



MINFILE Detail Report
BC Geological Survey
Ministry of Energy, Mines and Petroleum Resources

Location/Identification

MINFILE Number: 093L 088 **National Mineral Inventory Number:** 093L14 Ag2

Name(s): DUTHIE
DUTHIE MINE, HENDERSON, ASHMAN, FAULT PLANE, DOME, MAMIE, CORONADO, SIL-VAN,
MCPHERSON, RAVEN, HUMMINGBIRD, CANARY

Status: Past Producer **Mining Division:** Omineca

Mining Method: Underground **Electoral District:** Bulkley Valley-Stikine

Regions: British Columbia **Resource District:** Skeena Stikine Forest District

BCGS Map: 093L074

NTS Map: 093L14W **UTM Zone:** 09 (NAD 83)

Latitude: 54 46 23 N **Northing:** 6070775

Longitude: 127 21 26 W **Easting:** 605674

Elevation: 1142 metres

Location Accuracy: Within 500M

Comments: Location of the McPherson adit, on the southwest side of Hudson Bay Mountain, 12 kilometres west of Smithers. See also Dome (093L 089).

Mineral Occurrence

Commodities: Silver, Lead, Zinc, Gold, Cadmium, Copper

Minerals **Significant:** Galena, Freibergite, Silver, Sphalerite, Tetrahedrite, Pyrrhotite, Pyrargyrite, Arsenopyrite, Gold, Chalcopyrite, Pyrite, Marcasite

Associated: Quartz, Carbonate, Chalcedony

Alteration Type: Silicific'n

Mineralization Age: Unknown

Deposit **Character:** Vein

Classification: Epigenetic, Hydrothermal

Type: I05: Polymetallic veins Ag-Pb-Zn+/-Au

Shape: Bladed **Modifier:** Sheared

Host Rock

Dominant Host Rock: Volcanic

Stratigraphic Age	Group	Formation	Igneous/Metamorphic/Other
Jurassic	Hazelton	Undefined Formation	-----
Cretaceous	-----	-----	Bulkley Intrusions

Isotopic Age	Dating Method	Material Dated
-----	-----	-----
-----	-----	-

Lithology: Andesite, Rhyolite, Tuff, Lapilli Tuff, Porphyritic Granodiorite, Quartz Porphyritic Monzonite, Diabase Dike, Dioritic Dike

Geological Setting

Tectonic Belt: Intermontane **Physiographic Area:** Hazelton Ranges

Terrane: Stikine

Inventory

Ore Zone: DUTHIE
Category: Measured
Quantity: 19,700 tonnes

Year: 1985
Report On: Y
NI 43-101: N

Commodity	Grade
Silver	207.0000 grams per tonne
Gold	2.5500 grams per tonne
Lead	5.0000 per cent
Zinc	7.5000 per cent

Comments:

Reference: Map 58.

Summary Production

		Metric	Imperial
	Mined:	35,819 tonnes	39,483 tons
	Milled:	36,040 tonnes	39,727 tons
Recovery	Silver	49,214,023 grams	1,582,268 ounces
	Gold	55,590 grams	1,787 ounces
	Lead	1,976,761 kilograms	4,358,012 pounds
	Zinc	1,301,177 kilograms	2,868,604 pounds
	Cadmium	28 kilograms	62 pounds

Capsule Geology

The Duthie mine is located on the south west slope of Hudson's Bay Mountain, 13 kilometres west of Smithers.

The Duthie mine country rock consists of Lower-Middle Jurassic Hazelton Group volcanics comprised mainly of spherulitic flow-banded rhyolite and massive lapilli tuff which is cut by numerous diabasic and dioritic dikes. The flow-banded rhyolite outcrops along the southern part of Hudson Bay Mountain and is overlain to the north, east and west by massive lapilli tuff. The contact dips 20 degrees north at about 1220 metres in elevation on the Henderson vein. In the vicinity of the veins the host rock is highly altered and bleached.

A Middle-Late Cretaceous Bulkley Intrusions stock intrudes the core of Hudson Bay Mountain and is comprised of porphyritic granodiorite and quartz monzonite with associated quartz veining.

The mineral deposits of the Duthie mine occupy four main fault zones, originally known as the Ashman, Henderson, Fault Plane and Dome. The mineralized fault zones or "vein-lodes" strike northeast and dip between 50 degrees southeast to 70 degrees northwest. They range from a few centimetres to 2.4 metres in width and from 213 to in excess of 1067 metres in length. The vein lodes are sliced, sheared and brecciated and host sulphide veins or infillings with vein quartz and carbonate gangue. The main ore minerals are galena, sphalerite, tetrahedrite, pyrrargyrite, pyrite, arsenopyrite, gold, chalcopyrite, silver and freibergite. Ore from the Henderson-Ashman lode also contains pyrrhotite and marcasite. All the ore contains gold and rare visible gold is associated with the arsenopyrite. The ore is associated with minor quartz and carbonate gangue and is crosscut by younger chalcedony veins up to 5 centimetres in width.

There is a progressive change in the mineralization in a northeast direction along the Henderson-Ashman vein lode as the deposit approaches the granodioritic stock which forms the core of the mountain. The galena-sphalerite-tetrahedrite ore changes to arsenopyrite-sphalerite ore that contains more gold and zinc but less galena and silver.

