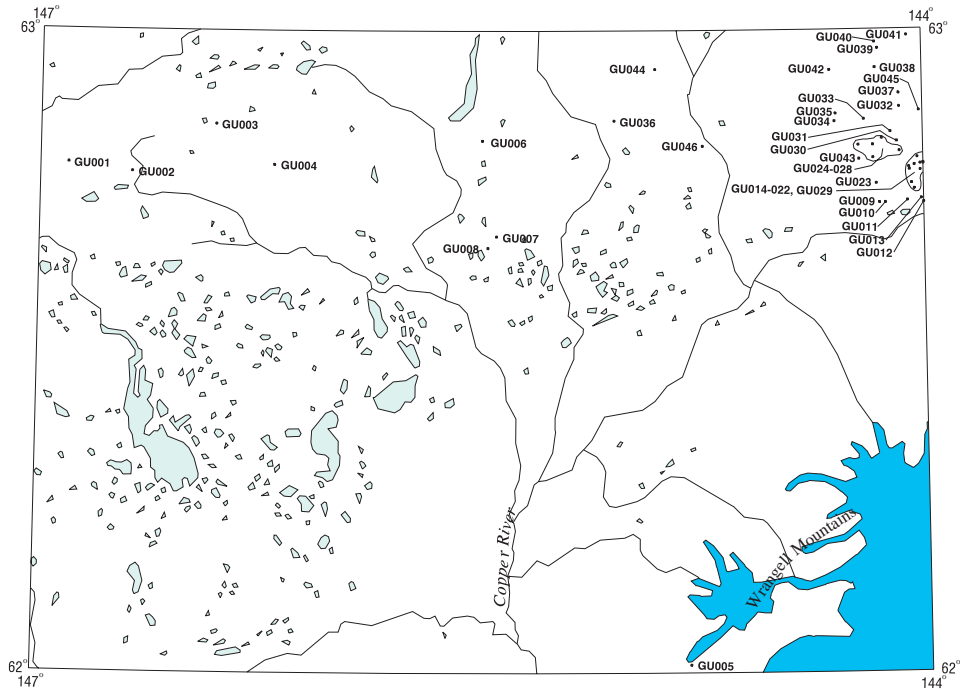


## Gulkana quadrangle

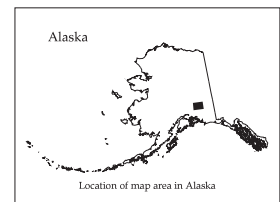
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



*Distribution of mineral occurrences in the Gulkana  
1:250,000-scale quadrangle, Alaska*

This and related reports are accessible through the USGS World Wide Web site <http://ardf.wr.usgs.gov>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to: Frederic Wilson, USGS, 4200 University Dr., Anchorage, AK 99508-4667, e-mail [fwilson@usgs.gov](mailto:fwilson@usgs.gov), telephone (907) 786-7448. This compilation is authored by:

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Anchorage, AK



*This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.*

**Site name(s):** KFC

**Site type:** Occurrence

**ARDF no.:** GU001

**Latitude:** 62.792

**Quadrangle:** GU D-6

**Longitude:** 146.905

**Location description and accuracy:**

The KFC occurrence is about one-half mile, north-northwest of VABM Laren and about six and one-half miles south of the Maclaren River. The occurrence is at an elevation of about 4600 feet approximately on the center of the sideline which separates sections 27 and 28, T. 12 N., R. 9 W., Copper River Meridian. The prospect is located within 500 feet.

**Commodities:**

**Main:** Ag, Cu

**Other:** Au

**Ore minerals:** Bornite, chalcocite, chalcopyrite, chrysocolla, malachite

**Gangue minerals:** Calcite, chlorite, epidote, quartz

**Geologic description:**

The KFC occurrence is in a belt of Pennsylvanian and Permian sedimentary and volcanic rocks informally called the 'Lichen Greenstone Belt' (Castle and Degenhart, 1978, p. 12-16). The Lichen Belt takes its name from the Lichen prospect about 20 miles north-west of the KFC occurrence in the Healy quadrangle (Smith, Bundtzen and Tribble, 1975). At both the KFC location and the Lichen prospect, mineralized rocks in outcrop and talus invariably are partly covered by red-orange lichen (*Trentepohia aurea*). Copper minerals at the KFC occurrence are associated with three host rocks: 1) quartz-chlorite schist, 2) epidote-rich calcareous greenstone, and 3) orange-weathering impure marble. The rocks have been weakly metamorphosed and are tentatively correlated with the Tetelna Formation of Pennsylvanian to Permian age based on fossils collected near the Lichen prospect in the Healy quadrangle (Turner and Smith, 1974).

At this occurrence, the primary copper minerals are bornite, chalcocite, and chalcopyrite that occur as stringers and dissemination's within a crudely stratabound sequence of schist, greenstone, and impure marble. The copper minerals have been partly oxidized to chrysocolla and malachite; outcrops are variably copper stained and partly covered by red-orange lichen. The maximum width of the exposed mineralization is about 10 feet. The zone can be traced along strike through a talus field for about 500 feet and soil samples suggests that the occurrence continues for at least another 200 feet (Castle and

Dagenhart, 1978). A series of chip and channel samples cut across the occurrence contain from 0.8 to 3.15 percent copper, from 0.14 to 0.71 ounces of silver per ton, and as much as 0.01 ounces of gold per ton. A selected sample from a talus boulder about 3 feet in diameter contained 24.5 percent copper, 4.1 ounces of silver per ton, and 0.03 ounce of gold per ton.

**Alteration:****Age of mineralization:**

Tentatively the mineralization is assumed to be Pennsylvanian to Permian, the age of the Tetelna Formation that hosts the deposit. The occurrence is crudely stratabound. The copper minerals appear to be diagenetic as they occur in stringers and as dissemination's in three distinct lithologic units. Remobilization of copper may have occurred during green-schist metamorphism in the Jurassic(?).

**Deposit model:**

Cyprus massive sulfide (Cox and Singer, 1986, model 24a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

24a

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The KFC occurrence was discovered in 1977 during a regional geochemical survey conducted by WGM Inc., a consulting company, for Ahtna Inc. a regional Native corporation. A soil-sample survey extended the deposit about 200 feet along strike beyond the 500 foot-long zone where mineralized samples are found on the talus slope. The occurrence has not been drilled.

**Production notes:****Reserves:****Additional comments:**

The KFC occurrence is within a belt of weakly metamorphosed sedimentary and volcanic rocks at least 50 miles long, informally called the Lichen Greenstone Belt (Castle and Degenhart, 1978, p. 12-16). It contains several other occurrences of copper (GU002 to GU008, excluding GU005) and the belt is favorable for the occurrence of other copper/silver deposits. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Turner and Smith, 1974; Smith, Bundtzen, and Tribble, 1975; Castle and Degenhart, 1978.

**Primary reference:** Castle and Degenhart, 1978

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group),  
and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s):** Unnamed (southwest of Monsoon Lake)

**Site type:** Occurrence

**ARDF no.:** GU002

**Latitude:** 62.779

**Quadrangle:** GU D-6

**Longitude:** 146.688

**Location description and accuracy:**

The occurrence is near the east end of a six-mile-long, east-trending ridge about 7 to 9 miles south of the Maclaren River. The occurrence is about 4 miles south-southwest of the center of Monsoon Lake. It is in the SE1/4NE1/4, section 34, T. 12 N., R. 8 W., Copper River Meridian, and is located accurately within 1000 feet.

**Commodities:**

**Main:** Ag, Cu

**Other:**

**Ore minerals:** Bornite, chalcocite, chalcopyrite, malachite

**Gangue minerals:**

**Geologic description:**

This occurrence is near the east end of the so-called 'KFC anomalous zone', an elongated east-west zone about 10 miles long which includes the KFC prospect (GU001). This occurrence consists of rubble crop and is coincident with highly anomalous stream sediment values for copper (101-570 ppm) reported by Castle and Degenhart (1978, figure 6) near the east end of the KFC anomalous zone. Bedrock is mainly composed of schistose basalt and andesite of the Pennsylvanian to Permian, Tetelna Formation. Work to the east of the area (Arehart, 1982) found numerous occurrences of: 1) veinlets and disseminations of bornite, chalcocite, and chalcopyrite; 2) local copper staining in epidotized volcanics; and 3) the Platypus Mountain prospect (GU003), which occurs in a felsic horizon in the volcanics.

**Alteration:**

**Age of mineralization:**

Diagenetic or epigenetic remobilization of copper and associated metals in volcanic host rocks of Pennsylvanian to Permian age.

Remobilization of copper may have occurred during green-schist metamorphism in the Jurassic(?).

**Deposit model:**

Cyprus massive sulfide (Cox and Singer, 1986, model 24a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

24a

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The area was prospected on behalf of the Ahtna Native Regional Corporation in 1977 (Castle and Degenhart, 1978). An area immediately to the east was prospected by Noranda Inc. (Arehart, 1982). The exploration was only in reconnaissance.

**Production notes:****Reserves:****Additional comments:**

It is likely that detailed prospecting will find numerous, additional small occurrence of copper sulfide minerals in metamorphosed andesite and basalt in the area. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Castle and Degenhart, 1978; Arehart, 1982.

**Primary reference:** Castle and Degenhart, 1978

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Platypus Mountain****Site type:** Occurrence**ARDF no.:** GU003**Latitude:** 62.854**Quadrangle:** GU D-5**Longitude:** 146.404**Location description and accuracy:**

This occurrence is on a rounded mountain labeled '4666' on the USGS 1:63,360-scale, topographic map; it is in a range locally called the Alphabet Hills. The occurrence is about 2.5 miles north-northeast of the point where Keg Creek bends from southwest to south. The occurrence is on the southwest flank of the mountain at an elevation of about 4100 feet. It is in the NW1/4NW1/4, section 5, T. 12 N., R. 6 W., Copper River Meridian. The prospect is known accurately within 500 feet.

**Commodities:****Main:** Ag, Au, Cu**Other:****Ore minerals:** Azurite, chalcocite, chalcopyrite, malachite, pyrite**Gangue minerals:** Chlorite**Geologic description:**

The Platypus Mountain occurrence is in a thin unit of felsic tuff and exhalite within a 5000-meter-thick section dominated by mafic volcanic flows, tuffs, and breccia. The section also contains subordinate, weakly metamorphosed siltstone, claystone, and marble. The rocks are probable late Paleozoic in age. They are possibly correlative with the Pennsylvanian to Permian, Tetelna Formation and probably are correlative with the country rocks at the KFC occurrence (GU001). Prospecting in the area is handicapped by extensive Quaternary gravel which mantles many of the hills.

Chalcopyrite, partly oxidized to azurite and malachite, occurs in stringers within a chloritic, rhyolite(?) flow-breccia at this occurrence (Arehart, 1982). Samples of the breccia contain as much as 4,100 ppm copper, 1.5 ppm silver, and 620 ppb gold. Semi-massive pyrite occurs in a cherty exhalite unit adjacent to the flow-breccia. Lenses and stringers of chalcocite, partly oxidized to malachite and azurite, are associated with the predominant mafic rocks. The pyritic, cherty, exhalite unit which hosts the flow-breccia extends east-west for about two miles.

**Alteration:**

Chloritization of felsic tuff and exhalite.

**Age of mineralization:**

Diagenetic or epigenetic remobilization of copper and associated metals in a volcanic pile of Pennsylvanian and Permian age. Remobilization of copper may have occurred during green-schist metamorphism in the Jurassic(?).

**Deposit model:**

Cyprus massive sulfide (Cox and Singer, 1986, model 24a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

24a

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The Platypus Mountain occurrence was discovered in 1981 by a Noranda Exploration company team (Arehart, 1982). A gridded, soil survey and a CEM geophysical survey were completed on the prospect. The lands are mainly covered by selections of Ahtna Inc., a regional Native corporation.

**Production notes:****Reserves:****Additional comments:**

Arehart (1982) reported numerous copper occurrences in intermediate and mafic volcanics near the Platypus Mountain occurrence. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Arehart, 1982.

**Primary reference:** Arehart, 1982

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00



**Site name(s):** Unnamed (on hill 4890 east of VABM Keg)

**Site type:** Occurrence

**ARDF no.:** GU004

**Latitude:** 62.791

**Quadrangle:** GU D-5

**Longitude:** 146.205

**Location description and accuracy:**

The occurrence is near the crest of hill 4890 about 2.5 miles east of VABM Keg. It is in the NE1/4SW1/4, section 29, T. 12 N., R. 5 W., Copper River Meridian. The occurrence is located accurately within 1000 feet.

**Commodities:**

**Main:** Ag, Cu

**Other:**

**Ore minerals:** Azurite, chalcocite, malachite

**Gangue minerals:**

**Geologic description:**

The occurrence is in schistose, andesitic to basaltic, volcanic rocks, tentatively correlated with the Pennsylvanian to Permian, Tetelna Formation. Numerous occurrences of chalcocite partly oxidized to azurite and malachite occur in the section (Arehart, 1982, p. 3). This locality is Arehart's sample 2308 which contained more than 2 percent copper and 50 ppm silver. The sample was high-grade material; there are also probably numerous additional small copper occurrences in the vicinity.

