

826040
Kutcho Creek
Property 104I/01

A PROPOSAL TO FARM-IN

on

ESSO MINERALS CANADA CLAIMS

KUTCHO CREEK AREA

NORTHERN BRITISH COLUMBIA

KUTCHO EXPLORATION FARM-IN PROPOSAL

INTRODUCTION

Esso Minerals Canada (EMC), together with Sumac Mines Ltd., have defined three sulphide lenses along a westerly plunging linear trend on their Kutcho Creek property in northern British Columbia (Fig. 1). The most easterly and largest, the Kutcho lens, contains in excess of 14 million tonnes of open-pit reserves grading 1.75% copper, 2.47% zinc, 28.9 g/t silver and 0.34 g/t gold. The central lens contains about 10 million tonnes of sub-ore grade pyritic rich material while the smallest, most westerly lens is estimated to contain about 1.5 million tonnes of 2.94% Cu, 4.9% Zn, 59.8 g/t Ag, 0.51 g/t Au.

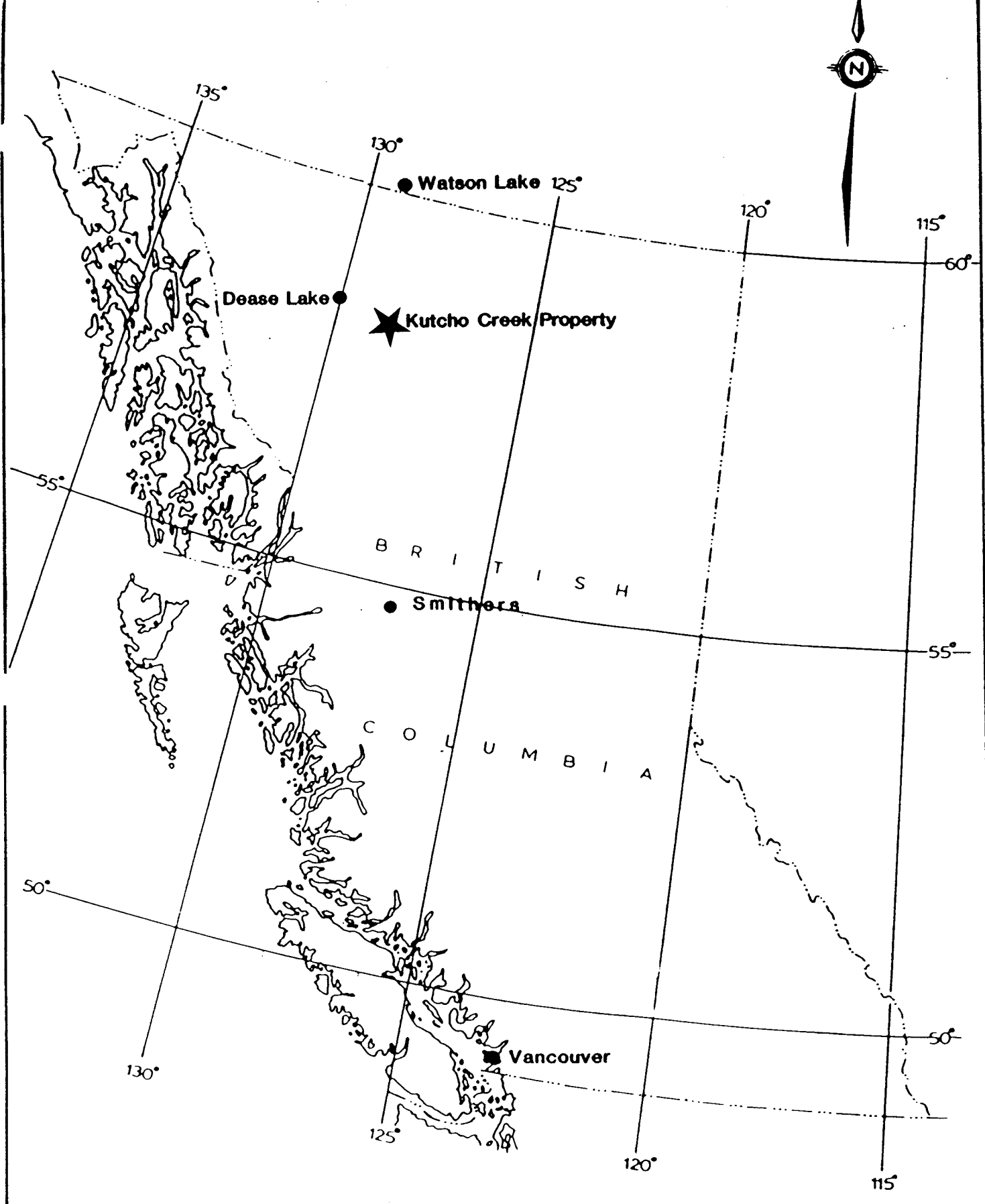
The area including these lenses is covered by an existing Esso-Sumac agreement (Fig. 2) and is excluded from this proposal. However, EMC controls outright about 8960 hectares of prospective ground adjoining the southern boundary of this jointly held land.

