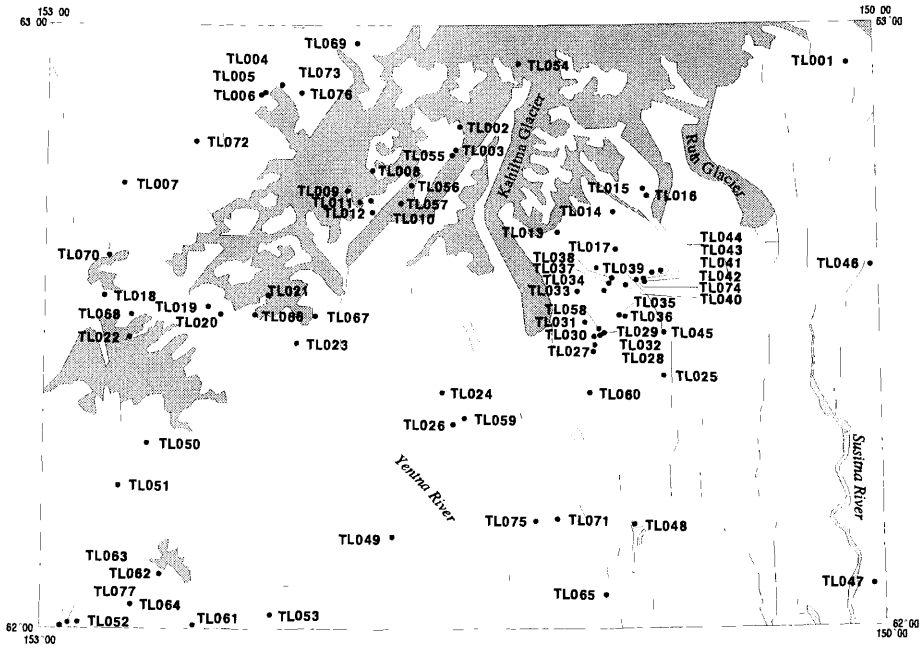
Alaska Resource Data File

U.S. Department of the Interior - U.S. Geological Survey

Talkeetna 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 Talkeetna 1:250,000-scale quadrangle, southcentral Alaska

This and related reports are accessible through the USGS World Wide Web site http://www-mrs-ak.wr.usgs.gov/ardf. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to Donald Grybeck, USGS, 4200 Unversity Dr., Anchorage, AK 99508-4667, email dgrybeck@usgs.gov, telephone (907) 786-7424. This compilation is authored by:

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OPEN-FILE REPORT 99-139

Site name(s): Boedeker; Boedaker

Site type: Prospect

ARDF no.: TL001

Latitude: 62.933 **Quadrangle:** TL D-1

Longitude: 150.097

Location description and accuracy:

Reed and others (1978, locality 47) locate this prospect north of the Hidden River, a short distance east of Swift Creek. The prospect is at an elevation of 4000 feet in the southeast quarter of Section 19, T. 33 N., R. 13 W., of the Seward Meridian within Denali State Park.

Commodities:

Main: Au, Pb

Other: As

Ore minerals: Arsenopyrite, galena, gold, pyrite

Gangue minerals: Limonite, quartz, sericite

Geologic description:

Steeply dipping Triassic foliated slate, fine-grained schist and argillite (Trvs, Reed and Nelson, 1980) are cut by one steeply dipping, three- to twelve-foot-wide quartz vein and smaller parallel quartz veins that range from 2 to 10 inches wide and strike N20W and dip 20W. The veins contain disseminated pyrite and arsenopyrite with trace amounts of silver and free gold. Gold is preferentially in smaller quartz veins, none of which extend more than 100 feet along strike.

The mineralization may be related to the undivided Tertiary and (or) Cretaceous intrusive bodies (TKi) mapped by Reed and Nelson (1980) to the south of this occurrence. Geophysical and geological mapping by the Alaska Division of Geological and Geophysical Surveys which is currently ongoing (1997-1998) may provide more information in the near future.

Alteration:

Age of mineralization:

Tertiary or Cretaceous; mineralization may be related to the undivided Tertiary and (or) Cretaceous intrusive bodies mapped by Reed and Nelson (1980) the south of this occurrence.

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: Undetermined.

Site Status: Undetermined

Workings/exploration:
Tuck (1934) reports several open cuts and a 30 foot adit were excavated at this site; the present condition is unknown.

Production notes:

Reserves:

Additional comments:
The prospect is located within Denali State Park.

References:
Smith, 1932; Smith, 1933 (B 836); Tuck, 1934; Berg and Cobb, 1967; Clark and Cobb, 1972; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Tuck, 1934

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Lacuna Glacier)

Site type: Occurrence

ARDF no.: TL002

Latitude: 62.836 **Quadrangle:** TL D-3

Longitude: 151.484

Location description and accuracy:
Reed and others (1978, locality 32) locate this occurrence west of the Lacuna Glacier at about 4200 feet elevation in the northwest quarter of Section 26, T. 32 N., R. 12 N., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Cr, Fe

Other:

Ore minerals: Chromite, magnetite, pyrrhotite

Gangue minerals:

Geologic description:
This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier which is part of the Dall Trend, described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B). These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest trending fault which places the Paleozoic rocks over Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe these occurrences as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. Chromite occurs as: (1) disseminated rounded grains 1-3 mm in diameter, (2) streaks and lenses, (3) irregular pods up to 6 feet long and (4) lens-like bodies up to 6 feet thick and 60 feet long throughout the dunite. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3. Other chromite occurrences in this trend are described in TL003, TL008 - 012, and TL055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
The mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Lacuna Glacier)

Site type: Occurrence

ARDF no.: TL003

Latitude: 62.785 **Quadrangle:** TL D-4

Longitude: 151.515

Location description and accuracy:

Reed and others (1978, locality 30) locate this occurrence west of the Lacuna Glacier at about 4300 feet elevation in the southwest quarter of Section 10, T. 31 N., R. 12 N., of the Seward Meridian, approximately 3500 feet northeast of TL 055. This occurrence is within Denali National Park and Preserve.

Commodities:

Main: Cr, Fe

Other:

Ore minerals: Chromite, magnetite, pyrrhotite

Gangue minerals:

Geologic description:

This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier which is part of the Dall Trend, described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B). These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest trending fault which places the Paleozoic rocks over Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe these occurrences as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. At this site a grab sample of chromite contained 0.02 ppm each ruthenium and iridium. Chromite occurs as: (1) disseminated rounded grains 1-3 mm in diameter, (2) streaks and lenses, (3) irregular pods up to 6 feet long and (4) lens-like bodies up to 6 feet thick and 60 feet long throughout the dunite. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Other chromite occurrences in this trend are described in TL 003, TL008 - 012, and

TL055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Jiles-Knudson; J + K; Purkeypile(s)

Site type: Prospect

ARDF no.: TL004

Latitude: 62.902 **Quadrangle:** TL D-5

Longitude: 152.151

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-C and Fig. 4.2C(3)-A(1)) show the J+K adit in schist near the granite contact about 1/2 mile below Boulder Creek Glacier on the east bank of Boulder Creek in the southeast quarter of Section 32, T. 33 N., R. 15 W., of the Seward Meridian.

Commodities:

Main: Ag, Au, Cu, Pb

Other: As, Mn, Sb, Zn

Ore minerals: Arsenopyrite, chalcopyrite, galena (argentiferous), malachite, pyrite, pyrrhotite, sphalerite

Gangue minerals: Goethite, manganese oxides, siderite

Geologic description:

The Jiles-Knudson prospect is located on the west side of the Boulder Creek drainage, the geologic setting of which is provided, as follows, from work by C.C. Hawley and Associates, Inc. (1978) and Reed and Nelson (1980). Blocky slate, argillite, thin-bedded siliceous limestone and chert define a belt of lower Paleozoic sedimentary and metavolcanic rocks (possibly Keevy Peak, other Totalanika series, or equivalents) bordered by the Tertiary Tonzona granitic pluton (Tmt), part of the McKinley sequence of mapped by Reed and Nelson (1980). The granite has three phases: a coarse-grained, locally porphyritic biotite granite; a medium-grained biotite granite; and a late fine-grained, leucocratic, locally aplitic, muscovite- tourmaline granite in which ovoid clusters of small black tourmaline crystals give the rock a 'dalmatian' appearance. Muscovite may exceed biotite in the granite and accessory minerals include tourmaline with lesser amounts of topaz, fluorite, garnet, zircon, and apatite. Late-stage greissen veinlets contain muscovite, topaz, tourmaline, locally abundant beryl, and occasionally, cassiterite. Lead, silver and tin mineralization occurs in lower Paleozoic metasediments and metavolcanic rocks along the north and northeast contact of the pluton.

At this site a short adit (J+K adit), dozer cuts and diamond drill holes have been used to explore the Jiles-Knudson property. The prospect is a lenticular body of pyrrhotite-rich skarn, 3 to 10 feet thick, that contains pods of galena, pyrite, arsenopyrite, possible tetra-

hedrite, and other sulfides stratabound within Paleozoic limestone (C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978). The body strikes about N85E and dips 80 degrees to the north and is exposed for about 140 feet. The sulfide body has been exposed in an open cut, a 15 foot shaft, eleven-foot adit and trench. The pyrrhotite-rich skarn runs 0.7 to 0.9% copper. One sample of gossan from the shaft dump contained 3.22 oz/ton Ag. Another gossan sample contained 0.96% lead. An eleven-foot sample from pyrrhotite-rich material in place carried 0.96 oz/ton gold. (Maloney and Thomas, 1966, Table 5; C.C. Hawley and Associates, Inc., 1978).

In the entire Boulder Creek area there are widely separated, mineralized outcrops. Mapping and ground geophysical surveys, including magnetics and Chrone VLF, suggest extensive skarn development and skarn mineralization across Boulder Creek from the J+K adit. Little sub-surface exploration has been completed. Although tin is not specifically reported from the Jiles-Knudson prospect, its proximity to the Boulder Creek (TL073) suggests that it is part of the same mineralizing system.

In much of the published literature the Purkeypile group of lode claims includes Boulder Creek (TL073), Hogback (TL006) and Mespelt (TL005) prospects.

Alteration:

Development of skarn assemblage in Paleozoic country rocks (C.C. Hawley and Associates, Inc., 1978).

Age of mineralization:

Tertiary; mineralization in the Jiles-Knudson area is interpreted to be linked to the Tonzona granite (Tmt), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:

Fringe zone of Pb, Zn, and Ag sulfide mineralization to tin veins (generally related to the tin vein model of Cox and Singer, 1986; model 15b) or related to Sn Skarn Deposits (Cox and Singer, 1986; model 14b).

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

15b or 14b

Production Status: Undetermined.

Site Status: Undetermined.

Workings/exploration:

F. B. Jules and Ed Knutson of Poorman, Alaska concentrated their effort on the Jiles-Knudson prospect between 1910(?) and 1923. Mr. I.W.. Purkeypile and son David Purkeypile 'rediscovered' and prospected the Boulder Creek area since the late 1940s (C.C. Hawley and Associates, Inc., 1978). The area was evaluated by numerous private mining companies in the 1970s and 1980s.

Workings at the Jiles-Knudson include an open cut, a 15 foot shaft, 11 foot adit and trench (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-C and Fig. 4.2C(3)-A(1)).

Production notes:

Reserves:

Additional comments:

Although tin is not specifically reported from the Jiles-Knudson property, its proximity to the Boulder Creek tin lodes suggests that it is very likely part of the same mineralization and alteration event. Thus the inclusion of Jiles-Knudson in model 14b is based on that interpretation. Most post-1970 prospecting has centered on tin-silver mineralization in the Boulder Creek area.

The Purkeypile group of lode claims includes Jiles-Knudson (this record), Boulder Creek (TL073), Mespelt (TL005) and Hogback (TL006) prospects.

References:

Capps, 1925; Capps, 1927; Maloney and Thomas, 1966; Berg and Cobb, 1967; Clark and Cobb, 1972; Reed and Lanphere, 1972; Conwell, 1977; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Warner, 1985; Nokleberg and others, 1987.

Primary reference: Maloney and Thomas, 1966

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Mespelt

Site type: Prospect

ARDF no.: TL005

Latitude: 62.89 **Quadrangle:** TL D-5

Longitude: 152.21

Location description and accuracy:

The Mespelt prospect is located at the end of the trail shown in the east half of Section 2, T. 32 N., R. 16 W., of the Seward Meridian. C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-C) locate this prospect approximately 800 feet east-southeast of Little Mountain at about 4300 feet. Also shown by Reed and others (1978) as locality 5.

Commodities:

Main: Ag, Pb, U

Other: Au, Sn, W, Zn

Ore minerals: Galena, metazeunerite, pyrite, sphalerite, zeunerite

Gangue minerals: Calcite, limonite, quartz, siderite

Geologic description:

The Mespelt prospect consists of two bulldozer cuts, several prospect pits, and a 40 foot shaft (now caved) constructed to evaluate a 7-foot-wide, 1000-foot-long quartz-carbonate vein that cuts the Tertiary-age Tonzona granitic pluton (Tmt), part of the McKinley sequence mapped by Reed and Nelson (1980). The vein, comprised of argentiferous galena, low-grade uranium, and tin mineralization, occurs beneath a gossan cap. High grade grab samples collected in 1959 contained 0.18 to 32.91 oz/ton Ag; trace Au, up to 46.4% Pb, 0.037 to 0.14% eU, up to 2.52% Sb, up to 0.06% Sn, and 0.01 to 0.04% W. A chip sample collected in 1956 assayed 56.3% WO3 (Maloney and Thomas,1966, Table 3; Reed and others, 1978). Greisen assemblages of quartz-tourmaline-muscovite are developed adjacent to the vein. Tin in excess of 1,500 ppm in the nonmagnetic heavy-mineral concentrates from stream silt samples collected from the Camp Creek drainage to the west of this prospect is reported by Curtin, Karlson, Tripp, and Day (1978).

The geologic setting of the Mespelt silver-lead-tin-tungsten vein is described, as follows, by C.C. Hawley and Associates, Inc., (1978) and Reed and Nelson (1980). Blocky slate, argillite, thin-bedded siliceous limestone and chert define a belt of lower Paleozoic sedimentary and metavolcanic rocks (possibly Keevy Peak, Totalanika series, or equivalents) bordered by the Tonzona granitic pluton. The granite has three phases: a coarse-grained, locally porphyritic biotite granite; a medium-grained biotite granite; and a late fine-grained, leucocratic, locally aplitic, muscovite - tourmaline granite in which ovoid

clusters of small black tourmaline crystals give the rock a 'dalmatian' appearance. Muscovite may exceed biotite and accessory minerals include tourmaline with lesser amounts of topaz, fluorite, garnet, zircon, and apatite. Late-stage greissen veinlets, like those at the Mespelt propect, contain muscovite, topaz, tourmaline, locally abundant beryl, and occasionally, cassiterite. Lead, silver and tin mineralization occurs in Paleozoic metasediments and metavolcanic rocks along the north and northeast contact of the pluton. The Tonzona pluton has metamorphosed the country rocks to skarn assemblages along the contact and has formed skarn hosted polymetallic mineralization such as at the Jiles-Knudson (TL 004), Boulder Creek (TL073) and the nearby Hogback prospect (TL006).

In much of the literature, the Jiles-Knudson, Mespelt, Hogback and Boulder Creek are included as the Purkeypile group of lode claims.

Alteration:

Greisen assemblages of quartz-tourmaline-muscovite-chlorite are developed locally (C. C. Hawley and Associates, Inc. 1978).

Age of mineralization:

Tertiary; mineralization in the Boulder Creek, Jiles-Knudson , Hogback and Mespelt areas is interpreted to be linked to the Tonzona granite (Tmt), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:

Fringe zone of Pb, Zn, and Ag sulfide mineralization to tin veins (generally related to the tin vein model of Cox and Singer, 1986; model 15b).

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

15b

Production Status: No

Site Status: Undetermined

Workings/exploration:

Workings consist of two bulldozer cuts, prospect pits, and a 40-foot shaft (now caved) (C.C. Hawley and Associates, Inc., 1978).

Production notes:

No published information available.

Reserves:

Additional comments:

High grade samples were taken by the U.S. Bureau of Mines in 1959 and by the Alaska Division of Geological and Geophysical Surveys (C.C. Hawley and Associates, Inc., 1978). In much of the literature, the Jiles-Knudson, Mespelt, Hogback and Boulder Creek

are included as the Purkeypile group of lode claims.

High grade grab samples collected in 1959 contained 0.18 to 32.91 oz/ton Ag; trace Au, up to 46.4% Pb, 0.037 to 0.14% eU, up to 2.52% Sb, up to 0.06% Sn, and 0.01 to 0.04% W. A chip sample collected in 1956 assayed 56.3% WO3 (Maloney and Thomas,1966, Table 3; Reed and others, 1978). Greisen assemblages of quartz-tourmaline-muscovite are developed adjacent to the vein. Tin in excess of 1,500 ppm in the nonmagnetic heavy-mineral concentrates from stream silt samples collected from the Camp Creek drainage to the west of this prospect is reported by Curtin, Karlson, Tripp, and Day (1978).

References:

Capps, 1925; Capps, 1927; Maloney and Thomas, 1966; Berg and Cobb, 1967; Clark and Cobb, 1972; Reed and Lanphere, 1972; Conwell, 1977; MacKevett and Holloway, 1977; Curtin, Karlson, Tripp and Day, 1978; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Maloney and Thomas, 1966

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Hogback; Purkeypiles; Little Mountain

Site type: Prospect

ARDF no.: TL006

Latitude: 62.886 **Quadrangle:** TL D-5

Longitude: 152.226

Location description and accuracy:

Maloney and Thomas (1966) locate the Hogback prospect in the southwest quarter of Section 2, T.32 N., R.16 W., of the Seward Meridian. It is roughly 3000 feet southwest of Little Mountain on a ridge between the headwaters of Camp Creek and Canyon Creek at about 4300 feet in elevation; about 1.0 miles southwest of the Mespelt prospect (TL005). Reed and others (1978) show this prospect as locality 4.

Commodities:

Main: Ag, Pb, Zn

Other: Au, Cu

Ore minerals: Chalcopyrite, galena, smithsonite, sphalerite

Gangue minerals: Calcite, fluorite, goethite, quartz

Geologic description:

A tractor road leads from the Mespelt prospect (TL005) to the Hogback prospect where several bulldozer cuts expose mineralized fissure veins that crosscut quartzite and limestone. The prospect consists of 3 to 4 high-grade stringers, ranging from 1.2 to 3.0 feet wide, of argentiferous galena and zinc minerals, separated by vein quartz and altered, sheared granite in a zone 32 feet wide. Quartz-fluorite alteration is developed within and adjacent to the quartz-sulfide veins. Country rocks are converted to skarn minerals (Maloney and Thomas, 1966; C.C. Hawley and Associates, Inc., 1978). Tin in the non-magnetic heavy-mineral concentrates from stream silt samples collected by Curtin, Karlson, Tripp, and Day (1978) is in excess of 1,500 ppm from the Canyon Creek drainage to the west of this prospect.

Reed and others (1978) report the veins contain 5 to 48% lead, and 32 to 70 oz/ton silver. Maloney and Thomas (1966, Table 1) collected high-grade samples that yielded 19.30 to 134.76 oz/ton silver, trace to 0.04 oz/ton gold, 2.89 to 67.2% lead, 2.32 to 36.0% zinc, 1.2% copper.

The geologic setting of the Hogback lead-zinc-silver vein is described, as follows, by C. C. Hawley and Associates, Inc., (1978) and Reed and Nelson (1980). Blocky slate, argillite, thin-bedded siliceous limestone and chert define a belt of lower Paleozoic sedimentary and metavolcanic rocks (possibly Keevy Peak, other Totalanika series, or equiva-

lents) bordered by the early Tertiary Tonzona granitic pluton (Tmt), part of the McKinley sequence of intrusive rocks mapped by Reed and Nelson (1980). The granite has three phases; a coarse-grained, locally porphyritic biotite granite; a medium-grained biotite granite; and a late fine-grained, leucocratic, locally aplitic, muscovite-tourmaline granite in which ovoid clusters of small black tourmaline crystals give the rock a 'dalmatian' appearance. Muscovite may exceed biotite and accessory minerals include tourmaline with lesser amounts of topaz, fluorite, garnet, zircon, and apatite. Late-stage greissen veinlets contain muscovite, topaz, tourmaline, locally abundant beryl, and occasionally, cassiterite. Lead, zinc, and silver mineralization at the Hogback prospect occurs in the lower Paleozoic metasediments and metavolcanic rocks along the north and northeast contact of the pluton. The Tonzona pluton has metamorphosed the country rocks to skarn assemblages along the contact and has formed skarn- hosted polymetallic mineralization such as at the Jiles-Knudson (TL004), Boulder Creek (TL073) and the nearby Mespelt prospect (TL005).

In much of the literature, the Jiles-Knudson, Mespelt, Hogback and Boulder Creek are included as the Purkeypile group of lode claims.

Despite the paucity of tin values in published analyses for the Hogback prospect, its proximity to Mespelt and the Boulder Creek tin areas and elevated tin values in streams sediment samples regionally suggests that it is part of the tin mineralizing system related to these other prospects.

Alteration:

Quartz-fluorite alteration developed with vein assemblage. Country rocks are converted to skarn minerals (Maloney and Thomas, 1966; C.C. Hawley and Associates, Inc., 1978).

Age of mineralization:

Tertiary; mineralization in the Boulder Creek, Jiles-Knudson, Mespelt and Hogback areas is interpreted to be linked to the Tonzona granite (Tmt), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:

Fringe zone of Pb, Zn, and Ag sulfide mineralization to tin veins (generally related to the tin vein model of Cox and Singer, 1986; model 15b).

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

15b

Production Status: No

Site Status: Undetermined

Workings/exploration:

Several bulldozer cuts have been made, and a tractor road leads from this prospect to the Mespelt Prospect (TL005).

Production notes:

Reserves:

Additional comments:

Despite the paucity of tin values in published analyses for this prospect, its proximity to Mespelt and the Boulder Creek tin area suggests that it is the fringe part of the tin mineralizing system related to these other prospects. In much of the literature the Purkeypile group of lode claims includes Hogback, Jiles-Knudson, Mespelt and Boulder Creek.

References:

Capps, 1925; Capps, 1927; Maloney and Thomas, 1966; Berg and Cobb, 1967; Clark and Cobb, 1972; Reed and Lanphere, 1972; Conwell, 1973; Conwell, 1977; MacKevett and Holloway, 1977; Curtin, Karlson, Tripp and Day, 1978; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Maloney and Thomas, 1966

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL007

Latitude: 62.74 **Quadrangle:** TL C-6

Longitude: 152.72

Location description and accuracy:
Reed and others (1978, locality 2) show this occurrence in the southern half of Section 30, T. 31 N., R. 18 W., of the Seward Meridian in the headwaters of a northwesterly flowing tributary to Pingston Creek.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcocite, unidentified copper carbonate minerals

Gangue minerals:

Geologic description:
Lower Paleozoic phyllite of Reed and Nelson's (1980) Pzsv unit contains a stratiform lens of chalcocite five centimeters thick. Copper carbonate minerals are sporadically present in the surrounding area (Reed and others, 1978).

Alteration:

Age of mineralization:
Lower Paleozoic; Assumed to be age of enclosing phyllite, assigned to the lower Paleozoic by Reed and Nelson (1980).

Deposit model:
Possibly sediment-hosted copper (Cox and Singer, 1986; model 30b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
30b (?)

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Copper carbonate minerals are sporadically present in the surrounding area (Reed and others, 1978).

Production notes:

Reserves:

Additional comments:

References:

MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL008

Latitude: 62.745 **Quadrangle:** TL C-4

Longitude: 151.826

Location description and accuracy:
Reed and others (1978, locality 24 and 25) locate this occurrence in the southwest quarter of Section 25, T. 31 N., R. 14 W., of the Seward Meridian on a nunatak within the Dall Glacier in Denali National Park and Preserve.

