

# Shangri-La Minerals Limited

87-168-15982

GEOPHYSICAL, GEOCHEMICAL, AND GEOLOGICAL REPORT

ON THE  
LOCKE PROJECT

FOR

*Owner/Operator:* ADRIAN RESOURCES LTD.

NTS 92H/8E AND 92H/1E

OSOYOOS AND SIMILKAMEEN MINING DIVISIONS

WEST LONGITUDE:  $120^{\circ}06'07.8''$   
NORTH LATITUDE:  $49^{\circ}14'7''$

FILMED

BY

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FOR

SHANGRI-LA MINERALS LIMITED

12 NOVEMBER 1986

15,982

GEOLOGICAL BRANCH  
ASSESSMENT REPORT

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## SUMMARY

A combined geological, geophysical and geochemical reconnaissance of the Locke Project property held by Adrian Resources Ltd., was conducted by Shangri-La Minerals Limited from May 15 to June 12, 1986. The claims are situate in the Osoyoos and Similkameen Mining Divisions approximately 12 km south of Hedley, B.C.

The property area is underlain by Triassic Nicola Group metasediments and metavolcanics which are cut by Jurassic sills and a Late Jurassic or Early Cretaceous granitic intrusion. The contact areas between granite and Nicola Group rocks are not well exposed within the property; the metasediments examined near the contact revealed no obvious major alteration but should be more closely investigated.

Electromagnetic conductors coincide with areas of high magnetic gradient at two places within the property. These anomalies may be due to the presence of pyrrhotite, a sulphide mineral that is both conductive, magnetic and a major ore constituent at the nearby Mascot Nickel Plate Mine.

Soil geochemistry survey results show that the thick soils contain generally erratic metal concentrations. Isolated high gold values exist within soil at the western end of the Locke project area. One of these samples was collected in the same area as a soil concentrate collected by Trans Arctic Explorations Ltd. which assayed 2.456 ounces/ton gold.

It is recommended that an exploration program be undertaken to determine the source of the geochemical and geophysical anomalies in order to better evaluate the economic mineral potential underlying the Locke Project Property.

Respectfully submitted at Vancouver, B.C.

  
James S. Falconer, P.Eng.  
12 November 1986

  
PROFESSIONAL  
ENGINEERS  
OF  
THE  
PROVINCE  
OF  
BRITISH  
COLUMBIA  
J. S. FALCONER  
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**PART A****Introduction**

From May 15 to June 12, 1986 a program consisting of grid establishment, geological mapping, geochemical and geophysical surveying was conducted over the Locke Project claims held by Adrian Resources Ltd.

The purpose of this exploration program was to examine an area with geology favourable for the occurrence of gold deposits south of the Mascot-Nickel Plate properties, and to delineate zones of economic mineral potential. The Locke Project region has been sporadically explored for gold since the turn of the century.

**Property Status**

The Locke Project property consists of five grid system mineral claims. Particulars are as follows:

Name	Record No.	Anniversary Date	Area
LOCKE 1	1739	18 April 1987	20 units
LOCKE 2	1740	18 April 1987	16 units
LOCKE 3	1741	18 April 1987	20 units
LAMB 2	1716	12 April 1987	20 units
Gold Key	2436	12 June 1987	4 units

The LOCKE 2 mineral claim overlaps the Ashnola Indian Reserve No. 10A to the east.

This report shall be submitted to receive assessment work credit.

The Locke Project claims are shown on British Columbia Ministry of Energy,

**Mines and Petroleum Resources Mineral Claim Maps M92H/8E and M92H/1E.****Location, Access and Topography**

The Locke Project claims are situate in the Osoyoos and Similkameen Mining Divisions, approximately 12 km south of Hedley, B.C. and 22 km west-northwest of Keremeos, B.C. Access is best via asphalt and gravel roads west from Keremeos and along a B.C. Telephone microwave station service road for a distance of approximately 25 km.

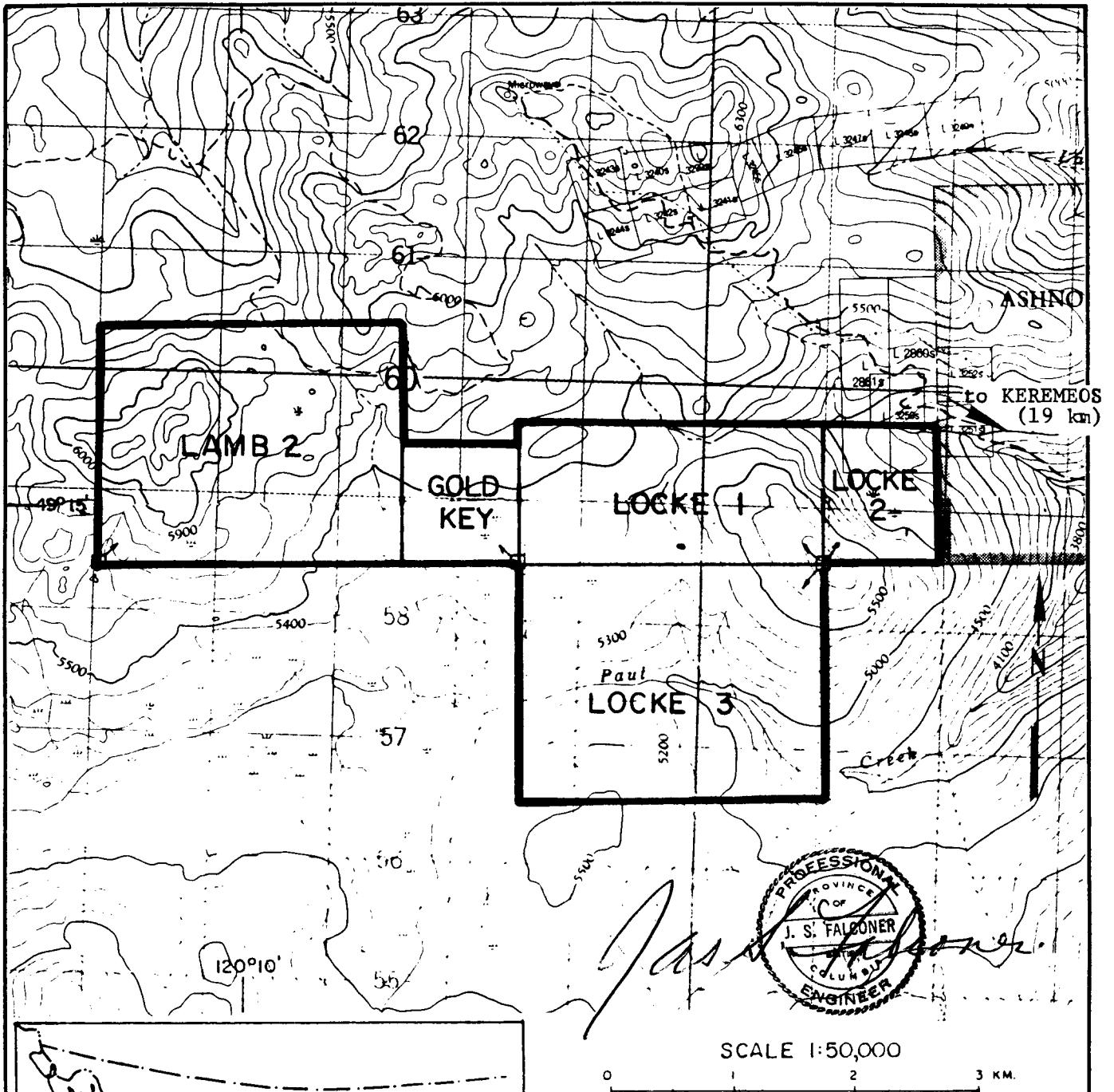
Paul Creek drains the southern part of the Locke Project claims; the creek flows easterly into the Similkameen River. The topography is fairly gentle with elevations ranging between about 1390 and 1860 m above sea level. Stands of evergreen trees cover most of the Locke Project area; a few willow swamps, open meadows and stands of deciduous trees are also found within the project area.

