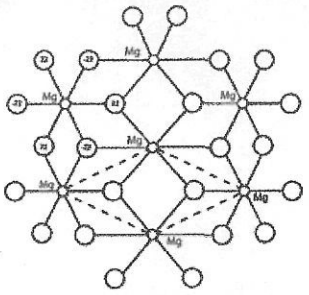


Redonda Environmental

GEOCHEMICAL, PROSPECTING and GEOLOGICAL ASSESSMENT REPORT

on the

WEST REDONDA BRUCITE PROPERTY (Magnesium Hydroxide)
Pryce Channel Area, Toba-Bute Inlet

Vancouver Mining Division
Latitude 50°17.121N/Longitude 124°50.573W
NTS 92K/7W (92K.026)

Prepared for
Redonda Environmental Services Ltd.
#5-2330 Tyner St.
Port Coquitlam, B.C.
V3C 2Z1
Phone: 604-970-6402, Fax: 604-944-6102

Prepared by

J. T. SHEARER, M.Sc., P.Geo.
#5-2330 Tyner St.
Port Coquitlam, B.C.
V3C 2Z1
Phone: 604-970-6402, Fax: 604-944-6102

March 1, 2008

Fieldwork completed between April 15, 2007 and December 15, 2007

CONTENTS

Brucite Quarry West Redonda Island.

IMGP 2507 — Frontiecpiece —

LIST OF ILLUSTRATIONS and TABLES

ILLUSTRATIONS

TABLES

CAMPBELL RIVER

LUND

LOCATION MAP

FIGURE 1

SUMMARY

1) The West Redonda Property Island is about 30km north by boat from the community of Lund or about 45km north of Powell River, B.C.

2) The limestone quarry on West Redonda Island is located 1.2km west of Gloucester Point.

3) The main limestone unit was quarried in the years 1920, 1921, 1922, 1923 and 1924 with a recorded production totalling 24,126 tonnes by Nickson Construction for Pulp and Paper Mills in Howe Sound.

4) Brucite (magnesium hydroxide) occurs within zones as 1 to 3mm granules, particularly in the eastern margin of the deposit where brucite constitutes about 30% of the rock. Brucite is a magnesium hydroxide Mg(OH)2, and consequently it has a higher magnesium content than most minerals used as an ore of magnesium. Brucite forms soft, waxy to glassy, white, pale-green, grey or blue crystals, plate aggregates, rosettes, fibrous masses and fracture fillings. It is relatively soft (2.5 on Mohs Scale) and it has a low density (2.38-2.40g/cm^2)

5) In 1944, Gouge collected samples which assayed:

	MgO	CaO	Fe_2O_3	Al_2O_3	SiO_2	CO_2	H_2O at 105°C
Sample 23	9.22	46.27	0.32	0.22	1.28	39.94	2.94
Sample 23A	20.50	37.21	0.18	0.05	0.48	34.66	6.48

6) Several magnetite zones are known from previous work including:
   a. Black Warrior – solid magnetite 4.3m wide by 15.2m high. Assays across 4.3m = 64.8%Fe
   b. Redonda Iron Mine (Elsie) – past producer of 568 tonnes exposed 15.2m wide, 12.2m high and 6.1m long. Assays in 1919 gave 60.6%Fe.
   c. Homestake – outcrop width of 18.2m

7) Sampling 2007 consisted of prospecting along the magnetite-bearing creeks and sampling of the Brucitic limestone quarry.

8) As an industrial mineral, brucite can be used in caustic and dead-burned magnesia production. It also has a variety of other industrial mineral applications such as a functional filler in plastic compounds, fire and smoke retardant, electric wire insulation, carpet backing, and waste water treatment chemical.

9) Finely ground product samples have been split into 1kg charges for market evaluation that may range from applications as fire-extinguisher media, neutralization agents, ceramic and chemical feed stocks and detergents to metal production industries.

   It is recommended that a current data base of prices and specifications be compiled to map out the appropriate production strategies, since test results to date indicate encouraging grade and hardness properties.

Respectfully submitted,

J. T. (Jo) Shearer, M.Sc., P.Geo.
March 1, 2008

INTRODUCTION

The West Redonda Island area lies about 50 km northeast of Campbell River, B.C. and 30 km north of Lund. The area lies at the northeastern end of the Vancouver Island Coast Ranges and is characterized by fairly rugged topography with fault-line scarps and fault-controlled valleys accentuated by glaciation. The claims straddle the west side of the Coast Plutonic Complex.

The oldest rocks in the West Redonda Island Area belong to the Paleozoic Alexander Terrain, which contain volcanic and sedimentary units ranging from Middle Devonian to Early Permian age.

Northern Vancouver Island and adjacent Mainland has a complex structural history with frequent rejuvenation of previous structures. All Paleozoic rocks are affected by a series of southeast trending, upright to overturned, southwest-verging folds.

On the Brucitic One Claim a band of limestone and brucitic limestone (magnesium hydroxide), 60 metres wide enclosed in granitic rocks, extends southwestward up the side of Gloucester Mountain for at least 800 metres from the shore of Pryce Channel. The carbonate sequence strikes 180° and dips vertically. The beds are cut by fine-grained feldspar dikes. The band is composed mainly of bluish grey, fine-grained white limestone containing a few beds of orange-buff weathering skarn on the margins.

Magnesium hydroxide is an alkali that is widely used for neutralisation of acid effluents, removal of dissolved heavy metals from industrial effluents and flue-gas scrubbing. It also has applications as a flame retardant filler, as well as a feedstock for the production of magnesia and other magnesium chemicals. It is available in the market as an aqueous slurry and as a dry powder.

The limestone and brucite prospects of the West Redonda Claims could possibly be developed to produce various products and by-products, starting with single stage crushing and screening of the limestone to produce construction aggregates for the local market. With the addition of grinding and packaging facilities, the brucite could yield fillers and products for more regional markets in fire retardants. Further potentials include products for the national and international markets, such as dead burned magnesium oxide for refractory brick manufacturing and caustic calcined magnesia (periclase) for the refractory industry, which would yield quicklime, hydrated lime and magnesia as by-products used by the pulp and paper industry. Finally, magnesium metal could be produced, using either one of the ferrosilicon processes (Pidgeon process or Magnetherm Process) or one of the magnesium chloride processes (Kaiser or Dow).

It is envisaged that, if sufficient reserves are defined, then primary crushing and screening would be carried out at the future quarry site, the crushed material would then be conveyed to the prospective barge loading facility for shipment to customers or distributors, or the plant site for secondary crushing and further treatment.

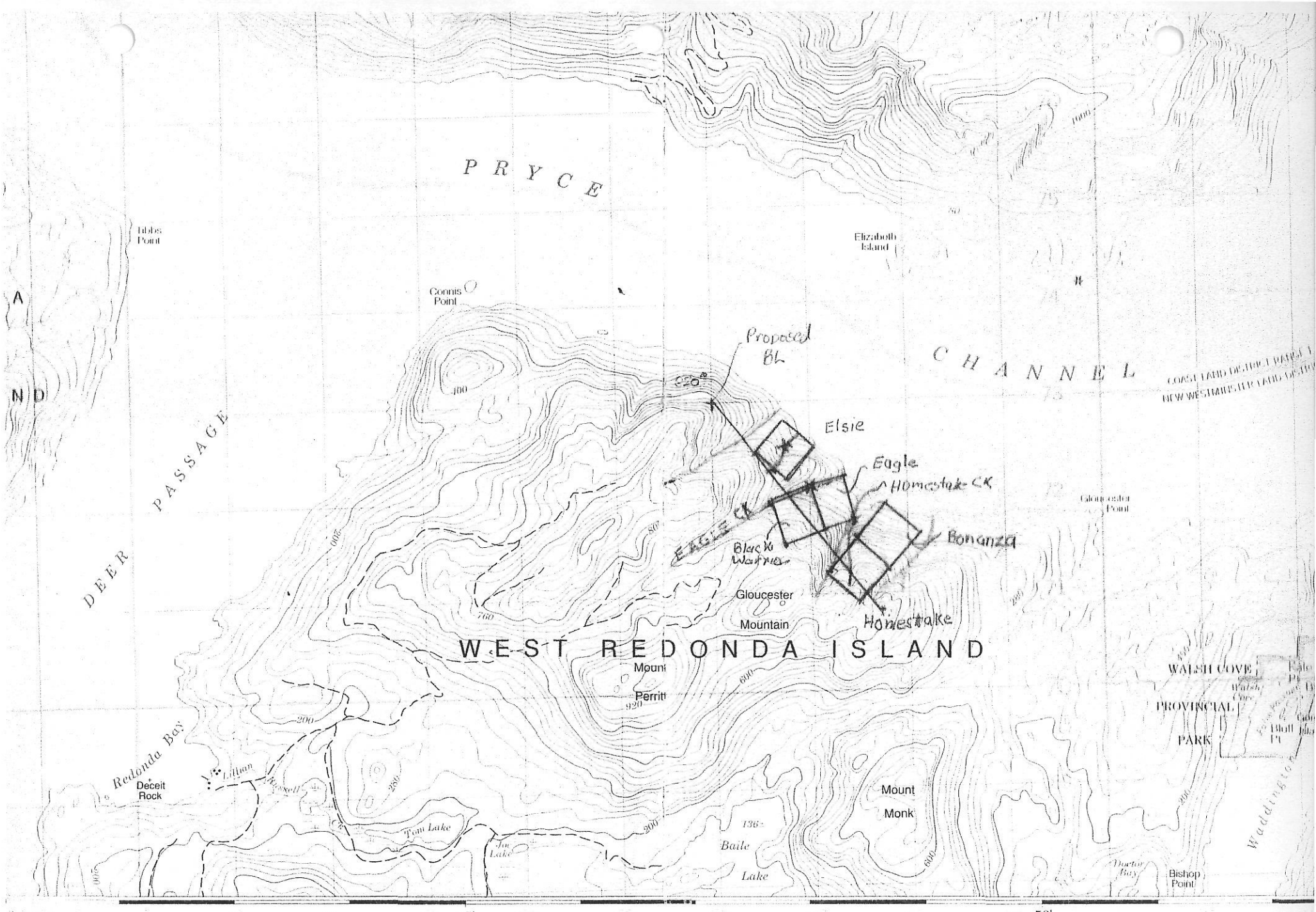


FIGURE 2

DETAIL LOCATION MAP

CENTRE FOR MAPPING,
NES AND RESOURCES
1989. PUBLISHED 1991.

THE CANADA MAP OFFICE

LOCATION AND ACCESS

The areas covered by the West Redonda Claims are situated 30 km northeast of the launch facility at Lund. Lund is 15 km north of Powell River on Highway 101 and 42 km northeast of Campbell River.

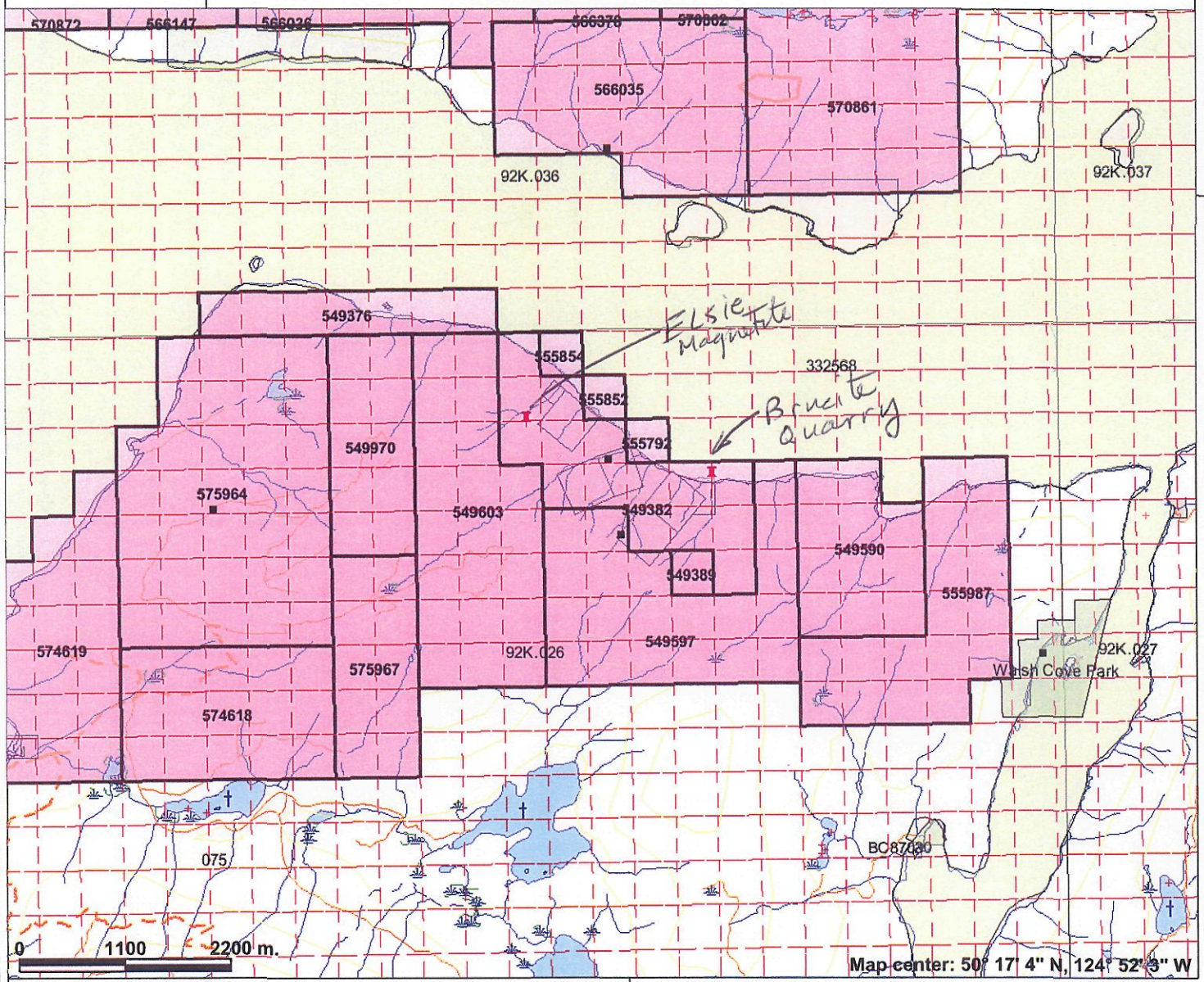
West Redonda Island is south of Pryce Channel between Toba and Bute Inlets and north of Desolation Sound.

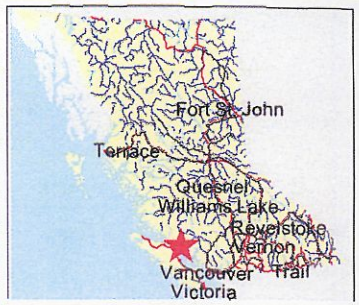
Active fish farms occur in the area and current non-union logging is underway on the north side of Pryce Channel.

The area is also 19km north of the First Nation Community of Squirrel Cove (on Cortes Island). The general area is within the Asserted Traditional Territories of the Homalco and Klahoose First Nations.

Pryce Channel has very deep water to within a short distance from a steep rocky shore. Barges in the 1920's were loaded directly out of the quarry as evidenced by the steel tie-ups noted on the shore.

West Redonda Brucite Project





Legend

MINFILE Status
- Producer
- Past Producer
- Developed Prospect
- All others

Indian Reserves
National Parks
Parks
MTO Grid (MTO)

Mineral Tenure (current)
- Mineral Claim
- Mineral Lease

Mineral Reserves (current)
- Placer Claim Designation
- Placer Lease Designation
- No Staking Reserve
- Conditional Reserve
- Release Required Reserve
- Surface Restriction
- Recreation Area
- Others

Survey Parcels
BCGS Grid

Contours (1:250K)
- Contour - Index
- Contour - Intermediate
- Areaof Exclusion
- Areaof Indefinite Contours

Transportation - Points (TRIM)
- Helipad

Transportation - Lines (TRIM)
- Airfield

N

Scale: 1:62,510

Notes: Brucite on Tenure 549382

FIGURE 3

CLAIM MAP

CLAIMS STATUS

The property consists of eleven MTO Cell Claims as shown in Table I and Figure 3.

