

DESCRIPTIVE MODEL OF HOMESTAKE Au

By Byron R. Berger

APPROXIMATE SYNONYMS Volcanogenic gold, iron-formation-hosted Au, Archean lode gold.

DESCRIPTION Stratabound to stratiform gold deposits in iron-rich chemical sediments in Archean metavolcanic terrane.

GENERAL REFERENCES Ridler (1970), Hutchinson (1976), Philips and others (1984), Fripp (1976), Colvine and others (1984).

GEOLOGICAL ENVIRONMENT

Rock Types Regionally metamorphosed mafic and felsic metavolcanic rocks, komatiites, and volcaniclastic sediments interlayered with banded iron-formation. Intruded by felsic plutonic rocks and locally by quartz porphyry, and syenite porphyry.

Age Range Mainly Archean.

Depositional Environment Controversial: submarine hot-spring activity related to volcanism, or later hydrothermal activity related to intrusive rocks.

Tectonic Setting(s) Archean greenstone belts. Commonly near regional division or "break" between predominantly metavolcanic and predominantly metasedimentary rocks. Greenschist-facies metamorphism.

Associated Deposit Types Kuroko massive sulfide deposits, Algoma Fe, low-sulfide gold-quartz veins.

DEPOSIT DESCRIPTION

Mineralogy Native gold + pyrite + pyrrhotite ± arsenopyrite ± magnetite ± sphalerite ± chalcopyrite. May contain minor tetrahedrite + scheelite + wolframite + molybdenite ± fluorite ± stibnite. Realgar at Hemlo deposit. Some deposits show zoning from proximal pyrrhotite ± magnetite to distal arsenopyrite.

Texture/Structure Narrow thinly laminated beds, veins, or lenses, overlying stringers (stockworks).

Alteration Host rocks contain quartz + siderite and (or) ankerite + tourmaline + chlorite + magnetite in mafic volcanic terranes. Chromian mica and chlorite particularly around veins and stockworks. Banded oxide-facies iron-formation replaced by pyrite or pyrrhotite.

Ore Controls Bedded ores in Fe-rich siliceous or carbonate-rich chemical sediments with vein and stockworks in feeder zones to these sediments, often interlayered with flow rocks. Beds may be cut by concordant or sharply discordant quartz-carbonate veins with gold.

Weathering Gossans from oxide and carbonate iron-formation.

Geochemical Signature Au + Fe + As + B + Sb (+ platinum-group metals in mafic volcanic terranes). Bi, Hg, and minor Cu-Pb-Zn-Ag-Mo.

EXAMPLES

Homestake, USSD	(Rye and Rye, 1974)
Passagem, BRZL	(Fleisher and Routhier, 1973)
Dome Mine, CNON	(Fryer and others, 1979)
Agnico Eagle, CNQB	(Barnett and others, 1982)
Vubachikwe, ZIMB	(Fripp, 1976)

GRADE AND TONNAGE MODEL OF HOMESTAKE Au

By Dan L, Mosier

COMMENTS Deposits were combined when they occur within 1.6 km of each other. Grades and tonnages were not found to be significantly different for deposits associated with different host rocks. See figs. 184-186