**Alteration:**

Local introduction of epidote.

**Age of mineralization:**

Remobilization of copper may have occurred during green-schist metamorphism in the Jurassic(?).

**Deposit model:**

Cyprus massive sulfide (Cox and Singer, 1986; model 24a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

24a

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The occurrence was found in 1981 during regional reconnaissance by Noranda Inc. on Ahtna Inc., regional Native corporation lands.

**Production notes:**

**Reserves:**

**Additional comments:**

Outcrops are mostly limited to ridge crests; hill slopes below about 3,500 feet in elevation are mostly covered with gravel and have thick brush mats. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Arehart, 1982.

**Primary reference:** Arehart, 1982

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Nadina River****Site type:** Prospect**ARDF no.:** GU005**Latitude:** 62.0**Quadrangle:** GU A-2**Longitude:** 144.8**Location description and accuracy:**

The Nadina River site is a discredited placer location for gold and platinum group metals. In about 1899, the entire creek was staked from Nadina Glacier to the stream's confluence with the Copper River but there is no record of actual production or the occurrence of significant gold or platinum-group elements. The arbitrary location given here is in the wide glacial valley on the border between the Gulkana and Valdez quadrangles.

**Commodities:****Main:** Au, PGE's**Other:****Ore minerals:** Gold, platinum group metals**Gangue minerals:****Geologic description:**

Most of the wash in the Nadina River is unaltered andesitic lava and tuff of the Mt. Drum volcano (Mendenhall and Schrader, 1903, p. 63-64). As early as 1899, there were rumors of very high grade gold and platinum in the sediments of Nadina River. The river was staked and intensively prospected; one shaft was reportedly 67 feet deep. The Geological Survey collected many samples from the area but was unable to confirm any concentration of gold or platinum metals, and there has been no further reports of placers along the river.

**Alteration:****Age of mineralization:**

Probably no placers exist but if so, they would be Holocene.

**Deposit model:**

(Discredited Au-PGE placer)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The creek was actively prospecting beginning in about 1899, but apparently with no results and there is no indication of any activity after about 1903. One shaft was reportedly 67 feet deep.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Mendenhall and Schrader, 1903; Cobb, 1979 (OF 79-1247).

**Primary reference:** Mendenhall and Schrader, 1903

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

**Site name(s): Meier Lake****Site type:** Prospect**ARDF no.:** GU006**Latitude:** 62.829**Quadrangle:** GU D-3**Longitude:** 145.498**Location description and accuracy:**

The Meier Lake prospect (Cobb, 1979: OFR 79-1247, p. 19) is on the southeast flank of the three-mile-long, east-trending ridge north of Gillespie Creek; it is about 1/4 mile west of Meier Lake. The prospect is locality 1 of Richter and Matson (1972) and MacKevett and Holloway (1977). The prospect is in the SE1/4SE1/4, of section 12, T. 12 N., R. 2 W., Copper River Meridian. The prospect is approximately located but probably correct within 1000 feet.

**Commodities:****Main:** Cu, Fe**Other:****Ore minerals:** Chalcopyrite, magnetite**Gangue minerals:****Geologic description:**

Greenschist and amphibolite of pre-Triassic age occur on the north flank of a Jurassic(?) granodiorite to biotite-quartz diorite intrusion that, based on an airborne survey, underlies the Meier Lake area (Rose and Saunders (1965, figs. 1 and 3). Gabbro and diorite underlie the area north of greenschist and amphibolite. Magnetite containing small amounts of chalcopyrite occurs in greenschist and sheared diorite. Magnetite forms lenticular veinlets as much as 1 inch thick. Chalcopyrite also occurs in a Jurassic(?) granodiorite on nearby Hogan Hill (GU007 and GU008).

**Alteration:****Age of mineralization:**

Probably Jurassic, formed in contact zones of a Jurassic (?) granodiorite to biotite-quartz diorite intrusion.

**Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Small exploration pits (Rose and Saunders, 1965).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Rose and Saunders, 1965; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Rose and Saunders, 1965

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Unnamed (northeast of Hogan Hill)****Site type:** Occurrence**ARDF no.:** GU007**Latitude:** 62.68**Quadrangle:** GU C-3**Longitude:** 145.45**Location description and accuracy:**

This occurrence (Cobb, 1979 [OF 79-1247]) is east of the Richardson Highway on the upper reaches of Haggard Creek, about 2.0 miles north-northeast of Hogan Hill (GU008). It is the same locality reported as number 2 by Rose and Sanders (1965, p.14), Mulligan (1974), Richter and Matson (1972), and MacKevett and Holloway (1977). The occurrence is in the SW1/4SE1/4, section 32, T. 11 N., R. 1 W., Copper River Meridian.

**Commodities:****Main:** Cu**Other:****Ore minerals:** Chalcopyrite, pyrite**Gangue minerals:****Geologic description:**

Pyrite and traces of chalcopyrite occur on fracture surfaces in a late Jurassic(?) granodiorite pluton which is part of the Gulkana River metamorphic complex (Rose and Saunders, 1965; Berg and Cobb, 1967; and Nokleberg and others, 1994).

**Alteration:**

K-feldspar and propylitic (chlorite) alteration of granodiorite adjacent to mineralized fractures (Rose and Saunders, 1965).

**Age of mineralization:**

Mineralization is related to granodiorite which is probably Late Jurassic.

**Deposit model:**

Porphyry Cu(?) (Cox and Singer, 1986; model 17)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

17(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

There are old gold prospect pits in the general area but no data on the actual presence of gold (Mulligan, 1974).

**Production notes:**

**Reserves:**

**Additional comments:**

See also Hogan Hill (GU008).

**References:**

Rose and Saunders, 1965; Berg and Cobb, 1967; Mulligan, 1974; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-124); Nokleberg and others, 1994.

**Primary reference:** Rose and Saunders, 1965

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00



**Site name(s): Unnamed (on Hogan Hill)****Site type:** Prospect**ARDF no.:** GU008**Latitude:** 62.662**Quadrangle:** GU C-3**Longitude:** 145.479**Location description and accuracy:**

An unnamed prospect (one of the Hogan Hill prospects of Cobb, 1979 [OF 79-1247, p. 14]) is on the north end of Hogan Hill about 0.1 mile east of the Richardson Highway. The prospect is about 0.1 to 0.2 miles east of the center of section 7, T. 10 N., R. 1 W., Copper River Meridian. This prospect is locality 3 of Rose and Saunders (1965), and Richter and Matson (1972). The location is probably accurate within 0.1 mile.

**Commodities:****Main:** Cu**Other:** Pb, Zn**Ore minerals:** Chalcopyrite, galena, pyrite, sphalerite**Gangue minerals:** Quartz**Geologic description:**

The prospect is in amphibolite on the south flank of a granodiorite intrusion that crops out northeast of Hogan Hill. The foliation in the amphibolite strikes north to north-northwest and dips steeply to the east. Small quartz veins strike east-northeast and dip 75 degrees southeast. The strike of the amphibolite is sub parallel to the contact between the granodiorite and amphibolite (Rose and Saunders, 1965, figs 1 and 2). The amphibolite and granodiorite both form part of the Gulkana River metamorphic complex. Veinlets of quartz that contain pyrite and chalcopyrite with subordinate galena and sphalerite are sub parallel to the foliation of the amphibolite (Rose and Saunders, 1965; Mulligan, 1974).

**Alteration:****Age of mineralization:**

Mineralization is probably related to a Late Jurassic granodiorite.

**Deposit model:**

Polymetallic vein or low-grade porphyry copper(?) (Cox and Singer, 1986; model 22c or 18a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c or 18a(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Many small prospect pits (Rose and Saunders, 1965; Mulligan, 1974).

**Production notes:**

**Reserves:**

**Additional comments:**

See also GU006 and GU007.

**References:**

Rose and Saunders, 1965; Mulligan, 1974; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Rose and Saunders, 1965; Mulligan, 1974

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s):** Unnamed (east-northeast of VABM Cobb)

**Site type:** Occurrence

**ARDF no.:** GU009

**Latitude:** 62.73

**Quadrangle:** GU C-1

**Longitude:** 144.15

**Location description and accuracy:**

The occurrence is on the north flank of a hill which is locally called Grizzly Hill, a broad ridge trending east-northeast of VABM Cobb. The site is approximately centered along the south half of the section line dividing sections 17 and 18, T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:**

**Main:** Au

**Other:** Ag, Pb, Zn

**Ore minerals:** Galena, pyrite, sphalerite?

**Gangue minerals:** Carbonate minerals, quartz, tourmaline

**Geologic description:**

The higher part of the area consists of Border Phase rocks of the Pennsylvanian to Permian, Ahtell pluton. These rocks are apparently underlain by the Grubstake Phase of the pluton and are cut by east-northeast-trending dikes and masses of younger Jurassic diorite (Richter, 1966; Richter and Matson, 1968).

The approximate center of the occurrence is on the east end of a locally sulfidized, silica-carbonate zone, included within the area 3a of WGM Inc. (1980, fig. 3) which is anomalous in gold. The area also has anomalous lead and zinc (Richter, 1966). A stream-sediment sample in the drainage on the north side of the occurrence contained 7,100 ppb gold (Richter and Matson, 1978). The occurrences may extend over the ridge to the south where Kirk Stanley reported (written communication, 2000) low-grade, gold-tourmaline mineral occurrences, also argentiferous galena-quartz veins. Stanley speculated that there was a large tourmaline breccia pipe in the area.

**Alteration:**

Silicification; formation of silica-carbonate and tourmaline-bearing rocks.

**Age of mineralization:**

Uncertain; possibly composite mineralization related to both the Pennsylvanian to Permian, Ahtell pluton and the crosscutting Jurassic diorite, but could be related to either.

**Deposit model:**

Polymetallic veins, Au porphyry (?) (Cox and Singer, 1986; model 22c )

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Most of the area has only been mapped in reconnaissance and sampled with stream sediments. Kirk Stanley (written communication, 2000) trenched a nearby area on the south flank of the Grizzly Hills in about 1970.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980.

**Primary reference:** Richter and Matson, 1968; WGM, 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

**Site name(s): Unnamed (south of Flat Creek)****Site type:** Prospects**ARDF no.:** GU010**Latitude:** 62.73**Quadrangle:** GU C-1**Longitude:** 144.13**Location description and accuracy:**

The site consists of several occurrences near an unnamed prospect (Cobb, 1979 [OFR 79-1247, p. 30] on the north side of the center part of the broad ridge between Cobb Lakes and Flat Creek. The broad ridge was called the Grizzly Hills by Kirk Stanley (written communication, 2000). The prospects are about 0.4 miles, south-southwest of a prospect mapped by Richter (1966, fig. 5). It is within a broad lead-zinc geochemical anomaly defined by Richter (1966) and a nearly coincident, gold geochemical anomaly defined by WGM Inc. (WGM Inc., 1980; anomaly 3a). The locality is approximately the same as number 11 of Richter and Matson (1972), and number 27 of MacKevett and Holloway (1977). The occurrences are in the NE1/4SE1/4, section 17, T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Cu**Other:** Au, Pb, W**Ore minerals:** Chalcopyrite**Gangue minerals:** Carbonate, quartz, tourmaline**Geologic description:**

The area consists mainly of the Grubstake, medium-grained quartz monzonite phase of the Pennsylvanian to Permian, Ahtell pluton and its quartz-rich border phase (Richter, 1966). The area has widespread mineralization. Richter (1966 fig. 5) mapped a prospect with a sulfide-bearing quartz-carbonate vein at an elevation of about 3,400 feet in the drainage north of the ridge. Rocks nearby contain disseminated chalcopyrite. WGM Inc. (WGM Inc., 1980) mapped a half-mile-long altered area containing sulfide veins centered on this location. Stream sediments in the drainage below Richter's prospect contained 700 ppb gold and the south-draining stream from the ridge contained 300 ppm tungsten. Kirk Stanley (written communication, 2000) reported the existence of tourmaline and silver-lead veins on the Grizzly Hills but without specifying an exact location.

**Alteration:**

Tourmaline.

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The area has been explored intermittently by reconnaissance mapping, sampling, and minor bulldozer trenching since about 1963.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); WGM Inc., 1980.