PROPOSAL

Esso Minerals Canada is seeking a farm-in joint venture partner to explore wholly owned EMC ground adjacent to and immediately south of ground covered by the Esso-Sumac joint venture agreement (Fig. 2). EMC is prepared to let a potential partner earn a 49% interest in this ground by making exploration expenditures of \$3 million dollars over a 3-year period. EMC will be operator of the program. A commitment is required to fund a 1987 Phase 1 drill program of about 3000 m designed to test known anomalies; it is estimated to cost about \$570 K. Subsequent programs will be based on results of Phase 1.

A brief summary of the property is included. Should you wish to review the data in more detail, please contact this office and a mutually convenient time will be arranged.

J. A. McDonald
Exploration Manager
Western Region



ESSO MINERALS CANADA
LOCATION MAP FOR KUTCHO CREEK
MASSIVE SULPHIDE PROPERTY

Fig. 1.

THE PROPERTY

LOCATION

The Kutcho Creek property (NTS 104I/1W) is located in the Liard Mining Division about 100 km east of Dease Lake in northwest British Columbia. Geodetic coordinates are $58^{\circ}12'N$ and $128^{\circ}22'W$.

ACCESS

An 1100 m gravel airstrip at the junction of Kutcho and Andrea creeks permits fixed wing access from Smithers (300 km to the south), Dease Lake or Watson Lake. The airstrip is connected to the main Kutcho deposit and camp area by a 9 km 4-wheel drive road. Access from the main camp to the southern claim area is mainly by helicopter.

LAND

The area being offered for joint venture consists of 365 claims comprising about 8960 hectares (Figure 2) which are wholly owned by Esso Minerals Canada and are in good standing. These adjoin and lie immediately south of jointly held EMC-Sumac Mines Ltd. ground that covers the three known sulphide lenses.

HISTORY

EMC has worked the area continuously since 1973 (see Table 1). In addition to extensive drilling, major facets of that work included preliminary feasibility and environmental impact studies on the Kutcho deposits. Both were completed as part of the Esso-Sumac Joint Venture Agreement.

The exploration significance of the southern part of the property was recognized in 1984-85 when the entire claim group was re-evaluated and extensively mapped. A Questor INPUT survey was flown over these southern claims in 1985 and identified numerous conductors. Subsequent ground evaluation of these conductors and other anomalous features in 1986 defined the 14 targets located on Figure 3; nine of these warrant drilling.

