



## ASSESSMENT REPORT TITLE PAGE AND SUMMARY

**TITLE OF REPORT: Assessment Report on the Midway Mine Area: Mapping and Prospecting**

**TOTAL COST:\$11,185.00**

AUTHOR(S): James Ryley, B.A. Geol.

SIGNATURE(S): James Ryley

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): N/A

STATEMENT OF WORK EVENT NUMBER(S)/DATE(S): 5646669

YEAR OF WORK: 2016

PROPERTY NAME: Midway

CLAIM NAME(S) (on which work was done): 1043777, 1021863, 1045922

COMMODITIES SOUGHT: Lead, zinc, gold, silver

MINERAL INVENTORY MINFILE NUMBER(S),IF KNOWN: 87

MINING DIVISION: Fort Steele

NTS / BCGS: NTS 82WG4/BCGS

LATITUDE: 49° 14' 17"

LONGITUDE: 115° 15' 20" (at centre of work)

UTM Zone: 11 EASTING: 580886

NORTHING: 5454523

OWNER(S):

Ulla Sigrid Kapp and John Brooks Parry

MAILING ADDRESS:

John Parry: 810, 396-11<sup>th</sup> Ave. S.W., Calgary, Alberta, T2R 0C5

Ulla Kapp: 222, 2<sup>nd</sup> Ave. N.E., Calgary, Alberta, T2E 0E2

OPERATOR(S) [who paid for the work]: Ulla Kapp and John Parry

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Ulla Kapp: 222, 2<sup>nd</sup> Ave. N.E., Calgary, Alberta, T2E 0E2

REPORT KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude. **Do not use abbreviations or codes**)

Kid and Moyie markers, gold, silver, Midway Mine, Middle Aldridge Formation, Meso-proterozoic, sericite, arsenopyrite, folding, brecciation, Parallel zone.

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS:

MEM File ID #9900 & AR #8431 Sea Gold Oil Corp., AR # 05049 Dorvan Mines Ltd.,

MEM File ID #9897 & 9898.

TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (in metric units)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)	
GEOLOGICAL (scale, area)	1:10,000		Area/claim	
Geological mapping/sampling	1:10,000	1043777 1021863 1045922	42.18ha 63.28ha 21.09ha	385.00 1312.5 52.5
GEOPHYSICAL (line-kilometres)				
Ground				
Magnetic				
Electromagnetic				
Induced Polarization				
Radiometric				
Seismic				
Other				
Airborne				
GEOCHEMICAL (number of samples analysed for ...)				
Soil				
Silt				
Rock		1021863	63.28ha	1694.25
Freight				
DRILLING (total metres, number of holes, size, storage location)				
Core				
Non-core				
RELATED TECHNICAL				
Report Writing		1043777 1021863 1045922	42.18ha 63.28ha 21.09ha	377.3 1286.25 51.45
PROSPECTING (scale/area)				
PREPATORY / PHYSICAL				
Accommodation and food				1270.08
Fuel				518.89
Field gear: Flagging, GPS, sample bags				75.00
Transportation (includes 7422 km, 7 days at day rate)				4161.78
Sub-total				
			<b>TOTAL COST</b>	<b>11,185.00</b>

**ASSESSMENT REPORT**  
ON THE  
**MIDWAY MINE AREA**  
MAPPING AND PROSPECTING

Southeastern British Columbia, Canada  
Ft. Steele Mining District  
Mapsheet NTS 82G4

Centre of Work

UTM: 580886.0mE/5454523.0mN  
49° 14' 17.3" Latitude/115° 15' 19.72" Longitude

Prepared For

John Parry and Ulla Kapp

By

James Ryley, B.A. Geol, Assoc. Deg. Pet Geol.

## **SUMMARY**

The Midway Mine property lies within the northwest quadrant of the Yahk River mapsheet, Open File 6304, approximately forty travel kilometres southwest of Cranbrook, B.C. The Midway Mine was commissioned on the exploitation of the 'Leask Vein' with initial work dating back to the late 1920's.

The mine is introduced in The Annual Report of the Minister of Mines for the Year Ending 31<sup>st</sup> December, 1929. Historical research compiled by D.H. Wilson records production for the years 1933 where it was operated by B.C. Cariboo Gold Fields Ltd. and then later registered in 1937 to Moyie Gold Mines Ltd. The Midway Mine was worked yearly until 1940 and then not again until 1959. Final production ended in 1962 by Moyie Mines Ltd. The property was then optioned to various lessees primarily for exploration and rehabilitation work. These are reviewed under the History and Previous Work section.

In 1974 Stuart S. Holland, Chief Geologist, Geological Division of the Mineral Resources Branch compiled the total production for the Midway Mine. The report showed 1288 tons (1168 tonnes) mined with 292 ounces gold, 2,750 ounces silver, 238 pounds copper, 5618 pounds of lead, and 3750 pounds of zinc. The average grade of the 1288 tons mined was reported as 0.23 oz/ton gold (7.7 gm/t gold) and 2.14 oz/ton silver (73.2gm/t silver).

The 126.55 hectare property is jointly owned by Ms. Ulla Kapp and Mr. John Parry. The author was commissioned by Ms. Ulla Kapp on September 12, 2016 to perform geological mapping and rock geochemical sampling in the Midway tenure area. Geological mapping and sampling was conducted from September 15-23, 2016, non-inclusive. The purpose of the geological work was to ascertain the structural and stratigraphic nature of the Middle Proterozoic Aldridge Formation and associated ore zone of the Midway Mine. This report details the results of the mapping program along with a discussion of previous work as it relates to mineral potential.

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## INTRODUCTION

### Location and Access

The Midway property is located approximately 39.0 highway kilometres southwest of Cranbrook, B.C. The mine portals are immediately adjacent to Highway 3 on the north side and are located in the south central portion of the tenure block. The property is bisected on the southeast by the Canadian Pacific Railway line and lies within the corridor of a high pressure natural gas line.

Approximate elevations for the lower and upper mine portals are 930m and 955m, respectively. Access to the upper topography to 1200m is gained either by foot from the mine portal area, or along an east-west road that transects the property along the 1200m contour. Access to this seasonal road is gained from the Etna Ck. FSR east of the Midway Mine. The Etna Ck. FSR exits Highway 3 approximately five kilometres southwest of the town of Moyie. Travel .5km on the Etna Ck. FSR, turn right or north and travel an additional 2.75km to a switchback. The seasonal road exits off the switchback and is limited to ATV access three hundred metres in. The northeast corner of the tenure block is approximately five hundred metres from the switchback.

### Vegetation

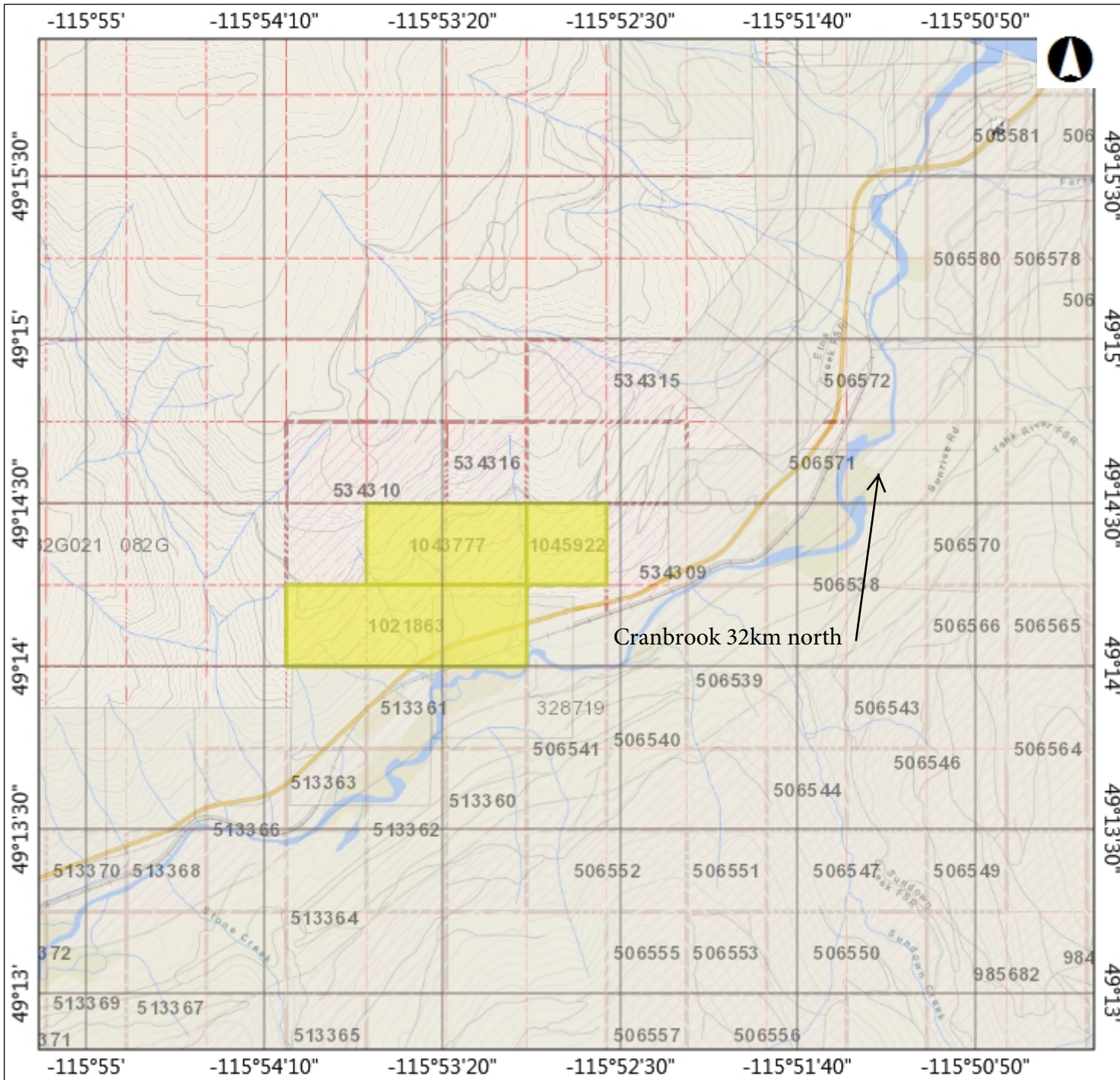
The property is situated within an elevation range of 800m-1400m. It is moderately treed with stands of fir, tamarack, lesser western pine and occasional spruce. Willows and alder growth occur in drainages which course the property infrequently. Occasional sizable scree slopes disrupt vegetation growth above the 1100m contour. Water occupies the drainages from April until mid-June.

### Tenure

The Midway property consists of 126.55 hectares within three tenure blocks. The claims are jointly owned on a 50/50 basis by Ulla Kapp and John Parry, both of Calgary, Alberta.

*Table 1: Tenure*

Tenure Number	Tenure Type	Ownership	Map Number	Issue Date	Expiry Date	Status	Area (Ha)
1043777	Mineral	282461 (50%) 120739 (50%)	082G	04/28/2016	04/28/2017	Good	42.18
1021863	Mineral	282461 (50%) 120739 (50%)	082G	08/04/2013	01/14/2018	Good	63.28
1045922	Mineral	282461 (50%) 120739 (50%)	082G	08/10/2016	08/10/2017	Good	21.09



### Midway Tenure Location

#### Legend

- National Parks - Outlined
- National Parks - Colour Fill
- Ecological Reserves - Tanta
- Protected Areas - Tantalis -
- Recreation Areas - Tantalis
- Conservancy Areas - Tantal
- Mapsheet Grid (1:20,000)
- Mapsheet Grid (1:250,000)
- Land Act Primary Parcels - 1 Filled

#### Contours - (1:20,000)

FCODE

- Contour - Index
- Contour - Index Indefinite
- Contour - Index Depression



1: 50,000

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Datum: NAD83

Projection: Web Mercator

#### Key Map of British Columbia



## History and Previous Work

The Midway Mine was developed on the 'Leask vein', first reported in The Annual Report of the Minister of Mines for the Year Ending 31<sup>st</sup> December, 1929 (D.H. Wilson). J. Leask and Associates of Cranbrook, B.C. optioned the property to B.C. Cariboo Goldfields in 1933. The five claim option was expanded by the staking of an additional sixty five claims to cover the valley bottom and the summits of the mountains on either side. By the end of 1933 the adit [upper portal] was drifted in 300' (91.4m) with reported values from a 40 ton (36.3 tonne) production run sent to the Trail smelter assaying 0.32 oz/ton Au and 2.5 oz/ton Ag. The rock analysis was 59.2% silica, 16.8% Sulphur, 17.1% iron, 0.5% lime, and 1.0% arsenic. Work resumed in the fall of 1934 and continued until the summer of 1935 whereby the mine was extended to a length of approximately 1,350' (411.5m). It is reported that the vast majority of production had occurred in these early years (Mines and Petroleum Resources Report, 1965) and had amounted to "a total 1,053 tons (955.3 tonnes) of ore containing 253 ounces of gold, 1,934 ounces of silver, 4,056 pounds of lead, and 2,634 pounds of zinc". The lower adit was developed post 1935 as the report for that year only mentions the one drift. Moyie Gold Mines Ltd. held the property in 1937 and reportedly through to 1940.

