Location/Identification

MINFILE Number: 092F 001
National Mineral Inventory Number: 092F3 Fe1
Name(s): **BRYNNOR**
KENNEDY LAKE, MAGGIE LAKE, CC, REDFORD

Status: Past Producer
Mining Method Underground, Open Pit
Regions: British Columbia
BCGS Map: 092F003
NTS Map: 092F03W
Latitude: 49 02 59 N
Longitude: 125 26 05 W
Elevation: 80 metres
Location Accuracy: Within 500M
Comments: Centre of open pit.

Mining Division: Alberni
Electoral District: Alberni-Pacific Rim
Resource District: South Island Natural Resource District

UTM Zone: 10 (NAD 83)
Northing: 5435839
Easting: 322103

Mineral Occurrence

Commodities: Iron, Magnetite, Aggregate, Limestone, Building Stone

Minerals
Significant: Magnetite
Associated: Pyrite, Pyrrhotite, Calcite
Associated Comments: Trace amounts.
Alteration: Garnet, Epidote, Serpentine, Chlorite, Sericite
Alteration Type: Skarn, Propylitic
Mineralization Age: Unknown

Deposit
Character: Massive
Classification: Skarn, Industrial Min.
Type: K03: Fe skarn, T01: Tailings
Shape: Irregular
Dimension: 500x200x50 metres
Comments: Approximate area of magnetite zones.

Host Rock

Dominant Host Rock: Sedimentary

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Lower Jurassic	Bonanza	Unnamed/Unknown Formation	------
Upper Triassic	Vancouver	Quatsino	------
Jurassic	------	------	Island Plutonic Suite

Isotopic Age	Dating Method	Material Dated
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Lithology: Basic Tuff, Limestone, Andesite, Quartz Diorite

Geological Setting

Tectonic Belt: Insular
Physiographic Area: Vancouver Island Ranges
Terrane: Wrangell

Metamorphic Type: Regional **Relationship:** Pre-mineralization

Grade: Greenschist

Inventory

Ore Zone: SAMPLE **Year:** 2011

Category: Assay/analysis **Report On:** N

NI 43-101: N

Sample Type: Drill Core

Commodity	Grade
Magnetite	58.5 per cent

Comments:

Reference: Assessment Report 33618

Summary Production

		Metric		Imperial	
Mined:		4,480,940	tonnes	4,939,390	tons
Milled:		4,154,022	tonnes	4,579,025	tons
Recovery	Iron	3,011,306,260	kilograms	6,638,793,902	pounds
	Aggregate	245,000,000	kilograms	540,132,542	pounds

Capsule Geology

The Brynnor past producer is located on Draw Creek, approximately 3.4 kilometres north of Maggie Lake.

The deposit occurs within a sequence of limestone and tuff of the Upper Triassic Quatsino Formation (Vancouver Group). These are cut off to the south by a large quartz diorite stock of the Early to Middle Jurassic Island Plutonic Suite. The sequence has been intruded by Tertiary syenite porphyry and diorite dikes, and is in fault contact with andesite of the Lower Jurassic Bonanza Group.

The tuffs show partial alteration to sericite, epidote, chlorite, and serpentine in thin-section while the limestones are commonly only recrystallized. The skarn mineralization is predominantly garnet-epidote alteration of the tuffs which envelopes the pods of magnetite for thicknesses up to about ten metres. Skarn minerals are not disseminated within the magnetite or the surrounding limestone and tuff beyond the alteration envelope. However, many dioritic dikes are partially or completely altered to skarn.

Structurally, the deposit has been folded and faulted. Fault offsets are generally small and of short areal extent. The layers of limestone and tuff have been folded into a broad anticline which plunges at a low angle to the southwest. Folding and most faulting precede the mineralizing events.

The magnetite is quite pure, containing only trace amounts of calcite, pyrite, and pyrrhotite. It appears to be the product of late-stage mineralization as evidenced by the purity and cross- cutting relationships. Two large mineralized pods lie along the contact between the limestone and tuff. Small, isolated pods are found scattered within the tuffs, but are of no economic consequence. Magnetite and skarn are preferentially located where dikes cross the limestone-tuff contact but no magnetite is found within the dikes.

