

### Location/Identification

<b>MINFILE Number:</b>	092C 073	<b>National Mineral Inventory Number:</b>	092C8 Cu1
<b>Name(s):</b>	<b>SUNRO</b> SUNRO MINE, SUNLOCH AND GABBRO, SUNLOCH 6 (L.797), SUNLOCH, GABBRO, RIVER, CENTRE, CAVE, VULCAN, JORDAN RIVER		
<b>Status:</b>	Past Producer	<b>Mining Division:</b>	Victoria
<b>Mining Method</b>	Underground	<b>Electoral District:</b>	Malahat-Juan de Fuca
<b>Regions:</b>	British Columbia, Vancouver Island	<b>Forest District:</b>	South Island Forest District
<b>BCGS Map:</b>	092C050		
<b>NTS Map:</b>	092C08E	<b>UTM Zone:</b>	10 (NAD 83)
<b>Latitude:</b>	48 26 54 N	<b>Northing:</b>	5366648
<b>Longitude:</b>	124 01 59 W	<b>Easting:</b>	423609
<b>Elevation:</b>	300 metres		
<b>Location Accuracy:</b>	Within 500M		
<b>Comments:</b>	Location of the River zone, near the centre of the Sunloch 6 claim (Lot 797) (NTS Map 092C/08).		

### Mineral Occurrence

<b>Commodities:</b>	Copper, Gold, Silver, Molybdenum, Nickel, Cobalt		
<b>Minerals</b>	<b>Significant:</b>	Chalcopyrite, Pyrrhotite, Pyrite, Molybdenite, Pentlandite, Copper, Cubanite	
	<b>Significant Comments:</b>	Pentlandite occurs locally in pyrrhotite.	
	<b>Associated:</b>	Hornblende, Quartz	
	<b>Alteration:</b>	Hornblende, Scapolite	
	<b>Mineralization Age:</b>	Unknown	
<b>Deposit</b>	<b>Character:</b>	Shear, Vein	
	<b>Classification:</b>	Hydrothermal, Epigenetic, Replacement	
	<b>Type:</b>	M02: Tholeiitic intrusion-hosted Ni-Cu	
	<b>Shape:</b>	Irregular	<b>Modifier:</b> Fractured
	<b>Dimension:</b>	340x335x30 metres	<b>Strike/Dip:</b> 150/75S
	<b>Comments:</b>	River zone.	

### Host Rock

<b>Dominant Host Rock:</b>	Volcanic		
<b>Stratigraphic Age</b>	<b>Group</b>	<b>Formation</b>	<b>Igneous/Metamorphic/Other</b>
Eocene	-----	-----	Metchosin Volcanics
Eocene	-----	-----	Sooke Gabbro
<b>Isotopic Age</b>	<b>Dating Method</b>	<b>Material Dated</b>	
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<b>Lithology:</b>	Basalt, Hornblende Gabbro, Hornblendite, Hornfels		
<b>Comments:</b>	The ore zones are mainly in the Metchosin basalts near contacts with gabbroic intrusions. Minor ore zones also occur in the gabbro.		

### Geological Setting

<b>Tectonic Belt:</b>	Insular	<b>Physiographic Area:</b>	Vancouver Island Ranges
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**Terrane:** Crescent

**Metamorphic Type:** Contact

**Grade:** Hornfels

### Inventory

**Ore Zone:** SUNRO **Year:** 1973  
**Category:** Measured **Report On:** Y  
**Quantity:** 1,030,465 tonnes **NI 43-101:** N

Commodity	Grade
Copper	1.4700 per cent

**Comments:** Proven.

**Reference:** Northern Miner - December 27, 1973.

**Ore Zone:** SUNRO **Year:** 1973  
**Category:** Indicated **Report On:** Y  
**Quantity:** 423,782 tonnes **NI 43-101:** N

Commodity	Grade
Copper	1.3300 per cent

**Comments:** Probable.

**Reference:** Northern Miner - December 27, 1973.

### Summary Production

	Metric	Imperial
<b>Mined:</b>	1,329,034 tonnes	1,465,009 tons
<b>Milled:</b>	1,329,034 tonnes	1,465,009 tons
<b>Recovery</b>		
Silver	2,262,651 grams	72,746 ounces
Gold	203,101 grams	6,530 ounces
Copper	13,754,271 kilograms	30,322,977 pounds

### Capsule Geology

The Sunro Mine is located on the eastern side of the Jordan River, approximately 3 kilometres north east of the community of Jordan River.

