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WHITE WATER GROUP  
DRY RIDGE PROPERTY

By: E.P. Sheppard & Assoc.  
Vancouver, B.C.

82-F-11

Prop. Sub.



FP SHEPPARD & ASSOCIATES LTD  
 DRY RIDGE SILVER MINES LTD. (NPL)

**LOCATION MAP  
 LEMON CREEK, SLOCAN M.D.**

**BRITISH COLUMBIA**

SCALE: 1 in = 136 mi.

To Accompany report by E.P. Sheppard, P. Eng.

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GEOLOGICAL REPORT

On the  
WHITEWATER GROUP  
Slocan Mining Division  
British Columbia

of

Dry Ridge Silver Mines Ltd. (NPL)

By:  
E. Percy Sheppard, P.Eng.  
Consulting Geologist

December 11, 1970  
Vancouver, B. C.



GEOLOGICAL REPORT  
WHITEWATER GROUP  
Slocan Mining Division, B. C.

SUMMARY & CONCLUSIONS

Dry Ridge Silver Mines Ltd. (N.P.L.) is the owner of the 75-claim Whitewater Group, located in the Slocan Mining Division, B. C. Co-ordinates: 117°-08'W, 50°-05'N. The property is accessible by a truck and jeep road from Retallack. Extension of the jeep road to the northwest end of the group will make the claims along the Whitewater Creek easily accessible.

Shipments of silver, lead and zinc ore were made about the turn of the century from properties near the present claims group. A small shipment is reported from present claims EK 10, 8, 9 and 7, where a shallow shaft shows a vein of galena, zinc and carbonates over 28" in width.

The area is underlain by sedimentary volcanic rocks invaded by granite and related rocks. They have been folded and thrust into a complex pattern which appears to be one of the chief geologic controls on ore deposition.

An area of serpentized rocks, possibly the alteration product of an ultrabasic, contains appreciable amounts of chrysotile asbestos of good quality along a length of over one mile and a width of 1000 feet. The fibre occurs in small hairline fractures of 1/16" to 1/8" thickness.

Nickel mineralization is reported from claims TOM 28 and 29, with magnetite, pyrrhotite and minor chalcopyrite in serpentine. Silver, lead and zinc mineralization in a Slocan type vein is opened up by a 65-ft. shaft. It is reported that a small shipment of ore was made from this shaft in 1899.

A program to fully explore the showings should occupy



Whitewater Group

SUMMARY & CONCLUSIONS - cont.

a six-month period beginning in early Spring. Geologic mapping and magnetometer work would be the basis of the program.

It is concluded that the chrysotile asbestos occurrence is a prime target for exploration on the Whitewater group of claims.

The nickel occurrence warrants further exploration, both geologic and geophysical. The Slocan type silver, lead, zinc vein warrants exploration and development.

RECOMMENDATIONS

It is recommended that the proposed exploration program outlined in this report be started early in the Spring of 1971.

It is further recommended that Dry Ridge Silver Mines Ltd. (N.P.L.) allocate the sum of \$135,000 to implement the program.

GEOLOGICAL REPORT  
WHITEWATER GROUP  
Slocan Mining Division, B. C.

INTRODUCTION

The following report was prepared for Dry Ridge Silver Mines Ltd. (N.P.L.) at the request of Mr. W. F. Nottelman, President.

Data for the report were obtained by the writer on a visit to the property on September 16, 1970. Mr. K. Millar, Prospector, of New Denver, acted as guide. Mr. H. M. Meixner, Geologist, spent three days on the property in July mapping and sampling the asbestos showings. Additional data were obtained from previous reports by the following Professional Engineers: J. S. Kermeen, S. M. Manning, T. R. Buckham, and R. E. Renshaw. Pertinent Government reports were also reviewed.

PROPERTY

The Whitewater Group (comprised of the Whitewater and Glacier claims) comprises 75 staked mineral claims, as follows:

	Name	Record No.	Expiry Date
<u>Whitewater Group</u> (40)	TOM 1-6 incl.	15411-15416	Aug. 28, 1971
	TOM 10 & 11	15417-18	" " "
	TOM 22 & 23	15423-24	" " "
	TOM 25 & 26	15426-27	" " "
	TOM 28 & 29	15429-30	" " "
	TOM 31-32	15432-33	" " "
	TOM 34-35	15435-36	" " "
	CHRIS 2	15439	" " "
	CHRIS 4 & 5	15441-42	" " "
	TAM 1-4	15601-4	Oct. 1, 1971
	TAM 5-14	15776-15785	Nov. 12, 1971
	E.K. 7-10	13898-13901	Oct. 15, 1971
	<u>Glacier Group</u> (35)	TOM 12, 15, 18, 21, 24, 27, 30, 33, 36	15419-20-21- 22, 15425, 15428, 15431, 15434, 15437
CHRIS 3 & 6		15440, 15543	Aug. 28, 1971
TIM 1-9		15767-75	Nov. 12, 1971
TIP 1-15		15752-66	" " "

