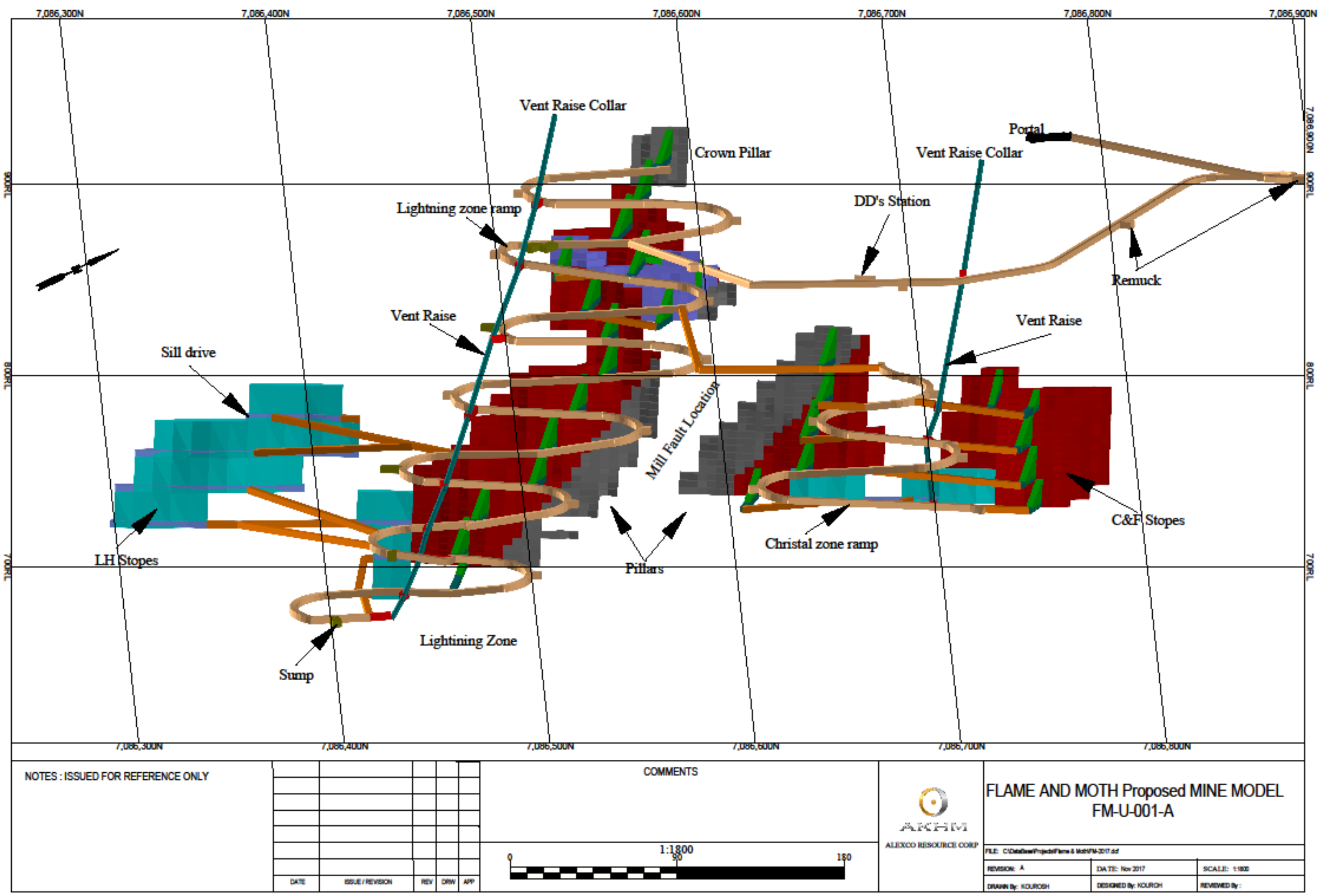

Figure 3-3 Flame and Moth Resource Mine Plan View

The main features of the Flame and Moth underground mine design includes; Total Life of Mine decline development consisting of 700m of primary ramp (3.7m x 3.7m @ -15%) from the portal at the 906 masl elevation to the 796.5 masl level. In addition to the primary decline, approximately 93 metres of remucks, sumps, drill access platforms and safety bays are part of the Phase 1 development.

- Ore and waste level access drifts.
- Underground shop and refuge station; and ventilation raise.

