Property File
092G-SE 037
Sumas Mountain

008238

PROSPECTUS

DEVELOPMENT OF A FELDSPAR PROSPECT ON SUMAS MOUNTAIN

NEW WESTMINSTER MINING DIVISION
122° 10' W., 49°7' N.

Submitted to the British Columbia
Mine Development Assessment Branch

by

QUALITY INDUSTRIAL MINERAL & SUPPLY INC.
37195 Ward Road, R.R.#4
Box 12, Abbotsford, B. C.
V2S 4N4

APRIL 1992

TO ACCOMPANY REPORT BY		
PEGASUS EARTH SENSING CORPORATION	SCALE —	DATE
	FILE —	FIGURE
	DRAWN	CHKD TR

TABLE OF CONTENTS

1.0 PROJECT FACT SHEET:

Corporate Data:

Project Name:	Sumas Sodaspar
Company:	Quality Industrial Mineral & Supply Inc.

Project Details:

Location:	Sodaspar
Estimated Capital Cost	$5 million
Minerals:	sodic feldspar
	$Na(K,Ca,Mg)(Al,Si)Al\ Si_2O_8$
Mine System:	Open Pit
Plant Capacity	100 Tonnes/Hr.
Possible Production	150,000 Tonnes/Yr.
Market	
Western North America	36-50,000 tonnes/Yr.
Pacific Rim Markets	50-150,000 tonnes/Yr.
Process Plant/Mill:	crushing/magnetic circuits
Proposed Mine Life:	+/100 Years

Access/Transportation:	Class 3 Road in place 2.8 Km.
Construction of:	
New Access Road	1.2 Km.
Main Haul Road	4.0 Km.
Truck, Railroad, Barging	Existing Facitilities

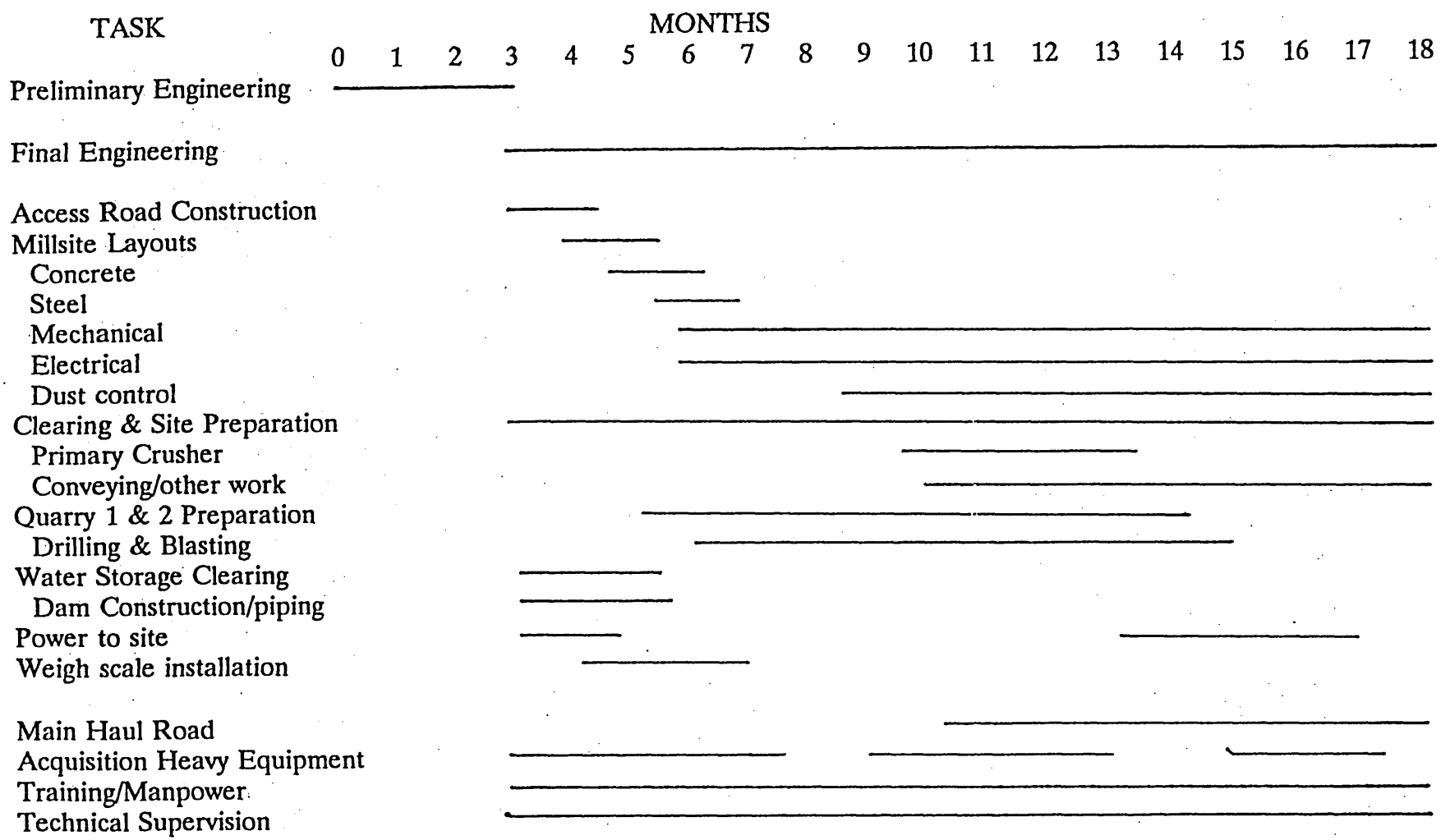
Power Supply	
Requirements:	+/- 1000 Kw. 440 volts

Workforce Information:

Operational Jobs:	11 - 16 Full time, 5 part time
Construction Jobs	20 (not including road)
Workforce:	20 Man-Yrs.
Indirect/Induced Jobs:	22

Mineral Reserves:	measured 36,000,000 tonnes
	indicated 50-100,000,000 tonnes

SCHEDULE


TASK
MONTHS
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Preliminary Engineering
Final Engineering
Access Road Construction
Millsite Layouts
Concrete
Steel
Mechanical
Electrical
Dust control
Clearing & Site Preparation
Primary Crusher
Conveying/other work
Quarry 1 & 2 Preparation
Drilling & Blasting
Water Storage Clearing
Dam Construction/piping
Power to site
Weigh scale installation
Main Haul Road
Acquisition Heavy Equipment
Training/Manpower
Technical Supervision

2.0 INTRODUCTION

Sodaspar (sodic feldspar), an industrial mineral, is the major source of alumina (Al_2O_3) which acts as a flux in the manufacture of glass, fibre-glass and in ceramic products such as kitchen sinks, toilets or floor tiles. It also acts as a filler for paint and asphalt tile.

North American major producers are located near Peterborough, Ontario, and North Carolina. Industrial minerals are freight sensitive. Freight charges for feldspar products to western consumers from eastern suppliers greatly exceeds the original cost at the producing plant.