**History**

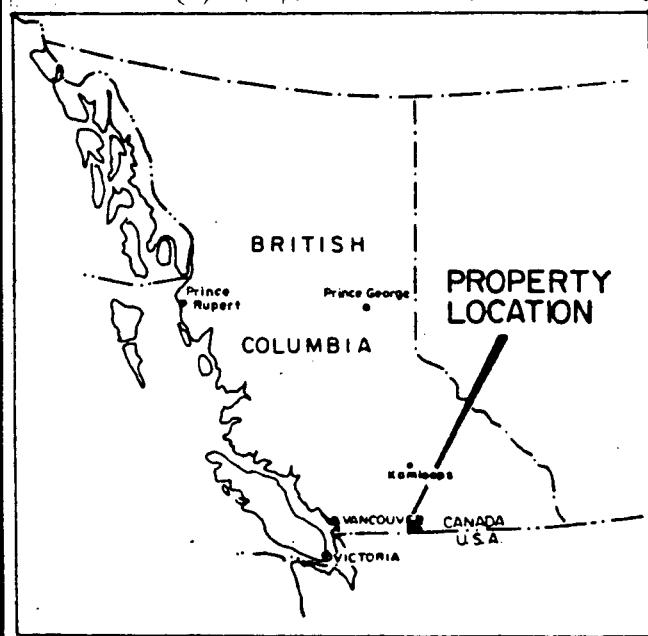
The Hedley area has been prospected since the 1880's. Many gold occurrences were discovered and in the 1940's the area became famous for gold orebodies hosted mainly in skarn. The Nickel Plate Mine, which began production in 1904, produced in excess of 1,760,000 ounces gold. Four other nearby properties, including the Hedley Mascot Mine, produced between 5,000 and 50,000 ounces gold each.

Today, the Hedley area is being actively explored by various companies. Most notable is Mascot Gold Mines Ltd. which has been developing an open pit gold mine on Nickel Plate Mountain that is expected to begin producing in 1987 at a mining rate of 1800 tons per day.

The area to the south of the Similkameen River has also been intensely prospected, resulting in the discovery of numerous gold occurrences. Banbury Gold Mines Ltd. and Noranda Exploration of Canada Ltd. are presently exploring a system of quartz-filled shear zones in sedimentary rocks which have been intruded by an



To accompany report by J. Falconer, P. Eng.



## LOCKE PROJECT

FOR: ADRIAN RESOURCES INC.  
BY: SHANGRI-LA MINERALS LIMITED

## LOCATION MAP

OSOYOOS M.D., B.C.

N.T.S. 92 H - 1, 8

DATE: JUNE 1986

DRAWN BY: M.R.

FIGURE N°. 1

irregular diorite body.

No work is known to have been done on the Locke Project property prior to April 1984. Trans-Arctic Explorations Ltd. performed VLF-EM surveys over portions of the LOCKE 1, LOCKE 2 mineral claims in 1984 (Mark, 1984) and over a portion of the LAMB 2 mineral claim in 1985 (Mark, 1985).

Interpretation of the VLF-EM survey results indicated that northeasterly to northerly trending conductors exist within LOCKE 1 and LOCKE 2 mineral claims. Mark (1984) thought that these conductors were caused by either fault, shear or breccia zones. Northeasterly trending VLF-EM conductors exist within the portion of LAMB 2 mineral claim surveyed during 1985 (Mark, 1985). Mark thought that the conductors were probably caused by faults, shears or contacts which could have been mineralized by sulphides.

## PART B SURVEY SPECIFICATIONS

### Grid

A total of 7.25 km of baseline and tieline, and 105.875 km of crossline were surveyed. The grid baseline used by Trans-Arctic Explorations Ltd. during April 1984 was refurbished and extended.

To facilitate future orientation on the property, grid stations were marked with Tyvex plastic tags and flagging. All lines were established using a compass and hip chain.

One baseline and two tielines were oriented on an azimuth of 210°. Crosslines were turned at right angles from the baseline and stations established at 25 m intervals.

### **Magnetometer Survey Method**

The magnetometer survey was conducted using a Geometrics Instrument Ltd. Unimag Proton Precession Magnetometer, and a Scintrex MP-2 Proton Precession Magnetometer. These instruments measure the magnitude of the Earth's total magnetic field. Corrections for diurnal variation were made possible by closing loops during the survey. Diurnal variation ranged between nil and 78 gammas.

Readings were taken at 25 m intervals over the grid. A total of 94.525 line-km was surveyed. Survey results are presented as Figure 2.

### **VLF-EM Survey Method**

The survey was conducted using a Sabre Electronics Model 27 V.L.F. Electromagnetometer. This instrument is a receiver which utilizes the primary electromagnetic fields generated by United States Navy V.L.F. marine communication stations. These stations transmit on frequencies between 15 and 25 kHz, and have a vertical antenna current resulting in a horizontal primary magnetic field. Secondary fields are induced in conductors. The VLF-EM method measures the dip of the field resulting from the sum of the primary and secondary fields.

A transmitting station located along the trend of possible conductors and/or the geological strike is selected for maximum electromagnetic coupling. The transmitter at Seattle, Washington (west-southwest of the property) was used.

Readings were taken at 25 m intervals on grid lines. The data was filtered as described by D.C. Fraser, Geophysics Vol. 34, No. 6. The advantage of the Fraser filtering method is that it removes the D.C. and attenuates long spatial wavelengths to increase resolution of local anomalies. The filter also shifts the dip angle by 90° so that cross-overs and inflections become contourable quantities.

The VLF-EM survey results are presented as Figure 3. A total of 100.25 line-km were surveyed.

### **Geochemistry, Soil and Vegetation Survey Methods**

A total of 1,031 soil and 30 rock samples was collected. Soil samples were taken from the "B" horizon (15-30 cm depth) using a cast iron mattock. Soil weighing no less than 200 g was placed in Kraft paper gusset envelopes and sun dried before selected samples were analyzed. A total of 514 soil samples were analyzed by Acme Analytical Laboratories Ltd. using an induction coupled plasma spectrophotometer and atomic absorption (for gold). Samples not analyzed are being warehoused by Shangri-La Minerals Limited.

The soil and vegetation survey was conducted by traversing the property along the grid lines and by digging numerous pits to examine soil profiles with the objective of determining the relative merit of the geochemical soil results.

## **PART C**

### **Geology**

#### **Regional Geology**

The Hedley district is underlain by Triassic and slightly older sedimentary and volcanic rocks of the Nicola Group which have been intruded by igneous rocks of Jurassic and/or younger ages. North of the Similkameen River these intrusive rocks are large granodiorite and granite bodies, and smaller diorite and gabbro stocks with numerous dykes and sills. Fewer intrusions exist south of the Similkameen River; a large granodiorite body and a limited number of smaller diorite and gabbro intrusions are present.

Several workers have distinguished various formations within Nicola Group rocks north of the Similkameen River. Distinguishing features of these rocks diminish south of the river, and much of the Nicola Group becomes difficult to subdivide.

## Property Geology

### Lithologies

The property area is underlain by Triassic Nicola Group metasediments and metavolcanics which are cut by Jurassic sills and a Late Jurassic or Early Cretaceous granitic intrusion. The metasediments and metavolcanics were not subdivided into the various formations of the Nicola Group. Seven mappable units were distinguished. The map units comprise two intrusive rock types, three metavolcanic units and two metasedimentary units (Figure 4).

### Metavolcanics and Metasediments

#### Metasiltstone

Green, soft metasiltstone was observed at only one locale, L800S/275W. It is pale grey on weathered surface, breaks with conchoidal fracture and contains local sub-rounded quartz granules and andesite clasts. Metasiltstone contains approximately 1% disseminated biotite flakes and traces of disseminated pyrite.

#### Volcaniclastics

Volcaniclastics are the most abundant rock type exposed within the Locke claim group. This light grey to light greenish-grey, fine to locally medium-grained, massive rock forms numerous outcrops within the western portion of the mapped area. The rock is of felsic composition; grain boundaries are generally faint. It does not appear tuffaceous. Volcaniclastics locally grade into hard quartzites and cherts which break with conchoidal fracture

and have faint compositional banding. Volcaniclastics also locally appear crystalline with rare smokey quartz eyes, and may be in part an acidic volcanic flow.

Clasts are predominantly feldspar which weathers white on outcrop surfaces. The volcaniclastics contain rare rounded quartz pebbles and angular black siltstone fragments.