OWNERSHIP

The claims are owned by Dry Ridge Silver Mines Ltd. (N.P.L.) by right of purchase from the owners.

LOCATION & ACCESS

The claims group is located near Retallack, Slocan District, in South Central British Columbia. A gravel road extends past the Buchanan Mine 1 3/4 miles south of the claims. A jeep trail completed in October 1970 extends to the TOM 28 claim, and will be continued along the valley flank in the spring. Mt. Brennan lies a few miles north of the claims and Whitewater Creek flows southeasterly through the group. Elevation is approximately 6000'; co-ordinates, 117°-08', 50°-05'.

HISTORY

The area has seen production of silver, lead, zinc ores from the Lucky Jim and Whitewater properties, which are only 3 miles distant from the group under discussion. Occurrences of good quality chrysotile asbestos with up to 3/4" fibres; silver, lead, quartz veins and nickel are present on the property. It is reported that a shipment of ore was made from the shaft on a galena vein about 1899.

GENERAL GEOLOGY

The general area is underlain by sedimentary and volcanic rocks invaded by granite and related rocks. The sedimentary series and volcanics are placed within Triassic or Lower Jurassic ages; granites and related rocks are placed within the Lower Cretaceous. The sedimentaries are known as Slocan Series, and are intruded by granitic and lamprophyre dikes. Greenstones, known as the Kaslo formation, lie below the Slocan Series. Folding is of the complex Alpine type and metamorphism, which is present, does not play an important role in the development of the present rock types.

Regionally, the sedimentaries were folded between the Nelson granite on the south and the Kuskanox granite and Kaslo greenstones on the north. The general form of the folding is complex and is felt to be one of the chief geologic controls on ore deposition. One of the main regional features of the folding is a northeasterly-trending complex characterized by axial planes of little or no dip and low plunge which runs through the area from the Mammoth Mine to Retallack. This structure coincides roughly with the most productive area of the Slocan.



DETAILED GEOLOGY

The detailed geologic survey of the claims group is incomplete. Reconnaissance type mapping showed the presence of serpentinized rocks which may have been peridotites before alteration took place. Evidence of conglomerate and schistose-looking float leads to the theory that the rocks may well be serpentinized sediments such as argillites or schists. This rock occurs on the TOM claims 11, 2, 4, 6, 10, 1, 3 and 5. Detailed mapping and determination of rock types is necessary before the structural relationships and dimensions of this formation are known.

Andesites lie to the north and may be the source of the hydrothermal solutions which serpentinized the sediments. Rocks forming the steep cliffs along the southwest side of the valley are grey-green argillites, probably Triassic Slocan Series. They strike N-W and dip S-W, and are found in contact with the serpentinized rocks.

To the northeast, basic and intermediate volcanics containing thin, sheared slate beds were observed, striking 140° dipping vertically. Dunite and lamprophyre dikes were seen cutting the greenstones. Syenite porphyry, light grey in color, was observed intruding the serpentinized rocks. Detailed plane table-controlled geological mapping is required in order to work out an accurate geologic picture.

MINERALIZATION

Chrysotile asbestos of good quality has been observed in the serpentinized rocks on TOM claims 11, 2, 4, 6, 10, 1, 3 and 5, outlined for a length of over one mile and an approximate width of 1000 feet. Several separate showings are also found on the claims.

The asbestos fibre is light green-white in color and occurs in small hairline fractures 1/16" to 1/8" thick. Occasionally fibres up to 1/4" to 1" in length are found. A 1" vein of chrysotile altered to talc was noted. The veinlets usually occur normal to the jointing pattern. The hairline fractures are normally closely spaced - less than 2" separations.