Commodities:

Main: Cr, Mo

Other:

Ore minerals: Chromite, molybdenite

Gangue minerals: Quartz

Geologic description:
Reed and others (1978) describe this coincident mineral occurrence of a quartz-molybdenite vein cutting Paleozoic and (or) Mesozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997) chromite-bearing dunite. The quartz-molybdenite vein is 20 to 50 centimeters thick, with as much as 20 volume percent molybdenite as foliated tabular crystals up to 5 centimeters in diameter. It is probably genetically related to the middle Tertiary (38 m.y.) granodiorite of Mt. Foraker (Reed and Nelson, 1980) and may indicate porphyry molybdenum/copper potential (Reed and others, 1978). The dunite is part of the Dall trend described in TL002, 003, TL009 - 012, and TL055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997) chromite-bearing dunite. Tertiary; vein hosted quartz-molybdenite presumed to be related to the middle Tertiary (38 m.y.) granodiorite (Reed and others, 1978).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a); vein is possibly related to Por-

phyry Cu-Mo (Cox and Singer, 1986; model 21a) or Porphyry Mo, Low-F (Cox and Singer, 1986; model 21b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a and 21a or 21b

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
This prospect is located within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; Reed and others, 1978; Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL009

Latitude: 62.728 **Quadrangle:** TL C-4

Longitude: 151.909

Location description and accuracy:

Reed and others (1978, locality 23) locate this occurrence in the southwest quarter of Section 33, T. 31 N., R. 14 W., of the Seward Meridian adjacent to the Dall Glacier on a ridge at about 5000 feet within Denali National Park and Preserve.

Commodities:

Main: Cr, Ni

Other:

Ore minerals: Chromite

Gangue minerals:

Geologic description:

Reed and others (1978) report massive and disseminated chromite within sheared ultramafic rock at this locality. This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier which is part of the Dall Trend, described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B). These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest trending fault which places the Paleozoic rocks over Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe the occurrences in this belt of ultramafic rocks as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. Chromite occurs as: (1) disseminated rounded grains 1-3 mm in diameter, (2) streaks and lenses, (3) irregular pods up to 6 feet long and (4) lens-like bodies up to 6 feet thick and 60 feet long throughout the dunite. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3. Other chromite occurrences in this trend are described in TL002, TL003, TL008, TL010 - 012, and TL055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL010

Latitude: 62.712 **Quadrangle:** TL C-4

Longitude: 151.825

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, sample site no. 234, Figure 4.0-B) show this occurrence between the Dall and the Yentna Glaciers in the northwest quarter of T. 30 N., R. 14 W., of the Seward Meridian in Denali National Park and Preserve.

Commodities:

Main: Cr, Cu, Ni

Other:

Ore minerals: Pyrrhotite and other unknown copper or nickel-bearing sulfides

Gangue minerals:

Geologic description:
This occurrence is described by C.C. Hawley and Associates, Inc. (1978) as a pod of massive sulfides, mainly pyrrhotite, with exposed dimensions of 4 feet by 20 feet. Assays from the massive sulfides contained as much as 0.14% copper, 0.17% nickel, 0.08% chrome. Soil samples from this part of the ultramafic belt contained values as high as 1500 ppm copper and 6000 ppm nickel.

This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B), as part of the Dall Trend, that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier. These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest-trending fault which places the Paleozoic rocks over the Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Other chromite occurrences in this trend are described in TL002, TL003, TL008 - 010, TL012, and TL055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Assays from the massive sulfides contained as much as 0.14% copper, 0.17% nickel, 0.08% chrome. Soil samples from this part of the ultramafic belt contained values as high as 1500 ppm copper and 6000 ppm nickel.

Production notes:

Reserves:

Additional comments:
Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL011

Latitude: 62.709 **Quadrangle:** TL C-4

Longitude: 151.864

Location description and accuracy:
Reed and others (1978, locality 26) locate this occurrence in the northeast quarter of T. 30 N., R. 14 W., of the Seward Meridian on a nunatak in the Dall Glacier within Denali National Park and Preserve.

Commodities:

Main: Cr

Other:

Ore minerals: Chromite

Gangue minerals:

Geologic description:
Cobb and Reed (1980) describe disseminated chromite in dunite at this locality. High chromium and nickel values in sediment and heavy-mineral concentrate samples are reported by Curtin, Karlson, Tripp, Day, Cooley, and McDougal (1978) from streams draining the ultramafic rocks in the area.

This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier which is part of the Dall Trend, described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B). These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest-trending fault which places the Paleozoic rocks over the Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe these occurrences as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. Chromite occurs as: (1) disseminated rounded grains 1-3 mm in diameter, (2) streaks and lenses, (3) irregular pods up to 6 feet long and (4) lens-like bodies up to 6 feet thick and 60 feet long throughout the dunite. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3, 21.1% FeO,

8.9% MgO, and 9.7% Al2O3. Other chromite occurrences in this trend are described in records TL002, TL003, TL008 - 012, and TL055.

Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

Alteration:

Age of mineralization:

Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:

Podiform chromite (Cox and Singer, 1986; model 8a).

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

8a

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:

Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:

MacKevett and Holloway, 1977; Curtin, Karlson, Tripp and Day, 1978; Curtin, Karlson, Tripp, Day, Cooley and McDougal, 1978; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL012

Latitude: 62.692 **Quadrangle:** TL C-4

Longitude: 151.82

Location description and accuracy:

Reed and others (1978, locality 27) show this occurrence in the northwest quarter of Section 13, T. 30 N., R. 14 W., of the Seward Meridian on a northerly tributary of the Yentna Glacier at about 3300 feet in Denali National Park and Preserve.

Commodities:

Main: Cr, Ni

Other:

Ore minerals: Chromite, magnetite

Gangue minerals:

Geologic description:

Disseminated chromite in mafic and ultramafic rock cut by thin veinlets of magnetite and minor amounts of sulfides were noted by Cobb and Reed (1980) at this locality.

This is one of several chromite occurrences in a 25-mile long belt of alpine-type ultramafic bodies described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B), as part of the Dall Trend, that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier. These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) in a narrow belt of middle to upper Paleozoic sedimentary rocks that are exposed between the middle Tertiary (38 m.y.) Foraker pluton and the northwest-trending fault which places the Paleozoic rocks over the Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe these occurrences as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. Chromite occurs as disrupted, irregular pods of various shapes, as much as 6 feet thick and 60 feet long, and as disseminations and streaks throughout the dunite. Other chromite occurrences in this trend are described in TL 02, TL003, TL008 - 011, and TL 055.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample was 58.4% Cr2O3, 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Hidden Creek

Site type: Occurrence

ARDF no.: TL013

Latitude: 62.658 **Quadrangle:** TL C-3

Longitude: 151.151

Location description and accuracy:
Reed and others (1978, locality 42) show this occurrence in the headwater basin of Hidden Creek in the southeast quarter of Section 28, T.30 N., R.10 W., of the Seward Meridian in Denali National Park and Preserve.

Commodities:

Main: Sn

Other:

Ore minerals: Cassiterite

Gangue minerals: Muscovite, quartz, tourmaline

Geologic description:
In the headwater basin of Hidden Creek cassiterite occurs in quartz- tourmaline-muscovite veins that cut biotite granite of the early Tertiary Kahlilna pluton (Tmk) (Reed and others, 1978; Reed and Nelson, 1980).

Alteration:
Quartz-muscovite-tourmaline assemblage is developed associated with the Sn-bearing veins (Reed and others, 1978).

Age of mineralization:
Tertiary; mineralization is interpreted to be linked to the Kahiltna pluton (Tmk), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age by K/Ar method (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:
Sn Veins (Cox and Singer, 1986; model 15b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
15b

Production Status: None.

Site Status: Inactive.

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) have been done here. Cassiterite occurs in quartz- tourmaline-muscovite veins (Reed and others, 1978; Reed and Nelson, 1980).

Production notes:

Reserves:

Additional comments:

This occurrence lies within Denali National Park and Preserve.

References:

Reed and Lanphere, 1972; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL014

Latitude: 62.692 **Quadrangle:** TL C-2

Longitude: 150.949

Location description and accuracy:
Reed and others (1978, locality 43) show this occurrence in a tributary to the Kanikula Glacier at about 2500 foot elevation in the northwest quarter of Section 15, T. 30 N., R. 9 W., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Visible gold is described by Reed and others (1978) from pan concentrate samples at this site. The area is underlain by Mesozoic marine sedimentary rocks (KJs) which are covered by Quaternary alluvial deposits (Reed and Nelson, 1980). Dikes and intrusive bodies related to the early Tertiary Kahiltna pluton (Tmk, Reed and Nelson, 1980) intrude the KJs about four miles northwest of this locality.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: None

Site Status: Undetermined

Workings/exploration:
Visible gold occurs in pan concentrates from stream gravels (Reed and others, 1978).

Production notes:

Reserves:

Additional comments:
This site is located within Denali National Park and Preserve.

References:
Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Mount Goldie

Site type: Occurrence

ARDF no.: TL015

Latitude: 62.73 **Quadrangle:** TL C-2

Longitude: 150.84

Location description and accuracy:

Coordinates given here locate one of the two anomalous stream sediment sites described as the Mt. Goldie anomaly by Clark and Hawley (1968, Figure 2, no. 56). They report that the anomaly encompasses an area in Sections 31 and 32, T. 31 N., R. 8 W. and Sections 7 and 8, T. 30 N., R.8 W., of the Seward Meridian. The area lies within Denali National Park and Preserve.

Commodities:

Main: Au, As, Be, Co, Cu, Cr, Nb, Pb, Sn, Zn

Other:

Ore minerals: Gold and other unidentified minerals

Gangue minerals:

Geologic description:

Clark and Hawley (1968) describe the Mount Goldie silt anomaly as underlain by Mesozoic graywacke, quartzite and argillite (KJs) that are cut by Tertiary(?) aplite dikes and auriferous quartz veins. One rusty-weathering dike, about 3 feet wide, contains pyrite and arsenopyrite with minor gold. The aplite dikes may be related to the early Tertiary Kahiltna pluton (Tmk, Reed and Nelson, 1980) about four miles to the northwest. Two stream silt samples from streams draining this area contained 0.2 and 0.3 ppm gold, respectively (Clark and Hawley, 1968, Figure 2, no. 56).

Stream sediment samples with elevated Au, As, Be, Co, Cu, Cr, Nb, Pb, Sn, and Zn values from four streams in the area between the Tokositna and Kahiltna Glaciers indicate the area is auriferous and could host mineralized prospects (Clark and Hawley, 1968). See Rocky Cummins (TL016).

Alteration:

Age of mineralization:

Tertiary; mineralization is interpreted to be linked to the Kahiltna pluton (Tmk), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age by K/Ar method (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:
Possibly low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: No

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Two stream sediment samples from drainages in this area contained 0.2 and 0.3 ppm gold, respectively (Clark and Hawley,1968).

Production notes:

Reserves:

Additional comments:
The area lies within Denali National Park and Preserve.

References:
Clark and Hawley, 1968; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Rocky Cummins; Cummins

Site type: Prospect

ARDF no.: TL016

Latitude: 62.718 **Quadrangle:** TL C-2

Longitude: 150.826

Location description and accuracy:

Clark and Hawley (1968) locate this prospect 4.5 miles southeast of Mt. Goldie at about 2900 feet elevation in the southwest quarter of Section 5, T. 30 N., R. 8 W., of the Seward Meridian within Denali National Park and Preserve. Also shown as locality 45 in Reed and others (1978) and locality 15 in Hawley and Clark (1973) in a southeasterly flowing tributary about three miles upstream on the west side of the Tokositna Glacier.

Commodities:

Main: Ag, Au

Other: Bi, Sb, Sn, W

Ore minerals: Arsenopyrite, gold, pyrite, unknown silver-bearing mineral

Gangue minerals: Quartz

Geologic description:

Mesozoic graywacke and argillite (KJs, Reed and Nelson, 1980) host steeply dipping, N75W striking, quartz veins in a 30 -foot-wide zone. Minor sporadic gold values occur within this zone, along with traces of silver, bismuth and tin (Cobb and Reed, 1980). Quartz is milky white, locally vuggy with minor pyrite, arsenopyrite, an unidentified gray-brown metallic mineral, white mica and free gold (Clark and Hawley, 1968; Hawley and Clark, 1973). The veins may be related to the Tertiary Kahiltna pluton (Tmk) mapped by Reed and Nelson (1980) to the northwest.

Clark and Hawley (1968) report samples containing 0.02 to 1.4 ppm Au, up to 20 ppm Ag, with anomalous As, Bi, Sn and W.

Stream sediment samples from four streams in the area between the Tokositna and Kahiltna Glaciers indicate the area is auriferous and could host other prospects (Clark and Hawley, 1968). See TL015.

Alteration:

Age of mineralization:

Tertiary; mineralization is interpreted to be linked to the Kahiltna pluton (Tmk), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age

by K/Ar method (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: No

Site Status: Undetermined

Workings/exploration:
Some small prospect pits and reconnaissance mapping, stream silt and rock sampling (Clark and Hawley, 1968) are all that have been done here. Clark and Hawley (1968) report samples containing 0.02 to 1.4 ppm Au, up to 20 ppm Ag, with anomalous As, Bi, Sn and W.

Production notes:

Reserves:

Additional comments:
This prospect lies within Denali National Park and Preserve.

References:
Clark and Hawley, 1968; Clark and Cobb, 1972; Hawley and Clark, 1973; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Bear Creeks; Bear Creek

Site type: Prospect

ARDF no.: TL017

Latitude: 62.63 **Quadrangle:** TL C-2

Longitude: 150.94

Location description and accuracy:

C. C. Hawley and Associates, Inc. (1978, Fig. 42.-B(3)) show this placer prospect on Bear Creek, approximately 1.3 miles below confluence of the headwater tributaries, as unpatented placer claims extending from this point to confluence of Bear Creek and Tokositna River. Also shown by Reed and others (1978) as locality 89. This record also includes mineral occurrence at locality 44 of Reed and others (1978) on Bear Creek, below confluence with Wildhorse Creek. Location given here is near the center of the placer.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Bench placer of Pleistocene (and older?) unconsolidated sediments (Smith, 1930) overlie bedrock of Mesozoic graywacke and argillite (KJs, Reed and Nelson, 1980). Hydrothermal alteration of the bedrock at head of creek is reported by Hawley C.C. and Associates, Inc. (1978). Hawley and Clark (1973, Plate 1) show the Dutch Creek lineament extending down Bear Creek. This feature represents one of the steeply dipping normal faults that Hawley and Clark (1973) suggest are controlling features for placer gold in the Yentna district. Reed and others (1978) report post-1970 mining activity on Bear Creek.

Reed and others (1978) indicate that hydrothermally altered zones similar to those at the headwaters of Bear Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030) and Dutch (TL033) Creeks and at an unnamed locality east of McDoel Peak (TL053).

Alteration:

Hydrothermal alteration is reported by C. C. Hawley and Associates, Inc. (1978) at this site. No detailed description of alteration mineralogy is given.

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various surface methods including hand mining and dozer/sluice operations. Reed and others (1978) reported post-1970 mining activity. Current status is unknown.

Production notes:

Reserves:

Additional comments:

References:
Smith, 1930 (B 810) ; Hawley and Clark, 1973; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Smith, 1930

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Shellabarger Pass; Shellebarger Pass

Site type: Prospects

ARDF no.: TL018

Latitude: 62.553 **Quadrangle:** TL C-6

Longitude: 152.787

Location description and accuracy:
Reed and others (1978, locality 14) show these occurrences two miles north of Shellabarger Pass in the southwest quarter of Section 35, T.2 N. R. 19 W., of the Seward Meridian. Several massive sulfide bodies lie within 1/2 mile radius of this location.

Commodities:

Main: Ag, Au, Ba, Cu, Pb, Zn

Other:

Ore minerals: Barite, chalcopyrite, galena, marcasite, pyrite, pyrrhotite, sphalerite

Gangue minerals: Calcite, dolomite, quartz, siderite

Geologic description:
Several massive sulfide bodies lie within 1/2 mile radius of this location. According to Reed and Eberlein (1972), the Shellabarger Pass volcanogenic massive sulfide (VMS) deposits are comprised of at least six individual bodies. The massive sulfide bodies are lenticular deposits with exposed dimensions on the order of 50 to 100 feet by 17 to 27 feet, composed of 60% sulfides in a very fine grained mixture of pyrite, marcasite, sphalerite, chalcopyrite, galena and pyrrhotite. Sphalerite, chalcopyrite and galena make up about 15% of total sulfides. Some areas of heavily disseminated sulfides are localized along shear zones. Sulfide minerals are intergrown with the gangue minerals siderite, calcite, quartz, and dolomite. Sulfides and gangue occur in massive, lenticular sulfide bodies, as replacements of carbonate-rich beds, and as fracture fillings, mainly in chert and siltstone. Main sulfide bodies may be proximal to basaltic flow fronts. Regionally the basalt has high background copper values of 200 to 300 ppm.

The grade of the massive bodies averages 1 to 1.5% copper, 0.8 to 1.7% zinc, 0.9 to 2.4 oz/ton silver and less than 0.5% lead. Gold content varies from 0.0006 to 0.15 oz/ton. The sulfide bodies tend to be zoned, with highest chalcopyrite concentrations in basal parts and minor sphalerite in or near hanging walls (Reed and Eberlein, 1972; Nokleberg and others, 1994).

Hydrothermal alteration is extensive in the footwall but is rare to absent in hanging wall (Reed and Eberlein, 1972).

Indicated tonnage of known bodies is on the order of 50,000 tonnes (Reed and Eberlein,

1972). Nokleberg and others (1994) report an estimated several hundred thousand tonnes of unknown grade.

The host rocks are interpreted to be part of the Mystic terrane, a displaced fragment of the late Paleozoic and early Mesozoic North American Cordillera continental margin (Reed and Nelson, 1980; Decker and others, 1994; Nokleberg and others, 1994). The deposits occur in a north-trending structural trough of Triassic to Jurassic marine sediments and mafic volcanics (hypersthene normative tholeiites that includes pillow basalt, agglomerate, and breccia) in a eugeoclinal sequence which rests unconformably over Paleozoic sedimentary rocks consisting of interbedded chert, dolomite, siltstone, shale, volcanic graywacke, and basaltic aquagene tuff (Bundtzen and Gilbert, 1983; Reed and Nelson, 1980).

It is unclear whether the deposits are hosted in Paleozoic or Mesozoic rocks. There is evidence to suggest the volcanic host rocks are either upper Triassic (Norian?) or latest Devonian-earliest Mississippian. Bundtzen and Gilbert (1983) suggest that the host rocks to the Shellabarger VMS deposits could be Late Triassic. Bundtzen and others (1997) report Late Triassic fossils in from a sedimentary/basalt sequence in the Mystic terrane to the north and east in the adjacent McGrath quadrangle. Reed and Nelson (1980) consider the basalts to be post-Late Devonian age (possibly Mississippian), indicated by distinctive spherical concretions of fluoroapatite present in sedimentary breccia and conglomerate that apparently underly the pillow basalt at Shellabarger Pass. The source of the concretions is considered to be a phosphatic chert unit that overlies the Middle and Upper Devonian limestone. A nearby pillow basalt occurs in a chaotic sequence of sedimentary rocks that contains fossils of late Middle Devonian(?) (Reed and Nelson, 1980).

Alteration:

Hydrothermal alteration (mineralogy unspecified) is extensive in the footwall but is rare to absent in hanging wall (Reed and Eberlein, 1972).

Age of mineralization:

Triassic or Jurassic (Nokleberg and others, 1987, p. 48; Nokleberg and others,1994, p. 877) or latest Devonian-earliest Mississippian (Reed and Nelson, 1980).

Deposit model:

Besshi massive sulfide (Cox and Singer, 1986; model 24b).

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

24b

Production Status: No

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling are all that has been published on this property. Private concerns have held the property at various times in the past and

may have completed a more detailed evaluation, the results of which are not publicly available.

Production notes:

Reserves:

Indicated tonnage of known bodies is on the order of 50,000 tonnes (Reed and Eberlein, 1972). Nokleberg and others (1994) report an estimated several hundred thousand tonnes of unknown grade.

Additional comments:

In the past over 300 mining claims have been held in this area.

References:

Clark and Cobb, 1972; Reed and Eberlein, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Bundtzen and Gilbert, 1983; Nokleberg and others, 1987; Decker and others, 1994; Nokleberg and others, 1994; Bundtzen, T.K. and others, 1997.

Primary reference: Reed and Eberlein, 1972

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL019

Latitude: 62.535 **Quadrangle:** TL C-5

Longitude: 152.412

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, localities A and B, Fig. 4.1-C(3)) show this occurrence in the northwest quarter of Section 10, T. 28 N., R., 17 W., of the Seward Meridian along a tributary on the north side of the west fork of the Yentna River at about 4600 feet within Denali National Park and Preserve.

Commodities:

Main: Cu, Ni, Pt (?)

Other: As

Ore minerals: Chalcopyrite, nickel arsenide(?), pyrrhotite, unknown platinoid

Gangue minerals:

Geologic description:

C.C. Hawley and Associates, Inc. (1978) shown this occurrence at the west end of the Dall tactite region. Mineralization is associated with the early Tertiary Upper Yentna pluton, which consists of syenite, monzonite, lamprophyric peridotite and alkali gabbro dikes, that cuts the Permian Conglomerate of Mt. Dall (Reed and Nelson, 1980; Foley and others, 1997). Two types of mineralization have been noted. C.C. Hawley and Associates, Inc. (1978) describe small pods of sulfides consisting of pyrite, chalcopyrite, and possibly nickel arsenide within local zones of tactite and hydrothermally bleached conglomerate. Rock samples contain up to 1,200 ppm copper, 10,000 ppm nickel, and greater than 10,000 ppm arsenic; nickel and chromium are reported to be anomalous in some samples associated with the gabbro phase of the intrusive (C.C. Hawley and Associates, Inc., 1978). Foley and others (1997) describe very- fine- grained pyrrhotite and chalcopyrite abundantly disseminated in the lamprophyric peridotite and alkali gabbro dikes of the Upper Yentna pluton. These contain up to 0.14% combined copper and nickel, 928 ppm arsenic, 125 ppb gold, 22 ppb platinum and 11 ppb palladium along the northeastern margin of the pluton.

The Upper Yentna pluton, one of the nine composite plutons (Tcp) described by Reed and Nelson (1980), sutures the fault contact between Mesozoic marine sedimentary rocks (KJs) and Paleozoic sedimentary rocks (Pzsu) (Reed and Nelson, 1980). Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from

these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others 1992). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973). Also see TL020, TL023, TL052, and TL053.

Alteration:

Hydrothermally bleached conglomerate and local zones of tactite are described by C.C. Hawley and Associates, Inc. (1978).

Age of mineralization:

Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Upper Yentna pluton, one of the Tertiary composite plutons mapped by Reed and Nelson (1980).

Deposit model:

Cu skarn deposits (Cox and Singer, 1986; model 18b).

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

18b

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Rock samples contain up to 1,200 ppm copper, 10,000 ppm nickel, and greater than 10,000 ppm arsenic; nickel and chromium are reported to be anomalous in some samples associated with the gabbro phase of the intrusive (C.C. Hawley and Associates, Inc., 1978). Foley and others (1997) describe very- fine- grained pyrrhotite and chalcopyrite abundantly disseminated in the lamprophyric peridotite and alkali gabbro dikes of the Upper Yentna pluton. These contain up to 0.14% combined copper and nickel, 928 ppm arsenic, 125 ppb gold, 22 ppb platinum and 11 ppb palladium along the northeastern margin of the pluton.

Production notes:

Reserves:

Additional comments:

This site is located within Denali National Park and Preserve.

References:

Mertie, 1919; Cobb, 1973 (B 1374); C.C. Hawley and Associates, Inc., 1978; Reed and Nelson, 1980; Fechner and others, 1993; Foley and others, 1997.

Primary reference: Hawley, C.C.and Associates, Inc., 1978; Foley and others, 1997

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL020

Latitude: 62.522 **Quadrangle:** TL C-5

Longitude: 152.368

Location description and accuracy:
Reed and others (1978, locality 18) show this occurrence approximately at the toe of a glacier at the 3000 foot elevation mark in the northeast quarter of Section 14, T. 28 N., R. 7 W., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Pan concentrates containing visible gold are reported at this site by Reed and others (1978).