DEPOSITS

<u>Name</u>	<u>Country</u>	<u>Name</u>	<u>Country</u>
Agassiz	CNMN	Gurney	CNMN
Albino	CNON	Hard Rock-McLeod-Cockshutt	CNON
Ankerite-Aunor-Delnite	CNON	Hasaga-Howey	CNON
Arrowhead	CNQU	Hollinger and others	CNON
Ashley	CNON	Homestake	USSD
Bankfield-Tombill	CNON	Hutti	INDA
Barbara-Surprise	AUWA	Ida H.	AUWA
Barber-Larder	CNON	Island Lake	CNMN
Barberton	SAFR	Jason	CNON
Barry Hollinger	CNON	Jerome	CNON
Bellevue	AUWA	Kerr Addison	CNON
Bidgood-Moffatt-Hall	CNON	Kiabakari	TNZN
Big Bell	AUWA	Kilo-Moto	CNGO
Black Range-Oroya	AUWA	Kolar	INDA
Bob	ZIMB	Laguerre	CNON
Bonnievale	AUWA	Lancefield	AUWA
Bouscadillac and others	CNON	Lapa Cadillac	CNQU
Broulan and others	CNON	Leitch-Sand River	CNON
Buffalo Red Lake	CNON	Lingman	CNON
Burbanks	AUWA	Little Long Lac	CNON
Calder-Bousquet	CNQU	Madsen	CNON
Campbell Red Lake-Dickenson	CNON	Magnet Cons.	CNON
Carshaw-Tommy Burns	CNON	Marble Bar	A UWA
Cathroy Larder	CNON	Martin-Bird	CNON
Central Manitoba	CNMN	Matachewan Cons. & others	CNON
Central Patricia	CNON	Matona-Stairs	CNON
Cheminis-Fernland-Omega	CNON	McFinley	CNON
Chesterville	CNON	McMarmac	CNON
Connemara	ZIMB	McWatters	CNQU
Coolgardie	AUWA	Menzies	AUWA
Copperhead	AUWA	Minto-Tyrinite	CNON
Cosmopolitan	AUWA	Morris-Kirkland	CNON
Cullaton Lake	CNNT	Morro Velho	BRZL
Davidson	CNON	Mt. Magnet	AUWA
Day Dawn-Main Line	AUWA	Mt. Morgans	AUWA
De Santis	CNON	Naybob	CNON
Dome-Paymaster-Preston	CNON	Nobles Nob	AUWA
Edna May	AUWA	Norseman-Dundas	AUWA
Emu-Great Eastern	AUWA	Orpit	CNON
Fraser's	AUWA	Paddy's Flat	AUWA
Fuller-Tisdale	CNON	Palmer's Find	AUWA
Geita	TNZN	Passagem	BRZL
Gimlet-Slippery	AUWA	Pickle Crow	CNON
Gladstome-Sand Queen	AUWA	Queenston	CNON
God's Lake	CNMN	Raposos	BRZL
Gold Eagle-McKenzie	CNON	Red Crest	CNON
Gold Hawk	CNON	Red Lake Gold Shore	CNON
Gold Hill	CNON	Ross	CNON
Golden Ridge	AUWA	Rouyn Merger	CNQU
Gongo Socco	BRZL	Sanshaw	CNON

Shamva-Cymric Gp.	ZIMB	Uchi	CNON
Son of Gwalia	AUWA	Upper Beaver	CNON
Stadacona	CNQU	Upper Canada	CNON
Starratt-Olsen	CNON	Wasa Lake	CNQU
Talmora Longlac	CNON	White Feather	AUWA
Thompson Bousquet	CNQU	Wilmar and others	CNON
Timoni	AUWA	Wiluna-Moonlight	AUWA
Triton	AUWA	Youanmi	AUWA

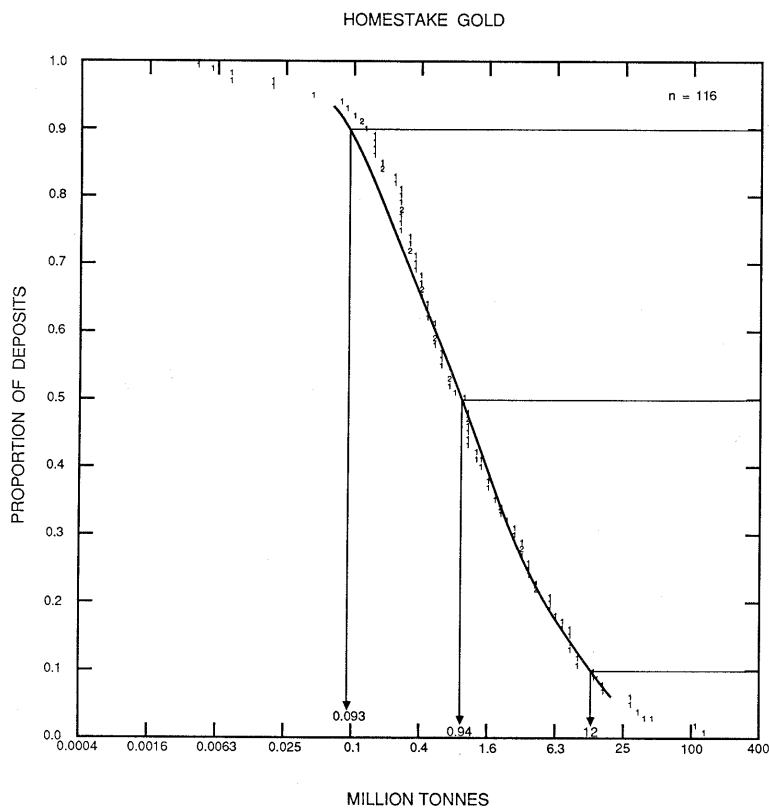


Figure 184. Tonnages of Homestake Au deposits.

