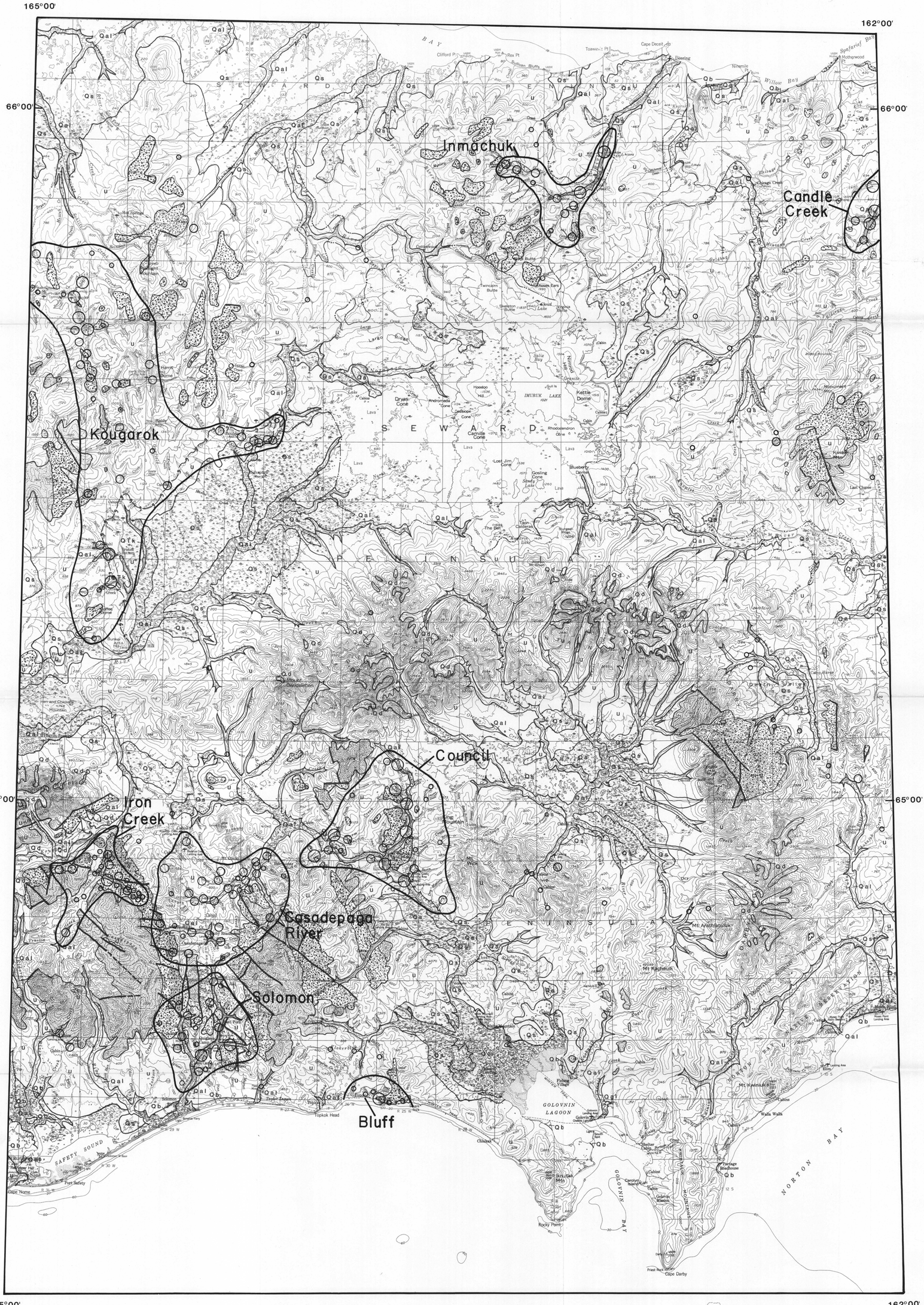
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1838-C



