

Terrane: Plutonic Rocks, Okanagan

Metamorphic Type: Regional

Relationship: Pre-mineralization

Grade: Greenschist

Inventory

No inventory data

Summary Production

		Metric	Imperial
	Mined:	17,564 tonnes	19,360 tons
	Milled:	0 tonnes	0 tons
Recovery	Silver	1,520,282 grams	48,878 ounces
	Gold	83,294 grams	2,678 ounces
	Silica	17,536,794 kilograms	38,662,013 pounds
	Lead	53,378 kilograms	117,678 pounds
	Zinc	24,519 kilograms	54,055 pounds
	Copper	4,401 kilograms	9,703 pounds

Capsule Geology

The former Susie mine is located 1.0 kilometre east of Burnell Lake and 4.75 kilometres northwest of Oliver, British Columbia.

The Susie claim (Lot 1917) was discovered and staked by G.A. Guess prior to 1901. In 1901, the claim was Crown granted. Approximately 363 tonnes of ore are reported stoped from surface outcrops in 1911. From this, 6.34 tonnes of hand-sorted ore were shipped to a Tacoma smelter. By 1913, three shafts and numerous opencuts and surface stripping exposed or intersected a 1.2 to 12.2 metre wide quartz vein. By 1922, the property was owned by Federal Mining Co. The Susie claim group now consisted of the Susie, Banker, Federal and Agricola claims. A 61-metre tunnel was developed on the Federal claim. A 4.57-metre wide quartz vein was intersected. The vein strikes north. The vein was also traced on surface by several opencuts, surface stripping and diamond-drill holes. Further underground development was carried out on the Susie, in 1923.

Between 1932 and 1934, the Victoria (Oliver) property, adjoining the Susie Group to the north, was developed by several opencuts and an adit. During this time, 27 tonnes of ore yielding 560 grams of gold and 1430 grams of silver was shipped. In 1934, the Susie claim group had expanded and consisted of the Susie, Oakville, Federal, Banker, Agricola, Grey Gables and Tres Hermanos Crown-granted claims. The following year, ownership was changed to the Federal Mining and Smelting Co. On the Susie claim, a new low-level adit was developed and 853 metres of drifting and crosscutting was done. Various lessees have worked this property between 1960 and 1976, when most of its production occurred. In 1987, Highland Valley Resources Ltd. conducted an extensive exploration program on the Susie and Stemwinder (082ESW007) properties. Work on the Susie property was limited to detailed rock sampling of favourable quartz vein sections on all three underground levels and quartz vein outcrops near the decline portal.

Regionally, the area is principally underlain by medium grained intrusive rocks that form the Jurassic Oliver plutonic complex. To the south, the complex cuts Carboniferous to Permian Kobau Group metasedimentary rocks. On its northern margin, the intrusive mass is in contact with Eocene volcanics and sediments of Penticton Group.

In the Susie claim area the Oliver plutonic complex is composed almost entirely of quartz monzonite. Three distinct phases are evident. A central core of massive medium-grained garnet- muscovite quartz monzonite is surrounded by hornblende-bearing porphyritic quartz monzonite north of the core and biotite-bearing to the south. The third phase is a hornblende-biotite quartz monzonite located to the south of the other two units.

The Susie mine is hosted by the hornblende-bearing porphyritic quartz monzonite northern phase of the Oliver plutonic complex. Nearby, a swarm of fine to medium grained quartz monzonite dikes cut this unit. The area has been extensively faulted and fractured. Regional hydrothermal alteration has resulted in epidote which occurs in seams up to 2.5 centimetres in width.

The Susie mine is comprised of a strong quartz vein. The vein is 1.2 to 15.2 metres wide, strikes north and dips 20 to 30 degrees east. At the shaft, the quartz vein strikes 010 degrees and dips 25 degrees east. The vein is characterized by an abundance of quartz, almost to the exclusion of other minerals. Pyrite mineralization is common along with varying amounts of galena, sphalerite and chalcopyrite which carry gold and silver values. Fragments of wallrock within the vein are also evident. The quartz has been subjected to varying amounts of post-mineralization fracturing, commonly to the extent that original textures are in large part destroyed. Hematite occurs in these fractures. Where relatively undeformed, the quartz

occurs as large crystals generally 2.5 centimetres or more in cross-section and several centimetres in length. In places the crystals show a rough cockscomb texture. Some early grey quartz is evident although the bulk of the quartz is generally white. The vein is variably cut by a number of mafic dikes. Wallrock alteration is not pronounced but a thin zone of sericitization occurs along vein margins. In 1987, underground sampling suggested a gold-rich shoot plunging northeast in a 2 to 3 metre wide quartz vein which dips 10 to 20 degrees east.