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/05/00

**Site name(s): Silver Creek****Site type:** Prospect**ARDF no.:** GU011**Latitude:** 62.733**Quadrangle:** GU C-1**Longitude:** 144.055**Location description and accuracy:**

The Silver Creek prospect (Cobb, 1979 [OFR 79-1247]) is at an elevation of about 2,800 feet in Silver Creek about 1/2 mile above its junction with Ahtell Creek. The location is number 8 of Richter (1966; fig. 5), locality 12 of Richter and Matson (1972), and locality 11 of MacKevett and Holloway (1977). The location is accurate to within 500 feet; it is the NW1/4SW1/4, section 14, T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Ag**Other:** Au, Cu, Pb, Zn**Ore minerals:** Chalcopyrite, galena, limonite, malachite, pyrite, sphalerite, tetrahedrite**Gangue minerals:** Carbonate, quartz**Geologic description:**

The Silver Creek prospect consists of highly altered, pyritic rock and veins that occur along cross-fractures to a major fault zone. The fault zone is 100 or more feet wide, strikes N 10-20 E and dips 65 to 80 degrees to the west. The fault appears to cut and displace a dike-like Jurassic(?) diorite that intrudes sedimentary and volcanic rocks of the Pennsylvanian to Permian, Slana Spur Formation (Richter 1964; 1966; Richter, Lanphere, and Matson, 1975; and Kirk Stanley, written communication, 2000).

Rocks within the fault zone are yellowish, carbonate- and gouge-rich hornfels that contain fine-grained disseminated pyrite. Quartz-carbonate veins as much as five-feet thick cross the fault zone; veins locally contain concentrations of galena, tetrahedrite, chalcopyrite, pyrite, and sphalerite. Limonite and malachite are abundant in near surface exposures (Thorne, 1946; Richter, 1966; Kirk Stanley, written communication, 2000).

Individual cross-veins described by Richter (1964; 1966, p. 32-33) strike NW and dip NE. Locally, they are enriched in silver, probably mainly in tetrahedrite. Thorne (1946, p. 8, fig. 4) reported that a one-foot-thick vein from the uppermost workings assayed a trace of gold, 17.5 ounces of silver per ton,

some lead, and 1.59 percent copper. Another sample from caved workings contained 0.04 ounce of gold per ton with only a trace of copper. The prospect was reopened and drilled in about 1969-70. Samples collected from small diameter (AX) drill holes locally contained more than 50 ounce of silver per ton. Low-angle BX holes drilled across the veins encountered occasional high silver values, but indicated that the average grade across the fault zone was less than 5 ounces of silver per ton. No substantial work has been done since 1970 (Kirk Stanley, written communication, 2000).

**Alteration:**

Country rocks near veins are altered to carbonates and are iron-stained; hornfels in the fault zone has been argillized and pyritized.

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The prospect has been known since about 1908 (Kirk Stanley, written communication, 2000). When visited by Moffit (1938) and Thorne (1946), most workings were caved. Renewed interest in the prospect began about 1962 and continued until about 1970. The property was trenched beginning in 1962, and drilled by the Ptarmigan Company in 1969 or 1970. It has been inactive since.

**Production notes:****Reserves:****Additional comments:**

The most recent exploration data on the property was summarized in: 'Slana Mineral Belt Prospects Review' by Kirk Stanley, a report for Ahtna Minerals Corporation (Wes Nason, Ahtna Minerals, written communication, 2000). Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.



**References:**

Moffit, 1938; Thorne, 1946; Richter, 1964; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/05/00

**Site name(s): Ahtell Creek****Site type:** Prospect**ARDF no.:** GU012**Latitude:** 62.73**Quadrangle:** GU D-1**Longitude:** 144.00**Location description and accuracy:**

This placer prospect is somewhat arbitrarily located on Ahtell Creek at the boundary between the Gulkana and Nabesna quadrangles. This location was chosen because of several conflicting locations. Richter (1966, fig. 5) shows one placer prospect on the Nabesna D-6 quadrangle about one-mile downstream from the quadrangle boundary. Richter and Matson (location 21, 1972) give a locality on Ahtell Creek about 0.8 miles upstream from the quadrangle boundary. In 1938, Moffit (1938, p. 51) reported that in 1936, prospecting for placer gold was in progress 'near the lower end of the canyon, 2 miles from the Slana Bridge. Ahtell Creek was also reported as auriferous by MacKevett and Holloway (1977, locality 20) in the SE1/4NE1/4, section 13 T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Ahtell Creek drains a large region known to be locally auriferous. Grubstake Creek (GU017) the most productive gold placer in the region enters Ahtell Creek about 4 miles above this site. A lode gold prospect, the Gold-Quartz prospect, (GU013), is in the Ahtell Creek canyon just above this site.

A description of prospecting activities on Ahtell Creek in 1936 by Moffit (1938, p. 51) suggests that the Ahtell Creek placer is of river-bar type, formed by the reworking of low-grade materials. Moffit reported that the prospect was in the canyon of Ahtell Creek where auriferous gravel deposits of probable local derivation formed in the bends of the river and at its mouth.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer gold deposit, river-bar subtype (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Undetermined.

**Site Status:** Inactive

**Workings/exploration:**

Prospect activity was reported in 1936 (Moffit, 1938; Smith, 1939).

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Moffit, 1938; Smith, 1939; Richter, 1966; Richter and Matson, 1972; MacKevett and Holloway, 1977.

**Primary reference:** Moffit, 1938

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Gold-Quartz****Site type:** Prospect**ARDF no.:** GU013**Latitude:** 62.736**Quadrangle:** GU C-1**Longitude:** 144.008**Location description and accuracy:**

The Gold-Quartz prospect (Cobb, 1979 [ OF 79-1247]) is in Ahtell Creek. about one mile below the junction of Silver Creek. It is in NE1/4 section 13, T. 11 N., R. 7 E., Copper River Meridian. The location of the prospect is shown correctly as location 9 in Richter (1966). It is shown incorrectly as number 13 in Richter and Matson (1972), and is approximately located as number 12 of MacKevett and Holloway (1977). The location given here is accurate within 500 feet.

**Commodities:****Main:** Ag, Au, Cu, Pb, Zn**Other:** Asbestos**Ore minerals:** Chalcopyrite, galena, gold, pyrite, sphalerite**Gangue minerals:** Carbonate, quartz**Geologic description:**

A quartz-carbonate vein occurs in Pennsylvanian volcanic rocks that trends N5-8W and dips 67 West. It occurs between a hanging wall of serpentized basalt or gabbro with chrysotile-calcite veinlets, and a footwall of tuff(?). Both walls of the vein are brecciated and iron stained. Slickensides and clay gouge with fragments of vein material indicate post-mineralization movement. The vein varies from 3 to 5 feet thick and is composed of locally brecciated, milky quartz with pods of ankerite; sphalerite, and smaller amounts of chalcopyrite, galena, pyrite and precious metals. Samples of vein assayed up to 0.9 ounce of gold per ton and 0.76 ounce of silver per ton, (Richter, 1964, 1966). The volcanic host rocks are part of Pennsylvanian and Permian, Slana Spur Formation. The description is summarized from Richter, 1964, 1966; Cobb, 1979 [OF 79-1247]; and Nokleberg and others, 1994.

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

An adit driven on the vein in 1955 and 1956 encountered glacial material 55 feet from the portal.

**Production notes:****Reserves:****Additional comments:****References:**

Richter, 1964; Richter, 1966; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); Nokleberg and others, 1994.

**Primary reference:** Richter, 1964

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/04/00

**Site name(s): Silver Shield****Site type:** Prospect**ARDF no.:** GU014**Latitude:** 62.751**Quadrangle:** GU D-1**Longitude:** 144.031**Location description and accuracy:**

The Silver Shield prospect (Cobb, 1979, p. 25) is about 1.2 mile east of the junction of Ahtell and Flat Creeks at an elevation of about 3,300 feet. The prospect is locality 14 of Richter and Matson (1972), and number 13 of MacKevett and Holloway (1977). The location is accurate to 500 feet. It is about on the center of the east side of the NE1/4, section 11, T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Ag, Pb**Other:** Au, Ba, Cu**Ore minerals:** Barite, cerussite, galena, limonite, pyrite, tetrahedrite**Gangue minerals:** Calcite, quartz**Geologic description:**

The Silver Shield prospect is in a vertical fault zone that separates mixed sedimentary-volcanic rocks to the north and volcanic rocks to the south. The fault strikes N55E. The rocks are mapped as Pennsylvanian to Permian, Tetelna Formation by Richter (1964; 1966).

The vein was discovered by the Alaska Division of Mines and Minerals in 1963 (Richter, 1964). It is poorly exposed but appears to be a limonite-stained quartz vein about five-feet thick with local concentrations of coarse galena, that cuts locally pyritic, sedimentary and volcanic rock. A 3-foot channel sample of the vein contained a trace of gold, 19.8 ounces of silver per ton, and 1.6 percent lead. Another sample contained 21 ounces of silver per ton, and 2.4 percent lead.

Subsequent private exploration determined that the quartz occurs as veins and pods in a 35-foot vertical, fault zone. The quartz veins locally contain segregations of massive barite and lesser amounts of calcite. Galena is disseminated in crystals as much as an inch across; cerussite, presumably after galena, also occurs in the veins. Some of the quartz was vuggy and argentiferous tetrahedrite occurs locally in the vuggy zones. Selected samples of tetra-

hedrite-rich vein material contain as much as 400 ounces of silver per ton (Richter, 1966).

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The deposit was discovered in 1963 by the Alaska Division of Mines and Minerals and was announced in 1964. It was staked soon afterwards. The deposit has been explored by open cuts.

**Production notes:****Reserves:****Additional comments:****References:**

Richter, 1964; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/05/00

**Site name(s): Unnamed (southwest of Hill 4410)****Site type:** Prospect**ARDF no.:** GU015**Latitude:** 62.76**Quadrangle:** GU D-1**Longitude:** 144.04**Location description and accuracy:**

A swarm of veins occurs about 1/4 mile southwest of hill 4410, between 3,500 to 4,200 feet in elevation. They are in the center of the E1/2, section 2, T. 12 N., R. 7 E., Copper River Meridian. The location of the individual veins is shown by Richter (1966, fig. 5, location 6). The locality was listed as an unnamed prospect by Cobb (1979 [OF 79-1247 p.31]). It is also number 15 of Richter and Matson (1972), and number 14 of MacKevett and Holloway (1977).

**Commodities:****Main:** Ag, Cu, Pb**Other:****Ore minerals:** Chalcopyrite, galena, tetrahedrite**Gangue minerals:** Quartz**Geologic description:**

The prospect consists of a swarm of veins mostly in the contact or border phase of the Pennsylvanian to Permian, Ahtell pluton (Richter, Lanphere and Matson, 1975) near its intrusive contact with the Pennsylvanian to Permian, Tetelna Formation (fig. 2, Richter, 1966). The contact northeast of Ahtell Creek is steep. It strikes east-northeast for about one mile, and is marked by a diabase dike. The contact then turns northerly and flattens abruptly, forming a low-angle contact that places Tetelna Formation rocks above the pluton. The veins strike N20E to N80E; they are discontinuous with irregular dip. The veins are mostly quartz although locally about 50 percent of the veins are galena. Small amounts of chalcopyrite are present and tetrahedrite is found in float fragments of the veins (Richter, 1966, p. 32).

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.



**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The veins were first discovered during geologic mapping by the Alaska Division of Mines and Minerals from 1963 through 1965. The vein swarm was then largely covered by claims after the 1964 announcement of the discovery of the Silver Shield prospect (GU014) nearby.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); WGM Inc., 1980.

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Boulder Creek****Site type:** Mine**ARDF no.:** GU016**Latitude:** 62.78**Quadrangle:** GU D-1**Longitude:** 144.01**Location description and accuracy:**

This placer (Cobb, 1979 [OF 79-1247 p. 6] is near the head of Boulder Creek (which is not named on the Gulkana D-1 quadrangle) at an elevation of about 3,800 feet. The prospect is about 1000 feet south of the center of section 36, T. 12 N., R. 7 E., Copper River Meridian. The prospect is shown as a placer on figure 5 of Richter (1966). It is shown as location 22 of Richter and Matson (1972) and locality 21 of MacKevett and Holloway (1977).

**Commodities:****Main:** Au**Other:** Mo**Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Boulder Creek is mainly underlain by altered volcanic rocks of the Pennsylvanian to Permian, Tetelna Formation. The mine approximately coincides with a dike-like intrusion of Jurassic diorite which cuts the Tetelna Formation. The dike-like intrusion strike north-northwest for at least a mile (Richter 1966; Richter and Matson, 1968, figures 4-8; WGM, written communication, 1980). Stream sediment samples collected on the dike and below it in Boulder Creek were anomalous in gold. Richter and Matson (1968) also found somewhat anomalous amounts of molybdenum (6 to 11 ppm) in stream sediments collected on or near the dike.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Yes. Very small.**Site Status:** Inactive**Workings/exploration:**

The area was prospected in the mid 1930s. Boulder Creek is almost certainly one of two unnamed gold-bearing creeks described briefly by Moffit (1938, p. 50-51) as 'two short streams that flow eastward from the divide at the head of Grubstake Creek into Porcupine Creek carry sufficient gold to encourage prospecting.' The other unnamed east-flowing auriferous creek is almost certainly Slope Creek (GU020). Moffit (1954, p. 195) also refers to easterly flowing, gold-bearing streams in the vicinity, one of which is probably Boulder Creek. Richter (1966) noted prospecting or small-scale placer mining in Boulder Creek.

**Production notes:**

Probably some gold was recovered during prospecting activities at the head of Boulder Creek.

