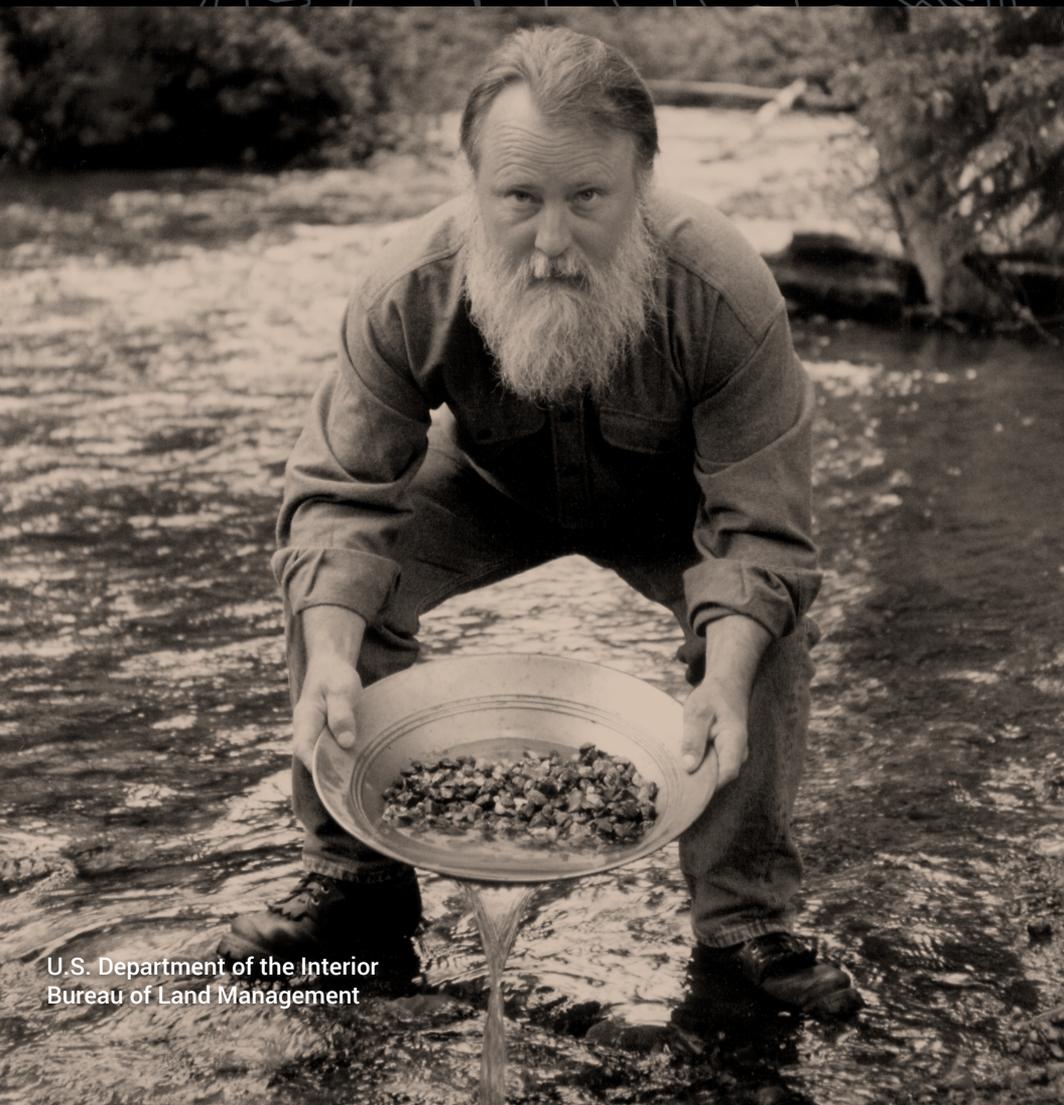


Gold Panning

Guide to Recreational Gold Panning on the
Kenai Peninsula, Chugach National Forest, Alaska



U.S. Department of the Interior
Bureau of Land Management

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Welcome

Striking it rich! Finding the mother lode! The lure of gold! 'Tis the stuff of miners' dreams. Unlike professional gold seekers, recreational gold panners benefit mostly from the adventure. The entire family can share in the fun of prospecting and gold panning.

In this booklet, we explain:

- Basic gold panning techniques
- How to find gold
- Mining rights and guidelines, and
- Identify areas available for recreational gold panning in the Chugach National Forest portion of Alaska's Kenai Peninsula.

Recreational gold panning on lands withdrawn from mineral entry is not a mining activity—it is a privilege. Be aware that panning, sluicing, and suction dredging can adversely affect water quality, which impacts vegetation, fish, wildlife, and ultimately people.

During the process of separating soil from minerals, silt may be washed into streams, creating turbid water. Fish, fish eggs, and aquatic insects have difficulty living in heavily silted water because of its reduced oxygen supply.

Avoid washing soil and vegetation into streams. Do not dig in stream banks. Digging increases silt in the stream and is also dangerous. Many banks are unstable and can slide without warning.

To reduce silt, dig only in active stream gravels. Return rocks or boulders moved during your efforts to their original positions. Aquatic insects, an important food source for salmon, often make their homes under these rocks. A little care will help ensure a healthy water ecosystem for both miners and anglers.

Good luck and good prospecting!

Gold – Significance and Use

Throughout history, humans have been lured by the brightness and ornamental beauty of gold. This most noble metal takes its name from the Germanic *gulth*: ‘glowing’ or ‘shining’ metal. Gold is a “precious metal” – which means that gold is rare and has a high economic value. Wealth is often measured by the gold standard.

Although sometimes we find gold free in nature, we generally find gold in conjunction with silver. To increase its strength, gold is usually alloyed with other metals such as silver, copper, platinum or palladium. We use gold alloys to make jewelry, decorative items, dental fillings and coins.

Gold is an excellent conductor of heat and electricity. It doesn’t tarnish when exposed to air, which is why gold works well as electrical connectors and microchips. Gold is also a good reflector of infrared radiation, and can help shield spacecraft and skyscrapers from the sun’s heat. Gold-coated mirrors can make telescopes that are sensitive to infrared light.

Gold is the most malleable and ductile (can be drawn into a very thin wire) of all known metals. A single ounce of gold can be beaten into a sheet measuring roughly five meters on a side. Pure gold is soft. On a scale of 1 to 10, gold has an average hardness of 2.8. Compare gold to diamonds, which have an average hardness of 10. When gold is alloyed with other metals, it becomes harder.

Gold’s specific gravity is 19.3, or more than 19 times heavier than an equal volume of water. This property is very useful in the recovery of placer gold.

Gold’s rich yellow color or “kindly” appearance turns paler as its silver content increases. When you know gold’s properties, it is relatively easy to identify. Novices can confuse gold with minerals such as pyrite and mica. Both minerals can occur with gold. Pyrite, or “fool’s gold,” is brassy, light yellow, and brittle. Mica is light yellow to bronzy, lightweight, and has a platy appearance.

Kenai Peninsula Mining – A History

Crew members from the *St. Peter*, a Russian vessel commanded by Vitus Bering, were the first Europeans to set foot in Russian America (Alaska) in 1741. It was not until 1848 that the Russians mounted an expedition solely to search for precious metals in Alaska.