The area is underlain by Mesozoic marine sedimentary rocks (KJs) that have been intruded by the Upper Yentna pluton, a 65 to 66 m.y. old intrusive body that is one of the composite plutons (Tcp) described by Reed and Nelson (1980). These composite plutons form a 65-km-long curvilinear belt from Mt. Estelle in the south to Cascade Creek in the northeast. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others 1992; Foley and others, 1997). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973). The occurrence lies near the convergent margin that places Paleozoic rocks over younger Mesozoic rocks (KJs) (Reed and Nelson, 1980). See also TL020, TL023, TL052, and TL053.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: No

Site Status: Undetermined

Workings/exploration:
Reconnaissance mapping, prospecting, stream silt, pan concentrate and rock sampling are all that have been done here. Pan concentrates containing visible gold are reported at this site by Reed and others (1978). Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others 1992; Foley and others, 1997). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Production notes:

Reserves:

Additional comments:
This site is located within Denali National Park and Preserve.

References:
Mertie, 1919; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Foley and others, 1997.

Primary reference: MacKevett and Holloway, 1977

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL021

Latitude: 62.554 **Quadrangle:** TL C-5

Longitude: 152.197

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, locality C, Fig. 4.1-C(3)) show this occurrence 3.4 miles from the peak of Dall Mt. on a bearing of S61E in the southwest quarter of Section 36, T. 29 N., R. 16 W., of the Seward Meridian at about 3600 feet within Denali National Park and Preserve.

Commodities:

Main: Ag, Au, Cu

Other:

Ore minerals: Bornite, chalcopyrite, gold, unknown platinoid, unknown silver mineral

Gangue minerals: Calcite, diopside, garnet, wollastonite

Geologic description:

At this occurrence massive Middle or Upper Devonian limestone (Dl), Paleozoic siliceous black argillite, and minor siltstone (Pzus) are intruded by the Cascade pluton, a 64.6 m.y. old composite pluton (Tcp) which consists of granite-porphyry, intermediate phase rocks and lamprophyre (Reed and Nelson, 1980). The mineral occurrence is separated from the intrusion by a few feet of pyritic, silicified black argillite. Massive bornite and chalcopyrite occur in a replacement band 0.3 to 3 feet wide, with free gold in thin calcite-diopside seams within banded tactite. One sample contained 25% copper, 41 oz/ton silver and 0.7 oz/ton gold over a three foot width (C.C. Hawley and Associates, Inc., 1978). Foley and others (1997) report locally abundant bornite within the pluton and anomalous gold in the lamprophyre (31 ppb) and in granite-porphyry (88 ppb). They also note anomalous platinum (300 ppb) in pan concentrate samples at the eastern margin of the pluton. The pluton has converted the country rocks to a tactite assemblage which includes diopside and wollastonite.

This occurrence is part of 10-mile-long tactite zone related to Cascade pluton; another anomalous area lies about three quarters of a mile southwest of this site (TL066) where bleached tactite zone in pebble conglomerate and extends for hundreds of yards between Cascade pluton and a small outlying stock.

The Cascade pluton has a composition similar to the Kohlsaat pluton (Reed and Nelson, 1980; Nelson and others, 1992). Foley and others (1997) report mean values of 20 ppb

gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from the composite plutons mapped by Reed and Nelson (1980) in the southern Alaska Range (Reed and others, 1978; Nelson and others 1992). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973). See also TL020, TL023, TL052, and TL053.

Alteration:

Development of calc-silicate mineral assemblages in tactitized limestone, and silicification of argillite and siltstone (C.C. Hawley and Associates, Inc., 1978).

Age of mineralization:

Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Cascade pluton dated as 64.6 +/- 1.8 m.y. by K/Ar methods (Reed and Lanphere, 1972).

Deposit model:

Cu skarn deposits (Cox and Singer, 1986; model 18b).

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

18b

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, prospecting, stream silt, pan concentrate and rock sampling are all that have been done here. Foley and others (1997) report mean values of 20 ppb gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from the composite plutons mapped by Reed and Nelson (1980) in the southern Alaska Range (Reed and others, 1978; Nelson and others 1992). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Production notes:

Reserves:

Additional comments:

The Cascade pluton has also been called the Dall Stock (C.C. Hawley and Associates, 1978). This occurrence is part of a 10-mile-long tactite zone related to Cascade pluton; another anomalous area lies 1 mile southwest of this site: bleached tactite zone in Dall Limestone pebble conglomerate extends for hundreds of yards between Cascade pluton and small outlying stock. This site is located within Denali National Park and Preserve.

References:

Mertie, 1919; Cobb, 1973 (B 1374); Reed and Lanphere, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Nelson and others, 1992; Foley and others, 1997.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL022

Latitude: 62.483 **Quadrangle:** TL B-6

Longitude: 152.694

Location description and accuracy:
Reed and others (1978, locality 16) show this occurrence 19.5 miles east-southeast from Shellabarger Pass, in the southwest quarter of Section 30, T. 28 N., R. 18 W., of the Seward Meridian. Located at about 4200 feet elevation on the east side of the Shadows Glacier the occurrence is within the Denali National Park and Preserve.

Commodities:

Main: Au, W

Other:

Ore minerals: Gold, scheelite, wolframite

Gangue minerals: Quartz, tourmaline

Geologic description:
Mesozoic marine sedimentary rocks (KJs) exhibit calc-silicate (skarn) alteration and are cut by a quartz- tourmaline-wolframite-scheelite vein 10 to 20 centimeters wide; the vein contains trace gold (Reed and others, 1978). The occurrence is within the thermal aureole of the Tertiary Cathedral pluton (Tmc), a biotite- muscovite granite that is part of the 52.3 to 56.2 m.y. McKinley sequence (Reed and Nelson, 1980).

Alteration:
Development of calc-silicate (skarn) mineral assemblage in country rocks (Reed and others, 1978).

Age of mineralization:
Tertiary; mineralization is interpreted to be linked to the Tertiary Cathedral pluton (Tmc), a biotite- muscovite granite that is part of the 52.3 to 56.2 m.y. McKinley sequence (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:
W veins (Cox and Singer, 1986; model 15a).

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

15a

Production Status: None.

Site Status: Inactive.

Workings/exploration:

Reconnaissance mapping, prospecting, stream silt, and rock sampling are all that have been done here. The quartz-tourmaline-wolframite-scheelite vein, 10 to 20 centimeters wide, contains trace gold (Reed and others, 1978).

Production notes:

Reserves:

Additional comments:

This occurrence is within the Denali National Park and Preserve.

References:

Reed and Lanphere, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Cascade Creek

Site type: Occurrence

ARDF no.: TL023

Latitude: 62.474 **Quadrangle:** TL B-5

Longitude: 152.093

Location description and accuracy:

Reed and others (1978, locality 21) locate this occurrence on Cascade Creek, a tributary to East Fork of the Yentna River, in the southeast quarter of Section 32, T. 28 N, R. 15 W., of the Seward Meridian within Denali National Park and Preserve. Also locality 77 of MacKevett and Holloway (1977).

Commodities:

Main: Au, Cu

Other: As

Ore minerals: GOLD

Gangue minerals:

Geologic description:

Reed and others (1978) describe visible gold in pan-concentrate samples from stream gravels at this site. This placer occurrence was apparently unreported prior to MacKevett and Holloway (1977). Curtin, Karlson, Tripp, and Day (1978) show heavy-metal concentrate values in streams draining this area, two of which had an excess of 3000 ppm copper, 50 ppm gold, 100 ppm silver. The country rocks are Mesozoic marine sedimentary rocks (KJs) that are intruded by the Late Cretaceous/early Tertiary Cascade (64.6 m.y.) pluton, one of the composite plutons (Tcp) described by Reed and Nelson (1980). Foley and others (1997) report mean values of 20 ppb gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton. The source of the metal in stream silt and pan concentrate samples at this site is probably related to the Cascade pluton.

Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from many of the composite plutons in the southern Alaska Range (Curtin, Karlson, Tripp, and Day, 1978; Curtin, Karlson, Tripp, Day, Cooley, and McDougal, 1978; Reed and others, 1978; Nelson and others 1992). Gold and platinum group element placers have been worked at several sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Also see TL020, TL023, TL052, and TL053.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (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:
Reconnaissance mapping, prospecting, stream silt, pan concentrate, and rock sampling by the U.S. Geological Survey (Curtin, Karlson, Tripp, and Day, 1978; Reed and Nelson, 1980) are all that have been published on this site. Reed and others (1978) describe visible gold in pan-concentrate samples from stream gravels at this site. Curtin, Karlson, Tripp, and Day (1978) show heavy-metal concentrate values in streams draining this area, two of which had an excess of 3000 ppm copper, 50 ppm gold, 100 ppm silver. Foley and others (1997) report mean values of 20 ppb gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton. The source of the metal in stream silt and pan concentrate samples at this site is probably related to the Cascade pluton. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from many of the composite plutons in the southern Alaska Range (Curtin, Karlson, Tripp, and Day, 1978; Curtin, Karlson, Tripp, Day, Cooley, and McDougal, 1978; Reed and others, 1978; Nelson and others 1992). Gold and platinum group element placers have been worked at several sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Production notes:

Reserves:

Additional comments:
This area is within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; Curtin, Karlson, Tripp and Day, 1978; Curtin, Karlson, Tripp, Day, Cooley and McDougal, 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Pass Creek

Site type: Mine

ARDF no.: TL024

Latitude: 62.392 **Quadrangle:** TL B-4

Longitude: 151.57

Location description and accuracy:
Reed and others (1978, locality 70) show this property about two miles above the confluence with Camp Creek in northwest quarter of Section 31, T. 27 N., R.12 W., of the Seward Meridian. It is also shown by C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B (4)) and Clark and Cobb (1972, locality 12).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Pass Creek is part of a productive placer area of approximately 36 square miles, including streams draining Fairview Mountain, with area of interest generally northeast and southeast of the summit of Fairview Mountain.

No detailed description is available for the Pass Creek property. The creek follows a fault contact between Mesozoic marine sedimentary rocks (KJs) and Tertiary continental deposits of the Kenai Group (Reed and Nelson, 1980). Hawley and Clark (1973) show a pattern of gold distribution that suggests the lode sources could be in or near the Pass Creek fault structure. Alternatively, the placer deposits may have been formed by reworking of Tertiary sedimentary rocks that contain small amounts of gold.

C.C. Hawley and Associates, Inc. (1978) report that the ground is essentially untested.

Also see Twin Creek (TL026) and Mills Creek (TL059).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined.

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:
C.C. Hawley and Associates, Inc. (1978) report that the ground is essentially untested.

Additional comments:
Also see Twin Creek (TL026) and Mills Creek (TL059).

References:
Mertie, 1919; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Smith, 1942 (B 933-A); Clark and Hawley, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Camp Creek

Site type: Mine

ARDF no.: TL025

Latitude: 62.418 **Quadrangle:** TL B-4

Longitude: 150.772

Location description and accuracy:
The U.S. Bureau of Mines (1998) locates the mine in the northwest quarter of Section 19, T. 27 N., R. 12 W., of the Seward Meridian about five miles north of the summit of Fairview Mtn. on a creek shown as Camp Creek.

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, PGE

Gangue minerals:

Geologic description:
Placer gold occurs in Pleistocene (?) sediments (U.S. Bureau of Mines, 1998). No geologic description is published for this property.
Cobb and Reed (1980) indicate that most of the mining in the basin was on Mills (TL059), Pass (TL024), and Twin (TL026) Creeks five to six miles to the southeast. Some production may have been from Camp Creek itself, but if so, the location cannot be pinpointed. Platinum is reported in the basin (Capps, 1913).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Cobb and Reed (1980) indicate that most of the mining in the basin was on Mills (TL059), Pass (TL024), and Twin (TL026) Creeks five to six miles to the southeast. Some production may have been from Camp Creek itself, but (if so) the location cannot be pinpointed. Platinum is reported in the basin (Capps, 1913).

References:
Capps, 1913; Martin, 1919; Clark and Hawley, 1968; C.C. Hawley and Associates, Inc., 1978; Cobb and Reed, 1980 (OFR 80-884); U.S. Bureau of Mines, 1998.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Twin Creek; Big Boulder Creek; Little Boulder Creek; John Creek; Notobac Creek

Site type: Mine

ARDF no.: TL026

Latitude: 62.34 **Quadrangle:** TL B-4

Longitude: 151.53

Location description and accuracy:

The location given is the center of a placered area which extends for about 3000 feet upstream and about one mile downstream in Sections 16, and 21, T. 26 N., R. 12 W., of the Seward Meridian. John, Big Boulder, and Little Boulder Creeks are headwater tributaries to Twin Creek. Clark and Cobb (1972) show this property as locality 17 on MF-369. It is also shown by Reed and others (1978) as locality 68 and by MacKevett and Holloway (1977) as locality 13.

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, platinum

Gangue minerals:

Geologic description:

The Twin Creek area is a major contributor to the gold production in the Yentna district. A productive placer area covers approximately 36 square miles, including streams draining Fairview Mountain, with the main area of interest generally northeast and southeast of the summit of Fairview Mountain. No lode occurrences have been found in the placer deposits near Fairview Mountain/Collinsville (Hawley and Clark, 1978).

C.C. Hawley and Associates, Inc. (1978) describe this placer occurrence as Pleistocene auriferous gravels with the main gold-bearing section lying on a brown to orange-brown clay bed about 15 feet deep, consisting of about 5 feet of quartz-bearing gravel. The gravel is underlain by the continentally derived Tertiary sedimentary rocks of the Kenai Group (Reed and Nelson, 1980).

Twin Creek has been mined nearly the entire distance from the confluence with Mills Creek up into headwater tributaries; probable reserves are largely covered by old tailings. Platinum minerals have been reported from the area (0.78 oz/ton), although the exact location was not specified. Hawley, C.C.and Associates, Inc. (1978) show possible reserve of 752,000 cubic yards on Figure 4.2-B(4).

Some data for Twin and Mills (TL059) Creeks are combined in the literature. Cobb and Reed (1980) indicate that Notobac Creek is probably another name for Twin Creek or for a tributary to Twin Creek and that John Creek is a small, steep-sided gulch tributary to Twin Creek that is cut in the Tertiary Kenai Group sediments. Capps (1913) reports that Johns Creek saw small production for a few years during the first quarter of the 20th century.

Also see Pass Creek (TL024).

Alteration:

Age of mineralization:

Pleistocene and possibly Tertiary.

Deposit model:

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

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

39a

Production Status: Yes; small.

Site Status: Undetermined.

Workings/exploration:

Mined in a drag line washing plant and sluice box (C.C.Hawley and Associates, Inc., 1978).

Production notes:

One sample of about 10 lb/yard (probably cubic yards) of black sand contained 0.78 oz/ton platinum metals (C.C. Hawley and Associates, Inc., 1978). Capps (1913) reports that Johns Creek saw small production for a few years during the first quarter of the 20th century.

Reserves:

C.C.Hawley and Associates, Inc. (1978) show possible reserve of 752,000 cubic yards on Figure 4.2-B(4); probable reserves are largely covered by old tailings.

Additional comments:

Some data for Twin and Mills (TL059) Creeks are combined in the literature. Cobb and Reed (1980) indicate that Notobac Creek is probably another name for Twin Creeks or for a tributary to Twin Creek and that John(s) Creek is a small, steep-sided gulch tributary to Twin Creek that is cut in the Tertiary Kenai Group sediments. Capps (1913) reports that Johns Creek saw small production for a few years during the first quarter of the 20th century.

References:

Capps, 1924; Smith, 1942 (B 933-A); Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Windy Creek

Site type: Mine

ARDF no.: TL027

Latitude: 62.459 **Quadrangle:** TL B-3

Longitude: 151.025

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, Fig. 42.-B(3)) locate this property on a small tributary that enters Cache Creek between Falls and Dollar Creeks, near the locality shown as Sunset on the published 15 minute map, in the southwest quarter of Section 6, T. 27 N., R. 9 W., of the Seward Meridian. Reed and others (1978) show this as locality 73.

Commodities:

Main: Au, Cu, Sn, W

Other:

Ore minerals: Arsenopyrite, cassiterite, copper, gold, ilmenite, magnetite, pyrite, scheelite

Gangue minerals: Garnet, quartz , zircon

Geologic description:
The Windy Creek deposit consists of 40 to 60 feet of gravel with the lower 6 feet stained and cemented by iron oxides and hydroxides, overlain by glacial mud containing large angular boulders. Gold occurs in the lower iron-stained 6 feet. The gravel averages 5 inches in diameter with some boulders from 1 to 3 feet in diameter. Glacial mud layer is overlain by 20 feet of gravel containing abundant pyrite (Capps, 1913; C.C. Hawley and Associates, Inc., 1978). Concentrates contain arsenopyrite, cassiterite, native copper, gold, ilmenite, magnetite, pyrite, scheelite, garnet, quartz and zircon (Cobb and Reed, 1980).

This deposit appears to be of glaciofluvial origin, similar to Nugget (TL035) and Bird Creek (TL040) placers. See also Cache Creek (TL029).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small.

Site Status: Undetermined.

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Deposit appears to be of glaciofluvial origin, similar to Nugget (TL035) and Bird Creek (TL040) placers. See also Cache Creek (TL029).

References:
Capps, 1913; Mertie, 1919; Capps, 1924; Smith, 1930 (B 810); Joesting, 1942; Smith, 1942 (B 933-A); Robinson and others, 1955; Clark and Hawley, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884).

Primary reference: Mertie, 1919

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Cheechako Gulch; Chechako Gulch

Site type: Mine

ARDF no.: TL028

Latitude: 62.47 **Quadrangle:** TL B-3

Longitude: 151.019

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978) located this property at the confluence of Cheechako Gulch with Cache Creek in the southwest quarter of Section 31, T. 28 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Smith (1933) reports on-going placer mining at this location in 1931, however, no deposit description for this site is available. Most likely it is a bench deposit similar to the Pleistocene age Cache Creek deposits (TL029). Bedrock is Tertiary sedimentary rocks of the Kenai Group (Reed and Nelson, 1980). Clark and Hawley (1968, p.45) report the gold fineness as 869 1/4.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Probably inactive

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Also see Cache Creek (TL029).

References:
Smith, 1933 (B 844-A); Robinson and others, 1955; Clark and Hawley, 1968; Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Smith,1933

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Cache Creek Area, including Spruce Creek;Short Creek; Rambler Creek; Lucky Creek; Pineo Bar; Bradley; Cache Creek Dredging Company; Cache Creek Mining Company; Erickson; Gold; Ltd.; Morgan; Murray; Murray And Harper; Obermiller And Eaglehorn; Peterson; Taraski; Tesmer And Beidermann; Wetherall; Yenta Dredging Co.

Site type: Mine

ARDF no.: TL029

Latitude: 62.49 **Quadrangle:** TL B-2

Longitude: 150.984

Location description and accuracy:

The Cache Creek area, in the Yentna District, is a productive placer area covering approximately 50 square miles, including streams draining the northwest flank of Peters Hills and the southeast flank of Dutch Hills, as well as tributaries to Cache Creek.

Reference coordinates are the approximate center of the most productive area on Cache Creek in the northwest quarter of Section 29, T. 28 N., R. 9 W., of the Seward Meridian. Dredging operations mined stream placers from Windy Creek to Nugget Creek, tributaries to Cache Creek. Mining claims extend, or have extended, from the headwaters to below Spruce Creek (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-B(3)).

Commodities:

Main: Au

Other: As, Pt, Sn, Th, U, W

Ore minerals: Arsenopyrite, cassiterite, copper, gold, ilmenite, magnetite, platinoids, platinum, pyrite, scheelite, uranothorianite

Gangue minerals: Garnet, monazite, quartz, rutile, zircon

Geologic description:

The Cache Creek area is a productive placer area in the Yentna District encompassing approximately 50 square miles including streams draining the northwest flank of Peters Hills and the southeast flank of Dutch Hills, as well as tributaries to Cache Creek. Dredging operations mined stream placers from Windy Creek to Nugget Creek, tributaries to Cache Creek. Mining claims extend, or have extended, from the headwaters to below Spruce Creek (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-B(3)).

Collectively the placer mines in the Yentna district have produced over 3.58 million grams of gold from 1906 to the present (Cobb and Reed, 1980; Nokelberg and others, 1994) with most of the area's production from dredging on Cache and Peters Creeks.

The largest operation used two floating dredges supported by three backhoes.

This huge region contains many placer prospects and mines in Pleistocene stream and bench deposits of well-washed gravels derived from glacial debris, transitional with deposits of glaciofluvial origin (Clark and Hawley, 1968). Pleistocene sediments are deposited on Mesozoic marine slates and graywackes (KJs), although areas underlain by continentally derived Tertiary sediments of the Kenai group also occur (Reed and Nelson, 1980). Mesozoic rocks are cut by small granite bodies, diabase, and felsic dikes presumed to be early Tertiary in age (Clark and Hawley, 1968; Reed and Nelson, 1980).

C.C. Hawley and Associates, Inc. (1978) describe shallow stream gravels, 3 to 10 feet deep, average 4.5 feet, with well-defined, discontinuous pay streaks 150 to 300 feet wide and bench placers 7 to 35 feet deep with gold throughout, but mostly concentrated on bedrock of Mesozoic graywacke and argillite.

Cobb and Reed (1980) report arsenopyrite, cassiterite, copper, ilmenite, magnetite, unknown platinoids, platinum, pyrite, scheelite, uranothorianite, garnet, monazite, rutile, quartz, and zircon in the concentrates. Grades in the more productive parts of pay streaks mined during productive periods were $2 to $3 per bedrock foot or $1.50 per cubic yard when gold was valued at $20.67 an ounce (Capps, 1913, p. 57). In 1919 Martin (p. 247) reported platinum contents equal to about 0.003% of gold by weight. Concentrate samples contain 0.07% U and 0.035% ThO2 with eU content of 0.19% (Robinson and others, 1955, p.2). The average fineness of the gold from Cache Creek is 866, with a range of 850.75 to 871 (Smith, 1941; Clark and Hawley ,1968).

In their 1978 report C.C. Hawley and Associates, Inc. indicate that probably more than half of the gold in Cache Creek has been mined. Ground down to about 10 cents per bedrock foot has been mined profitably in both Cache and lower Falls Creek in the 1970s.

This record refers to the Cache Creek region generally, and encompasses many specific occurrences and former producers. Mining claims on Cache Creek extend, or have extended, from its headwaters to below Spruce Creek. Placer mining took place on the following secondary drainages to Cache Creek: Spruce Creek, Dollar Creek, Windy Creek, Short Creek, Cheechako Gulch, Falls Creek, Thunder Creek, Rambler Creek, Lucky Creek, Nugget Creek, and Gold Creek (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-B(3)).

Alteration:

Age of mineralization:

Pleistocene and Tertiary (?) (Clark and Hawley, 1968).

Deposit model:

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

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

39a

Production Status: Yes

Site Status: Undetermined

Workings/exploration:

Sluice box-CAT or dredge methods for almost 10 miles. Large volume, low grade and the overall coarseness of the gold favor large-scale, high capacity operations such as dredging (C.C. Hawley and Associates, Inc., 1978).

Production notes:

Large volume, low grade and the overall coarseness of the gold favor large-scale, high capacity operations such as dredging. Most of area's production from dredging on Cache & Peters Creeks. Ground down to about 10 cents per bedrock foot has been mined profitably in both Cache and lower Falls Creek in the 1970s (C.C. Hawley and Associates, Inc., 1978.

Grades in the more productive parts of pay streaks mined during productive periods were $2 to $3 per bedrock foot or $1.50 per cubic yard when gold was valued at $20.67 an ounce (Capps, 1913, p. 57). Platinum content is equal to about 0.003% of gold by weight (Martin, 1919, p. 247). Concentrate sample contained 0.07% U and 0.035% ThO2 with eU content of 0.119% (Robinson and others, 1955, p.2). Clark and Hawley (1968) report the average fineness of the gold from Cache Creek is 866, with a range of 850.75 to 871.

Reserves:

C.C. Hawley and Associates, Inc. (1978) indicate that probably more than half of the gold in Cache Creek has been mined.

Additional comments:

This record refers to the Cache Creek region generally, and encompasses many specific occurrences and former producers.