The main magnetite body has been mined by open pit. The other body lies east-southeast of the old pit and has been outlined by diamond drilling and underground development. A fault separating the two bodies strikes north-northeast and dips 70 degrees west. In the eastern body, the massive magnetite appears to be bounded by fault slips and gouge zones. This ore body is 60 metres deeper than the open pit body.

From 1962 to 1968, the open pit produced concentrate containing an average of 63.8 per cent iron. A total of 3,011,306,260 kilograms of iron concentrates was shipped from 4,480,940 tonnes mined. Reserves for the east ore body are undocumented, however, they likely contain a grade comparable (56 per cent) to the deposit mined at the open pit.

In 1988, two 13.6-kilogram bulk samples of waste rock were analyzed for associated alloying element content. Results were negligible (Assessment Report 18150).

In 2008, Ridgemont Capital Corp. completed 21 diamond drill holes, totalling 6678 metres, on the occurrence.

In 2009, remaining measure and indicated resources were re-estimated at 7 million tonnes at a grade of 51 per cent, with inferred resources of an additional 13 million tonnes (Assessment Report 31392). Reserves for the east ore body are undocumented, however, they likely contain a grade comparable (56 per cent) to the deposit mined at the open pit. Drilling has indicated that gold resources associated with the magnetite deposits and other parts of the skarn are sporadic. Thicker sections of magnetite show the strongest gold association and grades up to 2.7 grams per tonne over approximately 3 metres (Assessment Report 31392).

J.J.M. Construction Limited (part of the J.J.M. Group) extracted approximately 245,000 tonnes of limestone from the dumps and shipped/trucked it to Washington State, (near Aberdeen) for a breakwater.

In 2011, Logan Resources Ltd. and joint venture partner Ridgemont Iron Ore Corp. conducted drilling and ground geophysics. The 2011 Ridgemont diamond drill program consisted of 61 holes totalling 10, 234.58 metres utilizing 29 drill pads. The program coverage was categorized into three zones: the Main, East and North zones. The drill results from the East zone confirmed that magnetite mineralization was similar in strike and dip to that found in the Main zone. Highlights are shown in the following table (Assessment Report 33618).

Drillhole	From(metres)	To(metres)	Interval(metres)	Magnetite iron (per cent)
RD11-46	145	155	10	45.7
RD11-47	77	88	11	58.5
RD11-50	24.4	34	9.6	47.7
RD11-58	46	65	19	51
RD11-59	57	65	8	50.1
RD11-61	49	56	7	51.1

Bibliography

EMPR AR 1902-210; 1960-108-110; *1961-104-110; *1962-A46,A51,111, 122-124; *1963-A46,A51,117-121; 1964-A52,A57,167-168; *1965-A52, A57,236-238; 1966-A48,A49,75; 1967-A50,A52,75-76; 1968-A50,A52, 103; 1969-A53; 1970-A52

EMPR ASS RPT 13612, *18150, 25831, 27530, 30537, *31392, 31700, 33100, *33618

EMPR BULL *55, pp. 52-60; 101, pp. 57,155, Appendix 6

EMPR EXPL 1998-50

EMPR GEM 1969-426; 1970-479

EMPR INDEX 4-120

EMPR OF *1988-28

EMPR PF (*Various Maps & Plans; Menzies, M.M. and Sherg, C.C.: Report)

EMR MP CORPFILE (Noranda Mines Limited; Brynnor Mines Limited)

GSC BULL *172, p. 68-70

GSC MAP 17-1968

GSC OF 463

GSC P 68-50, p. 38

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Date Coded:	1985/07/24	**Coded By:**	BC Geological Survey (BCGS)	**Field Check:**	N
Date Revised:	2022/03/28	**Revised By:**	Nicole Barlow (NB)	**Field Check:**	N