

### Location/Identification

<b>MINFILE Number:</b>	103H 027	<b>National Mineral Inventory Number:</b>	103H2 Au1
<b>Name(s):</b>	<b><u>SURF INLET</u></b> PUGSLEY, SURF, SURF INLET MINE, PUGSLEY MINE, BELMONT-SURF INLET, PRINCESS ROYAL, HOMESTAKE, D.L.S., BLUFF, SADIES CREEK, SEAGULL (L.2097), HOMESTAKE (L.21)		
<b>Status:</b>	Past Producer	<b>Mining Division:</b>	Skeena
<b>Mining Method</b>	Underground	<b>Electoral District:</b>	North Coast
<b>Regions:</b>	British Columbia	<b>Resource District:</b>	North Coast Forest District
<b>BCGS Map:</b>	103H006		
<b>NTS Map:</b>	103H02W	<b>UTM Zone:</b>	09 (NAD 83)
<b>Latitude:</b>	53 05 29 N	<b>Northing:</b>	5882443
<b>Longitude:</b>	128 52 56 W	<b>Easting:</b>	507887
<b>Elevation:</b>	300 metres		
<b>Location Accuracy:</b>	Within 500M		
<b>Comments:</b>	Surf Inlet mine (the Pugsley mine is 1700 metres to the south).		

### Mineral Occurrence

<b>Commodities:</b>	Gold, Copper, Silver, Molybdenum		
<b>Minerals</b>	<b>Significant:</b>	Pyrite, Chalcopyrite, Silver, Chalcocite, Bornite, Covellite, Molybdenite	
	<b>Associated:</b>	Quartz, Ankerite, Calcite	
	<b>Alteration:</b>	Chlorite, Sericite	
	<b>Alteration Type:</b>	Sericitic, Chloritic	
	<b>Mineralization Age:</b>	Upper Cretaceous	
<b>Isotopic Age:</b>	80 +/- 1 Ma	<b>Dating Method:</b>	Potassium/Argon
		<b>Material Dated:</b>	Whole rock
<b>Deposit</b>	<b>Character:</b>	Vein, Shear	
	<b>Classification:</b>	Hydrothermal, Epigenetic	
	<b>Type:</b>	I01: Au-quartz veins	
	<b>Shape:</b>	Tabular	<b>Modifier:</b> Sheared, Faulted
	<b>Dimension:</b>	350x300x12 metres	<b>Strike/Dip:</b> 003/45W
	<b>Comments:</b>	Surf vein; maximum width is 12 metres. Material dated is altered shear zone mineralization from a sericite-altered diorite porphyry (Assessment Report 15377).	

### Host Rock

<b>Dominant Host Rock:</b>	Plutonic		
<b>Stratigraphic Age</b>	<b>Group</b>	<b>Formation</b>	<b>Igneous/Metamorphic/Other</b>
Mesozoic-Cenozoic	-----	-----	Coast Plutonic Complex
<b>Isotopic Age</b>	<b>Dating Method</b>	<b>Material Dated</b>	
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<b>Lithology:</b>	Hornblende Gneiss, Quartz Diorite Porphyry, Hornblende Biotite Quartz Diorite, Dioritic Gneiss		

### Geological Setting

<b>Tectonic Belt:</b>	Coast Crystalline	<b>Physiographic Area:</b>	Fiord Ranges (Northern)
<b>Terrane:</b>	Plutonic Rocks		
<b>Metamorphic Type:</b>	Regional		

Grade: Amphibolite

### Inventory

**Ore Zone:** TAILINGS **Year:** 1988  
**Category:** Indicated **Report On:** Y  
**Quantity:** 169,500 tonnes **NI 43-101:** N

Commodity	Grade
Gold	1.1310 grams per tonne

**Comments:** Calculated reserves of tailings site located at the confluence of Paradise Creek and Bear Lake.  
**Reference:** Assessment Report 17275.