The Metchosin Volcanics form a belt 8 to 16 kilometres wide which extends west-northwest across the southern end of Vancouver Island. The volcanics consist principally of basalt and some diabase. Near the Sunro mine they include porphyritic and non-porphyritic, amygdaloidal varieties; beyond the mine area, well-developed pillow lavas, flow breccias and fragmental types are found. They strike 120 to 130 degrees and dip 15 to 30 degrees northward, although in places they may be vertical or dip steeply southward. Fossils found in interbedded basaltic sandstone indicate an Eocene age (Geological Survey of Canada Memoir 96, page 290).

The mineralization of the Sunro mine appears to be genetically related to the emplacement and crystallization of the Eocene Sooke Gabbro within the Metchosin Volcanics, the orebodies occurring near contacts. The gabbro, possibly comagmatic and coeval with the volcanics, occurs as several stock-like masses of augite gabbro that trend northwesterly across the southern tip of the island. However, these bodies in the Sunro vicinity are elongate, striking with the enclosing volcanics, and may be sills. Three northwesterly trending bands of gabbro occur on the Sunro property, ranging in width from 150 to 900 metres, separated by about 1 kilometre of basalt, and known to extend along strike for about 6.5 kilometres. The centre band, from 600 to 900 metres wide, is the widest of the bands and the most important, hosting copper mineralization in shears in basalt along both contacts. The rock is a dark greenish grey coarse-grained hornblende gabbro with conspicuous plagioclase crystals. Some relicts of primary augite remain as cores surrounded by the secondary hornblende. Some white patches occur in the gabbro where plagioclase has been hydrothermally altered to scapolite. The basalt in the contact zone has a definite hornfels texture.

The oldest rocks in the area form the Jurassic to Cretaceous Leech River Complex and consist of a series of argillites and sandstone that have been metamorphosed into slaty and quartzose schists. The complex is in contact with the northern boundary of the Metchosin Volcanics along the west striking Leech River fault. Marine sandstones and conglomerates of the Oligocene Sooke Formation overlie the volcanics and gabbro along the southern boundary of their exposure near the ocean. Many diabase dikes are exposed, cutting the gabbro in the Jordon River canyon. They range in width from just a few millimetres up to about 3 metres, but widths of about 1 metre are typical.

The basalt surrounding the ore-bearing shear zones has been extensively replaced by hornblende, and in the shear zones this hornblendized basalt has been mineralized with chalcopyrite, pyrrhotite, pyrite and small amounts of molybdenite. Microscopic lathes of cubanite have been noted in some specimens of chalcopyrite, and minute blebs and wisps of pentlandite have been seen in pyrrhotite. Much of the pyrite has a striking colloform texture. A small amount of native copper, as disseminated grains and as a leaf-like coating on short slips, has been seen in core from holes drilled beyond the mineralized zones. Scattered grains of magnetite are common, not only in the ore zones but also beyond them.

The ore sulphides form a pattern of gash-like veinlets and irregular lenticular masses in the hornblende rock of the shear zones. Some chalcopyrite veinlets also contain quartz. In addition to its occurrence as veinlets and lenses, a small amount of chalcopyrite occurs as disseminated grains.

As many as 16 mineralized zones have been located on the property since it was discovered in 1915. The zones typically occur in basalt but at least three minor zones are located in areas mapped as gabbro. Three zones along the northeast contact of the gabbro body, the River, Cave and Centre, have proved to be the most promising. The River zone ranges in width from 30 centimetres to about 30 metres and is traceable along strike for about 335 metres, and to a depth of 340 metres. The zone is roughly parallel to the trend of contact, striking 150 degrees and appearing to dip from 70 to 80 degrees southwest. The Cave zone, about 200 metres southwest from the River zone, trends at 140 degrees and contains widely spaced stringers and lenses of chalcopyrite over a width of about 40 metres. The zone has a proven length of 180 metres (possibly as much as 460 metres) and a vertical extent of 150 metres. The Centre zone, located about 90 metres southeast from the River zone, strikes 110 degrees and dips vertically. It has been traced for a length of 200 metres and to a known depth of 97 metres. Where exposed underground, the zone comprises a 36 metre width of widely spaced stringers of chalcopyrite.

Production commenced in 1962 and proceeded intermittently for 8 years until 1974, most or all of the production apparently coming from the River and Cave zones.