LEGEND

■■■■ OUTLINE OF AREA AVAILABLE FOR JOINT VENTURE

~~~~~ OUTLINE OF ESSO-SUMAC JOINT VENTURE AGREEMENT

0 1 2 km

Scale 1:50,000

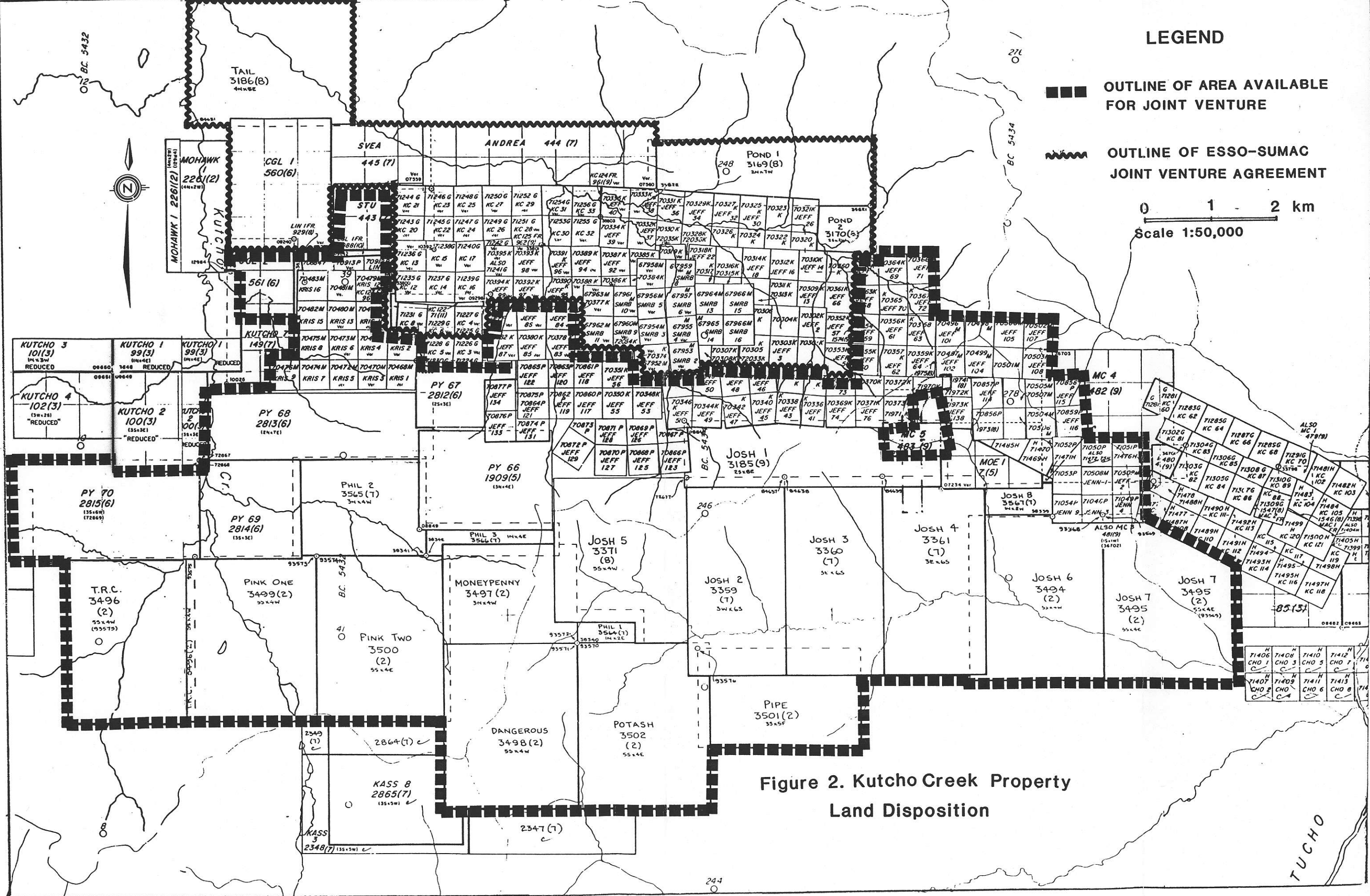


Figure 2. Kutcho Creek Property Land Disposition

TUCHO

**TABLE 1**  
SIMPLIFIED CHRONOLOGICAL WORK HISTORY FOR ESSO'S KUTCHO CREEK PROPERTY

| <u>YEAR</u> | <u>GEOLOGY</u>                                                                                                   | <u>GEOPHYSICS</u>                                                                                          | <u>GEOCHEMISTRY</u>                                                                                                             | <u>DRILLING</u>                                                    |
|-------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 1967        |                                                                                                                  |                                                                                                            | Initial survey & anomaly                                                                                                        |                                                                    |
| 1970        | Float discovery & staking<br>(lapsed)                                                                            |                                                                                                            |                                                                                                                                 |                                                                    |
| 1972        | Staking by Sumitomo                                                                                              |                                                                                                            |                                                                                                                                 |                                                                    |
| 1973        | Staking (Esso)<br>Prospecting                                                                                    | AEM, Ground EM & Mag                                                                                       | Detailed stream/silt survey                                                                                                     |                                                                    |
| 1974        |                                                                                                                  | Ground follow-up on AEM;<br>HEM and MAG surveys<br>Gravity survey                                          |                                                                                                                                 | 1696 m in 16 holes                                                 |
| 1975        | Regional & property<br>scale mapping                                                                             |                                                                                                            |                                                                                                                                 | 1534 m                                                             |
| 1976        | Claims surveyed                                                                                                  | EM & MAG surveys Turam                                                                                     | Soil & silt sampling                                                                                                            | 1691 m in 24 holes (DDM 31-54)<br>(3120 m in Kutcho Zone)          |
| 1977        | Property scale mapping                                                                                           |                                                                                                            | Silt sampling<br>Litho geochem                                                                                                  | 4335 m in 16 holes<br>Testing lower sulphide zone and<br>west zone |
| 1978        | Claim staking, surveying<br>DDH surveying, mapping                                                               | Charge potential survey                                                                                    |                                                                                                                                 | 8933 m in 16 holes & 6 wedge<br>branches (DDH 70-87)               |