Base from U.S. Geological Survey
Bendeleben, Solomon, and Kotzebue, 1955

SCALE 1:250 000

5 0 5 10 15 20 25 MILES
5 0 5 10 15 20 25 KILOMETERS

AREA OF MAP

Geology modified from Till and others (1986), and Kaufmann (1985)

PLACER GOLD OF THE SOLOMON, BENDELEBEN, AND SOUTHERN PART OF THE KOTZEBUE QUADRANGLES, WESTERN ALASKA

By

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CORRELATION OF MAP UNITS

Qd, Qal, Qs, Qb	QUATERNARY	CENOZOIC	QTk	QUATERNARY(?) - TERTIARY	CENOZOIC
u	MESOZOIC				
	ORDOVICIAN - CAMBRIAN	PALEOZOIC			
	PRECAMBRIAN				

DESCRIPTION OF MAP UNITS

Qd **Glacial drift (Quaternary)**—Unsorted, unstratified till; locally stratified and sorted ice-contact and outwash gravel. Includes drift from the four most recent glacial intervals recognized on the Seward Peninsula. The oldest deposits (assigned to the Stewart River glacial interval) are probably pre-Wisconsin in age. They form subdued, gravelly ridges that have been substantially modified by post-glacial weathering. Drift of the next younger interval (Salmon Lake glaciation) is found closely nested behind the older, outermost drift. In the study area, glaciers of this interval were largely restricted to mountain valleys, but south of the Kigluaik Mountains they spread out beyond the mountain front, forming large piedmont lobes. Glaciers of the succeeding interval (Mount Osborn glaciation) were confined to mountainous tributary valleys, where they left moraines that retain their morphologic freshness. The youngest ice advance is either latest Wisconsin or early Holocene in age. It is recorded only in a few of the highest valley heads. The unit is found far inside the limits of much older drift. A thorough discussion of the study area's glacial history is provided by Kaufman (1985) and Kaufman and Hopkins (1986)

Qal **Alluvium (Quaternary)**—Stratified deposits of sorted gravel, sand, and silt. Includes active channel, terrace, overbank, fan, oxbow/lake fill, glaciofluvial and lagoon deposits, and mine tailings. Also includes small eolian sand dunes on point bars in the major basins and thermal spring thaw zones

Qs **Silt and peat deposits (Quaternary)**—Thick deposits of weakly stratified, well-sorted eolian silt with sand, organic-rich silt, and detrital peat. Contain ice wedges and high volume of interstitial ice. Support numerous thaw lakes and pingos. Found in marshy, topographic depressions throughout the map area

Qb **Beach deposits (Quaternary)**—Silt, sand, and gravel deposited during the last interglacial (Pelukian transgression) and perhaps older marine transgressions on the southern coastal plain (north of Safety Sound). Include ancient barrier bars composed of well-sorted sand forming linear ridges. Include clean sand and cobbly sand forming modern spits, beaches, and barrier bars along the coast

QTk **Kougarok Gravel (Quaternary? and Tertiary)**—Oxidized, quartz-rich pebble-cobble gravel with lenses of silt, sand, and abundant vertical plant debris. Locally contains ice-wedge pseudomorphs. Forms terrace remnants on the northwest margin of Kuzitrin River basin. Locally lignified wood and peat are exposed in wave-cut pingos near the confluence of Noxapaga River and Turner Creek. This unit was called the middle member of the Kougarok Gravel by Hopkins (1963) and the Noxapaga Formation by Sainsbury (1974). Contains a middle Miocene pollen assemblage (T.A. Ager, written commun., 1985)