TABLE I
List of Claims

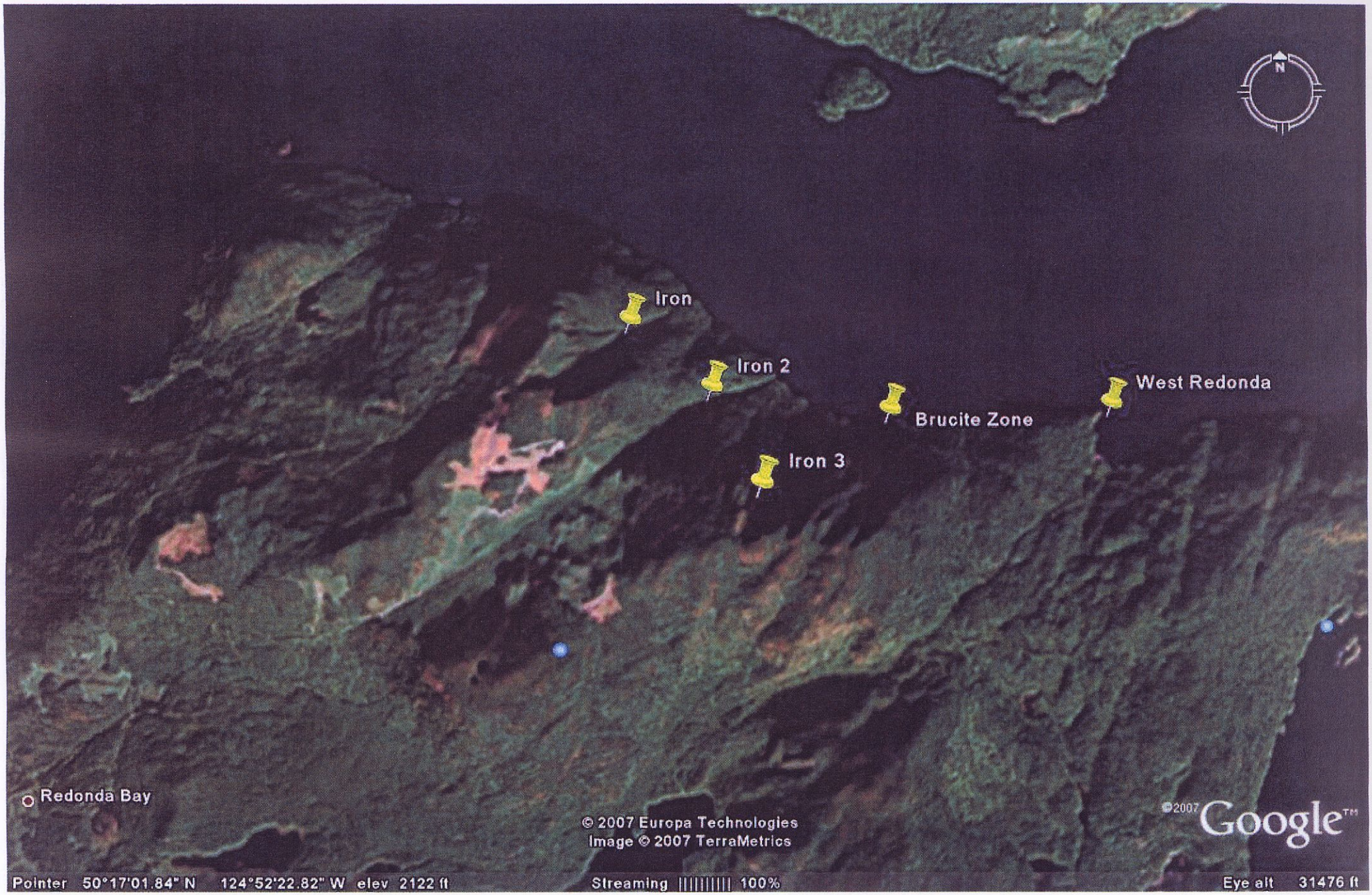
Name	Tenure #	Area (ha)	Current Expiry Date*	Registered Owner
Redo 1	549376	144.47	January 14, 2011	J. T. Shearer
Brucitic One	549382	309.68	January 15, 2011	J. T. Shearer
Brucitic Two	549389	20.65	January 15, 2011	J. T. Shearer
Red 2	555852	20.64	April 6, 2011	J. T. Shearer
Red 3	555854	20.64	April 6, 2011	J. T. Shearer
Red 4	555987	351.08	April 8, 2011	J. T. Shearer
Coast 1	555792	20.64	April 5, 2011	J. T. Shearer
Redo 3	545590	227.14	January 15, 2011	J. T. Shearer
Redo 4	549597	413.02	January 16, 2011	J. T. Shearer
Redo 6	549603	433.60	January 16, 2011	J. T. Shearer
Redo 7	549970	206.44	January 22, 2011	J. T. Shearer

Total ha 2,168.00

* with application of Assessment work documented in this report.

Mineral title is acquired in British Columbia via the Mineral Act and regulations, which require approved assessment work to be filed each year in the amount of $4 per year per hectare for the first three years and then $8 per year thereafter to keep the claim in good standing.

Under the present status of mineral claims in British Columbia, the consideration of industrial minerals requires careful designation of the products end use. An industrial mineral is a rock or naturally occurring substance that can be mined and processed for its unique qualities and used for industrial purposes (as defined in the *Mineral Tenure Act*). It does not include "Quarry Resources". Quarry Resources includes earth, soil, marl, peat, sand and gravel, and rock, rip-rap and stone products that are used for construction purposes (as defined in the *Land Act*). Construction means the use of rock or other natural substances for roads, buildings, berms, breakwaters, runways, rip-rap and fills and includes crushed rock. Dimension stone means any rock or stone product that is cut or split on two or more sides, but does not include crushed rock.



Google Image FIGURE 4

Google Image FIGURE 4

HISTORY

Elsie

This mineral claim was staked many years ago (Minister of Mines Annual Report 1918) and a shipment of about 600 tons of magnetite ore was made to an iron blast-furnace in Oregon. The claim was worked and Crown-granted about 1885. The claim is located on the west side of West Redonda Island, on the slope of a very steep mountain which reaches an elevation of about 3,000 feet within quite a short distance from the shore. The claim is staked from the shore in a southerly direction, starting from the mouth of a small torrential unnamed stream which flows through a box canyon for a considerable distance. The trail up the mountainside has a grade of nearly 45 degrees.

Black Warrior Group

This group contains the Eagle, Iron Cliff, Black Warrior, Homestake and Bonanza mineral claims. The group is staked from the shore of Pryce Channel easterly from the Elsie mineral claim, including about 4,500 feet along the shore-line in an easterly direction, and extending up the northerly slope of the precipitous mountain range for about 3,000 feet horizontal measurement.

West Redonda Island

About 1.2 kilometres west of Gloucester (George) Point on West Redonda Island, two limestones each about 30 metres wide, are exposed along the shore about 100 metres northwest of the west corner of Lot 3439. Other smaller occurrences are exposed less than a kilometre west and northwest of Lot 3439.

The main limestone to the east were quarried in the 1920's and are exposed from sea level to over 200 metres elevation on the precipitous slope. It is bounded by a green intrusive rock which is in turn enclosed by a light coloured hornblende granite. The limestone is white and grey, medium to coarse grained with a locally mottled texture. A shear-related lamination occurs within a section of white limestone. Total production from 1920 to 1924 was 24,126 tonnes.

West Redonda Island Brucite Zone

Mineral Inventory Layers

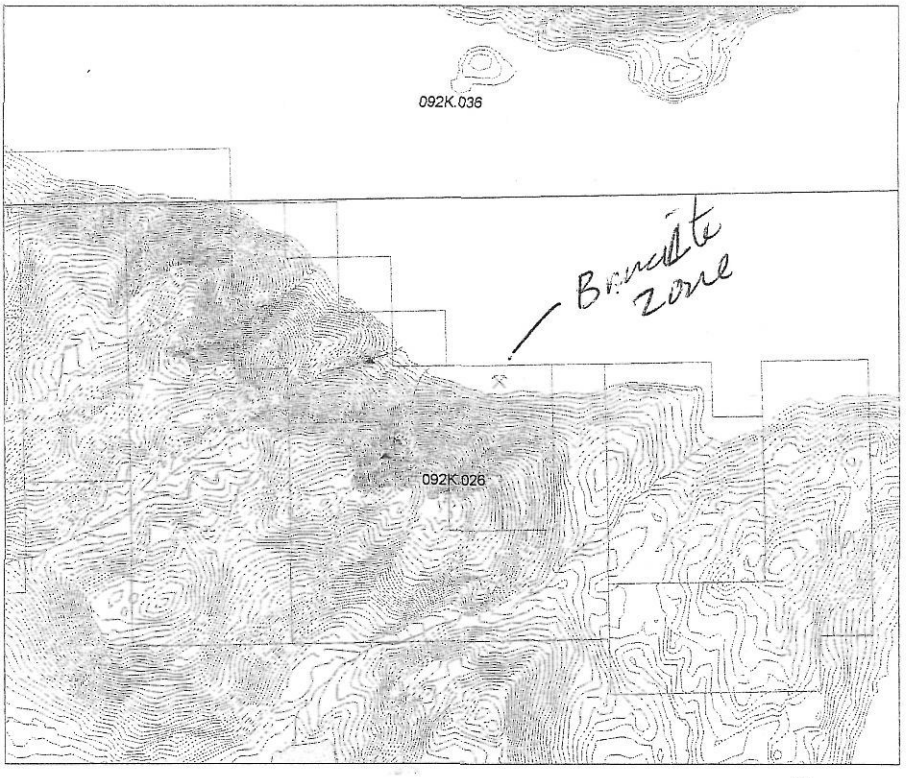
MINFILE status
- Developed Prospect
- Past Producer
- Producer
- Prospect
- Showing
- All Others

MTO Mineral Titles Layers

MTO Mineral Titles Online Polygons
- Coal
- Placer
- Mineral
- Other

Topographic Layers

Digital Road Atlas (<250K)
- Freeway
- Highway
- Ramp



SCALE 1 : 63,540

1 0 1 2 3

MILES

N

FIGURE 5
Topographic Map.

REGIONAL GEOLOGY

The Coast Plutonic Complex is a long narrow belt of plutonic and metamorphic rocks extending from northern Washington through the Coast Mountains of western British Columbia into southeast Alaska and Yukon Territory, Roddick and Hutchison (1972 and 1974) and Hutchison (1970) summarized the geology of the southern half of this belt and provided numerous references. The belt consists largely of intermediate and basic (locally migmatitic) discrete and coalescing plutons, bodies of gneiss and migmatites, and pendants of metamorphosed sediments and volcanics. Between latitudes 52º and 55º N a complex of migmatites, gneiss and plutonic rock (the Central Gneiss Complex) forms the core of the Coast Plutonic Complex and may represent the oldest and most deeply exhumed rocks in the belt. The strata flanking the Coast Mountains are dominantly Mesozoic volcanic and sedimentary rocks, with minor Paleozoic material, which have been intruded by Mesozoic and Tertiary granitoid plutons.

The Coast Plutonic Complex has a pronounced asymmetry. Diorite and dioritic migmatites are most abundant in the western part of the belt; granodiorite and quartz monzonite are more plentiful to the east. Metamorphic grade of the stratified rocks increases from the greenschist facies in the western part of the belt to amphibolite (locally granulite) facies in the central and east-central parts.

An inspection of the regional geology map (Roddick 1980, O.F. 480), shows several elongate, fault-bounded slices of metasedimentary rocks sandwiched between diverse separate plutons of the Coast Plutonic Complex. To the northwest of the West Redonda Island is the series of gold-silver properties of the Alexandria-Dorotha Morton stretching from Fanny Bay on Phillips Arm to Duncan Point on Knight Inlet, a distance of over 30 km.

The Alexandria mine consists of extensive workings, which include five or more portals on the western shore of Phillips Arm. The main mine workings date back to 1989 with extensions and improvements since that time by various owners. Production in 1939 and 1940 totals 1694 tonnes, yielding 40,580 grams of silver, 2,239 grams of gold and 1,761 kilograms of copper.

The mine straddles the sheared contact between diorite to the southwest and metamorphosed rocks to the northeast. The shear zone dips approximately 75º to the southwest and locally truncates the contact. It can be traced from the Alexandria through the Enid-Julie (092K 024) and Doratha Morton (092K 023) and on to the Commonwealth (092K 025) occurrences respectively.

The workings explore the highly silicified and quartz-veined shear zone. Pyrite and minor chalcopyrite within the quartz veins are known to carry high gold and silver values. The best intersections from underground drillings re 1.0 metre grading 11.0 grams per tonne, 1.15 metres grading 6.45 grams per tonne and 0.82 metre grading 5.0 grams per tonne gold (Assessment Report 14466).

Drill indicated reserves are 25,600 tonnes grading 10 grams per tonne gold (Exploration in British Columbia 1986, page C274).

REGIONAL GEOLOGY----Redonda Brucite Project

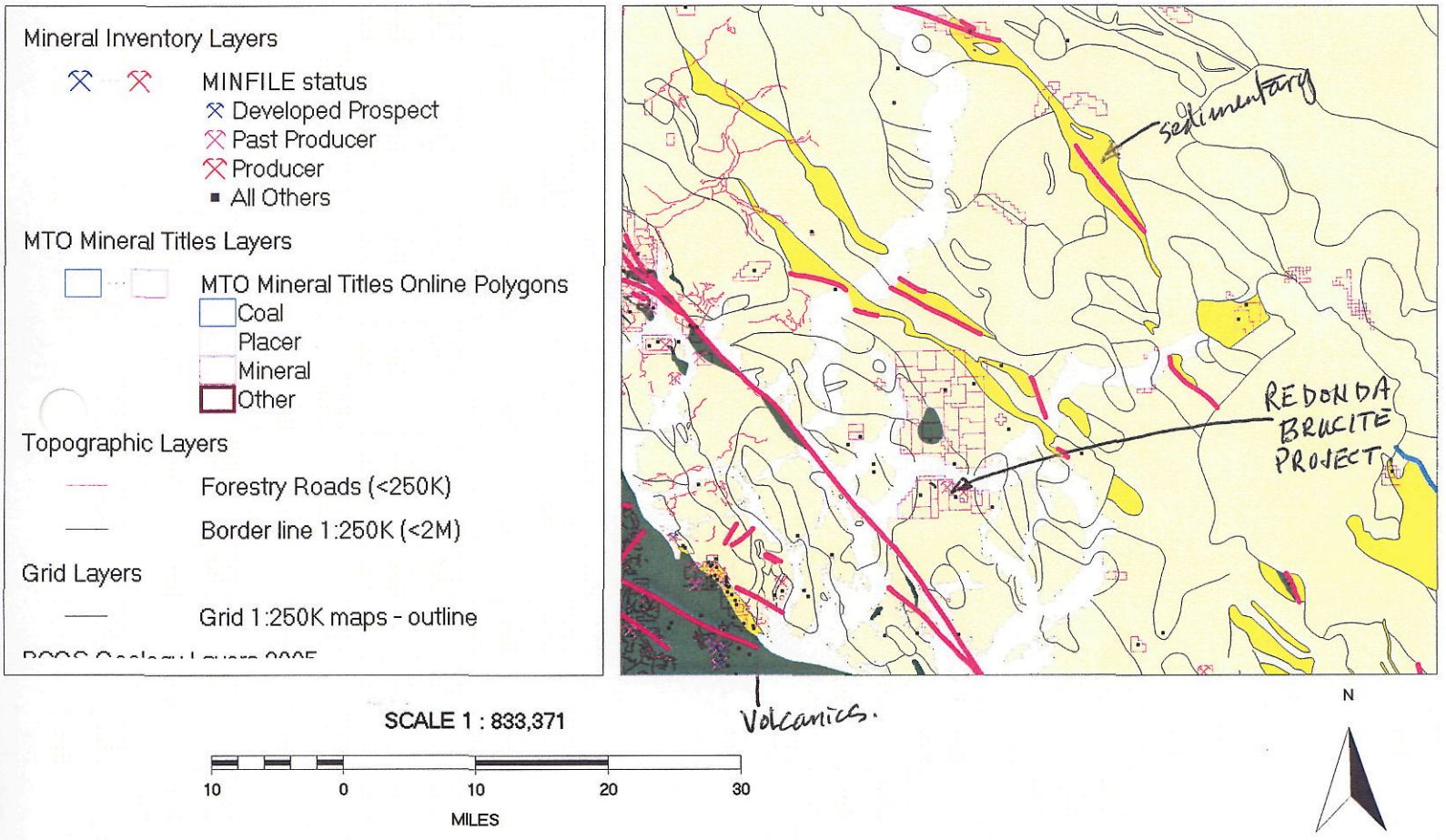


FIGURE 6
Regional Geology

PROPERTY GEOLOGY

The property is mainly underlain by Coast Range intrusives with minor limestone septa.

At lower elevations on the property the sediments consist mainly of massive grey limestones locally metamorphosed to a clean white crystalline marble with brucite and infrequently there is some minor pyrite skarn. There is some minor interbedded argillite.

The intrusive phase on the property is a fine grained to medium grained granodiorite. Near the contact this becomes very fine grained and biotite rich.

At the Black Warrior, magnetite outcrops in the steep bank of Eagle Creek at an elevation of 91 metres, 400 metres from the shore of Pryce Channel on West Redonda Island. An open cut on the Black Warrior (L.2446)claim, prior to 1918, in the bank of Eagle Creek uncovered a solid magnetite zone 4.3 metres wide, nearly 15.2 metres high and of undetermined length. Magnetite is hosted in skarn altered limestone and/or greenstone near the contact with diorite. A sample chipped across the width of the face, 4.3 metres, assayed 64.8% iron, 5% silica and trace phosphorous and sulphur (Minister of Mines Annual Report 1919, page 216).

The island's geology is composed of intrusive rocks of the Jurassic to Cretaceous Coast Plutonic Complex. Age dating from the southern part of West Redonda Island indicates an age of 111 to 113 million years by potassium-argon from biotite and hornblende (Geological Survey of Canada Open File 480). Locally, highly metamorphosed greenstone and limestone of unknown group, formation or age are found in diorite.

At the Homestake, magnetite is recorded to occur in outcrop for a width of around 18.2 metres. The magnetite, where it outcrops, does not occur at the actual line of contact between limestone and diorite, but a short distance away. No assays or examinations of the extent and quality of the magnetite have been made at this location (Minister of Mines Annual Report 1918, page 283).