In 1848, the Russian-America Company sent Russian mining engineer Peter Doroshin to the Kenai Peninsula to prospect for precious metals. He found only a few ounces of placer gold in the upper Kenai River (*Map 1*). Although he then abandoned his mining venture, Doroshin was convinced that the Kenai Mountains contained large placer gold deposits. Thirty-eight years later, his hunch proved correct.

In the late 1880s, a prospector from Alaska's Interior named Al King was rewarded with four pokes of gold from Resurrection Creek. King kept his discovery quiet until 1893. Looking for King's discovery, other prospectors found gold on Resurrection Creek and nearby streams in 1894.

As word spread, prospectors began to trickle into the region. In 1895, claims were staked on Mills and Sixmile creeks and gold was discovered near Girdwood.

By 1896, a full-fledged gold rush was on! The first arrivals were seasoned miners from the American West and Canada. Latecomers tended to be inexperienced miners with grand dreams of easy riches. Thousands of prospectors arrived in Cook Inlet to seek their fortunes. News of the district's richness were exaggerated over time, dooming many stampedeers to bitter failure.

A record amount of gold was produced in 1897. A second short-lived rush occurred in 1898—mainly due to an overflow of miners from the Yukon gold rush in Canada.

Mining was simple—liberal use of a pick and shovel and a strong back. Miners shoveled gold-bearing stream gravels into sluices (long narrow wooden boxes through which water was run). Slats caught the gold, and let the gravel waste (tailings) wash through. Rich, shallow deposits were soon worked out (*Figure 1*).

Later, hydraulicking was used (*Figure 2*). A high pressure water jet broke up the gravels and washed it through a sluice box. Large amounts of gravel could be processed in a shorter time, allowing lower grade gravels to be mined at a profit. To get enough water pressure, miners dug long ditches on hillsides above their operations to collect and funnel water down to the mining area. One of these ditches stands out as a conspicuously straight strip of alder brush on the mountainside east of Canyon Creek. You can see it from a pull-out on the east side of the Seward Highway, three miles south of the Hope Road junction. An interpretive site at the pull-out describes the mining history of the area.

In some streams, miners noticed milky-white quartz boulders with small specks of gold in them. Curious prospectors, looking for the source, discovered gold-rich quartz veins on Palmer, Bear, and Sawmill creeks in 1898.

Settlements at Hope and Sunrise sprang up along the shores of Turnagain Arm. Both mining communities served as supply and entertainment sources for thousands of people. Sunrise all but disappeared after nearby mining played out and fire destroyed much of the town. Placer mining on nearby Resurrection Creek and lode deposits in Palmer Creek kept Hope going.

By 1931, only about 20 men were in placer mining on local creeks. Today, scant evidence exists of Sunrise, but Hope survives.

More than 100 years of mining in the northern Kenai Peninsula produced about 133,800 troy ounces of placer gold. Hard rock mines produced an additional 30,000 troy ounces. Suction dredging and sluicing are currently the most common mining methods.



Figure 1: Sluice box operation on Lynx Creek in 1904. Gold-bearing gravel from the stream cut on the right of the photo was shoveled into the sluice box.

U.S. Geological Survey photo



Figure 2: Hydraulic mining on Juneau Creek in 1904. Note hand-stacked boulders and precarious wheel-barrow bridge.

U.S. Geological Survey photo

Geology of the Northern Kenai Peninsula

The rocky peaks of the Kenai Mountains have their origin in sands and muds deposited on the sea floor about 65 million years ago. These deposits created large submarine alluvial fans streaming into the sea at the then western edge of the North American continent, piling up to form sedimentary deposits at least a mile thick.

The tremendous weight of this great thickness of sediment generated high internal pressures and temperatures that baked the muck to form siltstone and sandstone. Later, hot silica-rich fluids from the depths penetrated these rocks along faults and fractures. Upon cooling, the fluids crystallized to form milky white quartz veins. If conditions were right, the hot fluids may have contained gold and silver that became frozen in the veins during crystallization, forming lode deposits. You can find excellent examples of quartz veins exposed along the Seward Highway, 2.7 miles north of the west-side rest area in Turnagain Pass. Subsequent weathering of the veins released the gold to mix with stream gravels. Due to its high specific gravity, the action of water to concentrate the gold form placer deposits.

Beginning about 2 million years ago, climatic cooling and heavy precipitation resulted in the formation of large glaciers on the Kenai Peninsula. Like giant bulldozers, the advancing glaciers pushed gravel ahead of them, dispersing the placer gold. A warming trend, that began about 12,000 years ago, caused the glaciers to retreat, leaving behind gravel-filled U-shaped valleys. Knolls and ridges in the Turnagain Pass area are composed of gravels left behind by glaciers that filled the valley to a depth of at least 2,000 feet.

Braided stream channels from the melting glaciers reworked the gravels concentrating the dispersed placer gold. Rapid down cutting by streams during the mountain building process left deposits behind as bench placers, perched above the present valley floors. This down cutting concentrated the gold further, forming gulch placers in the stream bottoms. Most of the gold on the Kenai Peninsula has been produced from placer deposits along Crow, Canyon, Resurrection, Lynx, Bear, Mills, Gulch, and Sixmile creeks. (*See following sections and maps.*)

Mining Right & Guidelines

Here are a few simple rules and guidelines that all recreational gold panners must know:

- *Recreational gold panning on the Chugach National Forest consists of the use of hand tools, panning, sluicing, and suction dredging with a 4-inch or smaller intake hose.*
- *You must follow all National Forest rules, such as camping limits, discharge of firearms, and use of trails. You can find regulations in Title 36 Code of Federal Regulations (CFR), with general prohibitions in part 261. Review these regulations before you go gold panning. You can find copies of these regulations on the Internet and at Chugach National Forest offices in Anchorage, Girdwood, Seward, and Moose Pass.*
- *You can use gold pans and hand tools-fed sluice boxes year-round in the streams listed in this booklet.*
- *No hydraulic mining or use of earth-moving equipment is allowed.*
- *Work only the active stream channel or unvegetated gravel bars. Do not dig in stream banks!*
- *You are not allowed to build structures, cut trees or dig up archaeological, historical, or paleontological objects, nor are you allowed to obstruct others in their recreational pursuits. If you find those objects, please report them to the Chugach National Forest.*

Suction dredges

There are Alaska Department of Fish and Game (ADF&G) and the Alaska Department of Environmental Conservation (ADEC) regulations about how and when to suction dredge some streams. You must get permits from both agencies to suction dredge streams that are important for salmon spawning habitat. To find out more about these permits, contact ADF&G and ADEC. The ADF&G permit is free and for the Six-Mile Creek and Resurrection Creek areas, may be downloaded from their webpage. The ADEC permit can be pickup at one of their local offices and requires a \$25 annual fee.

Suction dredges that are 4-inch diameter or less may be used within the active stream channel in recreational gold panning areas of the Chugach National Forest.