The Henderson vein lode is marked by intense faulting and more brecciation than the other veins and has proved to be the most productive. It outcrops between 1082 to 1280 metres elevation for about 610 metres and then joins the Ashman vein lode. The combined veins have been traced to the northeast for 460 metres at 1360 metres elevation. The Henderson vein strikes 065 degrees and dips between 50 degrees southeast to 80 degrees northwest. The Ashman vein is traceable for 520 metres southwest of its junction with the Henderson.

At 1090 metres elevation, the Henderson vein joins the Fault Plane vein lode and the two veins plunge at a low angle southwest. The Henderson vein has a near vertical dip, whereas the Fault Plane striking nearly parallel, dips 55 to 60 degrees southeast.

The fourth vein, the Dome (093L 089), lies 400 metres southeast of the Henderson and strikes 065 degrees and dips 75 to 85 degrees northwest. The Dome vein is well-defined for 215 metres.

The Duthie mine was first discovered in 1922 and mining from the 'front end' continued until 1930. From 1946 until 1954, the 'back end' or Breccia zone was worked by Sil-Van Consolidated Mining and Milling Company. At this time, a 136-tonne-per-day mill was operated with lead and zinc concentrates being shipped to Trail. Over 72200 tonnes of ore was milled during this time.

In the mid 1980s, the Duthie property was owned by Consolidated Silver Standard Mines Limited and operated by Duthie Mines Limited. From 1984 through 1988, more than 3 600 metres of horizontal adit development of three levels was completed. A mill capable of producing 45 tonnes per day of flotation concentrates was in operation from 1984 until 1986. In 1988, proven and probable reserves were 24 500 tonnes at 2.74 grams per tone gold, 655.1 grams per tonne silver, 4.4 per cent lead and 5.5 per cent zinc; with a further 72 500 to 90 600 tonnes of inferred reserves (Property File Rimfire Cummer, 1989).

Measured geological reserves at Duthie are 19,700 tonnes grading 207 grams per tonne silver, 2.55 grams per tonne gold, 5 per cent lead and 7.5 per cent zinc (Map 58).

Bibliography

EMPR AR 1908-64,172; 1911-119; 1912-115; 1914-215,216; 1917-113; *1922-108,109; 1923-108; 1924-94; 1925-135,359; 1926-129; 1927-134; 1928-159-161,520; 1929-161,429; 1930-139; 1934-C9-C11; 1939-69; 1940-55; 1941-55; 1942-54; 1946-86; *1947-98-100; *1948-82-85; 1950-100; 1951-112; 1952-93; 1953-93; 1954-95; 1956-26-27; 1957-10-11; 1963-25; 1968-120; 1979-129

EMPR ASS RPT 14300, 15709

EMPR BC METAL MM00030

EMPR FIELDWORK 1988, pp. 195-208

EMPR INDEX 3-199

EMPR INF CIRC 1984-1, p. 13; 1985-1, p. 17

EMPR IR 1984-5, p. 115

EMPR MAP 58; 69-1; 65 (1989)

EMPR MIN STATS 1985, p. 49; 1990, p. 27

EMPR MINING 1975-1980, Vol.1, p. 22; 1981-1985, pp. 15, 40; 1986-1987, p. 57; 1988, p. 66

EMPR OF 1992-1; 1998-8-I, pp. 1-20; 1998-10

EMPR PF (Various Maps and Reports; Consolidated Silver Standard Mines Ltd., Annual Report 1988, p. 5)

EMPR PF Rimfire (Davidson, A.J. (1989-03-14): Letter to W.J. Cummer re: Duthie Mines; Cummer, W.J. (1989-02-28): Proposal to Joint Venture exploration and development of the Duthie Mine)

EMR MP CORPFILE (Duthie Mines Ltd.; Atlas Exploration Company Ltd.; Dorita Silver Mines Ltd.; Silver Standard Mines Ltd.)

GSC BULL 270

GSC MAP 971A

GSC MEM 223, p. 103

GSC OF 351

GSC P 36-20; 44-23

GSC SUM RPT 1908, p. 45; 1925 Part A, p. 130

CANMET IR 2269; 2948

GCNL Dec.18, 1978; May 18, 1979; #48, 1985; #76, 1987

N MINER Feb.16, 1978

W MINER Apr. 1947, p. 110 (Re-opening of the Duthie Mine)

WWW http://www.infomine.com/index/properties/DUTHIE_PROPERTY.html

Kirkham, R.V. (1969): A Mineralogical and Geochemical Study of the Zonal Distribution of Ores in the Hudson Bay Range, British Columbia, Ph.D. Thesis, University of Wisconsin

EMPR PFD 900069, 903054, 903132, 15614, 15615, 15616, 15617, 15619, 15620, 15621, 750587, 750588, 821277, 821278, 882523, 882524, 882525, 882526, 882529, 882530, 882536, 882527, 882528, 882531, 882538, 882539, 882540, 882541, 882542, 882532, 882533, 882534, 882535, 887721, 600253, 600254, 600255, 600256, 600277, 600303, 802226, 802227, 802228, 802229, 802230, 802231, 802232, 802233, 804362, 802582, 802583, 802598, 802884, 804021, 804083, 804158, 804218, 804306, 804308, 804312, 676237, 520853, 520854, 520855, 520856, 681416

Date Coded:	1985/07/24	Coded By:	BC Geological Survey (BCGS)	Field Check:	N
Date Revised:	2009/07/14	Revised By:	Sarah Meredith-Jones (SMJ)	Field Check:	N