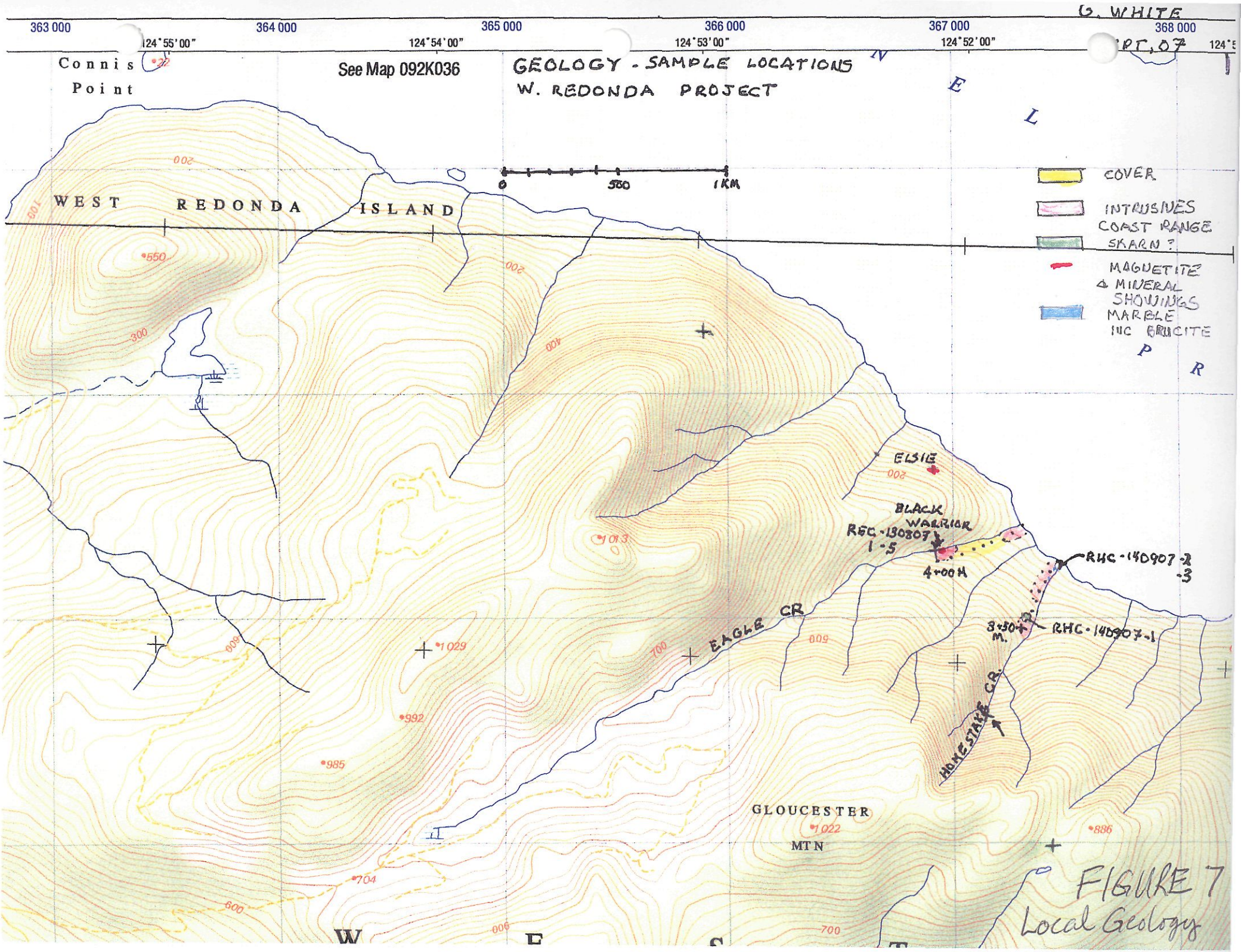
The Redonda Iron prospect is centrally located on the Elsie (L.1648) claim on the north shore of Redonda Island. The claim was originally staked in 1892 and produced 568 tonnes of ore but no other development has taken place and the prospect remains largely undeveloped (Open file 1988-28).

Magnetite is hosted in skarn altered tuffs and limestone near the contact with diorite. The skarn mineralogy comprises primarily pyroxene and garnet with wollasonite and vesuvianite developed in limestone. The mineralogy also includes diopside, quartz, epidote, calcite and a small amount of sphene.

The deposit is exposed in a large open cut or quarry about 15.2 metres wide from east to west, 12.2 metres high at the face and 6.1 metres north to south. The deposit exposed in the face is a massive body 15 metres high and 9 metres wide with a 3 metre margin of mixed magnetite and skarn. A grab sample from the face of the open cut assayed 60.6% iron, 10.9% silica and trace sulphur and phosphorous (Minister of Mines Annual Report 1919, page 216).

In par, the ore is solid magnetite, but in general the magnetite occurs in nests, granules or reticulating veins throughout the altered limestone. Irregularly distributed throughout the solid ore are a few small cavities in which the magnetite has assumed the form of small crystals.

Work in 2007 consisted of prospecting and sampling along creeks where the magnetite zones were located, see Figure 7 and collecting large character samples of the limestone and brucitic limestone at the 1920's quarry, see Figures 8, 9, and 10.


G. WHITE
363 000
364 000
365 000
366 000
367 000
368 000
124°55'00"
124°54'00"
124°53'00"
124°52'00"
Connis Point
See Map 092K036
GEOLOGY - SAMPLE LOCATIONS
W. REDONDA PROJECT
WEST REDONDA ISLAND
0
500
1KM
COVER
INTRUSIVES COAST RANGE
SKARN ?
MAGNETITE
MINERAL SHOWINGS
MARBLE INC BRUCITE
ELSIE
BLACK WARRIOR
REC-130807
1-5
4+00 M
RHC-140907-2
-3
3+50 M
RHC-140907-1
EAGLE CR
HORSESTAKE CR.
GLOUCESTER MTN
1022
1029
1013
992
985
704
886
550
FIGURE 7
Local Geology

METALLURGY

Seven sample lots were delivered to Process Research Labs on September 18, 2007, totalling 161.4kg in weight. Head assays indicated an MgO grade between 4.7% and 7.2% which was accompanied by an average of 83.3% $CaCO_3$ and only 2.45% SiO_2. All samples showed relatively low ranges of compositional variation and no environmentally deleterious components (refer to full report in Appendix III).

Two sub-samples (QD2A-1 and QD2B-1) totalling 14.6kg in weight, separately crushed to 10 mesh, were subjected to standard grinding in a stainless steel rod mill at a pulp density of 65% solids. With a 30-minute grind time, 99% of the particles were finer than 325-mesh. Product was dried and riffled into 1kg bags for market evaluations. The assays indicated that none of the MgO dissolved and that minor increase in the iron content was affected by grinding.

Further work to upgrade the raw ore samples are pending the outcome of market evaluation efforts that should produce tighter product specifications to guide the process design.

Based on the results, an immediate application of this type of ore for neutralization purposes emerges. The carbonate content is elevated and nuisance impurities are largely absent. An upgrading of the neutralization potential and efficiency is normally achieved by roasting and slaking, depending on the intended application.

The remainder of crushed samples QD2A-1 and QD2B-1 were blended and subjected to standard grinding in a stainless steel rod mill at 65% solids pulp density. Judging by the fine grind of 90% passing 325-mesh, the materials can be classified as soft, which would benefit the upgrading costs once an intended application has been identified. The grind decant water assays would indicate very minor dissolution of the MgO, which can easily be augmented by lowering the pH and increasing the bicarbonate content of the leach medium.

Finely ground product samples have been split into 1kg charges for market evaluation that may range from applications as fire-extinguisher media, neutralization agents, ceramic and chemical feed stocks and detergents to metal production industries.

It is recommended that a current data base of prices and specifications be compiled to map out the appropriate production strategies, since test results to date indicate encouraging grade and hardness properties.

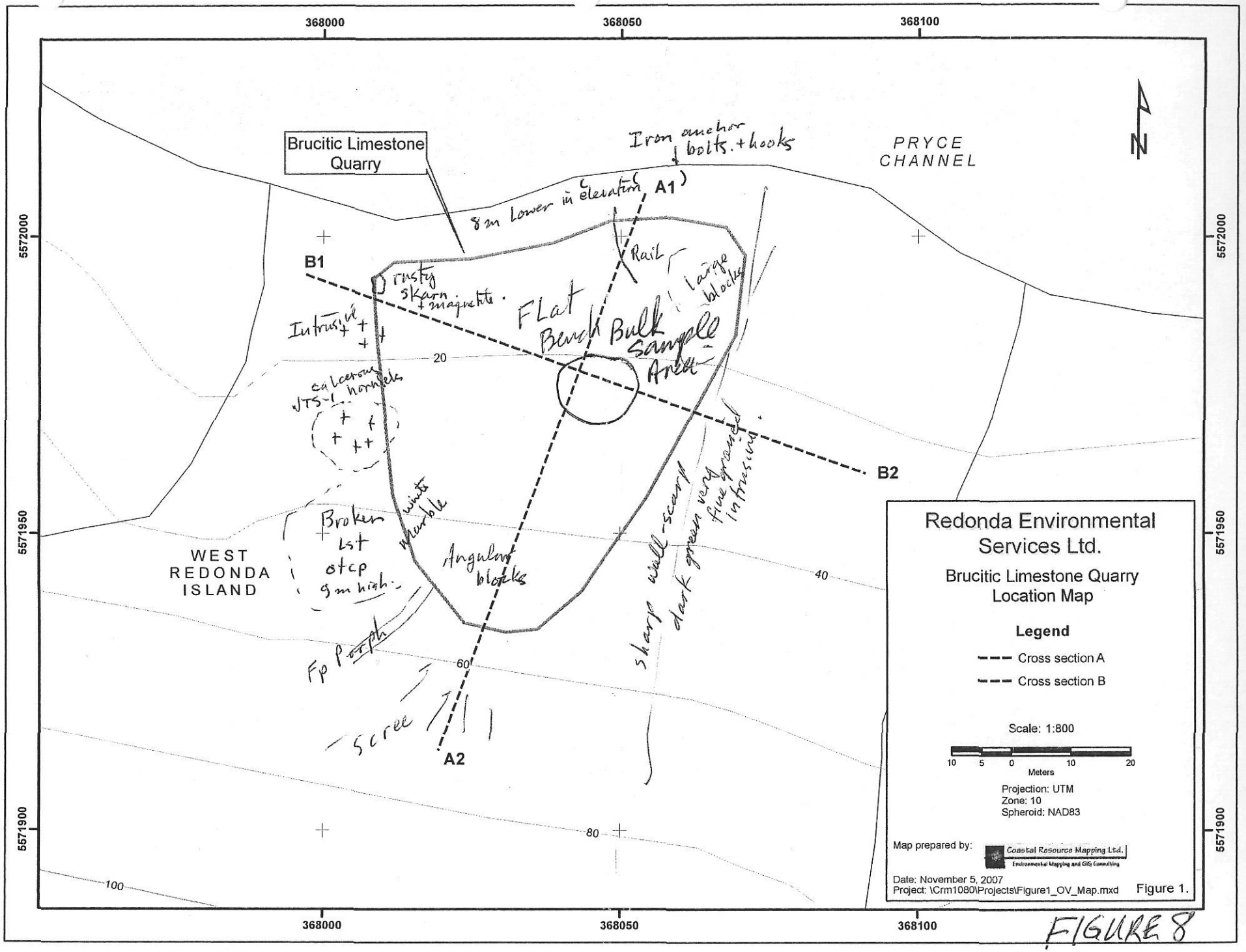

368000
368050
368100
5572000
5571950
5571900
Brucitic Limestone Quarry
Iron anchor bolts + hooks
PRYCE CHANNEL
N
8m lower in elevation
A1
B1
B2
A2
Rail
rusty skarn + magnetite
Flat Bench Bulk sample Area
large blocks
Intrusive
20
calcareous hornfels
WTS-1
Broken lst
white marble
Angular blocks
WEST REDONDA ISLAND
40
sharp wall-scarp
dark green very grained fine intrusive
Fp porph
60
scree
80
100
Redonda Environmental Services Ltd.
Brucitic Limestone Quarry
Location Map
Legend
Cross section A
Cross section B
Scale: 1:800
10 5 0 10 20
Meters
Projection: UTM
Zone: 10
Spheroid: NAD83
Map prepared by:
Coastal Resource Mapping Ltd.
Environmental Mapping and GIS Consulting
Date: November 5, 2007
Project: \Crm1080\Projects\Figure1_OV_Map.mxd
Figure 1.

FIGURE 8

CONCLUSIONS AND RECOMMENDATIONS

The known limestone, brucite and magnetite zones covered by the West Redonda Island Claims have been known for some time. Assays by government workers indicate up to 20.5% MgO due to abundant brucite content.

Most of the limestone production currently mined in British Columbia originates from Texada Island. The Triassic Quatsino Formation on Texada Island contains the most significant limestone resources situated on or near tidewater along the British Columbia coast.

In the West Redonda Island Claim Area, the carbonate formations have been intruded by the Coast Plutonic Complex, which has led to the creation of high purity, high calcium limestones and also extensive high purity brucite units.

Prospecting in 2007 in the central part of the West Redonda Claims has shown that the carbonate horizons do indeed continue to the southwest toward Gloucester Mountain and contain elevated MgO content.

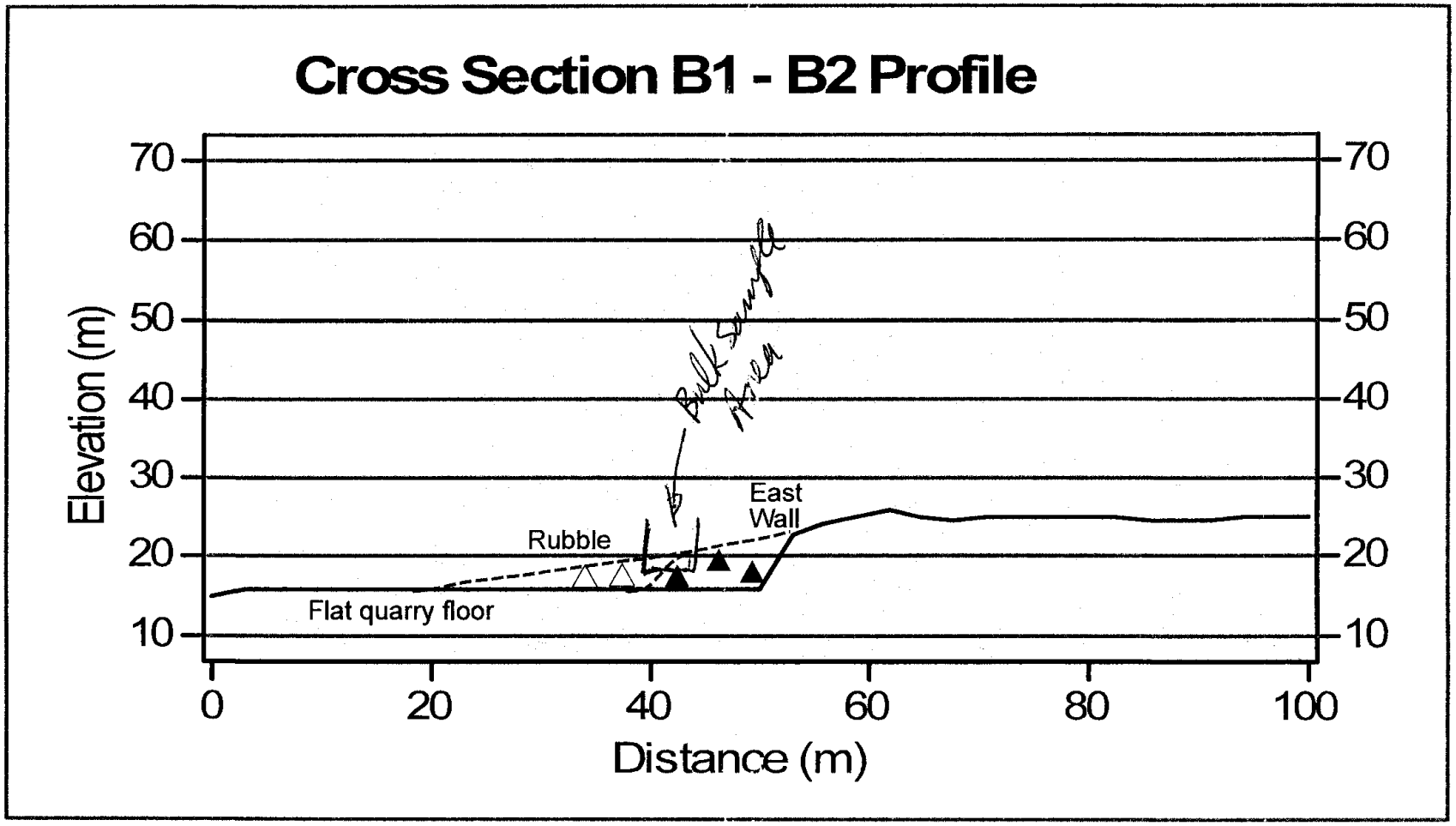
Finely ground product samples have been split into 1kg charges for market evaluation that may range from applications as fire-extinguisher media, neutralization agents, ceramic and chemical feed stocks and detergents to metal production industries.