Mining law and mining claims: The 1872 Mining Law allows a person to locate a mining claim on federal land and to mine that claim. However, when certain lands are withdrawn from mineral entry, no claims can be located there (although there may be pre-existing claims). The four designated areas in this publication are withdrawn from mineral entry and have no mining claims. Any other federal lands in the Chugach National Forest not covered by claims are available for recreational panning. Remote areas are less likely to have mining claims. As a recreational panner, you do not operate under the 1872 Mining Law.

You can hike, fish, hunt, and recreate on a federal mining claim, but you must respect the claimant's equipment and operations. The claim owner has an exclusive right to mine his or her claim. You must have permission from the claimant to pan on his or her claim.

If you wish to file a claim, or want to know the location, owners, and status of legal claims, do the following:

- *All location notices for federal mining claims in Alaska **must** be filed with the Bureau of Land Management (BLM) Alaska State Office (see 'More Information' section).*
- *Establish the area in which you are interested in filing a claim. (BLM, U.S. Bureau of Mines (closed in 1996), and U.S. Geological Survey publications identify gold-bearing streams.)*
- *Locate the area on a topographic map, and determine section, township, and range.*
- *With this information, check with the BLM who keeps current records for all mining claims on federal lands (see 'More Information' section).*
- *Mark claim locations on your topographic map, and go out and look for markers in the field.*

A placer mining claim is normally 20 acres, generally measuring 660 feet by 1,320 feet. The long direction of the claim is usually oriented parallel to the stream. Be aware that claims may exist with no visible markers. If there is an error in the location description, the marker on the ground rules.

Where to look for gold

Water is the primary agent in the formation of most placer deposits. Moving water can transport large amounts of material, from fine silt to large boulders, especially during runoff periods. When freed from the rock by weathering, gold is added to stream waters along with rock debris, and is carried along by the stream. Where streams meander, go over falls, or are deflected around boulders, a drop in water velocity occurs and the gold drops out. Continued agitation by water causes gold to settle down through the gravel until reaching bedrock or an impermeable clay layer. These concentrations are called *pay streaks*.

The best places to find gold exist where turbulence changes to slower-moving water flow. Check out slower water below rapids and waterfalls, deep pools, and the downstream side of boulders. Inside bends of meanders, upstream ends of sand or “point” bars are good places to pan fine gold, which is renewed yearly during runoff. Bedrock crevices or pockets acting as natural riffles can collect gold. Scoop out and pan material from these spots.

Spring, early summer, and just before freeze up in the fall are good times of the year for panning. Water is low and gold-bearing gravel is exposed. To minimize resource damage, confine digging to active, unvegetated stream gravels.

Equipment you will need

The basic equipment is quite simple and requires only a minimum investment. A gold pan is most important. Early prospectors used metal pans; modern versions are plastic with built-in riffles. In a pinch, frying pans and even hub caps will work. New metal pans generally come with a coating of grease and should be cleaned thoroughly by heating over an open fire. The pan will rust, but some rust is beneficial for collecting fine gold.

Suggested equipment.

- **gold pan** (plastic with riffles or metal); 14-inch size is best.
- **shovel** to loosen gravel from creek bottom.
- **grizzly pan** with 1/2-inch holes in bottom; this pan helps separate coarse gravel, speeding up the panning process.
- **magnifying lens** (at least 10X power) to identify minerals.
- **sluice box**, approximately three feet long; (construct or obtain commercially; aluminum version is available.)
- **tweezers** for picking up gold; a dry finger will also work.
- **small magnet** for separating out magnetic black sands.
- **small glass vials** to hold gold.
- **rubber gloves** to protect hands from cold water.
- **rubber boots** to keep feet dry while wading in creeks.

Most of these items are available at local miners' and prospectors' supply houses, sporting goods stores, and some hardware stores.

For your safety

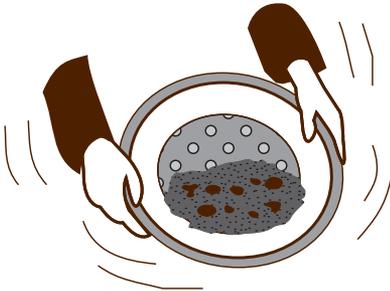
The Chugach National Forest is one of the most diverse and beautiful of the nation's 155 national forests. Its spectacular mountains, marine shorelines, wetlands, and wildlife lure visitors from around the world.

A place as wild as the Chugach has its dangers, however. A little knowledge and good judgment can help ensure a safe outdoor experience. (*Check out more tips near the end of this booklet*).

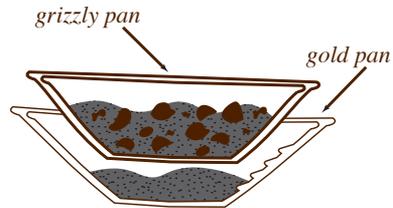
How to pan for gold

The key to recovering placer gold from gravel is the weight difference between ordinary gravel and gold. This difference allows gold to move downward (concentrate) when agitated. The simplest placer mining tool for this purpose is the pan. So grab your gold pan, grizzly, and shovel, and let's begin.

Shovel gravels into a grizzly positioned over the gold pan.

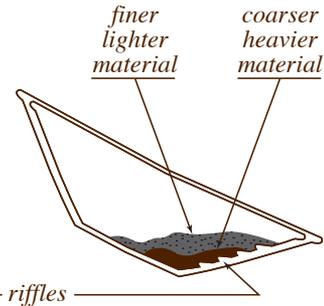


A grizzly (a pan with holes in the bottom) is used to separate larger rocks from the finer material.



Pan cross-section. After the rocks are caught in the grizzly you examine for gold, they may be discarded.

Agitate the material through the grizzly.



With the pan's riffles pointed away from you, alternate underwater dipping and swirling, until the lighter, finer material is washed away and the heavier material remains in the bottom of the pan.

Check the over-sized material for gold nuggets, and then toss. Totally submerge your half-full pan in water. You may pan from a squatting or sitting position at the stream edge, in gently moving water, holding the pan between your knees.

Keep pan riffles pointed away from you to catch any gold that might slip over the lip. Liberal water, agitation, and patience are required to persuade gold to settle to the bottom of the pan. While your pan is submerged, break up any clots of dirt and wash any cobbles that may have clay that can trap placer gold. When your water in the pan starts to clear, you have removed the clay. Pick pebbles from the pan to get them out of the way. Look for heavy pieces with unusual color or shape. You might find a gold nugget or a gold-bearing piece of vein quartz.

Hold the pan level under water and shake it with a sideways or circular motion. The gold will settle to the pan bottom. Occasionally tilt the pan to let the sand-sized material wash out.

Dip the pan in and out of the water.



When dark sands (heavy mineral grains) are all that is left (except for the gold, of course), you are panning correctly. Hopefully, your pan will look like this when you are finished.

Using a slightly forward motion with the pan tilted, wash lighter material away. Alternate underwater swirling and dipping until only a few spoonfuls of heavy minerals remain. When dark, heavy mineral grains (black sands) are present, you are doing the panning right.

Black sands may be a variety of heavy minerals including magnetite, garnet, scheelite, zircon, cassiterite, and platinum. Precious and semi-precious stones are uncommon in Kenai Peninsula placers, but keep an eye out for them. If it is heavy, keep it and seek identification from a geologist or miner.