**Ore Zone:** DUMPS **Year:** 1986  
**Category:** Unclassified **Report On:** Y  
**Quantity:** 270,000 tonnes **NI 43-101:** N

Commodity	Grade
Gold	3.4300 grams per tonne

**Comments:** Tonnages range from 270,000 to 360,000 in waste dumps.  
**Reference:** MDAP - Prospectus, Surf Inlet Mines Ltd. 1986.

**Ore Zone:** PUGSLEY **Year:** 1961  
**Category:** Combined **Report On:** Y  
**Quantity:** 47,250 tonnes **NI 43-101:** N

Commodity	Grade
Silver	9.5000 grams per tonne
Gold	11.3400 grams per tonne
Copper	0.6000 per cent

**Comments:** Probable and possible.  
**Reference:** CIM Special Volume 37, page 184 and Northern Miner Jan. 24, 1974.

### Summary Production

		Metric	Imperial
<b>Mined:</b>		918,128 tonnes	1,012,062 tons
<b>Milled:</b>		904,085 tonnes	996,583 tons
<b>Recovery</b>	Gold	12,095,368 grams	388,875 ounces
	Silver	6,258,235 grams	201,207 ounces
	Copper	2,834,461 kilograms	6,248,917 pounds

### Capsule Geology

The Surf Inlet mine is located on Princess Royal Island near the head of Surf Inlet southeast of Prince Rupert.

The property straddles a deeply entrenched creek; the Surf Inlet group (D.L.S. group and La Cuivre group) of claims lying to the north, and the Pugsley group (Princess Royal and Homestake groups) of claims lying to the south.

Exploration and development work began in about 1900. The Princess Royal group of 3 claims was owned by Messrs. Wilson, Irving, & Rithet; the Homestake group of 5 claims, adjoining and south of the Princess Royal group was owned by Messrs. McMillan, Howden, Cliff, and Nowell; the D.L.S. group was owned by Messrs. Cleveland and Kelly. Additional claims in the Bluff group were staked in 1901 adjoining the D.L.S. group and

were subsequently included in it. The Princess Royal and Homestake groups were bonded to Mr. J. Findlay and Associates in 1902; the Princess Royal claim (Lot 7, R 4) was Crown-granted to Messrs. Wilson and Rithet in 1902. All groups were apparently idle from about 1903 until 1910.

Surf Inlet Gold Mines Limited was formed in 1910 to develop the D.L.S. group of 9 claims; however, very little work was done by the company. The Tonopah-Belmont Development Company optioned the property in 1915 and Belmont Canadian Mines Limited was formed to carry on development work. The following year the Princess Royal group was optioned from Princess Royal Gold Mines Limited; this group had previously been held by Princess Royal Island Mining Company Limited, which was incorporated in June 1911.

Belmont Canadian Mines Limited was reorganized under the name Belmont-Surf Inlet Mines Limited in 1917 with Surf Inlet Mines Limited retaining a 20 per cent interest in the new company. A 270 tonne mill was put into operation in 1917. Development of the Princess Royal group under the option agreement continued until 1921 when the purchase of the property was completed. The company operated continuously until June 1926 when operations were suspended.

Princess Royal Gold Mines Limited, incorporated in May 1933, acquired the Surf Inlet and Pugsley groups and exploration and development work was begun. The old mill was reconditioned to handle 63 tonnes per day. The company name was changed in 1935 to Surf Inlet Consolidated Gold Mines Limited. Operations were continuous until November 1942 when the mine closed for the duration of the war. Work was resumed in April 1946 and suspended again the following December. During the year some 152 metres of underground development work was completed and 2320 metres of diamond drilling was done from the surface.

Underground development work totals some 15,240 metres of drifts, cross-cuts, and raises. During the period 1940-46 some 20,420 metres of diamond drilling were completed.