It is recommended that a current data base of prices and specifications be compiled to map out the appropriate production strategies, since test results to date indicate encouraging grade and hardness properties.

Future work should emphasize a Phase I prospecting and geological mapping, all rocks collected should be assayed and several soil lines in which the soil samples are assayed for Mg, Ca, As, Ag, and Au. A Phase II trenching and diamond drilling are recommended as a follow-up if Phase I results are sufficiently encouraging.

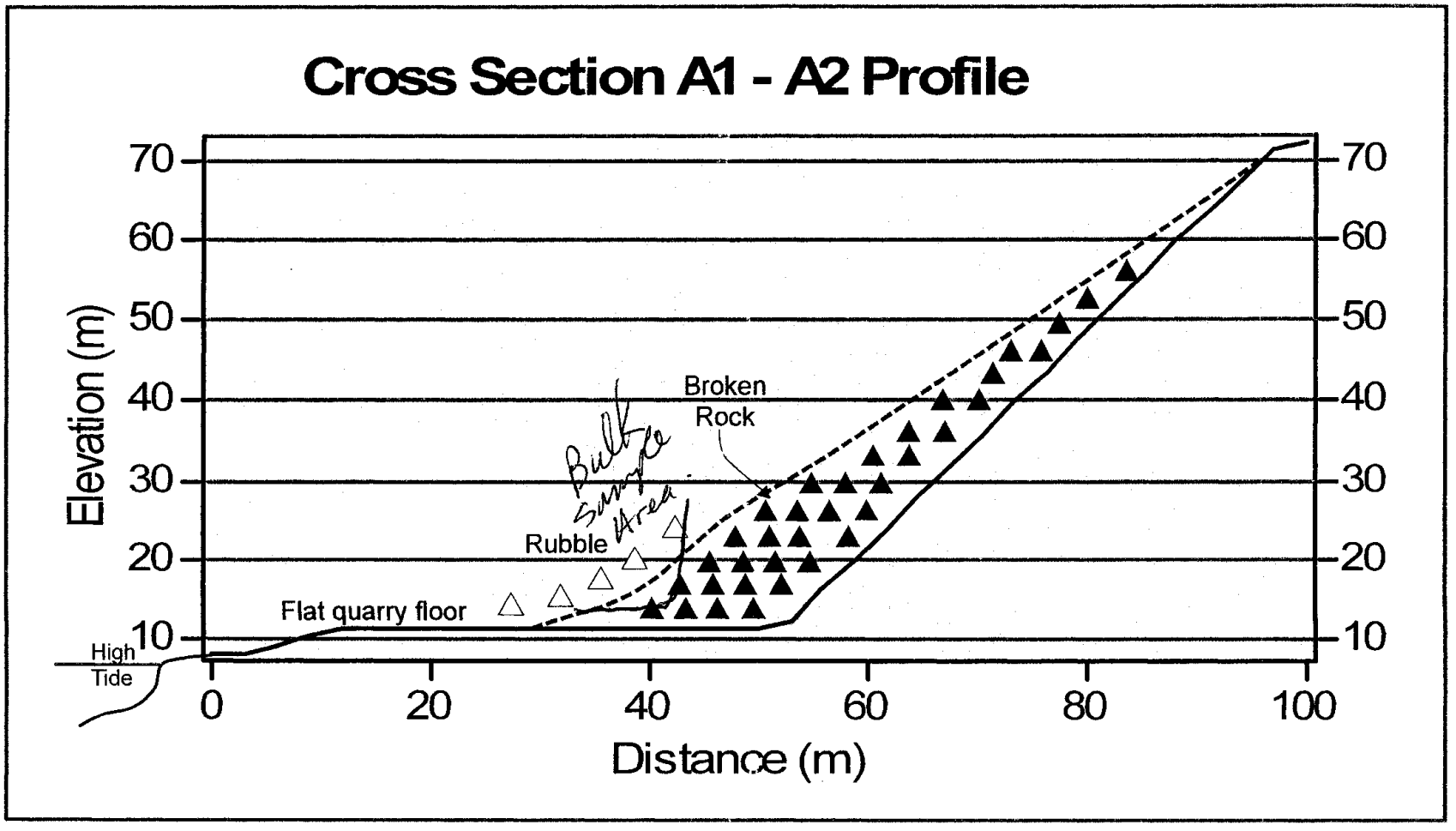
Respectfully submitted,

J.T. Shearer, M.Sc., P.Geo.
March 1, 2008



Redonda Environmental Services Ltd.
East - West Cross Section B1 - B2

FIGURE 9 ~~Figure 3.~~



Redonda Environmental Services Ltd.
North - South Cross Section A1 - A2

FIGURE 10 ~~Figure 2~~.

Cost Estimate for Future Work West Redonda Island Claims

Continued reconnaissance geological mapping and sampling.

Phase I

1) Supervision and mapping	4,000.00
2) Line cutting and sampling	4,000.00
2a) Additional PRA Test Work, mineralogy	12,470.00
Phase I Total	$ 20,470.00

Phase II

3) Trenching for fresh material	16,000.00
4) Detail geological mapping	4,000.00
5) Excavation & sorting of 10,000 tonnes for extended trials,	100,000.00
	2,000.00
	2,000.00
Phase II Total	$ 124,000.00

Phase III

6) Road Building for Drill access from both north and south of Fish Farm	20,000.00
7) Diamond Drilling, 2,500 ft. @ $26/ft.	65,000.00
8) Drill Supervision, Core Logging, Core Splitting	18,000.00
9) Core handling facility	4,000.00
10) Report Preparation	3,800.00
Phase III Total	$110,800.00
11) Marketing	5,000.00
Grand Total Phases I, II & III	$250,000.00

REFERENCES

Annual Reports of the Minister of Mines
for the years 1898, 1902, 1917, 1919, 1920, 1923, 1925, 1927 & 1933.

Brownlee, D. J., 1982:
Geology and Geochemistry Report on the Blue Bells Property, Assessment Report #10,911.

Fischl, P., 1992:
Limestone and Dolomite Resources in British Columbia. B.C. Geological Survey, Open File 1992-18, 152pp.

Goudge, M. F., 1944:
Limestones of Canada, Their Occurrence and Characteristics, Report 811, part 5, pages 163-164, 175-176.

Hutchison, W. W., 1970:
Metamorphic Framework and Plutonic Styles in the Prince Rupert Region of the Central Coast Mountains, British Columbia. Canadian Journal of Earth Sciences 7, 376-405

O'Grady, B. T., 1936:
Blue Bells Silica Property, Annual Minister of Mines Report, Part F.

Richards, T. A. and McTaggart, K. C., 1976:
Granitic Rocks of the Southern Coast Plutonic Complex and Northern Cascades of British Columbia. Geological Society of America Bulletin 87, pp. 935-953.

Roddick, J. A., 1980:
Geology of 92K Map Sheet (Bute Inlet) and Notes on the Stratified Rocks of Bute Inlet Map Area Geological Survey of Canada, Open File 480.

Roddick, J. A. and Hutchison, W. W., 1972:
Plutonic and Associated Rocks of the Coast Mountains of British Columbia. International Geological Congress, Twenty-fourth Session, Canada, Guidebook A04-C04, 71p.

1974:
Setting of the Coast Plutonic Complex, British Columbia. Pacific Geology, 8, pp. 91-108.

Woodsworth, G. J. and Roddick, J. A., 1977:
Mineralization in the Coast Plutonic Complex of British Columbia, South of Latitude 55ºN. Geological Society of Malaysia, Bulletin 9, Nov. 1977 pg. 1-16.

APPENDIX I

STATEMENT OF QUALIFICATIONS

MARCH 1, 2008

APPENDIX I

STATEMENT OF QUALIFICATIONS

I, JOHAN T. SHEARER, of 3572 Hamilton Street, in the City of Port Coquitlam, in the Province of British Columbia, do hereby certify:

1. I am a graduate of the University of British Columbia (B.Sc., 1973) in Honours Geology, and the University of London, Imperial College (M.Sc., 1977).

2. I have over 35 years of experience in exploration for base and precious metals and industrial mineral commodities in the Cordillera of Western North America with such companies as McIntyre Mines Ltd., J. C. Stephen Explorations Ltd., Carolin Mines Ltd. and TRM Engineering Ltd.

3. I am a fellow in good standing of the Geological Association of Canada (Fellow No. F439) and I am a member in good standing with the Association of Professional Engineers and Geoscientists of British Columbia (Member No. 19,279).

4. I am an independent consulting geologist employed since December 1986 by Homegold Resources Ltd. Unit #5-2330 Tyner Street, Port Coquitlam, British Columbia.

5. I am the author of this report entitled "Geochemical, Prospecting and Geological Report on the Redonda Property" dated March 1, 2008 for Redonda Environmental Services Ltd.

6. I have visited the property September 5 to 17, 2007. I carried out geological mapping and sample collection. I am familiar with the regional geology and geology of nearby properties. I have become familiar with the previous work conducted on the West Redonda Island property by examining in detail the available reports, plans and sections, and have discussed previous work with persons knowledgeable of the area.

7. I have an Open Pit Supervisor Ticket (#98-3550) for daily supervision duties.

8. I own an interest in the West Redonda Claims and President of Redonda Environmental Services Ltd.

Dated at Port Coquitlam, British Columbia, the 1st day of March, 2008.

J. T. Shearer, M.Sc., F.G.A.C., P.Geo.
Quarry Supervisor #98-3550
March 1, 2008

APPENDIX II

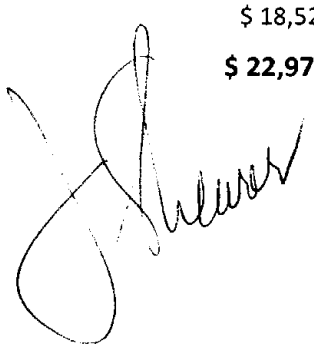
STATEMENT OF COSTS 2007 PROGRAM

MARCH 1, 2008

Statement of Costs

Professional Services		
Wages		
J.T. Shearer, M.Sc., P.Geo., (refer to timesheet)		
7 days @ $600/day, September 5 to 17, 2007		$4,200.00
	GST	252.00
	Subtotal	4,452.00
Expenses (Refer to attached Expense sheet)		
Truck Rental, 2 trucks fully equipped 4x4, 10 days @ $75/day		750.00
Fuel		119.77
Ferries		215.60
April, Water Taxi, 3 hrs @ $150/hr		450.00
Food & Meals		449.11
Jon Stewart, 3 days @ $400/day, Sept. 12-14/07		1,200.00
Geoff White, 4 days @ $350/day, Sept. 12-15/07		1,400.00
Mickey Augustine, 3 days @ $200/day, Sept. 12-14/07		600.00
Robert Stewart, 2 days @ $250/day, Sept. 12+13/07		500.00
	GST on Wages	222.00
Boat Rental from Troy Dagneau, September 2007		2,000.00
Maps		161.30
Keystone Environmental Report		1,324.05
Nova Pacific Environmental, Report		2,500.00
Metallurgical Work, Assays & Grinding Process Research, Gi Tan, Ph.D.		4,100.00
Hotel in Lund		649.80
Report Preparation		1,200.00
Word Processing and Reproduction		185.00
	Subtotal	$ 18,526.63
	Total	**$ 22,978.63**

Event No. 4187286 recorded $21,000 in work on January 1, 2008.



APPENDIX III

ASSAY CERTIFICATES of 2007 WORK

MARCH 1, 2008

HEAD ASSAY REPORT

Client: Redonda
Sample: pulverized Brucite Samples

Date: 16-Oct-07
Project: 0707409

Items	Report as	Units	BA-1	HSC-4	QDA-1	QD2A-1	QD2B-1	QD2C-1	QW-4	Analytical Method
Aluminum Oxide	Al2O3	%	1.2	0.98	0.94	1.25	0.94	0.98	1.26	WRock
Barium Oxide	BaO	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	WRock
Calcium Oxide	CaO	%	47.12	47.92	47.72	45.52	45.86	48.76	43.71	WRock
Iron Oxide	Fe2O3	%	0.24	0.2	0.07	0.28	0.08	0.09	0.21	WRock
Potassium Oxide	K2O	%	0.41	<0.01	0.37	0.63	<0.01	<0.01	0.41	WRock
Magnesium Oxide	MgO	%	5.45	5.13	4.7	6.17	7.17	4.93	6.03	WRock
Manganese Oxide	MnO	%	0.02	0.03	0.01	0.02	0.02	0.02	0.04	WRock
Sodium Oxide	Na2O	%	0.4	0.40	0.39	0.43	0.42	0.44	0.4	WRock
Phosphorus Pentoxide	P2O5	%	0.04	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	WRock
Silica	SiO2	%	2.6	1.06	0.52	2.38	0.57	0.54	9.48	WRock
Titanium Oxide	TiO2	%	0.03	0.01	0.01	0.03	0.01	0.01	0.03	WRock
Loss on Ignition	LOI	%	41.98	43.70	44.61	42.65	44.02	44.08	37.61	2000F
Accounted for by Whole Rock	Total	%	99.49	99.44	99.35	99.43	99.10	99.85	99.19	Calculated
Strontium	SrO	ppm	230	157	194	191	171	168	138	ICPM
Chromium	CrO3	ppm	11	12	15	13	12	13	13	ICPM
Zinc	ZnO	ppm	11	29	3	9	7	5	9	ICPM
Copper	Cu	ppm	23	8	27	95	13	58	15	ICPM
Carbonate	CO3	%	56.16	58.77	59.88	56.86	58.96	59.98	49.85	Leco
Calcium Carbonate	CaCO3	%	84.10	85.53	85.17	81.24	81.85	87.03	78.01	calculated max.
Brucite	Mg(OH)2	%	7.88	7.42	6.80	8.93	10.37	7.13	8.72	calculated max.
Moisture Content	H2O	%	0.11	0.05	0.04	0.08	0.07	0.07	0.07	oven dry
Paste pH			9.36	8.51	8.84	9.30	9.70	8.85	8.71	probe
Neutralization Potential	as CaCO3 equivalent	kg/t	915.22	930.73	940.97	922.98	944.69	937.56	840.13	Sobek

APPENDIX IV

SAMPLE DESCRIPTIONS

MARCH 1, 2008

APPENDIX IV
SAMPLE DESCRIPTIONS

Synopsys of Field Notes – Sept. 13/07

- Eagle Creek traverse
- Attempt to locate Black Warrior showing.
- Creek bed impassable after short distance
- A marked trail was found on the south bank ridgeline above creek (recent trail marks)
- The box canyon that forms from Eagle makes for very difficult access to the creek bed to trail area
- My assistant M. Augustine was able to get down to the creek bed and sample a magnetite showing (samples REC 130807-1 to 5)
- It is not conclusively known whether this is the Black Warrior showings as described in the old Minster of Mines Reports
- Toto file (thread line) was used to measure and mark 50m intervals up creek
- GPS unit location not available in steep canyon and heavily timbered areas.

Beach and Eagle Creek Mouth

- Intrusive diorite rock unit LOC N50°17.345±23m, W124°51.705 sea level
- REC-4+25 Farthest point ascended to, trail ends
- Got very steep and a 150° box canyon wall made further descent not possible
- REC-3+50 V. steep – Another attempt at descent to creek bed. M. Augustine successful and took samples REC130807-1 to 5. (3' seam, no other detail)
- Didn't want to re-climb original descent route and tried creek bed route, unsuccessful and had to return up the original route, making a late day.

Synopsis of Field Notes – Sept. 14/07

West Redonda Project

Homestake Creek Traverse

- RHC – measured from Beach and creek mount with totofile chain – marked and flagged route
- Note – old line similar to one found on the banks of Eagle Creek also ends at RHC-3+50m from beach
- Homestake Creek mouth and ocean LOC N50°17.248±23m, W124°51.523 sea level
- White marble (Brucite) boulders common as well as intrusive rocks in creek bed
- RHC – 0+50m up creek
- Alluvial fan rubble
- LST + intrusive boulders
- RHC – 0+75m medium grained intrusive and a fine grained unit (dyke?) light grey
- Good outcrop
- RHC – 1+25 – falls make creek bed impassable
- Med grained intrusive
- Criss crossed with dyke-like stringers
- Had to go up N.W. bank ridge to continue up creek
- RHC – 2+00 v steep creek bed
- Intrusive rocks
- Old flag line found
- RHC – 2+50
- Some epidote skarn
- Not in place
- RHC – 2+80 Sample RHC-140907-1
- Possible skarn-epidote
- Soft, friable

- Good outcrop
- Couldn't access creekbed – too steep
- Too steep for creek access – possible bedding seen across creek
- 190/45N, white boulders still visible in creek indicating contact further up creek.
- Samples taken of rubble float boulders found near the mouth of Homestake Creek
- RHC-140907-2 – coarse grained white limestone-marble, weathered surface showing spherules, possible brucite
- RHC-140907-3 – more fine grained version of the above, description similar
- Float in creek

APPENDIX V

METALLURGICAL REPORT
PROCESS RESEARCH LABS

MARCH 1, 2008

PROGRESS REPORT 1

To	Jo Shearer		Company:	Redonda Environmental
From	Gie Tan		Date	November 28, 2007
Project No	0707409	Send:	By e-mail	

1. OBJECTIVES

Characterization of Brucite-limestone samples for beneficiation purposes.