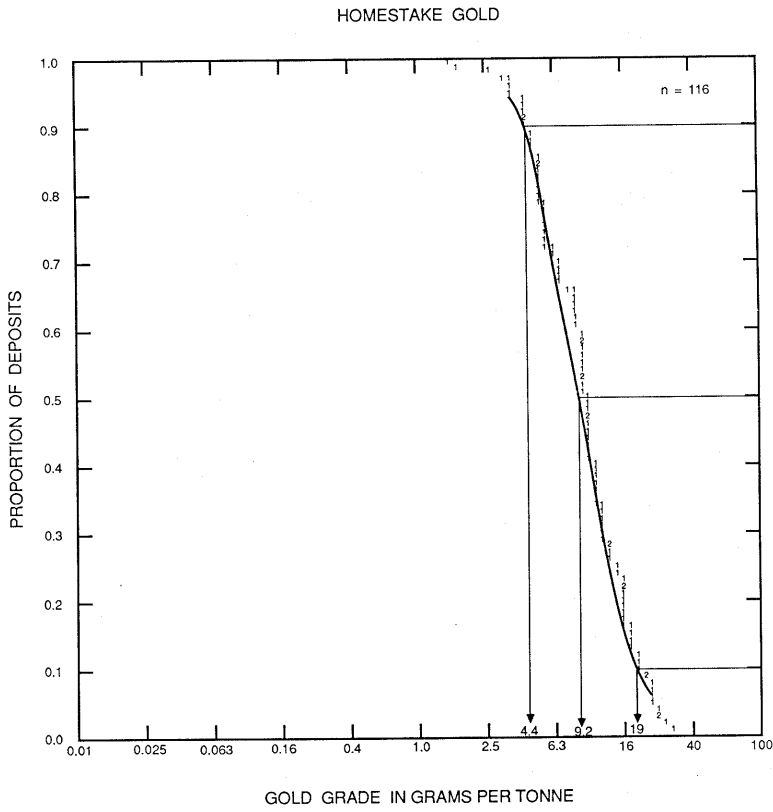


Figure 185. Gold grades of Homestake Au deposits.

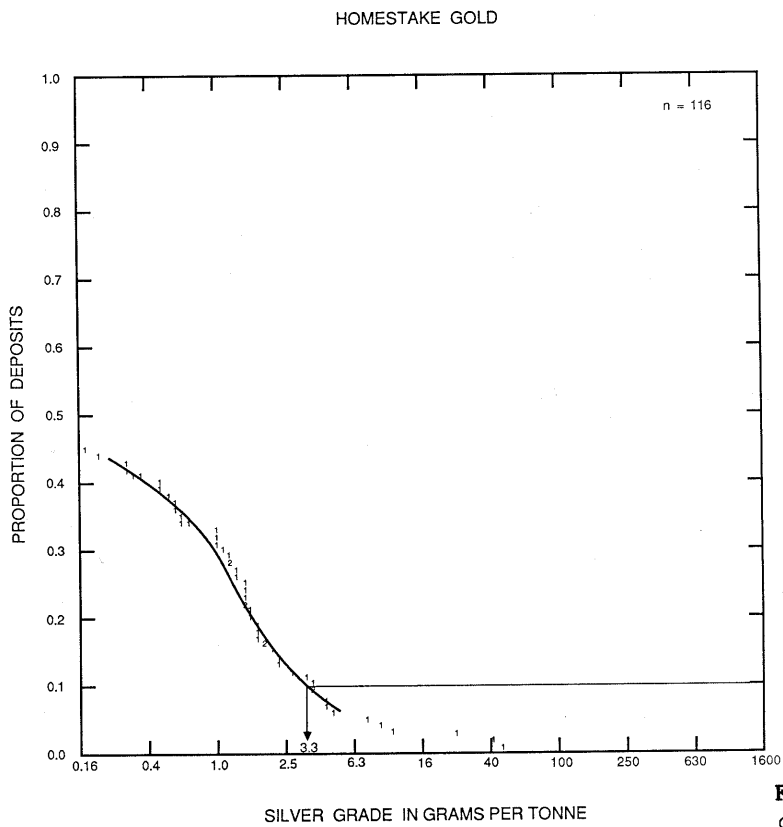


Figure 186. Silver grades of Homestake Au deposits.