**Reserves:****Additional comments:**

The association of stream sediment samples with anomalous gold and molybdenum near the elongate diorite pluton suggests that the intrusive and its contacts should be prospected for lode occurrences of gold and other metals.

**References:**

Moffit, 1938; Moffit, 1954; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Richter and Matson, 1968**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)**Last report date:** 12/20/00

**Site name(s): Grubstake Creek****Site type:** Mine**ARDF no.:** GU017**Latitude:** 62.785**Quadrangle:** GU D-1**Longitude:** 144.049**Location description and accuracy:**

Grubstake Creek (Cobb, 1979 [OF 79-1247 p. 11-12] flows west and joins Ahtell Creek about 2 miles south of the Dome. The creek was mainly mined in a section of its canyon about 0.8 to 1.2 miles above its mouth. Grubstake Creek is locality 10 of Richter (1966), locality 17 of Richter and Matson (1972), and locality 16 of MacKevett and Holloway (1977). The location is accurate to within 500 feet; it is in the SE1/4SW1/4, section 26, T. 12 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Au**Other:** Ag, Cu**Ore minerals:** Copper, gold, silver**Gangue minerals:** Ilmenite, magnetite**Geologic description:**

The rocks along Grubstake Creek consist of granitic rocks of the Pennsylvanian to Permian, Ahtell pluton and altered volcanics and minor sedimentary rocks of the Pennsylvanian to Permian, Tetelna Formation. Jurassic diorite forms small bodies that intrude the volcanic section and possibly the Ahtell pluton. Richter and Matson (1968) proposed that the source of the placer was the Jurassic diorite; earlier Richter (1966) had assumed that the source was the Permian, Ahtell intrusive.

The placer deposit consisted of poorly sorted gravels with occasional boulders. The discovery of an economic placer was made in 1934. The gravel section reported then was more than 16 feet thick and bedrock had not been reached (Moffit, 1936, p. 139-141). The country rock was volcanic and limestone with Permian fossils. Native gold was accompanied by significant amounts of native copper and native silver. The native metals found in the placer, are rough and some are dendritic, indicating a local source. Ilmenite was found in concentrates, and magnetite occurred locally in flattened slabs more than 1 foot across. Moffit (1937, p. 106-107) later reported that sheared

diorite was encountered in bedrock under the placer.

**Alteration:**

Rocks nearby have iron-stained, pyrite-rich zones and there is local hydrothermal alteration of the Ahtell pluton and its wall rocks.

**Age of mineralization:**

Holocene placer .

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Yes; small

**Site Status:** Inactive

**Workings/exploration:**

Gold was found in sub-economic concentrations early in the history of the district. An economic deposit was found in 1934 and was mined on at least a small scale until World War II (Moffit, 1936, 1937, 1938; Smith, 1942; Moffit, 1942; Thorne, 1946). It was subsequently worked on a small scale after the war.

**Production notes:**

Placer deposits in Grubstake and Slope Creeks (GU007) have been mined intermittently since 1934. The total gold production from both creeks is probably less than \$30,000 (about 857 ounces) (Richter and Matson, 1968).

**Reserves:****Additional comments:**

See also Slope Creek (GU020). The placer in upper Grubstake Creek probably overlies a disseminated lode gold deposit (GU019).

**References:**

Moffit, 1936; Moffit, 1937; Moffit, 1938; Smith, 1942; Moffit, 1944; Thorne, 1946; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; Cobb, 1979 (OF 79-1247); MacKevett and Holloway, 1977; Nokleberg and others, 1994.

**Primary reference:** Richter, 1966; Richter and Matson, 1968

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group),

and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): J.D. Lyons**

**Site type:** Prospect

**ARDF no.:** GU018

**Latitude:** 62.781

**Quadrangle:** GU D-1

**Longitude:** 144.047

**Location description and accuracy:**

The J.D. Lyons prospect (Cobb, 1979 [OF 79-1247,p. 18]) is at an elevation of about 4,400 feet on the ridge about 1/4 mile south of the confluence of the two headwater forks of Grubstake Creek . It is in the center of the N1/2, section 35, T. 12 N., R. 7 E., Copper River Meridian. Another geologically similar prospect is at an elevation of about 3,700 feet to the north, but south of Grubstake Creek. The location of these prospects is accurate; they are shown as locality 5 of Richter (1966, figure 5, p. 31), locality 16 of Richter and Matson (1972), and locality 15 of MacKevett and Holloway (1977).

**Commodities:**

**Main:** Cu

**Other:**

**Ore minerals:** Chalcopyrite, malachite (?), pyrite

**Gangue minerals:** Quartz

**Geologic description:**

The Lyons prospect is in hornfelsed, chlorite-hornblende volcanic rocks in the border phase of the Pennsylvanian to Permian, Ahtell pluton (Richter, 1964 and 1966; Richter and Matson, 1968). The hornfels is cut by irregular, discontinuous quartz veins as much as 6 inches thick. The veins and host rock is weakly copper stained (malachite?), and the quartz veins contain small amounts of pyrite and chalcopyrite (Richter 1966, p. 31).

**Alteration:**

Chlorite-hornblende hornfels in altered border phases of the Pennsylvanian to Permian, Ahtell pluton.

**Age of mineralization:**

The mineralization is probably related either to the Pennsylvanian to Permian, Ahtell intrusive or to mid-Jurassic dioritic rocks exposed east of the occurrence.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The prospect on the ridge at an elevation of about 4,400 feet was developed prior to 1963 by prospect pits and by a 10-foot-long adit (Richter, 1964).

**Production notes:****Reserves:****Additional comments:****References:**

Richter, 1964; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Richter, 1966**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)**Last report date:** 12/20/00



**Site name(s):** Unnamed (in headwaters of Grubstake Creek)

**Site type:** Prospect

**ARDF no.:** GU019

**Latitude:** 62.788

**Quadrangle:** GU D-1

**Longitude:** 144.030

**Location description and accuracy:**

A copper-gold porphyry is exposed in upper Grubstake Creek. The location is the approximate of the porphyry system. It is about two-thirds of the way south along the section line between 25 and 26, T. 12 N., R. 7 E., Copper River Meridian. The deposit is approximately three-quarters of a mile long by one-half mile wide and is probably continuous with a similar porphyry in upper Slope Creek (GU020). The location is accurate.

**Commodities:**

**Main:** Au, Cu

**Other:** Fe, Pb, Zn

**Ore minerals:** Arsenopyrite, chalcopyrite, galena, magnetite, malachite, sphalerite

**Gangue minerals:** Carbonate, iron-carbonate; quartz

**Geologic description:**

The upper part of Grubstake Creek consists mainly of highly altered, border phase rocks of the Pennsylvanian to Permian, Ahtell Creek quartz monzonite. The Ahtell Creek rocks are intruded into the Pennsylvanian to Permian, Tetelna Formation which is mainly volcanic rocks. Both the Ahtell pluton and the Tetelna Formation are cut by composite dikes and irregular bodies of a mid-Jurassic complex that varies from diorite to quartz diorite (Richter and Matson, 1968; Bull, Schneider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999). Where the Tetelna rocks have been intruded by the diorite complex they have been converted to multicolored, biotite and hornblende hornfels.

Porphyry-type mineralization occurs mainly in the diorite complex and adjacent hornfels. Various subtypes occur: 1) propylitic altered zones with as much as 10 % pyrite are cut by quartz-carbonate veins that contain pyrite, chalcopyrite, and galena; 2) potassic altered zones containing secondary biotite and K-feldspar are cut by quartz-K feldspar veins, veinlets, and disseminated concentrations of as much as 15% pyrite, chalcopyrite, arsenopyrite, and magnetite; and 3) sericite/phyllitic altered zones locally stained with malachite contain 5-30 % sulfides. There are widespread localized zones of argillic and iron-carbonate alteration. The hornfelsed Tetelna Formation within about 100 feet of diorite also has several subtypes of porphyry mineralization including: 1) silicified zones containing as much as 15% pyrite; 2) quartz-carbonate veins with pyrite, chalcopyrite, ar-

senopyrite, and galena; and 3) chloritic-magnetite or chloritic-pyrite breccia cut by quartz-pyrite-chalcopyrite veinlets. The hornfels adjacent to chloritic zones is typically bleached. Based on reconnaissance mapping by Homestake Mining Company geologists (Bull, Scheider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999) the porphyry alteration and mineralization is crudely zoned, with potassic alteration occurring at lower elevations and in upper Grubstake Creek. Discrete veins in the Grubstake area such as the J. D. Lyons prospect (GU018) appear to be related to the hornfels phase of this porphyry deposit. The rocks in the area are deformed and so extensively altered that much more detailed work will be needed to accurately map the complex.

The porphyry in upper Grubstake has not been tested by drilling, but it has been mapped and sampled by Cominco geologists (St. George, 1992) as well as the geologists affiliated with Homestake Mining Company. St. George found soils that are highly anomalous in gold along reconnaissance lines through upper Grubstake Creek. Soils collected by Homestake Mining Company indicate that a broad area that covers much of upper Grubstake and upper Slope Creeks contains more than 200 ppb gold. Eighty-four rock samples collected mostly in the Grubstake area contained a mean gold concentration of about 240 ppb gold; copper in these samples averaged about 350 ppm, and locally exceeded 1%.

**Alteration:**

Potassic alteration with the introduction of K-feldspar and biotite occurs in the core of the system. Locally the rocks are sericitized and phyllically altered. Higher in the system, the rocks are silicified, altered to clay, and carbonatized. Bull and her co-authors (1997 and 1999) indicate that galena is more abundant distally.

**Age of mineralization:**

The porphyry deposit is probably related to the emplacement of a Jurassic diorite complex.

**Deposit model:**

Porphyry Cu-Au (Cox and Singer, 1986; model 20c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

20c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Grubstake Creek has been explored extensively since the discovery of viable placer deposits in 1934 (GU017). Work by Richter and his associates appears to have triggered exploration in the 1960's and 1970's (Richter, 1964 and 1966; Richter and Matson, 1968). Kirk Stanley was active at this time. In more recent years the area has been studied by Cominco Exploration (St. George, 1992), and Homestake Mining Company (Bull, Schneider and Freeman, 1997; and Bull, Freeman, and Schneider, 1999). Ahtna Minerals Company has recently consolidated the geologic data as much of the prospect area lies on

Ahtna regional Native corporation land.

**Production notes:**

**Reserves:**

**Additional comments:**

Upper Grubstake Gulch contains part of a copper-gold porphyry that only has been examined in reconnaissance. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1964; Richter, 1966; Richter and Matson, 1968; St. George, 1992; Bull, Schneider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999.

**Primary reference:** Bull, Freeman, and Schneider, 1999

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Unnamed (in upper Slope Creek)****Site type:** Prospect**ARDF no.:** GU020**Latitude:** 62.79**Quadrangle:** GU D-1**Longitude:** 144.01**Location description and accuracy:**

A copper-gold porphyry-type is exposed in upper Slope Creek. The center of the deposit is approximately 0.2 miles north of the center of section 25, T. 12 N., R. 7 E., Copper River Meridian. The deposit is approximately one-half mile long by one-third mile wide and is probably continuous with a similar porphyry system in upper Grubstake Creek (GU019). The location is approximate. It is upstream from a gold placer in Slope Creek (GU021).

**Commodities:****Main:** Au, Cu**Other:** Fe, Pb, Zn**Ore minerals:** Arsenopyrite, chalcopyrite, galena, magnetite, malachite, sphalerite**Gangue minerals:** Carbonate, iron-carbonate, quartz**Geologic description:**

The upper part of Slope Creek consists of highly altered volcanic rocks of the Pennsylvanian to Permian, Tetelna Formation. The Tetelna Formation is cut by by composite dikes and irregular bodies of a mid-Jurassic diorite to quartz diorite complex (Richter and Matson, 1968; Bull, Schneider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999). Locally the diorite bodies trend north-northwest along the general regional trend. One diorite body is elongated east-northeast along a fault zone which appears to follow the north side of Slope Creek. The intensity of the mineralization and the distribution of the main masses of diorite indicate that a porphyry appears to underlie upper Slope Creek.

Porphyry-type mineralization occurs mainly in the diorite complex and adjacent hornfels. Various subtypes occur: 1) propylitic altered zones with as much as 10% pyrite are cut by quartz-carbonate veins that contain pyrite, chalcopyrite and galena; 2) potassic altered zones containing secondary biotite and K-feldspar are cut by quartz-K feldspar veins, veinlets, and disseminated concentrations with up to 15% pyrite, chalcopyrite, arsenopyrite, and magnetite; and 3) sericite/phyllitic altered zones locally stained with malachite contain 5-

30 % sulfides. There are widespread local zones of argillic and iron-carbonate alteration.

The hornfelsed Tetelna Formation within about 100 feet of diorite also has several subtypes of porphyry mineralization including: 1) silicified zones containing as much as 15% pyrite; 2) quartz-carbonate veins with pyrite, chalcopyrite, arsenopyrite, and galena; and 3) chloritic-magnetite or chloritic-pyrite breccia cut by quartz-pyrite-chalcopyrite veinlets. The hornfels adjacent to chloritic zones is typically bleached.