2. SUMMARY OF WORK TO DATE

Seven sample lots arrived on September 18, 2007, totaling 161.4kg in weight. Head assays indicated a MgO-grade between 4.7% and 7.2%, which was accompanied by am average of 83.3% $CaCO_3$ and only 2.45% SiO_2. All samples showed relatively low ranges of compositional variation and no environmentally deleterious components.

Two sub-samples (QD2A-1 and QD2B-1) totaling 14.6kg in weight, separately crushed to 10-mesh, were subjected to standard grinding in a stainless steel rod mill at a pulp density of 65% solids. With a 30-minute grind time, 99% of the particles were finer than 325-mesh. Product was dried and riffled into 1kg bags for market evaluations. The assays indicated that none of the MgO dissolved and that a minor increase in the iron content was effected by grinding.

Further work to upgrade the raw ore samples are pending the outcome of market evaluation efforts that should produce tighter product specifications to guide the process design.

3. INTRODUCTION

At the request of Mr. Jo Shearer (Homegold Resources), sample characterization tests were conducted to explore the response of the ore to potential beneficiation techniques.

The primary objective of this testing is to develop a better understanding of the make up and response of these samples to metallurgical upgrading. This progress report presents the preliminary results with a brief overview of methods used in the study.

4. TEST PROCEDURES AND RESULTS

4.1. Sample Preparation and Characterization

After receiving and recording the individual sample weights, single bags were selected at random to represent each sampling-location (Bucket A, Homestake Creek, Quarry Day A, Quarry Day 2A, Quarry Day 2B, Quarry Day 2C and Quarry Wall).

Each 8kg or less sub-lot was crushed individually to 10-mesh and appropriate assay charges were riffled out. Determinations ranged from moisture and paste pH measurements, Sobek neutralization potential, carbonate, whole rock and multi-element ICP scans. The results are summarized in Table 1 and should be complemented by mineralogy or XRD examinations if positive mineral identifications are required.

Table 1. Head Assay Summary of Selected Sample Bags

Items	Report as	Units	BA-1	HSC-4	QDA-1	QD2A-1	QD2B-1	QD2C-1	QW-4	Analytical Method
Aluminum Oxide	Al2O3	%	1.2	0.98	0.94	1.25	0.94	0.98	1.26	WRock
Barium Oxide	BaO	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	WRock
Calcium Oxide	CaO	%	47.12	47.92	47.72	45.52	45.86	48.76	43.71	WRock
Iron Oxide	Fe2O3	%	0.24	0.2	0.07	0.28	0.08	0.09	0.21	WRock
Potassium Oxide	K2O	%	0.41	<0.01	0.37	0.63	<0.01	<0.01	0.41	WRock
Magnesium Oxide	MgO	%	5.45	5.13	4.7	6.17	7.17	4.93	6.03	WRock
Manganese Oxide	MnO	%	0.02	0.03	0.01	0.02	0.02	0.02	0.04	WRock
Sodium Oxide	Na2O	%	0.4	0.40	0.39	0.43	0.42	0.44	0.4	WRock
Phosphorus Pentoxide	P2O5	%	0.04	<0.01	<0.01	0.06	<0.01	<0.01	<0.01	WRock
Silica	SiO2	%	2.6	1.06	0.52	2.38	0.57	0.54	9.48	WRock
Titanium Oxide	TiO2	%	0.03	0.01	0.01	0.03	0.01	0.01	0.03	WRock
Loss on Ignition	LOI	%	41.98	43.70	44.61	42.65	44.02	44.08	37.61	2000F
Accounted for by Whole Rock	Total	%	99.49	99.44	99.35	99.43	99.10	99.85	99.19	Calculated
Strontium	Sr	ppm	230	157	194	191	171	168	138	ICPM
Chromium	Cr	ppm	11	12	15	13	12	13	13	ICPM
Zinc	Zn	ppm	11	29	3	9	7	5	9	ICPM
Copper	Cu	ppm	23	8	27	95	13	58	15	ICPM
Carbonate	CO3	%	56.16	58.77	59.88	56.86	58.96	59.98	49.85	Leco
Calcium Carbonate	CaCO3	%	84.10	85.53	85.17	81.24	81.85	87.03	78.01	calculated max.
Brucite	Mg(OH)2	%	7.88	7.42	6.80	8.93	10.37	7.13	8.72	calculated max.
Moisture Content	H2O	%	0.11	0.05	0.04	0.08	0.07	0.07	0.07	oven dry
Paste pH			9.36	8.51	8.84	9.30	9.70	8.85	8.71	probe
Neutralization Potential	as CaCO3 equivalent	kg/t	915.22	930.73	940.97	922.98	944.69	937.56	840.13	Sobek

Based on the results, an immediate application of this type of ore for neutralization purposes emerges. The carbonate content is elevated and nuisance impurities are largely absent. An upgrading of the neutralization potential and efficiency is normally achieved by roasting and slaking, depending on the intended application.

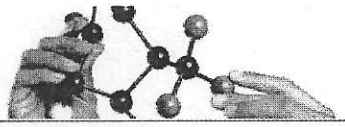
4.2. Grinding Test

The remainder of crushed samples QD2A-1 and QD2B-1 were blended and subjected to standard grinding in a stainless steel rod mill at 65% solids pulp density. Judging by the fine grind of 90% passing 325-mesh, the materials can be classified as soft, which would benefit the upgrading costs once an intended application has been identified. The grind decant water assays would indicate very minor dissolution of the MgO, which can easily be augmented by lowering the pH and increasing the bicarbonate content of the leach medium.

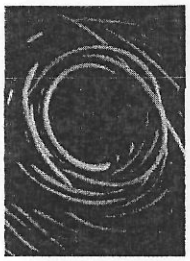
5. CONCLUSIONS AND RECOMMENDATIONS

Finely ground product samples have been split into 1kg charges for market evaluation that may range from applications as fire-extinguisher media, neutralization agents, ceramic and chemical feed stocks and detergents to metal production industries.

It is recommended that a current data base of prices and specifications be compiled to map out the appropriate production strategies, since test results to date indicate encouraging grade and hardness properties.



Micro-Particle Science, Inorganic Expertise and Process Improvement



In thermoplastic compounds -- like wire, cable and hoses -- flame retardancy (FR) is paramount. Magnesium hydroxide ingredients by Huber deliver superior FR functionality.

Magnesium hydroxide functions in the same manner as alumina trihydrate

However, while ATH is an effective flame retardant and smoke suppressant for many polyolefins, there are limitations to its use.

Applications include: TPO roofing • plastics • paints/coatings • and many more!

Magnesium hydroxide undergoes endothermic decomposition with water release at 630° F (332° C). The endothermic decomposition of Mg (OH)2 which occurs during combustion is its flame retardant mechanism. For combustion to occur, there must be fuel, oxygen and heat. By absorbing some of the heat, magnesium hydroxide prevents or delays ignition and retards combustion of the polymeric material. The water released during decomposition has the effect of diluting the combustible gases and acting as a barrier, preventing oxygen from supporting the flame.

Mg(OH)2----------MgO+H2O

The smoke suppression properties of magnesium hydroxide are believed to be due to the dilution effect of the water vapor on the combustible gases or due to a char formation effect on the polymer.

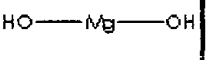
Physical Property Comparison of Alumina Trihydrate and Magnesium Hydroxide

PROPERTY	Alumina Trihydrate $Al(OH)_3$	Magnesium Hydroxide $Mg(OH)_2$
Physical Form	Powder	Powder
Particle Morphology	Hexagonal Platelet	Hexagonal Platelet
Color	White	White
Specific Gravity, g/cm^3	2.42	2.36
pH Value	9-10	10-11
Hardness, Mohs	2.5-3.5	2.0-3.0
Refractive Index	1.57	1.58
Temperature of Decomposition	220°C/428°F	330°C/626°F
Heat of Decomposition, cal/g	280	328
Theoretical loss on Ignition, %	34.6	31.0

Need to find a Mag product for your application? Click the product finder above!

Worldwide Headquarters
Atlanta, Ga.
1-866-JMHUBER
Int'l: 1-678-247-7329

MAGNESIUM HYDROXIDE



PRODUCT IDENTIFICATION	
CAS NO.	1309-42-8
EINECS NO.	215-170-3
FORMULA	$Mg(OH)_2$
MOL WT.	58.33
H.S. CODE	2816.10
TOXICITY	Oral rat LD50: 8500 mg/kg
SYNONYMS	Milk of Magnesia; Mint-O-Mag; Magnesia Magma; Magnesium Hydrate;
DERIVATION	
CLASSIFICATION	
PHYSICAL AND CHEMICAL PROPERTIES	
PHYSICAL STATE	white powder, Odorless
MELTING POINT	350 C (Decomposes)
BOILING POINT	
SPECIFIC GRAVITY	
SOLUBILITY	Practically insoluble
pH	9.5-10.5 (aqueous slurry)
VAPOR DENSITY	
AUTOIGNITION	
NFPA RATINGS	Health: 1 Flammability: 0 Reactivity: 0
REFRACTIVE INDEX	
FLASH POINT	will not burn
STABILITY	Stable under ordinary conditions

APPLICATIONS

Magnesium Hydroxide is a white powder; specific gravity 2.36; , very slightly soluble in water; decomposing at 350 C. It occurs naturally as the mineral called brucite or is prepared by reacting magnesium sulphate or chloride with sodium hydroxide. It is used in the refining of sugar, in extraction of magnesium metal, in the processing of uranium, and in the sulfite wood pulp process. It is an inert filler, flame retardant and smoke suppressant for plastics, synthetic rubber, reinforced polyesters, phenolics, and urethane foam. Magnesium hydroxide releases its 31% water when heated to above 325 C, which cools the product below flash point to reduce fire occurance. Medicinally it, in the form of a mixture (milk of magnesia), is also used as an antacid and as a osmotic laxative.

SALES SPECIFICATION	
APPEARANCE	white powder
ASSAY	96.0% min (dry)
LOSS ON IGNITION	30.5% max
SOLUBLE SALTS	0.5% max
CALCIUM OXIDE	1.5% max
MOISTURE	1.0% max
PARTICLE SIZE	99.7% min (325 mesh)
TRANSPORTATION	
PACKING	50kgs in Bag
HAZARD CLASS	not regulated
UN NO.	
OTHER INFORMATION	

Class of Flame Retardants

- Inorganic
  - Metal hydroxides
    - Aluminium hydroxide
    - Magnesium hydroxide
    - Orthers
  - Antimony compounds
    - Antimony trioxide
    - antimony pentoxide
    - Sodium antimonate
    - Others
  - Boron compounds
    - Boric acid
    - Borax
    - Zinc borate
    - Others
  - Other metal compounds
    - Molybdenum compounds
    - Titanium compounds
    - Zirconium compounds
    - Zinc compounds
      - Zinc stannate
      - Zinc hydroxy-stannate
      - Others
    - Others
  - Phosphorus compounds
    - Red phosphorus
    - Ammonium polyphosphate
    - Others
  - Other inorganic flame retardants
    - ammonium sulfamate
    - ammonium bromide
    - Others

- Halogenated organic
  - Brominated
    - Tetrabromobisphenol A
    - Decabromodiphenyl ether
    - Octabromobiphenyl ether
    - Tetrabromobiphenyl ether
    - Hexabromocyclododecane
    - Tribromophenol
    - Bis(tribromophenoxy) ethane
    - Tetrabromobisphenol A polycarbonate oligomers
    - Tetrabromobisphenol A epoxy oligomers
    - Others
  - Chlorinated
    - Chlorinated paraffins
    - Bis(hexachlorocyclopentadieno)cyclo-octane

        - Others

- Organophosphoros
    - Non-halogenated compounds
        - phosphate esters
            - Ttrialkyl phosphates
            - Triaryl phosphates
            - Aryl-alkyl phosphates
            - Others
        - polyols
        - phosphonium derivatives
        - phosphonates
        - Others
    - Halogenated phosphates
        - Tris(1-chloro- 2-propyl) phosphate
        - Tris(2-chloroethyl) phosphate
        - Tris(2,3-dibromopropyl)phosphate
        - Others

- Nitrogen-based
    - Polyurethanes
    - Polyamides
    - Melamine and its salts
    - Guanidine compounds
    - Others

APPENDIX VI

MARKET STUDY, KEYSTONE ENVIRONMENTAL

MARCH 1, 2008

Project No. 9528 (1.0)

July 31, 2007

KEYSTONE
ENVIRONMENTAL

Mr Jo Shearer, MSc., P. Geo.

Homegold Resources Ltd.
Unit 5, 2330 Tyner Street
Port Coquitlam, B.C.
V3C 2Z1

Keystone Environmental Ltd.
Suite 320 4400 Dominion St.
Burnaby BC V5G 4G3
Telephone 604 430 0671
Facsimile 604 430 0672
keyinfo@keystoneenviro.com
www.keystoneenviro.com

Re: Report on Findings
Preliminary market research for Magnesium Hydroxide (Brucite)

Dear Mr. Shearer,

This KEYSTONE ENVIRONMENTAL™ (Keystone) letter report, prepared at the request of **Homegold Resources Ltd.**, was conducted for the product Magnesium Hydroxide ($Mg(OH)_2$). The findings of this report are a summary of findings from our market research conducted in July 2007.

STUDY LIMITATIONS

Findings and conclusions documented in this report have been prepared in a manner consistent with that level of care and skill normally exercised by other members of the environmental science and engineering profession practicing under similar circumstances in the area at the time of the performance of the work, this report is not intended nor is it able to provide a totally comprehensive review of Magnesium Hydroxide.

This report has been prepared solely for the internal use of **Homegold Resources Ltd.** pursuant to the agreement between. **Homegold Resources Ltd.** and Keystone Environmental Ltd. Any use which parties outside of this agreement make of this report, or any reliance on or decisions to be made based on it, are the responsibility of such parties. Keystone Environmental Ltd. accepts no responsibility for damages, if any, suffered by any party outside of this agreement, as a result of decisions made or actions based on this report.

BACKGROUND

Keystone Environmental performed a brief market research for the industrial and environmental uses and demand for magnesium hydroxide. The market research included an internet search for common uses and suppliers throughout North America. Telephone conversations were also conducted with Greater Vancouver Regional District (GVRD) waste water treatment plant (WWTP) superintendents, Harry Tomlin and Michael Kong of Passive Fire Protection Partners (PFP Partners); Bill Kelly and Darren Matthews of Highland Valley Copper Mine; and Tom Grapple from the Ministry of Agriculture and Lands.

The mineral form of Magnesium Hydroxide ($Mg(OH)_2$) is Brucite. Brucite is a common alteration product of periclase in marble; a low-temperature hydrothermal vein mineral in metamorphosed limestones and chlorite schists; and formed during serpentinization of dunites. Brucite is often found in association with serpentine, calcite, aragonite, dolomite, magnesite, hydromagnesite, artinite, talc, and chrysotile.

Raw Brucite is often used as a flame retardant filler in the plastic industry and paper-making industry; as an additive in chemical fertilizers; and medical industry (magnesium products used as laxatives and antacids). It can also be used as an additive in the steel industry.

COMMON USES

Magnesium Hydroxide ($Mg(OH)_2$) is used as a flame retardant in plastics, paints adhesives, sealants and rubber. It is also used in fertilizer and agricultural foot baths, a replacement for caustic soda in peroxide bleaching of mechanical pulp, industrial talc, additives, and used in waste water treatment plants.

As a flame retardant it is used as a replacement for Alumina Trihydrate (ATH) a chemical used for flame retardancy and smoke suppression. $Mg(OH)_2$ dilutes the fuel available to sustain combustion and produces less Char than ATH resulting in increased effectiveness and decrease in smoke. It is less corrosive than ATH, lower in toxicity and lower in cost. $Mg(OH)_2$ is used as an additive or coating for plastics, paints, adhesives, sealants and rubber. It can also be used to coat steel and wood products.

Magnesium hydroxide has increasingly become a replacement for caustic sodas and limes used in waste water treatment plants (WWTP). It is becoming a more desirable

substitute because it is non-hazardous and environmentally friendly, it is safe and easy to store and handle. $Mg(OH)_2$ is compatible with most aerobic and anaerobic treatment systems and contributes to lower total dissolved solids (TDS) during waste water treatment. Using $Mg(OH)_2$ decreases the amount of sludge compared to other treatment methods. Compact sludge volumes allows for a less intensive filtering and de-watering process thereby reducing overall disposal costs. Magnesium hydroxide is more cost efficient than other alkalis because less product by weight will produce the same results as other alkalis. $Mg(OH)_2$ neutralizes acidic wastes more slowly than other alkalis resulting in more pH control; with a maximum pH of 9 whereas lime has a pH of 12 and caustic soda has a pH of 14. This allows for more control over operation pH and is safer for handling and storing.

A $Mg(OH)_2$ talc is used as an economic filler. It is used as an additive to thicken resins and gelcoats and is easily applied and sanded. The generated product from the nutrient removal process using $Mg(OH)_2$ in WWTP is a valuable slow release agricultural fertilizer.