Production in 1959 consisted of 121 tons (109.8 tonnes) and is recorded under the name of D.F. Sheck, Moyie. This tonnage yielded 28 ounces Au, 277 ounces Ag, 638 pounds of Zn, and 970 pounds of Pb. Notes from a 1980 report stated that the lower level was developed in the 1950's.

In 1962 the Midway property was optioned by Moyie Mines Ltd. which may have been a different company or revised version of Moyie Gold Mines Ltd. Both adit levels were rehabilitated along with two short raises driven between the two levels. Infrastructure and access was improved as well. Production records from 1962 show a total of 235 tons (213.2 tonnes). This was derived from two small shipments of development muck. Work ceased in October, 1962.

Total production for the mine was compiled in 1974 by Stuart S. Holland, Chief Geologist, Geological Division of the Mineral Resources Branch. The report showed 1288 tons mined with 292 ounces gold, 2,750 ounces silver, 238 pounds copper, 5618 pounds of lead, and 3750 pounds of zinc. The average grade of the 1288 tons mined was reported as 0.23 oz/ton gold and 2.14 oz/ton silver.

Calix Gold Mines Ltd. optioned the property in 1963. Work commenced in November and consisted of a new wash-house, compressor building, and rehabilitation of the surface area. Mine work consisted of a new entrance to the lower portal to straighten the drift. Work resumed in 1965 with the majority of it dedicated to slashing and widening portions of the drift and extending it 600 feet for a total length of 1050 feet (320.0m). At 715 feet (218.0m) a narrow mineralized vein was followed but was lost when the drift was driven into the hanging wall due to poor ground conditions. A number of short drill holes were drilled from the side of the drift but failed to intersect it. Further exploration was suspended. In 1966 work was confined to a small amount of surface stripping on the mountainside above the adits.

Anmar Mining Ltd. optioned the 11 claim Midway group in 1969 (George Cross Newsletter). The company apparently failed to raise the capital for a proposed trenching and drilling program or became in default of the agreement (as was the case with a uranium property in 1969).



Dorvan Mines Ltd. of Vancouver, B.C. conducted geophysical and geochemical work between August, 1973 and May, 1974. The geophysical exploration utilized EM and Magnetometer surveys. The latter was coupled with a soil geochemistry program. This approach was based on historic elevated arsenic values in the silicic mineralized structure which would predictably generate a magnetometer low. A baseline was established approximately 75 feet (22.9m) west of the upper portal with a bearing of 290° (inferred). Six lines 400' (122.0m) apart ran northerly at 90° to the baseline with 100' (30.5m) sample intervals. Anomalous magnetometer values were generated on all but line 5, and there was a distinct correlation between upper anomalous arsenic values and magnetometer lows.

The Em-15 results were described as 'disappointing' however there is a clear relationship in part with changes in magnetometer value amplitude. The results of the 1974 program is discussed in relation to the recent 2016 mapping.

File ID #9897 consists of letters showing correspondence between Mr. Nils Hagglund, President of Midway Mines Ltd. and The Minister of Mines and Petroleum Resources in July-August 1974. The correspondence was to solicit funds for the construction of a mill at the Midway Mine. Mr. Leask was mentioned as being a co-owner of the mine.

Sea Gold Oil Corporation conducted an extensive rehabilitation program from June 01-August 01, 1980. The upper and lower levels were rehabilitated, new portal doors installed, seventy-five channel samples taken, and six percussion holes were drilled. This program utilized the services of H.H. Shear, P. Eng., who surveyed the upper and lower levels with transit since no accurate map existed for the lower level. Channel sample and percussion hole locations are inferred to be accurate. Results of the sampling program showed ore grade values for the upper level but not the lower level. A comparison of the values is reviewed in the Discussion section as they relate to the geology. In a separate program in 1983 two diamond drill holes were conducted between the two levels in an effort to ascertain the possible existence of two ore structures. Drilling showed that only one structure spanned the upper and lower levels.

Lloyd Morgan of Cranbrook reportedly rehabilitated a portion of the Midway Mine, either the upper or lower portal, in the 1990's (verbal communication, D. Pighin, P.Geo).

## **GEOLOGY**

### **Regional Geology**

The Midway property is located on the west flank of the Purcell Anticlinorium, a broad generally north-plunging structure in southeastern B.C. that is cored by Middle Proterozoic Purcell Supergroup rocks and flanked by Upper Proterozoic Windermere Group or Paleozoic sedimentary rocks. The Midway Mine area is within the Moyie Range and immediately west of the apex of the Moyie Anticline, a sub-regional broad northeast trending anticlinal structure.

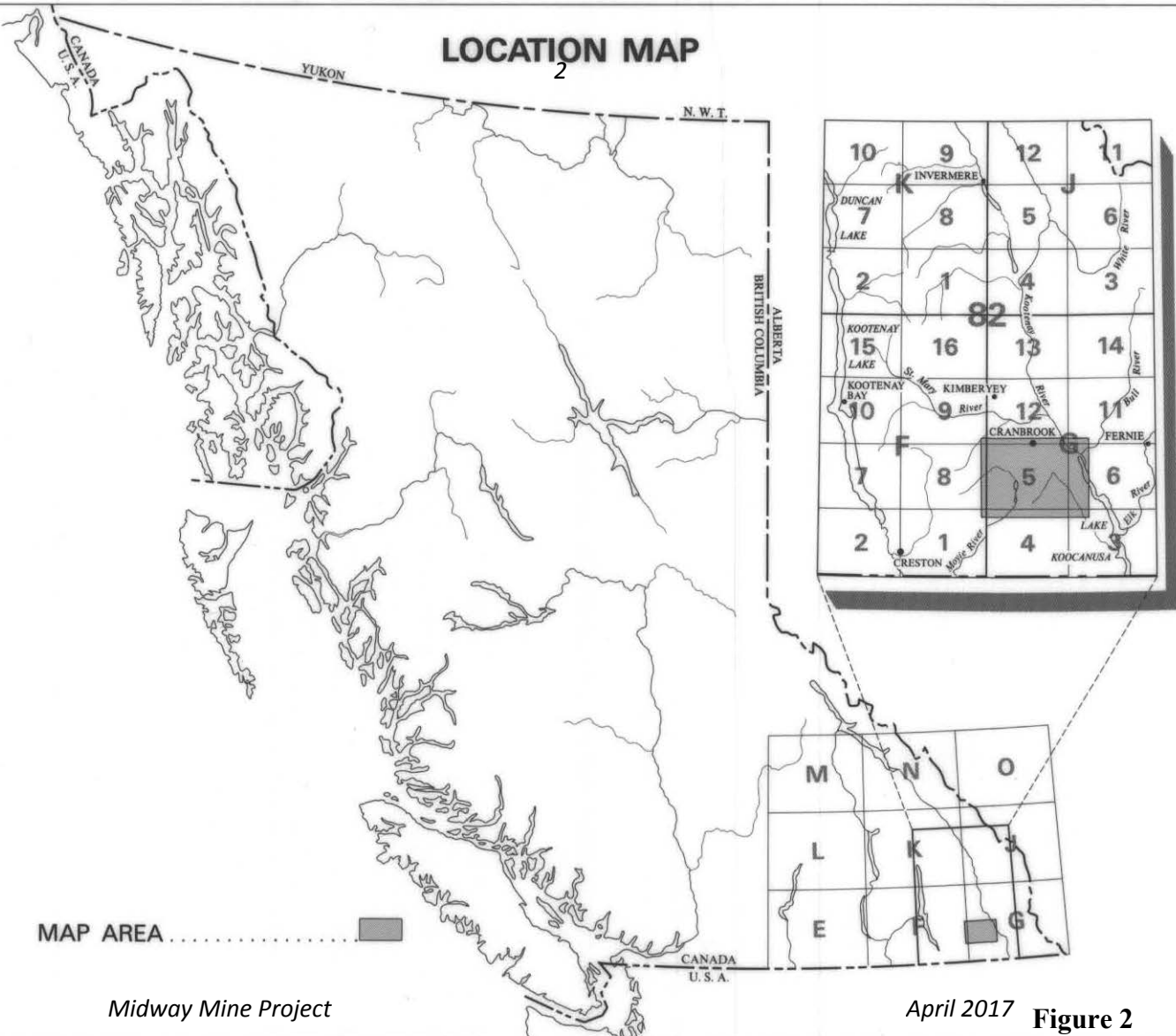
The rocks of the Moyie River anticline are those of the Aldridge Formation which is the lowest part of the Purcell Supergroup. The Purcell Supergroup comprises an early synrift succession, the Aldridge Formation, and an overlying generally shallow water post-rift or rift fill sequence which includes the Creston and Kitchener Formations and younger Purcell rocks.

The Aldridge is the oldest formation of the Proterozoic Belt-Purcell Supergroup. The Supergroup is a thick sequence of terrigenous clastic, carbonate, and minor volcanic rocks of Middle Proterozoic age. The basal Aldridge Formation, as exposed in Canada, consists of siliciclastic turbidites about 4000 meters thick. It is informally divided into the Lower, Middle, and Upper members. To the north and east in the basin, the Lower Aldridge (LA), the base of which is not exposed, is about 1500 metres of rusty weathering (syngenetic pyrrhotite), thin to medium bedded argillite, wacke and quartzitic wacke generally interpreted as distal turbidites. The Sullivan ore body at Kimberley, B.C. occurs at the top of this division. To the south and west in the basin in Canada, the upper part of the Lower Aldridge is dominated by grey weathering, medium to thick bedded quartz wackes considered to be proximal turbidites. The Lower Aldridge is commonly host to a proliferation of Moyie intrusions, principally as sills. The Middle Aldridge (MA) is about 2500 meters of grey to rusty weathering, dominantly medium bedded quartzitic wacke turbidites with periodic inter-turbidite intervals of thin bedded, rusty weathering argillites some of which form finely laminated marker beds (time stratigraphic units correlated over great distances within the Aldridge/Prichard basin). There are a number of Moyie intrusions as sills and minor dykes within the Middle Aldridge including two of the most consistent, laterally extensive sills. The Upper Aldridge is about 300 meters of thin bedded to laminated, rusty weathering, dark argillite and grey siltite often in couplet-style beds.

Figures 2, 3, and 4 show the location, geology, symbols and legend respectively, for the regional geology of the Moyie Lake area.

# LOCATION MAP

2



MAP AREA

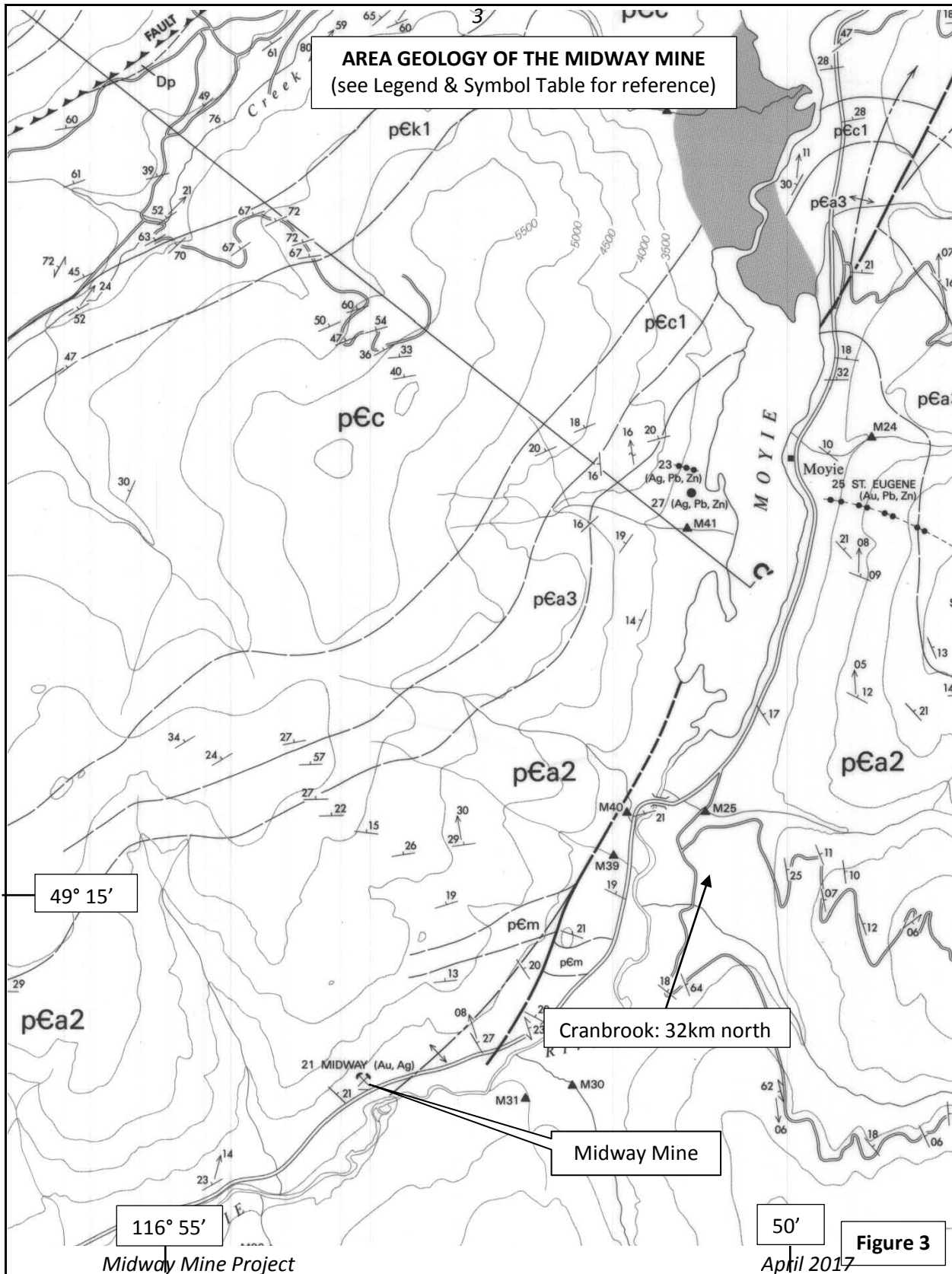
Midway Mine Project

April 2017 Figure 2

30'