The local market consisting of Western Canadian Provinces, Pacific Northwest States and Northern California now consume 36,000 to 55,0000 tonnes/Yr. The **Sumas Soda Feldspar Deposit** enjoys a significant freight advantage over eastern suppliers and is thus admirably positioned to capture much of this local market.

With measured reserves of 36,000,000 tonnes and a further indicated 50-100,000,000 tonnes, the Sumas Soda Feldspar is the largest known source of undeveloped feldspar in Western North America.

2.1 Location

The Sumas Soda Feldspar prospect on Sumas Mountain in British Columbia, contains rocks rich in feldspar outcropping over several kilometers and a few hundred meters in depth.

Exploration which began in 1985 resulted in the staking of several mineral claims August 14, 1986. Continued exploration and determination of a successful metallurgical process by Quality Industrial Minerals & Supply Inc.(QUIMS), has led to the production decision.

QUIMS owns 18 mineral claims in good standing grouped under the name 'Sumas Silica'. The claims, located within the New Westminster Mining Division, cover 450 hectares of mainly Crown Land (Figures 1 and 2).

2.2 Product

Sodic feldspar rocks consist of different varieties and ranges in colour. Several nearly vertical dykes and large masses containing pink to white coloured rocks will create a high quality commercial product.

Quality Industrial Mineral & Supply Inc. was incorporated for the express purpose of developing this sodic feldspar deposit.

2.3 Use

Sodic-feldspar and related products will be produced for glass, porcelain and ceramic manufacturers as well as manufacturers of fibre-glass and related products in the Western Canadian Provinces and Western region of U.S.A.

2.4 Reserves

Initial drilling(1991) and exploration has established **measured** mineable reserves of 36,000,000 tonnes. An additional 50-100,000,000 tonnes are **indicated.**

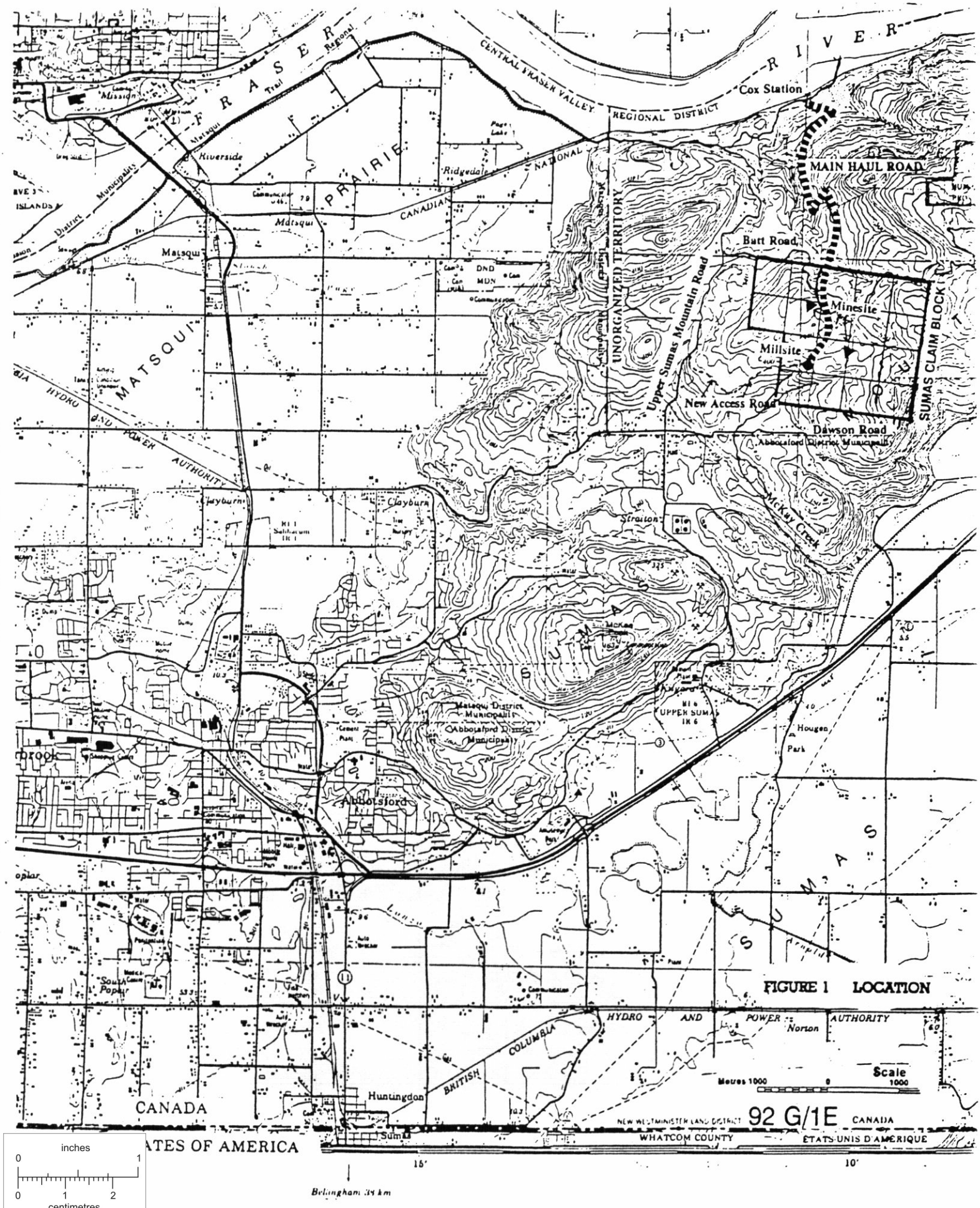


FIGURE 1 LOCATION

inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

2.5 Mine

Quality Industrial Minerals & Supply Inc. is looking to the future development of a soda feldspar open cut/pit mine on mineral claims Samus 1 - 4, and Nick 1 - 4, to supply the existing market needs (Figure 2). This involves mining, crushing, beneficiation, transporting, stockpiling, haul road construction to **existing barge and rail loading facilities at Chadsey Creek(Cox Station) on the northern arm of the Fraser River (Figures 1 and 3).**

The crushing, beneficiation plant, ore stockpiles and transport establishment will be located on the mineral claims of Quality Industrial Mineral & Supplies Inc.

3.00 PROJECT SETTING

The claims located on the west side of the Sumas Mountain Incorporated District, part of the Central Fraser Regional District are in an area zoned for **Multiple Land Use** (Figure 2). Access to the claims is presently gained off Upper Sumas Mountain and Batt Roads by an all weather gravelled forestry road which leads into the heart of claims (Figure 1). The closest main population centre is Abbotsford, located 10 kilometers south west of the mining property. The local community is termed Straiton with a Community Hall now on the eastside of Sumas Mountain Road, about 250 meters south of Dawson Road (Figure 3).