Shallow pits have exposed the showing described above. Three short diamond drill holes were attempted on the eastern showing but were abandoned and no information is available on the results. Samples of the asbestos fibre were examined by a firm familiar with asbestos evaluation and agreed that the fibre was of good quality. (See Appendix)

Nickel mineralization is reported on claims TOM 29 and 30. This occurrence has been known for at least 60 years. It was described by R. E. Renshaw, P.Eng., in 1969, as magnetite,

pyrrhotite and minor chalcopyrite mineralization in serpentine. Several chip samples cut across a 50' width along 150' of length returned from 0.21% Ni. over 50 ft. to 0.42% over 100 ft. These showings were not visited by the writer but it would appear that further work is warranted.

A vein located near the corners of EK 7, 8, 9 & 10 is reported as consisting of 3 feet of quartz and gossan in quartzite. An old report by C. D. McKenzie, dated March 1899, states that "The shaft is 65 feet deep and shows 28" of 'pay ore', made up of 18" of galena intermixed with tetrahedrite, sternbergite and silver chloride, and 10" of carbonates. The galena assays from 91 oz Ag and 78% Pb to 223 oz Ag and 74% Pb. Carbonates vary in value from 35 to 120 oz of silver per ton." A small shipment of ore from the upper part of the shaft is reported to run 96 oz Ag and 76% Pb. The shaft was located but was not examined, owing to the lateness of the season and presence of snow on the ground. This occurrence appears to be a typical Slocan vein and requires careful examination and exploration to assess the potential.

#### EXPLORATION PROGRAM

Exploration of the property should be along the following lines:

- (1) Determine the extent, market characteristics, and asbestos content of the mineralized zones exposed in the main showings;
- (2) Further determine the extent and attitude of serpentinized rock on the property;
- (3) Continue to search for additional bodies of asbestos within the serpentinized zones;
- (4) Utilize a magnetometer survey to outline the ultrabasic formation. This survey could be carried out over the nickel showing, as there appears to be sufficient magnetic elements present to make a magnetic survey feasible;
- (5) Stripping of overburden in the east part of the asbestos areas and, where possible, in the vicinity of the nickel showings. At the veins, bulldozer stripping along the strike of the exposure would improve the picture of the continuity of the vein structure;
- (6) Diamond drilling to follow the preliminary steps outlined above to test depth, extent and continuity of the various showings.

ESTIMATED COST OF EXPLORATION PROGRAM

Grid lines (75 miles @ \$50/mi.) .....	\$ 3,750.00
Geological mapping & Sampling, plane table control .....	10,000.00
Assaying, surface samples .....	2,250.00
Magnetometer survey .....	7,500.00
Stripping & trenching, roads .....	10,000.00
Camp, food, transportation .....	18,000.00
Supervision & Engineering .....	18,000.00
Travel .....	2,000.00
Diamond drilling, 3500' @ \$15/ft. ....	52,500.00
Core boxes & assays .....	4,000.00
Contingencies .....	7,000.00
	<hr/>
	\$ 135,000.00