The company name was changed to Surf Inlet Consolidated Mines Limited in 1955 and to Western Surf Inlet Mines Limited in 1959. Matchewan Consolidated Mines, Limited acquired the assets of the company in 1966. Reserves on the Pugsley group were estimated in 1961 at 42864 tonnes. In 1981, the occurrence was optioned by Cominco Limited and Placer Development Limited. They diamond drilled 10 holes totalling 1526 metres along a shear zone strike length of 1950 metres; results ruled out a large tonnage low-grade potential. The option was terminated in June 1984 with Matchewan retaining 100 per cent interest in 21 patented Crown leases.

Surf Inlet Mines Limited began work on the property in 1985. Sampling programs, surveys and metallurgical testwork were done to evaluate the tonnage and grade of the stockpiles and tailings on the Surf Inlet property. During 1988 work was begun on rehabilitation of the 900 level of the Surf Mine, in preparation for drill testing. During 1991 the company contracted Rem Exploration to carry out a sampling program of the Surf and Pugsley Mine dumps.

In 1997, Rupert Resources Limited drilled the downdip extension of the Surf orebody. This extension occurs on the former Wells property (103H 026). In 2010, two drill holes were performed on the same sites as the 1997 drilling program. Drill hole 2000-01 intersected a 2.5 metre wide mineralized zone including a 1.1 metre interval grading 0.60 grams per tonne gold, 0.8 grams per tonne silver and 138 parts per million copper. Two additional mineralized stringers were intersected further down hole at 309.0 to 310.5 metres and 327.0 to 327.5 metres. The first mineralized stringer returned 0.4 metres grading 4.9 grams per tonne gold, 158 grams per tonne silver and 9.32 per cent copper. The second mineralized stringer returned 0.15 metres grading 11.85 grams per tonne gold, 16.0 grams per tonne silver and 3.33 per cent copper. Drill hole 2000-02 intersected a 7.1 metre wide zone on quartz and brecciated metasediments including a 1.1 metre section which assayed 1.1 grams per tonne gold, 2.2 grams per tonne silver and 814 parts per million copper (Assessment Report 26704).

Drilling near the Wells property in 1942 intersected 3 metres of 6.5 grams per tonne gold and 1 metre of 21.6 grams per tonne gold (George Cross Newsletter #108, June 5, 1997).

The area is underlain by hornblende-biotite quartz diorite with diorite gneiss bands of the Tertiary-Jurassic Coast Plutonic Complex. A large, complex fault zone, traced for about 4.5 kilometres in a north-south direction, hosts the ore zones of the Surf Inlet and Pugsley mines. In the mine area the fault zone is convex toward the west and consists of several shear zones up to 9 metres thick and 45 to 60 metres apart with average dips of 45 degrees west.

Mineralized quartz veins parallel or subparallel the shear zones. The veins, 30 to 50 metres apart and up to 12 metres wide, contain mainly auriferous pyrite with minor chalcopyrite, silver, chalcocite, bornite, covellite and molybdenite. Gangue minerals include quartz, ankerite and minor calcite. Sericite and chlorite alteration are common near the veins.

Distribution of ore shoots within the veins depends on late-stage fault adjustments and flexures during which veins along certain shear surfaces and zones were fractured and mineralized (Assessment Report 15377).

The Surf Inlet mine veins lie near the east side of a north trending inclusion of hornblende gneiss, which is 300 to 600 metres wide. The veins are up to 300 metres long, 12 metres wide and 350 metres in vertical depth. They appear to fill subsidiary tension fractures, opened by movement along the main shears, resulting in a left-hand offset in which the west or hanging wall moved upward and southward. In 1981, reserves of the 550 level mine

dump from the Surf Inlet mine were calculated to be 362,880 tonnes of 2.98 grams per tonne gold (Assessment Report 16092).