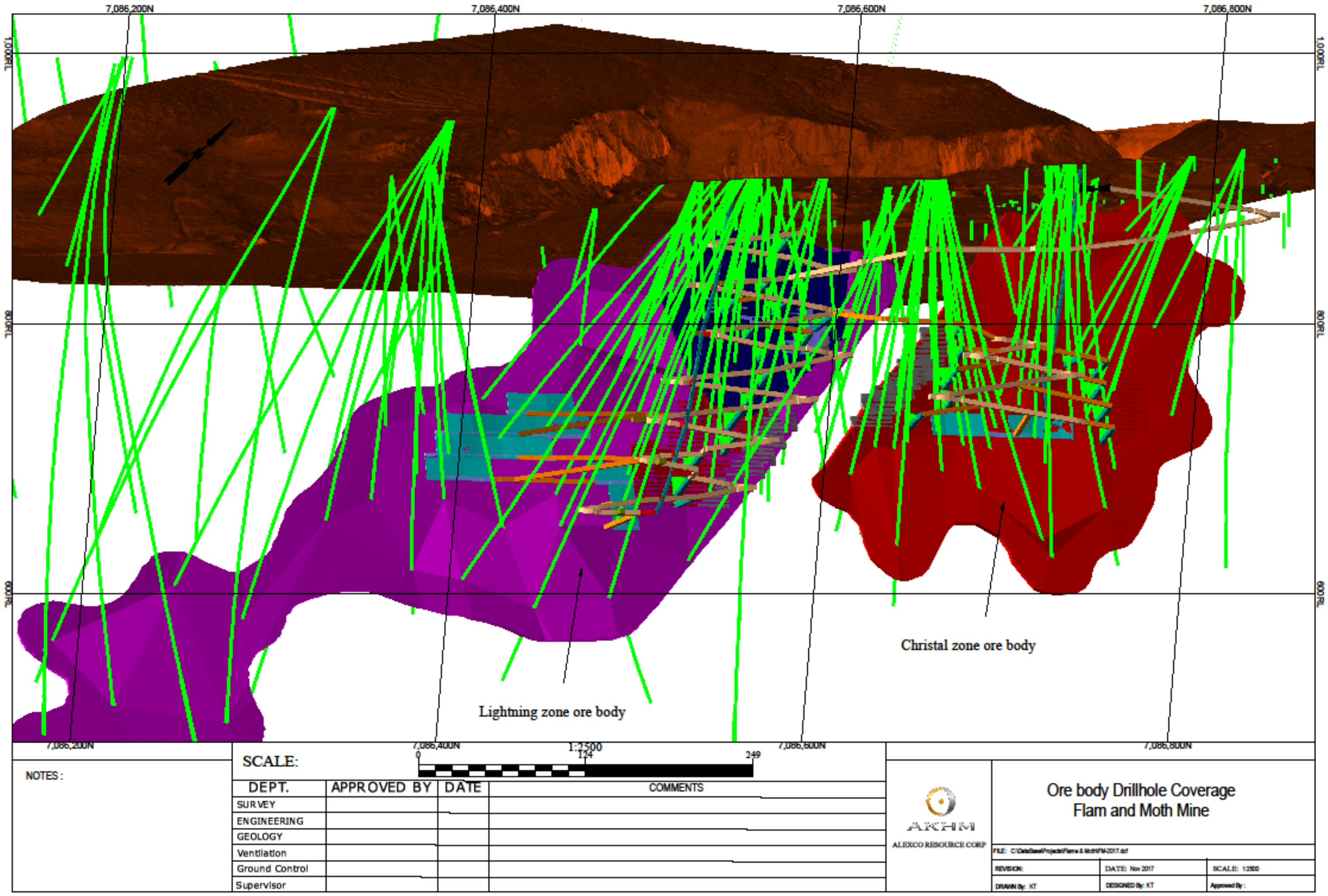

Figure 3-4 Flame and Moth Drill Hole Coverage of Ore Body

DEVELOPMENT AND OPERATIONS OVERVIEW

3.1.1 Clearing

Minimal area is required to be cleared at Flame and Moth as it will use existing cleared area at the Keno Hill District Mill site. The areas that have been cleared are the proposed portal location and haul road to the existing crusher pad, and areas requiring further clearing are the non-acid generating or metal leaching (N-AML) waste rock stockpile area and the potentially acid generating and/or metal leaching (P-AML) waste rock storage facility (WRSF). The total area to be cleared for Flame and Moth N-AML WRDA is 8,000 m^2 and 5,000 m^2 for the P-AML WRSF. Clearing will be kept a minimum at the Flame and Moth Mine. Clearing will be conducted under the environmental protection provisions of the QML.

3.1.2 Stripping and Grubbing

Stripping and grubbing is required for the area to be cleared for the Flame and Moth N-AML WRDA. The area to be stripped and grubbed will be kept a minimum at the Flame and Moth Mine. No stripping or grubbing is required for the P-AML WRSF. Any vegetation stripped or grubbed will be stockpiled for potential use for reclamation.

3.1.3 Portal and Decline

The Flame and Moth portal collar will be located at UTM 7,086,787N and 484,004E zone 8. The Flame and Moth portal collar will consist of a 5.0 metre steel multiplate culvert half arch anchored to concrete blocks. The steel multiplate culvert will be pinned with rock bolts to bedrock and shotcreted. The decline will then narrow to 3.7 m x 3.7 m (Figure 3-4) and advance the remaining distance at that diameter at an overall grade of -15%. The initial slope of the portal entrance will be at +1% grade to eliminate any surface water from outside the portal flowing down the decline ramp. Approximately 4 metres of blasting and excavation will occur to construct the opening for the multiplate cover. Once the cover is installed, the culvert arch will be covered with overburden material followed by revegetation. N-AML waste generated from the decline development will be used for general construction of laydown yards and the road to the crusher from the portal. P-AML waste will be stored either in a temporary P-AML facility located adjacent to the coarse ore stockpile, on the coarse ore stockpile adjacent to the crusher which is constructed with an impermeable cemented base and designed to store high sulfide ore material, or transported to the existing Bellekeno East P-AML facility. The new P-AML facility constructed for Flame and Moth will follow the EBA design specifications for P-AML facilities.

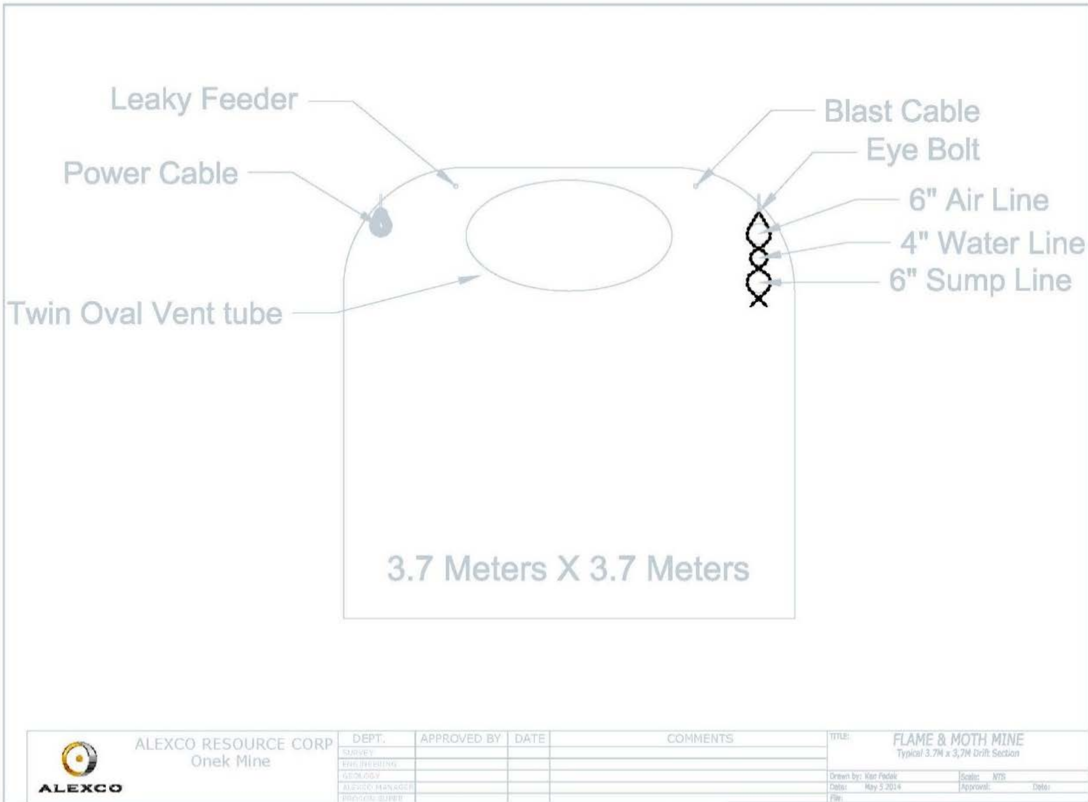

Figure 3-5 Typical Decline Cross Section and Services

The Flame and Moth proposed decline development consists of 701 metres of primary ramp (3.7m x 3.7m @ -15%) from the proposed portal site at the 906 masl elevation to the 805.5 masl level. Secondary drifts including but not limited to a maintenance shop, remucks where required, safety bays, level accesses, and sumps will be completed as the extraction drift advances to the vein. A conventional raise will be driven from the 805.5 level to surface.

Ore access drifts will be driven at 50 meters intervals from the footwall extraction drift. The vein will be intersected perpendicular to the ore access drift. Access drifts will first be driven 3.1 x 3.1 meters at -10%, this will allow for 5 cuts of the vein from each access drift.

A central blasting system, using conventional cabtire wire, junction boxes and blasting boxes will be used throughout the development and production stages of the mine. The main central blast station will be placed outside the portal entrance.