u **Bedrock and surficial deposits, undivided (Quaternary to Precambrian)**—Exposures of bedrock units other than those described above consist of Precambrian and Paleozoic blueschist- and amphibolite-facies metamorphic rocks, Paleozoic marble, dolostone, and granite, Cretaceous plutonic rocks, and Cretaceous and Tertiary sedimentary rocks. Also include widespread surficial deposits consisting of massive to weakly stratified silt, fine sand, and pebbles derived predominantly from windblown or frost-riven materials in valley bottoms the deposits include stratified organic silt and peat with abundant interstitial ice; on valley walls the deposits form solifluction lobes of poorly sorted stony silt. Angular, frost-riven bedrock rubble mantles hill tops and ridges. On mountain flanks, this unit includes aprons of inactive alluvial fans. North of the Kigluaik Mountains, around Safesty Sound, and in McCarthy's Marsh the unit includes extensive areas of lower Pleistocene glacial deposits highly modified by weathering processes and commonly overlain by a thick cover of windblown silt. The volcanic rocks of the Imuruk lava plateau, also overlain by a thick mantle of silt, are also included in this unit

Casadepaga Schist (Ordovician)—Forms rounded hills of frost-riven light-green and greenish-brown mafic schist, locally punctuated by dark greenish-black tors and rubble piles of metagabbro. The schist lithologies are dominantly mafic with calcareous components added; chlorite-albite schist, mafic schist, chlorite-albite-epidote-white mica schist, chloritoid-glaucophane metapelite, and calc-schist are common. Lithologies are interlayered on a scale of tens of centimeters. Ordovician age of the unit constrained by microfossils collected in overlying and underlying carbonate units (see Till and others, 1986). May represent pyroclastic deposits and stocks related to submarine mafic volcanism. Metamorphic assemblages present were formed during the Late Jurassic or Early Cretaceous and represent the epidote blueschist subfacies

Mixed rocks unit (Ordovician and Cambrian)—Interlayered pure and impure marble, quartz-graphite schist, pelite, calc-schist, and mafic schist. Gray and orange weathering marble and dark gray-black weathering quartz-graphite schist are the most common lithologies in the unit, which is dominated by one or the other at various localities. Internal stratigraphy of the unit is not consistent; lithologies thicken and thin along strike on a scale of kilometers. Boudins of metagabbro are found locally. Conodonts of Ordovician age are found in a gray marble near the top of the unit. Recrystallized radiolaria are found locally. Partially equivalent to the "slate of the York region" of Sainsbury (1974)

Contact—Includes fault contacts between undivided bedrock and surficial deposits

Fault—Dashed where inferred; mapped only in the mixed rocks unit and Casadepaga Schist

Upper limit of the Kougarok Gravel—Contact generally obscured by windblown silt

Outer limit of major basaltic lava flows of the Imuruk lava plateau—Contact generally obscured by windblown silt

Bluff **Boundary and name of most productive placer gold areas**

Placer gold occurrences--Large production, medium to small production, and prospect

INTRODUCTION

Eight of the historically most productive placer gold areas of the Solomon, Bendeleben, and southern Kotzebue quadrangles are delineated on this map. Each area encompasses a high density of placer gold occurrences as reported by the following sources: (1) previous occurrences compiled by Cobb (1973); (2) new data from a regional stream sediment and heavy-mineral concentrate sampling program by the U.S. Geological Survey (Ahrogast and others, 1985); (3) unpublished results of field panning by Yeend during the summers of 1982–84.

The extent of two bedrock units that are spatially associated with the occurrence of placer gold is highlighted. The bedrock geology shown on this map is modified from Till and others (1986) and mapping of surficial geologic units is after Kaufman (1985). The reader is referred to these reports for additional geologic information.

Roughly one-third of the total placer gold mined in Alaska has come from the Seward Peninsula. The Bendeleben and Solomon quadrangles of central Seward Peninsula include eight areas which account for 30 percent of the Seward Peninsula production. The major district outside of these quadrangles, the Nome district in the Nome quadrangle, is famous for its gold-rich beach placers.

The following discussion summarizes the early placer mining history, recent placer exploration and mining, and regional geology for each of the eight primary areas, and speculates on gold source rocks.