The porphyry in upper Slope Creek has not been tested by drilling, but it has been mapped and sampled in reconnaissance by geologists affiliated with Homestake Mining Company. Soils collected by Homestake suggest that a broad area that covers both upper Grubstake and upper Slope Creeks contains more than 200 ppb gold. Eighty-four rock samples collected mostly in the Grubstake Creek-Slope Creek area contained a mean gold concentration of about 240 ppb gold. Rock samples collected in upper Slope Creek locally contained more than 2,000 ppb gold. Rock samples in the upper Slope Creek-upper Grubstake Creek area averaged about 350 ppm copper and locally exceeded 1%. The rocks in the area are so intensely deformed and altered that much more detailed work will be needed to accurately map the complex.

**Alteration:**

Potassic alteration with the introduction of K-feldspar and biotite in the core of the system. Locally the rocks are sericitized and phyllically altered. Higher in the system, the rocks are silicified, altered to clay, and carbonatized. Bull and her co-authors (1997 and 1999) indicate that galena is more abundant distally.

**Age of mineralization:**

The porphyry deposit is probably related to the emplacement of a Jurassic, diorite complex.

**Deposit model:**

Porphyry Cu-Au (Cox and Singer, 1986; model 20c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

20c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Slope Creek has been explored since the discovery of placer deposits nearby in Grubstake Creek in 1934. That discovery led to prospecting and the location of small placer mines in Boulder Creek (GU017) and Slope Creek (GU021). Work by Richter and his associates appears to have triggered explo-

ration in the 1960's and 1970's (Richter, 1964 and 1966; Richter and Matson, 1968). Kirk Stanley was active at this time in the Ahtell and Grubstake Creek-Slope Creek areas. In more recent years the area has been studied by Homestake Mining Company (Bull, Schneider and Freeman, 1997; and Bull, Freeman, and Schneider, 1999). Ahtna Minerals Company has recently consolidated the geologic data as much of the prospect area lies on Ahtna regional Native corporation land.

**Production notes:**

**Reserves:**

**Additional comments:**

Upper Slope Creek contains part of a copper-gold porphyry that has only been examined in reconnaissance. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1964; Richter, 1966; Richter and Matson, 1968; Bull, Schneider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999.

**Primary reference:** Bull, Freeman, and Schneider, 1999

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/20/00

**Site name(s): Slope Creek****Site type:** Mine**ARDF no.:** GU021**Latitude:** 62.791**Quadrangle:** GU D-1**Longitude:** 144.000**Location description and accuracy:**

Slope Creek (Cobb, 1979, p. 26-27; OF 79-1247), which is unnamed on the Gulkana D-1 topographic map, is a tributary to Porcupine Creek in the SE1/4NE1/4, section 25, T. 12 N., R. 7 E., Copper River Meridian. The creek has been placer mined into the Nabesna D-6 quadrangle and the coordinates above are of the boundary between the two quadrangles. The mine is locality 18 of Richter and Matson (1972) and locality 17 of MacKevett and Holloway (1977). The location is accurate within 500 feet.

**Commodities:****Main:** Au**Other:** Ag, Bi, Cu**Ore minerals:** Bismuth, copper, gold, silver**Gangue minerals:** Barite (?), magnetite**Geologic description:**

Slope Creek has produced a small amount of placer gold that probably was derived from low-grade porphyry and vein deposits in upper Slope Creek (GU 020). The placer gold is accompanied by magnetite, native silver, native bismuth, native copper, and possibly barite (Moffit, 1944; Richter, 1966). As in Grubstake Creek (GU017) which is over the divide to the west, the gold is fine-grained and wiry, which suggests a short distance of transport (Richter and Matson, 1968).

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Yes

**Site Status:** Inactive

**Workings/exploration:**

Small-scale placer mining took place from about 1934 to the 1950's, and possibly more recently.

**Production notes:**

Placer deposits in Slope and Grubstake Creeks (GU017) have been mined intermittently since 1934. Total production from both is probably less than \$30,000 (about 857 ounces) (Richter and Matson, 1968).

**Reserves:**

**Additional comments:**

See also Grubstake Creek (GU017) and Boulder Creek (GU016).

**References:**

Moffit, 1944; Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); WGM Inc., 1980; Nokleberg and others, 1994.

**Primary reference:** Richter, 1966; Richter and Matson, 1968

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 11/30/00



**Site name(s):** Unnamed (northeast of the head of Quartz Creek)

**Site type:** Occurrence

**ARDF no.:** GU022

**Latitude:** 62.80

**Quadrangle:** GU D-1

**Longitude:** 144.02

**Location description and accuracy:**

This occurrence is an altered-sulfidized area more than one-mile long and about one-quarter mile across. It trends east-northeast across the ridge that divides Ahtell and Porcupine Creeks, northeast of the head of Quartz Creek. The center of the area is about 1,000 feet west of the center of section 24, T. 12 N., R. 7 E., Copper River Meridian.

**Commodities:**

**Main:** Au

**Other:** Ag, Pb, Zn

**Ore minerals:** Galena, gold (?), pyrite, sphalerite

**Gangue minerals:** Carbonate minerals, quartz

**Geologic description:**

The country rocks are mainly Pennsylvanian to Permian volcanic rocks with lesser sedimentary rocks (Richter, 1966; Richter and Matson, 1968). They have been silicified, converted to silica-carbonate rocks, and locally sulfidized along a east-northeast to northeast trending zone more than one mile long (WGM Inc., 1980). A soil sample collected in approximately the center of the zone contained more than 500 ppb gold. Rock samples collected from the altered zone locally contained more than 2,000 ppb gold, 20 ppm silver, and 5,000 ppm lead and zinc (Bull, Freeman, and Schneider, 1999).

**Alteration:**

Silicification; formation of silica-carbonate rock in intermediate volcanics; local sulfidation.

**Age of mineralization:**

Possibly related to a nearby Jurassic diorite intrusion.

**Deposit model:**

Gold porphyry

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Only reconnaissance mapping and sampling of natural exposures.

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980; Bull, Freeman, and Schneider, 1999.

**Primary reference:** WGM Inc., 1980, and Bull, Freeman and Schneider, 1999

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/08/00

**Site name(s): Hidden Creek****Site type:** Prospect**ARDF no.:** GU023**Latitude:** 62.76**Quadrangle:** GU D-1**Longitude:** 144.16**Location description and accuracy:**

Hidden Creek (Cobb, 1979 [OF 79-1247, p. 13]), is a south-flowing tributary to Flat Creek. It has been actively prospected about one-quarter mile north of the lake in the Flat Creek valley (Richter, 1966, fig. 5). Hidden Creek is locality 20 of Richter and Matson (1972) and locality 19 of MacKevett and Holloway (1977). It lies along the section line at the bottom center of the SW1/4, section 6, T. 11 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

The rocks in the area consist of Pennsylvanian to Permian volcanics of the Tetelna Formation that are intruded by monzonitic rocks of the Pennsylvanian to Permian, Ahtell pluton. The contact is broad and low angle; the Tetelna rocks form a roof cap over the pluton along Hidden Creek (Richter, 1966).

Little is known about this placer deposit. The area was prospected in the early 1900's; it was restaked and prospected again after the discovery of the placer in Grubstake Gulch in 1934 (Moffit, 1938, p. 51). The placer prospect is about 3 miles below the Elizabeth, molybdenum-porphyry deposit (GU025). This porphyry was apparently not sampled systematically for gold, but Richter and Matson (1968) reported one highly anomalous stream-sediment sample with 300 ppb Au in the valley of Hidden Creek below the Elizabeth deposit and about 2.5 miles above the placer workings in Hidden Creek.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Yes

**Site Status:** Inactive

**Workings/exploration:**

Small placer operation (Moffit, 1938; Richter, 1966).

**Production notes:**

Probably minor .

**Reserves:****Additional comments:****References:**

Moffit, 1938; Richter, 1966; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); WGM Inc., 1980.

**Primary reference:** Moffit, 1938; Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/04/00

**Site name(s): The Dome****Site type:** Prospect**ARDF no.:** GU024**Latitude:** 62.81**Quadrangle:** GU D-1**Longitude:** 144.08**Location description and accuracy:**

The prospect is on the top and on the north side of The Dome, a prominent isolated mountain on the west side of Ahtell Creek. The prospect is in the SE1/4NW1/4, section 22, T. 12 N., R. 7 E., Copper River Meridian. The prospect is correctly located as number 3 on figure 5 of Richter (1966). It was mislocated by 1.2 miles as locality 7 of Richter and Matson (1972).

**Commodities:****Main:** Cu, Pb**Other:****Ore minerals:** Chalcopyrite, galena, pyrite**Gangue minerals:** Calcite, limonite, quartz**Geologic description:**

The Dome prospect consists of veins and disseminated ore minerals in hornfelsed flows and possibly interbedded tuffs of the Pennsylvanian, Slana Spur Formation and in intrusive rocks of the Pennsylvanian to Permian, Ahtell Pluton (Richter, 1966; Richter Lanphere and Matson 1975; and Beard and Barker, 1989).

The silicic border phase of the Ahtell pluton contains stockworks of weakly metalliferous, quartz-calcite veins. The veins are as much as one foot thick and occupy joint sets. The predominant joint set strikes slightly west of north and dips moderately to the west. The veins contain sparse disseminated pyrite, chalcopyrite, and galena. The volcanic rocks also contain limonitic, hornfelsed volcanic rocks; the limonite probably formed by the oxidation of pyrite and chalcopyrite. A composite sample of an area about 400 feet by 100 feet in size contained from 0.05 to 0.1 percent copper (Richter, 1966, p. 31).

**Alteration:**

Quartz-sericite-pyrite alteration of the intrusive rocks is present on the northeast side of The Dome.

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Per-

mian, Ahtell pluton.

**Deposit model:**

Porphyry Cu (Cox and Singer, 1986; model 17)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

17

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Mineral deposits exposed in shallow pits (Richter, 1964, 1966).

**Production notes:****Reserves:****Additional comments:****References:**

Richter, 1964; Richter, 1966; Richter, 1975; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); Beard and Barker, 1989; Nokleberg and others, 1994.

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/01/00

**Site name(s): Elizabeth****Site type:** Prospect**ARDF no.:** GU025**Latitude:** 62.80**Quadrangle:** GU D-1**Longitude:** 144.17**Location description and accuracy:**

The Elizabeth prospect is on a southeast facing ridge in upper Hidden Creek about a mile south-southeast of the center of Long Lake. The coordinates are approximately the center of this low-grade molybdenum porphyry. The prospect was identified as locality 4 by Richter (1966, fig. 5). It is the same as locations 6 of both Richter and Matson (1972), and MacKevett and Holloway (1977). Cobb (1979 [OF 79-1247]) lists the site as an unnamed occurrence. It is in the SW1/4SE1/4, section 19, T. 12 N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Cu, Mo**Other:** Ag, Pb, Sn, Zn**Ore minerals:** Chalcopyrite, fluorite, ferrimolybdate, molybdenite, pyrite**Gangue minerals:** Clay, quartz, sericite**Geologic description:**

This low-grade, molybdenum porphyry occurs in a complex contact region of the Pennsylvanian to Permian, Ahtell pluton. A coarse-grained, porphyritic quartz monzonite phase of the Ahtell pluton appears to intrude the Border and Grubstake phases of the intrusion in the region south of Long Lake (Richter, 1966, fig. 2). The molybdenum deposit is mostly in the Border phase and in the overlying volcanic rocks of the Pennsylvanian to Permian, Slana Spur Formation.

The molybdenum deposit trends southeasterly from the ridge crest above Long Lake. On the ridge crest, it is about 400 feet wide; it extends over the ridge to the west for about 1,000 feet. To the southeast, the deposit widens to about 2,500-3,000 feet. The deposit is probably bounded by faults. On the surface the deposit is mainly rubble crop developed over a sericite-quartz-clay alteration zone with veinlets and disseminations of pyrite and minor molybdenite. Purple fluorite occurs locally. Quartz-molybdenum fragments mark the surface of the deposit and yellowish secondary ferrimolybdate occurs in surface materials (written communications, Emery Bailey Jr., ASARCO, 1969, and Kirk W. Stanley, 1970). The extent and shape of the deposit was defined by detailed geologic mapping and by a series of soil-sample lines running nearly east and west.

Because of poor exposures, the shape and size of much of the deposit was defined by a soil survey. Soils were analyzed for copper, molybdenum, lead, and zinc. Molybdenum was considered anomalous in excess of 20 ppm; Mo values are highest in a 1200-foot wide zone on the southeast side of the ridge. Copper and lead are partly coincident with molybdenum but also show strong anomalies on the lower southeast slope. Zinc is peripheral to molybdenum, copper, and lead. The highest zinc values are in Dry Creek (a local name for the creek in the center of section 30) that drains the southwest flank of the deposit. The distribution of zinc suggests that some may have been redistributed and concentrated in stream sediments. In absolute concentration, lead exceeds copper, zinc, and molybdenum. Lead in soils locally exceeds 0.1 percent. Apparently no samples were analyzed for gold.

