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EXPLORATION PROPOSAL FOR THE PRINCE GEORGE AREA
BRITISH COLUMBIA

by

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Kamloops, B.C.

Feb., 1981

Introduction

An area with a potential for volcanogenic massive sulphide deposits has been outlined east of Prince George, B.C. (NTS 93G/16). The area of interest is traversed by the Yellowhead Highway and is bounded on the south by Willow Creek, on the west by the Willow River, on the east by the Bowron River and to the north by Bateman Creek and Hay Creek. The area totals approximately 800 square km (173,000 acres).

Within the area of interest, a lowland topography with gentle relief prevails. Outcrop is scarce (<2%) and generally is confined to road cuts, creek bottoms and a few hills. On GSC Map 49-1960, two groups of rocks have been mapped in the area and include the predominantly volcanic Slide Mt. Group and an Upper Triassic/Lower Jurassic, marine, sedimentary and volcanic sequence. Regionally the Slide Mt. Group is characterized by pillowed basalts, chert, argillite and basic to intermediate pyroclastic rocks. The group is an ophiolite sequence and as such developed as an oceanic plate adjacent to a spreading ridge. The Slide Mt. Group is similar to and has been correlated with the Mississippian Fennell Formation of south central B.C.

Upper Triassic/Lower Jurassic volcanic rocks occur extensively throughout B.C. and although rocks of this age and type occur in widely scattered regions of the province they form a distinct group which display many similarities. The group consists of, texturally, a wide variety of volcanic rocks which are

predominantly andesitic flows with lesser basalt and related pyroclastics. Sedimentary varieties consist of greywacke, lithic wacke, conglomerate, shale and minor limestone. At several localities felsic volcanic rocks, some of which host massive sulphide deposits (eg. Kutcho Creek), form a significant component of the group.

Of primary interest in the area east of Prince George is the occurrence of felsic volcanic rocks which are exposed at two localities. The first exposure is along the Yellowhead Highway about 40 km east of Prince George. Here a quartz-eye rhyolite and a chaotic rhyolite slump breccia occur. The quartz-eye rhyolite contains lappilli size quartz and feldspar fragments in a foliated (near vertical), fine-grained, quartz-sericite-feldspar groundmass. This unit probably is a felsic lappilli tuff. The breccia unit, which is separated from the quartz-eye rhyolite by a small overburden covered draw consists of angular to subrounded rhyolite bombs, 5 cm to 30 cm in size, in a contorted, argillite matrix. This unit probably represents a slump breccia which developed adjacent to a felsic vent.

Travelling west along highway 16 from the rhyolite exposures, no more outcrop is seen until the Willow River crossing is reached (about 3 miles). Here, pillowed basalts, typical of the Slide Mt. Group, occur. East of the rhyolite exposure no outcrop is seen for about 2 miles. Past this, a few large outcrop areas are seen over the next mile and then no more

exposures are evident up to the Bowron River bridge which is a further 3 miles. The outcrops 2 to 3 miles east of the rhyolite occurrence consist of green, fine-grained andesite. One andesite outcrop contains two steeply dipping breccia zones each about 2 meters wide. The breccia zones contain massive to heavily disseminated, very fine grained, locally banded, syngenetic pyrite which surrounds angular fragments of andesite. These breccias may represent the roots of a massive sulphide deposit (ie. massive sulphide pipes) and are thus viewed as very significant especially when considering the close proximity to felsic volcanic rocks.

The rhyolites and nearby andesites, along Highway 16, are shown on GSC Map 49-1960 as occurring near the contact between the Slide Mt. Group and the Upper Triassic/Jurassic sequence. The andesites are typical of Triassic/Jurassic andesites and because felsic volcanics occur in the Triassic/Jurassic elsewhere, a Triassic/Jurassic age is favoured for these occurrences.

The second location of felsic volcanics occurs on a small hill north of Beaver Lake about 4 miles southeast of the Highway 16 occurrence. Noranda held this ground (Willow property) until about 1976 and carried out a program consisting of I.P., VLF, soil geochemistry, mapping and diamond drilling (4 holes) from 1968 to 1970. The Willow property is underlain by rhyolite flows and tuffs, graphitic schist, greywacke and andesite.

Mineralization discovered by Noranda consisted of pyrite in the rhyolites and sediments and minor chalcopyrite and bornite in andesite. Noranda were looking for a porphyry copper deposit when exploring this area and did not fully recognize the potential for massive sulphide deposits and as a result, the ground was allowed to lapse.