EARLY HISTORY

It is not surprising that the Russians were the first non-native peoples to visit the Seward Peninsula, as it is only 100 km from Siberia. The first landing, however, was not until 1732. An expedition under the Englishman James Cook surveyed the coast in 1778 and a map was subsequently published. Following the establishment of the first Russian settlement on St. Michael Island, stories flourished about Russians mining gold near Nome; however, the validity of the reports is doubted.

The first important inland exploration of the peninsula was in 1865–66, by the namesake of one of the quadrangles under study—Baron Otto von Bendeleben. Bendeleben was seeking a route for the telegraph line that was to connect Europe and America, a line that was never completed. During his explorations he is reported to have found placer gold on the Niukluk River. If true, this would be the earliest that placer gold was discovered in Alaska except for the discovery in Cook Inlet by Dorofshn, a Russian mining engineer, in 1854. For several decades following Bendeleben's visit, the peninsula continued to be regarded as a barren waste. The lead-rich mineral galena was found by natives at Omilak in the latter part of the 19th century. The Alaska Gold and Silver Mining and Milling and Trading Company shipped some ore from the Omilak mine, but the mine never reached a paying stage, and operations ceased by 1891.

The discovery of gold in the Klondike was responsible for encouraging gold prospecting throughout much of Alaska, and prospectors eventually found their way to the Seward Peninsula. There is some conflicting evidence concerning the initial gold discovery that led to the widespread gold rush in the early part of the 20th Century. Either the natives found gold on Ophir Creek in 1897 or it was discovered by a party of four prospectors including Daniel Libby, L.S. Meising, A.P. Mordaunt, and H.C. Blake in 1898 on Melsing Creek and adjacent Ophir Creek. These localities are all in the Council mining district in the Solomon quadrangle.

GEOLOGY OF IMPORTANT PLACER MINING REGIONS

There are eight areas within the Solomon and Bendeleben quadrangles within which approximately 2,000,000 oz of placer gold has been mined. This is roughly 10 percent of the total from Alaskan placer mines. These eight areas were delineated on the basis of the close grouping of placer gold occurrences as compiled by Cobb (1973), and stream sediment analysis and field panning by the U.S. Geological Survey during the summers of 1982–84. The eight areas are: 1) Bluff, 2) Candle Creek, 3) Casadepaga River, 4) Council, 5) Inmachuk, 6) Iron Creek, 7) Kougarok, and 8) Solomon. The bedrock underlying most of these areas has been informally referred to by Till and others (1986) as their "mixed unit" (hereafter called the "mixed rocks unit")—a part of the mappable metamorphic stratigraphy of the Nome Group. The mixed rocks unit is composed of interlayered pure and impure marble, quartz-graphite schist, pelite, calc-schist, and mafic schist. Dark gray-black weathering quartz-graphite schist is characteristic of the unit; the quartz-graphite schist and gray-weathering marble together may dominate the unit. The extent of the mixed unit is shown on the geologic map.

The 1980's gold rush that transformed some areas of Alaska into full-fledged active mining camps, such as the Circle District, has had little effect on the Seward Peninsula. Perhaps no more than a dozen small placer mines have been active in the Bendeleben and Solomon quadrangles in the past five years.

The following is a brief description of the geology and placer mining particulars for each of the eight identified areas.

BLUFF

Bluff is the location of one of the richest beach placers anywhere. Values as high as 7.5 oz/yd³ were noted (Collier and others, 1908). Daniels Creek and the beach deposits near the mouth of Daniels Creek produced the bulk of the gold—50,000 oz by 1906. The gravel in Daniels Creek is angular and rests on the very irregular surface of carbonate rock. Heavy minerals associated with the gold are magnetite, ilmenite, cinnabar, and garnet. Alfred Brooks in U.S. Geological Survey Bulletin 328 (Collier and others, 1908) on the Bluff region states, "...throughout the peninsula the richest placers occur at the contact of limestone and schist. These contacts appear to be where ... fissuring has developed and thus given opportunity for ore-bearing solutions to penetrate. The Daniels Creek deposits are no exception to this statement, for the location of the placers with reference to the limestone and schist, ... points to the conclusion that the zone of mineralization lies at the contact of the rocks of the two types."