Traces of disseminated pyrite are common throughout the unit, generally in patches up to about 1 m square where brown iron oxides occur on the weathered outcrop surface. Sulphides locally form up to 5% of the rock volume as very fine disseminated grains and as irregular masses up to a few mm across. The sulphides are almost entirely pyrite with local, rare pyrrhotite and arsenopyrite. At 3940W/2460S a vug 19 mm x 2 mm is filled by pyrite.

### **Andesite**

Andesite within the Locke project grid area is grey-brown on weathered surfaces, black to rarely reddish black on fresh surfaces. The rock is crystalline, generally fine-grained or aphanitic, dense with local euhedral lath-like pyroxene? crystals and garnet in an aphanitic matrix.

### **Rhyolite**

Rhyolite is a light grey or light brown, fine-grained to aphanitic, massive, locally vesicular rock which forms scattered outcrops throughout the northern half of the mapped area. Rhyolite has occasional feldspar phenocrysts and local clear quartz eyes up to 2 mm diameter. In places the rhyolite has a gradational contact with the volcaniclastic map unit. The

rhyolite contains local disseminated, very fine-grained sulphides and rare isolated pyrite blebs 1 mm in diameter; these sulphides result in the occurrence of limonitic iron oxides on weathered outcrop surfaces over areas up to 2 m by 7 m.

### Dacite

Grey to light green-grey to green crystalline, fine-grained to aphanitic dacite within the Locke grid area is locally vesicular and amygdaloidal. The vesicles are up to a few mm diameter. The rock contains local, very fine disseminated pyrite and chalcopyrite (?) which weather to form limonitic iron oxides on fracture surfaces. Vugs up to 8 mm diameter exist on dacite outcrop surfaces. Dacite contains occasional white feldspar phenocrysts in the Locke grid area.

### Intrusive Rocks

#### Granite

Rounded granite outcrops exist in three areas within the Locke project area; near 500S/1200W, 3150S/850W and 1495S/2180W. The rock is pale orange-pink to orange-red on weathered surfaces. The granite is generally cream coloured, massive, medium-grained, leucocratic and contains disseminated biotite. The granite locally contains magnetite. At 1495S/2180W several small irregular, white quartz veins intrude granite.

#### Feldspar Porphyry

Feldspar porphyry exists in a few small, scattered outcrops of cream to brownish green, medium-grained massive rock with local, clear quartz eyes in the southwestern portion of the

grid area. Characteristically, feldspar porphyry contains off-white euhedral to subhedral feldspar phenocrysts up to a few mm in diameter, and local traces of disseminated pyrite. The contact between feldspar porphyry and the surrounding country rock was not observed within the Locke grid area.

### **Structure**

No evidence of folding or faulting was observed in outcrop within the Locke grid area.

Bedding within the region generally trends northerly. No bedding was observed within the metasediments although faint compositional banding is locally visible within quartzites and cherts of the volcaniclastic unit.

### **Mineralization and Alteration**

Local, patchy (up to 15 cm wide, 100 cm long) alteration by apple-green epidote occupying up to 50% of volcaniclastic has occurred.

The country rocks near the intrusions within the Locke grid area are not visibly altered.

The 30 rock samples from the Locke grid area contain up to 15 ppb gold. Three of these rocks contain between 10 and 15 ppb gold.

Sample LK-15 (15 ppb gold) is volcaniclastic with approximately 0.5% pyrite.

Sample LK-3 (10 ppb gold, 0.9 ppm silver) is amygdaloidal dacite which contains about 0.3% very finely disseminated pyrite. Sample LK-3 probably also contains chalcopyrite; it contains 385 ppm copper.

Sample LK-19 (10 ppb gold) is quartzite volcaniclastic with 3% disseminated pyrite; this sample contains 31 ppm arsenic.

### **Soil & Vegetation Survey**

The Locke grid occupies an area of fairly uniform plant ecosystem units and generally thick, stable soils. This report outlines the present ecosystem units on the Locke grid, the processes involved in their formation, and their associated vegetation, soils, and soil parent materials.

#### i) **Soils**

The majority of the soils in this area were formed from glacial deposits (Fig. 5a). The area was covered by glaciers which left morainal till and glacio-fluvial material as they receded. This morainal till and glacio-fluvial material is thick over most of the grid area. The occasional esker can be seen in the extreme northeast and southeast corners of the grid near the creeks that presently flow there. The overall movement of the glaciers was from south to due north because the hill in the northeast part of the grid has been scraped on its south slopes and plucked on the north slopes.

After the glaciers receded, alluvial deposits originating from the till accumulated in the creek valleys and swamps. Weathering on the steep slopes of the grid's main hill has created some colluvial (fallen rock) deposits. These soil parent materials have had some effect on the soils that have developed and much to do with the minerals contained in them.

The most important soil formation process on these claims is podzolisation which is determined by the amount of water that moves through the soils. Podzols tend to eluviate iron and

aluminum sesquioxides combined with organic matter from their upper mineral horizon to deposit this material in lower soil horizons. The white, leached (iron and aluminum poor) horizon, usually no more than 5 cm thick, caps a red B Horizon where iron accumulates.

The soils on the Locke grid (Fig. 5b) range from the most eluviated podzols (orthic ferro humic podzols [O.FHP]) through the less eluviated brunisols (eluviated dystric brunisols [E.DB]) to an orthic dystric brunisol [O.DB]) which shows no signs of eluviation. The degree to which the soil is eluviated depends on the effective precipitation. Soils on slopes have more runoff, and less water passes through the soil horizons. Soils on hotter south-facing slopes have even less water moving through them. The podzols on the Locke grid are therefore concentrated on the central flat plateau. They are poorly developed because the rainfall in this area is minimal.

The second important group of soils in this area are gleysols. In depressions and areas where water saturates the soil for long periods, the movement of minerals through the soil horizons is much slowed. Iron is chemically reduced and hydrated oxides of iron are deposited in small pockets throughout the soil. One of the gleysols on the property, however, shows some eluviation (fera humic gleyo [F.HG]). The humic gleysols have a thick [50 cm] dark Ah mineral horizon which is high in organic matter just below the ground surface.

The other types of soils on the property occur in very small patches. In the southeast corner of the grid, some wetter humic soil (orthic sombric brunisol [O.SB]) occurs and in the rockier parts a regosol [O.R.] dominates. Regosols are undeveloped soils on bedrock or colluvium.

### ii) Vegetation

The vegetation on the Locke grid (Fig. 5c) is determined by two major factors: the availability of water and the time since fire has passed through.

If forest fires had never burnt the Locke grid area, most of it would be covered by spruce-subalpine fir mixed forests. Except in the driest areas, these species will eventually shade out the pine forests that grow soon after fire.

The present spruce stands occupy sites where the availability of water is highest. North aspects and the borders of creeks and swamps support these forests. Both the swamps and steep south-facing slopes have very low water availability. On the south-facing slopes it evaporates too quickly, and in the swamps there is too little oxygen for roots or too high a concentration of ions in the water. In between these extremes of forest types is treed rangeland. Treed rangeland is a transition between forest and grassland.

For more information on the vegetation and land management of these areas, please consult the Minister of Forests' publications on the ESSFa biogeoclimatic subzone.

### iii) Forest Ecosystem Units

#### a) Pine Forest

Dominant vegetation: Lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmannii*), False box (*Pachistima myrsinites*), Common juniper (*Juniperus*

*communis*), Grouseberry (*Vaccinium scoparium*), Twin flower (*Linnea borealis*), moss (*Pleurozium schreberii*).

Humus - thin mor

Soils - thin (20 cm) O.FHP or E.DB on thick (at least 2 m) till

Description - closed canopy burn occurring usually on flat ground over sandy to loamy podzolic soils.

b) Spruce Forest

Dominant Vegetation: Engelmann spruce (*Picea engelmannii*), Subalpine fir (*Abies lasiocarpa*), Sitka alder (*Alnus sitchensis*), Prickly currant (*Ribes lacustre*), Wax berry (*Symphoricarpos alba*), Trapper's tea (*Ledum glandulosum*), Sitka valerian (*Valeriana sitchensis*), Black twinberry (*Lonicera involucrata*), moss (*Pleurozium schreberii*).