3.1.4 Mining Methods

The relevant characteristics of the deposit from a mining method selection perspective are:

- The deposit is offset by approximately 95 m of apparent right lateral movement along the west-northwest trending post-mineral Mill fault. The Mill fault dips approximately 66° to the southwest with the mineralization in the hangingwall section referred to as the Lightning zone and that in the footwall section referred to as the Christal zone;

- Most of the deposit area is covered by overburden that ranges in depth from 0 to 50 m;
- It is a vein-type deposit dipping at roughly 64°, comprised of two main veins – Lightning and Christal, plus a much smaller splay vein called Lightning vein 2;
- Vein widths vary from less than 1 to 10 m. The selected mineable portions of the veins are mainly in the range of 4 to 7 m wide;
- It is a high grade, high value deposit requiring good mining recovery;
- It is a shallow deposit with mining depths ranging from the crown pillar 30 m below bedrock surface to a current maximum depth of 270 m;
- Vein continuity is expected to be reasonably good with contacts that can be visually identified;
- Wall rock strength is good with the vein material being of fair to weak. Vein material strength is expected to be much improved when dewatered.

Planned mining methods are predominantly longhole and cut and fill, similar to the mining methods currently used at Bellekeno (Table 3-1).

Table 3-1 Mining Method Selection

Selected Mining Methods	Justification
Overhand Cut and Fill	Selected for less competent rock, less dilution, better ground control and optimized ore recovery
Long Hole	Selected for more competent rock and to extract the remaining pillars towards the end of the mine life

A brief description of each main mining method is given in the following pages.

Cut and Fill (CF) mining is a method of short hole mining used in a wide range of deposit geometries. There are two main methods of cut and fill (CF) mining; overhand cut and fill (OCF) and underhand cut and fill (UCF). In the case of Flame and Moth, only OCF is anticipated.

OCF typically uses uncemented fill and mining begins at the bottom of a mining block and advances in “slices” of “lifts” upwards. Stoping begins from an access ramp driven off the main level to the bottom of the mineralized zone to be accessed. Using development mining techniques, a drift is driven through the mineralized zone to the defined limit of mining. Upon completion, the drift (or "cut") is filled with cemented back-fill, which would consist of tailings or waste rock. Once the stope is filled the ore access off the main haulage ramp is driven down to access the next lift on top of filled cut. This process continues until the top of the stope is reached. See Figure 3-5 for a typical CF schematic. The majority of ore mined from the Bellekeno mine to date has been through OCF and cemented rock fill mining methods and is well demonstrated.

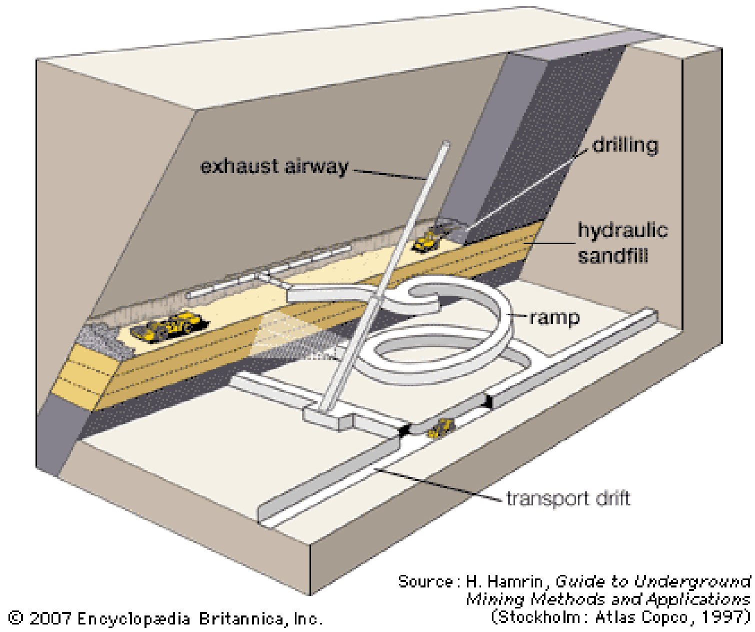

Figure 3-4 Overhand, Mechanized Cut & Fill Mining Methods (Source: Atlas Copco)

Long hole stoping ("LH") is normally used where large blocks of continuous mineralization can be identified and the surrounding rock is reasonably strong (Figure 3-6). Access to the top and bottom of the mineralized block is provided with drifts. A vertical opening (slot raise) is created within the stope block from the top of the block to the bottom. Long holes are drilled to blast vertical slabs off the mineralized block which is then scooped from a lower drawpoint by an LHD loader.

The depth on blast holes in the production sequence will be approximately 10-15 metres long. Blind raises or slot raises will be drilled with the LH drill unit, blasted and the stope block will be retreated out by drilling and blasting successive rings. Typically LH blocks will be pulled last unless they are in an area that would not conflict with ongoing operations. They could also be filled if they are located too close to mine infrastructure.

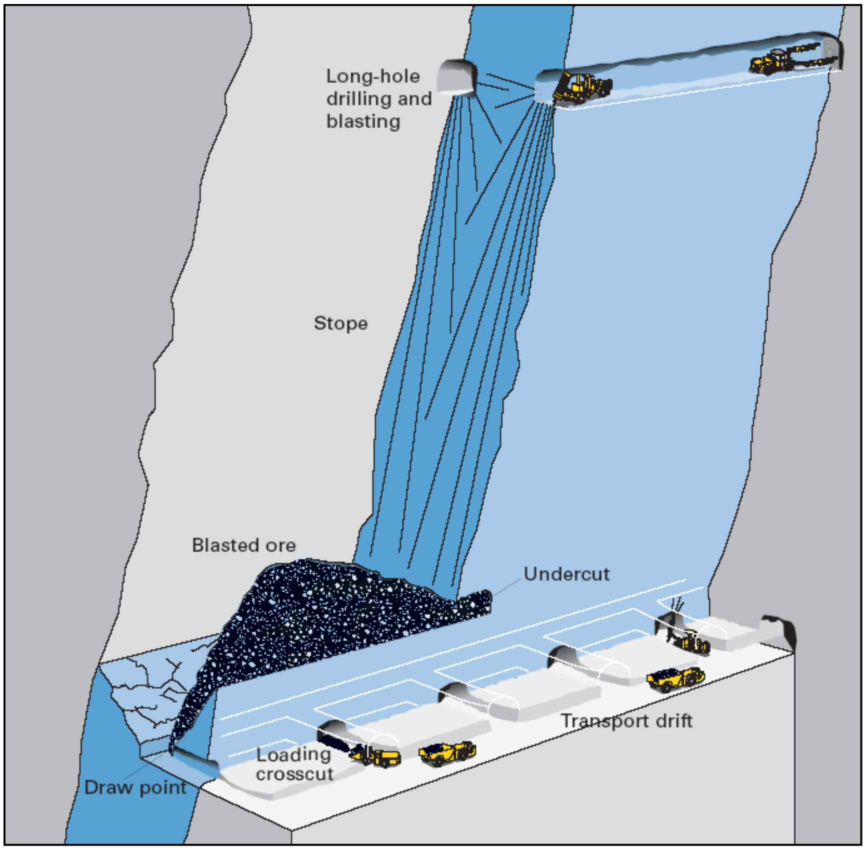

Figure 3-5 Long Hole Mining Method (Source: Atlas Copco)

3.1.5 Drilling and Blasting

A minimum of two jumbo drills are required to meet production targets for the deposit. The jumbos will be dedicated to the development of ramps, level accesses and sill development in the cut and fill stopes. A second, smaller, micro jumbo will be used in smaller headings and as a back-up for when the main jumbos are down for maintenance and servicing. In addition, jacklegs may be required if the vein geometry dictates.