Drilling in 1968 and 1969 shows that most of the deposit is very low grade, but two shallow holes drilled in 1968 found intercepts of rich mineralization. Both holes F and G cut ore grade material. Hole F, drilled northwest, assayed 0.519 % MoS<sub>2</sub> over 26 feet; drill hole G, drilled northeast from the same location assayed 0.642 MoS<sub>2</sub> over 41 feet. Both holes were drilled from the same location on the ridge between Dry and Moly Creeks at an elevation of about 4,500 feet (Moly Creek is a local name given to the creek in the southeast portion of section 13). None of the holes drilled in 1969 hit high grade mineralization. The maximum concentration of copper was about 0.3 percent; most samples ran 0.03 to 0.05 percent copper. Silver was not always assayed; its maximum concentration was 0.08 ounces per ton. The composite drill core was also analyzed spectrographically; tin was present in one sample at 50 ppm. Kirk Stanley later proposed two deeper holes nearer the top of the ridge where he believed better values would be found (written communication, 1970) A 2-foot-wide vein deposit that contains molybdenum reported by Richter (1966) is approximately on the northeast contact of the deposit.

The deposit is in part structurally controlled. Emery Bailey Jr., proposed that the deposit is bounded on east and southwest by post-Ahtell-pluton faults that control the courses of Moly and Dry Creeks (written communication, 1969). The deposit appears to be open to the southeast under upper Hidden Creek, but the best molybdenum zone appears to be near the top of the ridge in the northwest part of the deposit.

**Alteration:**

Argillic and sericite alteration; argillic alteration is probably accentuated by supergene acid solutions formed by oxidation of pyrite.

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Porphyry Mo (Cox and Singer, 1986; model 21b)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

21b

**Production Status:** None



**Site Status:** Inactive

**Workings/exploration:**

The deposit was discovered in 1957 by Au Noc Ho and Kirk W. Stanley but no work was done until 1968 (Stanley, written communication, 1970). The site was visited and mapped at a reconnaissance scale by Richter (1966). Stanley's and Richter's geologic mapping and new discoveries led to renewed prospecting in the area. The molybdenum porphyry was initially covered by 95 federal claims, Elizabeth 20 to 115, owned jointly by the Ptarmigan Company and investors. The Ptarmigan Company, a company formed by Kirk Stanley to work on prospects near the Ahtell pluton, conducted a geochemical survey in 1968 and drilled six shallow AX holes. The claims were leased to ASARCO in 1969 who mapped the area in detail and drilled seven BX holes; the deepest hole, no. 6, was 400 feet in length. Drilling was fairly difficult; holes tended to swell shut. ASARCO did not find enough mineralization to warrant further work by them and little has been done since 1969.

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/1/00

**Site name(s): Indian; Blue Ridge****Site type:** Prospect**ARDF no.:** GU026**Latitude:** 62.82**Quadrangle:** GU D-1**Longitude:** 144.22**Location description and accuracy:**

The Indian or Blue Ridge prospect is about one mile northwest of the west end of Long Lake at an elevation of about 5,100 feet. The coordinates are the site of a vein exposed on the ridge; it is at the center of a mineralized area which is mainly in the SE1/4, section 14, T. 12 N., R. 6 E., Copper River Meridian. The prospect is at locality 5 of Richter and Matson (1972), and locality 5 of MacKevett and Holloway (1977).

**Commodities:****Main:** Ag, Au, Cu, Pb**Other:****Ore minerals:** Azurite, chalcopyrite, galena, malachite, pyrite, tetrahedrite**Gangue minerals:** Calcite, quartz**Geologic description:**

The Indian prospect is mainly in relatively coarse and dark-colored, quartz monzonite of the Pennsylvanian to Permian, Ahtell pluton. It lies within a few hundred feet of its contact with Pennsylvanian to Permian, Tetelna volcanic rocks which are exposed to the south. The contact between the two units is a fault which strikes northwest. The fault zone is filled with a barren quartz vein that can be followed for more than 1,000 feet (Richter, 1966, p. 30; Thorne, 1946, fig. 2).

The area was first described by Moffit (1932) who visited the area in 1929. The prospect was restaked by Carl Witham and was examined by Thorne of the U. S. Bureau of Mines (Thorne, 1946) in company with Witham. Thorne made a sketch map of the property. Their map (figure 2) is the best available for the property.

In addition to the barren quartz vein, Thorne found five other veins. Thorne (1946, table 1) collected three samples from an east-west striking vein on the Blue Ridge No. 2 claim. This vein is exposed in pits on the west side of the ridge and about 150 feet north of the fault contact of the Ahtell pluton and Tetelna volcanics. Sample 1 from a 2-foot-thick vein that contains galena,

chalcopryrite, tetrahedrite, and secondary azurite and malachite in quartz-calcite gangue, assayed 0.01 ounce of gold per ton, 11.44 ounces of silver per ton, 4.18 percent lead, and 1.44 percent copper. Thorne's sample 2 was low grade, partly because of dilution with barren soil. Sample 3 of a 1-foot vein contained 5.16 ounces of silver per ton, 6.81 percent lead, and some copper. The veins are crustified and the sulfides fill open spaces in the crystalline quartz.

A narrow vein exposed about 4000 feet to the east of the barren quartz vein on the Blue Ridge No. 5 claim contained 0.04 ounce of gold per ton, 15.56 ounces of silver per ton, and 19.92 percent lead. Another vein exposed on the ridge on the end line between the Blue Ridge Nos. 5 and 1 claims contains 5.24 percent lead and small amounts of gold and silver.

The area was visited later by Richter (1966) but the trenches excavated by Witham and Thorne were caved. One vein that remained exposed was 5 feet thick, has a strike of N84W and dips 86 degrees south. It is mainly massive quartz with some galena and copper-staining. Wedow and others (1953) and Nelson, West, and Matzko (1954) found no appreciable uranium in the veins.

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein(?) (Cox and Singer, 1986; model 17)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

17(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The area was active when visited by Moffit in 1929 (Moffit, 1932). The prospect was again active late in World War II when it was examined by Thorne (1946) with the then-current owner, Carl Witham. The only workings are hand-dug open cuts.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage,

Alaska.

**References:**

Moffit, 1932; Thorne, 1946; Wedow and others, 1953; Nelson, West, and Matzko, 1954; Richter, 1966; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Thorne, 1946; Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 11/30/00

**Site name(s):** Unnamed (near Long Lake)

**Site type:** Occurrence

**ARDF no.:** GU027

**Latitude:** 62.82

**Quadrangle:** GU D-1

**Longitude:** 144.17

**Location description and accuracy:**

This occurrence is at the head of an unnamed headwater tributary of Ahtell Creek about three-quarters of a mile north of the east end of Long Lake. It is in the SE1/4NW1/4, section 18, T. 12 N., R. 7 E., Copper River Meridian.

**Commodities:**

**Main:** Fe

**Other:**

**Ore minerals:** Magnetite

**Gangue minerals:**

**Geologic description:**

The occurrence is associated with the Long Lake diorite phase of the Pennsylvanian and Permian, Ahtell pluton (Richter, 1966). An occurrence of magnetite is reported by WGM Inc. (1980). No specific information is available.

**Alteration:**

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Iron skarn(?) (Cox and Singer, 1986; model 18d)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

18d(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Only exposed in outcrop.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00

**Site name(s):** Unnamed (northeast of Long Lake)

**Site type:** Occurrence

**ARDF no.:** GU028

**Latitude:** 62.83

**Quadrangle:** GU D-1

**Longitude:** 144.14

**Location description and accuracy:**

This occurrence is at an elevation of about 4,300 feet on the north flank of a ridge about one mile northeast of of Long Lake . It is in the NE1/4NE1/4, section 17, T. 12 N., R. 7 E., Copper River Meridian.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:** Carbonate, quartz

**Geologic description:**

A gold-bearing vein was reported at this occurrence by WGM Inc. (1980, fig. 3). The country rock is a coarse-grained porphyritic, quartz monzonite phase of the Pennsylvanian to Permian, Ahtell pluton.

**Alteration:**

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Low-sulfide gold-quartz lode (Cox and Singer, 1986; model 38a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

38a

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Only exposed in outcrop.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00



**Site name(s):** Unnamed (north of Slope Creek)

**Site type:** Occurrence

**ARDF no.:** GU029

**Latitude:** 62.79

**Quadrangle:** GU D-1

**Longitude:** 144.00

**Location description and accuracy:**

This occurrence is on the ridge about 1/4 mile north of Slope Creek on the boundary between the Gulkana D-1 quadrangle and the Nabesna D-6 quadrangle. It is an approximate location at the south end of an auriferous intrusion mostly exposed on the Nabesna D-6 quadrangle. It is in the SE1/4NE1/4, section 25, T. 12 N., R. 7 E., Copper River Meridian. The occurrence is within the 'area 2' anomalous zone of WGM Inc. (1980) and is within the Porcupine prospect area of Homestake Mining Company (Bull, Schneider and Freeman, 1997; Bull, Freeman, and Schneider, 1999).

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold

**Gangue minerals:**

**Geologic description:**

The occurrence is at the south end of a linear, Jurassic diorite intrusive complex that continues north to north-northwest for about 2 miles (Richter, 1966; Richter and Matson, 1968).

A soil sample contains more than 100 ppb gold, and the north-flowing stream draining the area of the occurrence contains 2,700 ppb gold in stream sediments. Stream sediment samples draining the entire 2-mile long intrusion are extremely anomalous in gold i.e., from 1,000 to greater than 2,000 ppb. The streams drain the intrusion and its contact region and the gold is almost certainly derived from mineral deposits in the intrusion or in its contact rocks.

**Alteration:**

**Age of mineralization:**

Probably related to the intrusion of a Jurassic diorite.

**Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The area has only been explored by reconnaissance methods.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980; Bull, Schneider, and Freeman, 1997; Bull, Freeman, and Schneider, 1999.

**Primary reference:** Richter and Matson, 1968; Bull, Freeman, and Schneider, 1999**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)**Last report date:** 12/06/00

**Site name(s): Neversweat; Conkle****Site type:** Prospect**ARDF no.:** GU030**Latitude:** 62.82**Quadrangle:** GU D-1**Longitude:** 144.10**Location description and accuracy:**

The Neversweat prospect is on the north side of the West Fork of Ahtell Creek about 1.2 miles above its junction with Ahtell Creek. The coordinates are about midway between the two prospects shown by Richter (fig. 5, 1966, no. 2) and is accurate within 500 feet. The prospect is locality 8 of both Richter and Matson (1972) and MacKevett and Holloway (1977). It is in the SE1/4NE1/4, section 16, T. 12N., R. 7 E., Copper River Meridian.

**Commodities:****Main:** Cu, Pb**Other:** Ag, Au**Ore minerals:** Chalcopyrite, chrysocolla, galena, malachite, pyrite**Gangue minerals:** Limonite, quartz**Geologic description:**

The prospect is in quartz monzonite of the Grubstake phase of the Pennsylvanian to Permian, Ahtell pluton (Richter, 1966, fig. 2; Richter, Lanphere, and Matson, 1975; Beard and Barker, 1989). About 0.1 miles east of the prospect, the quartz monzonite abuts the Pennsylvanian to Permian, Tetelna Formation along a northwest fault.

The prospect consists of polymetallic quartz veins that contain a few percent of galena and lesser amounts of chalcopyrite. The primary minerals are in part oxidized to malachite, chrysocolla, and limonite in underground exposures (Thorne, 1946, p. 7). The prospect was active when visited by Thorne in 1945 who noted that the ground was extensively brush covered. In the main upper adit of the westernmost occurrence, the deposit is a 6-foot thick shear zone that contains three mineralized quartz veins that strike N15E and dip 70W. A representative 42-inch sample cut on the sill (floor) of the adit near the face contained 0.01 ounce of gold per ton, a trace of silver, 6.58 percent lead, and 0.19 percent copper. A shallow adit, apparently on the same structure, 300 feet south of the upper adit, contains a narrow vein with galena and chalcopyrite. Richter (1966, p. 30) reports a two-foot-wide vein that is 300 feet east of the lower adit; it contains small amounts of pyrite and chalcopyrite.

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The prospect was discovered and explored before 1925 (Moffit, 1938, p. 46-47; 1954). It was restaked as the Neversweat claims in 1943 (Thorne, 1946) and was actively prospected by its owners in 1945 when visited by Thorne. The prospect was subsequently restaked by Sam Gamblin (Richter, 1966, p. 30) who reported that the prospect was also known as the Conkle lead prospect.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Moffit, 1938; Thorne, 1946; Moffit, 1954; Richter, 1966; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); Beard and Barker, 1989.