References:

Brooks, 1910; Brooks, 1911 (P 70); Brooks, 1911 (B 480); Capps, 1912; Capps, 1913; Brooks, 1914; Brooks, 1915; Brooks, 1918; Martin, 1919; Mertie, 1919; Martin, 1920; Brooks, 1921; Brooks and Martin, 1921; Brooks, 1922; Brooks, 1923; Brooks and Capps, 1924; Capps, 1924; Brooks, 1925; Smith, 1926; Moffit, 1927; Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942; Wedow and others, 1952; Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Mertie, 1969; Clark and Cobb, 1972; Cobb, 1973 (B 1374); Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Nokleberg and others, 1994.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Falls Creek; Little Falls Creek; Treasure Creek

Site type: Mine

ARDF no.: TL030

Latitude: 62.484 **Quadrangle:** TL B3

Longitude: 151.021

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) locate this property at the headwaters of Falls Creek at the confluence of Falls, Little Falls and Ruby Gulch, tributaries to Cache Creek in the southwest quarter of Section 30, T. 28 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

In Falls Creek, C.C. Hawley and Associates, Inc. (1978) describe auriferous bench gravels in an old southwest flowing drainage on bedrock of sedimentary rocks of the Tertiary Kenai Group. The alluvial channels are shallow, 5 to 10 feet deep. The Falls Creek channel probably represents an old southwest flowing drainage similar to those at Thunder (TL032, 058), Dollar (TL031), Nugget (TL035) and Willow (TL042) Creeks. Quartz-breccia in these older channels previously has been described as the basal unit of the Tertiary Kenai Group (Capps, 1913). Hawley and Clark (1973) suggest that the conglomerate is younger than the Kenai Group and is the product of erosion of igneous dikes that intruded along northeast-striking normal faults.

Clark and Hawley (1968) report the fineness of the gold from Falls Creek ranges from 860 to 863. Ground down to about 10 cents per bedrock foot has been mined profitably in both Cache and lower Falls Creek in the 1970s (C.C. Hawley and Associates, Inc., 1978).

Reed and others (1978) indicate that hydrothermally altered zones similar to those in the headwaters of Treasure Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053). Other tributaries to Falls Creek from which placer gold has been produced are Ruby Gulch and Treasure Creek (Smith, 1939). From these older channels gold was reconcentrated into Cache Creek (TL029).

Alteration:

Hydrothermally altered zones in Falls Creek are noted by Reed and others (1978). Alteration mineralogy is not described at this site. However, based on its reported similarity to altered zones at Thunder Creek (TL032, TL058), it is most likely argillic alteration of Mesozoic sedimentary rocks.

Age of mineralization:

Pleistocene and Tertiary (?) (Clark and Hawley, 1968).

Deposit model:

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

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

39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:

The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Placer mining is reported as early as 1916. Ground down to about 10 cents per bedrock foot has been mined profitably in both Cache and lower Falls Creek in the 1970s (C.C. Hawley and Associates, Inc., 1978).

Reserves:

Additional comments:

Other tributaries to Falls Creek from which placer gold has been produced are Ruby Gulch and Treasure Creek. Also see Cache Creek (TL029). Reed and others (1978) indicate that hydrothermally altered zones similar to those in the headwaters of Treasure Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

References:

Paige and Knopf, 1907; Capps, 1912; Capps, 1913; Mertie, 1919; Capps, 1924; Smith, 1939 (B 917-A); Clark and Hawley, 1968; Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Dollar Creek

Site type: Mine

ARDF no.: TL031

Latitude: 62.508 **Quadrangle:** TL C-3

Longitude: 151.055

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) locate this property on Dollar Creek, a tributary to Cache Creek, just below an auriferous quartz-breccia bench deposit in the northwest quarter of Section 24, T. 28 N., R. 10 W., of the Seward Meridian.

Commodities:

Main: Au

Other: Sn, Ti

Ore minerals: Arsenopyrite, cassiterite, gold, ilmenite, magnetite, pyrite

Gangue minerals: Garnet, quartz, zircon

Geologic description:

This property lies on Dollar Creek, a tributary to Cache Creek, just below an auriferous quartz-breccia bench deposit (C.C. Hawley and Associates, Inc. (1978) , Fig. 4.2-B(3).

At this locality, near the head of the main pay streak of Dollar Creek, Capps (1913) described a basal conglomerate unit of the Tertiary Kenai Group composed of white to dark gray quartz in subangular to angular fragments up to 4 inches in diameter, within a matrix of very fine quartz, white clay and muscovite. Underlying the white quartz conglomerate is a strongly altered graywacke and slate. Clark and Hawley (1968) later suggested that the stream placers and the 60-foot-wide conglomerate probably are derived from hydrothermally altered, gold-bearing, alaskite which intrudes a fault zone and from associated quartz veins. They described the conglomerate as white quartz-breccia. Source of the gold is Dollar Creek is proximal as suggested by Mertie (1919) who reports abundant pyrite in concentrates with 4.03 oz/ton gold and the discovery of a large nugget in the late 1900s worth $90. Clark and Hawley (1968) report the gold fineness ranges from 857 to 871, with an average of 865 with 150 to 500 ppm copper, 100 to 200 ppm lead. C.C. Hawley and Associates, Inc. (1978) report that significant resources remaining in Dollar Creek.

The Dollar Creek channel probably represents an old southwest flowing drainage similar to those at Thunder (TL032, 058), Falls (TL030), Nugget (TL035) and Willow (TL042) Creeks (C.C. Hawley and Associates, Inc., 1978). From these older channels gold was reconcentrated into Cache Creek (TL029). Reed and others (1978) indicate that

hydrothermally altered zones, similar to those at Dollar Creek, are observed along Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

Alteration:

Capps (1913) describes strongly altered graywacke and slate underlying the white quartz conglomerate. Reed and others (1978) note hydrothermally altered zones similar to Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053). Mineralogy of the alteration is not described by either of these authors. However, based on its reported similarity to altered zones at Thunder Creek, it is most likely argillic alteration of Mesozoic sedimentary rocks.

Age of mineralization:

Pleistocene and Tertiary (Clark and Hawley, 1968).

Deposit model:

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

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

39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:

The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Mertie (1919) reports abundant pyrite in concentrates with 4.03 oz/ton gold and the discovery of a large nugget in the late 1900s worth $90.

Reserves:

C.C. Hawley and Associates, Inc. (1978) report significant resources remaining in Dollar Creek.

Additional comments:

Reed and others (1978) indicate that hydrothermally altered zones similar to those at Dollar Creek are observed along Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

References:

Paige and Knopf, 1907; Capps, 1912; Brooks, 1913; Capps, 1913; Brooks, 1914; Mertie, 1919; Capps, 1924; Brooks, 1925; Capps, 1925; Smith, 1932; Smith, 1933 (B 836);

Smith, 1933 (B 844-A); Smith, 1934; Smith, 1936; Smith, 1939 (B 917-A); Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Thunder Creek

Site type: Occurrence

ARDF no.: TL032

Latitude: 62.486 **Quadrangle:** TL B-3

Longitude: 150.999

Location description and accuracy:

U. S. Bureau of Mines (1998) shows this occurrence in the southeast quarter of Section 30, T. 28 N., R. 9 W., of the Seward Meridian. This locality is downstream about 0.6 miles from TL058. These two occurrences are two separate areas of placer workings, and appropriately assigned their own ARDF numbers, despite the confusing use of the same name twice.

Commodities:

Main: Au, Sn, W

Other: As

Ore minerals: Arsenopyrite, cassiterite, gold, scheelite

Gangue minerals:

Geologic description:

This occurrence is located about 0.6 miles downstream on Thunder Creek from another occurrence also called Thunder Creek (TL058). No published description of this locality is available. The description for the other Thunder Creek location (TL058), given below, contains more details on the nature of the placer deposit, and because of its proximity, probably applies to this occurrence also.

Clark and Hawley (1968) describe placer gold associated with an auriferous white quartz conglomerate and breccia deposits at Thunder Creek. The conglomerate is composed of angular quartz fragments mixed with a few rounded quartz and lithic pebbles in fine siliceous clay matrix. Thin layers of lignite are present within the conglomerate which indicate a Tertiary age (Clark and Hawley, 1968).

The white quartz conglomerate placers (e.g. Willow Creek (TL042), Thunder Creek (TL032), and Dollar Creek (TL031)) represent the oldest placers in the Cache Creek area. Capps (1925) describes the white quartz conglomerate as the basal unit of the Tertiary Kenai Formation. However Clark and Hawley (1968) suggest that the white quartz conglomerate is older and that the Kenai Group was deposited on it. They believe the auriferous conglomerate is near its original source in part because the characteristics of the gold show a common source that has not moved far or has not been reworked. Further, they indicate that the conglomerate is a product of shearing and weathering in situ of ar-

gillic altered, auriferous Tertiary quartz porphyry intrusive rocks and associated quartz veins that were emplaced along northeast, high angle normal faults. The lineaments in Dutch and Cache Creeks represent two of these faults. From these paleo-channels gold was reconcentrated into Cache Creek in more recent time. (Mertie, 1919; Clark and Hawley, 1968; C.C. Hawley and Associates, Inc., 1978).

Reed and others (1978) indicate that hydrothermally altered zones similar to those in Thunder Creek are observed along Dollar (TL031) and Thunder Creek (TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

Alteration:

Age of mineralization:
Tertiary and Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined.

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
There are two Thunder Creeks in the database, each with an ADRF number. These two occurrences, about 0.6 miles apart, are two separate areas of placer workings and appropriately assigned their own ARDF numbers, despite the confusing use of the same name twice.

Reed and others (1978) indicate that hydrothermally altered zones similar to those in Thunder Creek are observed along Dollar (TL031) and Thunder Creek (TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

References:
Paige and Knopf, 1907; Capps, 1912; Brooks, 1913; Capps, 1913; Brooks, 1914; Mertie, 1919; Capps, 1924; Capps, 1925; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934

(B 864-A); Smith, 1936; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942 (B 933-A); Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); U.S. Bureau of Mines, 1998.

Primary reference: Cobb, 1973

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Dutch Creek; Dutch Creek Mining Company; Basic Creek; Siwash Creek; Blank Creek; Prospect Creek

Site type: Prospect

ARDF no.: TL033

Latitude: 62.56 **Quadrangle:** TL C-3

Longitude: 151.08

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Figure 4.2-B(3)) show placer ground on Dutch Creek between Basic Creek on the south and Prospect Creek on the north in Sections 25, 35, and 36, T. 29 N., R. 10 W., of the Seward Meridian. Claims also cover northwest flowing tributaries to Dutch Creek along this section (Reed and others, 1978, locality 87).

Commodities:

Main: Au

Other: Cr, W

Ore minerals: Chromite, gold, scheelite

Gangue minerals:

Geologic description:

Bedrock at Dutch Creek is mapped as Mesozoic marine sedimentary strata (KJs) by Reed and Nelson (1980). The drainage is controlled by a northeast trending, high angle normal fault, known as the Dutch Creek Lineament (Hawley and Clark, 1973), that is parallel to a similar structure in the Cache Creek a mile and one half to the southeast. Hydrothermally altered zones at the headwaters of Dutch Creek are noted by Reed and others (1978). Gold fineness ranges from 875.75 to 877.75 and averages 876 (Clark and Hawley, 1968).

C.C. Hawley and Associates, Inc. (1978) report that the total production from the Dutch Creek placers is not known, but was probably small. Potentially productive ground is represented by placer claims in the Dutch Creek area which extend approximately four miles upstream from the coordinates given in this record and includes Basic, Siwash, Blank and Prospect Creeks, tributaries to Dutch Creek.

Hydrothermally altered zones similar to those at the headwaters of Dutch Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053) (Reed and others, 1978).

Also see First Creek (TL039).

Alteration:

Hydrothermally altered zones at the headwaters of Dutch Creek are noted by Reed and others (1978). Alteration mineralogy is not described at this site. However, based on its reported similarity to altered zones at Dollar and Thunder Creeks, it is most likely argillic alteration of Mesozoic sedimentary rocks.

Age of mineralization:

Pleistocene.

Deposit model:

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

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

39a

Production Status: Yes

Site Status: Undetermined

Workings/exploration:

The drainage has been prospected and mined by various small scale surface methods. Reed and others (1978) report that in 1974 production justified an industry exploration drilling program.

Production notes:

C.C. Hawley and Associates, Inc. (1978) indicate that the total production is not known, but was probably small. Placer claims extend to the following tributaries and to Dutch Creek: Basic Creek, Siwash Creek, Blank Creek and Prospect Creek, approximately four miles upstream from the coordinates given in this record.

Reserves:

Additional comments:

See also First Creek (TL039). Reed and others (1978) indicate that hydrothermally altered zones similar to those at the headwaters of Dutch Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

References:

Smith, 1936; Smith, 1937; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942; Joesting, 1942; Thorne and others, 1948; Clark and Hawley, 1968; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Upper Nugget Creek

Site type: Prospect

ARDF no.: TL034

Latitude: 62.561 **Quadrangle:** TL C-2

Longitude: 150.982

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-(3)) show this lode claim group covering most of the headwater basin of the south fork of upper Nugget Creek in the southwest quarter of Section 33, T. 29 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au

Other: As

Ore minerals: Arsenopyrite, gold

Gangue minerals: Quartz

Geologic description:
Upper Nugget Creek drains an area underlain by Mesozoic argillite and graywacke cut by a roughly circular, Tertiary (?) felsite porphyry body about 200 feet in diameter (Clark and Hawley,1968). Minor gold values have been returned from thin, sparsely distributed quartz-arsenopyrite veinlets which cut the porphyry. The veinlets are weakly mineralized at about 0.04 ppm gpld. Gold also occurs very sparsely on the joint surfaces of the rocks (Clark and Hawley, 1968).
See also Bradley Scheelite; Bird Creek (TL036).

Alteration:
Silicification (quartz veining) (Clark and Hawley,1968).

Age of mineralization:
Tertiary (Clark and Hawley,1968).

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: None

Site Status: Undetermined

Workings/exploration:
Workings consist of two short adits and a shallow prospect pit (Clark and Hawley, 1968).

Production notes:

Reserves:

Additional comments:
Also see Bradley Scheelite; Bird Creek (TL036).

References:
Clark and Hawley, 1968; Clark and Cobb, 1972; Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Nugget Creek; Nugget Bench High Channel

Site type: Mine

ARDF no.: TL035

Latitude: 62.52 **Quadrangle:** TL C-2

Longitude: 150.93

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) show placer ground from the confluence of Nugget Creek with Cache Creek to about 1.5 miles upstream through Sections 9, 15, and 16 in T. 29 N., R. 9 W., of the Seward Meridian. The Nugget Bench High Channel Deposit is shown on Fig. 4.2-B(3) about one mile upstream from the confluence. Coordinates given in this record are for the Nugget Bench High Channel.

Commodities:

Main: Au

Other: Sn, W

Ore minerals: Arsenopyrite, cassiterite, gold, Ilmenite, magnetite, pyrite, scheelite

Gangue minerals: Garnet, quartz, zircon

Geologic description:

Both Quaternary glaciofluvial deposits and Tertiary conglomeratic (white quartz-breccia, Clark and Hawley, 1968) units have been mined on Nugget Creek. The area is underlain by the Sterling Formation (Tps), the upper member of the Tertiary Kenai Group, and Mesozoic argillite (KJs) (Reed and Nelson, 1980). Quaternary auriferous stream gravels from 6 to 8 feet deep and bench gravels 1 to 6 feet deep above the Sterling Formation have been mined (Clark and Hawley, 1968, p. 11). The Nugget Bench High Channel cuts down through the Tertiary formations into the underlying Mesozoic argillite (KJs) exposing the Tertiary conglomerate/white quartz breccia deposits. The channel slopes away from present drainage direction and bedrock drains have been cut to Nugget Creek where it has been mined for 1000 feet along a northeast-southwest trend across Nugget Creek (C.C. Hawley and Associates, Inc.,1978). The channel can be projected magnetically for 400 feet beyond the mined section (C.C. Hawley and Associates, Inc., 1978). The gold fineness ranges from 860 to 864 and averages 861 (Clark and Hawley, 1968).

C.C. Hawley and Associates, Inc. (1978) report that as much as 30,000 ounces of placer gold may have been produced from the Nugget Bench deposits. In late 1907 grades were about $3 per bedrock foot.

Hawley and Clark (1973, p. A6) note that the highest grade lode deposits in Yentna dis-

trict are located at the Nugget Creek, the Colby (TL037), Bird (TL040) prospects.

Glaciofluvial deposits similar to Nugget Creek can be found on Windy Creek (TL027) and Bird Creek (TL040). Older Tertiary conglomeratic (white quartz breccia, Clark and Hawley, 1968) units probably represent southwest flowing drainages similar to those in Thunder (TL032, 058), Falls (TL030), Dollar (TL031) and Willow (TL042) Creeks. Gold was reconcentrated from these older Tertiary channels into the modern Cache Creek drainage (C.C. Hawley and Associates, Inc., 1978).

Also see Cache Creek (TL029).

Alteration:

Argillic alteration is locally associated with the white quartz conglomerate (Clark and Hawley, 1968).

Age of mineralization:

Pleistocene and Tertiary (Clark and Hawley,1968).

Deposit model:

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

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

39a

Production Status: Yes

Site Status: Undetermined

Workings/exploration:

Nugget Bench High Channel has been mined by conventional placer methods for 1000 feet along a northeast-southwest trend across Nugget Creek.

Production notes:

C.C. Hawley and Associates, Inc. (1978) report that as much as 30,000 ounces of gold may have been produced from these deposits. In late 1907 grades were about $3 per bedrock foot.

Reserves:

Additional comments:

Both Quaternary glaciofluvial deposits and Tertiary conglomeratic units have been mined on Nugget Creek. Glaciofluvial deposits similar to Nugget Creek can be found on Windy Creek (TL027) and Bird Creek (TL040). Older Tertiary conglomeratic units probably represent southwest flowing drainages similar to those in Thunder (TL032, 058), Falls (TL030), Dollar (TL031) and Willow (TL042) Creeks. Gold was reconcentrated from these older Tertiary channels into the modern Cache Creek drainage (C.C. Hawley and Associates, Inc., 1978). Also see Cache Creek (TL029).

References:

Paige and Knopf, 1907; Brooks, 1908; Brooks, 1911; Capps, 1912; Capps, 1913; Brooks, 1913; Brooks, 1914; Brooks, 1918; Mertie, 1919; Capps, 1924; Smith, 1929; Smith, 1930 (B 810); Smith, 1932; Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942 (B 933-A); Robinson and others, 1955; Clark and Hawley, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Gold Creek

Site type: Prospect

ARDF no.: TL036

Latitude: 62.518 **Quadrangle:** TL C-2

Longitude: 150.908

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) locate this prospect at the confluence of Gold Creek and Cache Creek in the northeast quarter of Section 15, T. 28 N., R. 9 W., of the Seward Meridian. Unpatented claims extend about 1 mile upstream from the confluence.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
At the confluence of Gold Creek and Cache Creek gold occurs in Pleistocene stream placers that range from 2 to 6 feet thick and have a pay streak 20 feet wide. The headwaters of Gold Creek are underlain by Mesozoic slate (KJs) and the lower courses are underlain by Tertiary continental deposits of the Kenai Group (Reed and Nelson, 1980). Gold is found on the bedrock surface and inside crevices in the slate at the Tertiary-Mesozoic unconformity (Capps, 1913). The fineness of the gold from Gold Creek is 857.5 (Clark and Hawley, 1968).
Also see Cache Creek (TL029).

Alteration:

Age of mineralization:
Tertiary (Capps, 1913).

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Also see Cache Creek (TL029).

References:
Capps, 1912; Capps, 1913; Brooks, 1914; Capps, 1924; Clark and Hawley, 1968; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Capps, 1913

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Colby

Site type: Prospect

ARDF no.: TL037

Latitude: 62.573 **Quadrangle:** TL C-2

Longitude: 150.964

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B (3)) locate this property in the southeast quarter of Section 28, T. 29 N., R. 9 W., of the Seward Meridian on ridge between Bird and Nugget Creeks.

Commodities:

Main: Au

Other: As

Ore minerals: Arsenopyrite

Gangue minerals: Muscovite, pitticite, sericite, zircon

Geologic description:
At this locality disseminated arsenopyrite occurs in a 4-foot-wide felsite porphyry dike and also in a thin quartz vein, with euhedral quartz and arsenopyrite crystals, that borders the dike (Clark and Hawley, 1968). Alteration adjacent to and within the dike is comprised of muscovite, pitticite, zircon and sericite (Clark and Hawley, 1968). A sample of the felsite porphyry contains 0.80 ppm Au, 5000 ppm As, 1500 ppm Ba, 150 ppm Zr, 50 ppm W (Clark and Hawley, 1968). Regionally Mesozoic marine sedimentary rocks (KJs) are cut by Tertiary (?) felsite dikes (Clark and Hawley, 1968; Reed and Nelson, 1980). Dikes in this prospect area trend N35 to N50E.

The highest grade lode deposits in Yentna district are in the Colby, Bird (TL040) , and Nugget Creek (TL035) prospects (Hawley and Clark, 1973, p. A6).

Alteration:
A thin section of quartz vein shows muscovite, pitticite, zircon and sericite alteration adjacent to and within the dike (Clark and Hawley, 1968).

Age of mineralization:
Tertiary; mineralization is interpreted to be related to the felsite dikes that are described as Tertiary in age by Clark and Hawley (1968).

Deposit model:

Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
36a

Production Status: No

Site Status: Undetermined

Workings/exploration:
Four or five shallow prospect pits were dug on the property by independant prospectors. In addition reconnaissance mapping, stream silt and rock sampling have been done by the U.S. Geological Survey (Clark and Hawley, 1968; Reed and Nelson, 1980).

Production notes:

Reserves:

Additional comments:
The highest grade lode deposits in Yentna district are Colby, Bird (TL040), and Nugget Creek (TL035) prospects (Hawley and Clark, 1973, p. A6).

References:
Clark and Hawley, 1968; Clark and Cobb, 1972; Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Bradley Scheelite; Bird Creek

Site type: Prospect

ARDF no.: TL038

Latitude: 62.582 **Quadrangle:** TL C-2

Longitude: 150.954

Location description and accuracy:
C. C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) locate this prospect on a tributary of Bird Creek in the southwest quarter of Section 22, T. 29 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au, W

Other:

Ore minerals: Arsenopyrite, gold, scheelite

Gangue minerals:

Geologic description:
At this locality northeast-striking felsite dikes of Tertiary age cut a sequence of Mesozoic graywacke and argillite (KJs) (C.C. Hawley and Associates, Inc., 1978; Reed and Nelson, 1980). Thin (one-half inch to three inches wide) ladder-type arsenopyrite-scheelite-quartz veins that contain free gold run parallel to the dikes (Reed and others, 1978). Clark and Hawley (1968, p. 41, samples 208 and 210) report 103 ppm gold in a 3-inch-wide arsenopyrite vein; 28.0 ppm gold and 100 ppm tungsten in a 1-inch-wide quartz-arsenopyrite vein.

Placer workings downstream in Bird Creek (TL040) are likely derived, at least in part, from this occurrence.

Alteration:

Age of mineralization:
Tertiary; mineralization is interpreted to be related to the felsite dikes that are described as Tertiary in age by Clark and Hawley (1968).

Deposit model:
Low-sulfide Au-quartz veins (Cox and Singer, 1986; model 36a).

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

36a

Production Status: None

Site Status: Undetermined

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Clark and Hawley,1968; Reed and Nelson, 1980) and by C.C. Hawley and Associates, Inc. (1978) have been completed in this area. They report that 600 to 800 lb. of scheelite-bearing float was removed from the site by the late Shorty Bradley.

Production notes:

600 to 800 pounds of scheelite-bearing float were removed from the site by the late Shorty Bradley (C.C. Hawley and Associates, Inc., 1978).

Reserves:

Additional comments:

Placer workings downstream in Bird Creek (TL040) are likely derived, at least in part, from this occurrence.