| 1979        |                                                                                                                  | Charge potential Jenn Area,<br>Esso West                                                                   |                                                                                                                                 | 6582 m (most in 4 holes + 25<br>branches in west zone)             |
| 1980        | Structural mapping on<br>western property                                                                        |                                                                                                            |                                                                                                                                 | 4245 m in 3 holes + 8<br>branches in west zones                    |
| 1981        |                                                                                                                  | Horizontal loop EM                                                                                         |                                                                                                                                 | 842 m in wedge branches                                            |
| 1982        |                                                                                                                  |                                                                                                            |                                                                                                                                 | 346 m in DDH 98 (102) 4<br>metallurgical holes in Kutcho zone      |
| 1983        | Color air photography<br>surveying of claims and<br>and drill collars                                            | Charge potential,<br>magnetometer & GENIE<br>surveys                                                       | Soil grids, vapour phase<br>orientation survey, heavy<br>mineral orientation study,<br>and Hg analyses on fracture<br>coatings. | 4335 m in 19 holes (101-121)                                       |
| 1984        | Detailed mapping,<br>geological studies                                                                          |                                                                                                            |                                                                                                                                 |                                                                    |
| 1985        | Detailed mapping, core<br>relogging and study of<br>the geology and<br>alteration around the<br>Kutcho deposits. | Large loops and moving<br>source GENIE approx.<br>60 line km.<br>Questor MKVI INPUT survey<br>560 line km. | Lithogeochemical study                                                                                                          |                                                                    |
| 1986        | Mapping southern claims<br>area, core logging                                                                    | Moving source GENIE<br>6 line km                                                                           | Soils, rocks, drillcore<br>southern claims                                                                                      |                                                                    |

PROPERTY GEOLOGY

The Kutcho property lies within the King Salmon Allochthon, a narrow sequence of Triassic island arc volcanics and Jurassic sediments that are sandwiched between two northerly dipping thrust faults. The volcanic sequence is thickest in the deposit area, in part because of primary deposition but also because of stratigraphic repetition by folds and thrust faults. Major folds are delineated by the Sinwa Limestone and by the contact between Kutcho Formation volcanics and the overlying Inklin Formation argillites (Figure 3).

Volcanogenic mineralization of the Kutcho deposit occurs at the contact between footwall lapilli tuffs and hanging wall quartz and quartz-feldspar crystal tuffs. The main sulphide-bearing interval is marked by extensive hydrothermal alteration and thinly bedded ash tuffs. This sulphide-bearing interval is geochemically, and usually visually, recognizable over a strike length of 8 km. Coarse-grained pyroclastic rocks of the Kutcho Formation occur in the vicinity of the known sulphide lenses; these pyroclastics become noticeably finer grained both southward and westward. The major center of volcanism is interpreted to be northeast of the Kutcho sulphide lens although subordinate centers may exist elsewhere on the property.