Magnesium Hydroxide can be used as a replacement for copper sulphate and lime in agricultural foot baths. The use of $Mg(OH)_2$ in foot baths, topical treatments or a protective wrap, controls foot rot, hairy warts and it also hardens hoof without causing caustic burns. It is safe to use and is non-toxic and non-corrosive. It does not contain any heavy metals and maintains a pH of 9.5 which kills the bacteria but does not harm humans, the animals or the environment.

GREATER VANCOUVER REGIONAL DISTRICT OPERATIONS SYSTEMS

The Greater Vancouver Regional District (GVRD) has five waste water treatment plants operating throughout the Lower Mainland. The superintendent of each WWTP was contacted to determine if $Mg(OH)_2$ was used in the treatment process.

Iona Waste Water Treatment Plant

Magnesium Hydroxide is not currently being used at the Iona WWTP. They do not need an alkali for their treatment process as they rely solely on air scrubbers. Consequently they are not interested in trying a magnesium hydroxide product as the treatment operates without it.

Northwest Waste Water Treatment Plant

Similar to the Iona WWTP, the northwest Langley WWTP does not use alkalis in their treatment process. A very minor amount of caustic soda is currently being used to clean the screens. They are not interested in pursuing an alternative.

Lions Gate Waste Water Treatment Plant

No additives are currently being used in the Lions Gate WWTP and have not been used for approximately 15 years. If the treatment process is operating as it is designed to there is no need for additives. Consequently they are not interested in pursuing magnesium hydroxide as a WWTP additive.

Lulu Island Waste Water Treatment Plant

A representative at the Lulu Island WWTP was unavailable at the time of the report.

Annacis Island Waste Water Treatment Plant

Magnesium hydroxide is not currently being used in the treatment process at the Annacis Island WWTP, but it is being used for corrosion control in sewer lines. Every year the sewer crowns are sprayed with a 50% mixture of magnesium hydroxide to coat them and protect them from bacteria and acidic corrosion. The magnesium hydroxide is supplied by a local company, Quadra Chemicals[1], in Delta, British Columbia. Quadra Chemicals might be interested in finding an alternative supplier.

PASSIVE FIRE PROTECTION PARTNERS

Currently Passive Fire Protection Partners (PFP Partners), located in Delta, B.C. uses Alumina Trihydrate (ATH) as their primary fire retardant for their products. They are not currently using Magnesium Hydroxide because it has not been developed for current production. PFP Partners is interested in learning about magnesium hydroxide and there is the potential that it could be used for future production possibly in steel coating and/or wood fire retardants. PFP Partners are open to new products and suppliers[2]

[1] Quadra Chemicals, Delta, B.C. (604-940-2313)
[2] Please contact Michael Kong at PFP Partners if you wish to send information and specifics on your Magnesium Hydroxide. (604-515-1788).

MINISTRY OF AGRICULTURE AND LANDS

To the best of their knowledge, the provincial Ministry of Agriculture and Lands have not been able to find any provincial or federal regulations currently governing the use of Magnesium Hydroxide in agricultural foot baths. Merv Webstein[3], head of the regulatory division at the Abbotsford Regional Animal Health Branch questioned the use of Magnesium Hydroxide as a substitute for copper sulphate and lime commonly used in agricultural foot baths, as they have not been provided with technical specifications or scientific literature on the disinfecting properties of your product.

HIGHLAND VALLEY COPPER MINE

Highland Valley Copper Mine in Logan, B.C. is currently using Potassium Permanganate, an oxidizing agent used to neutralize hydrogen sulphide. Although they are not currently using Magnesium Hydroxide for the waste water treatment plant they are interested in receiving more information. [4]

[3] Abbotsford Regional Animal health Branch, Ministry of Agriculture and Lands (1-888-221-7141).
[4] Please send information to Darren Matthews, (Dayshift) P.O. Box 1500, Logan Lake, BC. V0K 1W0. His phone number is 250-523-2443.

SUPPLIERS

There are several local companies that supply Magnesium Hydroxide:

- Industrial Plastics and Paints have multiple locations throughout the lower mainland. They supply an industrial talc made of $Mg(OH)_2$.
- Coast Fiber-tek, in Burnaby, British Columbia. Fiber-tek sells $Mg(OH)_2$ by the kilogram, the price is on a sliding scale with a better rate for the purchase of higher quantities.

Kilograms (kg)	Price ($)
0.450	3.50
1.5	9.45
10	14.90
22.68	22.45

- Quadra Chemicals, Delta, British Columbia, is the supplier for the GVRD. Pricing was not available.
- Martin Marietta Magnesia Specialty, multiple locations throughout the United States. They supply many products, including flame retardants, acid neutralizers for WWTP, and fertilizer supplements.
- There is also a large market in Korea and China.

CONCLUSION

Although the GVRD is not interested in pursuing an alternative supplier for the small amount of Magnesium Hydroxide that they are currently using there may be other possible markets for the product, such as using it for fire retardant products, in mining waste treatment and agricultural baths.

There appears to be a potential market with PFP Partners for future development of fire retardant products and a potential market with Highland Valley Copper Mine, a division of Teck Cominco Mines, for their waste water treatment plant. More research is needed to determine the effectiveness of using magnesium hydroxide as a substitute for copper sulphate and lime in agricultural foot baths. If a reliable product is developed there could be a potential market in the agricultural sector.

There are other market research reports for the global demand of Magnesium Hydroxide available through on-line companies that focus primarily on market research.[5] Due to budget limitations we did not purchase these documents but suggest that they should be purchased when needed.

As the demand for environmentally friendly alternatives to harmful and corrosive alkalis increase, the demand for Magnesium Hydroxide, or Brucite based products will likely increase. Due to the time and budget limitations of this study, we have not been able to fully analyze all the potential market opportunities for your product, but we have noticed

[5] Market Research: World market for Magnesium Hydroxide, Magnesium Peroxides, and oxides, hydroxides and peroxides of Stronium or Barium: a 2007 Global Trade Perspective. ($ 325 for online download) http://www.marketresearch.com/map/prod/1364456.html

Icon group International Inc. The world market for Magnesium Hydroxide, Magnesium Peroxide, and oxides, hydroxides and peroxides of Stronium or Barium: A 2006 Global Trade Perspective.($795 for report via email)
http://www.icongrouponline.com/data/reports_toc/00065920TC_toc.asp?sid=765163060

that there is a market need for your product. We will be pleased to work with you in investigating these opportunities in further detail at your request.

PROFESSIONAL STATEMENT

This report has been prepared and reviewed by Keystone Environmental Ltd. approved personnel who have the credentials and knowledge of the applicable public laws, regulations and/or policies which apply to this report.

This report was prepared by Melissa O'Donnell, and reviewed by Francisco Perelló and is subject to the General Terms and Conditions appended at the end of the report.

31. VII. 07
Date

Melissa O'Donnell, B.A.
Environmental Technician

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
F. PERELLO-ARACENA 31.VII.07

Francisco Perelló, Ph.D. P. Eng.
Department Head

Encl.

REFERENCES

Chemlocus. April 2004. Magnesium Hydroxide, the Green Retardant! Chem Journal Daily.
http://www.chemlocus.com/news/daily_read.htm?menu=D5&Sequence=6598&cpage=1&sub=A

DanDong Heqi Brucite Mining Co. Ltd.
http://www.brucite.cn/products_3.php

Icon group International Inc. The world market for Magnesium Hydroxide, Magnesium Peroxide, and oxides, hydroxides and peroxides of Stronium or Barium: A 2006 Global Trade Perspective.
http://www.icongrouponline.com/data/reports_toc/00065920TC_toc.asp?sid=765163060

Market Research: The world market for Magnesium Hydroxide, Magnesium Peroxides, and oxides, hydroxides and peroxides of Stronium or Barium: a 2007 Global Trade Perspective.
http://www.marketresearch.com/map/prod/1364456.html

Martin Marietta Magnesia Specialty
http://www.magspecialties.com/waterinfo.htm

Premier Chemicals LLC. Aquamag.
http://www.premierchemicals.com/aquamag/index.htm

The free dictionary by Farlex. Magnesium Hydroxide.
http://www.thefreedictionary.com/magnesium+hydroxide

Tradekey. July 2007. Zibo Auschina New Flame Retardant Materials.
http://www.tradekey.com/kpr-magnesium-hydroxide/

University of Cincinnati, Annual Project Report, January 2002.
http://www.ohioairquality.org/ocdo/pdf/2001AnnualReportD-96-16.pdf

USGS – Magnesium Compounds. Deborah A. Kramer.
http://minerals.usgs.gov/minerals/pubs/commodity/magnesium/mgcmyb2001.pdf

Water Online: December 2004. White Paper: The Use of Magnesium Hydroxide Slurry for Biological Treatment of Municipal and Industrial Waste Water.
http://www.wateronline.com/content/news/article.asp?docid=2572ef68-7e47-492b-aa73-1ab99e472ad0&VNETCOOKIE=NO

Wikipedia, Magnesium Hydroxide
http://en.wikipedia.org/wiki/Magnesium_hydroxide

Jo Shearer

From: "Francisco Perello" <fperello@keystoneenviro.com>
To: "Jo Shearer" <jo@HomegoldResourcesLtd.com>; "A. Salman Jamal (Syndicated Capital Corp)" <asj@syndicatedcc.com>
Sent: Friday, December 14, 2007 6:38 PM
Subject: PFP Partners - Meeting Minutes (Our Project No. 9528)

Jo and Salman,

This email provides my record of the discussion during our meeting with Passive Fire Protection Partners ("PFP Partners") on November 30th, 2007

- Michael Kong from PFP Partners provided a brief overview of his company. PFP Partners develops, manufactures and tests fire protection products, including fire and smoke stop sealant, caulking, electrical outlet box insert and firestop pad, fire and smoke protection pillows, firestopping electrical penetrations, fire and smoke stop sprayable mastic sealant, and many other products.
- Their current revenues are in excess of $10,000,000 with over 80% of the products sold in the USA through bulk quantity distributors.
- They are investigating and developing new products such as fire retardants ropes, fire resistance caulking, flame retardant coating for steel and other products.
- We provided Mr. Kong with a copy of the Progress Report 1 dated November 28, 2007 issued by PRA with the laboratory characterization of the brucite-limestone samples. Two 5-lb samples were also provided to him.
- Mr. Kong indicated that he would consider using the brucite (magnesium hydroxide) in the testing of the new products. Based on current workload and priorities, testing using brucite will take place not earlier than February 2008.
- During the meeting Mr. Kong indicated that their main raw material is Calcium Carbonate such as the CHX-6 from Imasco or Micronas 3 from Columbia River Carbonates.
- Mr. Kong is interested in finding alternative supplier for the calcium carbonate if the product's price is $0.15 per kilogram ($150 per metric tonne) or better.
- They require 22 pallets every 2 weeks, each pallet contains 50 50-lb bags, corresponding to 55,000 lb every 2 weeks or 1.43 million lb per year or $97,500 per year.
- Mr. Kong requested that we confirm in writing that they can supply PFP Partners' annual requirements at the target price.
- Mr. Kong also requested that the following technical data and information on the material be provided for their review:
    - MSDS
    - Technical data sheet on the product
    - Technical details on the most suitable dispersion agent that should be used when dissolving the product
    - Heat conductivity
    - Oil adsorption
    - The pH of slurries made with the product at 5 and 10 percent concentrations
    - Confirmation on whether the silica content is in crystal or non-crystal form (preference is for silica free material for some applications)

I trust this provides a summary of the meeting discussions. Please let me know if there are any discrepancies with these minutes and if you wish us to assist you with any of the outstanding actions.

As mentioned in my previous email of earlier this week, we are contacting the other potential candidates to identify market opportunities for the product.

We are also looking at manufacturers of similar products in and outside of BC as potential clients for the product.

Please call or email me if you have any questions.

Best regards,

Francisco A. Perelló, PhD, P.Eng.
Associate
Director of Technology
Keystone Environmental Ltd.
Phone: (604) 430-0671
Mobile: (778) 233-5383
Fax: (604) 430-0672
Email: fperello@keystoneenviro.com
Website: www.keystoneenviro.com

****

APPENDIX VII

ENVIRONMENTAL STUDY,
NOVA PACIFIC ENVIRONMENTAL

MARCH 1, 2008

Baseline environmental assessment associated with a potential quarry site on West Redonda Island, B.C.

January 2008

Prepared for:

Redonda Environmental Services Ltd

Prepared by:

Kevin deBoer, BSc.

and

Ross Murray, MSc. RPBio.

Nova Pacific
Environmental

Contents Page

Introduction

A property on the north shore of West Redonda Island is being considered for a quarry operation to remove brucitic limestone from the site of a previously operating quarry. The 0.04 ha property is located on the shoreline of Pryce Channel, at the base of a steep, north facing slope (Figure 1).

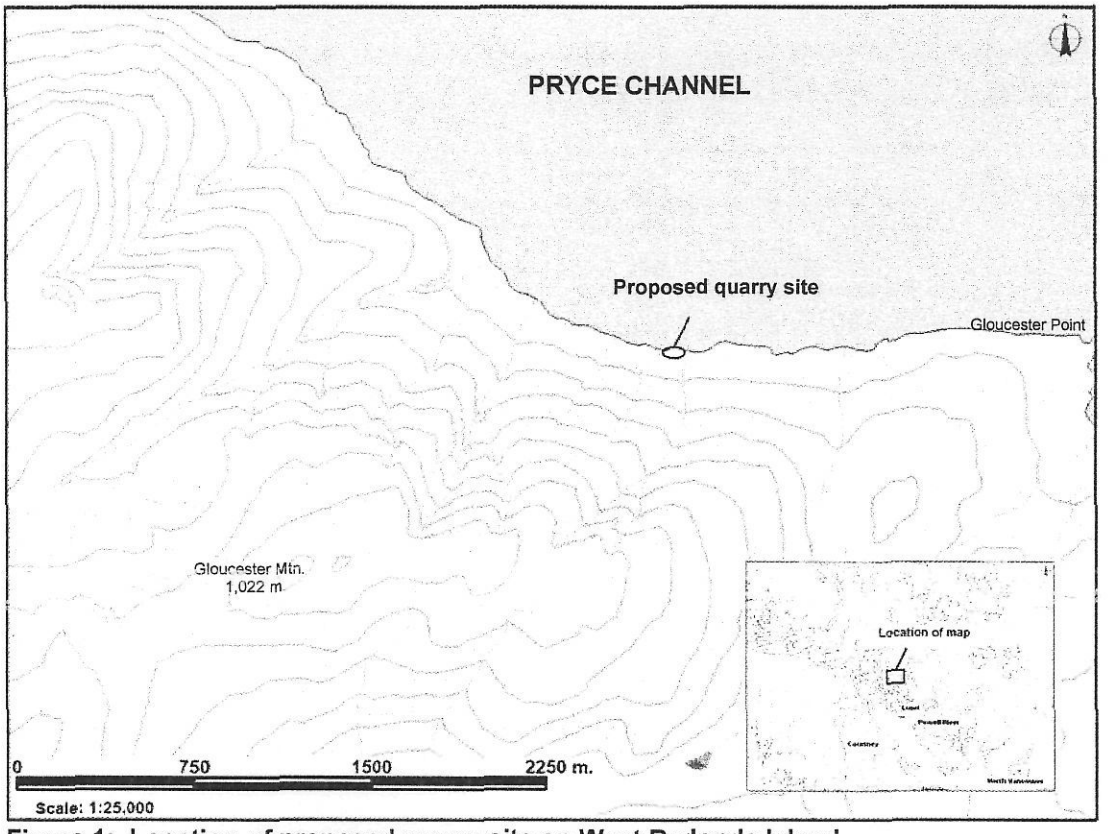


Figure 1: Location of proposed quarry site on West Redonda Island.

Nova Pacific Environmental was retained by Redonda Environmental Services Ltd. to provide a baseline environmental assessment which may result from the proposed quarrying activities at this location. The proposed activities include clearing the trees from a 60 m x 60 m plot, and excavating 900 tons of rock which would then be loaded to a barge. This location was previously used for quarrying limestone and it is anticipated that no drilling or blasting will be required as there is believed to be sufficient loose rock to meet the targeted amount[1].

Methods

This assessment was conducted based on information available from government resources, various other published sources and internet sites, and information provided by the client. No site visit was conducted and all observations and conclusion are based on the location and characteristics of the site as described in the available information. The maps included in the report to describe the location were prepared using a provincial mapping site[2]. The lists of potential flora and fauna were compiled based on distribution and habitat requirements for each species, which is described in greater detail below.

Species at Risk Analysis

The legal frameworks that oversee species at risk in British Columbia and Canada are reviewed in Appendix 1 and a brief summary is included here. Both levels of government utilize a model where an advisory body develops lists and recommends species for legislative recognition. The federal advisory body is the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and it operates under the Species at Risk Act (SARA). The provincial advisory body is called the Conservation Data Centre (CDC) and it advises the Ministry of Environment of BC. Species are ranked as extinct, extirpated, endangered, threatened, special concern, or stable. In both cases, the list recommended by the advisory body is larger than the list protected under law.