115° 25'

**AREA GEOLOGY OF THE MIDWAY MINE**  
(see Legend & Symbol Table for reference)




**Figure 3**

April 2017

**MIDWAY MINE AREA**  
**LEGEND & SYMBOL TABLE**

PLEISTOCENE AND RECENT

 TILL, GRAVEL, SAND, AND ALLUVIAL DEPOSITS

**p€nc** NICOL CREEK FORMATION

PURPLE AND GREEN, AMYGDALOIDAL AND VESICULAR BASALT, LOCALLY PORPHYRITIC (PLAGIOCLASE PHENOCRYSTS); INTERLAYERED GREEN TUFF BEDS AND THIN-BEDDED, COMMONLY GRADED, GREEN AND PURPLE SILTSTONE LAYERS (nci); PURPLE VOLCANIC CLASTIC SILTSTONE AND SANDSTONE

LOWER CRETACEOUS

**Kg** QUARTZ MONZONITE, GRANODIORITE

**p€vc** VAN CREEK FORMATION

THINLY LAMINATED PALE GREEN AND PURPLE SILTSTONE AND SHALE, CHARACTERISTICALLY REDDISH ORANGE WEATHERING; THIN-BEDDED PURPLE AND RED ARGILLACEOUS LIMESTONE; GREEN SILTY QUARTZITE; MINOR ARGILLACEOUS LIMESTONE NEAR BASE

DEVONIAN (7)

**Df** FAIRHOLME GROUP

DARK GREY TO BLACK, FINE-GRAINED FOSSILIFEROUS LIMESTONE; LOCAL NODULAR CHERT BEDS; BASE COMMONLY MARKED BY A FLUVIAL COBBLE CONGLOMERATE OVERLAIN BY A MEDIUM TO COARSE-GRAINED SANDSTONE

**p€k** KITCHENER FORMATION

MEDIUM TO DARK GREY SILTY AND ARGILLACEOUS DOLOMITE, DOLOMITIC ARGILLITE, AND ARGILLACEOUS LIMESTONE; GREY SILTY DOLOMITE WITH BLACK ARGILLACEOUS PARTINGS; MINOR GREEN SILTSTONE AND ARGILLITE

**Dp** 'PEAVINE CONGLOMERATE'

COBBLE TO COARSE BOULDER, POLYMIC TIC PARACONGLOMERATE, WITH SILT TO SAND MATRIX; MASSIVE TO MODERATELY WELL BEDDED

**p€k<sub>1</sub>**: PALE YELLOWISH GREEN SILTSTONE AND ARGILLITE WITH INTERLAYERED BUFF-WEATHERING DOLOMITIC SILTSTONE AND ARGILLITE; MINOR DARK GREY LIMY ARGILLITE

MIDDLE PROTEROZOIC

**p€m** MOVIE INTRUSIONS

METADIORITE TO METAGABBRO SILLS AND LOCALLY DYKES

**p€c** CRESTON FORMATION

LIGHT TO MODERATE GREEN SILTSTONE AND ARGILLITE; LESSER GREY, LIGHT BROWN, AND PURPLE-TINGED SILTSTONE AND ARGILLITE, WHITE QUARTZITE; MINOR BUFF-WEATHERING DOLOMITIC SILTSTONE

PURCELL SUPERGROUP

**p€r** ROOSVILLE FORMATION

GREY TO BLACK ARGILLITE WITH INTERCALATED GREEN SILTSTONE; GREEN SILTY ARGILLITE WITH THIN MAUVE SILTSTONE INTERLAYERS; OCCASIONAL THIN DOLOMITE, STROMATOLITIC DOLOMITE, AND CONGLOMERATE LAYERS

**p€a** ALDRIDGE FORMATION

**p€a<sub>3</sub>** (UPPER ALDRIDGE): THINLY LAMINATED, RUSTY WEATHERING, LIGHT TO DARK GREY ARGILLITE AND ARGILLACEOUS SILTSTONE

**p€p** PHILLIPS FORMATION

THIN-BEDDED PURPLE AND RED ARGILLITE, SILTSTONE AND QUARTZITE; MINOR GREEN SILTSTONE INTERLAYERS NEAR BASE




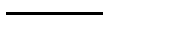

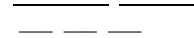










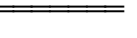
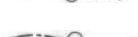
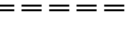



**p€a<sub>2</sub>** (MIDDLE ALDRIDGE): THIN TO THICK-BEDDED GREY QUARTZITE WACKE INTERLAYERED WITH LAMINATED SILTSTONE; SILTSTONE AND RUSTY WEATHERING ARGILLITE DOMINATE NEAR TOP

**p€g** GATEWAY AND SHEPPARD FORMATIONS

UPPER: THIN-BEDDED, FINELY LAMINATED GREEN SILTSTONE; MINOR PURPLE ARGILLITE  
MIDDLE: GREEN, BROWN, AND REDDISH BROWN SILTSTONE AND QUARTZITE, INTERBEDS OF GREEN AND PURPLE ARGILLITE; DIAGNOSTIC SALT CRYSTAL CASTS THROUGHOUT  
LOWER (SHEPPARD FORMATION): THIN-BEDDED DOLOMITE, STROMATOLITIC DOLOMITE; MAUVE, GREY, AND GREEN SILTSTONE, DOLOMITIC SILTSTONE, AND QUARTZITE; COBBLE-BOULDER POLYMIC TIC PARACONGLOMERATE AT BASE

**p€a<sub>1</sub>** (LOWER ALDRIDGE): RUSTY WEATHERING SILTSTONE AND QUARTZITE WITH INTERBEDS OF SILTY ARGILLITE; INTERLAYERED RUSTY WEATHERING QUARTZ WACKE AND SILTSTONE NEAR TOP

**SYMBOLS**

ROCK OUTCROP .....		FOLIATION, CLEAVAGE .....	
GEOLOGICAL CONTACT:		LINEATION .....	
DEFINED, APPROXIMATE, ASSUMED ..		MINOR FOLD AXIS (SHOWING VERGENCE) .....	
		SMALL SHEAR (SHOWING DIP) .....	
FAULT: DEFINED,		MINERALIZED VEIN (SHOWING TREND) .....	
APPROXIMATE, ASSUMED		MINE, PROSPECT, OR OCCURRENCE .....	
THRUST OR REVERSE FAULT		SILT SAMPLE LOCATION .....	
NORMAL FAULT .....		EDGE OF MAPPING .....	
FOLD AXIAL TRACE:		TOPOGRAPHIC CONTOUR (500-FOOT INTERVAL) .....	
ANTICLINE & OVERTURNED .....		ROAD: HARD SURFACE .....	
SYNCLINE & OVERTURNED .....		LOOSE OR STABILIZED SURFACE .....	
BEDDING: INCLINED, OVERTURNED .....			
TOPS UNKNOWN .....			
LAKE .....			

Midway Mine Project

## Property Geology

The Midway Mine property lies on the western limb of the Moyie Anticline. This broad relatively shallow dipping antiform whose axial hinge is oriented at ~N35°E, is developed within the Middle Proterozoic Aldridge Formation.

The tenure area is underlain by a clastic succession of Middle Proterozoic metasediments of the Middle Aldridge Formation.

The wacke metasediments are of greenschist metamorphic rank and consist of a series of turbidite sets known as bouma facies. The strata varies from very thin to thickly bedded, a characteristic common to turbidite flows which are typically normally graded. The gradation in general consists of basal fine to medium graded, moderate to well sorted, well rounded quartzite overlain by low angle planar argillaceous siltite variably interbedded with laminae to thin beds of argillite. The argillite denotes the final phase of a turbidite flow and commonly displays cross stratification within a dissipating energy regime. Initiation of subsequent turbidite flows are marked by sharp, planar contact quartzite beds which cap the argillite. Incomplete and complete Bouma facies sedimentation are present on the property.

Periods of quiescence punctuate the turbidites. This occurs as localized millimetre scale planar laminae void of cross stratification which host interbedded shales and silts, and monolithic regional scale planar laminae known as 'marker' beds.

A gabbroic Moyie sill courses the length of the property east to west in the upper central portion. This sill is known regionally as the Sundown sill, a term coined owing to the Sundown stratigraphic marker that immediately underlies the sill.

The stratigraphy of the mine area consists of relatively shallow northeast dipping metasediments with a northwest strike, and lesser shallow northwest dipping-northeast striking bedding. The latter course the upper northwest portion of the property, and reside to the west.

Measurements taken on the east side of the upper portal measure 320/20NE, consistent with strata east of the lower portal measuring 329/32NE, and immediately above the lower portal of 305/23NE.

A slight westerly shift of bedding occurs approximately 100m north of the upper portal at field station MW-07. Here an incomplete bouma facies outcrop measuring 30m wide x 40m high strikes west-northwest at 296° with a 25° NE dip. MW-12, located 165m southwest of the upper portal reflects this westerly shift with a shared strike and dip. The westernmost station of MW-18, located 200m southwest of MW-12 alongside the highway has the same strike with a shallower 17° NE dip. This westerly shift in bedding strike of 25°-35° occurs west of the prominent gully that lies just west of the upper portal. The shift progresses northward upslope where west-southwest striking strata with shallow northwest dipping beds occur in the uppermost elevation field stations MW-49, MW-50, and MW-56. These stations cover the east-west width of the property and are reflective of regional scale bedding attitudes north of the mine area.

Pronounced variations in the attitude of the stratigraphy occur north-northwest of the mine portal adjacent to and within the prominent gully. Significant shifts in strike and dip are almost without exception accompanied by brecciation, alteration, and elevated base and precious metal values. This is discussed in detail under *Structure* and *Geochemistry*.

## Stratigraphic and Structural Setting

### *Stratigraphy*

Stratigraphically, the mine is situated approximately 900 metres above the Lower-Middle Aldridge Formation contact (LMC), a reference as measured at the world class Sullivan Mine 75 kilometres to the northeast. This stratigraphic position is defined by the presence of regional scale stratigraphic ‘markers’ found in proximity to the Midway Mine by previous and current mapping programs. Markers were identified during the 2016 program using marker standards from the marker core library of High Grade Geological Consulting Ltd. under the permission of David Pighin, P.Geol.

The reader is advised that stratigraphic positioning distal to the Sullivan mine can be considerably different. Sedimentation rates, position within the paleo basin, and Moyie sill thickness variations can thicken or lessen the distance to the LMC. The section thickness at the Midway Mine however is considered to coincide relatively close to the Sullivan section. This inference is based on a drill hole two kilometres south of the Midway Mine that was drilled to the LMC. Drill hole CR-001 hosted markers whose stratigraphic distance coincided relatively close to that of the Sullivan section (personal communication, D. Pighin, P.Geol.)

#### *‘Kid’ stratigraphic marker:*

A quarry operation immediately east of the Midway Mine exposed a considerable section of Middle Aldridge strata from which a stratigraphic marker was obtained. The ‘Kid’ marker (field station MW-27) positions the strata in the upper bench of the quarry at ~917m above the Lower-Middle Aldridge contact (LMC). Projection of the marker west directly above the upper portal places the portal at approximately 875m above the LMC.