Beginners are often impatient to find gold quickly. Take your time. During the panning motion, black sand and other fine sands concentrate in the crease or riffles of the pan. You can separate gold from black sands by rolling water in the pan with a combination swirling and rocking motion. Lighter material moves to one side, gold stays put. For safety, do the final panning over another container to keep from losing the gold. Dry the fines. Use a magnet to separate magnetic grains and tweezers, a knife blade, or a dry finger to pick up small gold pieces. Save the gold in a water-filled vial.

Examine your gold. Rough, nugget gold is near its source. Gold that is flat and smooth has traveled some distance from its point of origin. Flour gold has been flattened to a few microns thickness and will float on water. Panning is a relatively slow method for recovering gold. Experienced panners can process about 10 large pans per hour. A sluice or suction dredge can increase productivity.

Kenai Peninsula gold panning areas

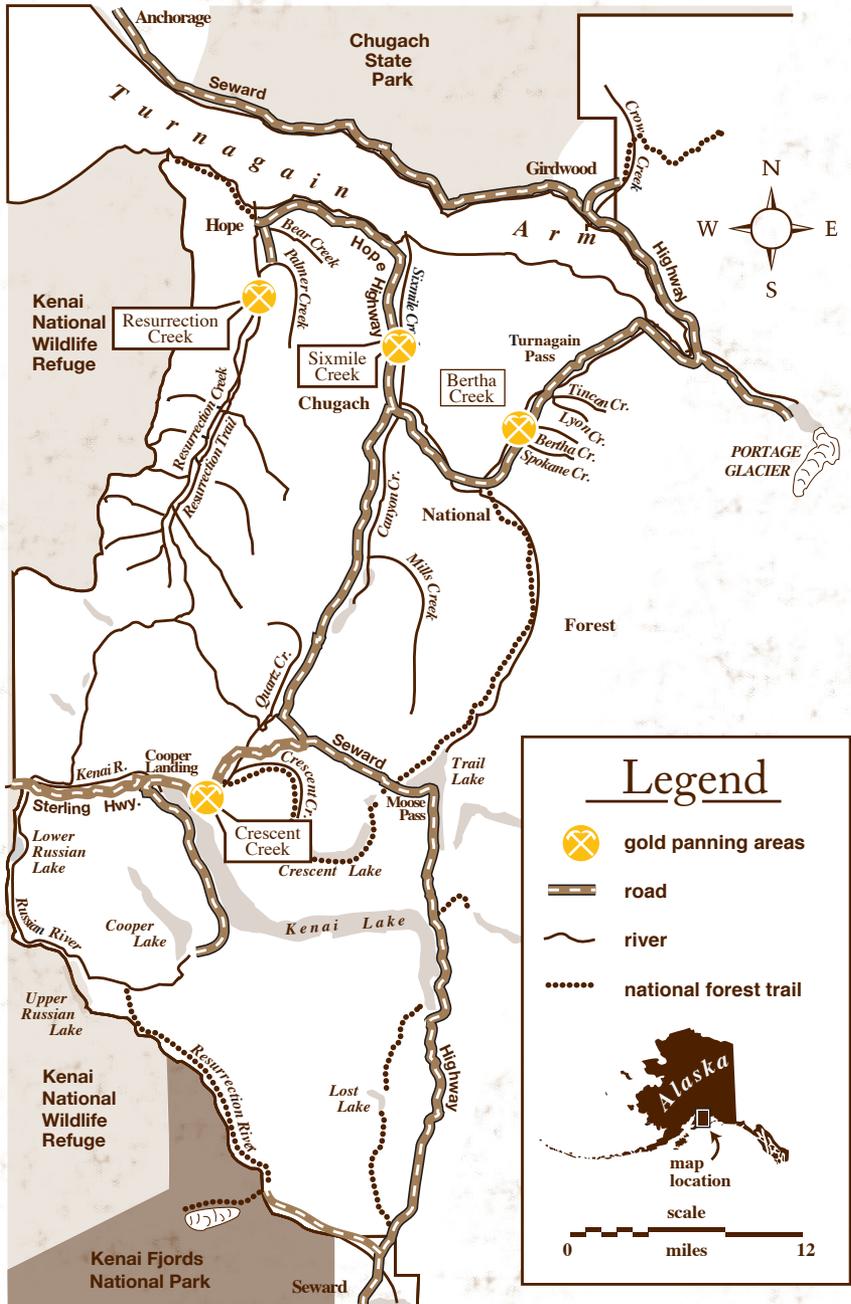
There is still gold “in them thar hills,” and we would like you to find some of it. We doubt that you will get rich panning gold recreationally, but you might find some color—and have a great time doing it. We have selected four sites on the Kenai Peninsula portion of the Chugach National Forest that we feel has the best potential for yielding gold (*Map 1*).

These sites are within two hour’s driving time from Anchorage via the Seward and Sterling highways. The following pages describe the four sites in detail. We hope that our descriptions will help you find success in your panning endeavors.

Good luck.



Map 1: Panning sites on the Kenai Peninsula



Bertha Creek panning area

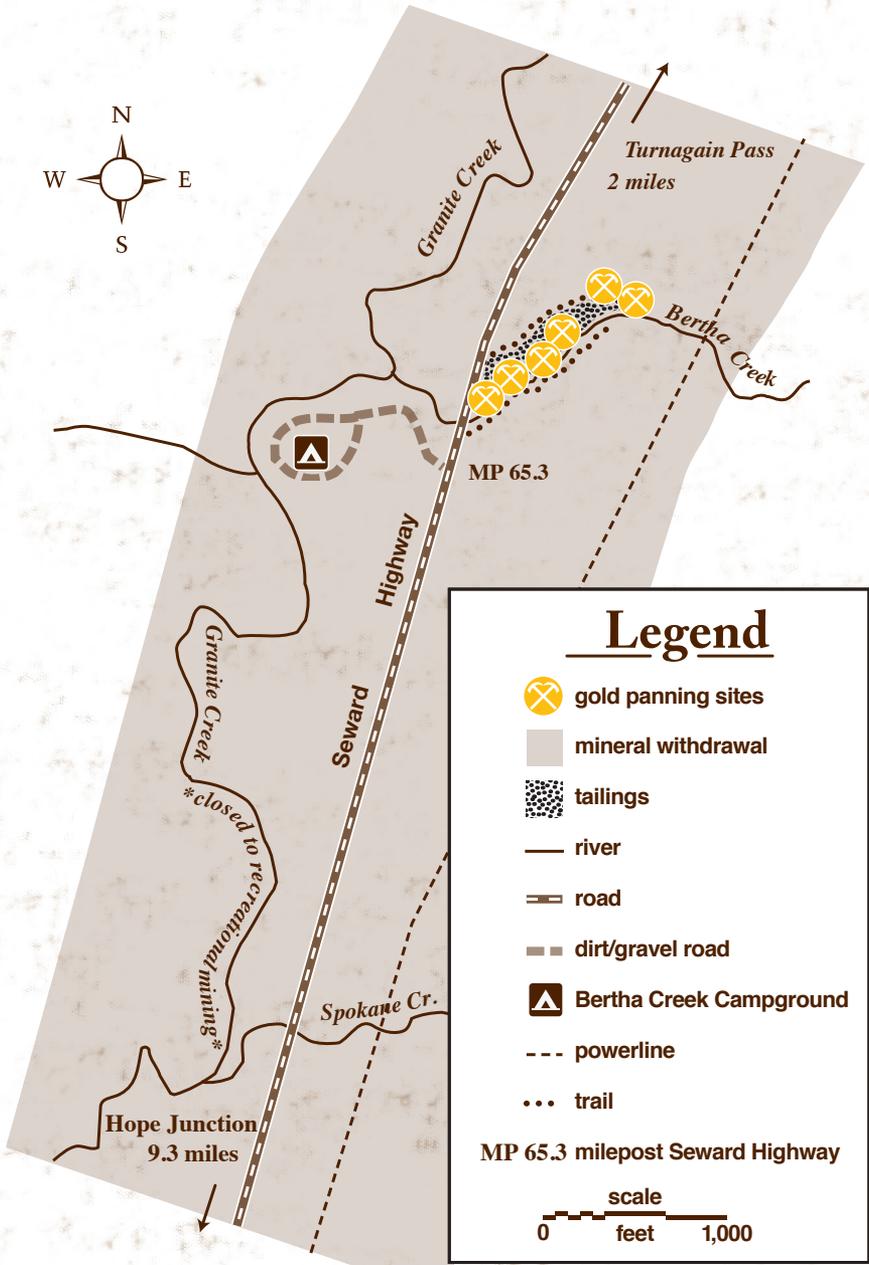
An early prospector named Bertha Creek after his daughter. Hand placer and hydraulic mining began in 1902 and may have yielded up to 600 troy ounces of gold. Most gold came from the alluvial fan below the canyon.