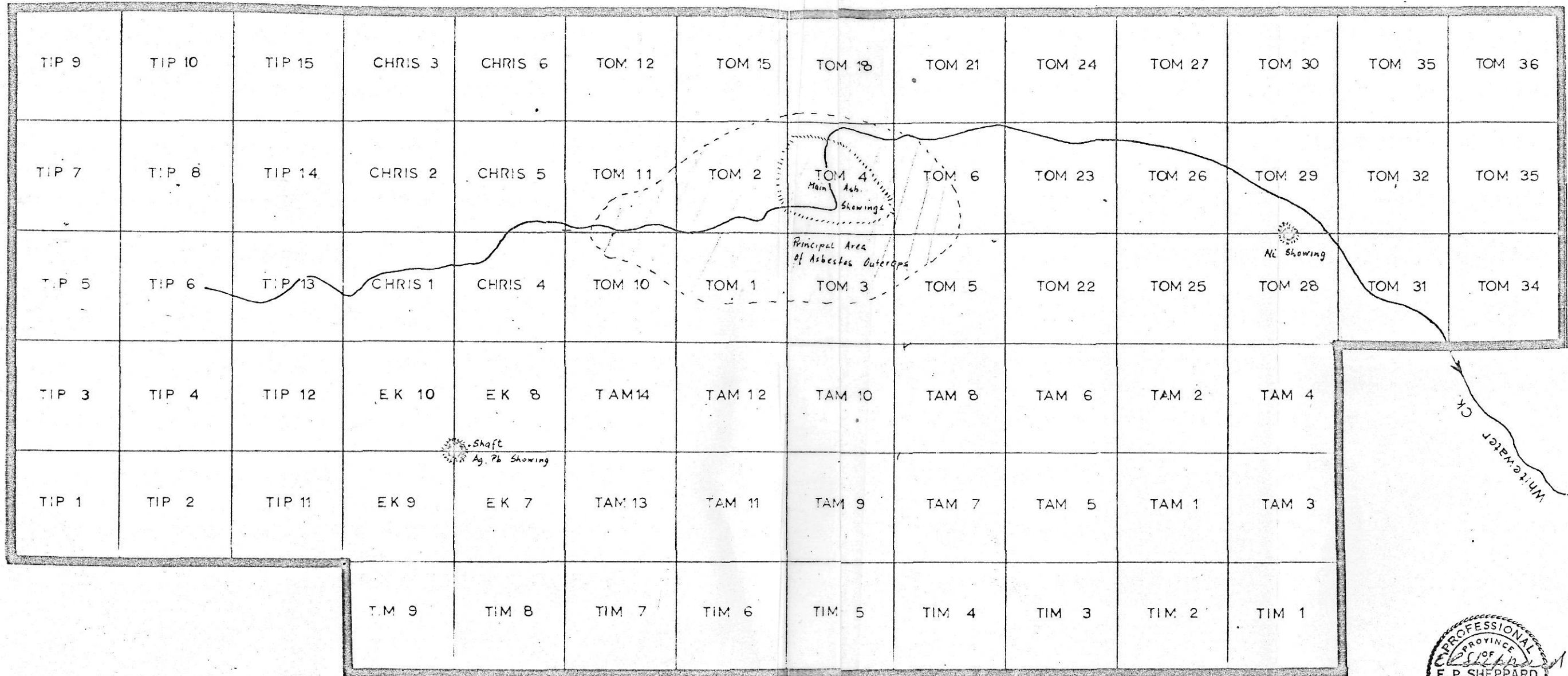
It is estimated that six months will be required to complete this program.

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E. Percy Sheppard, P.Eng.  
Consulting Geologist

December 11, 1970  
Vancouver, B. C.





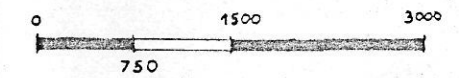
DRY RIDGE SILVER MINES LTD. (N.P.L.)

CLAIMS MAP

WHITWATER GROUP

SLOCAN M.D., B.C.

Scale 1 in. = 1500 ft. Dec. 1970



GEOLOGICAL REPORT  
On the  
DRY RIDGE PROPERTY  
Of  
DRY RIDGE SILVER MINES LTD. (N.P.L.)  
Slocan Mining Division  
British Columbia

By  
E. Percy Sheppard, P. Eng.  
Consulting Geologist

August 30, 1970  
Vancouver, B. C.

\* \* \* \*

E. P. SHEPPARD & ASSOCIATES LTD.

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MAPS:

Location Map	
Claim Map	Scale: 1" = 1/2 mi.
Geochemical (Lead)	" 1" = 100'
Geochemical (Silver)	" 1" = 100'
Assay Plans & Sections	" 1" = 50'

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GEOLOGICAL REPORT  
DRY RIDGE PROPERTY  
Slocan Mining Division, B. C.

SUMMARY

The Dry Ridge property of Dry Ridge Silver Mines Ltd. (N.P.L.) consists of 40 staked mineral claims located 16 miles north of Nelson, British Columbia, at coordinates 49°-41'N, 117°-17'W. The claims lie on the southwestern flank of Mt. Ruppel in the Slocan Mining Division.

Elevations range from 4000 feet to 7500 feet. Helicopter service from Nelson constitutes the most direct means of access to the claims. Roads are one and one-half miles distant and 2000 feet below the claims.

Original development work dates back to 1899. A small shipment of high-grade silver ore was reported to have been made in 1941.

The area is underlain by porphyritic granites of the Nelson Plutonic Rocks, which extend in all directions for several miles. Strong northeasterly shears cut the granites and are the loci for the mineralized quartz veins.

The vein on which the old work was done dips 65° SE, ranges up to 24" in thickness, and consists of quartz filling containing sulphides occupying a gouge-filled shear zone. On surface the granites exhibit strong alteration of the feldspar minerals for a distance of over 8 feet from the vein. Several patches were observed along the strike of the shear. Later lamproyre dikes cut the shear zone and the quartz filling.

Development work consists of a drift, crosscut, raise, two small stopes at the end of the drift, several pits and trenches. A total length of 480 feet of vein was explored by these shallow workings. The crosscut encountered two other veins which have not been developed.