Standard operating procedures are in place for drilling, loading, and blasting to ensure a safe work environment for all Alexco personnel, contractors, and visitors. These procedures follow all legislative requirements as set out in the Yukon OH&S Regulations and include but are not limited to the following:

Face Preparation and Drilling

1. Before drilling on any face, the back and walls must be made safe by scaling, bolting or by other means of support as required.
2. The face must be properly washed with water.
3. The driller must thoroughly examine the face for misfires, cutoff holes, and remnants of blast holes (bootlegs). All remnants of blasted holes must be washed out and marked with paint.
4. Any hole, regardless of length is to be treated as a misfire where:

- The hole cannot be inspected
- The toe of the hole is not visible
- Any explosive products and components remain in the hole

5. Lifters must be dug out, washed, marked and flagged with lifter tubes.
6. All faces in abandoned headings must be examined, washed, marked up, dated and signed.
7. Drilling must not be carried out within 160mm (6 in.) of a hole that has been previously blasted, or an intact portion of a blasted hole.
8. Drilling must not be done within one meter (3.3 ft.) of any hole containing explosives.
9. Ensure that the face is marked up according to engineering or geology standards. This includes line, grade, drill pattern, and any special geological mark-ups.
10. Check scale the face as required as drilling proceeds.
11. The new cut must be rotated a minimum of one foot from the old cut.
12. Drilling and loading shall not be carried out concurrently on the same face.
13. All holes must be collared and drilled wet.

Loading and Blasting a Development Round

1. The face and work area must be checked for hazards before loading begins. Drilling operations may have loosened rock at the face. Check scale for loose before beginning loading operations. This is to ensure workers and explosives are not struck with loose rock. Falling rock could injure worker, cut nonel shock tube causing misfire, or in rare instances trigger a premature detonation wile loading.
2. All equipment not required for loading is to be removed from the working area.
3. “LOADED FACE” and “DO NOT ENTER” sign shall be hung across access to the drift before any holes are loaded.
4. Blow all holes clean to remove water and rock fragments, standing clear of the holes when blowing out to ensure nobody is hit by rock fragments.
5. Bring only the required number of detonators to the face.
6. Leave proper amount of collar in each hole.
7. Follow mine specifications for loading perimeter holes for perimeter control.
8. Stick powder shall be loaded into blast holes using a loading stick of non-sparking material.
9. When ground conditions allow for the use of ANFO, the following steps are to be carried out:
   - Inspect ANFO loader to ensure that no rock fragments are blocking the ejector.
   - Connect air hoses to the loader and use whip checks on connections. Before turning on the air make sure all valves are in the off position.
   - Only properly maintained anti-static hose shall be used when loading pneumatically.
   - The loader must be grounded to remove static electricity.
   - Ensure you have control of the loading hose at all times.
10. When priming explosives, only a non-sparking tool can be used to punch a hole in a cartridge, such as a powder punch.
11. Load holes from the top of the face and work your way down.
12. All holes must be loaded before hooking up the nonels to the B-Line.
13. Connect the nonels to the B-Line.
14. The blaster in charge will string the electric cap to the lead wire after running out the shunted lead wire from the central blast line or blasting box to the face. Test the lead wire to ensure there is no voltage in the line.

15. Attach the electric detonator to the detonating cord. Lastly, tie in the lead wire to the blast line or blasting box and check the continuity of the circuit.
16. Place proper signage at entrance to drift, warning personnel of a loaded round.
17. When loading is complete, return all unused explosives to the proper storage magazines and make required entries into the log books.
18. Remove material from the area prior to blasting. Ensure equipment is parked in an area where it will not be damaged by fly-rock or the concussion of the blast.

3.1.6 Mucking

Mucking will be accomplished by two 2.5 m^3 Load Haul Dump Loaders (LHD) to meet production targets. One 2.5 m^3 LHD will be dedicated to production from the stopes and fill placement. The second 2.5 m^3 LHD will be used for mineralized and waste rock mucking and in addition to waste fill placement when the other LHD is unavailable. A 1 m^3 LHD will be used where mechanized mucking in narrow veins is needed.

3.1.7 Backfill Procedures

Backfill materials consisting of development waste rock (N-AML and P-AML) and dry filtered tailings will be placed into empty stopes by Load Haul Dump (LHD) or 15-tonne trucks. The mix of these materials is flexible and will be varied to minimize the surface environmental impact while optimizing the most efficient and cost effective back filling sequence. For cut and fill stopes, the backfill will be pushed up tight to the back using an LHD equipped with a rammer jammer.

Cemented backfill at approximately 5% cement by weight will be used in longhole stopes. The cement, rock and water will be mixed by LHD bucket in a small sump-like cut out near the empty stope. Cement will be transported underground in bulk bags.

A waste rock and tailings materials balance for Flame and Moth is shown in Table 3-2. Waste rock will be brought to surface when immediate backfill locations are not available. Depending on backfill cycles, stockpiled waste on surface will be re-handled and brought back underground for use as backfill. The initial N-AML waste rock produced during the early development phase will be used for various construction projects including; the portal pad, laydown areas, haul road, coarse ore stockpile expansion, DSTF embankment and mill yard expansion. The amount of rehandle will be minimized as much as possible to reduce the surface stockpile as well as reducing operating costs from rehandling. Vein material and waste will be handled by 15-tonne capacity haulage trucks underground and on surface. Trucks will be loaded at remuck bays on the ramp systems and will haul directly to the coarse ore stockpile at the crusher or to the planned surface waste rock dump location, both surface locations being within ~175 m of the portal. A temporary surface stockpile will be required for storage of P-AML waste. The first priority for backfill material will be the P-AML waste stored on the surface stockpile. It is expected that 100% of all P-AML waste will be used as backfill underground.

Under the current mine plan, waste rock broken underground is estimated at 347,000 tonnes. Approximately 210,000 tonnes of this waste rock is needed for Flame and Moth backfill, along with 172,000 tonnes of dry filtered tailings. The amount of waste rock used for surface construction requirements is estimated to be up to 137,000 tonnes. Some will be used for the new haul road alignment next to the mill that will be required as the DSTF expands in future into the area of the currently used haul road from the Bellekeno Mine. Given the relatively small amount of waste that remains on surface for construction purposes, a dedicated waste rock storage area for Flame and Moth is not anticipated. All waste rock will be inspected and tested as per the updated Waste Rock Management Plan, which segregates all waste rock as either potentially acidic/metal leaching (P-AML) or not (N-AML).