Bertha Creek crosses the Seward Highway 2.6 miles south of Turnagain Pass. Lower Bertha Creek lies within a withdrawal that extends for 1,300 feet on either side of the Seward Highway from Turnagain Pass south to Pete's Creek. Bertha Creek is available for recreational panning from its junction with Granite Creek upstream to the powerline crossing (*Map 2*). Granite Creek, however, is closed to recreational mining because of its salmon spawning habitat.

Bertha Creek's upper portion flows through a glacier-carved valley. Slate bedrock is exposed for 850 feet along the creek, beginning 150 feet above the Seward Highway's Bertha Creek bridge. A rough trail leads up the east side of the creek. The tan-colored clay layer on bedrock is a good bet for gold that ranges from flaky to nuggety. Single pans have produced gold pieces up to 1/4 inch long. The rust-colored quartz float in the stream bed occasionally contains pyrite cubes and may be the placer gold source. Another trail leaves the highway 250 feet north of the bridge, leading up the northwest side of the creek. At mile 0.2, it passes a bluff overlooking the site where Bertha Creek exits from a narrow steep-walled canyon. You can get good colors from stream gravel and fractured bedrock in this area.

You can also get gold from nearby Spokane Creek (*Map 2*) and Lyon, and Tincan creeks north of Bertha Creek. The withdrawal includes the lower creek portions that are open to recreational panning. An informal pull-off where the Seward Highway crosses Spokane Creek provides parking for 1-2 vehicles. Access Lyon and Tincan creeks from the Turnagain Pass rest area. Parking, camping, and picnic sites are available at Bertha Creek Campground. No motorized vehicles off established roadways in this area.

Map 2: Bertha Creek



Legend

-  gold panning sites
-  mineral withdrawal
-  tailings
-  river
-  road
-  dirt/gravel road
-  Bertha Creek Campground
-  powerline
-  trail

MP 65.3 milepost Seward Highway



Sixmile Creek panning area

Early prospectors named Sixmile Creek because the creek was about six miles up Turnagain Arm from Cook Inlet. Gold was discovered in Sixmile Creek in 1895. In the 1930s, hydraulic mining was attempted. In recent years, there were several small suction dredge operations.

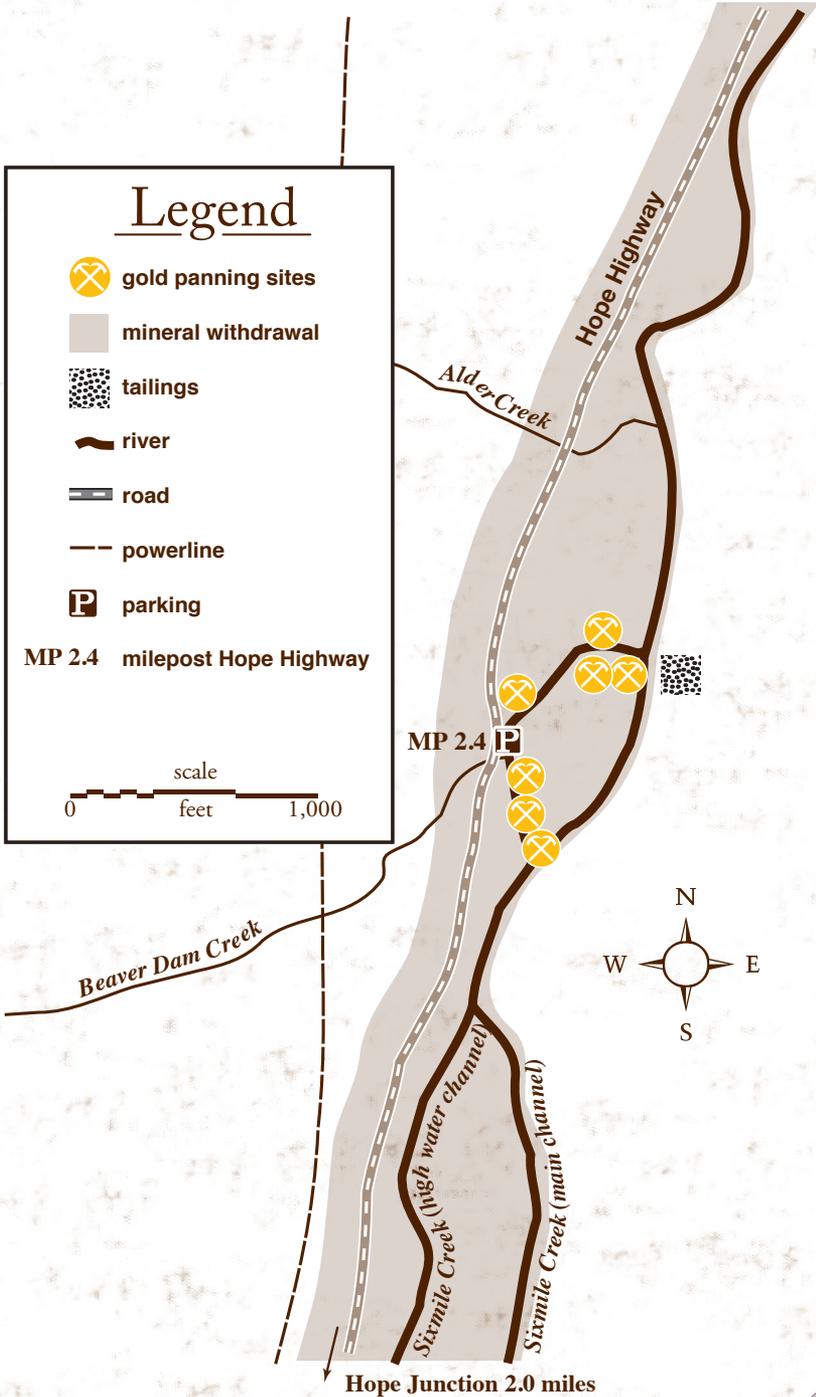
Sixmile Creek has produced up to 2,000 troy ounces of gold, mainly in the area just below the confluence of Sixmile and Canyon creeks. A withdrawal bounded by the east bank of Sixmile Creek and a line 200 feet west of Hope Road's center line, is available for recreational panning—0.7 miles to 5 miles north of the Hope Junction (*Map 3*).