In July 1982, the unconsolidated beach deposits were being mined for gold. Sand and gravel was being excavated from a 2.5-m-deep pit, the lower 2 m of which was composed of a moderately compacted brown, unsorted gravel, sand silt and clay. This was overlain by 0.5 m of light gray sand and gravel. All of this material appeared to be old mine tailings. A sample panned from midway in the brown layer produced some very fine grained gold fragments.

Approximately 15 people were employed in washing gold from the beach deposits in July 1982. Water was pumped directly from the surf. In the summer of 1985, 10 to 15 people were occupied in mining for gold in the sand and gravel near the mouth of Daniels Creek. They were intending to work the unmined gravel of Daniels Creek upstream from the beach with the aid of a conveyor belt but did not return in 1986 (Bruce Gamble, oral commun., 1987).

CANDLE CREEK

Much of the gold-rich portion of Candle Creek lies just beyond the eastern boundary of the Bendeleben quadrangle. Over 100,000 oz of gold was produced in the early years of this century from the Candle Creek area. Both bench and creek gravels contain gold. The gold is commonly flattened and black in color. Black sand is scarce and pyrite and rutile are occasionally found in the heavy concentrates. The bedrock is both schist and marble. Henshaw (Brooks, 1909) suspected that gold-bearing quartz veins and quartz-calcite veins in schists were the source of the placer gold. The hydraulic method and dredging have proved the most suitable for mining the gravel. A shortage of water for mining led to development of an extensive ditch system in the early years (Brooks, 1909).

Auriferous gravel was being mined by two men in the northeast corner of the Bendeleben quadrangle near the junction of Candle and Patterson Creeks during the summer of 1982. Schist and quartz clasts are common in the gravel. A panned concentrate from Patterson Creek produced six to eight gold flakes (as much as 1 mm in diameter), very little black sand and some sulfides. The miners report obtaining galena in the "heavies" and the presence of vertebrate bones in the frozen gravel.

In the vicinity of Candle, an area that has been extensively mined by dredge and hydraulic methods, unmined gold-bearing gravel and mine tailings were being prepared for mining during the summer of 1983. Along the margins of Candle Creek a 1.2–2.4-m-thick section of muck (thawed and stripped prior to mining) overlies 2.4–3.0 m of gold-bearing gravel resting on pelitic schist.

Exploration for buried gold-rich alluvial gravel was being conducted in the Mud Creek area by the Noranda Company in 1983. This is just outside the northeast boundary of the Bendeleben quadrangle.

CASADEPAGA RIVER

By 1900, the three mining centers in the southern Seward Peninsula—Council, Casadepaga River, and Bluff—had been discovered and were being intensively developed. The Casadepaga River area is underlain by complexly folded and faulted pelitic and calcareous schist, quartz-graphite schist, marble, and mafic schist. Smith (1910) reports the presence of quartz veins that contain sulfides and gold, especially those that occur near schist-limestone contacts. He felt that these mineralized veins were the source for the placer gold in the area. Most of the gold was found in streams tributary to the Casadepaga River and bench gravel along the main stream. Heavy minerals were primarily magnetite and garnet. Water shortages necessitated the construction of ditches for the simple early mining efforts. Later, dredges were used in the area prior to World War II.

A small gold placer mine was being operated by two men on Spruce Creek during the summer of 1982. The present-day miners are working the valley margins just beyond a 3-m-wide swath down the center of the valley that was mined in the early 20th century. Spruce Creek valley is 24–30 m across and is underlain by unfrozen gravel with no overburden. Common lithologies in the gravel include marble, mica schist, rusty bull quartz and greenschist. The gold is evenly distributed throughout the 1.2–2.4-m-thick gravel. In 1982, between 300 and 500 yd³ (250–400 m³) of gravel were mined per day. Values generally ranged between .01 and .015 oz/yd³. The gold particles are rarely larger than 3.5 mm in diameter. Bench gravel is found along the Casadepaga River, however, according to local miners, this gravel contains little gold.