In 1902, samples from the Nos. 1 and 2 shafts on the Susie claim yielded high gold and silver values. The lowest sample from the No. 1 shaft, Sample 1, yielded 34.2 grams per tonne gold and 60.17 grams per tonne silver. Sample 6, the highest from Shaft No. 1, yielded 32.57 grams per tonne gold and 459.43 grams per tonne silver. From the No. 2 shaft, Sample 20 yielded 16.80 grams per tonne gold and 219.43 grams per tonne silver (Guess, G.A. (1902): Susie Mine Plan). The average grade of a 6.34 tonne shipment of hand-sorted ore made in 1911 was 61.71 grams per tonne gold and 1433.14 grams per tonne (Minister of Mines Annual Report 1913, page K174).

Between 1987 and 1988, Highland Valley Resources Ltd. conducted an extensive exploration program on the Susie and Stemwinder properties. On the Susie, accessible workings were examined and channel sampled. A total of 155 rock chip samples were collected; 13 from surface outcrop and the remainder from 3 levels of underground workings. Surface sample 58955, the highest of all surface samples, yielded 9.01 grams per tonne gold, 185.83 grams per tonne silver and 0.48 per cent lead over 1.20 metre true thickness. From the upper levels, Sample 63094 yielded 21.12 grams per tonne gold, 93.94 grams per tonne silver and 0.1 per cent lead over a true thickness of 0.70 metre. Sample 57596, from the intermediate levels, yielded 18.31 grams per tonne gold and 217.37 grams per tonne silver over a true thickness of 1.00 metre. From the lower levels, Sample 57661 yielded 7.71 grams per tonne gold and 164.57 grams per tonne silver over a true thickness of 0.95 metre (Assessment Report 16779).

Total recorded production from 1960 to 1976 from the former Susie mine included 17,537 tonnes mined from which 1,519,505 grams of silver, 82,081 grams of gold, 53,378 kilograms of lead, 24,519 kilograms of zinc and 4401 kilograms of copper were recovered. Production between 1932 and 1934 from the Victoria (Oliver) totalled 27 tonnes, yielding 560 grams of gold and 1430 grams of silver.

In addition to precious and base metal recovered, between 1960 and 1976 about 17,500 tonnes of quartz vein material was shipped to the Trail smelter for use as a flux (Fieldwork 1981, page 9).

Bibliography

EM OF 1999-3

EMPR AR 1901-1231; *1913-K174,K178; 1915-K202; *1922-N165; *1923-A185; *1932-A25,A134,A136; 1933-A28,A169,A170; *1934-A25,D14,D15, D17; 1935-D12,D13,G47; 1960-A53; 1963-A48; 1964-A54,109; 1973-54; 1974-120; 1975-94; 1976-103

EMPR ASS RPT *16779

EMPR BC METAL MM00365; MM00370

EMPR ENG INSP (Mine plans)

EMPR EXPL 1975-E19

EMPR FIELDWORK *1981, p. 9; *1983, pp. 247,251

EMPR GEM 1973-43,44; 1974-24,53,54

EMPR INDEX 3-217; 4-125

EMPR MINING 1975, Volume I, pp. 28,55,59

EMPR MR MAP 7 (1934)

EMPR OF 1987-15; 1989-2; 1989-5, 1999-3; 1998-10

EMPR PF (Geology Map of Susie Mine - No. 2 Level; Guess, G.A. (1904-08-30): Blueprint Map of Susie Property; Smith, D. (1975-09-01): Mine Inspection Report - Susie Mine)

GSC MAP 341A; 538A; 539A; 541A; 15-1961; 1736A; 2389

GSC MEM 38; *179, pp. 1-9

GSC OF 481; 637; 1505A; 1565; 1969; 2167, pp. 49-50

GSC P 37-21; 72-53

EMPR PFD 1589, 1590, 1591, 1592, 750695, 823481, 823339, 825510, 825511, 825512, 825513, 825514, 825515, 825516, 825517, 675534, 675535

Date Coded:	1985/07/24	Coded By:	BC Geological Survey (BCGS)	Field Check:	N
Date Revised:	2008/02/23	Revised By:	Karl A. Flower (KAF)	Field Check:	N