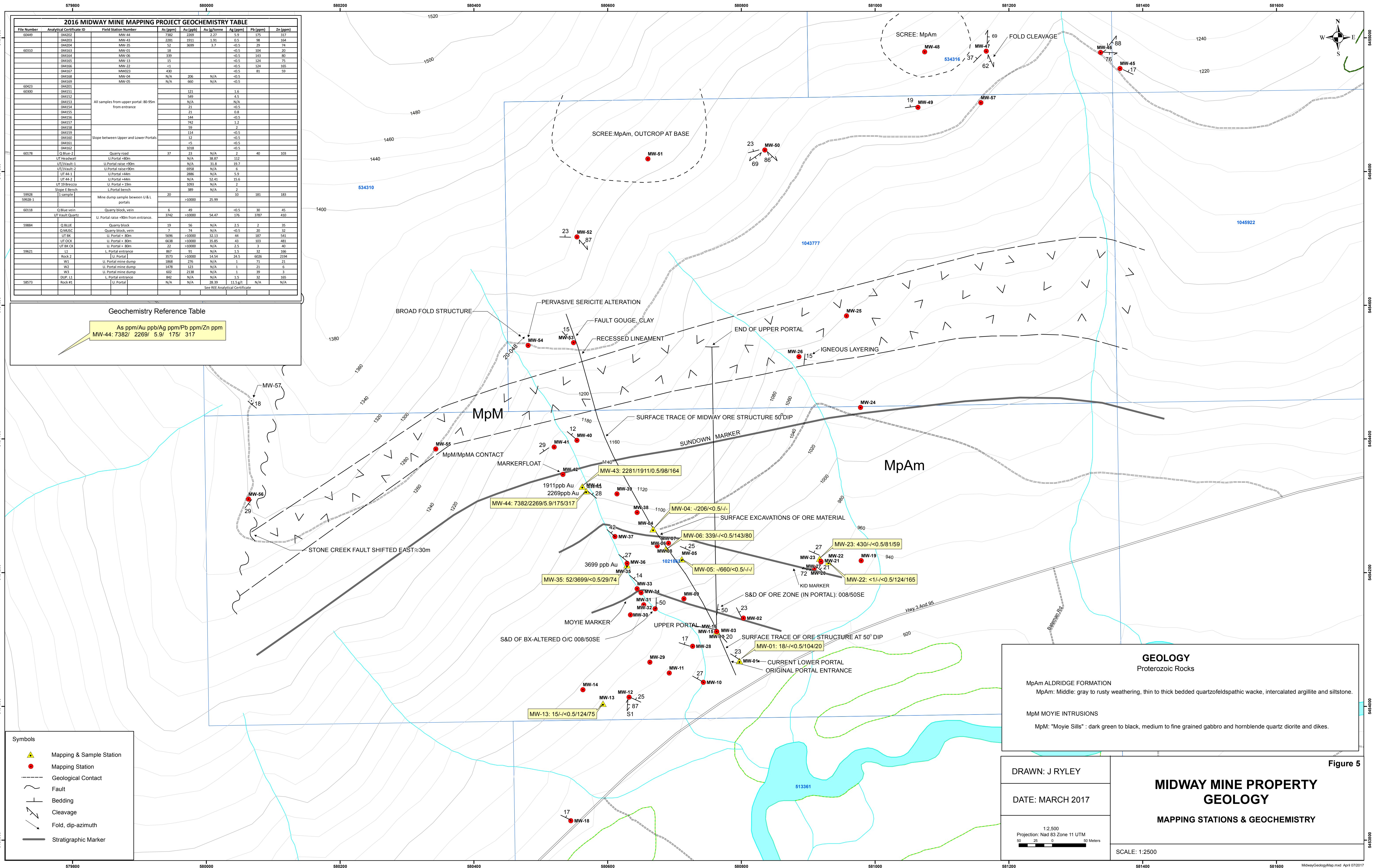
#### *‘Moyie’ stratigraphic marker*

At field station MW-31 two fragments of marker float were located in a gulley within five metres of additional float, both on the west side of the gulley. This location is approximately 110 metres west and forty metres of the upper portal. This float was identified as the Moyie marker. The float was located twenty metres directly downslope of a section of marker located in outcrop on the east flank of the gulley. While the outcrop marker samples could not be matched, it is inferred that the MW-31 float samples are likely sourced from the overlying marker outcrop. This inference is supported by the fact that the position of the outcrop coincides to within five percent of the recorded stratigraphic interval to the Kid marker when the Kid marker (MW-27) is projected westward above it.

#### *‘Sundown’ stratigraphic marker*

The Sundown marker is associated with the Sundown Moyie sill. This sill crosses the north central portion of the property east to west. Previous mapping positioned the Sundown marker south of and parallel to the Sundown sill. While the actual marker was not identified in the 2016 field program, marker float was obtained at the location where the Sundown marker was inferred to occur. Additionally, the distance from the Sundown marker to the westward projection of the Kid marker coincides within five percent of the established interval between the markers as recorded with the Sullivan section.

Figure 3: Midway Mine Property Geology; Mapping Stations and Geochemistry shows the stratigraphic projection of the Kid, Moyie, and Sundown markers.



**2016 MIDWAY MINE MAPPING PROJECT GEOCHEMISTRY TABLE**

File Number	Analytical Certificate ID	Field Station Number	As (ppm)	Au (ppb)	Ag (ppm)	Pb (ppm)	Zn (ppm)
6049	044202	MW-44	7382	2269	2.2	175	317
	044203	MW-43	2281	1911	1.91	0.5	98
	044204	MW-35	52	3699	3.7	<0.5	29
60910	044163	MW-01	18	>10000	<0.5	0.08	20
	044164	MW-06	339	>10000	<0.5	143	80
	044165	MW-13	15	>10000	<0.5	124	75
	044166	MW-22	<5	>10000	<0.5	124	165
	044167	MW-02	430	>10000	<0.5	81	59
	044168	MW-04	N/A	206	N/A	<0.5	
	044169	MW-05	N/A	660	N/A	<0.5	
60423	044201						
60300	044151		121		1.6		
	044152		549		4.5		
	044153	All samples from upper portal: 80-95m from entrance	N/A		N/A		
	044154		21		<0.5		
	044155		21		0.8		
	044156		144		<0.5		
	044157		742		1.2		
	044158		59		2		
	044159	Slope between Upper and Lower Portals	114		<0.5		
	044160		12		<0.5		
	044161		<5		<0.5		
	044162		1018		<0.5		
60378	044205	Quarry road	37	23	N/A	2	40
	044206	U Portal +80m	N/A	N/A	38.87	112	
	044207	U Portal raise +90m	N/A	N/A	31.8	19.7	
	044208	U Portal raise +90m	5058	>10000	6	197	541
	044209	U Portal +48m	2886	>10000	5.9		
	044210	U Portal +48m	N/A	N/A	52.41	15.6	
	044211	U Portal +39m	1093	>10000	2		
	044212	U Portal bench	389	>10000	N/A	2	
59928	044213	Mine dump sample between U & L portals	20		10	181	183
59928-1	044214		>10000		25.99		
60118	044215	Quarry block vein	6	49	<0.5	30	45
	044216	U Portal raise +90m from entrance	3742	>10000	54.47	176	3787
59884	044217	Quarry block	19	56	N/A	2.5	2
	044218	Quarry block vein	7	78	N/A	<0.5	20
	044219	U Portal + 80m	5058	>10000	32.13	44	197
	044220	U Portal + 80m	6638	>10000	35.85	43	103
	044221	U Portal + 80m	22	>10000	N/A	2.5	3
59821	044222	L Portal entrance	807	31	N/A	1.3	32
	044223	L Portal	3273	>10000	14.54	24.5	6206
	044224	U Portal mine dump	1868	276	N/A	1	71
	044225	U Portal mine dump	1478	123	N/A	1	21
	044226	U Portal mine dump	602	2138	N/A	1	39
	044227	L Portal entrance	842	N/A	N/A	1.5	32
58573	044228	Rock #1	N/A	N/A	28.39	11.5 g/t	N/A

**Geochemistry Reference Table**

As ppm/Au ppb/Ag ppm/Pb ppm/Zn ppm  
 MW-44: 7382/ 2269/ 5.9/ 175/ 317

**GEOLOGY**  
 Proterozoic Rocks

MpAm ALDRIDGE FORMATION  
 MpAm: Middle: gray to rusty weathering, thin to thick bedded quartzfeldspathic wacke, intercalated argillite and siltstone.

MpM MOYIE INTRUSIONS  
 MpM: "Moyie Sills": dark green to black, medium to fine grained gabbro and hornblende quartz diorite and dikes.

DRAWN: J RYLEY

DATE: MARCH 2017

1:2,500  
 Projection: Nad 83 Zone 11 UTM  
 50 25 0 50 Meters

**Figure 5**

**MIDWAY MINE PROPERTY GEOLOGY**

**MAPPING STATIONS & GEOCHEMISTRY**

SCALE: 1:2500



### ***Structure***

The projected stratigraphic marker correlation implies that the stratigraphy overlying the portals has apparently not undergone significant strike-slip or dip slip movement. The emplacement of the Midway mineralized silicified zone may have been accommodated by a dilatant zone developed within the limb of a fold in response to ductile movement.

Field measurements show a shift in bedding strike from east to west of 10°-20° immediately north of the portals. From east to west the strike shifts northerly from 297° to 314°, and locally to 008° accompanied by a significant increased bedding attitude (MW-32). The maximum deflection and dips occur on the east flank of the prominent gulley just west of the upper portal. Bedding attitudes on the west flank of the gulley revert to west-southwest with shallow northwest dips.

The angle of intersection of these opposing bedding attitudes is marked by the trace of the gulley. The northward deflection of bedding strike on the eastern flank of the gulley may be in response to northeast verging stress. Northeast movement has been documented on the two major faults that border the Midway Mine property, namely the Stone Creek fault to the west and the Lake fault to the east. Both faults show significant offset as evidenced by the displacement of stratigraphic markers bordering the faults. The Stone Creek fault displaces the Lamb marker 250m N-NE on the west side of the fault, this offset occurring 1.3km south-southwest of the Midway Mine.

Synthetic, or lesser faults develop in response to major stress. Interbedded argillites and siltites commonly respond in a ductile manner as opposed to the brittle quartzite beds. The latter display brittle deformation with the development of cleavage while interbedded argillite and siltite truncate the cleavage and absorb the stress. This was a common field observation at the Midway property. The intersection of the shallow to moderate bedding and steep NW-SE cleavage planes indicate the development of an antiform west of the mine portals. Brecciation, sericitic alteration and minor scale folding observed in the gulley and adjacent strata appears to be the surface manifestation of this response. This prominent gulley has been labelled the Parallel zone for the purpose of this report.

The Midway Mine resides on the western limb of the sub-regional scale Moyie anticline whose axial hinge trends ~060° south of the Midway Mine. Field measurements north and west of the mine portals show that a secondary fold antithetic (opposing, ~ sixty degrees) to the Moyie anticline is present to the west of the mine portals. This is reflected by the aforementioned intersection of bedding along the trace of the gulley.

The axial hinge of this subordinate fold trends N-NW with a shallow northerly plunge. The axial hinge direction of this intersection (i.e. Parallel zone gulley) parallels the surface projection of the Midway ore zone as measured in the upper portal. Figure 4, Midway Mine Area Composite Section, illustrates the parallel nature of the gulley (in blue as a stream) and the surface trace of the Midway ore structure.

The upper portal extends approximately 411.0m north (Mines and Petroleum Resources Report, 1965) with minimal lateral offset and at a level grade. This level grade attests to the consistent north trending strike extension of the ore structure. The coincident axial hinge direction and surface trace of the ore zone, and strike of the ore structure lends support to the emplacement of silicic mineralized fluids within a dilatant zone on the limb of a north trending fold.

Historic excavations hosting a silicic vein (s) occur upslope and west of the upper portal. The excavations located at field stations MW-04 and MW-05 occur along the projected trace of the upper portal ore structure. MW-06 immediately east of the projected trace, records a metre scale fold within a breccia zone.

The ore structure as measured within the upper portal trends  $\sim 008^{\circ}/50^{\circ}$  NE with a shallow N-NE plunge. The dip of the ore structure is consistent as projections to surface utilizing a  $50^{\circ}$  dip coincide with the surface excavations at MW-04 and MW-05. The surface projection of the ore structure south of the upper portal occurs approximately twelve metres west of the lower portal. The lower portal entrance however lies east of the *original* portal entrance by approximately twelve metres. The original entrance had caved and when the lower portal was rehabilitated a new entrance was made to the east of the original portal entrance.

Station MW-54 measures a broad fold structure and apparent associated pervasive sericite alteration. The fold axis trends  $048^{\circ}$  with a  $20^{\circ}$  NE plunge, occupying the same plunge orientation and similar trend as measured at the west side of the upper portal of the Midway Mine.



*Station MW-54: Broad fold structure,  $048^{\circ}$  trend with  $20^{\circ}$  plunge.*

Igneous layering of the gabbro measured at station MW-26 shows that at this locale the gabbro is discordant to the host stratigraphy. The igneous layering surface measurement shows a north strike with a shallow ( $15^\circ$ ) east dip which is juxtaposed against northwest striking northeast dipping stratigraphy. This location is approximately 350m east of MW-53. The lower gabbro-sediment contact 260m southwest of MW-53 appears concordant to sedimentary bedding. Measurements just above the upper gabbro-sediment contact to the west show W-SW to W-NW strikes and moderate ( $18^\circ$ - $29^\circ$ ) dips. The shallow eastern dip with a northern strike at MW-26 serves to explain why the gabbro appears thicker to the east on the surface geology map.

The 2016 structural measurements from surface mapping showed a consistent, property scale S2 cleavage measurement ranging from  $095^\circ$ - $110^\circ$  with steep northeast dips.

## ALTERATION

North of MW-04, just beyond where the surface projection of the Midway ore zone intersects the Sundown sill, clay is developed within fault gouge at station MW-53 as illustrated in the photo below. This alteration is accompanied by a significant northward shift in strike of greater than  $40^\circ$  when compared to strata in proximity to the north.

*MW-53: Fault gouge and clay development in association with close-spaced cleavage along the projection of the Midway structure.*



Field station MW-54 located approximately sixty metres to the west of MW-53 hosts pervasive sericite alteration of Middle Aldridge metasediments.