Humus - thick moss layers cover a null

Soils - Thick (1.5 m) O.HG, F.HG, or O.SB in alluvial valleys and thin (0.2 m) E.DB on colluvial slopes.

c) Willow Swamp

Dominant Vegetation: Willow (*Salix spp.*), Sedges (*Carex spp.*), Bog birch (*Betula glandulosa*), Yellow rose (*Potentilla fruticosa*), Anenome (*Anenome multifida*), Lousewart (*Pedicularis bracteosa*), mosses (*Sphagnum + other spp.*)

Humus - Thick (10 cm) mull

Soils - Thick ( $1\text{ m}^+$ ) O.HG on thick alluvial deposits

Description - Brush swamplands that occur in draws and old lakes. These are important wildlife and cattle habitats.

d) Pine Range

Dominant Vegetation: Lodgepole pine (*P. contorta*), Pine grass (*Calamagrostis rubescens*), Soopolaille (*Shepherdia canadensis*), Lupin (*Lupinus spp.*), Fireweed (*Epilobium angustifolium*), Bearberry (*Arctostaphylos uva-ursi*).

Humus - thin mor (<5 cm)

Soils - thin (20 cm) E.DB on gentle slopes over thick (>2 m) glacial till.

Description - rangeland under a pine canopy dominates the south-facing slopes which have not been recently burnt. Important grazing land.

e) Douglas fir forest

Dominant Vegetation: Douglas fir (*Pseudotsuga menziesii*), Engelmann spruce (*P. engelmannii*), Common Juniper (*J. communis*), Pine grass (*Calamagrostis rubescens*), Mountain arnica (*Arnica latifolia*).

Humus - thick mor (10 cm) often covered by mosses.

Soil - Shallow (20 cm) E.DB, O.DB, O.R and folisols on colluvium of variable thickness.

Description - This type occurs at the summit of a steep talus slope.

f) Mixed Range

Dominant vegetation: Engelmann spruce (*P. engelmannii*), Lodgepole pine (*P. contorta*), Douglas fir (*P. menziesii*), Sub-alpine fir (*A. Lasiocarpa*), Pine grass (*C. rubescens*), Heart leafed and mountain arnica (*A. cordifolia* and *latifolia*).

Humus - patchy, mor in closed forest to mull on open range.

Soil - E.DB. on thick (>2 m) till

Description - The higher south-facing slopes on the east portion of the grid have this drier open forest land.

g) Aspen Open Range

Dominant Vegetation: Trembling aspen (*Populus tremuloides*), Pine grass (*C. rubescens*), Sitka alder (*Alnus sitchensis*), Wild onion spp. (*Allium spp.*), Sticky cinquefoil (*Potentilla glandulosa*), Pussytoes (*Antennaria spp.*).

Humus - mor

Soils - O.DB on thick glacial till and glacio-fluvial

deposits.

Description - these areas of rangeland are too dry to support coniferous trees and occur on steep, dry south-facing slopes near the southeast corner of the grid.

h) Open Grassland Burn

Dominant Vegetation - Pine grass (*C. rubescens*), Bearberry (*A. uva-ursi*), Bush penstemon (*Penstemon fruiticosus*), Soopolaille (*S. canadensis*), Sticky currant (*Ribes viscosissimum*).

Humus - Mor

Soils - Outcrop or 0.DB (<20 cm) on glacial till.

Description - this area of open clearcut was cleared and burnt leaving grassland and much outcrop.

### **Discussion of Geochemical Results**

The results of geochemical analyses of 514 soils from the Locke project area show that the soils contain up to 195 parts per billion (ppb) gold and 0.9 parts per million (ppm) silver.

1,031 soil samples were collected and several pits were dug to examine the origin, composition and development of the soils.

The major features observed were as follows:

- a) The soils are generally thick, stable, poorly developed and of glacial till origin.
- b) Gold values are generally low throughout the area from which samples were analyzed, but four isolated high values exist in the western portion of the grid area (Figure 6a). The highest gold value (195 ppb) is located in the same area as a soil concentrate collected by Trans Arctic Explorations Ltd. which assayed 2.456 oz/ton gold.
- c) The high gold values are not coincident with high concentrations of any of the other analyzed elements (Figures 6a, 6b, 6c, 6d.).

## **Discussion of Geophysical Results**

### **Magnetometer Survey**

The total field magnetic data are presented in Figure 2.

The magnetic field recorded over the property varies a total of about 1,000 gammas in general. Occasional steep gradient areas have field strength variations of a few thousand gammas (Figure 2).

The background field strength value is approximately 500 gammas relative to a datum of 56,500 gammas. The level of magnetic activity varies widely over the map area, with the highest level of activity (i.e., steepest gradients) present in the western part of the property.

The rock types there are predominantly volcaniclastics

with some intrusives (Figure 4). Volcaniclastics are known to have widely varying concentrations of magnetite. The strong magnetic variations of the volcaniclastics effectively mask any contribution which may be due to pyrrhotite, which is present in this area.

An isolated magnetic low at L3150S, 3900W exists where feldspar porphyry intrudes volcaniclastics. Another area of low magnetic activity and low field strength is present at L2600S to L2200S between 3500W and 3900W. This low is probably due to the presence of rhyolite (Figure 4) which has a lower magnetite concentration than the volcaniclastics.

A linear magnetic feature in the extreme NW portion of the property corresponds to a linear trend of dacite outcroppings (Figure 4).

An interesting correlation between geology and magnetic data is observed at L2500S, 4250W where an observed dacite/volcaniclastic contact is coincident with a magnetic high of 2862 gammas and an associated minimum of less than 0 gammas.

The central and eastern portions of the grid area are characterized by generally low magnetic activity. This may be partly due to an increased thickness of overburden, but it also seems likely that the rock types there have a lower magnetic mineral content.

In the extreme northeast section of the grid a zone of high magnetic activity is contained between lines 500S and 900S. This anomaly is associated with andesite which commonly has a strong magnetic response (see Figure 4). This zone has a curve to it which is located at approximately 250W. This characteristic may

suggest a structural deformation, possibly related to a fault (?). It is also associated with a VLF conductor (see Figure 3).

Southwest of the previous area, an increase in magnetic activity is characterized by a series of peaks on lines 1600S to 1900S, stations 650W to 100W. This may indicate the presence of andesite or volcaniclastics.

### **VLF-Electromagnetic Survey**

Weak to moderately strong northeasterly-trending electromagnetic conductors exist throughout the Locke project area (Figure 3). The trend of the conductors parallels the regional trend of the rock units at Locke Project property. The most conductive bedrock exists within the northeastern corner of the grid area, also within the detail grid on the western edge of the area; both of these areas were surveyed by Trans-Arctic Explorations Ltd. in 1984 and 1985 (Mack, D.G., 1984 and 1985). Most of the conductors are in overburden-covered areas so the sources of conductivity are unknown.

In general, the areas with the most conductive bedrock are also areas of steep magnetic gradient.

The finely disseminated sulphides found within outcrop in the detailed western grid area are most likely not the source of the electromagnetic conductors. These conductors do not coincide with any geological features mapped within the grid area. The conductors may be due to the presence of pyrrhotite, a mineral which is both conductive and magnetic, but are most likely due to the presence of faults, shear zones and/or geologic contacts.

**VLF-EM Anomalies Outlined by Present Survey**

<b>Location</b>	<b>Comments</b>
L3200S; Stn. 4400W + Stn. 4300W to L2500S; Stn. 4350W	Weak linear conductive zone
L3200s; Stn. 4150W to L3000S; Stn. 4050W	Weak conductor, open to the SW.
L2800S; Stn. 4200W to L2000S; Stn. 4275W	Weak linear conductor, conductivity increases to the north, open to the north.
L2300S; Stn. 4075W to L1650S; Stn. 4200W	Mainly weak linear conductor except 2100W, Stn. 4100W which is a centre of moderately high conductivity, conductive trend is open to the north.
L2200S; Stn. 3900W	Moderately high conductive zone.
L3200S; Stn. 4000W and L3200S; Stn. 3725W	Weakly conductive zones, possibly continuing toward the NE and open to the SW.
L3200S; Stn. 3250W to L2700S; Stn. 3050W	Weakly conductive linear trend open to the SW, possibly continues northward.
L1600S, Stn. 3175W	Moderately conductive zone open to the north.