On GSC Map 49-1960 the area of the Willow property has been mapped as part of the Slide Mt. Group. However the lithologies are more typical of the Upper Triassic/Jurassic assemblage and are interpreted as such by the writer.

The occurrences of felsic volcanics and the possible massive sulphide pipes suggest that the area east of Prince George has a potential for hosting volcanogenic massive sulphide deposits. A proposal to explore for these deposits is outlined below.

Proposal

Because of pervasive overburden and the gentle relief in the proposed project area, blanket geochemical surveys and general prospecting of the area probably would not be effective in locating deposits of the type sought. A better approach would be to fly the area with an airborne E.M./Mag system to define target areas for follow-up ground geophysics, detailed prospecting and geochemical surveys. However, prior to flying some reconnaissance mapping to better define areas for flying and to determine the optimum spacing and orientation of survey

lines would be warranted. In general, a 5-phase exploration program is viewed. This program and an estimate of expenditures is outlined below.

Program

Phase I - reconnaissance mapping and prospecting to select areas for airborne E.M./Mag

Personnel - senior consulting geologist

Preparation	- 2 days	
Mobilization and demobilization	- 2 days	
Mapping	- 7 days	
	11 days	

11 days @ \$225

\$2,475 ✓

Vehical

4x4 truck - 9 days @ \$30	= 270	
- 1270 mi @ \$30	= 380	

\$650

\$650

Maps, Air Photos etc.

\$50

Geochemical Analyses

\$225

Meals and Accomodation

\$454 ✓

Report

\$500 ✓

		\$4,350
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Total Phase I

Phase II - Airborne E.M./Mag survey

The maximum permissive area is about 700 square km. Assume that, after the reconnaissance mapping, this can be reduced to about 400 square km. At a line-spacing of 400 meters, the survey would then total 1000 line km.

Airborne Survey

1000 line km @ \$40/line km	\$48,000
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Project Supervision	\$2,000
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Total Phase II	\$50,000
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Total Phases I & II	\$54,400
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Phase III - ground follow-up

Assume that five conductive zones are identified by the airborne survey.

Land Acquisition

100 units @ \$50	\$5,000
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Ground Geophysics

- 50 km of horizontal loop E.M., mag. and line cutting.

Personnel

4 men for 32 days @ \$400 per crew day	- \$12,800
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Vehical (crew cab)	\$1,500
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Materials, Shipping, Insurance	\$1,500
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Mobilization and Demobilization	\$2,500
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Meals and Accomodation	\$5,000
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Equipment Rental	\$2,500	
Report	\$4,000	
Miscellaneous	\$200	
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Total Geophysics	\$30,000	\$30,000

Prospecting, Mapping, Geophysical Supervision
and Soil Geochemistry

Personnel - senior consulting geologist		
- 40 days (includes supervision of ground geophysics)		
40 at \$225	\$9,000	
- geological assistant and soil sampler		
32 days @ \$80	\$2,560	
Geochemical Analyses	\$5,000	
Vehical (4x4 truck)	\$1,600	
Meals and Accomodation		
- 72 man-days	\$2,800	
Report		
- included under ground geophy.		
Miscellaneous	\$40	
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Total Mapping, Geochem.	\$21,000	\$21,000
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Total Phase III		\$56,000
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Total Phases I, II & III		\$110,400