Similar stratigraphy to that hosting the Kutcho deposit occurs in the southern part of the property in the Imperial Ridge and Josh Creek areas (Fig. 3). This stratigraphy, which includes felsic ash tuffs and exhalites, is interpreted as a structural repetition of the Kutcho Formation. The exploration potential of this stratigraphy has been enhanced by definition of fourteen targets using a combination of geological, geochemical and geophysical techniques.

DRILL TARGETS

The 14 targets located on Figure 3 are described in summary fashion in Table 2. All the targets occur over a strike length of 16 km in Kutcho Formation lithologies. The targets are rated as high, medium and low on Table 2 to help guide drill testing or ground evaluation. Ratings are based on encouraging exploration features such as anomalous geophysical or geochemical response, or favourable geology.

The proposed program for the 1987 season involves ground work to better define some of the 14 targets and a phase 1 drill test of 9 of these targets. Subsequent programs will be based on the results of Phase 1.

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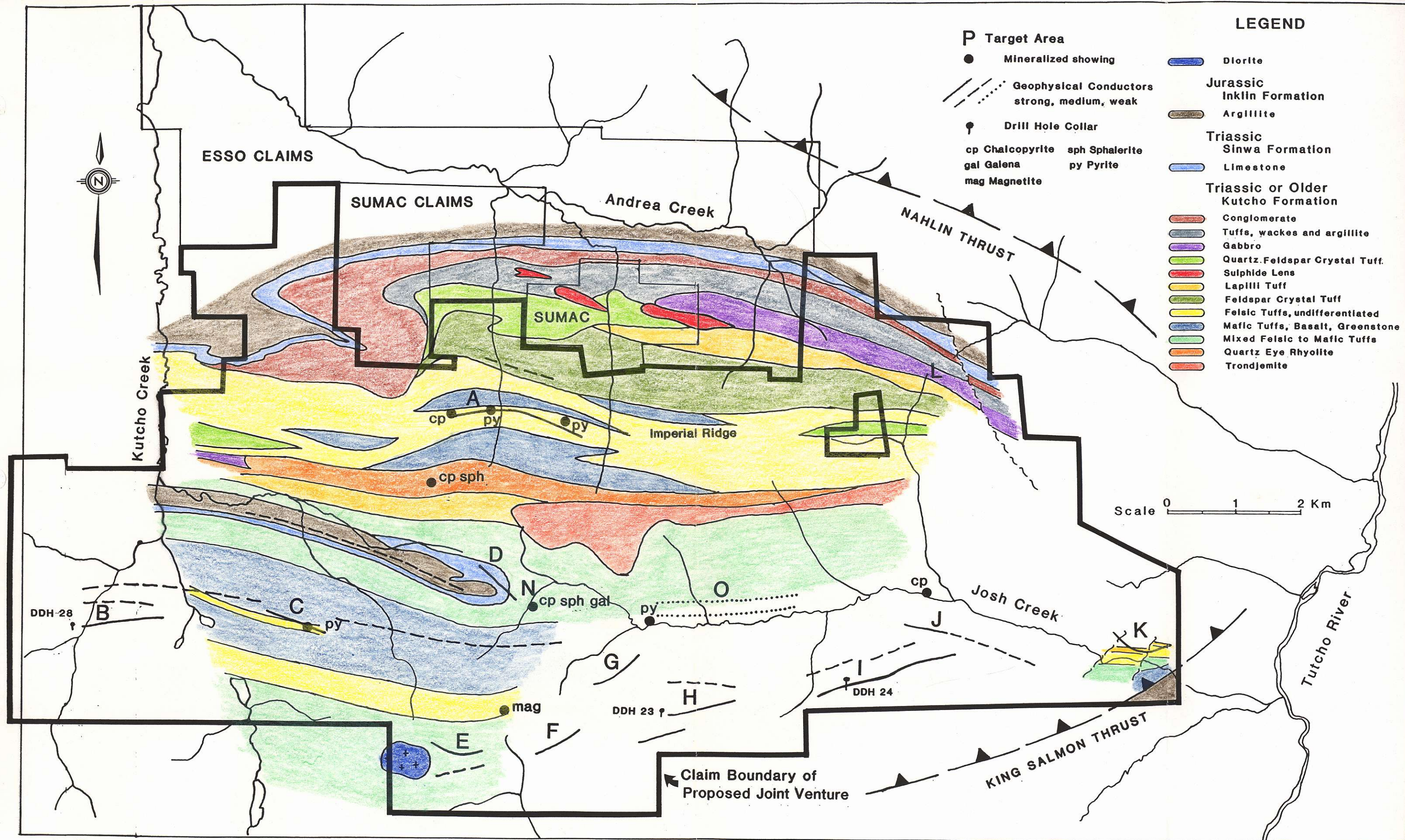


Figure 3. Generalized Geology and Geophysics, Kutcho Property

| Priority                         | Target Description |                 |            |           |                 |           |                                                                                                                       | Work Done                                                                                          |            |                               |         |                |          | Recommendations                                                                                            |            |                    |               |         |              |                                                                                     |
|----------------------------------|--------------------|-----------------|------------|-----------|-----------------|-----------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------|-------------------------------|---------|----------------|----------|------------------------------------------------------------------------------------------------------------|------------|--------------------|---------------|---------|--------------|-------------------------------------------------------------------------------------|
|                                  | Identity           | # of conductors | Length (m) | Depth (m) | Conductance (s) | Magnetics | Surface Geochem                                                                                                       | Geology                                                                                            | Year       | Ground Definition Technique 2 | Geology | Geochemistry 3 | Drilling | Results                                                                                                    | Drill Test | Geophysical Method | Line km Req'd | Geology | Geochemistry | Comments                                                                            |
| H                                | A                  | 2               | 500        | 45        | 15              | 15        | Cu, Zn silts                                                                                                          | Interfolded felsic & mafic tuffs, Cu & Zn occurrences<br>Carbonate exhalite.                       | n/a        |                               |         |                |          |                                                                                                            | Y          | LLG                | 2.5           | Y       |              | Interpreted as a fold repeat of the main Kutcho horizon.                            |
| L                                | B                  | 3               | 1200+      | 10        | 21              | -         |                                                                                                                       |                                                                                                    | '75        | HLEM                          | N       | Y              | 110m     | Narrow zones of pyrrhotite argillite. Mafic to felsic epiclastic host rocks.                               |            | MSG                |               | Y       | Y            | Use MSG to locate conductors and prospect, particularly to the west.                |