References:

Clark and Hawley, 1968; Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): First Creek

Site type: Prospect

ARDF no.: TL039

Latitude: 62.599 **Quadrangle:** TL C-3

Longitude: 151.01

Location description and accuracy:
C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) locate this prospect at confluence with Dutch Creek in southeast quarter of Section 18 and the northwest quarter of Section 19, T. 29 N., R. 9 W., of the Seward Meridian. Also locality 88 of Reed and others (1978).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
The placer deposit occurs within First Creek above its confluence with Dutch Creek. There is no published geologic description of the First Creek prospect. Reed and Nelson (1980) show the area underlain by Mesozoic sedimentary rocks (KJs). C.C. Hawley and Associates, Inc. (1978) suggest that Dutch Creek may be controlled by a northeast trending, high angle normal fault (Dutch Creek Lineament, Hawley and Clark, 1973) that is parallel to the structure controlling the Cache Creek drainage a mile and one half to the southeast. Clark and Hawley (1968) report gold fineness from Dutch and First Creeks, ranges from 875.75 to 877.75, averaging 876, and note that the total production from First Creek is probably small.
Also see Dutch Creek (TL033).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:
Total production from First Creek is probably small; see also Dutch Creek (TL033).

Reserves:

Additional comments:
Total production from First Creek is probably small (Clark and Hawley, 1968); see also Dutch Creek (TL033).

References:
Smith, 1938; Smith, 1939 (B 917-A); Clark and Hawley, 1968; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR-80-884); Reed and Nelson, 1980.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Bird Creek; St. Louis Channel

Site type: Mine

ARDF no.: TL040

Latitude: 62.57 **Quadrangle:** TL C-2

Longitude: 150.905

Location description and accuracy:

C. C. Hawley and Associates, Inc. (1978, Fig.4.2-B(3)) locate the Bird Creek high channel deposit (St. Louis Channel) on a tributary to Peters Creek in the southeast quarter of Section 26 , T. 29 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au, Cu, W

Other: Bi, Sb, Sn

Ore minerals: Arsenopyrite, copper, gold, magnetite, pyrite, scheelite

Gangue minerals:

Geologic description:

Capps (1912) indicates that the present Bird Creek, which flows into Peters Creek, appears to have captured a drainage which at a previous time may have flowed into the ancestral Cache Creek drainage. This Pleistocene glaciofluvial channel, at its base, is almost 100 feet above and sub-parallel to the Bird Creek and rests on broken, decayed slate overlain by a yellow-stained basal gravel and 50 to 75 feet of glacial mud containing angular boulders (Capps, 1912). The channel is auriferous throughout, but especially in the basal gravel (C.C. Hawley and Associates, Inc., 1978; Hawley and Clark, 1973). Concentrates contain pyrite, arsenopyrite, magnetite, scheelite, and a small amount of native copper (Cobb and Reed, 1980). Clark and Hawley (1968) report the fineness of the gold to range between 835 1/2 and 879 1/4, averaging 859. Significant resources may be left in the high channels, bench deposits and tributaries (C.C. Hawley and Associates, Inc., 1978).

These placer workings probably contain some gold that is the downstream concentration from antimony, tin and bismuth in arsenopyrite-scheelite- gold-quartz veins in the Bradley Scheelite/Bird Creek prospect (TL038).

Also see Peters Creek (TL045); other Pleistocene glaciofluvial placer deposits in the district are Windy Creek (TL027) and Nugget Creek (TL035), both tributaries to Cache Creek. C.C. Hawley and Associates, Inc. (1978) report that lode deposits also occur in the Colby (TL037) and Nugget Creek (TL035) drainages.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes

Site Status: Undetermined

Workings/exploration:
Workings in 1976 consisted of 3 shallow pits, approximately 500 feet by 250 feet, 400 feet by 300 feet, and 400 feet by 200 feet . The St. Louis Channel was mined in the late 1970's and drilled in 1942 by Calumet and Hecla Copper Mining Co. (C.C. Hawley and Associates, Inc., 1978).

Production notes:
Values on the pay section are up to $50/yard (C.C. Hawley and Associates, Inc., 1978).

Reserves:
Significant resources may be left in the high channels, bench deposits and tributaries (C. C. Hawley and Associates, Inc., 1978).

Additional comments:
Significant resources may be left in the high channels, bench deposits and tributaries (C. C. Hawley and Associates, Inc., 1978). These placer workings probably contain some gold that is the downstream concentration from veins in the Bradley Scheelite/Bird Creek prospect (TL038). Also see Peters Creek (TL045); other glaciofluvial deposits in the district are at Windy Creek (TL027);and Nugget Creek (TL035), both tributaries to Cache Creek.

References:
Capps, 1912; Capps, 1913; Brooks, 1914; Mertie, 1919; Capps, 1924; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933 (B 836); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942; Smith, 1942; Robinson and others, 1955; Clark and Hawley, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884).

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Ruby Creek; Ruby Gulch

Site type: Mine

ARDF no.: TL041

Latitude: 62.58 **Quadrangle:** TL C-2

Longitude: 150.84

Location description and accuracy:
Clark and Cobb (1972, locality 28) and MacKevett and Holloway (1977, locality 27) show the Ruby Gulch mine in a small tributary near the head of Willow Creek, and about 0.6 miles north-northwest of the Willow Creek occurrence (TL042) in the south half of Section 19, T. 29 N., R. 8 W., of the Seward Meridian.

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, platinum

Gangue minerals:

Geologic description:
Ruby Gulch, a small tributary near the head of Willow Creek, cuts the contact between Mesozoic marine sedimentary rocks (KJs) and continentally derived Pliocene conglomerate of the Sterling (?) Formation (Tps) mapped by Reed and Nelson (1980). Mertie (1919) describes the placer deposit as 4 feet of gravel on bedrock of Tertiary continental deposits. He reports that mining at the site in 1917 recovered a little fine, flaky platinum with the gold.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes

Site Status: Undetermined

Workings/exploration:

The drainage has been prospected and mined by various small scale surface methods. No other data is available.

Production notes:

Mertie (1919) describes the placer deposit as 4 feet of gravel on bedrock of Tertiary continental deposits. He reports that mining at the site in 1917 recovered a little fine, flaky platinum with the gold.

Reserves:

Additional comments:

Also see Willow Creek (TL042).

References:

Mertie, 1919; Clark and Hawley, 1968; Clark and Cobb, 1972; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Mertie, 1919

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Willow Creek; Big Willow Creek; Little Willow Creek; Wilson Creek; Hansen; Jennings; Rice; Rocky Gulch; Slate Gulch; Snow Gulch

Site type: Mine

ARDF no.: TL042

Latitude: 62.575 **Quadrangle:** TL C-2

Longitude: 150.837

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) show this locality about one-and- one-half miles upstream north of the confluence of Little Writer Creek with Willow Creek, a tributary to Cottonwood Creek in the northeast quarter of Section 30, T. 29 N., R. 8 W., of the Seward Meridian.

Commodities:

Main: Au, Pt, Sn

Other: Ti, Zr

Ore minerals: Cassiterite, gold, ilmenite, magnetite, platinum, pyrite

Gangue minerals: Garnet, quartz, zircon

Geologic description:

Willow Creek drains across the contact between Mesozoic slate and graywacke (KJs) and Tertiary strata of the Sterling (?) (Tcp) and Tyonek (?) (Tts) Formations of the Kenai Group (Reed and Nelson, 1980). The placer gold deposits within Willow Creek are mostly hosted in Pleistocene stream gravels. C.C. Hawley and Associates, Inc. (1978) describe a Tertiary (?) white quartz conglomerate at the head of the main placer pay streak near the contact of the Tertiary strata on the Mesozoic strata. The conglomerate is a limonite- cemented, angular quartz grit consisting of sand- to pebble-size fragments. Hydrothermally altered intrusive rocks with associated quartz veins are found within a fault zone in the Willow Creek drainage and could represent a source for some of the placer gold (Capps, 1925; C.C. Hawley and Associates, Inc., 1978).

Mertie (1919) reports 20% tin in concentrates, equivalent to 25% cassiterite from Willow Creek. Gold, ilmenite, magnetite, platinum, pyrite, garnet, quartz, and zircon are also reported in the concentrates. He believed that the gold and cassiterite were derived from mineralized bedrock within the drainage. The gold is fine with an average fineness of 870, as reported by Clark and Hawley (1968).

The white quartz conglomerate placers (e.g. Willow Creek, Thunder Creek, TL032,

058, Dollar Creek, TL031) represent the oldest placers in the Cache Creek area. Capps (1925) describes the white quartz conglomerate as the basal unit of the Tertiary Kenai Formation. However Clark and Hawley (1968) suggest that the white quartz conglomerate is older and that the Kenai Group was deposited on it. They believe the auriferous conglomerate is near its original source in part because the characteristics of the gold show a common source that has not moved far or has not been reworked. Further, they indicate that the conglomerate is a product of shearing and weathering in situ of argillic altered, auriferous Tertiary quartz porphyry intrusive rocks and associated quartz veins that were emplaced along northeast, high angle normal faults. The lineaments in Dutch and Cache Creeks represent two of these faults.

Tributaries to Willow Creek which have been mined include: Ruby Creek (TL041), Gopher Creek (TL074), Falls Gulch, Rocky Gulch, Slate Gulch, and Snow Gulch. Also see Peters Creek (TL045).

Alteration:

Argillic alteration along fault zones (Clark and Hawley, 1968).

Age of mineralization:

Tertiary and Pleistocene (Clark and Hawley,1968).

Deposit model:

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

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

39a

Production Status: Yes; small.

Site Status: Undetermined.

Workings/exploration:

Garrett (1998) reports current placer mining by mechanical cut-and-fill techniques and feed hopper, trommel and sluice processing. Exploration has been conducted by test drilling and pits.

According to Garrett (1998) Willow Creek and its tributatries were mined as early as 1906. He describes the mining history of the area as follows: In 1911 pick and shovel and hydraulic methods were used. Gold pieces weighing one-half ounce were common. In the mid-30's about 2000 ounces of gold were produced from Little Willow Creek. Owners Frank and Helena Jenkins conducted hydraulic and hand-mining operations until 1939, when they and two other persons were murdered on the property. Exploration and mining was sporadic until 1979, when 4920 ounces of gold were recovered from a bench on the north side of Willow Creek. Mining has continued in this area until the present.

Production notes:

Reserves:

Additional comments:

Similar deposits occur on Thunder Creek (TL032, 058) and Dollar Creek (TL031), both tributaries to Cache Creek. See also Peters Creek (TL045). The structural grain of the area is defined by major northeast-trending, steeply dipping faults (Hawley and Clark , 1968).

References:

Paige and Knopf, 1907; Capps, 1912; Brooks, 1913; Capps, 1913; Brooks, 1914; Mertie, 1919; Brooks, 1921; Capps, 1924; Capps, 1925; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933 (B 836); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1939 (B 917-A); Smith, 1941; Smith, 1942 (B 933-A); Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Mertie, 1969; Clark and Cobb, 1972; Cobb, 1973 (B 1374); Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Garrett, 1998.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Poorman Creek; Kast; Nelson And Larson

Site type: Mine

ARDF no.: TL043

Latitude: 62.59 **Quadrangle:** TL C-2

Longitude: 150.81

Location description and accuracy:

Poorman Creek is a tributary to Cottonwood Creek, which in turn flows southwest into Peters Creek. The location of this placer is given by Mertie (1919, p. 257), as the confluence of Poorman and Dandy Creeks, where the paystreak was reported to be widest (150 feet). Placer claims extend at least one-half mile downstream from this location as shown by the U.S. Bureau of Mines (1998). Also shown as locality 29 in Clark and Cobb (1972) and locality 85 in Reed and others (1978).

Commodities:

Main: Au

Other: Cu, Pt, Sn, Th, U, Zr

Ore minerals: Cassiterite, gold, ilmenite, iridium, iridoosmium, magnetite, platinum, pyrite

Gangue minerals:

Geologic description:

Poorman Creek drains across the contact between Mesozoic slate and argillite (KJs) cut by Tertiary (?) soda rhyolites with associated quartz stringers and continentally derived Tertiary sedimentary rocks of the Kenai Group (Mertie, 1919; Reed and Nelson, 1980). The discovery claim is underlain by Mesozoic sedimentary rocks that strike N35E and dip 55NW (Mertie, 1919; Robinson and others, 1955; Reed and others, 1978).

Mining on Poorman Creek began at least as early as 1907 when six men recovered 1,329 ounces of gold (Garrett, 1998). Mertie (1919) reported that a bench deposit near the mouth of Dandy Creek, covered 2500 square feet and averaged 25 feet thick, or about 2300 cubic yards of gravel.

Concentrates contain cassiterite, gold, ilmenite, iridium, iridoosmium, magnetite, platinum, pyrite, garnet, quartz, and zircon (Cobb and Reed, 1980). Grades of 0.09% U, 0.06% ThO2, 0.229% eU, and 0.22% Cu are reported from the concentrates (Mertie, 1919). The U.S. Geological Survey analyzed a sample of platinum metals weighing 41.6 grains, with specific gravity of 18.1, which contained 32% iridoosmium, 11% iridium, 1.4% rhodium, 47.3% platinum, trace palladium, and 8.3% other elements. Concentrates were reported to run 36.54% tin, equivalent to 46% cassiterite (Mertie, 1919; Robinson and others, 1955). According to Mertie (1919), gold and cassiterite were likely to have

been derived from mineralized bedrock within the drainage. He also reported that Poorman Creek contained the most platinum of any placer in the Kahiltna valley. Clark and Hawley (1968) indicate that platinum-group minerals in the Yentna District may be derived from altered mafic or ultramafic dikes that cut the Mesozoic sedimentary rocks.

Also see Peters Creek (TL045).

Alteration:

Age of mineralization:

Pleistocene.

Deposit model:

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

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

39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:

Garrett (1998) reports current placer mining by mechanical cut-and-fill techniques and feed hopper, trommel and sluice processing. Garrett (1998) reports current placer mining by mechanical cut-and-fill techniques and feed hopper, trommel and sluice processing. Exploration has been conducted by test drilling and pits. Hydraulic and hand-mining operations were conducted in the past.

Production notes:

A bench deposit near the mouth of Dandy Creek mined in 1917 (Mertie, 1919) covered 2500 square feet and averaged 25 feet thick, or about 2300 cubic yards of gravel. Concentrate contained 0.09% U, 0.06% ThO2, 0.229% Eu, and 0.22% Cu. The U.S. Geological Survey analyzed a sample of platinum metals weighing 41.6 grains, with specific gravity of 18.1, which contained 32% iridosmium, 11% iridium, 1.4% rhodium, 47.3% platinum, trace palladium, and 8.3% other elements. Concentrates were reported to run 36.54% tin, equivalent to 46% cassiterite (Mertie, 1919; Robinson and others, 1955).

Reserves:

Additional comments:

This placer ground is shown by C.C. Hawley and Associates, Inc. (1978) as part of the reserve area held by the Peters Creek Mining Corporation. See also Peters Creek (TL045).

References:

Paige and Knopf, 1907; Brooks, 1908; Capps, 1912; Capps, 1913; Brooks, 1914; Mertie, 1919; Brooks, 1921; Capps, 1924; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith,

1932; Smith, 1933 (B 836); Smith, 1939 (B 917-A); Smith, 1941; Robinson and others, 1955; Clark and Hawley, 1968; Mertie, 1969; Cobb, 1973 (B 1374); Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980; Reed and Nelson, 1980; Garrett, 1998; U.S. Bureau of Mines, 1998.

Primary reference: Mertie, 1919

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Canyon Creek; Divide Creek; Long Creek

Site type: Mine

ARDF no.: TL044

Latitude: 62.593 **Quadrangle:** TL C-2

Longitude: 150.778

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) show this placer in Canyon Creek, a tributary to Long Creek which flows into the Tokositna River. Unpatented placer claims cover the entirety of Canyon Creek from the northeast quarter of Section 21 to the northwest quarter of Section in T. 29 N., R. 8 W., of the Seward Meridian. Coordinates for this locality are given for the site in the northeast quarter of Section 21, T. 29 N., R. 8 W., of the Seward Meridian. This property is shown by Clark and Cobb (1972) as locality 31 and by Reed and others (1978) as locality 86.

Commodities:

Main: Au

Other: Pt, Sn

Ore minerals: Cassiterite, gold, ilmenite, magnetite, platinum, pyrite, specularite

Gangue minerals: Garnet, zircon

Geologic description:

Canyon, Divide and Long Creeks drain across the contact between Mesozoic slate and graywacke (KJs) and Tertiary strata of the Sterling (?) (Tcp) and Tyonek (?) (Tts) Formations of the Kenai Group (Reed and Nelson, 1980). Cobb and Reed (1980) report that the placer deposits in Canyon Creek are probably derived directly from local mineralized zones in bedrock, which is mainly Mesozoic slate (KJs), intruded by Tertiary and (or) Cretaceous (TKi) acidic dikes and cut by quartz stringers. The bedrock locally contains visible pyritized zones.

According to Mertie (1919) stream gravels at this locale have a pay streak which ranges from 1 to 15 feet in width (average: 6 feet) and 2 to 8 feet in depth. Gold is found on or near bedrock. Gravel is mostly cobble-sized clasts 6 inches in diameter with some boulders up to 2 feet in diameter. Gold, platinum, magnetite, ilmenite, garnet, zircon, and cassiterite, some of which is crystalline with unworn edges, are noted in concentrates by Mertie (1919). This suggested to him that the gold and cassiterite were largely derived from mineralized rocks of the drainage area.

Cobb and Reed (1980) report that most, if not all, references to Long Creek are probably to Canyon Creek. Mining has also been reported on Ramsdyke Creek (Cobb, 1973),

which runs along the northwest side of the ridge north of the headwater basin of Canyon Creek.

Alteration:

Age of mineralization:
Tertiary and Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Cobb and Reed (1980) state that most, if not all, references to Long Creek are probably to Canyon Creek. Mining has also been reported on Ramsdyke Creek (Cobb, 1973), which runs along the northwest side of the ridge north of the headwater basin of Canyon Creek.

References:
Capps, 1912; Capps, 1913; Mertie, 1919; Brooks, 1921; Smith, 1930 (B 810); Smith, 1932; Smith, 1934 (B 857-A); Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Mertie, 1969; Clark and Cobb, 1972; Cobb, 1973 (B 1374); Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980; Reed and Nelson, 1980; Garrett, 1998.

Primary reference: Mertie, 1919

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Peters Creek; Peters Creek Mining Corporation Property; Cottonwood Creek

Site type: Mine

ARDF no.: TL045

Latitude: 62.49 **Quadrangle:** TL B-2

Longitude: 150.77

Location description and accuracy:

The coordinates for this location are given at the approximate downstream limit of dredge tailings from large-scale dragline operation near Petersville in the west half of Section 21 and 28, T. 28 N., R. 8 W., of the Seward Meridian. Auriferous stream and bench deposits occur upstream from this point for about one mile. Localities given by the following authors have been combined into one record (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-B(3); Clark and Cobb, 1973, localities 26 and 27; Reed and others, 1978, localities 81 and 82; and MacKevett and Holloway, 1977, localities 25 and 26).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Gold-bearing Pleistocene stream and bench gravel in the Peters Creek drainage basin occurs near the bedrock contact between Mesozoic marine sedimentary rocks (KJs) and continentally derived sedimentary strata of the Tertiary Kenai Group (Cobb and Reed, 1980; Reed and Nelson, 1980). The KJs unit is cut by Tertiary (?) diabase and other dikes (Hawley and Clark, 1973; C.C. Hawley and Associates, Inc., 1978; Cobb and Reed, 1980). C.C. Hawley and Associates, Inc. (1978) describe the base of the Tertiary strata in the headwaters of Peters Creek as an argillaceous white quartz conglomerate containing angular gold. Capps (1925) describes this conglomerate as the basal unit of the Tertiary Kenai Formation. However Clark and Hawley (1968) suggest that the white quartz conglomerate is older and that the Kenai Group was deposited on it. They believe the auriferous conglomerate is near its original source in part because the characteristics of the gold show a common source that has not moved far or has not been reworked. Further, they indicate that the conglomerate is a product of shearing and weathering in situ of argillic altered, auriferous Tertiary quartz porphyry intrusive rocks and associated quartz

veins that were emplaced along northeast, high angle normal faults.

In Peters Creek stream gravel averages 6 feet in depth; bench gravel is generally thinner, about 3 to 4 feet thick. Boulders are abundant in the stream gravel and the benches. The placer deposits have been mined from 1905 into the 1970s (Cobb and Reed, 1980) at various places over ten miles along Peters and Cottonwood Creeks. Large scale production in about 1937 to 1942 and 1946 to 1956 (C.C. Hawley and Associates Inc., 1978) from drag-line dredge operations covered an area 1200 feet wide and a mile long on Peters Creek.

The fineness of the gold ranges from 865 1/4 to 870 3/4; averaging: 868 (Clark and Hawley, 1968). C.C. Hawley and Associates, Inc. (1978, Table 4.2-B(3)-B) report probable reserves of the Peters Creek Mining Corporation to be 3,467,000 cubic yards from the combined areas of Cottonwood, Big Willow and Peters Creek. They suggest that most of the gold in Peters Creek drainage system is unmined.

According to C.C. Hawley and Associates, Inc. (1978) the Peters Creek placer gold deposits are generally too low grade for anything but a large-scale hydraulic or dredging operation to be successful. Drainages secondary to Peters Creek that also contain gold deposits are: Bird Creek (TL040); Willow Creek (TL042); Poorman Creek (TL043); and their headwater tributaries.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
Garrett (1998) reports current placer mining by mechanical cut-and-fill techniques and feed hopper, trommel and sluice processing. Exploration has been conducted by test drilling and pits. Hydraulic and hand-mining operations were conducted in the past. Placer mining on Peters Creek was reported in 1927 on Cottonwood Creek by Smith (1930, B 810). The placer deposits have been mined from 1905 into the 1970s (Cobb and Reed, 1980) at various places over ten miles along Peters and Cottonwood Creeks. Large scale production in about 1937 to 1942 and 1946 to 1956 (C.C. Hawley and Associates Inc., 1978) from drag-line dredge operations covered an area 1200 feet wide and a mile long on Peters Creek.

Production notes:
The placer deposits have been mined from 1905 into the 1970s (Cobb and Reed, 1980)

at various places over ten miles along Peters and Cottonwood Creeks. Large scale production in about 1937 to 1942 and 1946 to 1956 (C.C. Hawley and Associates Inc., 1978) from drag-line dredge operations covered an area 1200 feet wide and a mile long on Peters Creek.

Reserves:

C.C. Hawley and Associates, Inc. (1978, Table 4.2-B(3)-B) report probable reserves in the Peters Creek Mining Corporation are to be 3,467,000 cubic yards. They suggest that most of the gold in Peters Creek drainage system is unmined.

Additional comments:

According to C.C. Hawley and Associates, Inc. (1978) the Peters Creek placer gold deposits are generally too low grade for anything but a large-scale hydraulic or dredging operation to be successful;. Drainages secondary to Peters Creek that also contain gold deposits are Bird Creek (TL040), Willow Creek (TL042), Poorman Creek (TL043), and their headwater tributaries.

References:

Brooks, 1906; Brooks, 1908; Brooks, 1910; Brooks, 1911 (P 70); Brooks, 1911 (B 480); Capps, 1913; Brooks, 1914; Brooks, 1918; Martin, 1919; Mertie, 1919; Capps, 1924; Smith, 1929; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1937; Smith, 1938; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1941; Joesting, 1942; Wedow and others, 1952; Robinson and others, 1955; Koschmann and Bergendahl, 1968; Clark and Hawley, 1968; Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Garrett, 1998.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Curry; Mile 247

Site type: Occurrence

ARDF no.: TL046

Latitude: 62.599 **Quadrangle:** TL C-1

Longitude: 150.026

Location description and accuracy:
Reed and others (1978, locality 48) show this occurrence at mile 247 of the Alaska Railroad, less than 2 miles south of Curry, Alaska in the southeast quarter of Section 16, T. 29 N., R. 4 W., of the Seward Meridian.

Commodities:

Main: Mo

Other:

Ore minerals: Molybdenite

Gangue minerals: Quartz

Geologic description:
Narrow quartz veins, with minor amounts of molybdenite, and aplite dikes cut a 300 to 500 feet wide dike-like body of Tertiary and (or) Cretaceous (TKi) quartz diorite. Country rock is a Mesozoic marine sedimentary sequence of black slate and schist (KJs). (Smith, 1942; MacKevett and Holloway, 1977; Reed and Nelson, 1980).