A dredge was operated on American Creek as recently as 1979. The creek canyon is narrow in the vicinity of the dredge (25–30 m wide), and the schist bedrock dips approximately 30° upstream.

COUNCIL

Approximately 1,000,000 oz of gold has been produced from this area, making it the second richest placer area on the Seward Peninsula (second only to Nome). Bedrock is graphitic quartz, mica schist, pelitic and calcareous schist, and marble. Small quartz and calcite veins occur locally (Cobb, 1973). Many of the veins contain sulfide minerals and visible gold (Collier and others, 1908) and may have been the source of the placer gold. Magnetite, ilmenite, garnet, pyrite, hematite, rutile, and scheelite are present in the heavy concentrates (Collier and others, 1908).

Ophir Creek, the richest producing stream, was first worked by hand and horse-drawn scrapers and later reworked by dredges. On Ophir Creek in 1903, 1,000 men were employed mining on the main stream and its tributaries. In 1964, one of the few gold dredges being operated in Alaska was on Ophir Creek. In more recent years dredging has been sporadic on Ophir Creek just upriver from Council, and generally does not begin until late summer.

INMACHUK

The 4 km of the Inmachuk River below the mouth of the Pinnell River has yielded the bulk of the placer gold in this area. Much of this was mined in the first decade of the century by winter drifting. In the winter the river is filled with ice and under these conditions the floodplain gravel can be drift mined, using the ice as a roof. The floodplain gravel is from 275 to 350 m wide and the depth to bedrock varies from 5 to 9 m. The bedrock is schist with interlayered marble. The marble is thought to have served as a natural riffle that trapped most of the gold (Henshaw, 1909).

Cobb (1973) mentions that the placer gold probably came from quartz-calcite veins in the schist. Pyrite, sphalerite, and galena have been found in the Hannum Creek area where the deposit has many attributes of sediment-hosted submarine exhalative Zn-Pb (SEDEX) deposits (Church and others, 1985).

Large-scale mining operations were made possible in 1908 by construction of the Fairhaven Ditch which brought water from Imuruk Lake. Dredging on the Inmachuk and Pinnell Rivers occurred between 1912 and 1963. Tertiary gravel buried beneath lava-filled channels of the Inmachuk River has yielded some gold. The minimum age of this gravel is restricted by a radiometric age determination of approximately 5.7 Ma for the overlying basalt (Hopkins and others, 1971).

Although no operating placer mines were present along the Inmachuk River in the summer of 1982, there was evidence of recent stripping and thawing, probably preliminary to the mining of gravel there. Panned samples of gravel along the Inmachuk River all yielded some gold, including fragments as much as 0.5 mm in diameter. A panned sample of schist bedrock in Nelson Creek just upstream from Old Glory Creek produced abundant pyrite. Bench gravel was mined at this locality, and quartz boulders as large as 30 cm and iron oxide nodules as much as 15 cm in diameter are present. A small placer mine was operated recently on Old Glory Creek. The creek is narrow (less than 9 m across) and solifluction debris on the marginal slopes has buried the creek gravel.

IRON CREEK

Gold from both the modern stream and bench gravels has been mined nearly every year since its discovery in 1900. Marble, quartz-graphite schist, and pelitic schist are predominant bedrock types. Sulfide-bearing lodes have been explored as sources of lead, silver, copper and gold. Iron Creek was given different names in different parts of its course. Most of the gold came from the main stream in the parts called Iron Creek, Dome Creek, and Benson Creek. Most of the mining was by simple methods due to the scarcity of water; however, a dredge was installed in Iron Creek in 1939 and operated for two years. Heavy minerals present in the concentrates include magnetite, ilmenite, garnet, and cinnabar.