Table 3-2 Waste Rock and Tailings Material Balance (tonnes)

Category	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Sources							
Tonnes Waste Rock Broken	38,711	151,826	23,274	40,832	30,733	31,086	31,000
Tonnes Tailings Generated	-	53,247	122,653	112,382	107,649	108,605	108,300
Tonnes Backfill Required	-	32,566	68,824	69,151	69,284	69,038	64,107
Destinations							
Waste Tonnes to Backfill		32,566	43,600	40,832	30,733	31,086	31,000
Tailings Tonnes to Backfill		8,956	25,224	28,319	38,551	37,952	33,107
Waste Tonnes to Construction	38,711	98,394	-	-	-	-	-

3.1.7.1 Cemented Tailings/Waste Rock Backfill

Cemented tails and waste rock back fill are the preferred backfill methods. Where sill pillars are required, a cemented fill will be used to provide a stable back to mine up to from beneath. Extraction of the vein from the final lift requires that the pillar is self-supporting and maintains integrity while the heading is active. The quality and the placement of the fill are both important factors in this application. An increased cement content of between four and five percent will be required to provide the required strength of the pillar. In areas where additional caution is required during final lift extraction, the lift will be mined using up-holes and remote mucking.

Careful preparation of the excavation where cemented fill is to be placed will be required, including blasting beyond the vein contacts to provide a clean, rough surface for the fill to hang on. The floor should be cleaned prior to placement to prevent material falling from the back following mining. An appropriate lead time should be provided to allow set-up and cure for the cemented fill. Standard quality control procedures (e.g. unconfined compressive strength and slump tests) should be completed during batching and following placement of cemented tailing fill materials.

3.1.7.2 Uncemented Rock/Tailings Fill

For the overhand cut and fill mining method, uncemented rock fill/development waste and/or tailings fill will likely be utilized. These materials should be placed into headings as tight to the back as possible.

3.1.7.3 Paste Fill

A paste backfill system will be considered a potential option if the cut and fill method is deemed to be the most suitable mining method.

3.1.7.4 Backfill QA/QC

Quality assurance and quality control (QA/QC) procedures are in place to ensure backfill procedures are appropriate for short and long-term stability requirements. The following QA/QC procedures will be part of the Flame and Moth backfill operations:

- All stopes requiring backfill will be filled as soon as practicable after the extraction of ore is complete. A backfill log is to be maintained to track fill schedules and determine schedule bottlenecks.
- An engineering design by a competent P. Eng. will be maintained to ensure that the backfill properties are met.
- A monthly and cumulative fill placement record will be maintained to track the filled and void space throughout the mine. This will provide the mine planning engineers the required information to ensure that the rate of backfilling is consistent with overall targets and ore production requirements.
- Specifications for fill material size, % solids, % cement, etc are to be tracked and regularly reviewed to ensure consistency with the fill design.
- Tight filling will be used for minimizing stope failures and to prevent hangingwall and crown failures from propagating and to maximize the confinement of the fill in the stope.
- Appropriate safety measures will be established and maintained through standard operating procedures and JHA's to ensure employee safety where waste is actively dumped into the edge of an open stope. Examples of these safety measures include site specific standard operating procedures, site evidence of engineered backstops, additional lighting, training and employee competency assessment.
- A quality control program will be implemented to conduct ongoing testing of cemented backfill material to ensure design strengths are achieved. This will be done through collecting samples and conducting 7 and 28 day UCS tests on the samples.

3.1.8 Geotechnical Assessment

3.1.8.1 Rock Mass Quality

The Flame and Moth Vein is divided into the Lightning and Christal mining areas, separated by the Mill fault. The fault offsets the Christal area in a southeast direction by approximately 95 m and is primarily composed of very poor quality rock, with gouge and breccia materials. The fault thickness varies along strike, but near the proposed development locations the fault is approximately 2 to 4 m wide. Rock in the immediate hangingwall and footwall to the fault is considered to be of poor quality and exhibits conditions similar to those within the fault. The geotechnical assessment utilized borehole core photo reviews, re-logging of core photos, and detailed reviews of mining intersections to assist in understanding the distribution of likely ground conditions. Simplistic geotechnical domains were developed that reflect the quality of the rock mass relative to the mining methods proposed. Representative ground classes were developed that broadly correlate with the Poor, Fair, and Good domains.

The rock mass was separated into hangingwall, mineralized zone, and footwall zones, and then domained in terms of poor, fair, or good rock mass conditions. Planned mining areas without borehole coverage were assigned fair conditions.

At the Flame and Moth deposit, ground conditions within the footwall are less favourable for infrastructure placement based on well-developed weak schist packages. As such the location of the infrastructure will be within the hangingwall of the veins.

3.2 GROUND SUPPORT METHODS

3.2.1 Ground Classes

Based on the interpreted geotechnical conditions at Bellekeno, the following ground classes have been defined and presented in Table 3-3. These are based on the lithology determined from the face of the advancing heading. These ground control classes will form the basis of the ground control management for Flame and Moth, and additional classes added or modified as required.

Table 3-3 Ground Classes

Area	Ground Class	Typical Conditions
Development Headings	DG-1	Quartzite with less than 20% interbeds of schist (graphitic, chloritic). RQD* 70 – 90%, and intact rock strength ("IRS") 100 – 150MPa.
	DG-2	Quartzite with 20 – 80% interbeds of schist (graphitic, chloritic). RQD 60 – 80%, and IRS 40 – 90MPa.
	DG-3	Fault/shear zones comprising predominantly graphitic schist. RQD <50% and IRS 15 – 40MPa.
Production Headings	PG-1	Predominantly intact vein materials with RQD 50 – 60% and IRS 20 –40MPa. Weaker materials comprise <10% of vein; HW and FW units are competent and intact.
	PG-2	Predominantly intact vein materials, with brecciated or sheared HW and/or FW contacts. RQD 20 – 50% and IRS 15 – 30MPa. Weaker materials comprise 10% - 40% of vein width.
	PG-3	Predominantly soil strength materials in vein. HW and FW units are broken or sheared. RQD 0 – 30%, and IRS <15MPa. Excavation potentially does not require the use of explosives

** "RQD" Rock Quality Designation*

3.2.2 Support Requirement Evaluation

Development and production support requirements are based on the ground classes that are determined to be representative of the likely rock mass conditions. Mining practices in and around the deposit will need to be cautious and excavation size and overbreak limited as much as possible to maintain the stability of the excavations. Mining rates within the vein are expected to be low due to the requirement of short face rounds.

3.2.3 Support Classes

Support classes have been determined for the ground classes. Options have been provided in some classes to allow for flexibility in the selection of mining equipment.

3.2.4 Development Support Requirements

In general, the infrastructure is considered to be open for the long term situation, and support has been designed accordingly. The infrastructure has been designed to avoid areas with potential poor ground conditions; in some situations this is unavoidable and support will be increased to provide long term stability. Table 3-4 outlines the recommended ground support for development headings.

3.2.5 Intersection Support

Where intersections will be formed in PG-1 and PG-2 ground conditions, a standardized bolting program will be required. In addition to the standard Support Class requirements, any span opened over and above the standard development width (4.5 m) should be supported with additional grouted rebar bolts installed with mesh straps throughout the intersection. It is a requirement that permanent support, suitable to the final excavated dimension, be installed prior to the breakaway being taken. Table 3-5 outlines the support requirements for large intersections.