Alteration:

Age of mineralization:
Tertiary and (or) Cretaceous; mineralization is interpreted to be linked to the quartz diorite host rock mapped as TKi by Reed and Nelson (1980).

Deposit model:
Neither Cox and Singer (1986) nor Bliss (1992) have deposit models that conform to this type of molybdenite occurrence exactly. The best match is porphyry Mo, low-F (Cox and Singer, 1986; model 21b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21b

Production Status: No

Site Status: Undetermined

Workings/exploration:

This site is granite quarry, now abandoned; rock chip sampling is all that has been done here.

Production notes:

Reserves:

Additional comments:

References:

Smith, 1942 (B 926-C); Waring, 1947; Berg and Cobb, 1967; Clark and Cobb, 1972; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Cobb and Reed, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Montana; Montana Bog Iron

Site type: Occurrence

ARDF no.: TL047

Latitude: 62.07 **Quadrangle:** TL A-1

Longitude: 150.04

Location description and accuracy:
Reed and others (1978, locality 65) locate this site in the drainage basin of Goose Creek, about 1.3 miles southeast of Montana, Alaska, in Section 20, T. 23 N., R. 4 W., of the Seward Meridian.

Commodities:

Main: Fe

Other:

Ore minerals: Limonite, other hydrous iron minerals

Gangue minerals:

Geologic description:
Bog iron is currently forming a deposit about 50 feet in diameter, up to 8 feet thick, composed of limonite and probably other hydrous iron minerals (Berg and Cobb, 1967). The highest tenor reported is 41.2% Fe.

Alteration:

Age of mineralization:
Recent.

Deposit model:
Cox and Singer (1986) and Bliss (1992) do not include an ore deposit model for this type of occurrence.

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
not applicable

Production Status: No

Site Status: Inactive

Workings/exploration:

Surface sampling is all that has been done here (Berg and Cobb, 1967). The highest tenor reported is 41.2% Fe.

Production notes:

Reserves:

Additional comments:

This area is not large enough to be of economic interest; however, the area has not been prospected for similar, perhaps larger, deposits which may be present. This occurrence may be no more significant than the numerous unreported occurrences of this type occur throughout Alaska.

References:

Berg and Cobb, 1967; Clark and Cobb, 1972; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884).

Primary reference: Berg and Cobb, 1967

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Kahiltna River; Sholan Bar; Round Bend Bar; Red Hill Bar; Boulder Bench

Site type: Mine

ARDF no.: TL048

Latitude: 62.173 **Quadrangle:** TL A-2

Longitude: 150.883

Location description and accuracy:

U.S. Bureau of Mines MAS/MILS database (1998) locates this area near the confluence of Peters Creek and Kahiltna River on a circular bar in the northwest quarter of Section 14, T. 24 N., R. 9 W., of the Seward Meridian; this placer extends several hundred feet up and down stream from the coordinates given. Also shown as locality 66 by Reed and others, 1978.

Commodities:

Main: Au

Other: Fe, Pt, Sn, Th, U, W, Zr

Ore minerals: Cassiterite, gold, hematite, ilmenite, magnetite, monazite, platinum, scheelite, uranothorianite

Gangue minerals: Apatite, feldspar, garnet, limonite, pyroxene, quartz, sphene, spinel, tourmaline, zircon

Geologic description:

At this locality Bates and Wedow (1953) report stream gravels 6 to 9 feet deep, several hundred yards wide that contain the following ore minerals in concentrate samples: cassiterite, gold, hematite, ilmenite, magnetite, monazite, platinum, scheelite, thorianite, uranothorianite. Robinson and others (1955, p. 2) report concentrates from Sholan Bar contain 0.14% U, 0.05% ThO2, 0.237% eU in concentrates and Round Bend Bar 0.08% U, 0.19% eU in concentrates.

Robinson and others (1955, p. 2, 21-22) also report variable amounts of apatite, feldspar, garnet, limonite, pyroxene, quartz, sphene, spinel, tourmaline, zircon in the concentrates. A prospector's sample from a drill hole on the Kahiltna River (probably from Red Hill Bar) contained approximately 25% ilmenite, 20% monazite, 15% zircon, 15% magnetite, 5% platinum, 5% scheelite, 5% uranothorianite, 5% garnet, 3% cassiterite and 2% sphene.

Gold has also been reported in stream and bench placers on Lake Creek (TL065), which runs parallel to the Kahiltna River on its west side.

Also see ARDF records TY027, 028, 029 in the Tyonek quadrangle.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined.

Site Status: Undetermined.

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
Gold has also been reported in stream and bench placers on Lake Creek (TL065), which runs parallel to the Kahiltna River on its west side.
See also ARDF records TY027, 028, 029 in the Tyonek quadrangle.

References:
Capps, 1912; Capps, 1913; Brooks, 1918; Brooks, 1919; Martin, 1919; Mertie, 1919; Brooks, 1921; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith, 1932; Smith, 1933; Smith, 1934 (B 864-A); Smith, 1936; Joesting, 1942; Bates and Wedow, 1953; Robinson and others, 1955; Overstreet, 1967; Clark and Hawley, 1968; Mertie, 1969; Clark and Cobb, 1972; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); U.S. Bureau of Mines, 1998.

Primary reference: Bates and Wedow, 1953

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on the Kichatna River)

Site type: Prospect

ARDF no.: TL049

Latitude: 62.153 **Quadrangle:** TL A-4

Longitude: 151.749

Location description and accuracy:
Clark and Cobb (1972, locality 11) locate this placer prospect at the confluence of the Nakochna River and the Kichatna River in the southeast quarter of Section 24, T. 24 N., R. 14 W., of the Seward Meridian. Reed and others (1978) show this prospect as locality 39.

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, platinum

Gangue minerals:

Geologic description:
Reed and others (1978) describe this site as an old placer prospect on river bars, chiefly for platinum. There is no evidence that the 1917 dredging operation at this site was productive. Cobb and Reed (1980) report some fine gold was recovered from the Nakochna River. No other published data are available.

The sources of platinum may be the ultramafic rocks of the composite plutons (Tcp) described by Reed and Nelson (1980) that extend from Mt. Estelle in the Tyonek quadrangle to the headwaters of Cascade Creek. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from the composite plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others, 1992). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Also see TL020, TL023, TL052, and TL05.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:

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

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined

Site Status: Undetermined

Workings/exploration:
According to Reed and others (1978) this was a former dredge site.

Production notes:

Reserves:

Additional comments:

References:
Capps, 1912; Capps, 1913; Martin, 1919; Clark and Cobb, 1972; Cobb, 1973 (B 1374); Hawley and Clark, 1973; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884).

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL050

Latitude: 62.308 **Quadrangle:** TL B-6

Longitude: 152.628

Location description and accuracy:
Reed and others (1978, locality 34) locate this occurrence on a tributary to the Kichatna River, in the northwest quarter of Section 33, T. 26 N., R. 18 W., of the Seward Meridian, at about 4100 feet within the Denali National Park and Preserve.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite, pyrite, pyrrhotite

Gangue minerals:

Geologic description:
Disseminations of chalcopyrite, pyrite, pyrrhotite and other sulfides occur in narrow mineralized fracture fillings within the Kichatna stock, a composite stock of primarily olive-bearing pyroxene quartz monzonite (Reed and Nelson, 1980).

The Kichatna stock is one of the nine composite plutons (Tcp) within a 65-km-long belt described by Reed and Nelson (1980), that extends from Mt. Estelle in the southwest to Cascade Creek in the northeast. These Late Cretaceous/early Tertiary composite plutons intrude Mesozoic marine sedimentary rocks (KJs) and at one locale, in the upper West Fork of the Yentna River, crosscut the fault boundary between the Mesozoic strata and Paleozoic rocks, Pzus of Reed and Nelson (1980). Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others, 1992; Foley and others, 1997). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Also see TL020, TL023, TL052, and TL053.

Alteration:

Age of mineralization:
Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Kichatna stock, one of the Tertiary composite plutons mapped by Reed and Nelson (1980).

Deposit model:
This occurrence does not specifically fit any of those defined by Cox and Singer (1986). It may be a variation of the Porphyry copper model (Cox and Singer, 1986; model 17).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
17(?)

Production Status: No

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here. Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others, 1992; Foley and others, 1997). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

Production notes:

Reserves:

Additional comments:
This occurrence is located within the Denali National Park and Preserve.

References:
Mertie, 1919; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and Nelson, 1980

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Kohlsaat Peak)

Site type: Occurrence

ARDF no.: TL051

Latitude: 62.238 **Quadrangle:** TL A-6

Longitude: 152.729

Location description and accuracy:
Curtin, Karlson, O'Leary, Day, and McDougal (1978) locate this silt sample site approximately one and a quarter mile N20E of Kohlsaat Peak in the southwest quarter of Section 23, T. 25 N., R. 19 W., of the Seward Meridian.

Commodities:

Main: Au, Cu, Mo, Pb, Zn

Other: As

Ore minerals: Arsenopyrite, chalcopyrite, galena, pyrite

Gangue minerals: Quartz, tourmaline

Geologic description:
Curtin, Karlson, O'Leary, Day, and McDougal, (1978) recorded a silt anomaly with up to 0.75 ppm gold from a stream draining Kohlsaat Peak. In the late 1980s Cominco American Incorporated (unpublished report) collected rock samples of quartz-sericite-chlorite altered intrusive upstream from the published stream silt site that contained values ranging from 2.43 to 7.96 ppm gold from samples with minor arsenopyrite and chalcopyrite. Foley and others (1997) report six rock samples from the Kohlsaat pluton with maximum values of 14 ppb gold, 4 ppb palladium, and 5 ppb platinum.

Reiners and others (1996) describe the Kohlsaat pluton as a concentrically zoned body with a biotite-granite-porphyry core that intruded seriate and porphyritic intermediate composition rocks. The latter include olive-, pyroxene-, and biotite-bearing quartz syenite, quartz monzonite, and monzonite. Lamprophyric mafic and ultramafic rocks that range in composition from peridotite to alkali gabbro and monzonite are found as large xenoliths at the northeastern margin of the pluton. The granite-porphyry core is altered to sericite, quartz, carbonate and tourmaline assemblages, with minor enrichments of copper, gold, lead, molybdenum, and zinc. They have postulated that the composite pluton at Kohlsaat formed from depleted mantle melts that were contaminated during several stages of mafic magma generation by crustal components.

The Kohlsaat pluton is one of the larger composite plutons (Tcp) in the Yentna region described by Reed and Nelson (1980). These composite plutons form a 65-km-long curvilinear belt from Mt. Estelle in the south to Cascade Creek in the northeast that primarily

intrude Mesozoic marine sedimentary rocks (KJs). Anomalous gold, platinum-group elements, copper, chrome, nickel and arsenic are reported from these plutons (Reed and others, 1978; Reed and Nelson, 1980; Nelson and others 1992; Foley and others, 1997). Gold and platinum group element placers have been worked at sites downstream from these bodies (Mertie, 1919; Cobb, 1973).

See TL020, TL023, TL052, and TL005.

Alteration:

Carbonate, chlorite, sericite, and quartz alteration.

Age of mineralization:

Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Kohsaat pluton which has been determined to be 65.6 +/- 1.9 m.y. old by Reed and Lanphere, 1973.

Deposit model:

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

Production Status: None

Site Status: Undetermined

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Curtin, Karlson, O'Leary, Day, and McDougal, 1978; Reed and Nelson, 1980) and Cominco American Incorporated in the late 1980s (unpublished report) have been done in this vicinity.

Production notes:

Reserves:

Additional comments:

References:

Mertie, 1919; Cobb, 1973 (B 1374); Reed and Elliot, 1970; Reed and Lanphere, 1973; Curtin, Karlson, O'Leary, Day and McDougal, 1978; Reed and Nelson, 1980; Reiners and others, 1996; Foley and others, 1997.

Primary reference: Foley and others, 1997

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on Portage Creek)

Site type: Occurrence

ARDF no.: TL052

Latitude: 62.01 **Quadrangle:** TL A-6

Longitude: 152.865

Location description and accuracy:
Reed and others (1978, locality 36) locate this occurrence in the southwest quarter of Section 12, T. 22 N., R. 20 W., of the Seward Meridian at about 2550 feet in a north fork of Portage Creek.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Curtin, Karlson, O'Leary, Day, and McDanal (1978) report pan concentrate samples with visible gold from Quaternary gravels at this locality. The gold may have been derived from sources similar to those noted upstream from this locality. About one mile upstream at site TL007, chalcopyrite, pyrrhotite, arsenopyrite, molybdenite and pyrite with elevated gold values occur as joint coatings, in veins, and as disseminations adjacent to northwest-striking mineralized joint sets. In addition, altered granodiorite float located about 2 miles S72W contains gold-bearing veinlets of arsenopyrite and pyrite (TL063).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: No

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and pan concentrate sampling by the U.S. Geological Survey (Reed and Elliott, 1970; Curtin, Karlson, O'Leary, Day, and McDanal, 1978; Reed and Nelson, 1980). Reconnaissance exploration has been conducted in the area by various private companies at various times during the 1970s and 1980s. Results from the exploration campaigns are not published.

Production notes:

Reserves:

Additional comments:

References:

Reed and Elliot, 1970; Curtin, Karlson, O'Leary, Day and McDanal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Curtin, Karlson, O'Leary, Day, and McDanal, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near McDoel Peak)

Site type: Occurrence

ARDF no.: TL053

Latitude: 62.024 **Quadrangle:** TL A-5

Longitude: 152.184

Location description and accuracy:
Reed and others (1978, locality 38) show this occurrence in a tributary to Johnson Creek at about 2700 feet. The locality is approximately 3.5 miles east of McDoel Peak in the southeast quarter of Section 3, T. 22 N., R. 16 W., of the Seward Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Curtin, Karlson, O'Leary, Day, and McDanal (1978) report gold (+30 ppm) in bulk heavy-mineral concentrate samples from stream gravels at this locality. The area is underlain by hydrothermally altered Mesozoic graywacke and argillite (KJs) and one of the small bodies of diorite/granodiorite assigned to the Late Cretaceous (67.4 m.y.) Kichatna plutons (TKk) (Reed and others, 1978; Reed and Nelson, 1980). The creek contains abundant float of vein quartz. Gold was not detected from the quartz material, but Reed and others (1978) report a pan concentrate yielded more than 30 colors of fine gold. They indicate that similar altered zones are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017).

Alteration:
The area is underlain by hydrothermally altered Mesozoic graywacke and argillite (Reed and others, 1978). Alteration mineralogy is not specified. However, based on its reported similarity to altered zones at Thunder Creek (TL032, TL058), it is most likely argillic alteration of Mesozoic sedimentary rocks.

Age of mineralization:
Pleistocene; gold in sediment samples may have been derived from zones within the KJs that are hydrothermally altered by one of the Late Cretaceous diorite/granodiorite

(67.4 m.y.) Kichatna plutons (TKk) mapped by Reed and Nelson (1980).

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: No

Site Status: Undetermined

Workings/exploration:
Reconnaissance mapping (Reed and Nelson, 1980), stream silt and rock sampling (Curtin, Karlson, O'Leary, Day, and McDanal,1978) has been done by the U.S. Geological Survey. Prospecting and sampling was done by prospectors and claim owners in the 1980s. Current claim status is not known.

Production notes:

Reserves:

Additional comments:

References:
MacKevett and Holloway, 1977; Curtin, Karlson, O'Leary, Day and McDanal, 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Mt. Foraker)

Site type: Occurrence

ARDF no.: TL054

Latitude: 62.937 **Quadrangle:** TL D-3

Longitude: 151.288

Location description and accuracy:
Reed and others (1978, locality 33) show this occurrence on southeast flank of Mt. Foraker, about 3.2 miles southeast from the summit, in the northwest quarter of Section 24, T. 33 N., R. 11 W., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Ag, Au, Cu, Mo

Other: As

Ore minerals: Arsenopyrite, chalcopyrite, gold, pyrite

Gangue minerals:

Geologic description:
The area is underlain by Paleozoic argillite (Pzus) and Middle to Upper Devonian limestone (Dl) that are cut by the middle Tertiary (38 m.y.) granodiorite of the Mt. Foraker pluton (Tf) (Reed and Nelson, 1980). Disseminated pyrite, chalcopyrite and other sulfides occur in sheared sedimentary rocks. Nearby float contains massive arsenopyrite with up to 0.45 oz/ton gold (Reed and others, 1978).

Alteration:

Age of mineralization:
Middle Tertiary; mineralization is interpreted to be related to the Mt. Foraker pluton which is described as a 38 m.y. old pluton Reed and Nelson (1980).

Deposit model:

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

Production Status: No

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt and rock sampling (Reed and others, 1978; Reed and Nelson, 1980) are all that have been described here. Nearby float contains massive arsenopyrite with up to 0.45 oz/ton gold (Reed and others, 1978).

Production notes:

Reserves:

Additional comments:

This site is located within Denali National Park and Preserve.

References:

MacKevett and Holloway, 1977; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Lacuna Glacier)

Site type: Occurrence

ARDF no.: TL055

Latitude: 62.79 **Quadrangle:** TL D-4

Longitude: 151.51

Location description and accuracy:

Reed and others (1978, locality 31) locate this occurrence west of the Lacuna Glacier at about 5400 feet elevation in the center of Section 10, T. 31 N., R. 12 N., of the Seward Meridian approximately 3500 feet northeast of TL003. The site is within Denali National Park and Preserve.

Commodities:

Main: Cr, Fe

Other:

Ore minerals: Chromite, magnetite, pyrrhotite

Gangue minerals:

Geologic description:

This locality is one of several chromite occurrences in a 25-mile-long belt of alpine-type ultramafic bodies that are discontinuously exposed from the Dall Glacier northeast to the Lacuna Glacier which is part of the Dall Trend, described by C.C. Hawley and Associates, Inc. (1978, Fig. 4.1-(C)3 and Fig. 4.0-B). These chromite- and magnetite-bearing dunite and peridotite sills are shown by Reed and Nelson (1980) within a narrow belt of middle to upper Paleozoic sedimentary rocks exposed between the middle Tertiary (38 m. y.) Foraker pluton and the northwest trending fault which places the Paleozoic strata over the Mesozoic marine sedimentary rocks (KJs). Foley and others (1997, p. 431) suggest that these ultramafic bodies may be genetically related to the composite plutons (Tcp) of Reed and Nelson (1980) in the upper Yentna River.

Reed and others (1978) describe these occurrences as magmatic segregations of podiform and disseminated chromite hosted in dunite sills. Chromite occurs as: (1) disseminated rounded grains 1-3 mm in diameter, (2) streaks and lenses, (3) irregular pods up to 6 feet long and (4) lens-like bodies up to 6 feet thick and 60 feet long throughout the dunite. Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3 21.1% FeO, 8.9% MgO, and 9.7% Al2O3. Other chromite occurrences in this trend are described in TL002, TL003, and TL008 to TL012.

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980) or Late Cretaceous/early Tertiary (?) (Foley and others, 1997).

Deposit model:
Podiform chromite (Cox and Singer, 1986; model 8a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
8a

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling are all that have been done here (C.C. Hawley and Associates, Inc., 1978). Chromium content of 0.7 to 1% from typical dunite is given in Reed and others (1978). The average of 3 microprobe analyses of one sample: 58.4% Cr2O3 21.1% FeO, 8.9% MgO, and 9.7% Al2O3.

Production notes:

Reserves:

Additional comments:
Mineral occurrences in the Dall Trend are all within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on the Yentna Glacier)

Site type: Occurrence

ARDF no.: TL056

Latitude: 62.737 **Quadrangle:** TL C-4

Longitude: 151.678

Location description and accuracy:

Reed and others (1978, locality 28) show the location of mineralized cobbles in moraine along the west limit of the Yentna Glacier in the northeast quarter of Section 34, T. 31 N, R. 13 W., of the Seward Meridian within Denali National Park and Preserve. This site is located approximately two and a half miles north-northeast of TL057.

Commodities:

Main: Cu, Mo

Other:

Ore minerals: Chalcopyrite, molybdenite, pyrite

Gangue minerals:

Geologic description:

Granodiorite cobbles with fractures containing molybdenite, pyrite and minor chalcopyrite found at this site on the Yentna Glacier moraine are probably derived from the middle Tertiary (38 m.y.) Foraker pluton (Reed and others, 1978; Reed and Nelson, 1980). Minor malachite staining in Paleozoic sedimentary rocks is noted near the pluton contact. Further information that supports the Foraker pluton as the source of the float is anomalous copper (300 to 700 ppm) in a stream sediment and glacial debris sample taken from a site on the Yentna Glacier which drains the Foraker pluton (Curtin, Karlson, O'Leary, Day, and McDougal,1978).

Use of a porphyry for this occurrence is not to suggest that a cobble with mineralized fractures is in itself a porphyry deposit. Instead, its possible affiliation with the Mt. Foraker pluton suggests that these veins could be a distal feature related to a concealed porphyry system. Not enough data exists to quantify this determination (Reed and others, 1978).

This site is located approximately two and a half miles north-northeast of TL057 on the Yentna Glacier moraine.

Alteration:

Age of mineralization:

Middle Tertiary; mineralization is interpreted to be related to the 38 m.y. Foraker pluton (Reed and Nelson, 1980).

Deposit model:
Possibly related to Porphyry Cu-Mo (Cox and Singer, 1986; model 21a) or Porphyry Mo, Low-F (Cox and Singer, 1986; model 21b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21a or 21b

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping and rock sampling are all that have been done here (Reed and Nelson, 1980). Minor malachite staining in Paleozoic sedimentary rocks is noted near the pluton contact. Further information that supports the Foraker pluton as the source of the float is anomalous copper (300 to 700 ppm) in a stream sediment and glacial debris sample taken from a site on the Yentna Glacier which drains the Foraker pluton (Curtin, Karlson, O'Leary, Day, and McDougal,1978).

Production notes:

Reserves:

Additional comments:
This site is within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; Curtin, Karlson, O'Leary, Day and McDougal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on the Yentna Glacier)

Site type: Occurrence

ARDF no.: TL057

Latitude: 62.707 **Quadrangle:** TL C-4

Longitude: 151.716

Location description and accuracy:

Reed and others (1978, locality 28) show the location of mineralized cobbles in moraine along the west limit of the Yentna Glacier in the northeast quarter of Section 9, T. 30 N., R. 13 W., of the Seward Meridian within Denali National Park and Preserve. This site is located approximately two and a half miles south-southwest of TL056.

Commodities:

Main: Cu, Mo

Other:

Ore minerals: Chalcopyrite, molybdenite, pyrite

Gangue minerals:

Geologic description:

Granodiorite cobbles with fractures containing molybdenite, pyrite and minor chalcopyrite found at this site on the Yentna Glacier moraine are probably derived from the middle Tertiary (38 m.y.) Foraker pluton (Reed and others, 1978; Reed and Nelson, 1980). Minor malachite staining in Paleozoic sedimentary rocks is noted near the pluton contact. Further information that supports the Foraker pluton as the source of the float is anomalous copper (300 to 700 ppm) in a stream sediment and glacial debris sample taken from a site on the Yentna Glacier which drains the Foraker pluton (Curtin, Karlson, O'Leary, Day, and McDougal,1978).

Use of a porphyry for this occurrence is not to suggest that a cobble with mineralized fractures is in itself a porphyry deposit. Instead, its possible affiliation with the Mt. Foraker pluton suggests that these veins could be a distal feature related to a concealed porphyry system. Not enough data exists to quantify this determination (Reed and others, 1978).

This site is located approximately two and a half miles south-southwest of TL056 on the Yentna Glacier moraine.

Alteration:

Age of mineralization:

Middle Tertiary; mineralization is interpreted to be related to the 38 m.y. Foraker pluton (Reed and Nelson, 1980).