There are approximately 12 acreages south of the claims with residences along both sides of Dawson Road. The sodaspar mining operation will not interfere with these residences as they are approximately 1.5 Km.(1 mile) from the intended site of the operation. In February, 1992 there were 20 acreages of various sizes along Batt Road, all within the Wade Creek watershed drainage area. These residents likewise average some 1.5 Km.(1 mile) from the mill site.

A large tank farm belonging to the Trans Mountain Pipeline is located one kilometre south of the Dawson Road residences. The nearest industry--Clayburn Brick and Tile Products is three kilometers to the south of Dawson and Upper Sumas Mountain Roads (Figure 1).

Clayburn Industries and its predecessors have been in operation for nearly 100 years without any known interference to surrounding properties.

Less than two kilometers north of Batt Road, near the Fraser River; Mainland Sand and Gravel Ltd. operate two shifts (15 hours) for five days a week. Ninety percent of the material is barged down the Fraser River, the remainder is trucked to local markets.

The physiography of the mining area ranges from Elevation 320 m. (1000 feet) in the west to over 600 m. (1878 feet) above sea level to the east. The average local relief is 20 meters consisting of glacial carved craggy outcrops of exposed rock.

Soil cover is thin, usually less than 40 cm. to absent, exposing bare rock in colours from grey to white (frontispiece). The proposed active mine site has little to no soil cover. The property and extensive surrounding area is rugged with numerous logging roads criss crossing the area.

Drainage of the south part of the claims is via McKay Creek to the Sumas Canal. Wades Creek drains the north part of the claims to the Fraser River.

Logging of first and second growth hemlock and fir has removed all of the trees from the intended mine site. After scarification, slash burning, natural regrowth by deciduous shrubs and bushes (up to 2 meters) is and has occurred where sufficient moisture is present.

Reforestation by evergreen seedlings was undertaken about 5 years ago with average regrowth ranging from 60 cm. to 2 meters. Grazing of underbrush by sheep was attempted last year. However, many of the young seedings were grazed as well. The mine operation will produce a minimal amount of disturbance to reforestation.

Sodic feldspar is non-toxic with a neutral ph. The mining operation will entail stockpiling of bulk sodic feldspar. Upon processing to the desired marketable product, the rock will be trucked from the mill site to: Abbotsford or the CNR/CPR Rail siding or Chadsey Creek Barge Loading Facilities near the north end of Main Haul Road or Sumas, USA at the Burlington Northern Rail siding (Figure 1).

The project will consist of a weigh scale on the edge of the property with mine road access to feldspar stockpiles beside the beneficiation plant. Rock will be drilled and blasted from the hillside cut, transported to the mill site by ore truck for primary crushing, then by conveyors to grinding circuits. The resulting product will move by conveyor to stockpiles under cover.

When beneficiation is needed to satisfy certain customer requirements, the product may be screened, reclassified with magnetic and high tension separators after acid digestion, then sent through Knelson type cyclonic separators to produce a product which meets the exacting specifications demanded.

The local market will consume about 3000 tonnes/month feldspar resulting in truck traffic of 4 - 6 trips per day for a 5 day work week. Truck traffic will proceed from the Millsite via a new access road to the Upper Sumas Mountain Road and Abbotsford/Sumas USA via Sumas Mountain Road.

Once this market is achieved (est. time less than 2 years) all hauling will move to the Main Haul Road. Truck traffic will gradually increase to a maximum of about 20 trips per day (15,000 tonnes/month). The Main Haul Road follows the 'Old Wagon Road' (on Crown Land) from Paddlewheel Dock/Cox Station through the north end of the claims to the Millsite (Figures 1 and 3).

4.0 GEOLOGY

4.1 Regional Geology:

Roddick (1956) first mapped this area as being part of the Chehalis Volcanics. He indicated that the rock present consisted of massive andesite and dacite porphyries with phenocrysts of plagioclase feldspar. Granodiorite of the Coast Range Batholith is present on the east side of Sumas Mountain. Quaternary sediments, mainly alluvium cover lower elevations including the Fraser River Delta.

4.2 Property Geology:

Non-commercial granodiorite and volcanic andesites surround the Sumas feldspar-rich dykes (Units 4 & 5) in Figure 4. The granodiorite and andesite is a medium-grained, grey to green in colour.

The feldspar dykes exist at the surface. Limonite is common on joint and fracture surfaces. The feldspar is highly jointed and fractured and breaks readily into resistant angular fragments which are now used locally for road construction. Quarrying has been done in the northeast part of the property (Samus 4) to provide subbase aggregate for nearby subdivisions.

4.3 Geochemistry

The critical factor in an economic evaluation of feldspar is the iron (Fe) content of the raw material. Raw material must have a sufficiently low iron content that it can be used without much/costly beneficiation.

The Fe content of the rocks below the zone of weathering is lower than that of samples from near the surface. Thus, drilling has indicated that large tonnages of rock with iron

Legend

Feldspar-rich Dacite/Latite Dykes

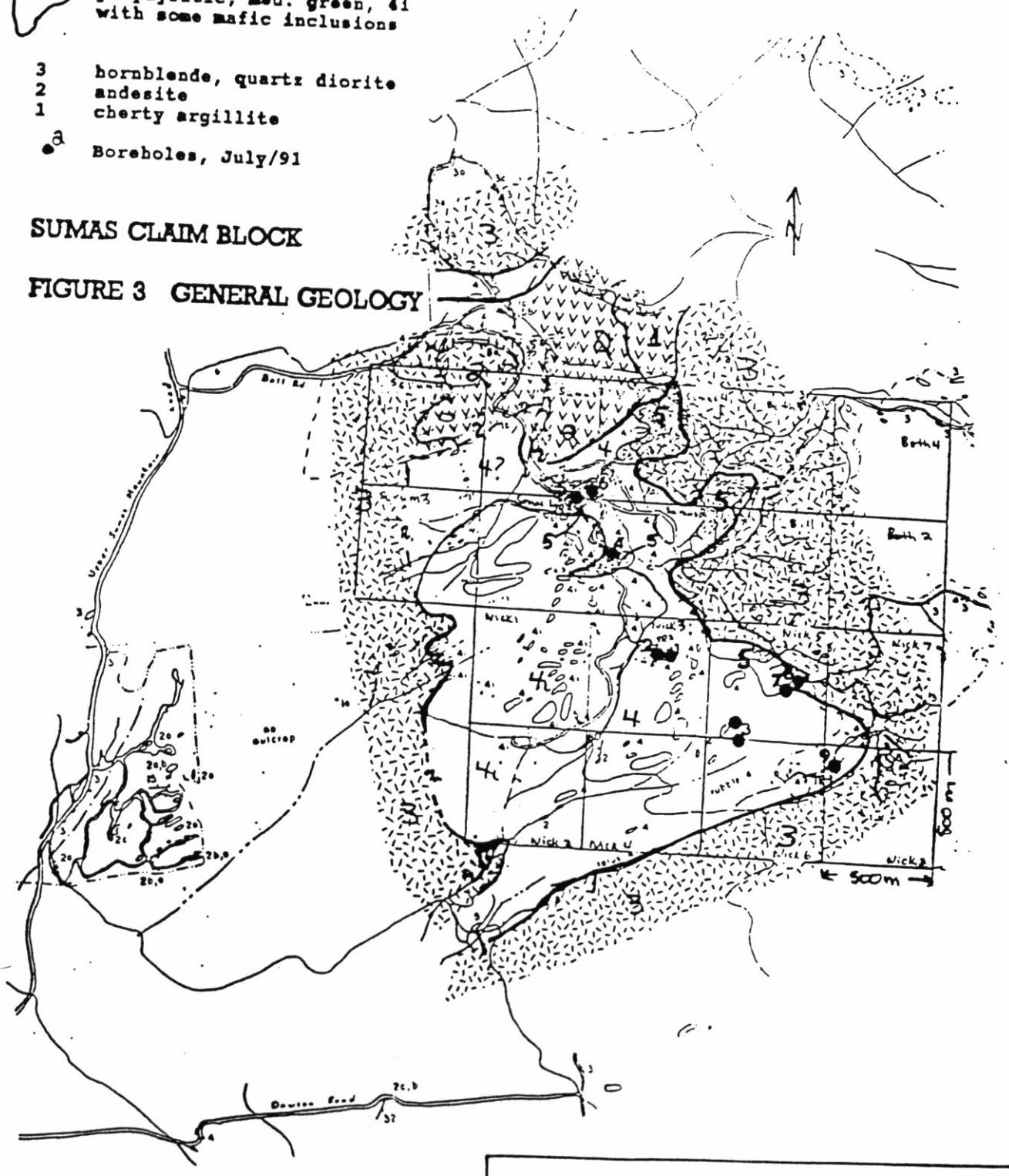
5
4 leucratic, cream to white porphyritic, med. green, 4i with some mafic inclusions