Federally, COSEWIC lists 552 species while SARA lists 457 species, 303 of which are protected as extirpated, endangered or threatened. For reasons explained in the Appendix, SARA applies only to migratory birds or aquatic species at the Redonda Island property, and this reduces the list applicable to the property to 74 species. Provincially, CDC lists 731 species, subspecies or populations of species as red-listed (extirpated, endangered or threatened) and 644 species, subspecies or populations of species as blue listed (special concern). While new legislation is forthcoming that will facilitate the listing of species for conservation purposes, these procedures are not in place. Under the Wildlife Act the BC Government lists only 4 species at risk in British Columbia. These are the burrowing owl (*Athene cunicularia*), the sea otter (*Enhydra lutris*), Vancouver Island Marmot (*Marmota vancouverensis*) and the American White Pelican (*Pelecanus erythrorhynchos*). While new regulations that could extend the provincial species at risk listings are awaiting enactment, until the new legislation comes into force the current status will remain unchanged.

Additional provincial protection is provided under some of the general provisions of the Wildlife Act that apply to all species. In addition, Section 34 of the Wildlife Act protects all birds and their nests when occupied by an egg and the nests of eagles, peregrine falcons, gyrfalcons, ospreys, herons, and burrowing owls are protected at all times[3].

The list of plant and animal species included in this review was generated using a search engine provided by the Conservation Data Centre (CDC), a department of the Ministry of Environment of BC[4, 5]. The search was directed to include all species designated Red or Blue status, according to the provincial government, and which were known to occur in the Coastal Western Hemlock (CWH) biogeoclimatic zones of the Sunshine Coast District. This list was supplemented by a search of the federally regulated SARA registry, in order to include any federally protected species which may have been excluded by the original search parameters[6].

Once these species lists were assembled, the species were ranked by comparing their preferred habitat information with the conditions found at the site. Species that had not been recorded locally and were known to have habitat preferences which did not match the site were designated as "very unlikely". Species that were generally known to occur within the forest district, but were not expected to be found in the habitat conditions present at the site were designated as "unlikely". Species known to be present in the general area and whose habitat preferences matched conditions at the site were designated as "possible". No listed species achieved rankings that designated a greater likelihood than possible.

Site Description

The proposed quarry site is located on West Redonda Island, in the Sunshine Coast Forest District. West Redonda is approximately 2 km distant from any portion of the mainland coast. Situated at 50° 17' 10" N by 124° 51' 05" W, the site is immediately adjacent to the marine shoreline of Pryce Channel (Figure 3). The terrain is very steep, dropping sharply from the 1022 m height of Gloucester Mtn. down to the shore of the channel. Estimates of the slope near the

shore, calculated using government maps, suggests that the grade is approximately 60% near the shore and increases with elevation. The two streams which lie to either side of the property are short and steep, and very likely to be ephemeral watercourses, flowing intermittently during periods of heavy rainfall.

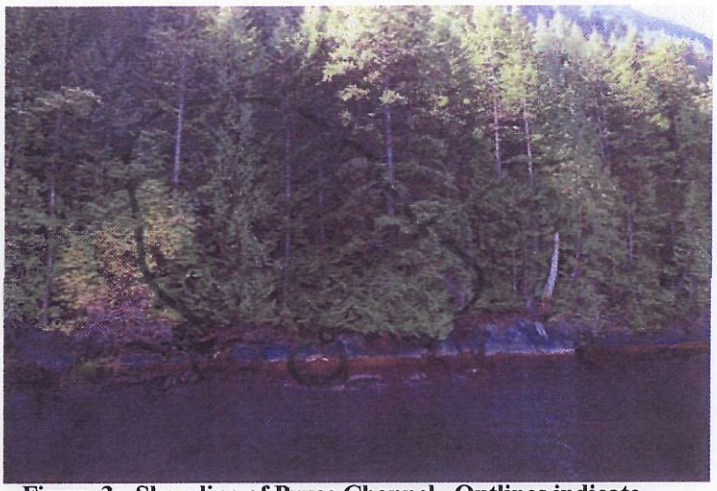


Figure 3: Shoreline of Pryce Channel. Outlines indicate approximate area of site and visible sample of brucitic limestone.

The entire island lies within the Coastal Western Hemlock (CWH) biogeoclimatic zone, while the property area is more specifically defined within the dry, maritime subzone (CWH-dm). The CWH zone typically receives substantial rainfall and relatively mild temperatures with little significant fluctuation throughout the year. Within the CWH, the dry, maritime subzone is characterized by a mean annual temperature (MAT) of 8.7°C and a mean annual precipitation (MAP) of 1,864 mm[7]. The CWH-dm subzone is slightly warmer and receives less rainfall than the greater CWH zone.

The vast forests within the Coastal Western Hemlock zone are highly productive ecosystems and are home to a wide variety of plants and animals, many of which are strongly associated with the CWH zone. Interspersed between the forest areas, particularly in the lowland zone, it is also common to find freshwater bogs which contribute to the variety of species. Vegetation typically associated with the CWH-dm subzone includes Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tusga heterophylla*), western redcedar (*Thuja plicata*), vine maple (*Acer glabrum*), salal (*Gaultheria shallon*), bracken fern (*Pteridium aquilinum*), sword fern (*Polystichum munitum*), flat moss (*Plagiothecium undulatum*), and lanky moss (*Rhytidiadephus loreus*)[8]. Most of the forest on the north side of West Redonda is relatively young and the predominant tree species is western hemlock, although there are fragments of older forest scattered at the less accessible mid to high elevations[9]. Documents provided by the client indicate the site activities will be confined to a relatively small area which has been previously disturbed and therefore the small volume of cleared timber will mostly be younger trees.

Results

Wildlife

A search of the CDC's BC Species and Ecosystem Explorer and the federal SARA registry produced a list of 31 animal species (Appendix 2). From this list 9 species were considered very unlikely and another 16 were rated as unlikely. The remaining 6 species were listed as possible. This includes the Great Blue Heron, *fannini* subspecies (*Ardea herodias fannini*), Marbled Murrelet (*Brachyramphus marmoratus*), Northern Goshawk *laingi* subspecies (*Accipiter gentilis laingi*), Pine Grosbeak *carlottae* subspecies (*Pinicola enucleator carlottae*), Western Toad (*Bufo borealis*), and the Pacific Sideband Snail (*Monadenia fidelis*). Appendix 2 presents a complete listing of all the considered species and a brief explanation of the assigned status.

Plants

The search of the CDC's BC Species and Ecosystem Explorer produced a list of 26 potential plant species for the project area (Appendix 3). A search of the SARA registry produced no additional results. 21 of the listed species were given a status of unlikely and 5 were ranked as possible. The plants ranked as possible included the Field Dodder (*Cuscusta campestris*), Macoun's Groundsel (*Senecio macounii*), Woodland Penstemon (*Nothochelone nemorosa*), White Adder's-mouth Orchid (*Malaxis brachypoda*), and the Least Moonwort (*Botrychium simplex*). Appendix 3 includes a complete presentation of the species which were considered and additional comments regarding the assigned status.

Aquatic environment

The site is located immediately on the marine shoreline of Pryce Channel and photos of the site show an apparently typical coastal marine environment with various algae, mussels, and starfish. Although the described site activities are expected to have very minimal impact on the marine environment, there are several species listed in the federal SARA registry which are reported to occur in Pryce Channel. This includes the Grey Whale (*Eschrichtius robustus*), Harbour Porpoise (*Phocoena phocoena*), Humpback Whale (*Megaptera novaeangliae*), Killer Whale (*Orcinus orca*), Steller Sea Lion (*Eumetopias jubatus*), Short-Tailed Albatross (*Phoebastria albatrus*), Northern Abalone (*Haliotis kamtschatkana*), and the Olympia Oyster (*Ostrea conchaphila*).

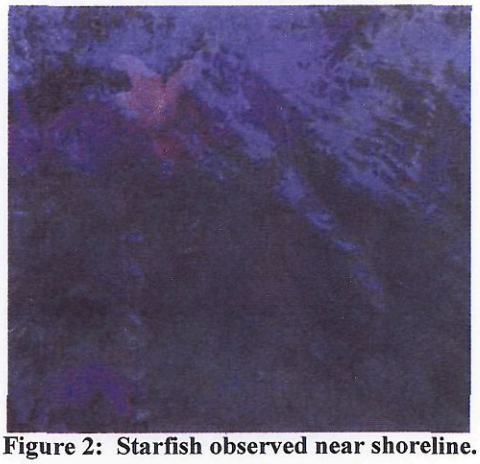


Figure 2: Starfish observed near shoreline.

Figure 3: Marine life on north shore of West Redonda Island.

The streams which flow into Pryce Channel on either side of the site are likely to be ephemeral. Using the internet maps provided by the provincial government, the gradient within the first 65m from the shore is estimated to be greater than 60%. Beyond 65m from shore the slope increases to greater than 80%. These estimates suggest that the very steep slope prevents these streams from being suitable fish habitat. A slope greater than 20% is generally considered to steep for most fish species. However, based on the level of mapping detail, there is still a possibility that the lowest elevations present some usable habitat.

Conclusions

The proposed site will affect a relatively small area of approximately 0.04 ha. Some clearing will be required, and it is anticipated that these will be primarily younger trees growing within the perimeter of the previously operating quarry. This baseline assessment indicated that this is unlikely to be critical habitat for any listed species, and the modest clearing efforts are not expected to have significant environmental impact.

There is a possibility that the area is used for nesting, and prior to the initiation of work the site should be surveyed for nests. If nests are recorded or certain birds are identified action may be required. Section 34 of the Wildlife Act protects all birds and their nests when containing eggs,

and the nests of eagles, peregrine falcons, gyrfalcons, ospreys, herons, or burrowing owls at any time. Trees that contain protected nests should be marked and remain undisturbed throughout the activities. A setback area with a radius equaling the height of the tree is recommended surrounding any tree containing a nest.

The site activities include the transfer of quarried material to a barge from shore and there is an associated risk of spillage. Care should be taken to prevent quarried material from being deposited on the marine and shoreline environments, since there is potential for marine organisms to be damaged or smothered if excessive sediment is deposited in the area. Runoff from the site presents a similar concern and the site plan includes a settling pond to collect and settle surface water from the project area.

An on-site evaluation was not completed as a part of this study and the preparation of a comprehensive list of the wildlife and vegetation was therefore beyond the study scope. On site assessment, potentially including seasonal surveys, would be required to establish with confidence the presence or absence of listed species and to assess what measures may be necessary for their responsible management.

References

[1] Redonda Environmental Services Ltd. 2007. Mineral and Coal Notice of Work and Reclamation Program.

[2] http://maps.gov.bc.ca/

[3] WILDLIFE ACT, [RSBC 1996] CHAPTER 488. Copyright (c) Queen's Printer, Victoria, British Columbia, Canada. http://www.qp.gov.bc.ca/statreg/stat/W/96488_01.htm#section6. (accessed on December 20-21, 2007)

[4] B.C. Conservation Data Centre. 2007. *Conservation Data Centre Mapping Service*. Minist. of Environ. Victoria, BC. Available: http://maps.gov.bc.ca/imf50/imf.jsp?site=cdc (accessed Dec 20-21, 2007).

[5] B.C. Conservation Data Centre. 2007. *BC Species and Ecosystems Explorer*. B.C. Minist. of Environ. Victoria, BC. Available: http://srmapps.gov.bc.ca/apps/eswp/ (accessed Dec 20-21, 2007).

[6] Environment Canada, Canadian Wildlife Service. 2004. *Species at Risk Web Mapping Application* (http://www.sis.ec.gc.ca/ec_species/ec_species_e.phtml), (accessed on Dec 20-21, 2007).

[7] http://genetics.forestry.ubc.ca/cfcg/proj_cataloguing/overview_climate.html#names

[8] Pojar, J., Klinka, K. and Demarchi, D.A. (1991) Chapter 6 - Costal Western Hemlock Zone from Ecosystems of British Columbia (Compiled and edited by D Meidinger and J. Pojar.

[9] http://www.bcforestinformation.com/maps/frames.htm

Appendix 1

Species at risk legislation and listing procedures

Species at risk are covered under federal and provincial law. Federally, species at risk are covered by the Species at Risk Act (SARA). Provincially, species at risk are covered under the Wildlife Act and the Forest and Range Practices Act.

Federal Law

SARA makes it an offence to kill, harm, harass, capture or take an individual of a listed species that is extirpated, endangered or threatened; possess, collect, buy, sell or trade an individual of a listed species that is extirpated, endangered or threatened, or its part or derivative; or to damage or destroy the residence of a listed endangered or threatened species or of a listed extirpated species if a recovery strategy has recommended its reintroduction.

However, this federal legislation applies only to federal lands except for aquatic species and migratory birds covered by the *Migratory Birds Convention Act, 1994* where it applies to all lands. Federal lands are lands owned by the federal government and include national parks, lands used by the Department of National Defence, reserve lands and most of the land in the three territories.

This means that the Act applies to listed aquatic species and birds covered by the *Migratory Bird Convention Act, 1994* wherever they are found and to all listed species on federal lands only. In the provinces, listed species other than aquatic species and migratory birds are protected under provincial laws except that the federal government may intervene on the absence of provincial action, but this has not occurred.

Provincial Law

Species at risk are covered in BC under the Wildlife Act and the Forest and Range Practices Act. The Wildlife Act is the principal act and an amendment to this act has passed Third Reading and been given Royal Ascent but it will not become law until it is brought into force by regulation of the Lieutenant Governor in Council. It has been awaiting that final step since May 20, 2004, and until this occurs the Wildlife Act 1996 stands on its own.

Species at risk are afforded the general protection afforded to all wildlife species under the Wildlife Act. That is, it is illegal to possess, take, injure, molest, destroy or otherwise interfere with any wildlife without a license or permit, and this general statute protects species at risk. The current Wildlife Act also stipulates that it is an offence to possess, take, injure, molest or destroy a bird or its egg, or its nest if that nest is occupied, or the nest of an eagle, peregrine falcon, gyrfalcon, osprey, heron or burrowing owl at any time. The government may also designate land in an existing wildlife management area as a critical wildlife area or a wildlife sanctuary. It may also designate a species as endangered or threatened.

If and when the Wildlife Amendment Act 2004 comes into force, the government will have the ability to designate a species as extirpated, endangered or threatened on its own information or as endangered or threatened based on its federal listing. Under this new legislation it will be an offence to kill, harm, harass, capture or take; damage or destroy a residence of; import, export or traffic in; possess, ship, or transport a species at risk except where such action may be authorized by one of a variety of legal instruments (e.g. a sampling permit for scientific purposes).

Under the Forest and Range Practices Act, the Identified Wildlife Management Strategy has the goals of minimizing the effects of forest and range practices on Identified Wildlife, and to maintain their limiting habitats throughout current, and where appropriate, historic ranges. These provisions apply only to range or forest activities, or other activities that require forestry permits to clear land.

Listing Process and Status

Species potentially at risk are evaluated and ranked at the provincial and national levels by agencies which support the legislative process. At the national level, species are evaluated and ranked by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In British Columbia, the Conservation Data Centre (CDC) in Victoria is responsible for tracking the status of rare, endangered and vulnerable animal and plant species and communities found in B.C. Both COSEWIC and CDC are advisory bodies that propose species for listing to the legislative bodies.

Federally. COSEWIC creates lists and individual species on these lists are considered for inclusion on the lists prepared under SARA. Not all recommendations are accepted and there are resulting differences in the lists. In addition, not all SARA listed species are protected; only species listed in SARA Schedule 1 as extirpated, endangered or threatened are protected under federal statute.

While COSEWIC lists 552 species, SARA lists a total of 457 species in total. SARA lists 303 species in Schedule 1 as extirpated, endangered or threatened and those 303 species are protected under law. Of those 303 species, 22 are migratory birds and 52 are aquatic species, and they are protected under SARA wherever they may occur in Canada. The remaining 229 species are protected by federal law only on federal lands.

Provincially, the CDC prepares and presents lists and the government designates species at risk under the Provincial Wildlife Act. Species are classified as Red-Listed (extirpated, endangered or threatened) or Blue-Listed (of special concern). Red- and blue-listed species are also ranked based on their global (G) status and sub national (S) rarity (1=critically imperilled; 2=imperilled; 3=vulnerable; 4=apparently secure; 5=secure; T=infraspecific taxon (usually subspecies); B=breeding; N=non breeding; NR=not ranked; Q=questionable taxonomy; Z=migratory transient). CDC lists 731 species as Red-Listed and 644 species as Blue-Listed. However, only four species are listed under the provisions of the Wildlife Act, and all are Red Listed. These are the Vancouver Island Marmot (*Marmota vancouverensis*), the Burrowing Owl (*Athene cunicularia*), the Sea Otter (*Enhydra lutris*) and the American White Pelican (*Pelecanus erythrorhynchos*).

Finally, it should be noted that ranking is applied to species, subspecies, populations, and ecotypes. This means that 100 species at risk may in fact be less than 100 "species" since a given species may appear more than one time if more than one population of that species is at risk. For example, the White Sturgeon (*Acipenser transmontanus)* is listed individually by CDC for the Kootenay, Columbia, Nechako, Upper Fraser, Middle Fraser and Lower Fraser populations, and it therefore appears 6 times as Red-Listed.

Appendix 2

Listed animal species, showing listing status by regulatory body and likelihood of occurrence, evaluated based on site conditions and documented distributions and habitat needs of listed species.