Deposit model:
Possibly related to Porphyry Cu-Mo (Cox and Singer, 1986; model 21a) or Porphyry Mo, Low-F (Cox and Singer, 1986; model 21b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
21a or 21b

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping and rock sampling are all that have been done here (Reed and Nelson, 1980). Minor malachite staining in Paleozoic sedimentary rocks is noted near the pluton contact. Further information that supports the Foraker pluton as the source of the float is anomalous copper (300 to 700 ppm) in a stream sediment and glacial debris sample taken from a site on the Yentna Glacier which drains the Foraker pluton (Curtin, Karlson, O'Leary, Day, and McDougal,1978).

Production notes:

Reserves:

Additional comments:
This site is within Denali National Park and Preserve.

References:
MacKevett and Holloway, 1977; Curtin, Karlson, O'Leary, Day and McDougal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Thunder Creek

Site type: Mine

ARDF no.: TL058

Latitude: 62.497 **Quadrangle:** TL B-3

Longitude: 151.003

Location description and accuracy:

U. S. Bureau of Mines (1998) locates this mine in the southwest quarter of Section 19, R. 9 W., T. 28 N., of the Seward Meridian. C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) show an outline of a claim block on Thunder Creek, a tributary to Cache Creek. This locality is upstream about 0.6 miles from TL032. These two occurrences are two separate areas of placer workings, and appropriately assigned their own ARDF numbers, despite the confusing use of the same name twice.

Commodities:

Main: Au, Cu, Sn, W

Other:

Ore minerals: Arsenopyrite, cassiterite, copper, gold, ilmenite, magnetite, pyrite, scheelite

Gangue minerals: Garnet, quartz, zircon

Geologic description:

Clark and Hawley (1968) describe placer gold associated with an auriferous white quartz conglomerate and breccia deposits at Thunder Creek. The conglomerate is composed of angular quartz fragments mixed with a few rounded quartz and lithic pebbles in fine siliceous clay matrix. Thin layers of lignite are present within the conglomerate which indicates a Tertiary age (Clark and Hawley, 1968).

Capps (1931) reports grades of $2 to $2.50 per cubic yard when gold was at $20.67. The gold fineness ranges from 850.5 to 876.5, averaging 865 (Clark and Hawley, 1968.) Concentrates contain gold, ilmente, magnetite, garnet, zircon, pyrite, arsenopyrite, cassiterite, sheelite and native copper (Cobb and Reed, 1980).

The white quartz conglomerate placers (e.g. Willow Creek (TL042), Thunder Creek (TL032), and Dollar Creek (TL031)) represent the oldest placers in the Cache Creek area (Clark and Hawley, 1968). Capps (1925) describes the white quartz conglomerate as the basal unit of the Tertiary Kenai Formation. However Clark and Hawley (1968) suggest that the white quartz conglomerate is older and that the Kenai Group was deposited on it. They believe the auriferous conglomerate is near its original source in part because the characteristics of the gold show a common source that has not moved far or has not been reworked. Further, they indicate that the conglomerate is a product of shearing and

weathering in situ of argillic altered, auriferous Tertiary quartz porphyry intrusive rocks and associated quartz veins that were emplaced along northeast, high angle normal faults. The lineaments in Dutch and Cache Creeks represent two of these faults. From these paleo-channels gold was reconcentrated into Cache Creek in more recent time. (Mertie, 1919; Clark and Hawley, 1968; C.C.Hawley and Associates, Inc.,1978).

Reed and others (1978) indicate that hydrothermally altered zones similar to those in Thunder Creek are observed along Dollar (TL031) and Thunder Creek (TL032), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

Alteration:

Argillic alteration is associated with fault zones (Clark and Hawley, 1968).

Age of mineralization:

Tertiary and Pleistocene (Clark and Hawley, 1968).

Deposit model:

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

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

39a

Production Status: Yes; small.

Site Status: Undetermined.

Workings/exploration:

Placer operations are mapped in Thunder Creek from its confluence with Cache Creek to about a mile and a half upstream (C.C.Hawley and Associates, Inc., 1978). Surface placer operations were probably open-cut, sluice and (or) hydraulic operations.

Production notes:

Capps (1931) reports grades of $2 to $2.50 per cubic yard when gold was at $20.67. The gold fineness ranges from 850.5 to 876.5, averaging 865 (Clark and Hawley, 1968).

Reserves:

Additional comments:

Reed and others (1978) indicate that hydrothermally altered zones similar to those in Dollar Creek are observed along Dollar (TL031) and Thunder Creeks (TL032, TL058), at the headwaters of Treasure (TL030), Dutch (TL033) and Bear Creeks (TL017) and at an unnamed locality east of McDoel Peak (TL053).

References:

Paige and Knopf, 1907; Capps, 1912; Brooks, 1913; Capps, 1913; Brooks, 1914; Mertie, 1919; Capps, 1924; Capps, 1925; Smith, 1930 (B 810); Smith, 1930 (B 813); Smith,

1932; Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1934 (B 857-A); Smith, 1934 (B 864-A); Smith, 1936; Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942 (B 933-A); Robinson and others, 1955; Clark and Hawley, 1968; Koschmann and Bergendahl, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); U.S. Bureau of Mines, 1998.

Primary reference: Clark and Hawley, 1968

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Mills Creek; Wagner Gulch; Chicago Gulch

Site type: Mines

ARDF no.: TL059

Latitude: 62.35 **Quadrangle:** TL B-3

Longitude: 151.49

Location description and accuracy:

The best location for this mined area is shown by C.C. Hawley and Associates, Inc. (1978) on Figure 4.2-B(3)) in Sections 8, 9, 16, and 17, T. 26 N., R. 12 W., of the Seward Meridian. Coordinates given are approximately one half mile upstream from Collinsville. The placered area extends approximately two miles upstream into the headwater drainages of Wagner and Chicago Gluches. The locality is also shown by Clark and Cobb (1972, locality 14).

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, platinum

Gangue minerals:

Geologic description:

Mills Creek is part of the productive placer area known as Collinsville or Fairview Mountain which encompasses approximately 36 square miles. Mills Creek drains southeast from the summit of Fairview Mountain over bedrock that is shown by Reed and Nelson (1980) as semi- and unconsolidated Tertiary clastic sediment of the Sterling (?) Formation (Tps) A northeast-striking normal fault cuts the sedimentary strata and parallels the high angle northeast-striking Pass Creek fault mapped to the northwest.
No lode occurrences have been found in the placer deposits near Fairview Mountain/ Collinsville (Hawley and Clark, 1978).

C.C. Hawley and Associates, Inc. (1978) describe placer operations at this locality on auriferous gravels 3 to 10 feet deep, 20 to 30 feet wide. The main gold-bearing section is on top of a brown to orange-brown clay bed about 15 feet deep and consists of about 5 feet of quartz-bearing gravel. The gold is derived from reworking of the Tertiary clastic sediments (Tps) in the Pleistocene.

Mills Creek area was mined nearly all the way from confluence with Twin Creek to the headwater gulches of Wagner and Chicago Gulches. C.C. Hawley and Associates, Inc. (1978) report that production from the entire Collinsville area came from about '1.6 million yards of ground mined in a drag line washing plant operation and 100,000 yards

mined by sluice box, which respectively, contained about $0.60 and $1/yard gold at $35/ ounce.' Grades of 0.78 oz/ton platinum minerals are reported from one area but the exact location is not specified (C.C. Hawley and Associates, Inc., 1978).

Some data for Twin Creek and Mills Creek are combined. See also Twin Creek (TL 026) and Pass Creek (TL024). Wagner Gulch and Chicago Gulch, headwater tributaries to Mills Creek, have also been mined.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Yes; small

Site Status: Undetermined

Workings/exploration:
C.C.Hawley and Associates, Inc. (1978) described exploratory testing by drill and backhoe and mining with a drag line washing plant and sluice box.

Production notes:
Mills Creek area was mined nearly all the way from confluence with Twin Creek to the headwater gulches. C.C.Hawley and Associates, Inc. (1978) report that production from the entire Collinsville area came from about '1.6 million yards of ground mined in a drag line washing plant operation and 100,000 yards mined by sluice box, which respectively contained about $0.60 and $1/yard gold at $35/ounce.' Grades of 0.78 oz/ton platinum minerals are reported from one area but the exact location is not specified (C.C. Hawley and Associates, Inc., 1978).

Reserves:
C.C. Hawley and Associates, Inc. (1978) show possible reserve of 640,000 cubic yards in Mills Creek (Fig. 4.2 B(4)) above the confluence with Twin Creek and another 230,000 possible cubic yards possible below the confluence. The probable reserves are largely covered by old tailings.

Additional comments:
Part of a productive placer area of approximately 36 square miles, including streams draining Fairview Mountain, with area of interest generally northeast and southeast of the summit of Fairview Mountain.

Some data for Twin Creek and Mills Creek are combined. See also Twin Creek (TL

026) and Pass Creek (TL024). Tributaries to Mills Creek on which gold has been mined are Wagner Gulch and Chicago Gulch.

References:

Capps, 1912; Capps, 1913; Brooks, 1914; Capps, 1924; Smith, 1929; Smith, 1930 (B 810); Smith, 1933 (B 836); Smith, 1933 (B 844-A); Smith, 1939 (B 910-A); Smith, 1939 (B 917-A); Smith, 1942 (B 933-A); Robinson and others, 1955; Koschmann and Bergendahl, 1968; Clark and Cobb, 1972; Cobb, 1973 (B 1374); MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884).

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Lower Cache Creek

Site type: Mine

ARDF no.: TL060

Latitude: 62.391 **Quadrangle:** TL B-3

Longitude: 151.04

Location description and accuracy:
Reed and others (1978,locality 72) show the lower Cache Creek placer near junction of Cache Creek and Morgan Creek in the northeast quarter of Section 36, T. 27 N., R. 10 W., of the Seward Meridian.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Smith (1938) reports bench placers overlie old stream terraces cut in glacial till in lower Cache Creek. Bedrock is probably continentally derived Tertiary sedimentary strata of the Tyonek (?) Formation (Tts) overlain by glacial drift (Qn) (Reed and Nelson, 1980). A northeast-striking, high angle normal fault is mapped crossing Cache Creek about one mile upstream from this site (Reed and Nelson, 1980). No other published descriptive information is available. No data is available on possible production.
Also see Upper Cache Creek (TL029).

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined.

Site Status: Undetermined.

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:
No data on possible production; see Upper Cache Creek (TL029).

References:
Smith, 1938; MacKevett and Holloway, 1977; Reed and others, 1978.

Primary reference: Smith, 1938

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Shirley Lake)

Site type: Prospect

ARDF no.: TL061

Latitude: 62.003 **Quadrangle:** TL A-5

Longitude: 152.457

Location description and accuracy:
The prospect is located on the north side of Shirley Lake in the Long Lake Hills in the northeast quarter of Section 18, T. 22 N., R. 17 W., of the Seward Meridian. The location of this prospect is approximated from Reed and others (1978, locality 37). Part of deposit may lie in Tyonek quadrangle; see ARDF record TY023.

Commodities:

Main: U

Other:

Ore minerals: Unknown secondary uranium minerals

Gangue minerals:

Geologic description:
Secondary uranium minerals are sporadically localized along joints in Tertiary tuff and tuff-breccia (Cobb, 1979, p. 22; Reed and others,1978; and Reed and Nelson,1980). Maximum amount of radioactivity in U.S. Geological Survey samples was 0.021% uranium; a prospector reported assay of 0.29% uranium in one sample (Freeman,1963, p. 29-30). Radioactive rock probably formed by deposition of small amounts of uranium that migrated with subsurface water moving along joints. Exploration did not disclose any extension of radioactive rock below surface or away from joints. The joint controlled deposits, sporadic mineralization, and general low grade of the radioactive areas indicate unfavorable conditions for the presence of ore-grade material. All deposits appear to be small and low grade (Cobb, 1979).

Alteration:

Age of mineralization:
Tertiary to Holocene.

Deposit model:

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

Production Status: No

Site Status: Inactive

Workings/exploration:
Shallow pits were excavated and scintillometer surveys conducted by private concerns.

Production notes:

Reserves:
All deposits appear to be small and low grade (Cobb, 1979).

Additional comments:

References:
Freeman, 1963; MacKevett and Holloway, 1977; Reed and others, 1978; Cobb, 1979 (OFR 80-86); Cobb and Reed, 1980 (OFR-80-884); Reed and Nelson, 1980.

Primary reference: Freeman, 1963

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Mt. Distin)

Site type: Occurrence

ARDF no.: TL062

Latitude: 62.091 **Quadrangle:** TL A-6

Longitude: 152.578

Location description and accuracy:
Alaska Department of Natural Resources unpublished claim records show this locality, about one mile N10E of Distin Peak in the southeast quarter of Section 9, T. 23 N., R. 18 W., of the Seward Meridian.

Commodities:

Main: Au, Cu

Other: As

Ore minerals: Arsenopyrite, chalcopyrite, pyrite, pyrrhotite

Gangue minerals: Quartz

Geologic description:
A small plug of Late Cretaceous (67 m.y.) diorite, assigned to the Kichatna plutons (TKk), intrudes Mesozoic flysch (KJs) in this area (Reed and Nelson, 1980). Cominco American Incorporated (unpublished report) describes vuggy veins, veinlets, and breccia of quartz-pyrrhotite- pyrite-chalcopyrite-and/or arsenopyrite that cut both the sedimentary and intrusive rocks. A similar occurrence is noted in Old Man Creek (TY026) in the Tyonek quadrangle.

Alteration:
Quartz alteration.

Age of mineralization:
Late Cretaceous; mineralization is interpreted to be linked to the Late Cretaceous diorite that is mapped as one of the 67 m.y. old Kichatna plutons by Reed and Nelson (1980).

Deposit model:
Polymetallic veins (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:
Prospecting, silt and rock chip geochemistry and mapping at 1:12,000 scale by Cominco American Incorporated in the late 1980s.

Production notes:

Reserves:

Additional comments:

References:
Reed and Nelson, 1980.

Primary reference: This record

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Portage Creek)

Site type: Occurrence

ARDF no.: TL063

Latitude: 62.002 **Quadrangle:** TL A-6

Longitude: 152.928

Location description and accuracy:

Reed and others (1978, locality 35) locate this occurrence on the south side of the north fork of Portage Creek in the northwest quarter of Section 15, T. 22 N., R. 20 W., of the Seward Meridian at about 3900 feet.

Commodities:

Main: Au

Other: As

Ore minerals: Arsenopyrite, gold, pyrite

Gangue minerals: Quartz

Geologic description:

Reed and others (1978) describe altered granodiorite float with thin (<5 millimeters wide) veinlets of arsenopyrite and pyrite with up to 1.5 ppm gold.

The occurrence lies within the Late Cretaceous /early Tertiary (65 m.y. to 66 m.y.) granodiorite of Mount Estelle (Te) that intrudes Mesozoic marine sedimentary rocks (KJs) (Reed and Nelson, 1980). At this locality the pluton has a leucocratic equigranular phase and a porphyritic phase with potassium feldspar phenocrysts up to 10 millimeters in size (Cominco American Incorporated, unpublished report). The granodiorite of Mt. Estelle probably reflects the same plutonic event as the composite plutons (Tcp) to the north described by Reed and Nelson (1980). About 2 miles N72E of this location gold-sulfide-bearing veinlets are described at an unnamed site (TL052).

Similar gold-sulfide veins are also present in the Estelle pluton, ARDF record TY019 to the south in the Tyonek quadrangle.

Alteration:

Age of mineralization:

Late Cretaceous/early Tertiary; mineralization is interpreted to be related to the granodiorite of Mt. Estelle for which hornblende ages are about 65 to 66 m.y. (Reed and Nelson, 1980).

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Rock chip sampling and silt sampling by the U.S. Geological Survey (Reed and others, 1978) and mapping, rock chip sampling and silt sampling Cominco American Incorporated in the late 1980s have been done in the area. Reed and others (1978) describe altered granodiorite float with thin (less than 5 millimeters wide) veinlets of arsenopyrite and pyrite with up to 1.5 ppm gold. Other private companies have conducted reconnaissance programs in the area at various times between the 1960s to present.

Production notes:

Reserves:

Additional comments:

Similar gold-sulfide veins are also present in the Estelle pluton, ARDF record TY019 to the south in the Tyonek quadrangle.

References:

Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Round Mtn)

Site type: Prospect

ARDF no.: TL064

Latitude: 62.04 **Quadrangle:** TL A-6

Longitude: 152.68

Location description and accuracy:
Alaska Department of Natural Resources unpublished claim records show this locality, about one mile south of Round Mountain, to cover an approximately one square mile area in Section 25, T. 23 N., R. 19 W., of the Seward Meridian and adjacent Sections 35 and 36, in T. 22 N., R. 19 W., of the Seward Meridian. Coordinates are given for poorly exposed part of the prospect in Section 35. Exposures in Section 25 are in a canyon, easily seen from the air.

Commodities:

Main: Ag, Au, Pb, Zn

Other: As, Sb

Ore minerals: Arsenopyrite, chalcopyrite, galena, pyrite, pyrrhotite, sphalerite, stibnite

Gangue minerals: Quartz, sericite

Geologic description:
Mesozoic marine sedimentary rocks (KJs) and (or) undivided Tertiary tuff and tuffaceous sedimentary rocks (Tvs) mapped by (Reed and Nelson, 1980) are intruded by intermediate to mafic sills, dikes and small plugs (Cominco American Incorporated, unpublished report). The intrusive rocks are overprinted by quartz-sericite-pyrite and magnetite-carbonate alteration. Auriferous veins, pods and stockwork which contain variable amounts of pyrite, pyrrhotite, sphalerite, galena and quartz ,+/-chalcopyrite, stibnite and arsenopyrite are concentrated along intrusive contacts and structures. Geochemical values in rock chip samples range from several hundred ppb gold to just under an ounce per ton gold in select high grade samples. Silver values up to about an ounce per ton is recorded select samples (Cominco American Incorporated, unpublished report).

Alteration:
Quartz-sericite-pyrite, quartz-pyrite, carbonate, and magnetite alteration.

Age of mineralization:
Early or middle Tertiary; mineralization is interpreted to be linked to the Tvs, which Reed and Nelson (1980) relate to plutonism of the same age in this part of the Alaska

Range.

Deposit model:
Polymetallic veins (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:
Prospecting, silt, soil and rock chip geochemistry, magnetic and VLF geophysical survey, and mapping at 1:12,000 scale by Cominco American Incorporated in the late 1980s. Geochemical values in rock chip samples range from several hundred ppb gold to just under an ounce per ton gold in select high grade samples. Silver values up to about an ounce per ton is recorded select samples (Cominco American Incorporated, unpublished report).

Production notes:

Reserves:

Additional comments:
Rock exposures at this site are limited to stream cuts.

References:
Reed and Nelson, 1980.

Primary reference: This record

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Lake Creek; Lower Lake Creek; Alaska Continental Golds

Site type: Occurrence

ARDF no.: TL065

Latitude: 62.056 **Quadrangle:** TL A-2

Longitude: 150.987

Location description and accuracy:
Capps (1913) reports that one man mined gravels on a bench twelve miles from the junction of Lake Creek with the Yentna River. The location of this occurrence is estimated at best. Coordinates given here place the prospect in the northwest quarter of Section 30, T. 23 N., R. 9 W., of the Seward Meridian.

Commodities:

Main: Au, Pt

Other:

Ore minerals: Gold, platinum

Gangue minerals:

Geologic description:
Cobb and Reed (1980) report that the lower part of the (water) course is entrenched as much as 300 feet in glacial and Tertiary continental deposits; bedrock is very deep. Fine gold was recovered from both stream and bench placers. Martin (1919, p. 33) reports platinum in the Lake Creek basin, but no specific location is given.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined.

Site Status: Undetermined.

Workings/exploration:

The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:

References:

Paige and Knopf, 1907; Capps, 1912; Capps, 1913; Martin, 1919; Capps, 1924; Smith, 1934 (B 864-A); Smith, 1937; Clark and Hawley, 1968; Cobb, 1973 (B 1374); Clark and Cobb, 1972; Cobb and Reed, 1980.

Primary reference: Capps, 1913

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL066

Latitude: 62.526 **Quadrangle:** TL C-5

Longitude: 152.23

Location description and accuracy:
Reed and others (1978, locality 20) locate this occurrence in the southeast quarter of Section 10, T. 28 N., R. 16 W., of the Seward Meridian, approximately 3.5 miles southeast of Mt. Dall within Denali National Park and Preserve.

Commodities:

Main: Ag, Cu, Zn

Other: Fe, Mn

Ore minerals: Unidentified sulfides

Gangue minerals:

Geologic description:
At this site Reed and others (1978) describe disseminated sulfide minerals (unidentified) within secondary hydrous iron- and manganese-oxide stained Mesozoic argillite and graywacke (KJs) cut by stringers of the Cascade pluton. The 64.6 m.y. Cascade pluton is one of the composite plutons (Tcp) mapped by Reed and Nelson (1980). They report copper and gold mineralization is indicated by stream sediment and pan concentrate samples from Cascade Creek, approximately one mile to the southeast from this site. Foley and others (1997) report mean values of 20 ppb gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton.
Also see TL021.

Alteration:

Age of mineralization:
Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Cascade pluton dated as 64.6 +/- 1.8 m.y. by K/Ar methods (Reed and Lanphere, 1972).

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt, pan concentrate and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) are all that have been described here. The Cascade pluton is one of the composite plutons (Tcp) mapped by Reed and Nelson (1980). They report copper and gold mineralization is indicated by stream sediment and pan concentrate samples from Cascade Creek, approximately one mile to the southeast from this site. Foley and others (1997) report mean values of 20 ppb gold, 1 ppb palladium, 42 ppb platinum, 139 ppm nickel, and 26 ppm copper from six rock samples of the Cascade pluton.

Production notes:

Reserves:

Additional comments:

This site is located within Denali National Park and Preserve.

References:

Reed and others, 1978; Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL067

Latitude: 62.522 **Quadrangle:** TL C-5

Longitude: 152.043

Location description and accuracy:
Reed and others (1978, locality 22) locate this occurrence at approximately 3800 feet in a tributary to the east fork of the Yentna River in the northwest quarter of Section 15, T. 28 N., R. 15 W., of the Seward Meridian in Denali National Park and Preserve.

Commodities:

Main: Au, Cu, W

Other:

Ore minerals: Unidentified sulfides and oxides

Gangue minerals:

Geologic description:
Reed and others (1978) describe disseminated sulfide minerals (unidentified) in felsite dikes of the East Fork Yentna stock, a medium-grained, pyroxene-bearing biotite granite, that is one of the composite plutons (Tcp) of Reed and Nelson (1980). Maximum values of 2 ppb gold, 1 ppb palladium, and 5 ppb platinum from the East Fork stock are reported by Foley and others (1997).

Alteration:

Age of mineralization:
Late Cretaceous/early Tertiary; mineralization is interpreted to be related to the East Fork Yentna stock, one of the composite plutons mapped by Reed and Nelson (1980).

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt, pan concentrate and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) are all that have been described here. Maximum values of 2 ppb gold, 1 ppb palladium, and 5 ppb platinum from the East Fork stock are reported by Foley and others (1997).

Production notes:

Reserves:

Additional comments:

References:

Reed and others, 1978; Reed and Nelson, 1980; Foley and others, 1997.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL068

Latitude: 62.521 **Quadrangle:** TL C-6

Longitude: 152.688

Location description and accuracy:
Reed and others (1978, locality 15) show this occurrence at about 2800 to 3000 feet, approximately three miles east of Shellabarger Pass in the northwest quarter of Section 18, T. 28 N., R. 18 W., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Cu

Other:

Ore minerals: Unidentified copper-bearing minerals; specular hematite

Gangue minerals:

Geologic description:
Reed and others (1978) report three samples that averaged 0.1% copper from the Shellabarger stock, an altered biotite-pyroxene gabbro. This stock is mapped as one of the composite plutons (Tcp) by Reed and Nelson (1980). It lies northwest of the main belt of composite plutons and intrudes undivided Paleozoic sedimentary rocks.

Alteration:
The Shellabarger stock is described as an altered gabbro by Reed and others (1978) and by Reed and Nelson (1980). Alteration mineralogy is not specified.

Age of mineralization:
Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the Shellabarger stock, one of the composite plutons mapped by Reed and Nelson (1980).