3 hornblende, quartz diorite
2 andesite
1 cherty argillite

a Boreholes, July/91

SUMAS CLAIM BLOCK

FIGURE 3 GENERAL GEOLOGY



inches
0 1
0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

GEOLOGY

TO ACCOMPANY REPORT BY

PEGASUS EARTH SENSING CORPORATION

SCALE		DATE Apr '92
FILE 21-07		FIGURE 4
DRAWN TR		CHKD

contents of less than 0.35% exist below surface. For most users of feldspars allowable Fe varies with the intended use from:

-0.25-0.35% for fibreglass,
-less than 0.05% for high quality glass and porcelain,
-0.30% for low quality glass.

The beneficiation process will reduce the rock to silt size by grinding and crushing. **No heavy metals or toxic minerals are present in this rock type.**

4.4 Reserves

In an effort to evaluate Fe content with depth as well as geology it was decided to drill ten widely spaced boreholes for a total of 96 meters. Samples were analyzed by Vancouver based Acme Analytical Laboratories, SGS-General Testing Services Inc., Quanta Trace Laboratories, and Chemex Labs Ltd.

Although the actual thickness of the dykes is considered to be a few hundred meters, for conservative calculations; A MINIMUM DEPTH OF 50 meters is used. Geological mapping, drilling and measuring of exposed sections has revealed that 36,000,000 tonnes of sodic feldspar exists near the surface. These materials will need little beneficiation to meet the standards and specifications of the end users.

If one were to beneficiate some of the dark colored rocks (Unit 4) with a dilute acid wash, the tonnage of feldspar would be immense--in the order of an additional 50,000,000-100,000,000 tonnes.

Extensive laboratory testing has shown that it is possible to produce a low-iron feldspar from this additional tonnage, suitable for the exacting standards of high quality glass or porcelain.

5.0 PROJECT DESCRIPTION

Sumas sodaspar feldspars are composed of anhydrous alumina silicates (Al,Si)Al Si_2O_8) in combination with chemical base elements such as sodium Na, potassium K, calcium Ca, and magnesium Mg. Since Na(sodium) dominates the base elements of the Sumas feldspar it is termed **a sodium or sodic feldspar.**

Sodaspar acts as a flux and lowers the temperature at which the glass or ceramics must be fired. The sodaspar from the mine will undergo crushing, grinding, magnetic separation and milling to acquire the proper particle sizes needed by the users. For the manufacturers of glass products the material is ground to 20-40 mesh size (coarse sugar size) whereas manufacturers of ceramic products need the feldspar ground to -200 mesh (fine sugar size).

The project proposed is a small tonnage open cut/pit mine. It will consist of a weigh scale on the edge of the property with mine road access to feldspar stockpiles beside the beneficiation plant. Rock will be drilled and blasted from the pit, transported to the mill site by ore truck for primary crushing, then by conveyors to grinding circuits. The resulting product will move by conveyor to stockpiles under cover. If beneficiation is needed to satisfy certain customer requirements, the product may be screened, reclassified with magnetic and high tension separators, then sent through Knelson type cyclonic separators to produce a product which meets the exacting specifications demanded.

The ultimate production flow chart will approximate the following:

Quarry
↓
Primary Crusher
↓
Surge Bin
↓
Secondary Crusher
↓
Coarse Ore Storage Bin
↓
Cyclone Crusher/Grinder
↓
Knelson Concentrator--Heavy minerals to drums
↓
Tertiary Storage Bin--Bulk Loading Fibreglass Grades
↓
Wet Screens
↓
Roll Crushers
↓
Magnetic Drums--Heavy minerals to drums
↓
Quaternary Storage Bin
↓
Rotary Drying Screens--Product Storage--Bulk Loading Glass Grades
↓
Air Classifiers
↓
Product Storage
↓
Bulk/bagged Loading of Ceramic-Extender Grades

5.1 Opencut/pit Development

There is practically no overburden on the deposit as several alpine glaciers scoured the top of Sumas mountain removing previous weathered soil and rubble. Numerous outcrops of ore can be seen on the surface. Depending on the type of feldspar desired by the customer, two or three of these outcrops will be drilled using a tracked 30 ton excavator mounted with a Tamrock-Dp 438 rotary hammer rig.

The drilling pattern will depend on the structure and geology of the rock but benches a maximum of 12 meters high and up to 10 meters wide, will be created to ensure a high degree of safety. In general holes will be 9 cm wide and drilled on a 2 x 2 meter pattern using explosives for separation. A 1000 kg. drop ball may be used for secondary breaking. A front end loader (Cat 980 equivalent-20 tons) will place the pit-run into two 15 ton off road trucks for removal to the plant. A 25 ton D-7 Caterpillar, will be used to construct local access roads and assist in the mining.

Production blasting will be done once or twice a week to supply sufficient material to the plant for beneficiation. Blasting will be controlled to mitigate against noise and ground vibration.

5.2 Crushing Plant

Pit-run ore is discharged into a surface bin feeding a 35 ton jaw crusher to reduce rock to -15 cm.(6"). This is further reduced to 19 mm.(¾") by a secondary crusher and transferred to a crude ore storage building. Ore then passes through a 41 cm.(16") cyclone crusher which reduces the material to 100% passing a 30 mesh sieve and then through a Knelson type Cyclone Concentrator to separate most of the heavy minerals. The material is then stored. Crushing will be performed on a one shift per day basis. The discharge from the Knelson Concentrator will be stored in drums and sold to paving companies.