*MW-54: Pervasive sericite alteration.*

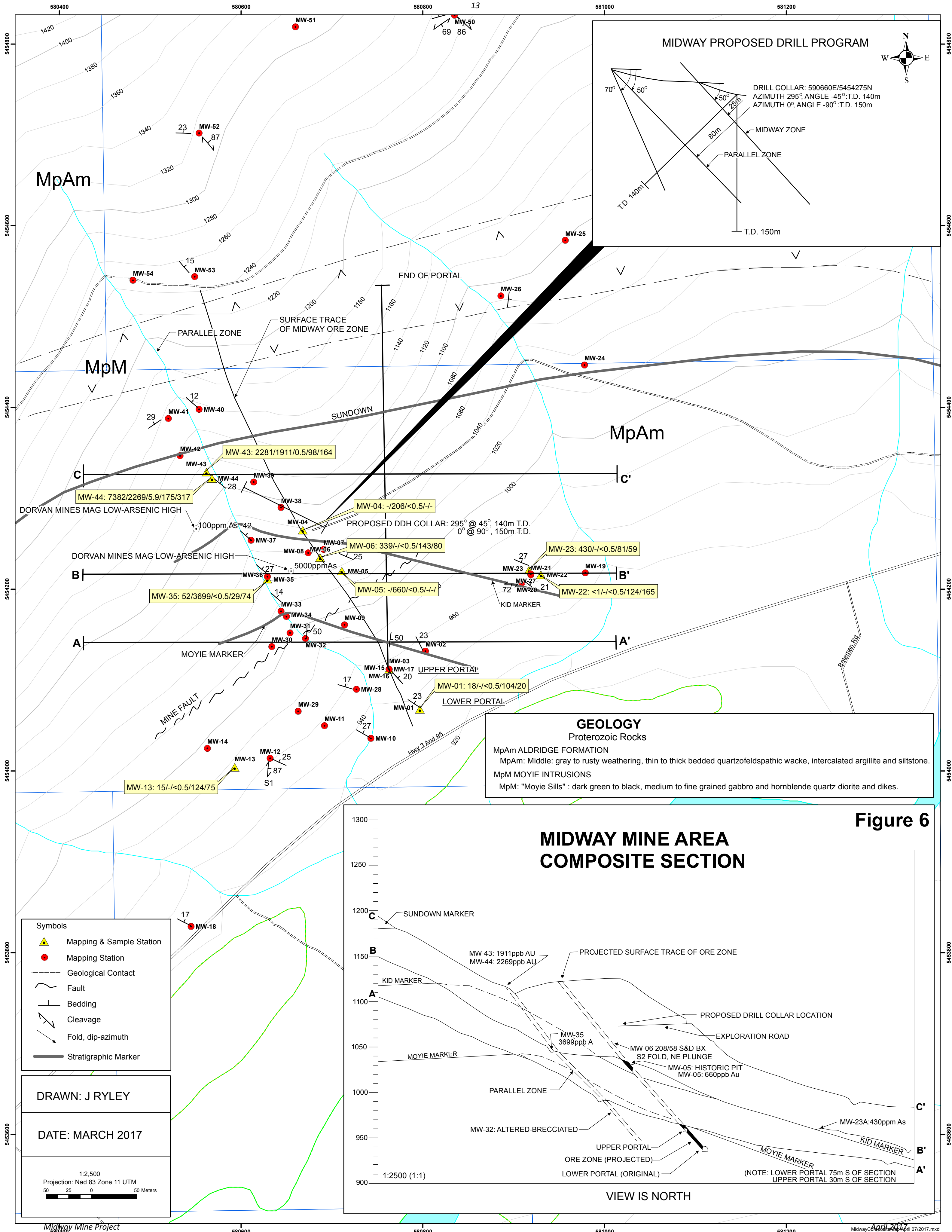


Alteration of the Aldridge metasediments can occur where the sediments are in contact with the gabbro due to the syngenetic relationship of the gabbro intruding into wet unconsolidated sediments during meso-Proterozoic time. Stations MW-53 and MW-54 however are approximately fifty metres north of the Sundown sill/Aldridge contact and the alteration therefore is considered post-emplacment. MW-53 and MW-54 represent the northernmost examples of sericite alteration.

MW-30 is the southernmost example, occurring west of the upper portal within the recessed lineament coined as the Parallel zone.

*MW-30: Pervasive sericite alteration, root wad.*





## **GEOCHEMISTRY**

A total of ten rock samples were collected by the author, and thirty five samples collected by Ms. Ulla Kapp. Analytical certificates and Assay Sample Locations are under the Appendix at the back of the report. Field locations of the samples are plotted on Figure 3: Midway Mine Property Geology; Mapping Stations and Geochemistry. Those samples collected by the author were labelled in the field with the 'MW' prefix then handed over to the custody of Ms. Ulla Kapp. Ms. Kapp submitted the samples which received a corresponding Loring Labs Ltd. assay number. The corresponding lab numbers are tabled under Field Notes, and the 2016 Midway Mine Mapping Project Geochemistry Table. The latter is located in the upper left hand corner of the Midway Mine Property Geology; Mapping Stations and Geochemistry map.

Samples collected by Ms. Ulla Kapp are from the inside of the upper portal, the slope between the upper and lower portals, and from the quarry adjacently east to the mine. No UTM coordinates were recorded when samples were obtained from the quarry, and the portal samples are estimated distances from the portal entrance. As a result these assay values are not plotted. The approximate locations have been provided for under the 2016 Midway Mine Mapping Project Geochemistry Table on the Midway Mine Property Geology; Mapping Stations and Geochemistry map.

### **Analytical Methodology**

The Loring Labs Ltd. analytical method for inductively coupled plasma (ICP) consists a multi-acid dissolution with an atomic absorption finish or inductively coupled plasma, or both. Volumetric and titrimetric methods are utilized for higher grade samples. Gold and silver is analyzed by fire assaying with a gravimetric finish or by instrumentation for lower limits. A minimum 30gm sample is used. Rare earth element (REE) analysis is with a metaborate fusion with an ICP finish. Blanks and standards are incorporated into the sample run. Analysis is performed in accordance with ASTM or government approved procedures.

A brief discussion of assay results for the upper portal samples is provided in the context of a systematic channel sampling program done by Sea Gold Oil Corporation that covered the Ulla Kapp sample area.

### **Historic and 2016 Assay Results**

Historical assay values showed a correlation between elevated arsenic and significant gold and silver values.

In 1933 a 40 ton (36.3 tonne) production run was sent to the Trail smelter which assayed 0.32 oz/ton Au an 2.5 oz/ton Ag from a rock analysis returning 59.2% silica, 16.8% Sulphur, 17.1% iron, 0.5% lime, and 1.0% arsenic. The 10,000 ppm arsenic value is atypically elevated.

Subsequent exploration programs such as the 1974 Dorvan Mines Ltd. program recognized the arsenic-gold relationship and implemented a soil program in concert with a magnetometer and EM survey. The results showed a distinct correlation between absolute magnetometer lows and anomalously high arsenic levels. The correlation with the highest arsenic level (5000ppm) from Line 1, station 2 occurred approximately twenty five metres east of the 2016 field station MW-35. Sample 044204 from MW-35 returned a value of 3699ppb Au. Field station MW-06 is located on the surface projection of the Midway ore zone and approximately a further twenty five metres east of Line 1, Station 2. Arsenic occurs at 339ppm in sample MW-06 (#044164) from a limonitic breccia obtained from outcrop.

The Dorvan Mines Ltd. station 3 on Line 1 yielded 122.5ppm As, with the field location being estimated at ten metres east of MW-04 which returned 206ppb Au in sample 044168. Field station MW-04 is on the projected surface trace of the ore zone and thirty metres north of MW-06.

Dorvan Mines Ltd. line 2, station 2 produced 100ppm As over a magnetometer low, the field location estimated to have occurred fifty five metres south-southwest of stations MW-43 and MW-44. Samples from these field stations returned 2281ppm and 7382ppm As, respectively. The corresponding Au values were 1911ppb Au and 2269ppb Au.

MW-44 hosts the highest silver and zinc values for field samples at 5.9ppm and 317ppm respectively. The zinc value is considered upper anomalous when an upper weakly anomalous value of 175ppm is utilized.

*MW-44: Sericitic altered limonitic breccia*





East of the Midway structure clay alteration with associated anomalous arsenic occurs in the upper bench of the adjacent quarry. Field station MW-23 records bedding parallel clay and gouge development. Sample 044167 (field sample MW-23A) from this location yielded an arsenic value of 430ppm from fault gouge underlying a sharp upper planar contact.

*MW-23: Fault gouge in quarry. Note the sericite alteration in rock left of hammer head.*



The following is a discussion of the upper and lower level sampling program as done by the Sea Gold Oil Corporation sampling and rehabilitation program in 1980. This is provided in the context of the Ulla Kapp samples from the upper portal. Note that the values derived are an arithmetic average, not a weighted average. Samples lengths varied over the composite intervals. The actual distance between channel samples is not mentioned in the Sea Gold Oil Corp. report however the sample locations are plotted on a mine map and measure relative to scale at ten feet (~3.0m) intervals.

Channel sampling of vein material in the upper level from 50-130 feet (15.2-39.6m) inclusive, produced an average of 0.191 oz/ton Au and 0.98 oz/ton Ag over an average width of 4.53 feet (1.38m). The following 70 foot (21.3m) section to 200 feet (61.0m) yielded only four samples as this was a heavily timbered section. Collectively these samples averaged 0.186 oz/ton Au and 4.14 oz/ton Ag over an average width of 3.25 feet (1.0m). A second composite section from 260-350 feet (79.2m-106.7m) over an average width of 4.9 feet (1.5m) consisted of 0.169 oz/ton Au and 5.77 oz/ton Ag. This second composite section covers the 260-310 feet (80.0m-95.0m) area sampled by Ulla Kapp. Ms. Kapp conducted random spot sampling in this area. Sample descriptions were not provided. The results are compiled in the Mapping Project Geochemistry Table located in the upper left hand corner of the Midway Mine Property Geology; Mapping Stations and Geochemistry map.

Of note is percussion drill hole BD-4 in this section that averaged 0.085 oz/ton Au and 6.60oz/ton Ag over 18 feet (5.5m). The drilling was done directly into and along the ore structure, not across the width. All samples are uncut and did not allow for dilution.

The two composite sections of 80 feet (24.4m) and 90 feet (27.4m) were taken over an averaged width of 1.45m and generated similar values of 0.191 oz/ton and 0.169 oz/ton Au, respectively. The arithmetic average of 0.18 oz/ton Au for the upper level contrasts with 0.047 oz/ton Au value from the lower level by a factor of 3.8 times.

## CONCLUSIONS

The sericite and clay alteration proximal to the Midway Mine is seen in context from the section Zoning of Hydrothermal Alteration-The Key Exploration Guide from Ore Deposit Models. Within this it states “*Within the broad areas of propylitic alteration [chlorite, calcite, pyrite, epidote, zeolite] are more restricted zones of sericitic alteration or recessive weathering clay alteration (illite-kaolinite-montmorillinite). These surround central zones of silicification or quartz veining, some portions of which may be mineralized*”.

The ore model for epithermal deposits details the vertical zonation aspect of the deposits. It notes that above the centre of ore deposition quartz veining persists, but diminishes progressively in abundance upward, as do precious and base metal amounts. As veining persists the quartz becomes finer grained and can become opaline silica or chalcedony. It should be noted that at the Midway Mine the ore is contained within a massive quartz zone with a sericitic alteration selvage and the primary sulphide minerals are pyrite and pyrrhotite. A number of samples found in proximity to the Midway and Parallel zones show pervasive sericite alteration.

The pyrite is considered a gangue mineral, often in association with sericite in the mid-portion of a deposit. The economic minerals are predominantly gold and silver with an increase in base metal content with depth. The model can vary due to episodes of over printing, but the simplistic model applies at the Midway Mine.

Studies of Canadian epithermal deposits has shown that there is a common ‘barren gap’ below the gold-silver deposits and the deeper silver-rich and base metal zones. These were referred to as ‘worthless gangue’. This observation may serve to explain why the lower level has a precious metal tenor nearly four times less than the upper level. The surface geology at the lower portal is characterized by a heterolithic breccia. The breccia consists of sericite altered angular to moderately rounded clasts of siltstone and quartzite. The quartzite clasts exhibit rounding through transport but the grain boundaries are distinct which implies a lower temperature regime not capable of pervasive silicic texture destructive alteration. The cement in part forms voids which host coliform silica, similar to sinter style textures. These characteristics suggest that this portion of the system may have been at a higher level with reduced temperatures. This model offers exploration potential at depth from an epigenetic model point of view.

Low sulphidation epithermal base and precious metal deposits typically display a geochemical footprint in which anomalously high arsenic, bismuth, or antimony values serve as an alteration halo to gold. The gold is generally micron size and developed with arsenopyrite and pyrite. The high degree of sulphide produces an incompetent limonitic, weathered oxidized surface to shallow depth rock. The deposit is vertically zoned whereby the surface oxidation transitions to primary semi-massive to massive sulphides often enveloped within a quartz gangue. Base metals develop with depth but may occur with precious metals owing to successive overprinting of metasomatic fluids.

The 1974 Dorvan Mines Ltd. geophysical and geochemistry program delineated a distinct correlation of elevated arsenic and absolute magnetometer lows. The proximity to the surface projection of the Midway zone and the Parallel zone and anomalous arsenic and gold values from the 2016 program implies continuity and expansion of the alteration zone.

The 1974 soil value of 122.5ppm As is upper anomalous and occurs within sixty metres south-southwest of two rock samples (MW-43A and MW-44, 044203-044202 respectively) generating 1.91gm/t and 2.27g/t Au. The magnetometer low and associated arsenic high is estimated to be fifty metres west of the Parallel zone, which expands the potential for economic mineralization westward.