Measured (proven) reserves are 1,030,465 tonnes grading 1.47 per cent copper; and indicated (probable) reserves are 423,782 tonnes grading 1.33 per cent copper (Northern Miner - December 27, 1973).

A property visit in May 2000 and sampling by J. Houle showed elevated values in nickel and cobalt. In 2004, A. Kikauka completed a program of soil and rock chip sampling:

Rock Sample Number:	Location	Copper ppm	Silver ppm	Gold ppb
S-04-AR-1	Bend Zone	7334	3.8	32
S-04-AR-2	Winkler Zone	7942	2.8	90
S-04-AR-3	River Adit Zone	>10,000	21.6	720
S-04-AR-4	Tiger Zone	4367	1.6	37
S-04-AR-5	Yellow Cliff Zone	7159	4.6	165
S-04-AR-6	Cave Zone	>10,000	35.6	960

(Assessment Report 27472)

### Bibliography

EMPR AR 1916-366; 1917-265; 1918-300; 1919-235; 1920-220; 1921-232; 1922-254; 1923-271; 1924-255; 1925-303,450; 1928-362; 1929-368; 1931-162; 1949-222; \*1950-180,193; 1955-79; 1956-124; 1957-72; 1958-60; 1959-141; 1960-116; 1961-113; \*1962-A47,A51,127; 1963-A47,A51,124; 1964-169,294; 1965-239; 1966-A48,A52,79; 1967-A50,A55,78; 1968-A50,A55,106; 1972-A51,A55; 1973-A51,A56; 1974-A117,A122; 1975-A96; 1978-128  
 EMPR ASS RPT \*27472  
 EMPR BC METAL MM00057  
 EMPR EXPL 2000-25-32  
 EMPR FIELDWORK 1988, pp. 525-527; 1989, pp. 503-510  
 EMPR GEM 1969-224; 1970-292; 1971-225; 1972-240; 1973-225; 1974-164  
 EMPR INDEX 4-125  
 EMPR MAP 65 (1989)  
 EMPR OF RGS 24; 1992-1; 1998-10  
 EMPR PF (Various mine plans and map - 1920's, 1960's and 1970's; Starr, C.C. (1926): Report on the Examination of the Gabbro Mine; History of the Sunloch Mine 1915 to 1965; Young, J.W. (1951): Sunloch Copper Mine; Correspondence between Ken Rose and Neil

McKechnie, 1962; Report on the Jordan River Mines by G.H. Kerr, 1974; Richardson, A.J. (1977): Report on the Closing of the Jordan River Mine; Photographs of the mine; Houle, Jacques (2000): Property Visit notes and sample results; District Geologist assays, 2000; Property information circular, 2001; photos, 2000)

EMR MIN BULL MR 223 (1989) B.C. 89

EMR MIN RES BR Sunro (Sunloch and Gabbro)

EMR MRD RESOURCE FILE MC-167-C3-2-25

EMR MP CORPFILE (Cowichan Copper Co. Ltd.; Sunloch Mines Ltd.; Gabbro Copper Mines Ltd.; Hedley Mascot Gold Mines Ltd.; Giant Mascot Mine Ltd.; Sunro Mines Ltd.; Sheep Creek Mines Ltd.)

EMR MP RESFILE (Sunro Mine)

GSC MAP 1386A

GSC MEM 13

GSC OF 463; 821

GSC P 72-44; 76-1A; 77-1A; 79-30

GSC SUM RPT 1919, Part B, pp. 20-30

CIM \*Vol.58, No.635, pp. 297-303

CMJ 1930 to 1962, 1972-73

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N MINER July, 1971; \*Dec.27, 1973; July 24, 1975

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Carson, D.J.T. (1968): Metallogenic Study of Vancouver Island with Emphasis on the Relationship of Plutonic Rocks and Mineral Deposits, Ph.D. Thesis, Carleton University

Hudson, R. (1997): A Field Guide to Gold, Gemstone & Mineral Sites of British Columbia, Vol. 1: Vancouver Island, pp. 72-73

<b>Date Coded:</b>	1985/07/24	<b>Coded By:</b>	BC Geological Survey (BCGS)	<b>Field Check:</b>	N
<b>Date Revised:</b>	2013/01/16	<b>Revised By:</b>	Karl A. Flower(KAF)	<b>Field Check:</b>	N