5.3 Beneficiation Plant

The material (now -30 mesh) will be further upgraded by being fed to an optional grinding circuit, low intensity magnetic drums, screened and then sent to high intensity electromagnetic separators and scalping screens. Discharge from the magnetic separators will be sold as iron ore. Heavy mineral rejects from the magnetic circuits will be stored in drums and also sold to paving companies. The upgraded product will be dried in a small rotary dryer and sent to storage bins at the millsite.

Finished product storage will be bagged or sold in bulk to end users.

Throughout the entire mill, particular attention will be paid to dust collection.

A mini-laboratory will be set up in the plant for quality control. The quality control program starts with sampling drill cuttings and carries through to sampling mining faces, several checkpoints in the mill, and as products are loaded unto conveyances for delivery to customers. Routine chemical analyses include determination of Al_2O_3, Na_2O, K_2O, CaO, MgO Fe_2O_3, heavy mineral content, sieve analyses for particle size, cone fusion tests and dry brightness.

An 8 meter high reinforced concrete/compressed earth dam will be constructed to provide water for local plant need and fire control.

The water pond will be located in a natural rock bowl gouged out by glaciation (Figure 1). It will contain a maximum of 13,500,000 litres (3,000,000 gallons) of water. Provision will be made to release a minimum of 1000 litres/hour during the summer months in order to enhance downstream habitat in the ephemeral drainage that leads to McKay Creek.

5.4 Loading Facilities

A weigh scale will exist at the plant. Our estimated penetration of the local market (Western North America) will result in the monthly movement of 750 tonnes by bags via trucks and 2250 tonnes in bulk by rail or truck. Assuming that the average truck can move 30 - 35 tonnes, this will result in an average of 5 trucks/day for 20 days/month.

Barge and/or rail loading facilities exist at Chadsey Creek (Cox Station) on the northern arm of the Fraser River or Abbotsford or Sumas USA Interchange (Figures 1 and 3). Once the Main Haul Road has been reopened, silos for holding bulk grades of feldspar will be constructed near Cox Station. Dust control will be by water sprays.

5.5 Waste Management/Pollution Control/Power Requirements

A 440 volt generator will be used as the initial power supply later supplanted by a 3 phase B.C. Hydro 440 voltage line which will be routed from Sumas Mountain Road. Fuel tanks at the millsite will be bermed for safety and accidental spillage. Garbage will be burned in a covered incinerator. Heating will be done with propane with tanks serviced locally. Also, a chemical toilet will be used. No permanent camp is necessary except facilities for a night watchmen.

No tailings will be produced. Water sprays will be used at the crusher to minimize dust when needed. The ultra fines of feldspar are valuable. Every effort will be made to maximize the collection and minimize the loss of fines.

The millsite will be encircled by ditching to capture any silt laden water channelling it to bio-filtered drains for eventual release. The discharge will be monitored according to the Pollution Control Objectives.

Dustfall emission will be measured in a form (mg/(dm^2 d)) and manner specified by the Director of Pollution Control for the Province of British Columbia. Water sprays will be installed at dust generation points.

All laboratory samples left over from assays will be collected, returned to the head end of the separation process. Wash water from glassware will be run into a buried PVC drain line and through bio-filters.

6.0 ENVIRONMENTAL CONSIDERATIONS

6.1 Present Aspect

In consideration of the fact that the area is now partially exposed rock, covered by a thin soil cover disturbed by two sessions of logging (early 1900's and 1980's) and cris-crossed by logging roads blasted out of the rock, it would appear that very little further surface disturbance is possible. The area is and has been burned in many places, which has destroyed much of the pre-existing moss, mulch cover and organic material in the soils. Now burned and bare rock is common throughout the claim block.

Because the rock (feldspar) exposed on the surface is heavily fractured it breaks readily upon a minimum of blasting into 'orange to grapefruit' size materials. Since readily exploitable gravel deposits on Sumas Mountain, are rare, this material is used extensively by the locals as sub base for roads.

Glacial overburden averages less than one meter in thickness except in small closed depressions. Only in the northern half of Samus 2, on both sides of the South Fork of Wade Creek leading towards 'Chicken Smiths's Ranch' is an area of thicker glacial materials, ranging up to 4 meters in depth.

As a result of logging, road construction and multiple burnings, retention of precipitation in the surficial soils is now drastically decreased (from the original state), allowing more rapid and oft catastrophic runoff to the drainage of Wade and McKay Creeks. Nevertheless, an attempt to re-stabilize this area is being conducted in part under a reforestation program by Wood-Lot License 045 (Deryle Kelleher) and by the Province of British Columbia Chilliwack Provincial Forest.

6.2 Mining

The sodaspar claim block consists of outcrops of exposed rock which have been extensively logged to clear-cut conditions. Because the grade of feldspar is variable and blending of rock is necessary to achieve a saleable product, from one to three small open cuts are envisaged. The open cuts with 30 - 50 meter long faces will have flat floors and back stepped walls of 12 meters high and 6 - 10 meters wide at each level.

Mining will initially proceed laterally into the hill side outcrops of feldspar. There is no permanent flowing water to/or from the proposed opencut/pit sites. Dust control will be by water sprays during crushing, hauling and screening.

Initially, ore for local markets will be moved by truck to Cox Station via a newly constructed access to Upper Sumas Mountain Road. The Main Haul Road will be utilized for bulk tonnage sales (Figure 3).

6.3 Drainage

The area is dissected by natural faults which have been gouged out by glaciation. A NE-SW drainage divide crosses the mid point of the claim block. Several small unconnected closed depressions have formed bogs which collect drainage from the outcrops.

The north half of the area is drained to the Fraser River by Wade Creek. The south half of the area drains via intermittent watercourses into bog depressions which eventually seep/flow into McKay Creek and then over two main waterfalls, the lower which is termed 'Hole in the Wall', to the Sumas Canal (Figure 1).

6.4 Water Storage

Water for local plant needs including dust management and fire control will be met by establishment of storage pond located in a glacially gouged depression, 150 meters southeast of the proposed Millsite (Figure 3). A proper spillway will be designed for sudden and winter overflow in addition to a minimum daily release allowance of 1000 litres/hour to sustain downstream flow. As stated above, the pond will contain about 13,500,000 litres (3,000,000 gallons).

6.5 Climate/Precipitation

The west coast climate of Sumas Mountain is characterized by moderate temperatures year round with heavy precipitation during the months of December to March. An annual range of temperature of 15°C. with about 1950 sunshine hours characterizes the claims area. As a result of temperature and pressure gradients created in the land/sea interface in the Georgia Strait, wind directions reverse during the year. For much of the winter, the land is colder than the water resulting in the flow of air towards the Georgia Strait. Winds are altered by the topography and blow from a northeast direction across the claims. This flow reverses in summer when the gradient turns in the opposite direction with wind movement from the southwest.