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Reconnaissance mapping, stream silt, pan concentrate and rock sampling by the U.S. Geological Survey (Reed and others, 1978; Reed and Nelson, 1980) are all that have been described here. Reed and others (1978) report three samples that averaged 0.1% copper from the Shellabarger stock, an altered biotite-pyroxene gabbro.

Production notes:

Reserves:

Additional comments:

References:

Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL069

Latitude: 62.971 **Quadrangle:** TL D-4

Longitude: 151.877

Location description and accuracy:
Reed and others (1978, locality 12) locate this occurrence in the northwest quarter of Section 36, T. 22 S., R. 23 W., of the Fairbanks Meridian in an easterly draining tributary to the Swift Fork Kuskokwim River at about 4000 feet within Denali National Park and Preserve. Location is approximate.

Commodities:

Main: Cu

Other:

Ore minerals: Unidentified secondary hydrous copper carbonate minerals

Gangue minerals:

Geologic description:
The location of this site is approximate. Reed and others (1978) describe a float sample of quartz semischist that contains unknown secondary hydrous copper carbonate minerals. The sample site lies near a thrust fault that places Devono-Mississippian(?) black shale and calcareous sedimentary rocks (Pzsl), considered to correlate with the Totalanika Schist in the Kantishna Hills to the north, over a lower Paleozoic quartzite, semischist, and metavolcanic rocks (Pzsv) (Reed and Nelson, 1980).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None.

Site Status: Inactive.

Workings/exploration:

Reed and others (1978) describe a float sample of quartz semischist that contains unknown secondary hydrous copper carbonate minerals.

Production notes:

Reserves:

Additional comments:

This site is located within Denali National Park and Preserve.

References:

Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed

Site type: Occurrence

ARDF no.: TL070

Latitude: 62.62 **Quadrangle:** TL C-6

Longitude: 152.77

Location description and accuracy:
Reed and others (1978, locality 13) locate this occurrence in the headwaters of Pingston Creek.

Commodities:

Main: Au

Other:

Ore minerals:

Gangue minerals: Mariposite

Geologic description:
This site is given as an unconfirmed location of gold-bearing mariposite-rich boulders by Reed and others (1978). This area drains Paleozoic sedimentary rocks south of the Denali Fault (Reed and Nelson, 1980).

Alteration:

Age of mineralization:
Paleozoic (?); boulders were likely derived from the Paleozoic rocks mapped by Reed and Nelson (1980) upstream from this site.

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:
Reconnaissance mapping and rock sampling by the U.S. Geological Survey (Reed and others, 1978) are all that have been described here. This site is an unconfirmed location

of gold-bearing mariposite-rich boulders by Reed and others (1978).

Production notes:

Reserves:

Additional comments:

References:
Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on Yenlo Creek)

Site type: Prospect

ARDF no.: TL071

Latitude: 62.182 **Quadrangle:** TL A-3

Longitude: 151.159

Location description and accuracy:
Reed and others (1978, locality 67) show this placer prospect located in Yenlo Creek in the southwest quarter of Section 8, T. 24 N., R. 10 W., of the Seward Meridian at the southwest end of Willow Mtn. The coordinates for this record are given at the center of the placer claim locations.

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:
Presumed to be a Pleistocene placer occurrence. No published geologic description of this site is available. Gold-bearing veins have been reported from the north end of the Yenlo Hills (TL075), approximately two and a half miles to the west of this site.

Alteration:

Age of mineralization:
Pleistocene.

Deposit model:
Placer Au-PGE (Cox and Singer, 1986; model 39a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
39a

Production Status: Undetermined.

Site Status: Undetermined

Workings/exploration:
The drainage has been prospected and mined by various small scale surface methods.

Production notes:

Reserves:

Additional comments:

References:
Reed and others, 1978.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Sheep Mountain

Site type: Occurrence

ARDF no.: TL072

Latitude: 62.81 **Quadrangle:** TL D-5

Longitude: 152.46

Location description and accuracy:
Reed and others (1978, locality 3) show this occurrence about 1.2 miles northwest of VABM Sheep west of the Tonzona River, in the east-central part of Section 4, T. 31 N., R. 17 W., of the Seward Meridian. Location is good to within 1/4 mile.

Commodities:

Main: Ag, Pb, Zn

Other: Mn, Sb

Ore minerals:

Gangue minerals:

Geologic description:
Reed and others (1978) described this locality as sporadic areas of manganese-rich metasedimentary rocks within the lower Paleozoic Pzsv unit which is considered to be correlative with similar units in the Kantishna Hills (Reed and Nelson, 1980). Gossans are spatially associated with felsic porphyry dikes and a Tertiary granite stock (Tmt) that may represent a cupola of underlying granitic rocks similar to the Tonzona pluton eight miles to the east-northeast (Reed and others, 1978; Reed and Nelson, 1980).

Curtin, Karlson, O'Leary, Day, and McDougal (1978) describe clusters of high copper (+7,000 ppm) and zinc (+2500 ppm) values and scattered high lead (+10,000 ppm) values in heavy-metal concentrates from stream sediment samples collected around the VABM Sheep area. They suggest that these anomalous samples are asociated with the granite stock.

Mineralization at this locality could be similar to the Mespelt (TL005), Hogback (TL006) or Boulder Creek (TL073) areas, which are associated with the Tonzona pluton.

Alteration:

Age of mineralization:
Tertiary; mineralization is interpreted to be linked to the intrusive rocks mapped by Reed and Nelson (1980) as related to the Tonzona pluton which is determined to be 52.3 to 56.2 m.y. by the K/Ar method (Reed and Lanphere, 1972).

Deposit model:
Possibly Polymetallic veins (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:
Reconnaissance mapping, stream sediment and rock sampling by the U.S. Geological Survey (Curtin, Karlson, O'Leary, Day, and McDougal, 1978; Reed and others, 1978; Reed and Nelson, 1980) are all that have been described here. Curtin, Karlson, O'Leary, Day, and McDougal (1978) describe clusters of high copper (more than 7,000 ppm) and zinc (more than 2500 ppm) values and scattered high lead (more than 10,000 ppm) values in heavy-metal concentrates from stream sediment samples collected around the VABM Sheep area.

Production notes:

Reserves:

Additional comments:

References:
Reed and Lanphere, 1972; Curtin, Karlson, O'Leary, Day and McDougal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Boulder Creek; Purkeypile Boulder Creek; Boulder Creek Tin Lode; Purkey Tin; Wonder; Scenic; Basin; Lead

Site type: Prospect

ARDF no.: TL073

Latitude: 62.903 **Quadrangle:** TL D-5

Longitude: 152.15

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2 - C(3) - A(1)) locate the Boulder Creek occurrence about 300 feet north-northeast of the J+K discovery adit (TL004) below Boulder Creek Glacier on the east bank of Boulder Creek in the southeast quarter of Section 32, T. 33 N. R. 15 W., of the Seward Meridian.

Commodities:

Main: Ag, Cu, Pb, Sn

Other: As, Sb

Ore minerals: Cassiterite, chalcopyrite, galena, tetrahedrite

Gangue minerals: Calcite, diopside, epidote, manganosiderite

Geologic description:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2 - C(3) - A(1)) locate the Boulder Creek occurrence about 300 feet north-northeast of the J+K discovery adit. Shallow shafts, dozer cuts and diamond drill holes have been used to explore the prospect. Host rocks are thermally metamorphosed calc-silicate rock, felsic schist, dolomite, and argillite approximately 300 to 600 feet north of Tonzona pluton. In plan the main exposure is circular with about a 40-foot diameter. Disseminated cassiterite, arsenopyrite, chalcopyrite, galena and pyrrhotite occur in clusters of narrow, open-space fracture fillings, suggestive of a stockwork-type deposit, and in veins up to five or six feet long and a foot wide. A six-foot-wide zone of manganosiderite is noted along the southern contact of one 18-inch-wide vein. Silicification and fracturing are intense. C.C. Hawley and Associates, Inc.(1978) report up to 4 percent tin, 0.3 percent copper, 2.8 percent zinc, 1 oz/ton silver and a trace of gold in rock chip samples. A nine-foot channel sample across a mineralized sheeted vein set averaging 1.57percent tin and 10.0 oz/ton silver is described by Conwell (1977). Selected samples from adjacent clusters contained as much as 18 percent tin and 230 oz/ton silver. Drill hole data suggest the deposit overlies a marginal cusp of the granite. Twelve of twenty-three drill holes intersected zones containing more than 0.53 percent tin. Intercepts were between 1.9 and 7.8 feet wide, with an average grade of

about 2 percent tin. One interval contained 5 percent tin over an 11.5-foot intercept (Conwell, 1977; Warner, 1985). C.C. Hawley and Associates, Inc.(1978) suggest that the drill holes may have been drilled down dip and thus did not adequately test the configuration of the mineralization. Warner (1985) estimated this occurrence contains at least 136,000 kg Sn.

In the entire Boulder Creek area there are widely separated, mineralized outcrops. Mapping and ground geophysical surveys, including magnetics and Chrone VLF, suggest extensive skarn development and skarn mineralization across Boulder Creek from the J+K adit. Little sub-surface exploration has been completed (C.C. Hawley and Associates, Inc.). Reed and others (1978) report that high tin values in pan concentrate samples collected along the northern granite-sedimentary contact suggest that tine mineralization occurs for at least 5 kilometers west of the Boulder Creek prospect and the possibility that addtional tin-silver deposits occur along this northern contact zone is considered excellent. The Boulder Creek region, probably due to its remote location and the low tin prices, is relatively under-explored.

The geologic setting of the Boulder Creek area is provided, as follows, from work done by C.C. Hawley and Associates, Inc. (1978) and Reed and Nelson (1980). Blocky slate, argillite, thin-bedded siliceous limestone and chert define a belt of lower Paleozoic sedimentary and metavolcanic rocks (possibly Keevy Peak, other Totalanika series, or equivalents) bordered by the Tonzona granitic pluton (Tmt), part of the McKinley sequence of Late Cretaceous and early Tertiary age intrusive rocks mapped by Reed and Nelson (1980). The granite has three phases; a coarse-grained, locally porphyritic biotite granite; a medium-grained biotite granite; and a late fine-grained, leucocratic, locally aplitic, muscovite-tourmaline granite in which ovoid clusters of small black tourmaline crystals give the rock a 'dalmatian' appearance. Muscovite may exceed biotite and accessory minerals include tourmaline with lesser amounts of topaz, fluorite, garnet, zircon, and apatite. Late-stage greissen veinlets contain muscovite, topaz, tourmaline, locally abundant beryl, and occasionally, cassiterite. Lead, silver and tin mineralization occurs in Paleozoic metasediments and metavolcanic rocks along the north and northeast contact of the pluton.

Alteration:

Development of tactite mineral assemblage in host rocks because of thermal effects of nearby biotite granite. Locally intense silicification (C.C. Hawley and Associates, Inc., 1978).

Age of mineralization:

Tertiary; mineralization in the Boulder Creek area is interpreted to be linked to the Tonzona granite (Tmt), part of the McKinley Sequence, that has been determined to range from 52.3 to 56.2 m.y. in age (Reed and Lanphere, 1972; Reed and Nelson, 1980).

Deposit model:

Sn Skarn Deposits (Cox and Singer, 1986; model 14b).

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

14b

Production Status: None

Site Status: Undetermined

Workings/exploration:

F. B. Jules and Ed Knutson of Poorman, Alaska concentrated their effort on the Jiles-Knudson prospect between 1910(?) and 1923. Mr. I.W.. Purkeypile and son David Purkeypile 'rediscovered' and prospected the Boulder Creek area since the late 1940s (C.C. Hawley and Associates, Inc., 1978). The area was evaluated by numerous private mining companies in the 1970s and 1980s.

Shallow shafts, dozer cuts and diamond drill holes have been used to explore the prospect. Mapping and ground geophysical surveys, including magnetics and Chrone VLF (C.C. Hawley and Associates, Inc., 1978, Fig. 4.2-C and Fig. 4.2C(3)-A(1)).

Production notes:

Reserves:

Warner (1985) estimates 136,000 kg Sn. Grab samples contain up to 18% Sn and 7,900 g/t Ag.

Additional comments:

In much of the literature the Purkeypile group of lode claims includes the Jiles-Knudson (TL004), Mespelt (TL005) and Hogback (TL006) prospects. The Jiles-Knudson prospect is probably on related mineralization and very likely part of the same mineralization and alteration event.

References:

Brooks, 1911 (P 70); Capps, 1925; Capps, 1927; Maloney and Thomas, 1966; Berg and Cobb, 1967; Clark and Cobb, 1972; Reed and Lanphere, 1972; Conwell, 1977; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980 (OFR 80-884); Reed and Nelson, 1980; Warner, 1985; Nokleberg and others, 1987.

Primary reference: Conwell, 1977; C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Gopher; Gopher Gulch; Gopher Creek; Gopher Cr.

Site type: Mine

ARDF no.: TL074

Latitude: 62.578 **Quadrangle:** TL C-2

Longitude: 150.866

Location description and accuracy:

C.C. Hawley and Associates, Inc. (1978, Fig. 4.2-B(3)) show this locality in the northeast quarter of Section 25, T. 29 N., R. 9 W., of the Seward Meridian at the head of Gopher Gulch about two miles north of the confluence of Little Writer with Willow Creek. Also shown as locality 28 by Clark and Cobb (1972).

Commodities:

Main: Au

Other:

Ore minerals: Gold

Gangue minerals:

Geologic description:

Willow Creek drains across the contact between Mesozoic slate and graywacke (KJs) and Tertiary strata of the Sterling (?) (Tcp) and Tyonek (?) (Tts) Formations of the Kenai Group (Reed and Nelson, 1980). The placer gold deposits within Willow Creek and the headwater drainages, Gopher and Ruby Gulches, are hosted in Pleistocene stream gravels. At the head of Gopher Gulch, highly argillaceous white quartz congomerate contained about 1500 ounces of angular gold in a 320 by 660 foot cut (C.C. Hawley and Associates, Inc., 1978). Gold is concentrated mainly on bedrock (Cobb and Reed, 1980). Mertie (1919) describes intricately intergrown gold and lead in one specimen from this locality. Mining was conducted on Gopher Gulch as early as 1917 (Garrett, 1998).

The white quartz conglomerate placers (e.g. Willow Creek, Thunder Creek, TL032, 058, Dollar Creek, TL031) represent the oldest placers in the Cache Creek area. Capps (1925) describes the white quartz conglomerate as the basal unit of the Tertiary Kenai Formation. However Clark and Hawley (1968) suggest that the white quartz conglomerate is older and that the Kenai Group was deposited on it. They believe the auriferous conglomerate is near its original source in part because the characteristics of the gold show a common source that has not moved far or has not been reworked. Further, they indicate that the conglomerate is a product of shearing and weathering in situ of argillic altered, auriferous Tertiary quartz porphyry intrusive rocks and associated quartz veins that were emplaced along northeast, high angle normal faults. The lineaments in Dutch

and Cache Creeks represent two of these faults.

Tributaries to Willow Creek which have been mined include: Ruby Creek (TL041), Willow Creek (TL042); Falls Gulch, Rocky Gulch, Slate Gulch, and Snow Gulch. See also Peters Creek (TL045).

Alteration:

C.C. Hawley and Associates, Inc. (1978) describe argillic alteration of the Tertiary quartz porphyry intrusive rocks.

Age of mineralization:

Tertiary and Pleistocene (Clark and Hawley,1968).

Deposit model:

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

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

39a

Production Status: Yes; small.

Site Status: Undetermined.

Workings/exploration:

Hand-mining and (?) hydraulic operations were conducted since 1917 (Garrett, 1998).

Production notes:

At the head of Gopher Gulch, highly argillaceous white quartz conglomerate contained about 1500 ounces of angular gold in a 320 by 660 foot cut (C.C. Hawley and Associates, Inc., 1978).

Reserves:

Additional comments:

Similar deposits occur on Thunder Creek (TL032, 058) and Dollar Creek (TL031), both tributaries to Cache Creek. Also see Peters Creek (TL045). The structural grain of the area is defined by major northeast-trending, steeply dipping faults (Hawley and Clark , 1968).

References:

Smith, 1930 (B 810); Clark and Hawley, 1968; Clark and Cobb, 1972; Cobb, 1973; Hawley and Clark, 1973; MacKevett and Holloway, 1977; C.C. Hawley and Associates, Inc., 1978; Reed and others, 1978; Cobb and Reed, 1980; Garrett, 1998.

Primary reference: C.C. Hawley and Associates, Inc., 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (in the Yenlo Hills)

Site type: Occurrence

ARDF no.: TL075

Latitude: 62.179 **Quadrangle:** TL A-3

Longitude: 151.236

Location description and accuracy:
This site is located in a drainage bottom in the southeast quarter of Section 11, T. 24 N., R. 11 W., of the Seward Meridian. It is approximately two and a half miles west of TL071 at the north end of the Yenlo Hills.

Commodities:

Main: Au, Cr, Ni, unidentified platinum-group elements

Other:

Ore minerals: Arsenopyrite, pyrite

Gangue minerals: Quartz

Geologic description:
Diamond Gold Corporation reports a discovery of gold-rich arsenopyrite veins that average 0.10 oz/ton gold and 2 oz/ton silver (company press release, 10/14/98). Trenching exposes the one vein in a 400-foot-long zone (width not specified). They indicate the mineralization is related to the 'Hudson Stock', a gabbro body which returned assays of anomalous nickel, chromite and platinum-group-elements (values not released). The ultramafic body, which intrudes Mesozoic marine sedimentary rocks (KJs, Reed and Nelson, 1980), produced extensive hornfels areas with stockwork quartz veinlets (C.C. Hawley, oral communication).

Alteration:
Some clay gouge, with pyrite and quartz, is reported in a fault zone in the sedimentary rocks.

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Active

Workings/exploration:

Trenching, rock chip sampling and mapping by Diamond Gold Corporation were conducted during 1998. They indicate the mineralization is related to the 'Hudson Stock', a gabbro body which returned assays of anomalous nickel, chromite and platinum-group-elements (values not released).

Production notes:

Reserves:

Additional comments:

References:

Reed and Nelson, 1980.

Primary reference: This record

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (near Heart Mtn)

Site type: Occurrence

ARDF no.: TL076

Latitude: 62.889 **Quadrangle:** TL D-5

Longitude: 152.078

Location description and accuracy:
Reed and others (1978, locality 11) show this site in a drainage one and a half miles east of Heart Mtn at about 4500 feet in elevation in the southwest quarter of Section 3, T. 32 N., R. 15 W., of the Seward Meridian within Denali National Park and Preserve.

Commodities:

Main: Cu, Ni

Other:

Ore minerals: Chalcopyrite, pentlandite(?), pyrite

Gangue minerals:

Geologic description:
Reed and others (1978) describe float samples of serpentinite, collected about a mile and a half east of Heart Mtn, that contain veins and irregular segregations of pyrite, chalcopyrite, and pentlandite(?). They indicate the source of the float is ultramafic rock to the south of this site, mapped as MzPzu by Reed and Nelson (1980). Chrome and nickel contents of the serpentinite (specific site not given) average 2000 ppm each (Reed and Nelson, 1980).

Curtin, Karlson, O'Leary, Day and McDougal (1978) show a cluster of heavy-mineral concentrate samples with high copper (more than 7,000 ppm) and lead (more than 12,500 ppm) values in T. 32 N., and T. 33 N., R. 14 W. and R. 15 W., SM, an area ranging from one half to two miles east of Heart Mtn. They suggest the source of the high copper values in heavy-mineral concentrate samples is most likely a small body of serpentinite mapped as MzPzu by Reed and Nelson (1980) in T. 32 N., R. 15 W., SM. The source of the anomalous lead is not known. Chalcopyrite, malachite, arsenopyrite, and fluorite were observed under the microscope in several of the heavy-mineral concentrate samples with high copper values (Curtin, Karlson, O'Leary, Day and McDougal, 1978).

Alteration:

Age of mineralization:
Mesozoic and (or) Paleozoic (Reed and Nelson, 1980).

Deposit model:
Possibly synorogenic-synvolcanic Ni-Cu (Cox and Singer, 1986; model 7a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
7a

Production Status: None

Site Status: Undetermined

Workings/exploration:
Reconnaissance mapping, stream silt and rock sampling by the U.S. Geological Survey (Curtin, Karlson, O'Leary, Day and McDougal,1978; Reed and others,1978; Reed and Nelson, 1980) are all that have been described here. Chrome and nickel contents of the serpentinite (specific site not given) average 2000 ppm each (Reed and Nelson, 1980). Curtin, Karlson, O'Leary, Day and McDougal (1978) show a cluster of heavy-mineral concentrate samples with high copper (more than 7,000 ppm) and lead (more than 12,500 ppm) values in an area ranging from one half to two miles east of Heart Mountain.

Production notes:

Reserves:

Additional comments:
This site is within Denali National Park and Preserve.

References:
Curtin, Karlson, O'Leary, Day and McDougal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: Reed and others, 1978

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

Site name(s): Unnamed (on Portage Creek)

Site type: Occurrence

ARDF no.: TL077

Latitude: 62.009 **Quadrangle:** TL A-6

Longitude: 152.9

Location description and accuracy:
This occurrence is located in Portage Creek at about 3100 feet in the southwest quarter of Section 11, T. 22 N., R. 20 W., of the Seward Meridian.

Commodities:

Main: Au, Cu, Mo

Other: As

Ore minerals: Arsenopyrite, chalcopyrite, gold, molybdenite, pyrite

Gangue minerals:

Geologic description:
The area is underlain by Mesozoic marine sedimentary rocks (KJs) that are intruded by the granodiorite of Mount Estelle (Te) (Reed and Nelson, 1980). At this locality the granodiorite has a leucocratic equigranular phase and a porphyritic phase with potassium feldspar phenocrysts up to 10 millimeters in size (Cominco American Incorporated, unpublished report). Cominco American Incorporated (unpublished report) describes chalcopyrite, pyrrhotite, arsenopyrite, molybdenite and pyrite as joint coatings, in veins, and as disseminations adjacent to northwest-striking mineralized joint sets. Sulfide-bearing rock samples from this site contain gold which ranges from 60 ppb to greater than 1.0 oz/ton. Silver values are generally below detection (less than 0.4 ppm); however isolated values of up to 11 ppm were recorded.

The granodiorite of Mt. Estelle probably reflects the same plutonic event as the composite plutons (Tcp) to the north described by Reed and Nelson (1980). Altered granodiorite float about 2 miles S72W of this location location contains gold-bearing veinlets of arsenopyrite and pyrite (TL063). Curtin, Karlson, O'Leary, Day, and McDanal (1978) report pan concentrate samples with visible gold from Quaternary gravels about one mile downstream from this locality at site TL052. Similar gold-sulfide veins are present in the Estelle pluton (TY019) to the south in the Tyonek quadrangle.

Alteration:

Age of mineralization:

Late Cretaceous/early Tertiary; mineralization is interpreted to be linked to the granodiorite of Mount Estelle (Te) for which Reed and Nelson (1980) give hornblende ages of about 65 and 66 m.y.

Deposit model:
This occurrence does not specifically fit any of those defined by Cox and Singer (1986). It may be a variation of the Porphyry copper model (Cox and Singer, 1986; model 17).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
17(?)

Production Status: No

Site Status: Undetermined

Workings/exploration:
Rock chip sampling and mapping at 1:12,000 scale by Cominco American Incorporated was conducted in the late 1980's (unpublished report). Reconnaissance mapping, stream silt and pan concentrate sampling was done in the area by the U.S. Geological Survey (Reed and Elliot, 1970; Curtin, Karlson, O'Leary, Day, and McDanal, 1978; Reed and Nelson, 1980). Sulfide-bearing rock samples from this site contain gold which ranges from 60 ppb to greater than 1.0 oz/ton. Silver values are generally below detection (less than 0.4 ppm); however isolated values of up to 11 ppm were recorded (Cominco American Incorporated, unpublished report).

Production notes:

Reserves:

Additional comments:

References:
Reed and Elliot, 1970; Curtin, Karlson, O'Leary, Day and McDanal, 1978; Reed and others, 1978; Reed and Nelson, 1980.

Primary reference: This record

Reporter(s): Madelyn A. Millholland (Millholland & Associates)

Last report date: 08/10/98

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