Sixmile Creek flows through a broad glacial valley with numerous gravel bars and some bedrock exposures. Park at mile 2.4 on the Hope Road, at the pull-out on the east side and follow a steep trail down the road embankment to Sixmile Creek (*Map 3*). Gravel bars along this stretch of creek contain flat flour gold and occasional small flakes. Pans have produced 15–20 fine colors of flat, well-worn gold. The south end of the gravel bar nearest the road is best, especially on the downstream side of larger rocks. Panning gravel on bedrock downstream from the bar can also produce gold. A rough trail from the north end of the parking lot will reach these sites that are best accessed during low water. Rusty-colored quartz float along the creek sometimes contains pyrite (fool's gold).

Suction dredges (4-inch or smaller) are only allowed from May 15 to July 15 with a free ADF&G permit and a ADEC permit (\$25 annual fee).

You can find good panning at mile 4.3 on the Hope Road (not shown on map). Pullout on a short side road into the trees and follow the trail to Sixmile Creek. You can find gold on point bars to the east and old channels next to the creek.

Map 3: Sixmile Creek



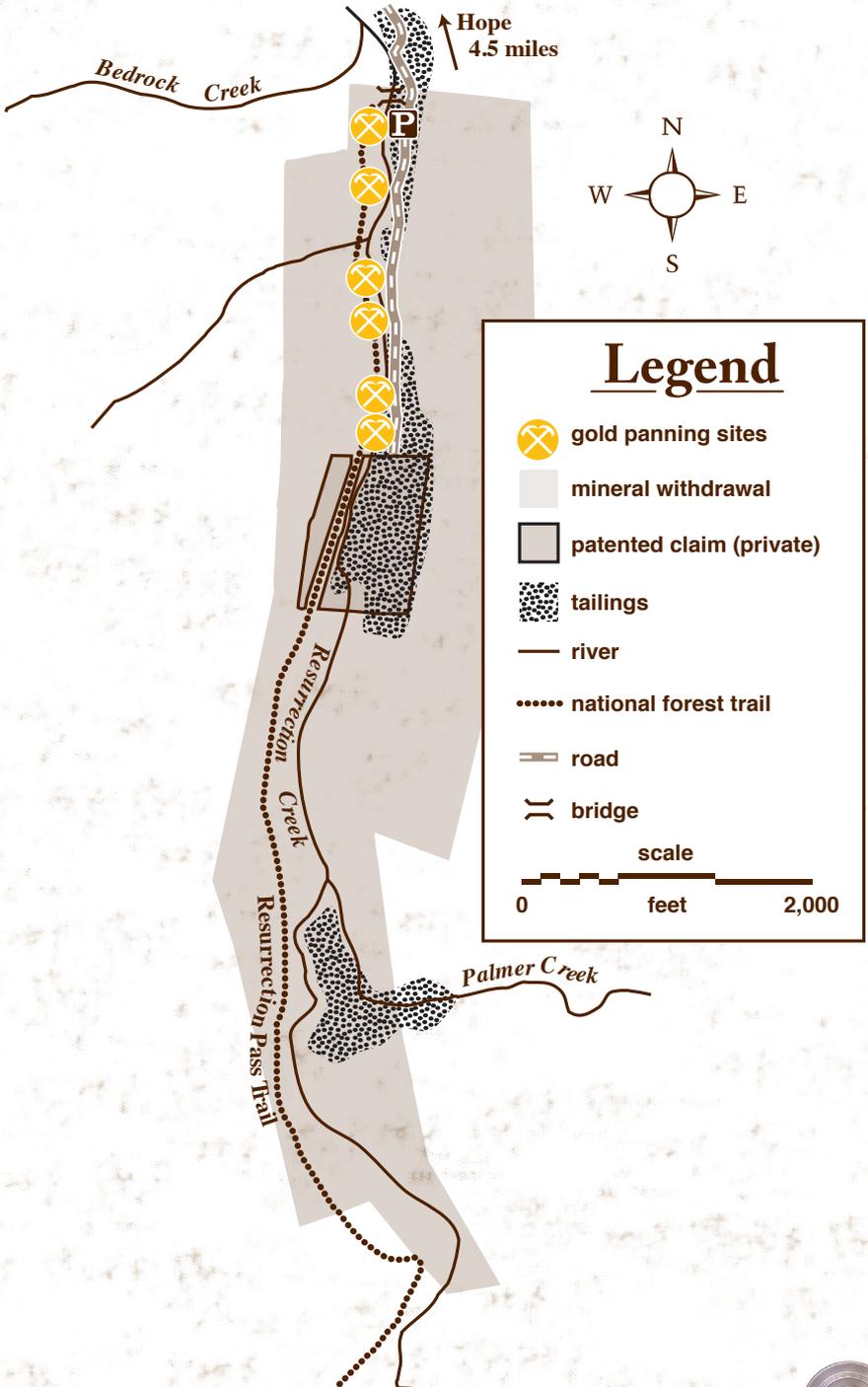
Resurrection Creek panning area

About 1888, the second discovery of gold on the Kenai Peninsula happened on Resurrection Creek. Resurrection Creek has produced an estimated 30,000 to 40,000 troy ounces of gold since 1895. Below Palmer Creek, Resurrection Creek flows through a 1,000-foot-wide alluvial flood plain. Creek gravels rest on a tan-to-yellow clay hard-pan, with streaks of blue clay present. Bench gravels are exposed on both sides of Resurrection Creek. You can find gold disseminated throughout the gravel, but it is mostly concentrated on clay and bedrock.

A half-mile stretch of Resurrection Creek lies within a withdrawal and is available for recreational gold panning. This area is a favorite site for recreational mining. Suction dredges (4-inch or smaller) are allowed from May 15 to July 15 with a free ADF&G permit and a ADEC permit (\$25 annual fee). You can access this area via the Resurrection Creek Road out of Hope. The mining area begins at the Resurrection Pass Trail footbridge, 4.5 miles from Hope, and continues upstream for 0.5 miles to a patented (private land) claim (*Map 4*). The claim boundary is marked with a gate.

You can pan fine gold from gravels all along the creek. Try for fine, flat gold near the campsite 0.25 mile above the footbridge and along the creek bank near the recreational mining information sign. Bedrock is exposed on the east canyon wall just above the campsite and just below the private lands. Both spots are good bets for gold. Rounded boulders piled along the creek are tailings from old hydraulic operations. Much of the road has been built on these tailings.