| H                                | C                  | 1               | 3000+      | 35        | 19-64           | -         |                                                                                                                       | Narrow band of sericite schist within mafic rocks.                                                 | '86        | MSG                           | Y       | Y              |          | Massive pyrite & silica exhalite along conductive trend.                                                   | Y          | GRV<br>CHG         |               |         |              | Extend grid to east and west. Chargeability survey to follow drilling.              |
| L                                | D                  | 1               | 400        | 25        | 15              | -         |                                                                                                                       | Probably graphitic sediments in limestone.                                                         |            |                               |         |                |          |                                                                                                            |            | MSG                |               |         |              | Locate conductor and prospect.                                                      |
| M                                | E                  | 3               | 1000       | 30        | 31              | -         |                                                                                                                       | Oxide facies within mixed tuffs.                                                                   |            |                               |         |                |          |                                                                                                            |            | MSG                |               |         |              |                                                                                     |
| L                                | F                  | 1               | 400        | 10        | 9               |           |                                                                                                                       |                                                                                                    |            |                               |         |                |          |                                                                                                            |            | MSG                |               |         |              | Locate conductor and prospect.                                                      |
| M                                | G                  |                 | 350        | 30        | 11              | 30        |                                                                                                                       | Interbedded felsic ash tuffs.                                                                      |            |                               |         |                |          | Located within a resistivity low - typical of pyritic sericite schist.                                     | Y          | LLG<br>GRV         | 2.5           | Y       |              | Delineate conductor, try gravity and soils, then drill test.                        |
| M                                | H                  | 3               | 700        | 0         | 39              | 60        |                                                                                                                       | H & I are likely part of the same trend. Argillaceous, tuffaceous cherts correspond to conductors. | '75<br>'86 | HLEM                          |         | LG             | 91m      | Alteration and lithochemistry indicate hydrothermal exhalative horizon; much better developed in target I. | Y          | MSG<br>GRV         | 6.0           | Y       |              | Locate conductors with MSG. Use gravity and soil surveys to guide drilling.         |