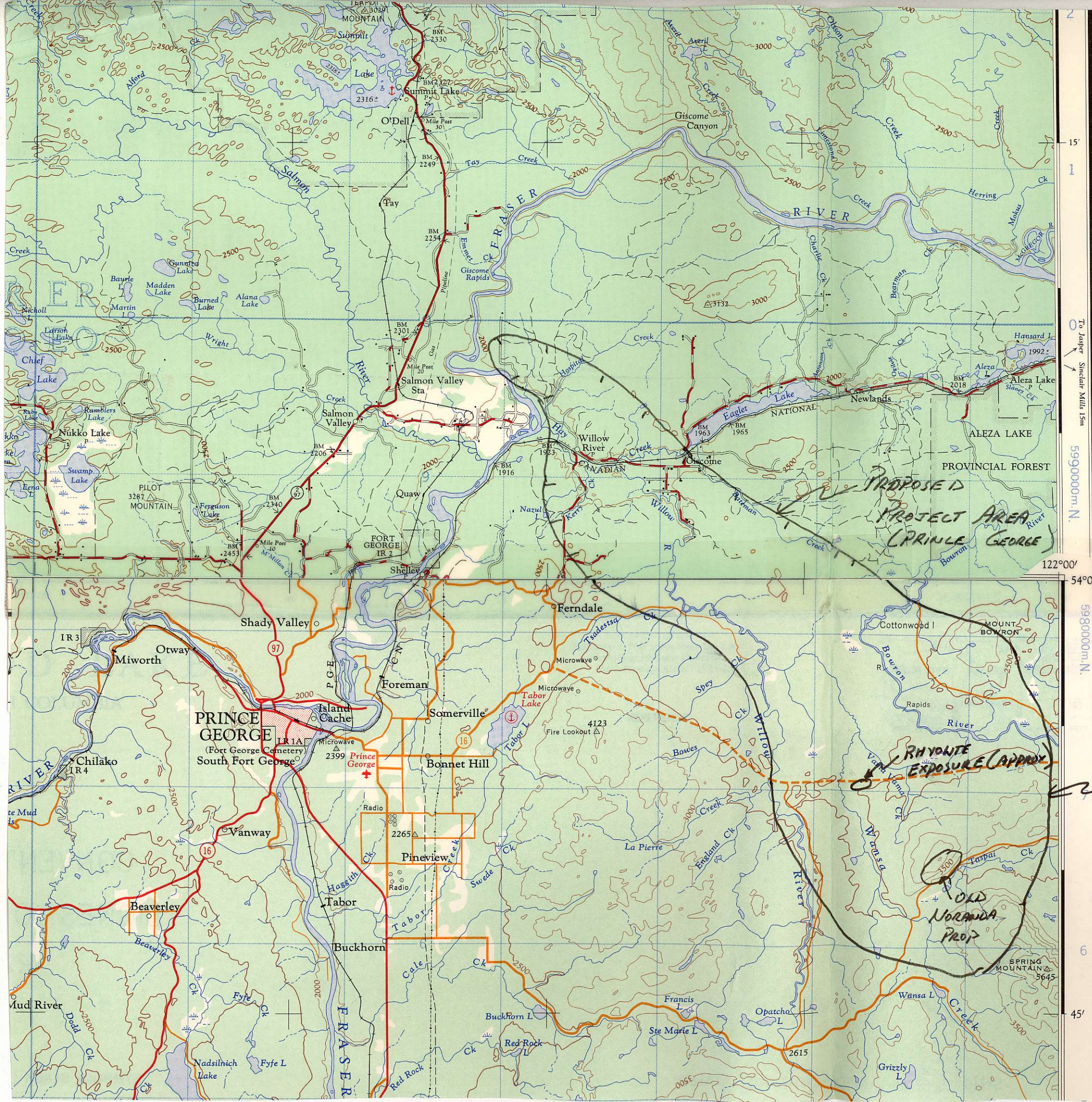
Phase IV - diamond drilling

Drilling - 1,500 ft. @ \$35/ft. (all inclusive)	\$52,500	
Road Construction	\$3,500	
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Total Phase IV	\$56,000	\$56,000

Total Phases I to IV	<u>\$166,400</u>
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Contingency	<u>\$16,600</u>
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TOTAL PROGRAM	<u>\$183,000</u>
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100,000 M. SQUARE IDENTIFICATION

GRID ZONE DESIGNATION	
10U	

TO GIVE A REFERENCE TO NEAREST 1000 METRES

EXAMPLE: LAKE

SQUARE: Read letters of 100,000 m. square	ER
EASTING: Read number on grid line immediately to left of point	4
Estimate tenths of a square from this line eastward to point.	7
	47
NORTHING: Read number on grid line immediately below point	4
Estimate tenths of a square from this line northward to point.	4
	44

MILITARY GRID REFERENCE
(to nearest 1,000 metres) ER4744

If reporting beyond 18° in any direction, prefix Grid Zone Designation as: 10UER4744

TEN THOUSAND METRE
UNIVERSAL TRANSVERSE MERCATOR GRID
ZONE 10

To Jasper-Sinclair Mills 15m
5990000m.N.

PROPOSED PRINCE GEORGE
PROJECT AREA

RHYOLITE
EXPOSURE (APPROX)

OLD
NORANDA
PROJ