Map 4: Resurrection Creek



Crescent Creek panning area

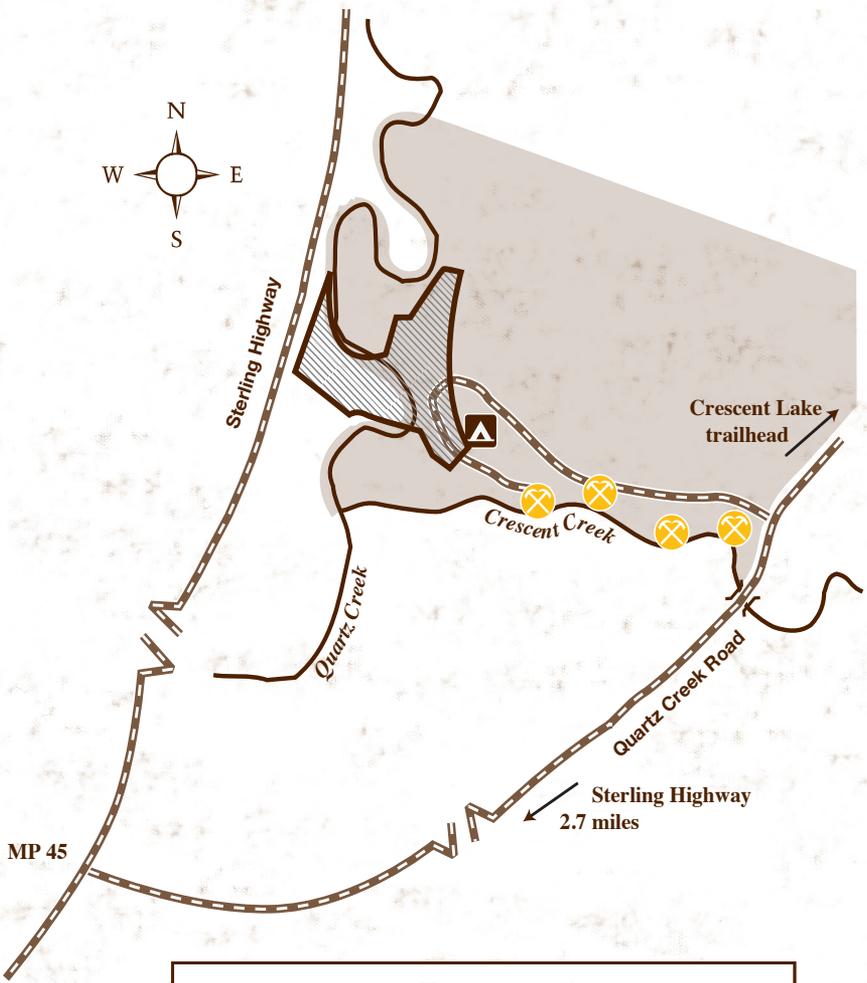
Evidence of early hand mining exists on Crescent Creek and suction dredging has been done on the upper parts of the drainage. Crescent Creek is available for recreational panning from the bridge on Quartz Creek Road to its junction with Quartz Creek (*Map 5*). Although adjacent to a Forest Service campground, the creek is on state land. For updated information regarding this site, contact the Alaska Department of Natural Resources, Mining Division.

You can access the area by turning onto Quartz Creek Road off the Sterling Highway, 7.4 miles southwest from the Seward-Sterling Highway junction at MP45. Bear left at intersection for 2.7 miles to the Crescent Creek bridge. Turn left past the bridge into the Crescent Creek campground (*Map 5*). For day use, park in the day use parking area.

Fine gold is disseminated through the clay-rich, boulders and gravels along Crescent Creek, just south of the campground. The gravels form an alluvial fan, where the creek exits nearby mountainous terrain. That creek portion, stretching for 600 feet below the bridge, produces flat to ragged, slightly crystalline, flakes up to 2 mm in size. Clay-rich gravels are best for holding gold. The south side of the creek has mining claims.

Because of king salmon spawning, Crescent Creek is only open to suction dredging from May 15 to July 15 with a free ADF&G permit. Old hydraulic workings on claims can be seen just south of the Crescent Creek trailhead. Respect active mining claims located on the upper portions of the creek, above the bridge.

Map 5: Crescent Creek



Legend

-  gold panning sites
-  Crescent Creek Campground
-  mineral withdrawal
-  bridge
-  river
-  Cultural site
-  road

scale
0 feet 1,000

How much gold have you found?

Just how much gold have you found and what is it worth? The following table is an approximate measure (assuming the gold is 100% pure). Use the scale column to compare to the gold you found. The value of a piece of gold equals the average weight times the current gold price (*find online or in the newspaper*). For example, a medium piece of gold would be worth 60 cents at a gold price of \$1,200/troy ounce.

Placer gold commonly contains small amounts of silver and other metals. It takes a lot of work to accumulate a small amount of gold. Hours of panning may be worth only a few cents. Historically, gold nuggets weighing up to 12 troy ounces have been recovered from the Kenai Peninsula, but these are very rare.

Scale	Size (mm)*	Explanation	Avg. Weight
	>2.0 coarse gold	Can be picked up with finger	0.003
	0.90-2.0 medium gold	About 2,200 color to troy ounce	0.0005
	0.40-0.90 fine gold	12,000 color to troy ounce	0.0008
	<0.40 flour gold	40,000 colors to troy ounce	0.00003

* millimeters

A Glossary of Mining Terms

It helps to know the lingo. Here are a few of the more common terms used in mining. Knowing these terms might help you be a better recreational panner and maybe have even more fun.

- alluvial fan:** Cone-shaped gravel deposit formed where a stream emerges from mountains onto a lowland.
- bedrock:** Solid rock underlying gold-bearing gravel.
- claim:** Mining ground held under federal or state laws by virtue of location and record.
- color:** A particle of gold found in the prospector's pan after washing the gravel.
- concentrate:** Minerals that are separated from less valuable materials.
- false bedrock:** A hard formation, usually a clay layer, within a placer deposit some distance above bedrock.
- finer:** Sand or other fine-sized material associated with placer deposits. Usually the last material left during the panning process.
- flour gold:** Finest gold dust, much of which will float.
- float:** Rock separated from the parent vein by weathering.
- heavies:** Minerals of high specific gravity in a placer concentrate, also called *black sands*.
- lode deposit:** A vein of mineral ore deposited between nonmetallic rock layers.
- nugget:** A piece of gold that can usually be picked up with the fingers.
- patent:** A government deed that conveys legal title of public land to the party to whom the patent is issued.
- pay streak:** A limited horizon within a placer deposit containing a concentration of gold rich enough to mine.
- placer deposit:** A glacial or alluvial deposit of sand or gravel containing eroded particles of valuable minerals.
- point bar:** The area on the upstream end of a gravel bar that can contain superficial concentrations of flour gold in a thin surface layer.
- poke:** A bag or sack of gold.
- prospector:** A person who searches for valuable minerals.
- riffles:** Small ridges in the bottom of a sluice box that catch gold in sand and gravel.
- sluice box:** An elongated wooden or metal trough with riffles, over which alluvial gravel is washed to recover gold.
- stake:** Laying out and marking the corners of a mining claim. Originally wooden stakes were used.
- suction dredge:** Uses a water jet and venturi effect to suck gravel off the stream bed and run it over a set of riffles.
- tailings:** Sand, gravel, and cobbles that have passed through sluice boxes.
- troy ounce:** One-twelfth ($\frac{1}{12}$) *troy pound*, used in reference to precious metals.