| H                                | I                  | 3               | 2500       | 5         | 51              | -         |                                                                                                                       | Host rocks are crystal-lithic tuffs.                                                               | '75<br>'86 | HLEM                          |         | LG             | 120m     |                                                                                                            |            |                    |               |         |              |                                                                                     |
| M                                | J                  | 1               | 200        | 55        | 21              | -         |                                                                                                                       | Mafic to felsic ash tuffs, sericite schist.                                                        |            |                               |         |                |          |                                                                                                            | Y          | LLG                | 2.0           | Y       | Y            | Favourable geology, but thick overburden.                                           |
| H                                | K                  | 1               | 500        | 5         | 15              | -         |                                                                                                                       | Crystal and lapilli tuffs, sericite schist.                                                        | '86        | MSG                           | Y       | Y              |          | Similar stratigraphy to the main Kutcho horizon.                                                           | Y          |                    |               |         |              | Drill test: line 6w 2+25s.                                                          |
| L                                | L                  | 1               | 200        | 0         | 8               | -         |                                                                                                                       | Metagabbro.                                                                                        |            |                               |         |                |          |                                                                                                            |            | MSG                |               | Y       |              | Locate with MSG and prospect.                                                       |
| M                                | N                  |                 |            |           |                 |           | Cu, Zn<br>Pb                                                                                                          | Carbonate exhalite. Pyritic, altered crystal tuffs.                                                | '85        | MSG<br>LLG                    | Y       | Y              |          | No conductive response. Anomalous lithochemistry.                                                          | Y          |                    |               |         |              | Good geological target, test at depths greater than 150m.                           |
| M                                | O                  | 2               | 2000       | 70        | -               | -         |                                                                                                                       | Pyritic sericite schist and ash tuffs.                                                             | '85        | LLG                           | Y       | Y              |          | Thin lenses of massive pyrite in highly altered schists. Spotty lithochem anomalies.                       | Y          |                    |               |         |              | Probably 3 -4 holes required to test both conductors over the entire strike length. |
| 1. H = High, M = Medium, L = Low |                    |                 |            |           |                 |           | 2. HLEM = Horizontal Loop EM, MSG = Moving source GENIE<br>LLG = Large Loop GENIE, GRV = Gravity, CHG = Chargeability |                                                                                                    |            |                               |         |                |          | 3. LG = Lithochemistry                                                                                     |            |                    |               |         |              |                                                                                     |

TABLE 2. SUMMARY OF EXPLORATION TARGET AREAS, KUTCHO CREEK