Winter temperatures are moderate with occasional slight frost penetration in the upper layers. The Frost Free Period (FFP) is about 150 days.

Total annual precipitation on the Claim block is projected at 1800-2200 mm.(71 - 86 inches). About 80% of the total annual precipitation falls during the period of October to April. A mean monthly deficit (actual evapotranspiration) of 26 mm. (Abbotsford Airport), occurs in the months of June - September, using a soil moisture storage capacity of 100 mm. of water in the A and B horizons. The soil storage is zero in the bare exposed rock of existing terrain.

The soil moisture regime is Class Subaquic or saturated for short periods of time in the winter months. The soil temperature is mild mesic with a MAT (Mean Annual Soil Temperature) of 8° C. to less than 15° C. degrees and a growing season ranging from 200 to 220 days for temperatures over 5°C.

6.6 Hydrology/Groundwater

The claim block area does not support any sustainable aquifers. Since 'tight' bedrock is exposed on the surface or near surface, precipitation does not have an opportunity to collect except in small bog depressions. No wells are on record to give yields or quality of water.

An area known as 'Chicken Smiths's Ranch' in Claim Nick 5/Bill 1 is situated in a bog depression (Figure 2). It is expected (based on the 'geological lay of the land'), that an ephemeral shallow water aquifer of questionable quality and/or yield would exist in (winter months) glacial rubble along the bedrock interface (about 4 meters down). Elsewhere, the near surface exposure of bedrock precludes a similar occurrence within the remaining claim block (frontispiece).

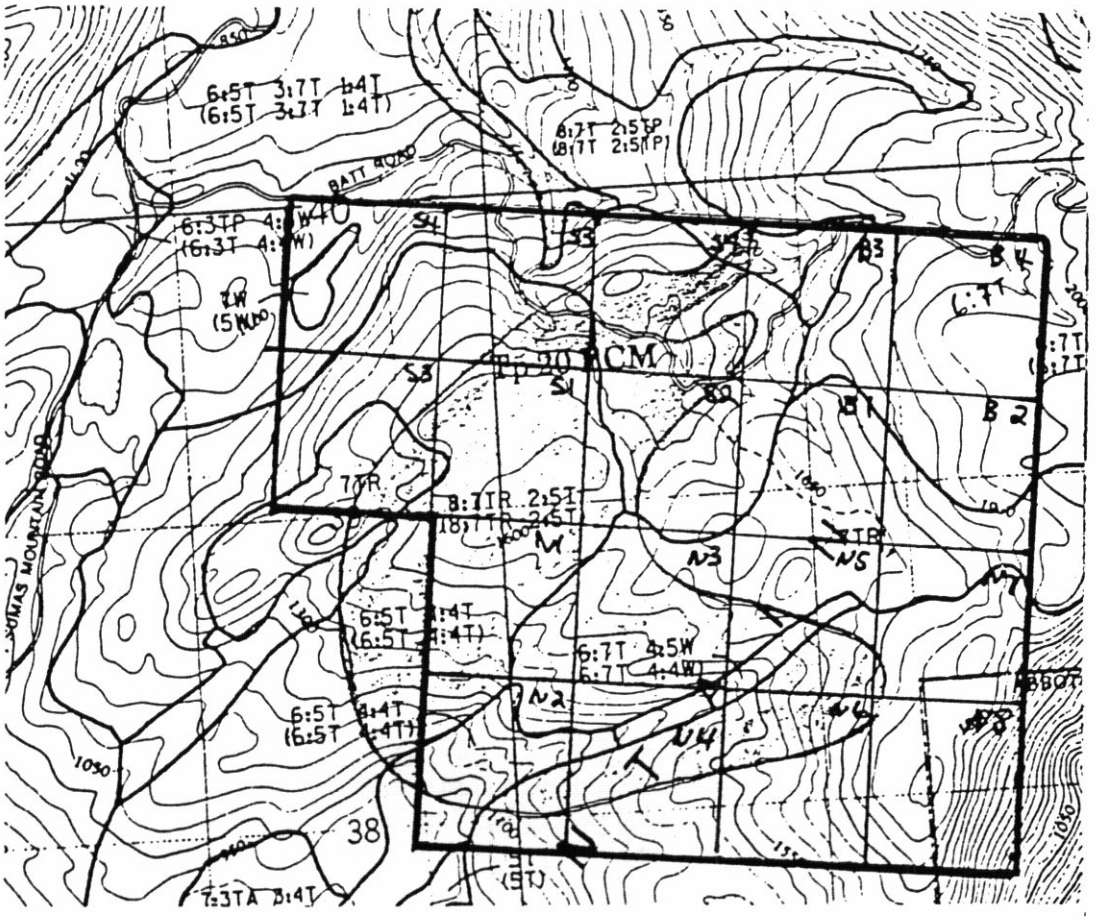
No surface ponding is evident except in closed depressions. In these areas organic, accumulations of 30 cm.(Histosol or Bog Soils) have been mapped overlying a silty rubble. All of the upland soils are extremely coarse textured with rapid water infiltration and downward movement. Since the water holding capacity is low, there is no need for special drainage provisions as natural soil drainage is most effective.

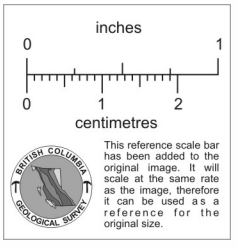
6.7 Soils/Land Use

Weakly developed soils are present throughout the claim block. The soil profiles, depending on the drainage and aspect, most closely approximate Dystric Brunisols (no Ah horizon) and Humo-Ferric Podzols (Bf horizon) in low lying areas. Dystric Brunisols commonly occur where there is little weathering (on tops and sides of the exposed rock outcrops). They are characterized by acidic soils and little translocation of soil materials. Humo-Ferric Podzols occur near the base of the rock outcrops and grade laterally into Gleysols and Organic soils which form bogs in the closed depressions.

The land in this area has been zoned as MULTIPLE LAND USE DESIGNATION with none to limited capability for agriculture as can be seen in the following illustration. The Sumas Claim Block and orebody have been overlaid onto a map showing the Canadian Land Capability Classification for Agriculture. Limitations are due to general steepness of terrain, low nutrients and water holding capacity, stoniness, and shallow profile. Examination of the frontispiece demonstrates these features. The main orebody generally lies on Class 6 - 7 TR which states that:

"land in this class is non-arable...to no capability for arable culture or sustained grazing.." with 'T' equating to steepness of topography and 'R' to rockiness or shallow bedrock.





SCALE 1:25,000

6.8 Surficial Geology

The area was last glaciated by ice moving from the northeast to the southwest judging by striations in the local rock bosses. The surficial materials consist of remnants of a washed glacial till composed of angular to well-rounded granitic and volcanic boulders derived locally as well brought from the nearby coastal mountains.

In addition, very angular coarse to medium sand consisting mainly of feldspathic and quartz fragments comprise 60% of the fines. Much of the area is exposed rock with a thin colluvial rubble forming the surficial cover.