There were no operating placer mines on Dome or Iron Creeks during the summer of 1982. A 15-m-wide bench at the mouth of Iron Creek contains a 3-m thick layer of gravel that has not been mined; however, panning did not reveal any gold. The bench may have been formed by the Pilgrim River rather than Iron Creek itself. The bench gravel, derived from glacial drift, includes well-rounded boulders as much as 30 cm in diameter. Boulder lithologies include schist, quartz, dark-colored slate, and mafic plutonic rocks (Smith, 1909).

KOUGAROK

This area encompasses the placers within the Kougarok River valley and the northwest margin of the Kuzitrin River basin, including those in the Noxapaga River area. Marble, quartz-graphite schist, pelitic schist, and mafic schist are common bedrock types in the area. The upper member of the Kougarok Gravel (Hopkins, 1963), a sparsely auriferous, clean, well-sorted, well-rounded, oxidized pebble-cobble gravel, extends as a more-or-less continuous sheet along the northwest margin of the Kuzitrin basin. It is distinguished from the younger, richer, auriferous gravel of late Pleistocene and Holocene age by its distribution in high terraces and interfluves between modern streams, by its reddish color, and by an exceptionally thick weathered zone in bedrock beneath the base of the gravel. Tertiary lignite, found in a few isolated exposures, is included in the middle member of the Kougarok Gravel (Hopkins, 1963). Sainsbury (1974) called this middle member unit the Noxapaga Formation, as it was uncertain whether a large unconformity existed below the upper gravel. A large block of claims has been staked on the upper member of the Kougarok Gravel in the vicinity of Quartz Creek. Exploratory drilling has occurred on these claims in recent years.

Much of the placer gold in the Kougarok area seems to be derived from a thin regolith of monolithologic, angular bedrock with iron-stained quartz boulders that overlies bedrock and underlies upper Quaternary peat deposits. Long periods of in situ weathering may have been important in the release of the gold in this area.

Large-scale mining was not possible in the Kougarok River valley until ditch systems had been constructed. On the Kougarok River, dredges accounted for most of the production. A dredge on the Kougarok River near Taylor begins operation in August and mines the river bed gravel that is as much as 3.5 m thick. Pyrite, magnetite, and hematite are in the concentrates from the Kougarok River, cassiterite from Mascot Gulch, scheelite from Homestake Creek, and cinnabar from Coffee Creek (Collier and others, 1908). The distribution of placer gold in the Kougarok area appears to be limited by the contact of marble with the schists (Collier and others, 1908).

SOLOMON

Stream and bench placers in the Solomon River drainage were worked until 1967. Most of the gold was recovered by dredges mining on the Solomon River, Shovel, Big Hurrah and Spruce Creeks. The richest gravel was probably in Big Hurrah Creek below the Big Hurrah Mine. The Big Hurrah mine was the only lode gold mine on the Seward Peninsula to attain production, yielding approximately 27,000 oz of gold mostly between 1903 and 1907 (Read and Meinert, 1986). The gold occurs in ribbon quartz veins at the Big Hurrah mine (Read and Meinert, 1986). Scheelite is common in panned concentrates from Big Hurrah Creek and the Solomon River. Other heavy minerals reported include magnetite, ilmenite, garnet, pyrite, chalcopyrite, and arsenopyrite (Smith, 1910).

Gravel deposits in the Solomon River just upstream from the mouth of Big Hurrah Creek are approximately 4 m thick and include boulders and cobbles of dark-colored schist, garnetiferous schist, and rusty quartz. Panned concentrates on Big Hurrah Creek contain a few gold flakes as much as 1 mm in diameter, garnet, and a small amount of black sand.