In August 1969, thorough sampling of the underground workings, surface pits and trenches was undertaken and a geologic map was prepared. Geochemical and electromagnetic surveys were run along the main vein. Several tons of rock from the 50-ft. surface trench were bagged and are still on

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Dry Ridge Property - cont.

SUMMARY - cont.

the property awaiting transportation. This constitutes the work program for the 1969 season.

CONCLUSIONS

Sampling of the underground drift, raise and surface trenches showed that the shear was barren throughout the drift length. Values in silver began at the end of the drift on surface and in the stopes. It is felt that either a vein deposit begins here or there is a mineralized shoot with a rake to the east.

The geochemical survey did not give any useful data. The electromagnetic survey, however, indicated the position of the vein and gouge-filled shear zone. This method of exploration could be used to good advantage over the property to search out hidden shears and veins.

Diamond drill holes placed at varying elevations, to explore the vein along its length, appear to be the most direct and cheapest method of exploring the structure.

Costly road-building could be postponed and a helicopter-supported program carried out during the initial stages of the exploration work.

RECOMMENDATIONS

It is recommended that an exploration program of geophysical surveying be undertaken over the whole property, and a diamond drill program be carried out on the east part of the main vein as well as over any areas which warrant further exploration.

It is further recommended that Dry Ridge Silver Mines Ltd. (N.P.L.) allocate the sum of \$105,500 to implement the above program.

GEOLOGICAL REPORT  
DRY RIDGE PROPERTY

Of

Dry Ridge Silver Mines Ltd. (N.P.L.)

Slocan Mining Division  
British Columbia

INTRODUCTION

The following report was prepared for Dry Ridge Silver Mines Ltd. (N.P.L.) at the request of Mr. W. F. Nottelman, President. Data for the report were obtained by the writer on a visit to the property on July 14, 1970. Mr. H. M. Meixner, Geologist, accompanied the writer and assisted in the mapping and sampling.

The data collected by L. J. Manning & Associates Ltd. in 1969 were analyzed and incorporated into the following compilation. The results of their survey, along with a study of the geologic environment from Government reports, aided in preparing the report.

PROPERTY

The Dry Ridge group of claims comprises 40 full-size staked mineral claims, as follows:

<u>Name</u>	<u>Record No.</u>	<u>Expiry Date</u>
Dry Ridge 1	11706	July 12, 1976
Dry Ridge 2	12249	Sept. 13, 1976
Dry Ridge 3-4	12890-91	May 21, 1976
Wolfe 1-11	12869-79	May 20, 1975
Wolfe 12-15	12880-83	May 20, 1972
Basin 1-6	12884-89	May 20, 1976
W.K. 1-5	13657-61	May 21, 1976
W.K. 6	13662	May 21, 1975
W.K. 7-11	13706-10	Sept. 8, 1975
Silver Tip 1	13711	Sept. 8, 1976
Silver Tip 2	13634	Aug. 18, 1976
Dry Ridge 5	13813	Sept. 24, 1976
Dry Ridge 6	13814	Sept. 24, 1976

The claims are held by Dry Ridge Silver Mines Ltd. (N.P.L.) by right of purchase from the owners.



### LOCATION

The Dry Ridge property lies 16 miles due north of Nelson, B. C. The coordinates are 49°-41'N; 117°-17'W.

The area is covered by the Kokanee Peak Sheet, 82-F-11W, of the National Topographic System.

The claims cover a ridge on the southwest flank of Mt. Ruppel, Slocan Mining Division, and extend into the valleys of Tagert and Mineral Creeks on either side of the ridge and into the valley of Crusader Creek to the southwest. Elevations range from 4000 to over 7500 feet. Much of the area lies above timberline.

### ACCESS

The nearest roads are about one and one-half miles distant and some 2000 feet lower in elevation. Helicopter travel constitutes the most convenient method of access at the present time.

### TOPOGRAPHY

The topography is mountainous, varying from gentle grass and shrub-covered slopes to steep rock faces with talus slopes below. Mt. Ruppel, over 7500 ft. high, lies in the eastern part of the property. A large cirque bites deeply into the north flank of the mountain.

There is very little useful timber on the property. Water is not plentiful on the ridge but may be obtained by pumping from the creeks at lower elevations.

### HISTORY

The main showings were found on claims Alexandra No. 2L2886 and Delley L2887, for which Crown Grants were obtained in 1898. Most of the work was done from 1895 to 1899. A small shipment of ore was reported to have been made in 1941.