Table 3-4 Support Classes for Development Headings

Area	Ground Class	Support Class	Support Requirements
Development Headings	DG-1	DS-1	1.8m friction anchors on 1.2x1.2m diamond spacing across back and shoulders. #6 galvanized welded wire mesh across back and shoulders. Additional spot bolting down ribs as required
		DS-2	1.8m grouted rebar on 1.2x1.2m diamond spacing across back and shoulders. #6 galvanized welded wire mesh across back and shoulders. Additional spot bolting as required
	DG-3	DS-3	1.8m resin grouted rebar on 1.2x1.2m diamond spacing down to 1.4m above floor. #6 galvanized welded wire mesh down to 1.2m above sill. Additional spot bolting as required. Mesh straps as required
	DG-4	DS-4	25mm flash-coat shotcrete in back and ribs. 2.4m resin grouted rebar on 1.0x1.0m diamond spacing down to 1.2m above floor. #6 galvanized welded wire mesh down to 1.0m above sill. Mesh straps as required. 50-75mm additional shotcrete in back and ribs. If required: spiling at 30cm centres with 4.5m self-drilling or grouted hollow bar spiles

Table 3-5 Support Requirements for Large Intersections

Area	Ground Class	Support Requirements
Development Headings	DG-1	2.4m grouted rebar on 3.0m diamond spacing throughout intersection Mesh Straps Final support installed before breakaway taken
	DG-2	
	DG-3	4.5m cable bolts on 2.0m diamond spacing throughout intersection Mesh straps Final support installed before breakaway taken

3.2.6 Production Support Requirements

Support design for production headings has been based on observed ground conditions, historic support performance, and anticipated ground conditions. It should be assumed that an increase in ground support will delay advance rates. Table 3-6 outlines support for production headings.

Table 3-6 Support Classes for Production Headings

Area	Ground Class	Support Class	Support Requirements
Production Headings	PG-1	PS-1	1.8m friction anchors across back on 1.2x1.2m spacing; rib bolting as required. If required: #6 galvanized welded wire mesh across back and shoulders. If required: 25mm flash-coat shotcrete in back; rib coverage as required
		PS-2	1.8m friction anchors across back on 1.2x1.2m spacing; rib bolting as required. #6 galvanized welded wire mesh across back and shoulders. If required: 25mm flash-coat shotcrete in back; rib coverage as required
	PG-2	PS-3	1.8m resin grouted rebar* across back and either friction anchors or grouted rebar in ribs on 1.0x1.0m spacing #6 galvanized welded wire mesh across back and shoulders. Mesh straps as required
	PG-3	PS-4	25mm flash-coat shotcrete on back and ribs. 1.8m grouted rebar* on 1.0x1.0m spacing in back and ribs. #6 galvanized welded wire mesh down to 0.8m above the sill 50-75mm shotcrete in back and walls If required: spiling at 30cm centers with 4.5m self-drilling or grouted hollow bar spiles. Mesh straps as required.

3.2.7 Shotcrete Requirements

Where required, shotcrete will be used to provide short and long term stability to access and production headings. In production headings, the main purpose of the shotcrete will be to prevent progressive ravelling of the rock mass. Where required, a 25 millimetre ("mm") flashcoat of shotcrete can be applied immediately after mucking to tie the rock mass together prior to the installation of conventional bolts and mesh support. Additional shotcrete can be applied if ground conditions dictate. In areas where shotcrete is required, it is important that shotcrete is applied as soon as possible following blasting and mucking to control the behaviour of the rock mass and prevent unravelling of the rock mass before final support is installed. In excavations expected to be open for the long-term, shotcrete can be used to prevent rock mass dilation and ravelling (e.g. where schist packages are intersected). In this situation, shotcrete can be applied as a flash-coat, with additional shotcrete thickness (50-75 mm) added following the installation of conventional support. Dry-mix shotcrete is the recommended product for use at Flame and Moth due to the requirement for compact equipment that can be rapidly moved around the mine. It is recommended that multiple dry-mix shotcrete machines are available for back up, and to support the need for multiple headings to be operating at one time. For most applications, additives will be used to provide the fast set-up times required to prevent ravelling of vein materials prior to conventional support installation.

3.2.8 Ground Support Monitoring Instrumentation

Quality control / quality assurance of the ground support methods for Flame and Moth will be monitored by the following programs;

- On-going field observations of ground support installations;
- Pull-tests to determine anchor strengths of various ground support anchors / rockbolts. These tests will be performed on ground support installations that have been installed specifically for the purpose of doing the test. These installations will not be part of the active ground support;
- Pull-tests will be performed on each type of anchor / rockbolts and in each type of ground condition;
- Test panels for shotcrete to determine compressive strengths.

As development and production advances, routine ground control and stability inspections will be done. This will be performed by Alexco personnel in conjunction with external rock mechanics / ground control experts. An annual audit and report will also be done in order to continuously review ground conditions and support methods.

In addition, any suspected ground concerns will be monitored by the appropriate instrumentation including field observations, ground movement monitors (GMMs), extensometers and/or other methods deemed appropriate. A dedicated ground control log book will be located at each mine and ground control concerns tracked and documented on an on-going basis. In addition, safety discussions are held with all personnel on a daily basis and this forum will be used to raise awareness of any ground control concerns and to discuss solutions.

3.2.9 Emergency Measures

The Flame and Moth Mine will be equipped with stench gas on the fresh air intake and the compressed air line. A procedure will be in place for the release of the stench gas during an emergency situation. The mine will have a secondary exit via a raise to surface, refuge station and communications using a leaky feeder system. A secondary communications system will be in place, this system will use Femco phones.

3.3 DEVELOPMENT AND PRODUCTION SCHEDULES

Ore feed from Flame and Moth combined with other deposits in the district is necessary to maximize the current mill capacity of 400 tpd. A development and production schedule has been prepared for the Flame and Moth deposit (Table 3-7). The schedule tracks and reports development metres and vein production material. The schedule shown is based on various assumptions; including commodity prices, economic parameters, development costs and productivity constraints. This schedule is a snapshot of Flame and Moth based on these parameters. As these parameters change in the future, the various production rates and timing will vary as well.

The schedule assumes a development rate of 4 metres per day for the main ramp and the Lightning ramp system. The Christal spiral ramp system was scheduled at 3 m per day line advance.

The production schedule includes some time allowances for vein water drainage after the vein has been intersected by access crosscuts. One month or more has been allowed for drainage before mining in the vein begins. Another constraint is that production stoping is not scheduled to begin until a second route out of the mine has been established to that location.

The maximum stope production rates used in the schedule include:

- 1,600 to 2,100 tonnes/month for the longhole method; and
- 1,000 to 2,100 tonnes/month for the cut and fill method.

These rates are long term averages that include the entire stope cycle including production and backfilling phases.

The sequence of underground development will entail shooting line and grade, marking up the face for jumbo drilling, drilling, loading holes for blasting, excavation and transportation of broken rock to pre-determined destinations, roof and rib bolting after the mucking sequence, assessment and sampling of the new face by a geologist and then repetition of the drill, blast, muck, bolt and assessment cycle. Utility piping, power cable and ventilation will be installed as the decline progresses.