Organic profiles up to 80 cm.(Histosol?) in thickness consisting mainly of partly decomposed woody fragments are common in several of the closed depressions. The organic material rests abruptly on a washed diamicton or glacial till.

6.9 Erosion Potential

Although slopes are steep, nearly vertical in some places, the erosion potential is extremely low as the soils are very permeable. Numerous patches of bare rock are readily evident (frontispiece). No hazardous areas exist.

6.10 Forestry/Vegetation

Although the claims have been logged the surrounding forests belong to the Coastal Western Hemlock Biogeoclimatic Zone. Characteristic climax trees in this surrounding zone are Western Hemlock Tsuga heterophylla and coastal Douglas-fir, Pseudotsuga menziesii. In the logged off claims (see frontispiece) the thin soil commonly supports shrubs such as salal (Gaultheria shallon) in shaded areas, Alder (Alnus rubra) and Birch (Betula paprifera?). Other shrubs (in full sunny areas) growing on the claim block, are blueberries (Vaccinium membranaceum), salmonberry (Rubus spectablis), elderberry (Sambucus racemosa),huckleberry Vaccinium occidentalis and false azaelas (Menziesia ferruginea).

A few conspicuous alpine meadow species such as lupines (Lupinus sp.) and anemones (Anemone sp.) grow in profusion along existing access roads. In addition, dominate ground cover includes the northern holly fern Polystichum lonchitis, sword fern Polystichum munitunm and club mosses Lycoposium alpinium.

In better drained areas, redtop (Agrostis alba), berberis (Berberis repens L.), margaritas (Anaphalis margitacea-pearly everlasting), many beautiful pink and white foxgloves (Digitalis purpureum).

In poorly drained areas near the bog depression are soft rush (Juncus effusius), cattail (Typha latifolia), creeping buttercup (Ranunculus repens) and even some skunk cabbage (Lysichitum americanum).

Reforestation by the following species: Grand Fir (Abies grandis), Douglas Fir (Pseudotsuga menziesii) and Western Hemlock (Tsuga heterophylla) was begun in 1985? resulting in maximum growth of 1 meter. An attempt to control competing species of vegetation by grazing of sheep was conducted with mixed results, in summer of 1991.

6.11 Wildlife

Sumas Mountain falls under the jurisdiction of Management Unit 2-4 where shooting is not allowed.

Lack of tree cover combined with low soil moisture retention has created arid conditions in summer. This has held growth to a minimum except for the profusion of grass species(Agrostis stolonifera??-bentgrass). Lack of suitable cover or habitat has restricted wildlife activities to relatively sparse populations.

Perhaps the only exception to this is the common sign of blacktail deer (Odocoileus sp.) and coyote (Canis latrans). Although two bucks were once observed on the site (16 field visits in 2 years) several game trails along the bog depressions and discussions with bow hunters suggest that deer are relatively common except 'during hunting season'.

Sparse populations of opossum (Didelphis virginiana), mountain beaver (Aplodontia rufa?), columbian ground squirrel (Spermophilus columbianus), woodchuck (Marmota monax), porcupine (Erethizon dorsatum), bobcat (Lynx canadensis), blackbear (Ursus americanus),

Amphibians such as frogs (Rana catesbeiana?) inhabit the edges of bog depressions. Climatic conditions on the claim block are extreme ranging from very dry(parched earth) to very wet in the winter time. These severe climatic conditions inhibit the growth and establishment of diverse animal species.

Birdlife is notable for conspicuous omissions. Scarce populations of spruce/willow (Franklin) grouse (Canachites canadensis F.), crows (Corvus brachyrhynchos?) and an occasional whisky

jack or Canada jay (Perisoreus canadensis) have been observed. In the autumn mallard ducks (Anas platyrhynchos) have been seen feeding in some of the bog depressions on the far eastern side of the claim block.

Several high (exceeding 20 meters) waterfalls as well as an ephemeral summer flow, preclude the incursion and establishment of salmonoid populations on the upper reaches of McKay and Wade Creeks. However, a dwarf subspecies? or geographic variant of coastal cutthroat (Salmo clarki spp.) is resident in McKay Creek south of the claims on both sides of Dawson Road in the McKay drainage. Local residents claim that the maximum size averages less than 10 cm.(4 inches).

No tailings are generated from the mine operation. If dust or fines from the milling operation were to be accidentally discharged into the drainage no harm would be done. The reason for this is that the specific gravity of the fines is similar to quartz and the particles would settle rapidly into the bed of the stream. In addition, since **no deleterious/hazardous minerals are present in this rock type the habitat would not be adversely affected.**

6.12 Archaeology

A meeting with Lester Ned, Chief of the Sumas Indian Band I. R. 6 was held on March 19, 1992. Lester Ned states:

> "...The Stol Nation/Sumas Indian Band does not have any ancestral land claims in the Sumas Mineral Claim Block area or access areas"...

7.0 SOCIAL AND ECONOMIC CONSIDERATION

The Sumas Mountain area has supported mining and quarrying continuously for over 100 years. As the area is close to major population centres and access recently improved, an explosion in real estate speculation by non resident and resident land owners is occurring.

The claims are located in an area zoned for Multiple Land Use (Figure 2). The closest main population centre is Abbotsford, located 10 kilometers south west of the mining property. The local community is termed Straiton, with a Community Hall now on the eastside of Sumas Mountain Road, about 250 meters south of Dawson Road (Figure 1).

There are approximately 20 acreages south of the claims with permanent residences along both sides of Dawson Road. Hobby farm/semi commercial?? establishments such as the Happy Hollow Nursery (B. Greenwell/Webber), kiwi fruit farm (Beamer), Flume Creek Bulldozing (Ted Jago), Mathers Enterprises-logging, stone sculpture/mason (T. Rogac) and general farming.

The sodaspar mining operation will not interfere with these residences as they are approximately 1.5 Km.(1 mile) from the intended site of the operation. In February, 1992 there were 20 acreages of various sizes along Batt Road, all within the Wade Creek watershed drainage area. These residents likewise average some 1.5 Km.(1 mile) from the mill site.

Sumas Mountain and Batt Roads have large properties being divided into acreages (min. 5 acre parcels) e.g. Fort St. John Oil Property (80 acres) recently purchased by Gen-Con (A. Russell) a non-resident developer. Bakstad, a non-resident (160 acres) located on the eastern end of Batt Road is in Phase II of 5 acre subdivision. Mathers Way, a paved access off of Dawson Road, constructed by Joan Hay and her associates, non-resident developers (56 acres) has sub-divided the land into 5 acre lots.

Ed Donkerly, (north and northwest of the junction of Batt and Sumas Mountain Road), a relatively recent non-resident, has been subdividing into 5 acre lots for the last few years. Udy, long time resident, is subdividing 80 acres into 5 acre lots on the south side of Dawson Road. On the north side of Dawson Road, south of the claims, G. Emerson, a resident developer is attempting a subdivision of 40 acres adjacent to Cole Road Right-of-Way.