### GEOLOGY

The area is underlain by porphyritic granites of the Nelson Plutonic Rocks. This body of intrusives extends for several miles in all directions.

Strong northeasterly shears cut the granites and these are the loci for the mineralized quartz veins. The vein on

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which the old work was done dips 65° SE, ranges up to 24" in thickness, and is composed of quartz and sulphides which carry silver values. It occupies a gouge-filled shear zone in the granites. The granites on surface exhibit strong alteration of the feldspars for a distance of over 8 feet from the vein. There are several local patches of alteration in the granite further along the strike of the shear zone. Later lamproyre dikes cut the shear.

#### DEVELOPMENT WORK

Existing development work consists of a drift, crosscut, raise, two small stopes, and several pits and trenches.

The drift, which begins as a crosscut, is 480 feet long and follows the main vein. A raise has been driven 300 feet from the portal. The purpose of this raise was to explore the high-grade mineralization exposed in a surface pit. There are two small stopes near the end of the drift. The crosscut was collared 1100 feet southwest of the drift portal. At 50 feet from the portal the crosscut intersected a vein about 1-ft. thick, with a strike more southeasterly than that of the others. At 100 feet west, the crosscut intersected a 3-ft. thick vein with a strike parallel to the main vein.

The largest pit lies about 250 feet NE of the drift portal. This pit is about 50 feet in length and appears to be the source of the early shipment of ore. At present several tons of ore are bagged and ready for shipment. The material in the bags came from the pit described above.

Several other pits and trenches are sloughed-in and were not reopened.

#### WORK PERFORMED

In August 1969 an electromagnetic survey was carried out over a strike length of 2500 feet along the "main vein" and extended 200 feet north and south of the vein. The instrument used was a Ronka E.M. 16. Readings were taken at 50-ft. separations on lines spaced 200 feet apart. Cross-over points were obtained on all cross-lines. Coincidence with the known mineralized vein near the drift was good. Several irregularities in the pattern occurred over lamproyre dikes which cut the veins and suggest fault displacement.

Thorough sampling of the drift, raise, crosscut and surface pit showed good silver values around the main pit, on surface, the face of the drift, and in a short raise 25

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feet from the face. The distribution of the silver values indicates the beginning of a mineralized zone or a rake to the east of the shoot outlined by sampling. Insufficient openings are available to prove or disprove either of the theories advanced.

#### GEOCHEMICAL SURVEY

This survey was carried out over most of the area covered by the electromagnetic survey. Samples were taken at 25-ft. separations on lines 100 feet apart. Two samples were taken up-hill to the north from cross-over points, one at the cross-over and 6 below it. Samples were assayed for silver and lead. The highest values were obtained in the areas of the open pit and dump mostly on the down-hill side, suggesting contamination from old workings.

The above geophysical program was carried out in September 1969 under the supervision of L. J. Manning & Associates Ltd. of Vancouver, B. C., in a most workman-like and professional manner.

#### EXPLORATION PROGRAM

The previous program was concentrated on a small part of the property around the old workings. The electromagnetic survey indicated a long linear set of cross-overs. The present program would investigate this area and perform more electromagnetic work over the property to search for the existence of blind veins.

Diamond drilling on the east end of the adit and below the large pit will determine whether the mineralization continues eastward and downward. The general target appears to be high-grade veins or plunging shoots within the through-going shear zones.

The following steps are outlined as the basis for a continuing exploration program:

- 1) Complete geology mapping of surface;
- 2) Carry out an electromagnetic survey in attempt to locate new or hidden veins;
- 3) Implement a diamond drill program to investigate the shoot shown up by the 1969 program, and any anomalies outlined by the present electromagnetic survey.

This program is to be based on helicopter service as to complete the road would take too much of the remaining season.



ESTIMATED COST OF EXPLORATION PROGRAM

Electromagnetic survey .....	\$ 7,000
Geological mapping & sampling .....	4,000
Diamond drilling, 4000' @ \$15/ft. ....	60,000
Camp installation .....	4,000
Water supply for drilling, pipeline, pump, labor .....	4,000
Assaying & Core boxes .....	2,500
Engineering & Supervision .....	5,000
Travel & Living expenses .....	4,000
Helicopter service .....	10,000
Administration & Head office expenses ....	<u>5,000</u>
	\$105,500

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August 30, 1970  
Vancouver, B. C.