RELATIONS BETWEEN PLACER MINING AREAS AND BEDROCK TYPES

All of the placer areas described above are underlain by the low-grade metamorphic rocks of the Nome Group. Much of the Nome Group is composed of schist divisible into several mappable lithostratigraphic units (Till and others, 1986). All of the eight placer mining areas delineated on the map contain exposures of the mixed rocks unit, which is dominated by a quartz-graphite schist and marble and locally contains boudins of metabasite. This bedrock unit seems to have the highest probability for being a lode gold source. Five of the areas contain outcrops of the Casadepaga Schist, a chlorite-albite and mafic schist with boudins of metabasite that also could have provided some of the gold to the placers and would be the next most likely bedrock source. An impure marble unit, found in the Solomon quadrangle in the vicinity of the Fish River, that contains lenses and layers of mafic minerals, may also have contributed some gold. It is present in the headwaters of Iron Creek—a major gold placer area—and is also found in the Aggie and Slate Creek areas. Tertiary(?) sandstone and conglomerate, present in headwater tributaries of the Kugruk River and on the west side of the Darby Mountains, could have contributed gold to isolated gold placers in these locations.

GOLD RESOURCE POTENTIAL AND RECOMMENDATIONS FOR FURTHER STUDY

Placer gold resources along previously mined major rivers and streams are limited in value and extent. Unmined auriferous gravel along the margins of the main drainages, within the extreme upstream reaches, and within small tributaries is of low value. Gold will have to increase in value to at least or more than $500 per ounce for many of these deposits to be economic. The case is similar for the unmined auriferous bench and terrace gravel. Not only are gold concentrations low in these deposits, but the gravel volumes are low and mining is difficult because of the great vertical distance from adequate water supplies.

One potential placer resource is within the extensive Tertiary(?) and Pleistocene gravels flooring the major river basins. But, the extent and richness of the gravel beneath the widespread Imuruk Volcanics, McCarthy's Marsh, the lower Fish River and Kuzitrin River basins is unknown.

Nelson and Hopkins (1972) report that placer gold occurs offshore in reworked glacial drift where the gold is concentrated in a thin lag of relict gravel overlying the glacial deposits. Gold is also locally concentrated in offshore alluvium where streams have dissected the moraines during periods of lowered sea levels. Flakes 1 mm in diameter or larger constitute the bulk of the gold in the offshore auriferous gravel. In the summer of 1986, these deposits were being mined by a large dredge operated by Inspiration Gold Company. Exploration and production are expected to continue on these offshore tracts.

The relation between placer gold occurrences and areas covered by ancient glacier ice within the quadrangles shows that: 1) there are no placer gold occurrences within the limits of late Pleistocene glaciers; 2) in the Iron Creek region, placers do occur in the area occupied by much older (early and middle Pleistocene) glaciers; and 3) in the Nome area, gold dredges recover gold from the older glacial drift deposits themselves.

The search for the source of the placer gold on the Seward Peninsula continues. As suggested in some of the early reports, vein systems within the bedrock where marble and schist are interlayered supplied some, if not all, of the gold. However, it is curious that there are no rich lode deposits found in these rocks today. Also worthy of consideration is the idea that, as in many locations in Alaska (Yeend, 1981, 1984a, 1984b), the placer gold on the Seward Peninsula is multicyclic, having been eroded and deposited several times. The Tertiary and Pleistocene gravels could have provided an earlier source from which much of the modern placer gold deposits were concentrated. Only isolated remnants of Tertiary gravel remain in the area. However, there may be extensive gravel beneath thick deposits of silt and peat in the larger river basins or beneath lower Pleistocene drift on the southern coastal plain. A very small quantity of placer gold was panned from disaggregated conglomerate of possible Tertiary age. The conglomerate forms the divide separating Spruce Creek and an unnamed stream to the north in the headwaters of the Kugruk River. This type of Tertiary(?) gravel may have been widespread on the Seward Peninsula and the gold contained in the gravel was subsequently reconcentrated in modern streams through extensive erosion during late Cenozoic time.

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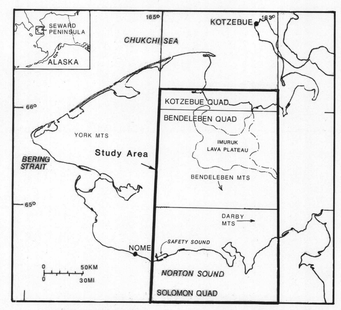

INDEX MAP SHOWING LOCATION OF STUDY AREA

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