Table 3-7 Flame and Moth Production Schedule

Category	Pre-Production	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Metres Development	885	2690	995	678	887	784	750
Tonnes Ore Mined/Milled		58,312	133,868	121,797	115,403	115,321	115,000
Tonnes Waste Broken	38,711	151,826	23,274	40,832	30,733	31,086	31,000
Tonnes Concentrate Produced		5,065	11,215	9,414	7,754	6,716	6,700
Tonnes Tailings Generated		53,247	122,653	112,382	107,649	108,605	108,300

3.4 WASTE ROCK AND ORE STORAGE

A summary of waste rock management for Flame & Moth over the life of mine for each deposit is shown in Table 3-8. The waste rock materials balance for the project indicates that the major permanent excavation to surface will be split approximately evenly during the initial two years of the development for a total permanent excavation tonnage of up to 137,000 tonnes to be used for construction. A lined temporary P-AML storage facility will be located near the portal entrance (shown on Figure 3-2) which will be used during the initial development (137,000 tonnes) after which the development schedule will enable all P-AML development rock to remain underground, and the P-AML rock stored within the temporary facility to be moved back underground as backfill. All P-AML waste rock will be rehandled back underground prior to closure

Table 3-8 Flame and Moth Waste Rock Materials and Management

Lithology	Total estimated tonnage	Tonnage P-AML	Tonnage N-AML	P-AML Rock Management	N-AML Rock Management
Quartzite	92,888	3,716	89,172	Underground backfill utilizing temporary storage on surface or permanent storage on surface in approved EBA generic design	Toe berm and base drainage layer for DSTF expansion, construction/ upgrade material; road upgrade and maintenance and general construction, underground backfill
Graphitic Schist	20,490	8,196	12,294		
Greenstone	3,048	0	3,048		
Sericite Schist	20,679	0	20,679		
Project Proposal Total	137,105	11,912	125,193		

The Waste Rock Management Plan (WRMP) has been revised to include provisions and updates for management of Flame & Moth waste rock.

Upon P-AML or N-AML determination as per the WRMP, directions will be given to the surface crew for hauling and disposal of the waste rock as described in the previous sections. These management protocols will mitigate potential effects associated with improper waste rock disposal, such as soil and surface/groundwater contamination. During operations, all waste rock will be immediately classified and moved to the appropriate disposal area or storage facility depending on type, thereby negating the need for a temporary waste rock classification area.

3.4.1.1 N-AML Waste Rock Disposal Areas

A N-AML waste rock disposal area will not be built for Flame and Moth Mine as the rock will either be used for construction or used as backfill. N-AML materials may be used for construction of portal pad and laydown area, expanded coarse ore stockpile, mill yard expansion, new haul road to crusher and construction of the toe berm and base layer for the DSTF expansion.

3.4.1.2 P-AML Waste Rock Disposal Areas

The temporary P-AML WRSF facilities will not be located within 30 m of a waterbody/watercourse. The facility will be bermed to ensure runoff does not enter the facility and leachate are appropriately managed. Temporary storage of P-AML waste rock will be within the drainage of the mill area that currently reports to the mill pond. EBA's Construction Specifications require that an engineer approve the site. Design criteria/specifications for additional P-AML Waste Rock Storage Facilities are provided in the approved Typical Waste Containment Facility Design – Construction Specifications (EBA, 2008[1]).

EBA's Construction Specifications account for physical stability of the temporary P-AML WRSF facility. The facility will be lined and seepage collected, would be pumped and treated as required during operations. At closure, all P-AML material in the temporary facility will be relocated underground and the P-AML facility will be decommissioned.

1 Available from the EMR website http://www.emr.gov.yk.ca/mining/pdf/mml_bellekeno_mine_development__and_operations_plan__waste_rock_storage_facility.pdf

3.4.1.3 Temporary Ore and Waste Rock Storage

All the Flame and Moth ore will be stored at the current or proposed coarse ore stock pad shown on Figure 3-2. N-AML waste rock may be temporarily brought to surface, and placed at the DSTF expansion toe buttress area, prior to being rehandled underground. The P-AML material brought to surface and placed in the temporary P-AML facility or coarse ore stockpile during the development of the decline will be used as backfill prior to the closure of the mine.

Upon P-AML or N-AML determination as per the WRMP, directions will be given to the equipment operator(s) for hauling and disposal of the waste rock as described in the previous sections. These management protocols will mitigate potential effects associated with improper waste rock disposal, such as soil and surface/groundwater contamination. During development, all waste rock will be immediately classified and moved to the appropriate disposal area or storage facility depending on type, thereby negating the need for a temporary waste rock classification area.

The temporary P-AML WRSF facilities will not be located within 30 m of a waterbody/watercourse. Water management structures (e.g. ditching) will be installed around the facility to ensure runoff and leachate are appropriately managed. Temporary storage of P-AML waste rock will be within the drainage of the mill area that currently reports to the mill pond. EBA's Construction Specifications require that an engineer approve the site. Design criteria/specifications for additional P-AML Waste Rock Storage Facilities are provided in the approved Typical Waste Containment Facility Design – Construction Specifications (EBA, 2008[2]). These designs may be updated and revised P-AML facility designs provided specific to the Flame and Moth development project.

EBA's Construction Specifications account for physical stability of the facility. The facilities are lined and seepage is collected and treated as required during operations. At closure, all P-AML material in the temporary facility will be removed and the P-AML will be decommissioned.

3.5 MANPOWER

Alexco plans to undertake development and operations with its own employees, without the involvement of a general mining contractor. Some specialty tasks such as diamond drilling, alimak raising, and raise boring will likely be contracted out.

Table 3-9 shows the estimated labour requirements for the development and operations of the Flame and Moth mine. There are additional shared positions with other mines in the district (Bellekeno, Lucky Queen) shown in the summary table.

EBA Engineering Consultants Ltd.(2008). Waste Containment Facility Design, Keno Hill Silver District, YT Construction Specifications

Table 3-9 Estimated Labour Requirements

Common Mine Operations	
Function	**Number**
Mine Supervision	10
Safety & Training	4
Technical Services	12
Maintenance Supervision	6
Maintenance	18
Surface Trucking	8
Sub-total Mining	58
Flame & Moth Pre-Production	
Function	**Number**
Lateral Development	17
Stoping	11
Vein & Waste Trucking	10
Backfill	5
Mine Services	7
Contractors	4
Sub-total Mining	54
Flame & Moth Production	
Function	**Number**
Lateral Development	6
Stoping	17
Vein & Waste Trucking	10
Backfill	7
Mine Services	8
Sub-total Mining	48

4 ASSOCIATED MINE SERVICES AND INFRASTRUCTURE

4.1 POWER

The initial power requirements for the Flame and Moth decline development will be primarily for the Jumbo, ventilation fan and surface support facilities. Total power demand during the decline development is approximately 300 kW. A new electrical cable will be extended from the existing mill substation to the Flame and Moth portal face. Electrical power at 4,160 V will be extended down the decline as it advances and then stepped down to 600 V for use powering the Jumbo, fans, etc. During peak production levels, Flame and Moth will require approximately 600 – 750 kW of power which will continue to be supplied via the existing mill substation.