Common Name	Scientific Name	Global Rank	Provincial Rank	COSEWIC	BC Status	SARA Schedule	Likelihood of Occurrence	Habitat and Distribution Notes[1,2,3]
Mammals								
Fisher	*Martes pennanti*	G5	S2S3		Blue		**Very Unlikely**	Found throughout the province, but in very low numbers. Not known from the larger islands or adjacent areas of the mainland coast.
Grizzly Bear	*Ursos artos*	G4	S3	SC (May 2002)	Blue		**Very Unlikely**	Although Grizzly bears are found in low numbers along the southern coast it is unlikely that they ever occupied Vancouver Is. or the large coastal islands.
Roosevelt Elk	*Cervus canadensis roosevelti*	G5T4	S3		Blue		**Very Unlikely**	Restricted to Vancouver Island and a few isolated populations on the mainland as a result of reintroduction. Not reported on Redonda Island.
Townsend's Big-eared Bat	*Corynorhinus townsendii*	G4	S3		Blue		**Very Unlikely**	At the extreme northern extent of range and has specific habitat requirements. Found primarily in lowlands, and range generally coincides with highly developed areas.
Steller Sea Lion	*Eumetopias jubatus*	G4	S2S3B, S3N	SC (Nov 2003)	Blue	1	**Unlikely**	This marine species is wide-ranging and very likely is found offshore. Further, the shoreline of the site is treed and very steep, providing no opportunity for a rookery or haulout site.
Wolverine, *luscus* subspecies	*Gulo gulo luscus*	G4T4	S3	SC (May 2003	Blue		**Very Unlikely**	Wide ranging throughout the provincial mainland, but avoids coastland and not documented on any of the large islands of the Georgia Depression.

Birds								
Band-tailed Pigeon	*Patagioenas fasciata*	G4	S3S4B		Blue		**Unlikely**	Forages in a broad range of habitats. Project area is located at the northern edge of large range. Project Site is beyond northern limit of established breeding range. Non-breeders sparsely distributed as far north as Queen Charlotte Is. Coastal populations show strong affinity to mineral springs or gravel sites.
Barn Swallow	*Hirundo rustica*	G5	S3S4B		Blue		**Unlikely**	Forages over open areas, often near water, and remains relatively close to the nest. Nests in buildings, caves, and cliff crevices. Avoids heavily wooded areas.
Canada Goose, *occidentalis* subspecies	*Branta canadensis occidentalis*	G5T2T3	S1N		Blue		**Unlikely**	Breeds in Alaska and tends to overwinters in agricultural lands in Washington and Oregon. May pass through on migration route, but unlikely to be affected by site activities.
Double-crested Cormorant	*Phalacrocorax auritus*	G5	S3B	NAR (May 1978)	Blue		**Unlikely**	Breeding is concentrated primarily in the Strait of Georgia, near areas of high human activity. Can be found throughout the coast but prefers sheltered waters such as bays, lagoons and estuaries.
Great Blue Heron, *fannini* subspecies	*Ardea herodias fannini*	G5T4	S3B,S4N	SC (May 1997)	Blue	3	**Possible**	Ubiquitous along the coast. No breeding colonies have been documented in the vicinity of the site, and the extremely steep site and abrupt shoreline suggest that this location is not ideal for foraging
Green Heron	*Butorides virescens*	G5	S3S4B		Blue		**Unlikely**	This site is at the very northern edge of the current range. This species may range in the area during the summer months but no breeding has been documented. Also, the steep shoreline at the site does not present ideal foraging opportunities.

Marbled Murrelet	*Brachyramphus marmoratus*	G3G4	S2B,S4N	T (Nov 2000)	Red	1	**Possible**	Numerous occurrences documented on nearby islands and adjacent coastline. Several nesting sites documented on East Redonda Is., and one on the south end of West Redonda Is. Nests high in canopy of old growth forests, within 75 km of coastline. Unlikely to be breeding in younger forests close to the site, but may use older growth farther inland.
Northern Goshawk, *laingi* subspecies	*Accipiter gentilis laingi*	G5T2	S2B	T (Nov 2000)	Red	1	**Possible**	Distribution includes Vancouver Is, the Queen Charlotte Is., other coastal islands and possibly parts of the coastal mainland. Tend to nest in maturing-to-old mesic, coniferous stands dominated by Douglas-fir and western hemlock. Forages in a variety of forest cover types.
Peregrine Falcon, *anatum* subspecies	*Falco peregrinus anatum*	G4T4	S2B	SC (Apr 2007)	Red	1	**Unlikely**	Only 20 known breeding pairs in BC, restricted to the lower Fraser Valley, Southern Vancouver Island and Gulf Islands, and a few locations in the Interior. Birds may rarely visit the area during wanderings when not breeding.
Peregrine Falcon, *pealei* subspecies	*Falco peregrinus pealei*	G4T3	S3B	SC (Apr 2007)	Blue	1	**Unlikely**	Relies heavily on large seabird colonies. Distribution limited primarily to the Queen Charlotte Is. and the northwest coast of Vanouver Is.
Pine Grosbeak, *carlottae* subspecies	*Pinicola enucleator carlottae*	G5T3	S3B		Blue		**Possible**	Breeds on Vancouver Is., the Queen Charlotte Is. and probably the mainland coast. Nests and forages in open coniferous forest and forest edge.
Purple Martin	*Progne subis*	G5	S2S3B		Blue		**Very Unlikely**	Current range restricted to southeastern Vanvouver Island and lower Fraser Valley. Otherwise, generally found in sheltered estuaries and harbours, often associated with extensive mudflats.
Spotted Owl	*Strix occidentalis*		G3	S1	Blue	1	**Very Unlikely**	Rely on naturally occurring nest sites, most commonly found in older forests. Very susceptible to habitat decline due to logging. BC population is at the northern extreme of distribution, and the project site is well beyond restricted provincial range.

Western Screech-Owl, *kennicotii* subspecies	*Megascops kennicottii kennicottii*	G5T4	S3	SC (May 2002)	Blue	1	**Unlikely**	Prefers open forest for foraging and large old trees for nesting. Partial to riparian habitats in valley bottomlands and therefore susceptible to habitat loss from human development.
Amphibians								
Coastal Tailed Frog	*Ascaphus truei*	G4	S3S4	SC (May 2000)	Blue	1	**Very Unlikely**	Found extensively in the southern Coast and Cascade Ranges in clear, cold, swift flowing creeks. Not established on the majority of the large coastal islands.
Red-legged Frog	*Rana aurora*	G4	S3S4	SC (Nov 2004)	Blue	1	**Unlikely**	Prefers slow moving water with abundant vegetation. Known to occur on adjacent coastlines of Vancouver Is. and the mainland north of Powell River. Presence on Redonda Is. or nearby islands has not been documented. If in fact this species is present among the coastal islands, there is unlikely to be suitable habitat at the project site.
Western Toad	*Bufo boreas*	G4	S4	SC (Nov 2002)	Yellow	1	**Possible**	Nearby streams may be sufficient for breeding habitat. Outside of the breeding season can be found in very wide variety of habitats. Occurs throughout BC, except for the NE corner of the province.
Reptiles								
Western Painted Turtle - Pacific Coast Population	*Chrysemys picta pop.1*	G5 TNR	S2	E (Apr 2006)	Red		**Very Unlikely**	On the mainland is restricted to the area south of Powell River. Found in lowlands and valleys in ponds, lakes and slow moving streams. Project site is beyond range and not suitable habitat.
Invertebrates								
Black Petaltail dragonfly	*Tanypteryx hageni*	G4	S3		Blue		**Unlikely**	Strongly associated with seepage areas, bogs or streams and not usually under forest canopy. Forages near sunny forest edge. Currently documented only on the mainland coast.

Blue Dasher dragonfly	*Pachydiplax longipennis*	G5	S3S4		Blue		**Unlikely**	This species, like many other odonates, breeds in ponds, and is therefore unlikely to be found at or near the steep, forested project location. Adult dragonflies do wander, but are most likely to be found near sites with suitable larval habitat.
Dun Skipper butterfly	*Euphyes vestris*	G5	S3	T (Nov 2000)	Blue	1	**Unlikely**	Larval host plant is reported to be sedges of the *Carex spp.* Found in open moist areas where the host species can be found. Not currently documented as far north on the coast as Redonda Is.
Pacific Sideband snail	*Monadenia fidelis*	G4G5	S3S4		Blue		**Possible**	Distribution not well documented. Unknown if this species occupies the coastal islands. Found in a variety of habitats, from forest to open grassy areas.
Scarletback Taildropper slug	*Prophysaon vanattae*	G4	S3S4		Blue		**Unlikely**	Distribution information is sparse, but suggests that the range for this species is limited to Vancouver Island and the Chilliwack Valley.
Threaded Vertigo snail	*Nearctula* sp.1	G3G5	S2		Red		**Unlikely**	Information on distribution is limited. Requires moist habitat in old gowth or mature second growth forests.
Western Pine Elfin butterly, *sheltonensis* subspecies	*Callophrys eryphon sheltonensis*	GNR	S3		Blue		**Unlikely**	This subspecies, occurs in Washington in the Puget Sound area and might occur on some of the Gulf Islands in British Columbia. Strongly associated with various hard pines, the larval food species, which are not common on the island.[4]

Appendix 3

Listed plant species, showing listing status by regulatory body and likelihood of occurrence, evaluated based on site conditions and documented distributions and habitat needs of listed species.

Common Name	Scientific Name	Global Rank	Prov Rank	COSEWIC	BC Status	SARA	Likelihood of Occurrence	Habitat and Distribution Notes[567]
Dicotyledons								
Beach Bindweed	*Convolvulus soldanella*	G5	S3		Blue		**Unlikely**	Only documented on western coast of Vancouver Is. and the Queen Charlotte Is. Associated with moist or mesic sand dunes.
Grey Beach Peavine	*Lathyrus littoralis*	G5	S2		Red		**Unlikely**	Strongly associated with coastal dunes and sandy beaches. Distributed primarily along the southwest coast of Vancouver Is. and in the Queen Charlotte Is.
California Hedge-parsley	*Yabea microcarpa*	G5?	S1		Red		**Unlikely**	Grows at lower elevations along streambanks or other moist sites. Found on Gulf Is. and SE Vancouver Is. Project site is well north of any documented occurrences.
Chaffweed	*Anagallis minima*	G5	S2S3		Blue		**Unlikely**	BC occurrences primarily on Vancouver Is. Rare in Gulf Is. and on the mainland. Associated with watercourse edges, ponds, or marshes.
Field Dodder	*Cuscuta campestris*	GNR	S2S3		Blue		**Possible**	A leafless parasite, found most often on legumes. Partial to drier locations at lower elevations along the coast.
Fleahy Jaumea	*Jaumea carnosa*	G4G5	S2S3		Blue		**Unlikely**	A succulent perennial found on tidal beaches, mudflats and marshes. Occurs near Powel River, but no suitable habitat at the site.

Common Name	Scientific Name	Global Rank	Prov Rank	COSEWIC	BC Status	SARA	Likelihood of Occurrence	Habitat and Distribution Notes[567]
Heterocodon	*Heterocodon rariflorum*	G5	S3		Blue		**Unlikely**	Usually associated with wetlands or moist seepages in the lowland and lower montane zones. Occurrences primarily reported from southern Vancouver Island and the south central interior of BC.
Macoun's Groundsel	*Senecio macounii*	G5	S3		Blue		**Possible**	Found in dry open woods or meadows at lower elevations. Partial to rocky outcrops and disturbed areas such as limestone quarries. Rarely found as far north as Redonda Island.
Menzies' Burnet	*Sanguisorba menziesii*	G3G4	S2S3		Blue		**Unlikely**	Associated with bogs, marshes, and wet meadows at low to mid elevations along the coast.
Poison Oak	*Toxicodendron diversilobum*	G5	S2S3		Blue		**Unlikely**	Grows on dry or mesic rocky slopes at lower elevations. May be suitable habitat at the project site, however poison oak has not been documented this far north.
Smooth Willowherb	*Epilobium glaberrimum* spp. *fastigiatum*	G5T4T5	S2S3		Blue		**Unlikely**	This species is found along moist streambanks, on rocky slopes or in open forest. However, it is generally found at mid to high elevations in the montane or alpine zones.
Snow Bramble	*Rubis nivalis*	G4?	S2		Red		**Unlikely**	Prefers moist forest and clearings at mid elevations. Several occurrences on eastern Vancouver Island.
Western Pearlwort	*Sagina decumbens* ssp.*occidentalis*	G5TNR	S3		Blue		**Unlikely**	Partial to moist habitats in forest openings and on open slopes. Site is located in a well-forested area providing no suitable habitat.
Western St. John's-wort	*Hypericum scouleri* spp. *nortoniae*	G5T3T5	S2S3		Blue		**Unlikely**	Found in open and moist streambanks, estuaries, and marshes, and at low to subalpine elevations. The shaded, drier environment of the project site is not suitable habitat.

Common Name	Scientific Name	Global Rank	Prov Rank	COSEWIC	BC Status	SARA	Likelihood of Occurrence	Habitat and Distribution Notes[567]
Woodland Penstemon	*Nothochelone nemorosa*	G5	S2S3		Blue		**Possible**	Moist forests and rocky slopes from low to mid elevations. Several occurrences on nearby mainland coast and Vancouver Is.
Monocotyledons								
Dune Bentgrass	*Agrostis pallens*	G4G5	S3		Blue		**Unlikely**	Found on dry sand dunes, meadows, rock outcrops and slopes. Partial to open, sunny locations. Unlikely to be found on forested, north facing slope.
Green-sheathed Sedge	*Carex feta*	G5	S2S3		Red		**Unlikely**	Strongly associated with ditches, marshes and wet meadows. Project areas does not contain suitable habitat.
Pointed Broom Sedge	*Carex scoparia*	G5	S2S3		Blue		**Unlikely**	Restricted to moist and wet sites such as ditches, lakeshores, marshes and meadows in the lowland and montane zones
Slimleaf Onion	*Allium amplectens*	G4	S3		Blue		**Unlikely**	This species occurs on the east coast of southern Vancouver Is., the nearby Gulf Is. and on the mainland from the Powell River area and south. Prefers dry fields, meadows, and open hillsides in the lowland zone.
Small Spike Rush	*Eleocharis parvula*	G5	S2S3		Blue		**Unlikely**	Short, mat-forming perennial. Limited to shallow salt water locations, such as coastal marshes and brackish tidal flats.
White Adder's-mouth Orchid	*Malaxis brachypoda*	G4Q	S2S3		Blue		**Possible**	Associated with wet sites such as streambanks, beaches, moist forests, mudflats, or fens. Project area may be too dry and shaded to be suitable.
Ferns								
Giant Chain Fern	*Woodwardia fimbriata*	G5	S3		Blue		**Unlikely**	Restricted in BC to Texada Is., Lasqueti Is., and SE Vancouver Is. Not documented in the area of Redonda Island. Grows in wet forests and cliffs along the coast.

Common Name	Scientific Name	Global Rank	Prov Rank	COSEWIC	BC Status	SARA	Likelihood of Occurrence	Habitat and Distribution Notes[567]
Least Moonwort	*Botrychium simplex*	G5	S2S3		Blue		**Possible**	Habitat for this species is difficult to characterize as it tolerates a wide variety of moisture, slope, aspect and light conditions. The few occurrences in BC are widely distributed. Has been identified at sights near Powell River and Courtney.
Northern Adder's-tongue	*Ophioglossum pusillum*	G5	S2S3		Blue		**Unlikely**	Prefers periodically flooded, moist streamside meadow, marshes, open pastures and lake margins at low to mid elevations.
Upswept Moonwort	*Botrychium ascendens*	G2G3	S2		Red		**Unlikely**	Mesic to moist grassy fields and meadows in the lowland and montane zones. Forested slopes near site are not suitable
Clubmosses								
Nuttall's Quilllwort	*Isoetes nuttalli*	G4?	S3		Blue		**Unlikely**	The only quillwort that grows without being submerged, yet still requires wet conditions such as vernal pools and seepages. Project area is unlikely to provide the necessary habitat

References

[1] Klinkenberg, Brian. (Editor) 2006. *E-Fauna BC: Electronic Atlas of the Fauna of British Columbia [www.efauna.bc.ca]*. Lab for Advanced Spatial Analysis, Department of Geography,University of British Columbia, Vancouver. (accessed December 20-21, 2007).

[2] Cannings, S.G., L.R. Ramsay, D.F. Fraser, and M.A. Fraker. 1999. Rare amphibians, reptiles, and mammals of British Columbia. Wildl. Branch and Resour. Inv. Branch, B.C. Minist. Environ., Lands and Parks, Victoria, BC.

[3] Fraser, D.F., W.L. Harper, S.G. Cannings, and J.M. Cooper. 1999. Rare birds of British Columbia. Wildl. Branch and Resour. Inv. Branch, B.C. Minist. Environ., Lands and Parks, Victoria, BC.

[4] http://www.cbif.gc.ca/spp_pages/butterflies/index_e.php (accessed December 20-21, 2007)

[5] Douglas, G.W., D.V. Meidinger, J.L. Penny. 2002. *Rare Native Vascular Plants of British Columbia 2nd. ed.* B.C. Ministry Sustainable Resources Management and B.C. Ministry Forests, Victoria. BC.

[6] Pojar, Jim and Andy MacKinnon. 1994. *Plants of Coastal British Columbia Including Washington, Oregon and Alaska*

[7] Klinkenberg, Brian. (Editor) 2006. *E-Flora BC: Electronic Atlas of the Plants of British Columbia [www.eflora.bc.ca]*. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. (accessed December 20-21, 2007).