L1400S, Stn. 2700W to 1500S, Stn. 2700W	Moderately conductive trend, open to the north.
L1400S, Stn. 2350W	Isolated moderately conductive zone.
L1000S, Stn. 2000W to L1500S, Stn. 2200W	Moderate to weak trend, open to the north.
L1400S, Stn. 1900W	Isolated moderately conductive zone.
L800S, Stn. 1250W	Isolated conductive zone.
L600S, Stn. 1125W	Isolated moderately high conductive zone.
L2500s, Stn. 500W	Moderately conductive zone possibly open toward the south.
L400S, Stn. 575W to L900S, Stn. 300W	Weak linear conductive trend.

**PART D****Conclusions and Recommendations**

The Locke Project property of Adrian Resources Ltd. is underlain by the same group of rocks as those containing the gold orebodies at Hedley, B.C.

Soil samples from the property contain generally low metal values; however, soil over most of the property is thick and would probably mask underlying metal occurrences. Isolated soil samples have high (195, 168, 95, 85, and 42 ppb) gold contents.

VLF-electromagnetic conductors coincide with areas of high magnetic gradient in the northeastern corner and in the western third of the grid area. These anomalies are not due to any geologic feature observed at ground surface but may be due to the presence of pyrrhotite, faults, shear zones and/or geologic contacts. Pyrrhotite and other sulphide minerals are associated with gold in the orebodies at Hedley. Three of the conductors in the western grid area are coincident with isolated geochemical gold highs.

A second phase exploration program is necessary in order to properly evaluate the economic potential underlying the Locke property.

An induced polarization survey should be performed to better establish the nature of the VLF-electromagnetic conductors.

Stripping should be performed to determine the source of coincidental geophysical and geochemical anomalies at 3150S/3750W, as well as the source of conductors determined to be of interest after follow-up by induced polarization surveys.

**Estimated Cost of Proposed Program**

Analyses of remaining previously collected soil samples, 517 @ \$10.75/sample	\$ 5,550.00
Induced Polarization and Resistivity Survey, allow	9,000.00
Line cutting	1,500.00
Trenching, bulldozing, allow	4,000.00
Geological support, allow	3,000.00
Assays, allow	1,000.00
Engineering, supervision, reports, allow	<u>3,000.00</u>
Total Cost of Proposed Program:	\$ 27,050.00
	=====

Contingent upon favourable results from the recommended program, additional diamond drill tests will be necessary in order to fully evaluate the geometry and grade of economic mineralization underlying the Locke property.

Respectfully submitted at Vancouver, B.C.  
  
 J. S. FALCONER  
 BRITISH COLUMBIA  
 ENGINEER  
 James S. Falconer  
 16 July 1986.

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**APPENDIX A**

**COST BREAKDOWN OF PHASE I PROGRAM**

**APPENDIX A**  
**COST BREAKDOWN OF PHASE I PROGRAM**

**Grid establishment**

Base lines, 7.25 km @ \$400.00/km	\$ 2,900.00
Crosslines, 105.875 km @ \$100.00/km	10,587.50
Magnetometer Survey, 94.525 km @ \$ 120.00/km	11,343.00
VLF-EM Survey, 100.25km @ \$ 120.00/km	12,030.00
Geological Mapping and Support, 34 days @ \$200/day	6,800.00
Geochemical Sampling, 1031 samples @ \$7.00/sample	7,217.00
Soil and Vegetation Studies	2,000.00
Geochemical Analyses	
514 soils @ \$10.75 each	5,525.50
30 rocks @ \$14.75 each	442.50
Airphoto and Map enlargements	625.00
Engineering and Interpretation	3,000.00
Report preparation costs	1,850.00
	\$ 64,320.50
	=====

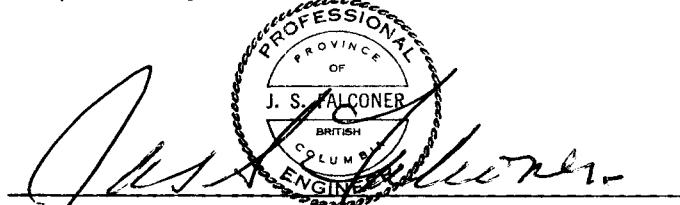
**APPENDIX B**  
**CERTIFICATES**

## CERTIFICATE

I, James Selkirk Falconer, of Vancouver, British Columbia, do hereby certify:

- 1) I am a Consulting Professional Engineer to Shangri-La Minerals Limited, 200-675 West Hastings Street, Vancouver, British Columbia, V6B 4Z1.
- 2) I am a Registered Professional Engineer in the Province of British Columbia, Alberta and Ontario.
- 3) I graduated with a degree of Engineer of Mines from the Colorado School of Mines in 1969.
- 4) I have practised my profession for seventeen years.
- 5) This report is based on a personal property examination conducted in May 28, 1986 and on an evaluation of publicly held data pertaining to the said property, as well as field data collected by a Shangri-La Minerals Limited crew.
- 6) I hold no direct or indirect interest in the property described herein, or in any securities of Adrian Resources Inc., or in any associated companies, nor do I expect to receive any.
- 7) This report may be utilized by Adrian Resources Inc. for inclusion in a Prospectus or Statement of Material Facts.

Respectfully submitted at Vancouver, B.C.

  
James S. Falconer, P.Eng.  
12 November 1986

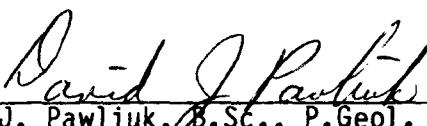


CERTIFICATE

I, David J. Pawliuk of the Municipality of Delta in the Province of British Columbia, do hereby certify:

- 1) I am a Consulting Geologist with the firm of Shangri-La Minerals Limited at 200-675 West Hastings Street, Vancouver, B.C., V6B 4Z1.
- 2) I graduated in 1975 from the University of Alberta, Edmonton, Alberta, and hold a Bachelor of Science with Specialization in Geology.
- 3) I am a registered member, in good standing, of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- 4) Since graduation I have been involved in numerous mineral exploration programs throughout Canada.
- 5) This report is based upon fieldwork carried out by this author and a Shangri-La Minerals Limited crew between May 15 and June 12, 1986.
- 6) I hold no direct nor indirect interest in the property, or in any securities of Adrian Resources Ltd., nor in any associated companies, nor do I expect to receive any.
- 6) This report may be utilized by Adrian Resources Ltd. for inclusion in a Prospectus or Statement of Material Facts.

Respectfully submitted at Vancouver, B.C.

  
\_\_\_\_\_  
David J. Pawliuk, B.Sc., P.Geo.  
16 July 1986

## CERTIFICATE

I, Robert Thomson, of the City of Rossland in the Province of British Columbia do hereby certify:

That I am a Consulting Forester with the firm of Shangri-La Minerals Ltd., 200-675 West Hastings Street, Vancouver, British Columbia, V6B 4Z1:

I further certify:

1. That I am a graduate of the University of British Columbia (1985) and hold a Bachelor of Science in Forestry Biology (Faculty of Forestry) degree.
2. That since 1980, I have been involved in numerous mineral exploration programs throughout Canada.
3. That this report is based on personal visits of the Locke Group mineral claims in June, 1986.
4. That I have no direct or indirect interest in the property described herein, or in Adrian Resources Inc., nor do I expect to receive any.
5. That this report may be utilized by Adrian Resources Inc. in a Prospectus or Statement of Material Facts.

Respectfully submitted  
at Vancouver, B.C.