Tips You Should Know...

- **BE BEAR AWARE.** The Kenai Peninsula is home to brown and black bears. Bears have roamed here for thousands of years. They are wild animals and can be very dangerous. You will be panning in the stream channel, home of a bear's favorite dinner—salmon. Stay alert and avoid bears whenever possible. For more information, get *Bear Facts* from the U.S. Forest Service or Alaska Public Lands Information Centers.
- **MOOSE.** Alaska has the world's largest moose. Although herbivores, moose can still be dangerous—any critter that weighs 1,000 pounds can be dangerous. Moose get especially cranky if they feel their young are in danger. Watch them from a distance.
- **COLD.** The water is cold and you can expect to get wet—after all, the gold is in the water. Wear insulated waterproof boots and gloves. Wool clothing can keep you warm even when wet. Bring extra clothing and dress in layers.
- **USE STREAM CHANNELS, NOT BANKS.** Mine only in the active stream channel—not along the shore or in cut banks. Undercutting stream banks and trees is an extremely dangerous activity. These banks tend to be very unstable. Heavy boulders and trees can fall on you if the bank should collapse.
- **PACK IT IN, PACK IT OUT.** Keep Alaska green, do not trash or litter. Many places have a \$1,000 fine for littering. Follow *Leave No Trace* principles, Int.org.

Further Reading...

To learn more about gold panning, the history of mining on the Kenai Peninsula, and the geology of mineral deposits in Alaska, you may be interested in the following publications.

Barry, M., *A History of Mining on the Kenai Peninsula*. M.J.P. Barry, Anchorage, Alaska. 1997.

Black, J., *Gold Prospectors Handbook*. Del Oeste Press, Tarzana, California, 1980.

Hoekzema, R., and S.F. Fechner, *Placer Gold Sampling in and Near the Chugach National Forest, Alaska*. U.S. Bureau of Mines Information Circular 9091, 1986.

Johnson, B. and others, *Geology and Mineral Resources of Kenai Peninsula, Alaska*. U.S. Geological Survey Bulletin 587, 1915.

Nelson, S. and others, *Geologic Map of the Chugach National Forest, Alaska*. U.S. Geological Survey Map MF-1645-B, 1985.

West, J., *How to Mine and Prospect for Placer Gold*. U.S. Bureau of Mines Information Circular 8517, 1971.

Winkler, G. and others, *Guide to the Bedrock Geology of a Traverse of the Chugach Mountains from Anchorage to Cape Resurrection*. Alaska Geologic Society Guidebook, 1984.

_____. *Dalton Highway Recreational Mineral Collection*. Bureau of Land Management, Anchorage, Alaska. Brochure. BLM-AK-GI-91-031-3966-060 Rev 2005.

_____. *Search for Gold Along the Koyukuk*. 2005.

Moffitt, F., *Minerals Resources: Gold Fields of Turnagain Arm Region*. 1906.

More Information...

If you would like more specific information about recreational panning on the Kenai Peninsula, we encourage you to contact any of the following:

U.S. Forest Service

Minerals Administrator
33599 Ranger Station Spur
(Kenai lake Office at MP 23.5)
Seward, AK 99664-9515
(907) 288-7756
www.fs.usda.gov/chugach

Environmental Protection Agency

Alaska Operations Office
222 West 7th Avenue, #19
Anchorage, AK 99513-7588
(907) 271-5083 or
(800) 718-0983
www.epa.gov/aboutepa/epa-alaska

Bureau of Land Management

Alaska State Office
222 West 7th Avenue, #13
Anchorage, AK 99513-7504
(907) 271-5960
www.blm.gov/alaska

Bureau of Land Management

Anchorage District Office
4700 BLM Road
Anchorage, AK 99507-2546
(907) 267-1246
800-478-1263
www.blm.gov/alaska

Alaska Department of Fish and Game

Division of Habitat
333 Raspberry Road, #2068
Anchorage, AK 99518-1565
(907) 267-2342
www.adfg.alaska.gov

Alaska Department of Natural Resources

Mineral Property Management and Mine Permitting
550 West 7th Avenue, #900B
Anchorage, AK 99501-3577
(907) 269-8642
(907) 269-8647
www.dnr.state.ak.us/mlw/mining/index.cfm

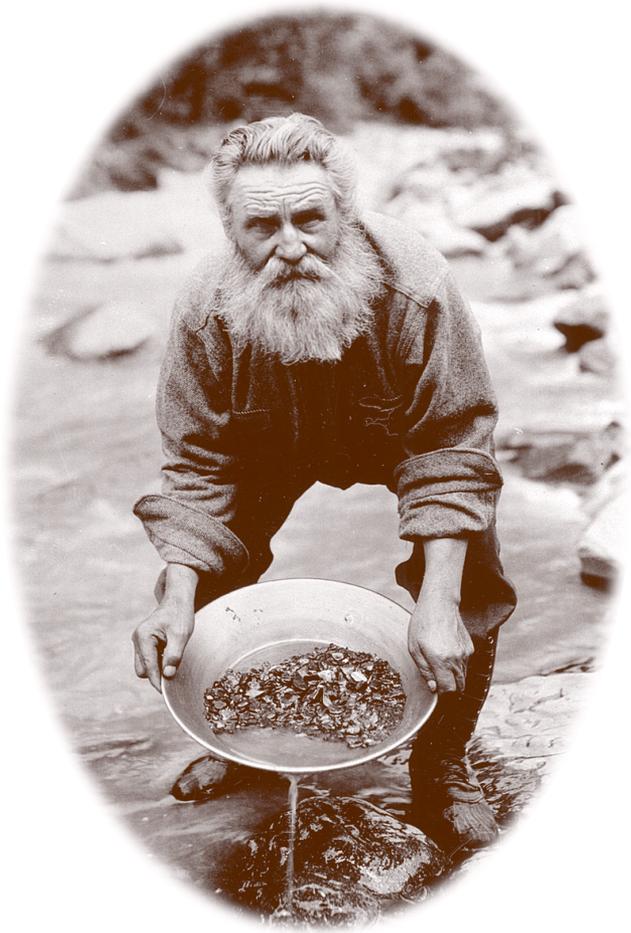
U.S. Geological Survey

Earth Science Information and Maps
4210 University Dr.
Anchorage, AK 99508-4626
(907) 786-7011
www.alaska.usgs.gov
USGS Maps Online:
<https://www.usgs.gov/products/maps/overview>

*The solitary seeker with his grub-stake on his back,
The restless buccaneer of pick and pan.
On the mesas of the Southland, on the tundras of the North,
You will find us, changed in face but still the same;
And it isn't need, it isn't greed that sends us faring forth—
It's the fever, it's the glory of the game.*

**“The Prospector”
Robert Service**





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