Currently Sumas Mountain and surrounding areas are experiencing a loss of work available in industry due to the closing of numerous factories and plants. There is an abundance of experience and qualified people in the area from which QUALITY INDUSTRIAL MINERAL & SUPPLY INC. may draw.

It is estimated that the Mine would require a total of about 200 operating days to supply the required local tonnage increasing to 240 operating days using the Main Haul Road. This equates to a total of approximately 16 full-time and 5 part time employees and an income increase in the order of $800,000.00 each year.

Unemployment is a serious problem especially for young people. The mine will have an in-house training program for specialized positions. QUALITY INDUSTRIAL MINERAL & SUPPLY INC. will be an equal opportunities employer. Local people will fill most of the needs of this mine, thereby incurring no negative influence to schooling, medical, municipal, policing, or other such support systems. Contact with most residents to date has been helpful and encouraging.

Economics indicated justification by QUALITY INDUSTRIAL MINERAL & SUPPLY INC. to invest an estimated $5,000,000.00 in the project which includes 5200 meters of haul road. At full capacity, benefits to local suppliers and including taxes will approach $1,800,000.00 per year.

QUALITY INDUSTRIAL MINERAL & SUPPLY INC. will be major exporters of feldspar and refined feldspar products to Western Canadian Provinces, Western United States and Pacific Rim Countries. Competitors in that market include mines/quarries situated in Eastern Canada or Eastern United States. A significant advantage in transportation cost is achieved with the Sumas Mine. Sufficient ore tonnage is available to produce a significant stability to the overall local economy of this area of British Columbia.

8.0 CORPORATE INFORMATION

QUALITY INDUSTRIAL MINERAL & SUPPLY INC.(QUIMS) is a small private British Columbia company that has raised all its capital by private stock placement. The following director and technical consultants are involved in developing this project:

JACK D. LEE (1931-) President and Director of QUIMS, 37195 Ward Road, Abbotsford, Straiton Area, B.C., V2S 4N4; resident of Sumas Mountain since 1978, businessman and prospector since 1957, President of LeeBilt General Contractors since 1960 and Sparton Equipment Ltd. since 1976. Jack has developed a sought after expertise in supplying and installing remote microwave tower foundations and anchors. He has gained his experience with B.C. Telephone having worked on nearly every Microwave site in British Columbia and with RKTG Consulting Engineers. He is a innovator/inventer having developed several practical improvements and refinements for drilling using a Warner Swaisy 30 ton excavator mounted with a Tamrock-Dp 438 rotary hammer rig.

JOHN H. INGLIS, C.G.A. (1928-) of 4550 East Hastings Street, North Burnaby, B.C. V5C 2K4 is the Corporate Accountant for QUIMS.

TORONTO DOMINION BANK on Hastings and Rosser, North Burnaby is the corporate bank for QUIMS.

PEGASUS EARTH SENSING CORPORATION (Pegasus), Consultant to QUIMS, of 4761 Cove Cliff Road, North Vancouver, B.C. V7G 1H8; responsible for geological exploration and also preparation of the Prospectus for submission to the Mine Development Review Board of the Province of British Columbia.

TED H.F.REIMCHEN, P. Geol., P. Geo., (1941-) President of Pegasus is a Professional Geoscientist and Geologist with 26 years of post-graduate experience in mineral exploration for placer minerals, gemstones, speciality and mineral sands to REO'S(rare earths) to industrial minerals and potable water. He is intimately familiar with property evaluation and geological mapping, drilling, tunnelling, sampling, and ore reserve calculations separating MINEABLE from GEOLOGICAL reserves for these minerals.

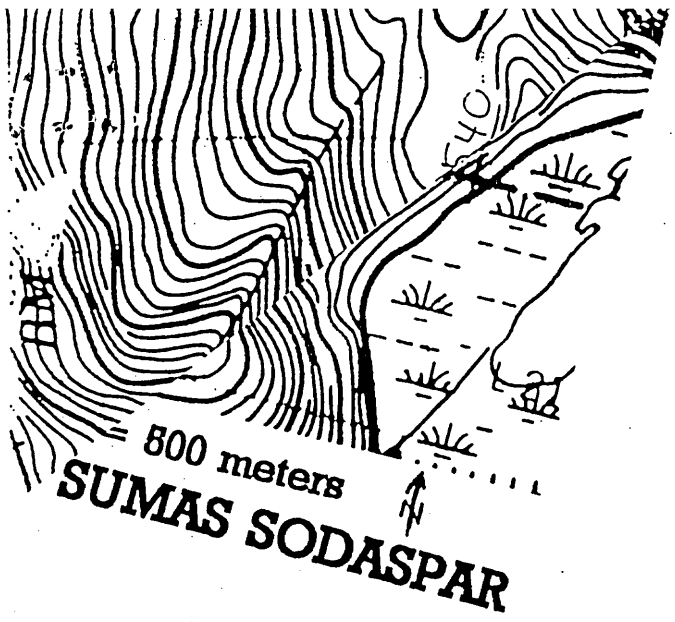
His experience and interests range from aerial photograph interpretation, erosion potential and hazard prediction to geobotanical prospecting and environmental assessments, wetland delineations to remote sensing, to engineering geology, and archaeology to seismic risk studies. He has involved himself with placer evaluation, mine design and running day to day operations of several large open pit mines in jungles to tundra in several areas of the earth. He has prepared numerous Professional Reports on geological prospects in 36 countries.

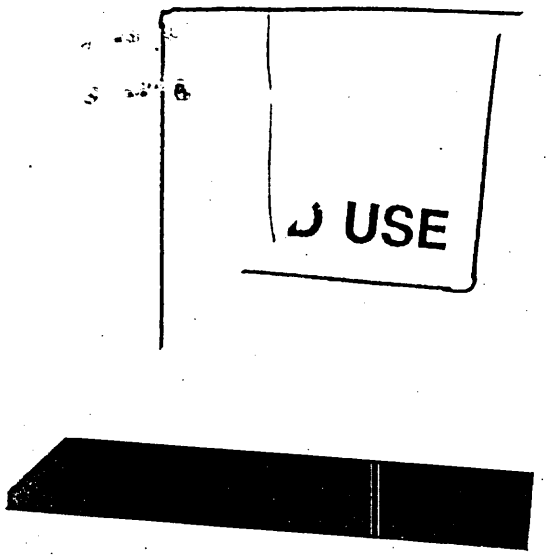
Expertise: NATURAL SCIENTIST

9.0 EXISTING PERMITS

1 MINISTRY OF ENERGY MINES and RESOURCES Exploration Approvals granted for drilling and sampling since 1987. Assessment reports have been filed and approved since that date.

2 MINISTRY OF ENVIRONMENT Water Management Branch, A Water Licence (File No. 2001560) for 20 acre feet was applied for on behalf of QUALITY INDUSTRIAL MINERAL & SUPPLY INC. on October 15, 1991.


500 meters
SUMAS SODASPAR


USE