The clay fault gouge at field station MW-23 is atypically high in arsenic at 430ppm. The alteration at this location is bound by being bedding parallel however the presence of arsenic suggests communication with the Midway mineralizing structure. Pre-mineralization or contemporaneous movement could have provided a pathway for migrating hydrothermal fluids to access. Note that lead and zinc are moderately anomalous with sample 044166 from field station MW-22 which is thirteen metres east of MW-23.

The Midway ore structure projection to surface has been substantiated by surface geochemistry, structural measurements, and historic exploration pits. The Parallel zone, whose geomorphology is expressed by the gully which parallels the surface projection of the Midway ore zone, is similarly substantiated by upper anomalous arsenic and gold values, localized structural offset, sericite alteration, and quartz development.

## RECOMMENDATIONS

The Midway property is a unique exploration play in that it was developed as a mine first, rehabilitated in part, and subjected to limited modern exploration methods. Geological mapping with a view to structural interpretation was not performed, nor was there a systematic sampling program. The work to date including this report is the reverse order of mineral exploration. The Midway Mine however affords the luxury of an understanding of the ore grade and the strike extension of the structure.

The mine was developed in the 1930's based primarily on the surface expression of the ore structure. The structure was developed on two levels with the upper level providing a metal tenor nearly four times that of the lower. Historic records do not provide any records of drilling for the strike or down-dip extensions of the ore structure. A compilation of the mining records for the upper level show an average grade of the 1288 tons mined as 0.23 oz/ton gold and 2.14 oz/ton silver. The reserves were not exhausted, and mining may have been stopped in part due to the onset of WWII and the economic conditions of that period of history.

Diamond drilling for the strike, down dip, and up dip extensions of the Midway and the Parallel zones is recommended.

### Drilling

The drill program recommended in this report is designed to test the extension of the Midway zone along strike and up-dip of the upper portal, and the subsurface extension of the Parallel zone. If successful, the uppermost secondary road would then be utilized to test for the northern strike extension of the Midway and Parallel zones.

The drill would be placed east of field station MW-53 approximately 100 metres and vectored west, testing the strike and near surface extension of the Midway ore zone and the Parallel zone. Drill hole depth is estimated at 200 metres with intersection of the Midway zone at 80 metres and the Parallel zone at 160 metres.

Moving the drill an additional 100 metres east along the road and drilling west would extend the strike of the Midway zone approximately an additional 75 metres. Intersection of the Midway zone is estimated at 150 metres. A vertical hole from this location would intersect the zone at an approximate depth of 260 metres. The drill hole depth could be increased if the previous location to the west intersected the Parallel zone. Intersection of the Parallel zone at this location would increase the drill hole depth an additional 90 metres.

The drilling budget included in this report is for the drilling of four NQ diamond drill holes from two drill site locations. The first location is as per the Composite Section map location on the exploration road in the lower central portion of the property. Two drill holes totaling 300m would be drilled from this location. The drill would then be moved north to the upper road which courses the east-west length of the property. The drill location on this road would be approximately 100 metres east of field station MW-53 and vectored west at  $-45^{\circ}$  for a total depth of 200 metres.

Drilling could be expanded utilizing the upper road by relocating the drill to the east 100 metres, as described above. To test for the southern down-dip extension of the Midway and Parallel zones the drill could be set up along the lower road of the quarry with drill holes vectored west and vertically.

## MIDWAY MINE DRILLING PROJECT PROPOSAL

## BUDGET SPREADSHEET

**PROJECT NAME:** Midway  
**DATE RANGE FOR EXPENSES:**  
**COMPILED BY:** James Ryley

DATE: April 2017

**PRE PROJECT EXPENSES** Date Range and items included**PERSONNEL PRE FIELD:** *Include research, data compilation, permitting, project planning etc.*

person/job description/number of persons x no. of mandays x day rate  
 Project Geologist: permitting/licences/sections  
 GIS Technician: sections

J. Ryley geological/permitting  
 K. Franck technical

persons	rate	no. of days	
1	\$ 425.00	2.00	\$850.00
1	\$ 280.00	0.50	\$140.00

**TOTAL PERSONNEL (PRE FIELD): \$990.00****PERSONNEL FIELD**

person/job description/number of persons x no. of mandays x day rate  
 Senior Project Geologist: core logging/drill supervision/collar set up  
 Core splitter: Transfer core drill site to core facility/core recovery/sample shipments

J. Ryley geological  
 Assistant geological assistant

persons	rate	no. of days	
1	\$ 425.00	10.00	\$4,250.00
1	\$ 250.00	10.00	\$2,500.00
		Hours	
1	\$60.00	40.00	\$2,400.00
1	\$50.00	24.00	\$1,200.00

**TOTAL PERSONNEL (FIELD): \$10,350.00****PERSONNEL POST FIELD**

person/job description/number of persons x no. of mandays x day rate  
 Project Geologist: report writing/report submission  
 GIS Technician: sections, assay plotting

J. Ryley geological  
 K. Franck technical

persons	rate	no. of days	
1	\$ 425.00	2.50	\$1,062.50
1	\$ 280.00	1.00	\$280.00

**TOTAL PERSONNEL (POST FIELD): \$1,342.50****TOTAL PERSONNEL: \$12,682.50****ANALYTICAL Lab Name:** Based on Stewart Group Pricing 2010 (updated Feb 03, 2010)

type x no. of samples x cost	# of Samples	cost	total
soils (prep)		\$2.75	\$0.00
soils (30 element ICP-MS)		\$20.00	\$0.00
soils (Au only geochem)		\$12.00	\$0.00
soils (Au plus ICP-MS)		\$24.00	\$0.00
rocks (prep)		\$6.50	\$0.00
rocks (30 element ICP-MS)		\$20.00	\$0.00
rocks (Au only geochem)		\$12.75	\$0.00
rocks (Au plus ICP-MS)		\$24.00	\$0.00
drill core (prep)	35	\$6.50	\$227.50
drill core (30 element ICP-MS)		\$20.00	\$0.00
drill core (Au only Assay)		\$13.25	\$0.00
rocks (Au plus ICP-MS)	35	\$25.00	\$875.00
Pb (Alone assay)	10	\$9.00	\$90.00
Zn (Alone assay)	10	\$9.00	\$90.00
Cu (Alone assay)		\$9.00	\$0.00
Ag (Alone assay)	35	\$9.00	\$315.00
Mo (Alone assay)		\$9.00	\$0.00
Au assay (15g)	35	\$13.25	\$463.75

**TOTAL ANALYTICAL: \$2,061.25****EQUIPMENT RENTAL**

quantity of equipment x no. of days x rate

4WD vehicle \$100/day  
 mileage:(km x rate) \$0.30/km  
 5 ton dual axle trailer  
 Diesel drum rental/purchase  
 Chain Saw  
 Rock Saw  
 Hand Held Radio w/charger  
 Satellite phone w/ charger  
 Field supply kit (including GPS, field packs, vests, first aid etc)  
 Survival Kit  
 Level III First Aid Kit  
 Core Splitter  
 Computer  
 Digital Camera

quantity	no of days	rate	
1	15.00	\$100.00	\$1,500.00
	1000.00	\$0.30	\$300.00
1	2.00	\$150.00	\$300.00
6	1.00	\$25.00	\$150.00
1	2	\$10.00	\$20.00
1	2	\$15.00	\$30.00
2	10	\$10.00	\$200.00
1	10	\$15.00	\$150.00
1			\$0.00
1			\$0.00
1			\$0.00
1			\$0.00
1	10	\$10.00	\$100.00
1	4	10.00	\$40.00

**TOTAL RENTAL: \$2,790.00**

**MIDWAY DRILLING BUDGET (continued)**

**AIRCRAFT CHARTER (includes fuel cost)**

A-Star 350 B3 *Pad building, drill moves, core transport*  
 H500D *Crew in and out during drilling*

rate/hour	no of hours	
\$ 2,355.00		\$0.00
\$ 1,355.00		\$0.00
<b>TOTAL AIRCRAFT CHARTER:</b>		\$0.00

**FUEL**

**Fuel - Automotive** Trucks, ATV

Consumption (l/hr)	Fuel Cost (\$/l)	Hours (hr)	
			\$300.00
<b>TOTAL FUEL:</b>			\$300.00

**DIAMOND DRILLING**

**Diamond drilling** : (no. of meters x cost/meter prorated)

*Estimated based on recent drilling, all inclu*

no.of meters	cost/m	
500	\$100.00	\$50,000.00
no.of months	cost/mo	
0.5	\$1,500.00	\$750.00
<b>TOTAL DIAMOND DRILLING:</b>		\$50,750.00

**Down hole survey tool** (no. of months x \$1500/mo)

**TRAVEL EXPENSES:** to / from projects

**Accommodation:** hotel/motel

**Meals:** (no.of men x no.of days x rate)

<b>TOTAL TRAVEL EXPENSES:</b>		
		\$0.00

**OTHER**

**Accommodation:** GEOLOGY CREW

**Accommodation:** DRILL CREW

**Meals:** (no.of men x no.of days x rate)

**Shipping:**

**Petrographic Analysis**

**FB Drilling mob/demob**

**Core Storage** *Note: Storage fees at Rosswood core facility*

**Logging Facility**

**Drill pad rental (2)**

**Drill pad removal: Apex crew (2)**

**Repairs & Maintenance - Equipment:**

**Field/logging supplies:**

**Filing fees:** *Note: Not applicable for assessment. Adjust accordingly for assessment drive BC*

**Report Preparation:** printing and plotting of figures

			\$200.00
			\$500.00
			\$1,000.00
			\$1,000.00
	10	75	\$400.00
			\$300.00
			\$200.00
			\$0.00
			\$150.00

**Subtotal: \$72,333.75**

15% Admin on 3rd party purchases only: \$0.00

10% Internal Contingency: \$7,233.38

**TOTAL: \$79,567.13**

**CALCULATIONS:**

Diamond Drilling: based on 500 m on 2 road locations with one drill move in between. Total of 10 days with mobilization

2016-2017 MIDWAY PROPERTY STATEMENT OF COSTS					
Exploration Work type	Comment	Days			Totals
<b>Personnel (Name) * / Position</b>	<b>Field Days (list actual days)</b>	<b>Days</b>	<b>Rate</b>	<b>Subtotal*</b>	
James Ryley, Geologist	September 15, 16, 17, 21, 23	5	\$350.00	\$1,750.00	
				\$0.00	
				\$1,750.00	<b>\$1,750.00</b>
<b>Office Studies</b>	<b>List Personnel (note - Office only, do not include field days)</b>				
Marker identification	James Ryley	1.5	\$350.00	\$525.00	
Report preparation	James Ryley	3.0	\$350.00	\$1,050.00	
Computer modelling	Kevin Franck, GIS Technician	4.0	\$35.00	\$140.00	
				\$1,715.00	<b>\$1,715.00</b>
<b>Geochemical Surveying</b>	<b>Number of Samples</b>	<b>No.</b>	<b>Rate</b>	<b>Subtotal</b>	
Rock	45	45.0	\$37.65	\$1,694.25	
Other				\$0.00	
				\$1,694.25	<b>\$1,694.25</b>
<b>Transportation</b>		<b>No.</b>	<b>Rate</b>	<b>Subtotal</b>	
SUV, Calgary-Midway Mine-return	Ulla Kapp	7422	\$0.49	\$3,636.78	
Fuel, total	Ulla Kapp	1	\$518.89	\$518.89	
Truck, per day rate	James Ryley	7.00	\$75.00	\$525.00	
				\$4,680.67	<b>\$4,680.67</b>
<b>Accommodation &amp; Food</b>	<b>Rates per day</b>				
Hotel	101.12	9.00	\$101.12	\$910.08	
Camp	Not applicable		\$0.00	\$0.00	
Meals	\$40.00	9.00	\$40.00	\$360.00	
				\$1,270.08	<b>\$1,270.08</b>
<b>Equipment Rentals</b>					
Field Gear (Specify)	Flagging, GPS, sample bags	5.00	\$15.00	\$75.00	
Other (Specify)					
				\$75.00	<b>\$75.00</b>
<b>Freight</b>					
				\$0.00	<b>\$0.00</b>
<b>TOTAL Expenditures</b>					<b>\$11,185.00</b>



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File ID #9897, Property File 82GSW021-07 Midway, 1974.

Roberts, R.G., and Sheahan, P.A., et al, 1988: Ore Deposit Models; A Canadian Cordilleran Model for Epithermal Gold-Silver Deposits, Geological Association of Canada.

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Shear, H.H., Sea Gold Oil Corp., 1980: Assessment Report # 8431, Mineral Resources Branch.

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Winslow, J, and McBean, R., Dorvan Mines Ltd., 1974: Assessment Report # 5049, Department of Mines and Petroleum Resources.

## STATEMENT OF QUALIFICATIONS

I, James Kendall Ryley, of 1504-12<sup>th</sup> Avenue South, Cranbrook, British Columbia, Canada declare:

- I am a graduate of the Southern Alberta Institute of Technology with an Associate Degree in Petroleum Geology, 1980.
- I am a graduate of the University of Montana, with a Bachelor of Arts Degree Geology, Professional Emphasis, 1990.
- I have a collective experience of over twenty four years of geological employment as a salaried employee and independent consultant for major and junior mineral exploration and oil and gas companies. Commodities include industrial minerals, coal, precious and base metals, conventional and non-conventional petroleum resources.
- I personally conducted the mapping and sampling program as outlined in this report, and prepared this geological report with no interest, other than fee based compensation.