**Primary reference:** Thorne, 1946 and Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/04/00

**Site name(s):** Unnamed (near the West Fork of Ahtell Creek)

**Site type:** Occurrence

**ARDF no.:** GU031

**Latitude:** 62.84

**Quadrangle:** GU D-1

**Longitude:** 144.11

**Location description and accuracy:**

This occurrence is on a minor southwest tributary to the West Fork of Ahtell Creek about 2.3 miles northwest of the junction of Ahtell Creek and its West Fork. It is in the NW1/4, section 9, T. 12 N., R. 7 E., Copper River Meridian. The occurrence is number 3d of WGM Inc. (1980).

**Commodities:**

**Main:** Au, Cu

**Other:**

**Ore minerals:** Chalcopyrite (?), gold

**Gangue minerals:**

**Geologic description:**

The occurrence is in the contact of the Pennsylvanian to Permian, Ahtell intrusion (Richter, 1966). Stream sediments draining the contact contain 2,000 ppb gold and 450 ppm copper (Richter and Matson, 1968; WGM, 1980). Rock chip samples found in a later follow-up by Homestake Mining Company (Bull, Freeman, and Schneider, 1999) contain more than 1,000 ppm copper and 100 ppb gold. Soils collected in the drainage at about 4,400 foot elevation contain more 500 ppm copper and 100 ppb gold.

**Alteration:**

**Age of mineralization:**

Uncertain; probably related to the Pennsylvanian to Permian, Ahtell pluton although there is a Jurassic diorite at the head of the drainage that may be related to this occurrence.

**Deposit model:**

Porphyry Cu-Au(?) (Cox and Singer, 1986; model 20c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

20c(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980; Bull, Freeman, and Schneider, 1999.

**Primary reference:** Richter and Matson, 1968

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00

**Site name(s):** Unnamed (near the head of Granite Creek)

**Site type:** Occurrence

**ARDF no.:** GU032

**Latitude:** 62.879

**Quadrangle:** GU D-1

**Longitude:** 144.079

**Location description and accuracy:**

The occurrence is at the head of Granite Creek near the west side of a small unnamed lake. It is approximately centered on the north-half of the boundary between sections 27 and 28, T. 12 N., R. 7 E., Copper River Meridian. The location is approximate but is within one-half mile.

**Commodities:**

**Main:** Fe

**Other:** Au

**Ore minerals:** Gold, magnetite

**Gangue minerals:**

**Geologic description:**

A magnetite skarn occurs in the head of Granite Creek in a region mainly composed of mixed dioritic rocks of Richter's Jurassic 'tectonic quartz-diorite unit' (Richter, 1966). Gold can be panned from the streams that drain the skarn (Kirk Stanley, written communication, 2000). The skarn is on the west side of the diorite complex (WGM Inc., 1979).

**Alteration:**

**Age of mineralization:**

Possibly associated with emplacement of Richter's (1966) Jurassic, quartz-diorite complex.

**Deposit model:**

Iron skarn (Cox and Singer, 1986; model 18d)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

18d

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Only natural exposures examined during reconnaissance exploration.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Richter, 1966; WGM Inc., 1979.

**Primary reference:** Richter, 1966; WGM Inc., 1979

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00



**Site name(s): Snipe****Site type:** Prospect**ARDF no.:** GU033**Latitude:** 62.86**Quadrangle:** GU D-1**Longitude:** 144.20**Location description and accuracy:**

The Snipe uranium-thorium prospect is at an elevation of 4,300 feet in an unnamed west-flowing tributary to the upper East Fork of Indian Creek. It is about 3.4 miles north of the west end of Long Lake in the SW1/4SW1/4, section 36, T. 13 N., R. 6 E., Copper River Meridian. The prospect is limited to a 30 foot by 50 feet outcrop in a stream cut. (WGM 1979).

**Commodities:****Main:** Th, U**Other:****Ore minerals:** Uranium and thorium are concentrated in iron oxides**Gangue minerals:** Opal, quartz, tourmaline**Geologic description:**

The Snipe prospect is in a coarse-grained potassic-diorite phase of the Pennsylvanian to Permian, Ahtell pluton, possibly near a contact with the Grubstake quartz monzonite phase (Richter, 1966). The prospect consists of vuggy quartz-tourmaline vein material bordered by bleached, clay-rich alteration zones in Indian Creek quartz monzonite, a phase of the Ahtell pluton defined by WGM Inc. (1979). Scintillometer readings vary up to 3,500 cps (over 8 times background) and grab samples contain up to 730 ppm uranium and 8,650 ppm thorium (WGM Inc., 1979). The prospect is limited to a 30 foot by 50 feet outcrop in a stream cut. (WGM Inc., 1979).

**Alteration:**

Marked by pyrite, quartz, tourmaline, and sericitized plagioclase.

**Age of mineralization:**

Probably associated with emplacement of Richter's (1966) Permian or possibly Jurassic, diorite to quartz-diorite complex.

**Deposit model:**

Vein-type uranium (?)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Shallow hand trenching in three areas.

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; WGM Inc., 1979.

**Primary reference:** WGM Inc., 1979

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00

**Site name(s): Tom Burns; Silver Circle****Site type:** Prospect**ARDF no.:** GU034**Latitude:** 62.857**Quadrangle:** GU GU D1**Longitude:** 144.300**Location description and accuracy:**

The Tom Burns prospect is on the ridge between the upper East Fork of Indian Creek and Indian Creek (sometimes called the West Fork) at an elevation of about 4,800 feet. The prospect is approximately on the section line less than 0.1 mile north of the southeast corner of section 32, T. 13 N., R. 6 E., Copper River Meridian. The prospect is locality 4 of both Richter and Matson (1972) and MacKevett and Holloway (1977). The location is in the approximate center of the Tom Burns 1 and 2 claims and is accurate within 1000 feet.

**Commodities:****Main:** Pb**Other:** Ag, Au, Ba, Cu, Zn**Ore minerals:** Chalcopyrite, barite, galena, gold, sphalerite (?), tetrahedrite**Gangue minerals:** Quartz**Geologic description:**

The Tom Burns prospect is near the west contact of the Pennsylvanian to Permian, Ahtell Creek intrusive which here is quartz monzonite. Based on float and prospect pits, the Tom Burns vein strikes northwest and dips northeasterly. The vein varies from about 2 to 8 feet wide and consists mostly of quartz. Sulfides, predominantly galena with minor chalcopyrite and tetrahedrite, form bands on the walls of vein as much as one foot wide. A sample cut from the westernmost outcrop of the Tom Burns No. 1 claim contains trace amounts of gold and silver, 12.37 percent lead, and 0.22 percent copper. A representative sample of float collected from the Tom Burns No. 2 claim contained 0.01 ounce of gold per ton, a trace of silver and copper, and 7.82 percent lead (Thorne, 1946, fig. 3 and p. 5-6).

The vein was examined in 1936 by Moffit (1938, p. 46) who reported galena and quartz but exposures were too badly sloughed to determine anything about the vein. Samples of float and of vein material in place contained as much as 0.01 ounce of gold per ton, trace Ag, 12.37% Pb, and 0.22% Cu (Moffit, 1932, 1938). The prospect was reexamined by WGM Inc. in their study of Ahtna Native Corporation lands (WGM, 1978). The WGM geologists reported barite and zinc (sphalerite?) in addition to the minerals previously re-

ported ; the WGM Inc. mapping indicates the strike of the vein is subparallel to the contact of the Ahtell intrusive.

**Alteration:****Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Probably inactive

**Workings/exploration:**

Caved open cuts.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Moffit, 1932; Moffit, 1938; Thorne, 1946; Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Thorne, 1946

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 11/27/00

**Site name(s):** Unnamed (headwaters of the East Fork of Indian Creek)

**Site type:** Occurrence

**ARDF no.:** GU035

**Latitude:** 62.869

**Quadrangle:** GU D-1

**Longitude:** 144.296

**Location description and accuracy:**

The occurrence is on a ridge about 5,200 feet in elevation between upper Indian Creek and the upper East Fork of Indian Creek. It is about 5.3 miles northeast of the center of Long Lake in the NW1/4NW1/4, section 33, T. 13 N., R. 6 E., Copper River Meridian. The occurrence is accurate to within 500 feet.

**Commodities:**

**Main:** Cu, Pb

**Other:** Ag?

**Ore minerals:** Chalcopyrite, galena

**Gangue minerals:** Carbonate minerals, quartz

**Geologic description:**

The occurrence is in the Ahtell pluton about one-quarter of a mile east of its western contact (WGM Inc., 1980). It is about 3/4 mile north of the Tom Burns prospect (GU034) and it is mineralogically similar to it. Chalcopyrite and galena occur with quartz-carbonate gangue in a vein. No assay information is available.

**Alteration:**

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**  
Natural exposures.

**Production notes:**

**Reserves:**

**Additional comments:**  
Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**  
WGM Inc., 1979; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00

**Site name(s): Excelsior Creek****Site type:** Prospect**ARDF no.:** GU036**Latitude:** 62.86**Quadrangle:** GU D-3**Longitude:** 145.05**Location description and accuracy:**

The location is approximate; it may be on Excelsior Creek about 3.5 miles above its mouth. Cobb (1979 [OF 79-1247]) cites Mulligan (1974, fig. 8) as the source for his location. This location is in the SW1/4, section 33, T. 13 N, R. 2 E., Copper River Meridian. It is possible that the location is farther upstream. The only direct reference to its location is in Mendenhall and Schrader (1903, p.46) who reported that 'further locations have been made in the region between Gakona and Chistochina on Excelsior Creek and the headwaters of the Shnu.' The Shnu is now called Sinona Creek (GU044); it is the next creek east of Excelsior Creek.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Country rock in the area is mostly volcanic rocks of the Pennsylvanian to Permian, Tetelna Formation. Placer deposits were found in the region in the early 1900's shortly after the discoveries of gold at Slate Creek, Miller Gulch, and other creeks in the Chistochina placer district. Nothing else is known of the deposits which are probably of the river-bar type.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

A small placer operation was noted in this area by Mendenhall and Schrader (1903) but apparently there has been no activity since.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Mendenhall and Schrader, 1903; Mulligan, 1974; Cobb, 1979 (OF 79-1247).

**Primary reference:** Mendenhall and Schrader, 1903

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 11/27/00



**Site name(s):** Unnamed (upper Granite Creek)

**Site type:** Prospect

**ARDF no.:** GU037

**Latitude:** 62.90

**Quadrangle:** GU D-1

**Longitude:** 144.08

**Location description and accuracy:**

The prospect is at an elevation of about 5,000 feet in a major west-flowing tributary to upper Granite Creek . It is listed as an unnamed prospect by Cobb (1979 [OF 79-1247]). The prospect is near the creek and approximately on the boundary between sections 15 and 16, T. 13 N., R. 7 E., Copper River Meridian. It was listed as locality 9 by both Richter and Matson (1972) and MacKevett and Holloway (1977).

**Commodities:**

**Main:** Cu

**Other:** Au, Mo

**Ore minerals:** Chalcopyrite, molybdenite

**Gangue minerals:** Quartz

**Geologic description:**

The prospect is one of several in or near the western contact zone of a Jurassic diorite to quartz-diorite batholith (Richter and Matsen, 1968; Richter, Lanphere, and Matson, 1975). Stream sediments collected from this zone (area 1, WGM Inc., 1980) were moderately anomalous in gold over a distance of about fifteen miles. According to Kirk Stanley (written communication 2000), chalcopyrite and molybdenite commonly occur along joint surfaces in silica-carbonate rock, which is widely developed near the western contact of the Jurassic pluton. No specific information is known about the prospect.

**Alteration:**

**Age of mineralization:**

Probably coeval with a Jurassic diorite to quartz-diorite complex.

**Deposit model:**

Porphyry Cu-Mo(?) (Cox and Singer, 1986; model 21a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

21a(?)

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

The prospect was briefly described to Richter in 1969 by Kirk Stanley. It is probably in or near upper Granite Creek as described by Stanley in a letter to Ahtna Minerals Corporation (written communication, 2000).

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter and Matson, 1968; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247); WGM Inc., 1980.

**Primary reference:** Richter and Matson, 1972; WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/06/00

**Site name(s): Granite Creek****Site type:** Prospect**ARDF no.:** GU038**Latitude:** 62.94**Quadrangle:** GU D-1**Longitude:** 144.16**Location description and accuracy:**

Granite Creek probably carries minor amounts of gold widely and it was prospected for several seasons prior to about 1940. The main activity was near the intersection of Granite Creek and the West Fork of Granite Creek in the W1/2, section 6, T. 13 N., R. 7 E., Copper River Meridian. The location is approximately the same given as locality 19 by Richter and Matson (1972) and locality 18 of MacKevett and Holloway (1977). The location is approximate.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

Granite Creek mainly flows on the dioritic phase of the Pennsylvanian to Permian, Ahtell pluton and sedimentary and volcanic rocks of the Pennsylvanian to Permian, Slana Spur Formation (Richter, Lanphere, and Matson, 1975). Granite Creek was sufficiently auriferous to be prospected for several seasons before World War II (Moffit, 1938, p.51). Production, if any, was small. The placer is probably of river-bar type.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Granite Creek was sufficiently auriferous to be prospected for several seasons prior to World War II (Moffit, 1938, p.51). Production, if any, was small.