A 1.1-metre sample of a quartz vein (Bluff showing) near the 200 level adit area assayed 30.0 grams per tonne gold, 97.7 grams per tonne silver, 0.02 per cent copper and .003 per cent tellurium. A sample of the 200 level adit dump assayed 136.5 grams per tonne gold, 172 grams per tonne silver, 0.021 per cent tellurium and 0.02 per cent molybdenum (Assessment Report 15377). An 80-centimetre sample of a quartz vein on Sadie Creek, at 145 metres elevation, assayed 45.0 grams per tonne gold, 15.1 grams per tonne silver, 1.02 per cent copper and 0.0033 per cent tellurium. A 2.5-metre channel sample of quartz vein and shear in the 900 level adit assayed 14.0 grams per tonne gold, 29.9 grams per tonne silver, 0.234 per cent copper and 0.0018 per cent tellurium. A diamond-drill hole (81-2), 800 metres to the south-southeast, intersected 10.4 grams per tonne gold, 69.7 grams per tonne silver over 60 centimetres. This hole is the sample location for a potassium/argon age date of 80 Ma plus or minus 1 Ma from a mineralized, altered diorite porphyry (Assessment Report 15377)

The Pugsley mine, 1700 metres south of the Surf mine, occurs mainly in quartz diorite porphyry. The main veins, about 45 metres apart, are up to 500 metres long and 300 metres vertical depth. Proven and probable reserves, estimated in 1961, at the Pugsley mine are 47,250 tonnes grading 0.6 per cent copper, 11.34 grams per tonne gold, and 9.5 grams per tonne silver (CIM Special Volume 37, page 184 and Northern Miner, Jan. 24, 1974).

Reserves of the tailings site located at the confluence of Paradise Creek and Bear Lake were calculated in 1988 to be 169,500 tonnes grading 1.131 grams per tonne gold (Assessment Report 17275). Reserves of the waste dumps range from 270,000 to 360,000 tonnes grading 3.43 grams per tonne gold (MDAP - Prospectus, Surf Inlet Mines Ltd. 1986).

Mining of nearly 1 million tonnes of rock from both mines averaged 13.0 grams per tonne gold, 6.8 grams per tonne silver and 0.31 per cent copper. The mines were in operation from 1915 to 1925 and again from 1935 to 1941.

The Surf One and Surf Two claims are held in good standing until February 28, 2007 by Rupert Resources Limited of Vancouver. Fifteen other claims in the same area on mapsheet 103H02W are held by the same owner until various dates in 2007.

### **Bibliography**

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GSC MAP 23-1970; 278A; 1385A  
GSC P \*70-41, pp. 46-47  
GSC SUM RPT \*1912, pp. 63-67; 1921 Part A, pp. 29-35  
CANMET IR 617 (No. 190), 1923; 776 (No. 687), 1936  
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GCNL #101, 1988; #184(Sept.24), 1990; #79(Apr.24),#108(June 5), 1997; #158(Aug.17), #177(Sept.15), 2000  
N MINER Jan.24, 1974; Nov.2, 1987  
V STOCKWATCH Nov.30, 1987  
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Placer Dome File  
EMPR PFD 901247, 903323, 903490, 17926, 17927, 17928, 17929, 17930, 17931, 17932, 17933, 17934, 17935, 17936, 17937, 17938, 17939, 17940, 905137, 750689, 750690, 750691, 750692, 907402, 908350, 909016, 888326, 888327, 888328, 888329, 888330, 888331, 888332, 888333, 888334, 888335, 888336, 888337, 888338, 888339, 888340, 888341, 888342, 888343, 888344, 888345, 889433, 825965, 825966, 825967, 825968, 825969, 825970, 825971, 825972, 825973, 825974, 825975, 825976, 825977, 825978, 825979, 825980, 825981, 825982, 825984, 825985, 825986, 825987, 825988, 825989, 675894, 675924, 675925, 675926, 676324

**Date Coded:** 1986/08/18

**Coded By:** Larry Jones (LDJ)

**Field Check:** N

**Date Revised:** 2012/09/27

**Revised By:** Karl A. Flower (KAF)

**Field Check:** N