## **APPENDICES**

Field Notes

Assay Certificates

## **Field Notes**

**MIDWAY MINE PROJECT FIELD NOTES**

Station	UTM		Description	Structure	Structure Notes	Sample	Loring Lab #
	Easting	Northing					
MW-01	580797	5454068	Immediately above lower portal. Hydrothermal breccia. Coarse, angular 3-30mm clasts, intense sericitic alteration, limonitic weathering, argillic in part, clay development related to gouge, botryoidal hematite developed along solution cavities, sinter style texture. Note that quartzite clasts are rounded indicating milling but grain boundaries are not annealed indication moderate temperature, brecciation was more mechanical than temperature dynamic. Possibly upper level in hydrothermal system.	So: 305/23NE S1: 110/53SW	Bedding, west contact with breccia Cleavage, west contact with breccia. Inferred NE plunge of breccia.	MW-01A	044163
MW-02	580803	5454132	MiddleAldridge strata, impure quartzite, interbedded siltite and argillite.	So: 329/32NE S1: 108/67SW	Note: bedding to cleavage relationship indicates antiform to the west (as it is)		
MW-03	580763	5454112	Upper portal. Marker found on east side of portal entrance. Breccia on east and west side, primarily on west side. Pervasive sericite alteration and coarse angular brecciated fabric. Iron oxide development. Brecciation differs from lower portal whereby milling and transport of clasts does not occur here but rather penetrative multi-directional fracturing, in part net textured millimetre scale.	So: 320/20NE S1: 330/53NE	East side of portal entrance Fold structure, west side of portal. Axial plane at 255/64NW. Plunge ~50°NE.		
MW-04	580668	5454265	Hand cob of quartz vein in excavation west and upslope of upper portal. Hosts pyrite and blebs possible subhedral tetrahedrite (?).			MW-04A	044168
MW-05	580711	5454220	Two excavations above scree slope. Hand cobbed quartz cobbles, hosts remnant bedding, minor sulphide, limonite, possible cerrusite film. Common float of limonitic breccia, analogous to upper portal, no			MW-05A	044169
MW-06	580687	5454235	Outcrop; 1.5mH x 7.0mW. Limonitic breccia with sericitic alteration of wacke, goethite veinlets.	S1: 208/58NW S2: 30-031	S2 Fold, NE plunge, metre scale fold in breccia zone.	MW-06	044164
MW-07	580691	5454244	Outcrop; 30mW x 40mH. Incomplete Bouma facies.	So: 296/25NE S1: 096/66SW S2: 038/83SE	Cleavage Secondary cleavage		
MW-08	580674	5454240	Outcrop; 2mW x 8mH. Quartzite with lesser siltite, minor argillite. Unaltered mPA2 strata.	So: 295/18NE			
MW-09	580714	5454161	Excavation covered in with scree, hosts hand cobbed quartz sericite boulders at base. Pervasively cleaved quartz breccia boulder hosting disseminated and discontinuous laminae pyrite and occasional tetrahedrite. Inferred contact with sericite altered brecciated siltite. Upper level Midway Mine style alteration.			MW-09A	Not assayed
MW-10	580743	5454036	Outcrop; 60mW x 10mH. Thick massive .80-1.0m beds quartzite, distal to brecciation/alteration.	So: 303/27NE S1: 014/86SW	Cleavage		
MW-11	580692	5454050	Outcrop; mPA2 strata. Bedding and second cleavage measurement on outcrop 30m W of MW-11	S1: 110/80SW So: 313/32NE S1: 012/87SE	Cleavage Cleavage		
MW-12	580632	5454014	Outcrop	So: 295/25NE S1: 005/87SE S2: 105/71SW			
MW-13	580593	5454004	Float. Planar laminae 2-4mm thick commonly with discontinuous stratiform pyrite and lesser pyrrhotite. Float of stratigraphic marker, found within 2m of MW-13. Labelled 13B.			MW-13A	044165
MW-14	580563	5454025	Marker float, in proximity to MW-13 marker float. Inferred as subcrop.				
MW-15	580763	5454112	Inside of upper portal. Three metres from entrance.	So: 270/23NE S1: 330/50N	East wall West wall. Ore zone strike and plunge		
MW-16	580763	5454112	Upper portal, end (caved) ~30m from entrance.	060  So: 336/40 S1: 008/50SE S2: 195/85NW	Fault movement lineation direction in hanging wall Hanging wall strike and dip Ore zone strike and dip Secondary high density cleavage creates incompetent central quartz section in ore zone.	MW-16A	Not assayed
MW-17	580763	5454112	Marker (?) east side upper portal, 3 metres from entrance.				
MW-18	580545	5453829	Outcrop; large exposure on highway. Strike defines intersection of N-S axial trace of broad fold. Midway Mine on east limb.	So: 297/17NE So: 330/26NE	Measurement 30m east on highway.		
MW-19	580979	5454218	Quarry, marker-style bedding exposed in road cut				
MW-20	580909	5454207	Upper bench of quarry	So: 308/21NE S1: 092/72NE	Hosts narrow quartz veins		

MW-21	580919	5454216	Quarry, upper bench. Bedding parallel fault gouge, 0.80m wide.				
MW-22	580930	5454216	Quarry, upper bench. Section 2.5m thick of black hard argillite with fine discontinuous syngenetic stratiform pyrrhotite and pyrite. Possible aphanitic tourmaline in part.			MW-22A	044166
MW-23	580917	5454221	Quarry, upper bench. Fault gouge, bedding parallel (apparent), 5m above (up-section) of MW22.	So: 297/27NE	Measured on upper contact	MW-23A	044167
MW-24	580978	5454447	Upslope above quarry. No outcrop, abundant gabbro boulders.				
MW-25	580957	5454584	Low confidence outcrop, 1m x1m. May be regolith.	So: 180/14 S1: 095/89			
MW-26	580886	5454523	Gabbro outcrop, 20mW x 15mH.	So: 003/15SE	Igneous layering		
MW-27	580919	5454217	Marker, upper bench in quarry. Moved but close to in place.				
MW-28	580727	5454090	mPA2 outcrop: 5mW x 2mH.	So: 283/17NE S1: 160/84SW	.5-.7m spacing		
MW-29	580663	5454066	Marker in root wad. Single piece.	So: 318/33NE	Outcrop upslope of root wad marker		
MW-30	580634	5454137	Float and root wad. Moderate sericite alteration with 0.5-1.0mm coarse muscovite development.				
MW-31	580654	5454152	Marker float, 2 pieces. Additional float 5m east.				
MW-32	580671	5454146	Faulted outcrop: brecciation, sericitic alteration, cleaved, limonitic fractures. Penetrative cleavage.	So: 008/50SE S1: 178/84SW	Same S&D as upper portal ore zone Penetrative cleavage, analogous to cleavage in central portion of ore in upper portal.		
MW-33	580644	5454176	Marker from outcrop, east side of gully.	So: 312/14NE	Suspect fault undercutting this strata to the east.		
MW-34	580650	5454170	Marker. Outcrop 15mW x 8mH, marker from centre. Forms headwall to gully with depression deflecting westerly. Unaltered.	So: 323/28			
MW-35	580629	5454211	Limonitic breccia, oxidized pyrite and angular sericitic clasts. In west splay off of main gully. Three pieces, inferred as float.		3699ppb Au	MW-35A	044204
MW-36	580629	5454214	Outcrop, 8mW x 5mH.	So: 311/27NE S1: 335/86NE			
MW-37	580611	5454254	Outcrop, steepened strata.	So: 306/42NE			
MW-38	580644	5454290	Outcrop, 40mW x 25mH. Strata normal.	So: 314/27NE S1: 040/72SE S2: 012/86SE			
MW-39	580614	5454318	Marker float from root wad (inferred as Sundown).				
MW-40	580554	5454398	Outcrop, 8mW x 8mH. Bleached float, transitional, proximal to gabbro, syngenetic influence.	So: 314/12NE S1: 088/82SW S2: 030/88			
MW-41	580520	5454388	West flank of gully. Bedding shift opposite side.	So: 240/29NW			
MW-42	580533	5454347	Marker float, numerous fragments.				
MW-43	580562	5454329	Net textured quartz veining, not in place. Host occasional 1-3mm pyrite and rare arsenopyrite.		1911ppb Au	MW-43A	044203
MW-44	580568	5454322	Outcrop, 0.5mW x 1.5mW. Pervasive sericite alteration, limonitic in part, locally brecciated, minor fold surface.	So: 304/28NE	From outcrop 10m downslope. 2269ppb Au	MW-44A	044202
MW-45	581366	5454954	Outcrop, 4mW x 3mH. North side of road.	So: 295/17NE			
MW-46	581337	5454978	Outcrop, 30mW x 3mH	S1: 093/76SW S2: 040/86			
MW-47	581166	5454980	Outcrop, 8mW x 1mH. mPA2 strata, moves gabbro contact north.	So: 230/37NW S1: 154/62NE	Fold cleavage.		
MW-48	581074	5454979	Scree, all mPA2, centre. Marker photo, two occurrences. Moves gabbro contact north. Outcrop ~100m S of scree.				

MW-49	581064	5454896	Outcrop mPA2, 4mW x 0.5mH	So: 264/19NW			
MW-50	580835	5454832	Outcrop mPA2, 30mW x 20mH.	So:: 258/23NW S1: 134/86SW S2: 058/69SE	0.8-1.0m density Barren		
MW-51	580660	5454819	Base of scree, 300mW x 150mH. All mPA2. Outcrop at base.				
MW-52	580554	5454702	Outcrop mPA2 40mW x 6mH.	So: 274/23NE S1: 320/87NE			
MW-53	580549	5454544	Outcrop, 10mW x 3mH. West side of gully on north side of road. Apparent fault gouge (differentially eroded) bedding parallel, moderate sericitic alteration.	So: 317/15NE S1: 035/77SE	0.1-0.3m density		
MW-54	580481	5454540	Outcrop, roadcut. Pervasive sericite alteration, incompetent strata, common hairline fractures: influence of gabbro contact.	S1: 20-048	Broad fold structures with NE plunge.		
MW-55	580343	5454385	Outcrop along roadcut. Contact of Moyie Sill/Middle Aldridge. 'Girty' style beds which are weakly calcareous. Bedding affected with local granophyric transitional hybrid alteration.				
MW-56	580063	5454310	Outcrop, 2mW x 1mH, mPA2 strata	So: 232/29NW			
MW-57	581158	5454903	Outcrop, roadcut, 8mW x 2mH	So: 296/18NE			

## **Assay Certificates**





## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 274-2777 Fax: 275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

FILE: 6 0 4 4 9

DATE: November 8, 2016

Sample Type: Rock

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
044202	5.9	0.80	7382	74	218	2	0.10	3	4	200	33	3.15	0.22	7	0.03	254	2	0.03	10	0.01	175	42	34	43	0.01	<1	7	3	317	11
044203	<0.5	3.78	2281	999	335	7	0.06	1	4	213	6	0.89	1.36	28	0.14	29	2	0.15	7	0.01	98	10	8	13	0.10	<1	22	4	164	38
044204	<0.5	4.77	52	1577	381	<1	0.08	2	10	94	8	9.15	1.54	9	0.13	694	3	0.20	19	0.02	29	<1	25	109	0.07	<1	51	2	74	38
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

0.500 Gram sample is total digested with Aqua Regia and ICP finish.

Samples received on: October 20, 2016

Certified by: \_\_\_\_\_



**LORING LABORATORIES LTD.**

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: Ulla Kapp  
222, 2nd Ave. N. E.,  
Calgary, Alberta,  
T2E 0E2  
403-230-8794

FILE: 6 0 4 4 9

DATE: November 8, 2016

Sample Type: Rock

**Certificate of Assay**

Sample No.	Au ppb	Au Grams/tonne
<u>"Assay Analysis"</u>		
044202	2269	2.27
044203	1911	1.91
044204	3699	3.70
<p>Sample analyzed using Fire Assay and AA/ICP finish. Samples received on: September 19, 2016</p>		

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_ Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

FORM ASYC-015



**LORING LABORATORIES LTD.**

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: Ulla Kapp  
222, 2nd Ave. N. E.,  
Calgary, Alberta,  
T2E 0E2  
403-230-8794

FILE: 6 0 4 2 3

DATE: November 8, 2

Sample Type: Rock

**Certificate of Assay**

Sample No.	Au Grams/tonne	Ag ppm
<p><u>"Assay Analysis"</u></p> <p>044201</p>	<p>16.07</p>	<p>33.0</p>

Sample analyzed using Fire Assay and AA/ICP finish.  
Samples received on: September 19, 2016

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance

FORM ASYC-015

!016



ce.



# Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 274-2777 Fax: 275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

FILE: 6 0 3 1 0  
 DATE: October 13, 2016  
 Sample Type: Rocks

## 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
044163	<0.5	2.57	18	119	395	28	0.09	1	4	113	60	5.83	0.34	25	0.03	150	2	0.86	<1	0.04	104	11	283	62	0.12	<1	15	1	20	13
044164	<0.5	6.19	339	507	497	13	0.05	<1	8	100	114	3.41	1.86	34	0.17	276	3	0.80	4	0.01	143	74	26	38	0.10	<1	39	2	80	52
044165	<0.5	6.53	15	1527	433	12	2.66	1	19	124	108	3.51	2.10	5	1.71	662	3	0.83	<1	0.05	124	10	125	38	0.26	<1	51	2	75	85
044166	<0.5	6.80	<1	1319	569	15	0.72	1	27	71	91	3.99	2.18	26	1.13	635	6	1.04	1	0.05	124	8	86	42	0.26	<1	57	3	165	68
044167	<0.5	9.70	430	1480	1090	11	0.18	<1	15	79	12	3.27	3.44	46	0.59	471	4	0.39	<1	0.03	81	10	40	43	0.33	<1	83	3	59	88
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

0.500 Gram sample is total digested with multi acid and ICP finish.

Samples received on: September 19, 2016

Certified by: \_\_\_\_\_



# LORING LABORATORIES LTD.

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: Ulla Kapp  
222, 2nd Ave. N. E.,  
Calgary, Alberta,  
T2E 0E2  
403-230-8794

FILE: 6 0 3 1 0

DATE: October 13, 2016

Sample Type: Rock

## Certificate of Assay

Sample No.	Au ppb	Au Grams/tonne	Ag ppm
<u>"Assay Analysis"</u>			
044168	206		<0.5
044169	660		<0.5

Sample analyzed using Fire Assay and AA/ICP finish.  
Samples received on: September 19, 2016

I HEREBY CERTIFY that the above results are those assays  
made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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016



ice.



# LORING LABORATORIES LTD.

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Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: Ulla Kapp  
222, 2nd Ave. N. E.,  
Calgary, Alberta,  
T2E 0E2  
403-230-8794

FILE: 6 0 3 0 0

DATE: October 13, 2016

Sample Type: Rock

Sample No.	Au ppb	Ag ppm
<u>"Assay Analysis"</u>		
044151	121	1.6
044152	549	4.5
044154	21.0	<0.5
044155	21.0	0.8
044156	144.0	<0.5
044157	742.0	1.2
044158	59.0	2.0
044159	114.0	<0.5
044160	12	<0.5
044161	<5	<0.5
044162	1018	<0.5
STD GS-1T (1080 ppb)	1071	
Blank	<5	<0.5
Sample analyzed using Fire Assay and AA/ICP finish. Samples received on: September 14, 2016		

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advan

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## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 274-2777 Fax: 275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

FILE: 6 0 1 7 8  
 DATE: August 29, 2016  
 Sample Type: Rocks

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
Q Blue-2	2	14.99	37	1537	1750	11	0.27	4	21	96	<1	3.93	4.76	56	1.15	418	5	2.10	23	0.03	40	<1	74	54	0.56	<1	128	6	103	108
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

0.500 Gram sample is total digested with multi acid and ICP finish.

Samples received on: August 16, 2016

Certified by: \_\_\_\_\_



001:2008 Certified

# LORING LABORATORIES LTD.

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

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Email: loringlabs@telus.net www.loringlabs.net

*Sam + John*

*6*

to: Ulla Kapp  
222, 2nd Ave. N. E.,  
Calgary, Alberta,  
T2E 0E2  
403-230-8794

FILE: 6 0 1 7 8

DATE: September 7, 2016

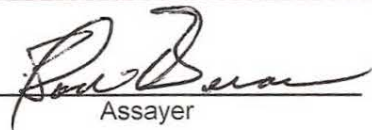
Sample Type: Rock

## Certificate of Assay

Sample No.	Au ppb	Au Grams/tonne	Ag ppm
<u>"Assay Analysis"</u>			
Q Blue - 2	23.0	-	2.0
UT Headwall	-	38.87	112.6
UT J/Vault-1	-	31.80	19.7
UT Vault-2	6958.0	-	6.0
UT 44-1	2886.0	-	5.9
UT 44-2	-	52.41	15.6
UT 19 Breccia	1093.0	-	2.0
Slope E Bench	389.0	-	2.0

Sample analyzed using Fire Assay and AA/ICP finish.  
Sample received on August 16, 2016

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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## Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 274-2777 Fax: 275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

FILE: 6 0 1 1 8

DATE: August 09, 2016

### 30 ELEMENT ICP ANALYSIS

Sample Type: Rocks

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
Q Blue Vein	<0.5	1.35	6	29	189	4	0.12	1	10	241	43	2.07	0.48	52	0.25	114	2	0.13	25	0.02	30	<1	10	23	0.08	<1	12	1	45	11
UT Vault Quartz	176	2.12	3742	29	196	55	0.08	10	10	110	80	7.90	0.73	6	0.09	21	4	0.04	24	<0.01	3787	260	4	94	0.03	<1	19	7	410	13
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

0.500 Gram sample is digested with Aqua Regia at 95 C for one hour and bulked to 10 ml with distilled water.  
 Partial dissolution for Al, B, Ba, Ca, Cr, Fe, K, La, Mg, Mn, Na, P, Sr, Ti, and W.

Samples received on: July 28, 2016

Certified by: \_\_\_\_\_



# LORING LABORATORIES (ALBERTA) LTD.

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

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To: ULLA KAPP  
222 - 2nd Avenue N.E.  
Calgary, AB  
T2E 0E2

File No: 60118  
Date: 8-Aug-16  
Samples: Rock

## Certificate of Assay

Sample No.	Au ppb	Au g/tonne
<u>"Assay Analysis"</u>		
Q Blue Vein	49	--
UT Vault Quartz	>10000	54.47

Sample received on July 28, 2016  
Gold by Fire Assay and finished by AA/Gravimetric

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

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Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: ULLA KAPP  
222 - 2nd Avenue N.E.  
Calgary, AB  
T2E 0E2

File No: 59928-1  
Date: 28-Jul-16  
Samples: Rock

## Certificate of Assay

Sample No.	Au ppb	Au g/tonne
<u>"Assay Analysis"</u>		
1 sample	>10000	25.99

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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## Loring Laboratories ( Alberta ) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 403-274-2777 Fax: 403-275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

FILE: 5 9 9 2 8

DATE: July 12, 2016

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
Slope Mo am	10.0	8.36	20	2020	1504	15	0.07	6	16	91	69	4.54	2.99	32	0.70	575	21	0.24	13	0.01	181	16	37	45	0.18	<1	69	4	183	60
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

\* 0.500 Gram sample is total digested with multi acid and ICP finish.

\* Sample received on June 23, 2016

Certified by: \_\_\_\_\_



# Loring Laboratories (Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 274-2777 Fax: 275-0541  
 loringlabs@telus.net

TO: ULLA KAPP  
 222 - 2 Ave NE  
 Calgary, AB  
 T2E 0E2

FILE: 5 9 8 8 4

DATE: June 17, 2016

## 30 ELEMENT ICP ANALYSIS

Sample Type: Rocks

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
Q BLUE	2.5	1.35	19	28	168	6	0.10	<1	7	52	7	1.71	0.70	33	0.46	142	1	0.02	13	0.03	2	2	3	29	0.12	<1	15	1	35	3
Q MUSC	<0.5	0.62	7	38	200	1	0.11	<1	6	422	21	1.46	0.26	121	0.22	198	1	0.01	9	0.02	20	4	7	19	0.05	<1	9	1	32	1
UT BK	44	0.03	5696	19	56	86	0.05	6	8	116	27	3.03	0.02	<1	<0.01	15	1	0.04	20	<0.01	187	130	4	193	<0.01	56	3	5	541	4
UT OCK	43	0.21	6638	15	53	81	0.04	6	3	90	31	3.04	0.12	1	0.01	13	1	0.04	4	<0.01	103	159	12	181	<0.01	49	5	4	481	5
Q BLUE CK	2.5	1.47	22	27	166	6	0.10	<1	7	57	8	1.81	0.76	36	0.50	146	1	0.02	13	0.03	3	2	3	32	0.11	<1	16	1	40	3
BLANK	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

0.500 Gram sample is digested with Aqua Regia at 95 C for one hour and bulked to 10 ml with distilled water.  
 Partial dissolution for Al, B, Ba, Ca, Cr, Fe, K, La, Mg, Mn, Na, P, Sr, Ti, and W.

Samples received on: June 9, 2016

Certified by: \_\_\_\_\_



# LORING LABORATORIES (ALBERTA) LTD.

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

To: ULLA KAPP  
222 - 2nd Avenue N.E.  
Calgary, AB  
T2E 0E2

File No: 5 9 8 8 4  
Date: June 17, 2016  
Samples: Rock

## Certificate of Assay

Sample No.	Au ppb	Au g/tonne
<u>"Assay Analysis"</u>		
Q BLUE	56	---
Q MUSC	74	---
UT BK	>10000	32.13
UT OCK	>10000	35.85
UT BK CK	>10000	---

I HEREBY CERTIFY that the above results are those assays  
made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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## Loring Laboratories ( Alberta ) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel: 403-274-2777 Fax: 403-275-0541  
 loringlabs@telus.net

FILE: 5 9 6 2 1

DATE: March 30, 2016

TO: ULLA KAPP  
 222 2Ave. NE  
 Calgary AB T2E 0E2

### 30 ELEMENT ICP ANALYSIS

Sample No.	Ag ppm	Al %	As ppm	B ppm	Ba ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P %	Pb ppm	Sb ppm	Sr ppm	Th ppm	Ti %	U ppm	V ppm	W ppm	Zn ppm	Zr ppm
L1	1.5	6.56	867	1901	730	60	0.19	20	10	78	16	14.48	2.41	<1	0.47	4824	4	0.16	11	0.01	32	<1	11	110	0.15	<1	54	4	166	76
Rock 2	24.5	0.01	3573	519	125	135	0.03	42	2	259	105	22.14	0.02	<1	<0.01	<1	1	0.02	6	<0.01	6026	362	4	169	<0.01	<1	12	19	2194	5
W1	1.0	4.53	1868	748	378	22	0.08	7	7	251	4	5.44	1.55	<1	0.15	1460	2	0.09	10	0.01	71	<1	8	44	0.07	<1	28	2	21	32
W2	1.0	3.75	1478	501	345	23	0.17	8	6	218	3	6.35	1.25	<1	0.13	2245	2	0.07	8	0.01	21	<1	13	48	0.06	<1	22	2	6	26
W3	1.0	0.23	602	137	235	8	0.05	3	2	422	12	2.11	0.06	<1	0.01	61	2	0.01	9	<0.01	39	<1	7	14	0.01	<1	3	1	3	2
DUP. L1	1.5	6.65	842	1981	709	57	0.19	20	10	76	16	14.38	2.38	<1	0.47	4857	3	0.17	12	0.01	32	<1	10	112	0.14	<1	54	3	165	71
Blank	<0.5	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<0.01	<0.01	<1	<0.01	<1	<1	<0.01	<1	<0.01	<1	<1	<1	<1	<0.01	<1	<1	<1	<1	<1

\* 0.500 Gram sample is total digested with multi acid and ICP finish.

\* Sample received on March 23, 2016

Certified by: \_\_\_\_\_



ISO 9001:2008 Certified

## Loring Laboratories(Alberta) Ltd.

629 Beaverdam Road N.E.,  
 Calgary Alberta T2K 4W7  
 Tel:403- 274-2777 Fax:403- 275-0541

FILE: 5 8 5 7 3

To: ULLA S, KAPP

DATE: June 01, 2015

### RARE EARTH ANALYSIS

Sample I.D.	CeO <sub>2</sub> ppm	Dy <sub>2</sub> O <sub>3</sub> ppm	Er <sub>2</sub> O <sub>3</sub> ppm	Eu <sub>2</sub> O <sub>3</sub> ppm	Gd <sub>2</sub> O <sub>3</sub> ppm	Ho <sub>2</sub> O <sub>3</sub> ppm	La <sub>2</sub> O <sub>3</sub> ppm	Lu <sub>2</sub> O <sub>3</sub> ppm	Nd <sub>2</sub> O <sub>3</sub> ppm	Pr6O11 ppm	Sm <sub>2</sub> O <sub>3</sub> ppm	Tb <sub>4</sub> O <sub>7</sub> ppm	Tm <sub>2</sub> O <sub>3</sub> ppm	Y <sub>2</sub> O <sub>3</sub> ppm	Yb <sub>2</sub> O <sub>3</sub> ppm	Total REE ppm Oxides
Rock # 1	<1	<1	1	<1	15	<1	<1	2	9	<1	7	<1	6	1	<1	41
STD	145500	1725	535	2566	5840	207	56030	13	68030	17040	10200	638	20	3191	115	
STD% Value	14.30	0.17	0.06	0.26	0.58	0.02	5.60	0.0013	6.70	1.80	1.00	0.06	0.002	0.32	0.011	

Analyzed using meta-boric fusion and ICP.

Sample received on May 27, 2015

Certified by: \_\_\_\_\_



**LORING LABORATORIES (ALBERTA) LTD.**

629 Beaverdam Road N.E. Calgary, Alberta T2K 4W7

Tel : (403) 274-2777 Fax : (403) 275-0541

Email: loringlabs@telus.net www.loringlabs.net

ISO 9001:2008 Certified

TO: ULLA S. KAPP  
222 - 2 Ave NE  
Calgary AB T2E 0E2

File No: 5 8 5 7 3  
Date: June 2, 2015  
Samples: Rock

### Certificate of Assay

Sample No.	Au gm/Tonne	Ag gm/tonne
<u>"Assay Analysis"</u>		
Rock #1	28.39	11.5

Methodology: Gold and Silver by Fire Assay - Gravimetric finish.

I HEREBY CERTIFY that the above results are those assays made by me upon the herein described samples:

\_\_\_\_\_  
Assayer

Rejects and pulps are retained for one month unless specific arrangements are made in advance.

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