Robert Thomson, B.Sc., Forestry Biology

June 19, 1986

**APPENDIX C**  
**SAMPLE DESCRIPTIONS**

**APPENDIX C**  
**SAMPLE DESCRIPTIONS**

- LK-1            800S, 275W    Grab  
Traces disseminated pyrite within soft, brownish green siltstone. Fracture surfaces coated with dark brown iron oxides.
- LK-2            691S, 544W    Grab  
Old rock sample number G.R.5 on flagging at site. Light greenish-grey, aphanitic, vesicular rhyolite with manganese (?) oxides present. No sulphides seen.
- LK-3            700S, 555W    Grab  
Dark greenish-grey to pale green, fine-grained, amygdaloidal dacite contains about 0.3% very finely disseminated pyrite. Local limonitic iron oxides on fracture surfaces.
- LK-4            1483S, 1090W   Grab  
Greenish-grey fine-grained rhyolite (somewhat dacitic) contains less than 1% very fine disseminated pyrite and pyrrhotite. Pyrite as isolated blebs about 1 mm diameter. Massive rock. No iron oxides on weathered surface.
- LK-5            1495S, 2180W   Grab  
Sample from several small, irregular, white quartz veins intruding granite. No sulphides nor iron oxides observed.
- LK-6            1483S, 2868W   Grab  
Light greenish-grey, fine-grained rhyolite with local clear quartz eyes 2 mm diameter contains 1 to 2% disseminated pyrite (minor chalcopyrite) as small blebs. Area of mineralized rock here 2 m by 7 m; other smaller rusty weathering outcrop areas nearby.
- LK-7            1430S, 2885W   Grab  
Pale grey fine-grained felsic volcaniclastic rock contains traces disseminated pyrite. Red-brown iron oxides on weathered outcrop surface over areas up to 1 m x 1 m. Pyrite locally forms 2% rock volume. Small, clear quartz eyes present.
- LK-8            1596S, 3256W   Grab  
Red-grey fine to medium-grained volcaniclastic contains local pyrite traces.

- LK-9            1596S, 2010W Grab  
Grey to dark grey, fine-grained volcaniclastic contains quartz pebbles, angular black siltstone fragments and traces disseminated pyrite. Rock locally appears crystalline.
- LK-10          1940S, 3835W Grab  
Green-grey fine-grained volcaniclastic locally contains up to 5% epidote (?) as discontinuous patches up to 15 cm wide, 1 m long. No sulphides seen.
- LK-11          1945S, 3825W Grab  
Grey, fine-grained volcaniclastic contains approximately 1% disseminated pyrite as blebs up to 2 mm diameter. Limonitic iron oxides coat fractures in outcrop over 1 m x 5 m area.
- LK-12          2750S, 4285W Grab  
Greenish-grey, fine-grained volcaniclastic contains about 1% disseminated pyrite and pyrrhotite.
- LK-13          2750S, 4240W Grab  
Grey, fine-grained to aphanitic, locally crystalline dacite contains from 1 to 2% disseminated pyrite and pyrrhotite (and arsenopyrite?).
- LK-14          3135S, 3910W Grab  
Cream to brownish green, medium-grained feldspar porphyry with local clear quartz eyes contains traces disseminated pyrite. Feldspar phenocrysts up to few mm diameter.
- LK-15          3000S, 2979W Grab  
Pale greenish-grey felsic volcaniclastic contains approximately 0.5% pyrite as euhedral cubes 1 mm diameter and as irregular masses up to a few mm across.
- LK-16          2694S, 4023W Grab  
Greenish-grey, very fine-grained cherty volcaniclastic with conchoidal fracture contains approximately 1% disseminated pyrite, pyrrhotite (and arsenopyrite?).
- LK-17          2605S, 4200W Grab  
Light grey, fine-grained, cherty volcaniclastic contains about 1% disseminated pyrite.

- LK-18            2460S, 3940W Grab  
Grey, fine to medium-grained volcaniclastic locally contains up to 2% pyrite. Vug 19 mm by 2 mm filled by weathered pyrite. Limonitic iron oxides coat fracture surfaces in outcrop.
- LK-19            1750S, 4400W Grab  
Grey, very fine-grained quartzitic volcaniclastic contains 3% disseminated pyrite in area 1 m by 3 m, open on 3 sides.
- LK-20            2898S, 4354W Grab  
Grey to light grey, very fine-grained, somewhat crystalline volcaniclastic contains about 2% disseminated pyrite and 1% disseminated pyrrhotite. Occurrence about 0.5 m by 0.25 m on edge of outcrop; open on 3 sides; found by Michael Renning.
- LK-21            2168S, 4435W Grab  
Grey, very fine-grained silicic volcaniclastic contains 1% (locally 3%) disseminated pyrrhotite and a pyrite veinlet about 0.5 Mm wide lining a fracture. Occurrence 0.5 m by 0.25 m at edge of outcrop.
- LK-22            2000S, 4315W Grab  
Light grey, fine-grained, rusty weathering volcaniclastic contains 1 to 3% disseminated pyrite over 5 m by 3 m area. Occurrence open on 3 sides.
- LK-23            1850S, 4075W Grab  
Dark green-grey fine-grained volcaniclastic contains trace to 0.5% disseminated pyrite.
- LK-24            1850S 4055W Grab  
Light grey-green very fine-grained volcaniclastic contains 0.5 to 1% disseminated pyrite.
- LK-25            1750S, 4100W Grab  
Grey to greyish cream, very fine-grained locally crystalline volcaniclastic float in bulldozed area contains 1 to 4% disseminated pyrite. Float pieces angular to subangular, coated with limonitic iron oxides, likely close to bedrock source.
- LK-26            1700S, 4025W Grab  
Grey to light grey, very fine-grained, somewhat crystalline volcaniclastic contains traces to 0.3% disseminated pyrite.

LK-27

1670S, 4055W Grab

Light grey, very fine-grained to medium-grained silicic volcaniclastic blocks on logging road contain 1% (locally 3%) disseminated subhedral pyrite, pyrrhotite and arsenopyrite (?). Angular blocks of volcaniclastic have limonitic iron oxides on weathered surface, extend over 2 m by 8 m area in road bed and are likely near bedrock source. "Road Showing".

LK-28

1193S, 219W Grab

Probable outcrop of pale grey-brown vesicular rhyolite contains quartz eyes and steel grey manganese (?) oxides. No sulphides seen.

LK-29

1085S, 2415W Grab

Pale grey to pale greenish grey, fine-grained feldspathic volcaniclastic contains trace disseminated pyrrhotite. Outcrop 5 m by 3 m.

LK-30

610S, 1081W Grab

Steel grey, fine to medium-grained, somewhat crystalline volcaniclastic of intermediate composition. Near contact with intrusive granite to west; no sulphides observed.