**Production notes:**

Probably minor if any.

**Reserves:**

**Additional comments:**

**References:**

Moffit, 1938; Richter and Matson, 1972; Richter, Lanphere, and Matson, 1975; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** Moffit, 1938

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/04/00

**Site name(s):** Unnamed (near hill 5330, south of the Slana River)

**Site type:** Occurrence

**ARDF no.:** GU039

**Latitude:** 62.97

**Quadrangle:** GU D-1

**Longitude:** 144.15

**Location description and accuracy:**

The occurrence is at an elevation of about 4,500 feet on a northeast facing slope about 1/4 mile northeast of hill 5330. It is in the SE1/4SE1/4, section 19, T. 14 N., R. 7 E. Copper River Meridian.

**Commodities:**

**Main:** Cu

**Other:**

**Ore minerals:** Chalcopyrite

**Gangue minerals:**

**Geologic description:**

This copper occurrence is on the projected trend of Richter's Jurassic diorite to quartz diorite complex (1966; Richter and Matson, 1968) but the bedrock geology is unknown. The occurrence which contained chalcopyrite, was reported by WGM Inc.(1980, fig. 3). No other data is known on the occurrence. See also GU040 which is nearby.

**Alteration:**

**Age of mineralization:**

Possibly associated with emplacement of Richter's (1966) Jurassic quartz-diorite complex.

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/15/00

**Site name(s):** Unnamed (near hill 5330, south of the Slana River)

**Site type:** Occurrence

**ARDF no.:** GU040

**Latitude:** 62.98

**Quadrangle:** GU D-1

**Longitude:** 144.16

**Location description and accuracy:**

This occurrence is at an elevation of about 4,600 feet on a northeast facing slope about one-third of a mile north of hill 5330. It is in the NW1/4SE1/4, section 19, T. 14 N., R. 7 E. Copper River Meridian.

**Commodities:**

**Main:** Cu

**Other:**

**Ore minerals:** Chalcopyrite

**Gangue minerals:**

**Geologic description:**

This copper occurrence is on the projected trend of Richter's Jurassic diorite to quartz diorite complex (1966; also Richter and Matson, 1968) but the bedrock at the occurrence is unknown. A chalcopyrite occurrence was reported here by WGM Inc. (1980, fig. 3). No other data is known on the occurrence. See also GU039 which is nearby.

**Alteration:**

**Age of mineralization:**

Possibly associated with emplacement of Richter's (1966) Jurassic quartz-diorite complex.

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Probably only natural exposures.

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1980

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00



**Site name(s): Judy****Site type:** Prospect**ARDF no.:** GU041**Latitude:** 62.99**Quadrangle:** GU D-1**Longitude:** 144.05**Location description and accuracy:**

The Judy prospect is on Granite Creek 1 to 1.5 miles above its junction with Slana River. It is locality 20 of Richter and Matson (1972) and locality 10 of MacKevett and Holloway (1977). The prospect was explored by Kirk Stanley who gave its location as in Granite Creek about 1.5 miles above the Slana River (written communication, 2000).

**Commodities:****Main:** Cu**Other:** Au**Ore minerals:** Chalcopyrite, gold, magnetite, malachite, pyrite**Gangue minerals:** Garnet**Geologic description:**

The Judy prospect is a copper-gold skarn associated with limestone of uncertain affiliation that is intruded by quartz diorite. The prospect is an isolated occurrence exposed along Granite Creek for about 200 feet. It is masked by soil and heavy brush away from the creek and the outcrops are conspicuously stained with malachite. Pyrite and chalcopyrite are common; magnetite occurs locally in altered limestone. The prospect was drilled with shallow AX diameter core-holes; short intercepts of high-grade gold values were encountered.

**Alteration:**

Contact metamorphism; formation of fine-grained garnet in limestone adjacent to quartz diorite.

**Age of mineralization:****Deposit model:**

Copper-gold skarn (Cox and Singer, 1986; model 18a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

18a

**Production Status:** None**Site Status:** Inactive**Workings/exploration:**

The prospect was explored by short geophysical lines and small diameter diamond-drill core holes. The maximum depth of these holes was about 150 feet.

**Production notes:****Reserves:****Additional comments:**

The best reference to this deposit is in a review of the 'Slana Mineral Belt prospects' by Kirk Stanley,' which is included in an interoffice memo of Ahtna Minerals Corp. (written communication to Wes Nason, 2000). This memo includes color photographs of the prospect. Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter and Matson, 1972; MacKevett and Holloway, 1977; Cobb, 1979 (OF 79-1247).

**Primary reference:** This report**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)**Last report date:** 12/04/00

**Site name(s):** Unnamed (east, southeast of Mankomen Lake)

**Site type:** Occurrence

**ARDF no.:** GU042

**Latitude:** 62.937

**Quadrangle:** GU D-1

**Longitude:** 144.315

**Location description and accuracy:**

The occurrence is at an elevation of approximately 4,500 feet, about 6.4 miles east, southeast of the east end of Mankomen Lake. The occurrence is in the center of section 5, T. 13 N., R. 6 E., Copper River Meridian. It is probably accurate within 500 feet.

**Commodities:**

**Main:** Fe

**Other:**

**Ore minerals:** Magnetite, pyrite

**Gangue minerals:**

**Geologic description:**

WGM Inc. (1979, fig. 6) reported an occurrence of magnetite and pyrite associated with the contact of the border phase of the Brimstone granite and the Pennsylvanian to Permian, Tetelna volcanics. A chilled zone of altered potassium-feldspar-rich rocks contains bands of disseminated pyrite and magnetite.

**Alteration:**

Related to a contact zone of a granitic body.

**Age of mineralization:**

**Deposit model:**

Skarn(?)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

WGM Inc., 1979.

**Primary reference:** WGM Inc., 1979

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

**Site name(s):** Unnamed (southwest of Long Lake)

**Site type:** Prospect

**ARDF no.:** GU043

**Latitude:** 62.798

**Quadrangle:** GU D-1

**Longitude:** 144.218

**Location description and accuracy:**

The prospect is an elevation of about 4,700 feet on the west side of an unnamed tributary to Flat Creek at . It is about three-quarters of a mile southwest of the west end of Long Lake. It is close to the NE corner of section 26, T. 12 N., R. 6 E., Copper River Meridian. The occurrence is probably accurate within 500 feet.

**Commodities:**

**Main:** Pb

**Other:** Ag?

**Ore minerals:** Galena

**Gangue minerals:** Carbonate minerals, quartz

**Geologic description:**

The prospect is in the Border Zone phase of the Pennsylvanian to Permian, Ahtell quartz monzonite pluton (Richter, 1966; Richter, Lanphere, and Matson, 1975). It is about 1/4 mile east of the contact of the pluton with rocks of the Pennsylvanian to Permian, Tetelna Formation. The deposit is a quartz or quartz-carbonate vein that contains galena. The vein strikes north-northeast and dips 32 degrees East (Richter, fig. 5, 1966; WGM Inc., 1979).

**Alteration:**

**Age of mineralization:**

Emplaced subsequent to or is related to the border phase of the Pennsylvanian to Permian, Ahtell pluton.

**Deposit model:**

Polymetallic vein (Cox and Singer, 1986; model 22c)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

22c

**Production Status:** Undetermined.

**Site Status:** Inactive

**Workings/exploration:**

Prospect pits.

**Production notes:**

**Reserves:**

**Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter, Lanphere, and Matson, 1975; WGM Inc., 1979.

**Primary reference:** Richter, 1966

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

**Site name(s): Sinona Creek (Shnu Creek)****Site type:** Prospects**ARDF no.:** GU044**Latitude:** 62.94**Quadrangle:** GU D-2**Longitude:** 144.91**Location description and accuracy:**

The location of the prospects is a very general one. The coordinates are arbitrarily located at the confluence of the two upper forks of Sinona Creek about 1.5 miles south-southwest of Sinona Lake. The only guide to the location is the statement of Mendenhall and Schrader (1903, p. 49) that 'some further locations have been made in the region between the Gakona and the Chistochina on Excelsior Creek and in the headwaters of the Shnu.' The Shnu is now named Sinona Creek.

**Commodities:****Main:** Au**Other:****Ore minerals:** Gold**Gangue minerals:****Geologic description:**

There was some prospecting and possibly minor production of placer gold in the area prior to 1903 (Mendenhall and Schrader, 1903). Sinona Creek has a very low gradient and flows mostly through unconsolidated material. Its headwater tributaries originate the Chistochina gold district of the Mt. Hayes quadrangle and small amounts of flour gold could have washed into Sinona Creek and been concentrated in river bar deposits along the river.

**Alteration:****Age of mineralization:**

Holocene placer.

**Deposit model:**

Placer Au, riverine subtype (Cox and Singer, 1986; model 39a)

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

39a

**Production Status:** Undetermined.

**Site Status:** Inactive

**Workings/exploration:**

Probably shallow placer workings prior to 1903 that have long since destroyed by erosion.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Mendenhall and Schrader, 1903; Cobb, 1979 (OF 79-1247).

**Primary reference:** Mendenhall and Schrader, 1903

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00



**Site name(s):** Unnamed (in the headwaters of an east fork of Ahtell Creek)

**Site type:** Occurrence

**ARDF no.:** GU045

**Latitude:** 62.873

**Quadrangle:** GU D-1

**Longitude:** 144.012

**Location description and accuracy:**

The occurrence is at an elevation of about 4,800 feet on the northeast-facing slope of a ridge more than 6,000 foot high that separates two unnamed forks of upper Ahtell Creek. It is in the SW1/4SW1/4, section 25, T. 13 N., R. 7 E., Copper River Meridian. It is a generalized occurrence accurate to within 1,000 feet that includes several mineralized outcrops.

**Commodities:**

**Main:** Au

**Other:**

**Ore minerals:** Gold, magnetite, pyrite

**Gangue minerals:** Carbonate minerals, quartz

**Geologic description:**

The occurrence is in the Jurassic 'tectonic, diorite to quartz diorite complex' of Richter that underlies the eastern part of the Ahtell Creek area (Richter, 1966; Richter and Matson, 1968; Richter, Lanphere, and Matson, 1975). It was discovered in 1979 following up a 1978 stream sediment survey of the area for the Ahtna Native corporation (WGM Inc., 1979). It is within a several-mile-long, gold-bearing trend aligned northwest that was called area 1 by WGM Inc. WGM found six streams in the belt with gold values from 200 to 850 ppb gold.

During the follow up at this location, WGM Inc.(1980) identified a 50-foot-wide silica-carbonate-altered diorite that contained 205 ppb gold. Up hill from the diorite, a 2-foot-thick hanging wall of a quartz-pyrite vein contained 335 ppb gold. A float cobble of magnetite from the same area contained 3,260 ppb gold (0.095 ounce of gold per ton). It is not known if further work has been done in the area.

**Alteration:**

Extensive silica-carbonate alteration of dioritic rocks.

**Age of mineralization:**

Possibly related to a Jurassic diorite complex.

**Deposit model:**

Porphyry Au?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:** None

**Site Status:** Inactive

**Workings/exploration:**

Stream sediments collected by WGM in 1978 were followed up in 1979 by outcrop sampling.

**Production notes:****Reserves:****Additional comments:**

Additional information can be obtained from Ahtna Minerals in Anchorage, Alaska.

**References:**

Richter, 1966; Richter and Matson, 1968; Richter, Lanphere, and Matson, 1975; WGM Inc., 1979; WGM Inc., 1980.

**Primary reference:** WGM Inc., 1979

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

**Site name(s):** Unnamed (in lower Chistochina River)

**Site type:** Mine

**ARDF no.:** GU046

**Latitude:** 62.82

**Quadrangle:** GU D-2

**Longitude:** 144.75

**Location description and accuracy:**

A mine symbol is shown on the Gulkana D-2 quadrangle on the west side of the lower Chistochina River in the SE1/4SE1/4, section 13, T. 12 N., R. 3 E., Copper River Meridian. The location is on the south bank of an east-flowing tributary to the Chistochina River.

**Commodities:**

**Main:**

**Other:**

**Ore minerals:**

**Gangue minerals:**

**Geologic description:**

The mine is on the south bank of a low-gradient tributary to the Chistochina. It is about one-quarter of a mile west of a winter trail into the Chistochina mining area in the Mt. Hayes quadrangle. This seems an unlikely location for a barrow or gravel pit and there is no other record of a lode or placer deposit here.

**Alteration:**

**Age of mineralization:**

**Deposit model:**

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

**Production Status:**

**Site Status:**

**Workings/exploration:**

The mine symbol shown on topographic map is the only indication of mining here.

**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Gulkana D-2 topographic quadrangle.

**Primary reference:** Gulkana D-2 topographic quadrangle

**Reporter(s):** W.T. Ellis (Alaska Earth Sciences), C.C. Hawley (Hawley Resource Group), and W.J. Nokleberg (U.S. Geological Survey)

**Last report date:** 12/07/00

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