4.2 CAMP EXPANSION

The existing Flat Creek Camp, which presently accommodates up to 150 people, will be expanded for up to 200 people required for Flame and Moth and district mining operations. Additional trailers will be added within the footprint of existing disturbance. The sewage disposal system will be expanded in accordance with the Public Health and Safety Act Sewage Disposal Systems Regulations and in conjunction with Environmental Health Services.

4.3 FUEL STORAGE

Fuel and petroleum products required for Flame and Moth development and production will be managed appropriately. A 28,000 L Envirotank will be used for fuel containment at Flame and Moth. The current tank located at the mill will be used for this purpose. Alexco's existing and approved Spill Contingency plan and Hazardous Materials Management Plan have been updated for the Flame and Moth Mine and will be adhered to for the development project.

4.4 EXPLOSIVES

Explosives will be used in mining operations at the Flame and Moth site. Onsite manufacturing will not be required. At Flame and Moth, explosives will be trucked to the site and stored in an approved magazine as shown in Figure 3-2. Explosives use, transport, handling, storage and disposal is governed by the Yukon *Occupational Health and Safety Act* Blasting Regulations and Occupational Health & Safety Regulations, and the *Transport of Dangerous Goods Act* and Regulations.

The blasting product will be ammonium nitrate / fuel oil (ANFO) and augmented with stick powder where needed. Detonators will be non-electric and tied in with detonator cord. The explosive magazines will be located at appropriate distances away from the portals and other buildings as dictated by regulations. Explosives and detonators will be conveyed to the working headings on as need basis transported via approved day boxes. Excess explosives will be returned to the magazine at the end of the shift. A log book will be maintained in the magazine as required by regulations.

4.5 COMMUNICATIONS

The Keno Hill Silver District is not within the Yukon grid for cell phone communication therefore a dedicated on site radio communication system has been installed for the Bellekeno mine. The system in place functions for the Flame and Moth mine. A leaky feeder system will be installed at Flame and Moth which allows surface radio communication to extend to underground operations.

4.6 COMPRESSED AIR

The Flame and Moth mine will be initially supplied with compressed air via the existing air compressors located inside the mill. This eliminates any noise concerns and makes use of existing infrastructure. A 6-inch Victaulic airline will provide air to the working face. Once Flame and Moth advances to the production stage, additional compressed air volumes will be required and a second electric compressor will be added either inside the mill building or near the Flame and Moth portal.

4.7 VENTILATION

A main ventilation raise from surface is planned next to the Lightning spiral ramp. It will deliver fresh air and will be equipped with a manway to provide a second exit from the mine. The raise collar on surface is planned across Duncan Creek road in an area where bedrock is exposed.

The planned ventilation flow for Flame and Moth is 78 cms, equivalent to 165,000 cfm based on a ventilation model. Heated fresh air will be delivered centrally to the mine through a 3-metre diameter bored raise equipped with a manway. Two fans operating in parallel on the fresh air raise will operate at an estimated total pressure of 1.8 kPa and will have a combined power draw of 190 kW (255 hp). Bedrock is exposed on surface at the planned raise collar location.

Exhaust air will be through the main Lightning ramp system that extends from the mine bottom to surface.

From the bottom of the fresh air raise, fresh air will be distributed by lateral development and ventilation raises to the lower extremities of the Lightning and Christal zones. In both cases, fresh air will be distributed upwards through the zones by a combination of ventilation raises and spiral ramps. Exhaust will be removed from the upper extremities of the Lightning and Christal zones through the ramp systems that connect them to the main Lightning ramp.

4.8 SUPPORT FACILITIES

Most of the mobile equipment maintenance will be performed in a planned surface shop, to be constructed near the Flame and Moth portal. The mine area is relatively small and it will not be difficult to bring underground equipment to the surface shop. An additional small maintenance shop will be set up underground to handle small repairs and routine servicing.

The maintenance department will have a fuel/lube truck, a mechanic's service truck, a tractor, and access to a scissor lift and a boom truck.

In addition to the mobile equipment, the mine maintenance department will be responsible for the stationary equipment consisting of air compressors, main ventilation fans, propane air heaters, underground electrical distribution system, and main dewatering pumps.

There will be several laydowns on the portal bench for ground support materials. The majority of the mining gear will be stored at the shop and office location as shown in Figure 3-2. Mine office trailers will be moved from Bellekeno and established adjacent to the mill office to accommodate a centralized admin complex for all mining and milling activities in the district.

4.9 SITE ACCESS AND TRANSPORT

Although the road through Keno City is a public highway, over the course of operations at Bellekeno, the vast majority of traffic including light and heavy service vehicles have been routed away from Keno City and diverted onto newly constructed access and haul roads.

Mine traffic associated with the Flame & Moth mine will use the Christal Lake Road and a short haul road (~175m) to be constructed between the portal and the crusher pad, as shown in Figure 2-3. The Bellekeno Project Bypass Road North will be re-routed to allow development of the DSTF expansion. As the mine operations at Flame & Moth begin, traffic from other deposits is expected to decrease, and the net level of traffic for the district should remain the same. A decrease in traffic along the Bellekeno Bypass Road is expected during Flame & Moth operations as Bellekeno mine operations are expected to cease during the active operations period at Flame and Moth. There will be no additional traffic through Keno City for the Flame and Moth Mine.

4.10 WORKER HEALTH & SAFETY

Operations at the Keno Hill Silver District fall under the jurisdiction of the Occupational Health & Safety Act and Regulations administered by the Yukon Workers' Compensation Health & Safety Board. Alexco has in place a Health & Safety Policy (Appendix A) and both will continue to be adhered to during the course of operations at Flame and Moth. The safety record at the Keno Hill Silver District is exemplary with over 250,000 manhours worked without a lost time accident.

All personnel and Contractors will meet the standards outlined in the Occupational Health and Safety Legislation, Mine Safety Rules, and Regulations of the Worker's Compensation Board.

The Emergency Response Plan has been submitted to YG under a separate cover page.

Alexco has an established program for achieving and maintaining a healthy and safe workplace. In the Keno Hill Silver District, there are currently emergency first aid responders providing 24-hour service. There are multiple first aid rooms and an ambulance on the site as well.

Alexco policy requires that all employees (including contractors' employees) have pre-employment medical examinations including a drug and alcohol test. All employees will be fully equipped with the proper personal protective equipment standard for working underground, taking into consideration hazards caused by noise level, air born particulates and confined work space.

All new employees will have a site wide and safety orientation and another orientation of the underground work site prior to commencing work. Regular safety meetings with supervisors, safety officer and employees are mandated. Any changes in procedures, equipment, or hazards require immediate notification to employees.

Underground contractors, Alexco personnel and others will have to comply with the Yukon OH&S regulations in addition to Alexco and contractor's in-house standards.

A Safety Coordinator/Officer specific for the underground operation will ensure all workers are orientated to all aspects of the work site including hazard identification, protective equipment requirements and that medical and health requirements are followed according to legislation. That position is also charged with ensuring continued training and skill development for all personnel.