**APPENDIX D**  
**ANALYTICAL RESULTS**



























## SHANGRI-LA MINERALS FILE # B6-3276

PAGE 7


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31005 4500W	1	5	3	41	.4	6	4	130	1.44	4	5	ND	1	26	1	2	6	24	.21	.018	3	7	.13	134	.11	2	2.43	.05	.04	1	1
31005 4450W	1	11	2	58	.3	6	7	231	2.50	4	7	ND	2	25	1	5	6	54	.30	.052	8	12	.35	131	.16	9	2.41	.04	.06	1	2
31005 4400W	1	7	4	59	.1	9	9	308	3.02	2	5	ND	1	23	1	3	2	71	.32	.044	5	12	.40	80	.19	6	2.79	.04	.06	1	3
31005 4350W	1	9	2	47	.1	6	7	234	2.62	2	5	ND	2	23	1	2	2	60	.32	.045	4	10	.36	69	.15	2	2.24	.04	.07	1	1
31005 4300W	1	12	3	51	.1	7	7	212	2.23	2	5	ND	1	28	1	2	3	48	.26	.049	8	11	.30	184	.15	2	2.38	.04	.06	1	2
31005 4250W	1	8	2	55	.1	6	3	92	1.42	2	5	ND	2	13	1	3	2	29	.10	.087	5	6	.08	47	.12	3	2.10	.04	.02	1	2
31005 4200W	1	12	2	58	.2	8	6	219	2.32	2	5	ND	2	16	1	2	2	48	.19	.106	6	10	.27	64	.13	7	2.72	.03	.05	1	2
31005 4150W	1	8	6	42	.3	8	5	161	2.27	2	5	ND	2	16	1	3	3	49	.15	.074	5	10	.21	73	.14	2	2.85	.03	.04	2	1
31005 4100W	1	8	3	43	.3	9	5	145	2.23	3	6	ND	2	14	1	5	2	45	.12	.089	5	9	.21	58	.14	2	3.20	.03	.04	1	2
31005 4050W	1	4	4	44	.1	5	4	166	1.88	4	5	ND	1	11	1	3	2	40	.09	.095	3	7	.13	60	.15	2	2.62	.03	.02	1	2
31005 4000W	1	5	5	54	.2	7	6	273	2.37	2	5	ND	2	14	1	2	6	48	.13	.077	3	10	.18	88	.15	3	2.85	.04	.04	1	3
32505 4500W	1	12	3	60	.3	9	8	210	2.45	2	7	ND	2	30	1	3	2	49	.22	.076	4	11	.27	171	.15	3	3.23	.04	.07	1	2
32505 4450W	1	7	4	56	.2	6	6	184	2.20	3	5	ND	1	17	1	2	5	47	.19	.053	4	8	.25	73	.13	4	2.13	.03	.04	1	5
32505 4400W	1	7	6	55	.2	4	4	187	1.85	6	5	ND	1	12	1	2	2	39	.12	.076	3	7	.13	52	.13	5	2.09	.03	.03	1	1
32505 4250W	1	6	6	40	.1	5	7	289	2.33	4	5	ND	1	18	1	2	2	52	.26	.049	4	9	.29	64	.12	2	1.72	.03	.04	1	2
32505 4200W	1	6	9	46	.1	5	5	215	1.87	2	5	ND	2	12	1	2	2	37	.10	.153	3	8	.07	43	.13	4	3.27	.03	.03	1	1
32505 4150W	1	13	8	51	.1	6	6	377	2.29	3	5	ND	2	19	1	2	2	49	.21	.066	8	10	.26	85	.16	2	2.82	.03	.03	1	1
32505 4100W	1	26	5	75	.1	14	10	201	3.23	10	5	ND	4	33	1	2	2	64	.26	.093	7	20	.41	253	.15	3	3.75	.02	.06	1	1
32505 4050W	1	7	9	51	.1	8	6	314	1.88	2	5	ND	2	18	1	2	2	36	.13	.114	5	10	.12	93	.13	6	2.48	.03	.03	1	1
32505 4000W	1	11	2	56	.1	9	6	287	2.23	4	5	ND	2	20	1	2	4	45	.18	.092	6	11	.21	107	.14	2	2.63	.03	.04	1	1
STD C/AU-S	22	58	40	134	7.2	72	29	1044	3.96	40	15	8	35	50	17	14	19	65	.48	.104	37	60	.88	188	.09	37	1.72	.06	.14	12	49





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
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SAMPLE#	Mo PPM	Cu PPM	Pb PPM	Zn PPM	Ag PPM	Ni PPM	Co PPM	Mn PPM	Fe %	As PPM	U PPM	Au PPM	Th PPM	Sr PPM	Cd PPM	Sb PPM	Bi PPM	V PPM	Ca %	P %	La PPM	Cr PPM	Mo %	Ba PPM	Ti %	D PPM	Al %	Na %	K PPM	W PPB	Au†
1900S 1000W	1	4	5	29	.1	9	3	85	1.42	2	5	ND	1	27	1	2	4	23	.23	.016	4	10	.15	78	.10	3	1.53	.05	.05	1	1
1900S 950W	1	10	9	40	.1	13	6	129	2.11	5	5	ND	3	45	1	2	3	38	.40	.154	5	16	.19	108	.12	2	2.62	.03	.10	2	1
1900S 800W	1	14	2	62	.1	14	5	410	1.96	5	5	ND	2	30	1	2	2	39	.25	.070	7	16	.24	183	.13	4	2.07	.03	.07	1	2
1900S 750W	1	7	7	72	.2	9	5	272	2.12	3	5	ND	2	25	1	3	3	39	.26	.164	7	10	.25	140	.11	2	2.19	.03	.09	1	1











To accompany report by J. Falconer, P. Eng.

49° 14'

LOCKE PROJECT	
FOR: ADRIAN RESOURCES INC.	
BY: SHANGRI - LA MINERALS LIMITED	
GEOLOGICAL BRANCH ASSESSMENT REPORT	
MAGNETOMETER SURVEY	
OSOYOOS M.D., B.C.	
NTS: 92H-1,8	DATE: JUNE 1986
DRAWN BY: M.R.	FIGURE NO. 2





To accompany report by J. Falconer, P. Eng.


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LOCKE PROJECT	
FOR: ADRIAN RESOURCES INC.	
BY: SHANGRI - LA MINERALS LIMITED	
GOLD GEOCHEMISTRY	
OSOYOOS M.D., B.C.	
N.T.S.: 92H-1, 8	DATE: JUNE 1986
DRAWN BY: M.R.	FIGURE NO.: 6a

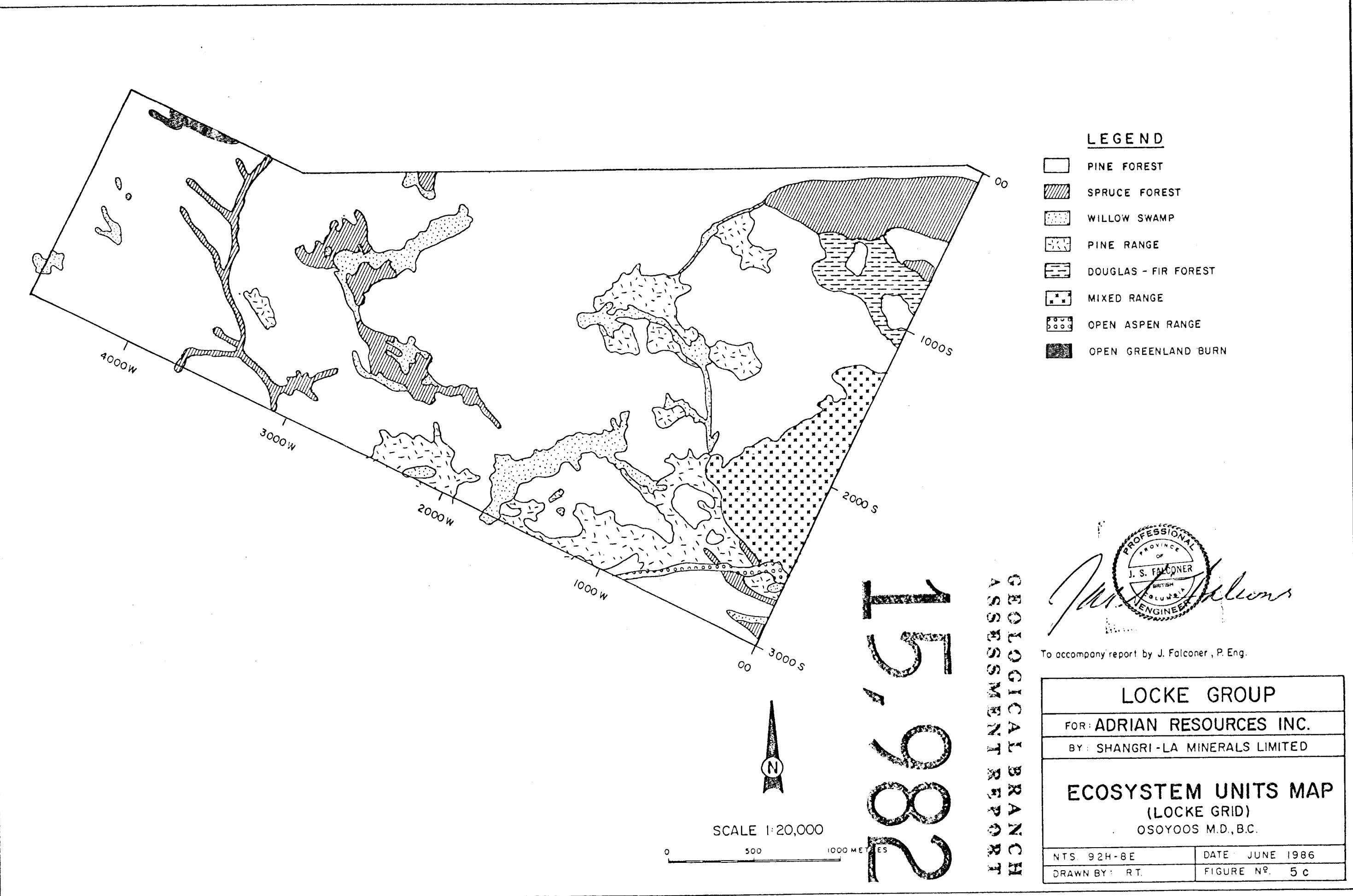
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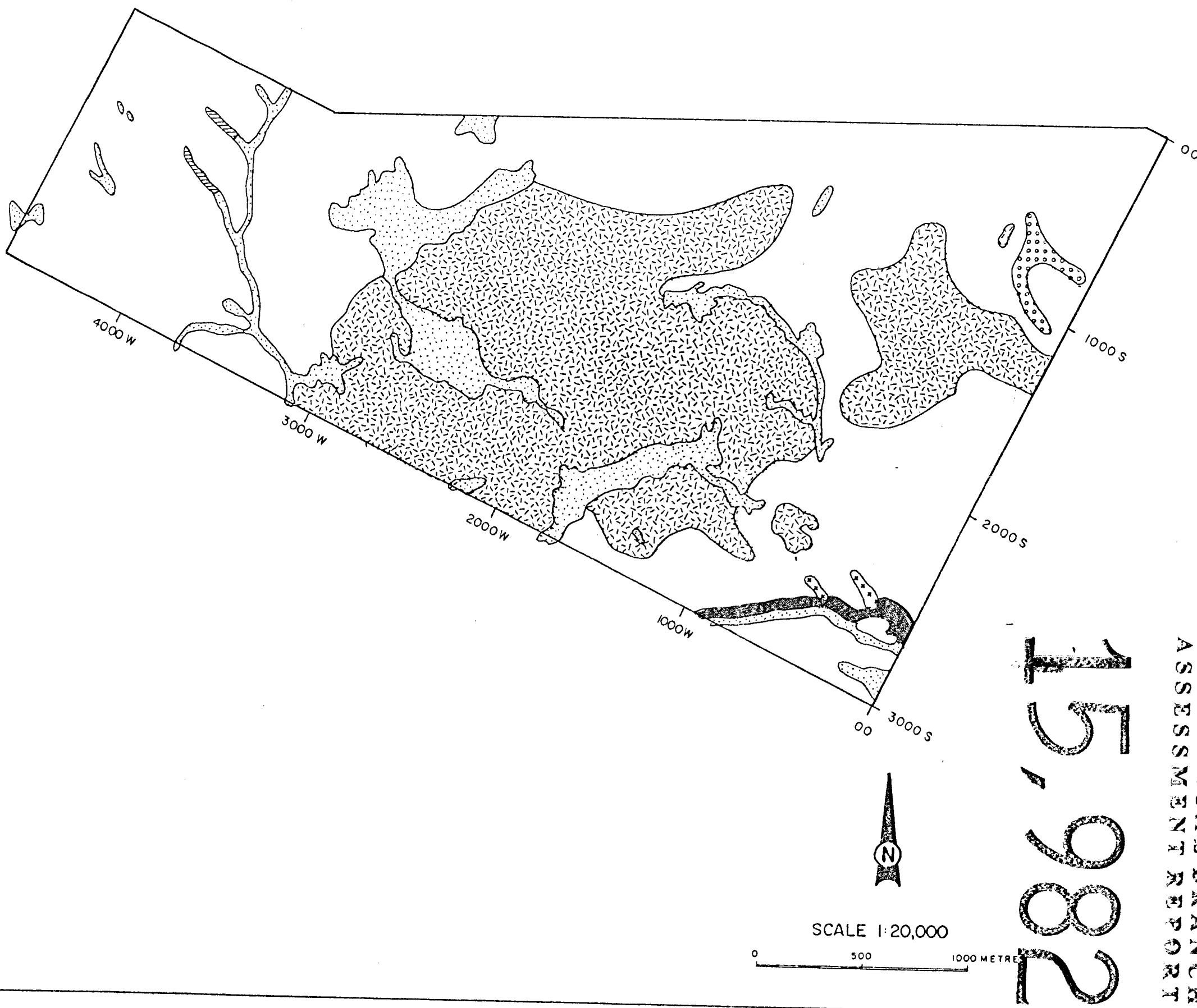
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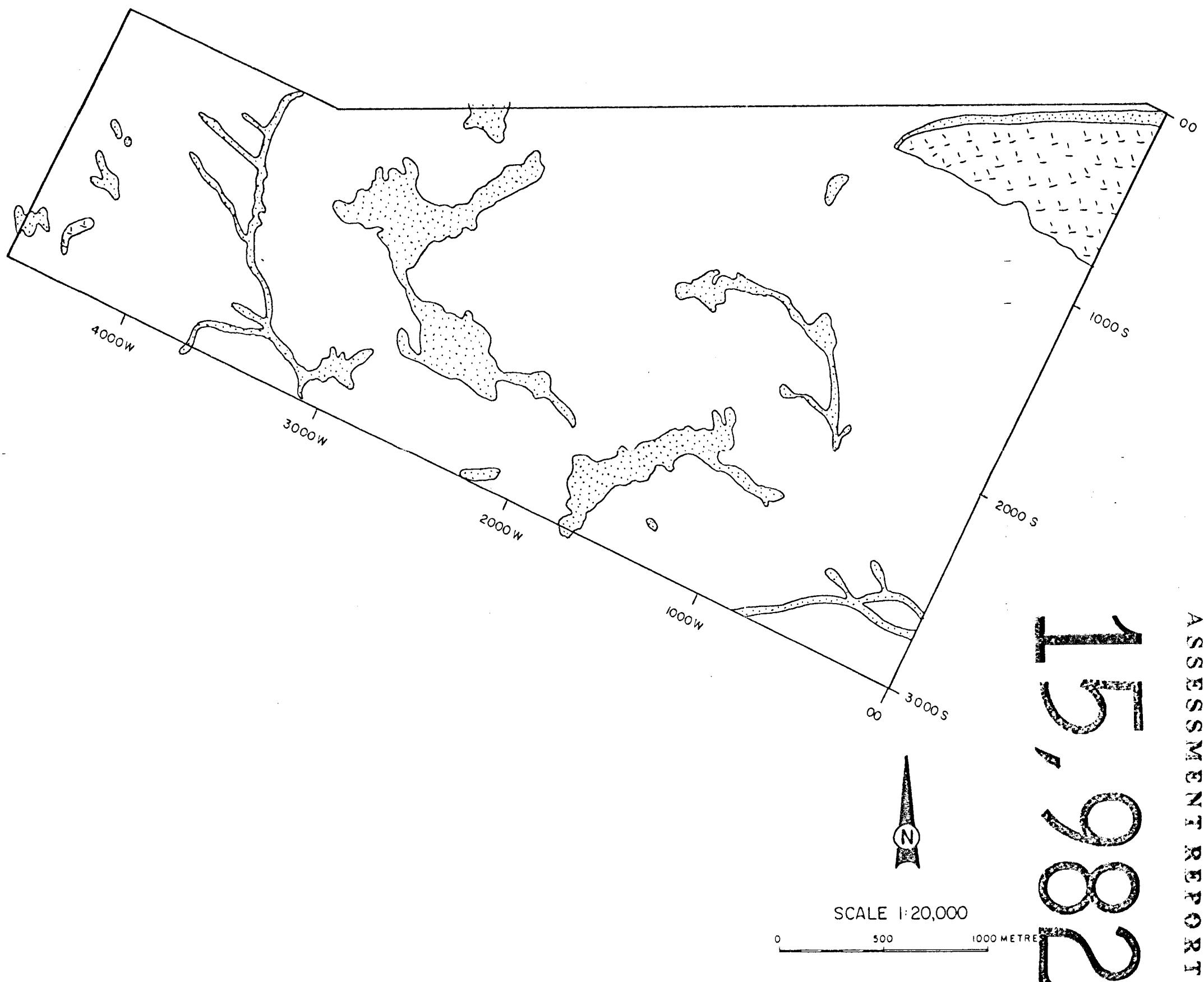
49° 14'

N

SCALE 1:5000  
0 100 200 400 METRES







To accompany report by J. Falconer, P. Eng.

LOCKE GROUP	
FOR: ADRIAN RESOURCES INC.	
BY: SHANGRI-LA MINERALS LIMITED	
(LOCKE GRID)	
SOIL PARENT MATERIALS MAP	
OSOYOOS M.D., B.C.	
NTS 92H-8E	DATE: JUNE 1986
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