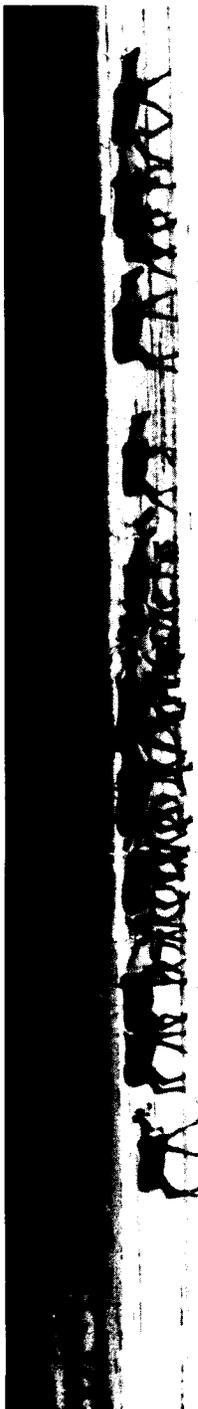


Fortymile
National Wild and Scenic River

alaska



DEPARTMENT OF THE INTERIOR

Final
Environmental Statement

Proposed
FORTY MILE
NATIONAL WILD AND SCENIC RIVER
Alaska

Prepared by
Alaska Planning Group
U.S. Department of the Interior



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Fortymile area. Remains of old ditches for diversions of streams in placer and hydraulic operations are evident in the heavily-mined areas of lower Mosquito Fork, South Fork, Walker Fork and Fortymile River. A small segment of the North Fork at "The Kink" was completely dewatered in early mining.

GEOLOGICAL AND MINERAL RESOURCES

GEOLOGICAL

The Fortymile River basin is underlain by complexly folded and faulted metamorphic rocks that have been intruded by felsic, mafic and ultramafic rocks. In places Cretaceous and or Tertiary sedimentary rocks lie unconformably on older metamorphic or igneous rocks. A major structure, the Tintina Fault zone is north of the basin.

The basic topography consists of rolling hills mantled with soil, tundra and forest cover with some bedrock exposures. Frost heaving also produces surface rubble which masks the underlying rock. Bedrock exposures are best seen in the river valleys where steep topography exists but even there, terraced gravel deposits often hide bedrock.

Primary color of bedrock is grey. Occasionally exposures of white marble and colorful banded metamorphic rocks are found.

The Fortymile River drainage system is superimposed on a geologically older drainage, and the present streams are entrenched to depths which range from a few tens of feet to more than 600 feet. Well-preserved entrenched meanders are common and in places there are narrow gorges with rocky cliffs several hundred feet high. High

level terraces, remnants of the ancient drainage, occur in many places along the main streams and their tributaries. They range in size from a few square feet to more than a square mile. They consist of coarse gravel, a few feet to many tens of feet thick, overlying truncated bedrock. In most places the terraces are gently sloping, have permafrost, and are muskeg covered.

The rocks in the northern part of the basin are mostly metamorphic and consist of quartz-mica schist, greenschist, greenstone, quartzite, and marble. They have been intruded by Mesozoic and Tertiary igneous rocks of granitic composition. The Middle Fork in the proposal area locally cuts through felsic volcanic rocks, but elsewhere metamorphic rocks and hornblende-bearing granitic rocks are the dominant types. The North Fork, Fortymile, and South Fork flow mostly through metamorphic rocks consisting primarily of quartz-mica schist, hornblende gneiss, quartzite, and marble. In places, granitic rocks margin the river, and on the Fortymile, ultramafic rocks are also exposed in the cliffs. The southern part of the basin has a wide variety of metamorphic rocks and volcanic rocks, augen gneiss, and granitic rocks of Mt. Fairplay. In the vicinity of Chicken, basalt, felsic volcanic rocks, and Tertiary sedimentary rocks occur along with the metamorphic and granitic rocks. Cretaceous sedimentary rocks are known in the Dennison Fork and West Fork drainage areas.

MINERAL RESOURCES

The overall geology of the Fortymile River basin is favorable for occurrence of metallic minerals. (Map 5)

Base metal lodes are known to occur in small abundant veins throughout the basin. These contain significant amounts of lead, tungsten, nickel, chromium, copper, zinc, antimony, iron and molybdenum. None have yet been developed

but the overall geologic framework of limestone rich metamorphic rocks intruded by various igneous rocks and other geologic factors can be considered as conducive to the formation of commercial-sized deposits.

The recent commercial development of asbestos along the Tintina Fault zone in the lower Fortymile River basin in Yukon Territory, Canada, has raised considerable interest in the Alaska portion of the Fortymile where similar conditions may exist. The Canadian mine, located at Clinton Creek, was first staked in 1957 and initially explored in 1957 and 1958. A decision was made to start production in 1965 and actual production started in late 1967. By 1969, the mining rate was 3,100 tons per day of 7 percent asbestos fiber. The mill can process about 100,000 tons of fiber annually. The ore body is about 4,500 feet long and 1,000 feet wide with an estimated reserve of 23 million tons.

Asbestos of commercial grade has been found on a ridge separating the drainages of the North Fork from the Middle Fork in the lower Late Creek drainage, and to the south of Champion Creek (Foster, 1969 U.S.G.S. Circ. No. 611).

The Alaska Department of Highways mines gravel for highway maintenance purposes from the flood plain of the South Fork in the vicinity of Chicken.

Maps showing the distribution of anomalous amounts of selected elements found during geochemical analysis of some 1,600 stream sediment and 1,500 rock samples are available for the Fortymile River basin north of Kechumstuk (Foster and Yount 1972. Misc. Field Studies Map, MF-356, U.S.G.S.). Earlier geochemical studies suggested several areas which are worthy of further sampling and geologic exploration because of silver concentrations:

1. Alder Creek

2. Tributary areas to the upper North Fork
3. Hutchinson Creek
4. Champion Creek

These appear to be related to fault structures.

A locally significant deposit of subbituminous coal occurs at Chicken.

There are no oil or gas deposits associated with the proposal.

It is gold that makes the Fortymile River area prominent and today gold remains the only known metallic mineral of economic significance.

In the fall of 1886 gold was first discovered in gravel bars on the Fortymile River at Franklin Creek and from that time on gold production became a steady, if not spectacular, component of the resource uses in the basin. Nearly all gold in the basin has been taken from placer deposits in the streams or higher ancient stream terraces. Lode deposits of gold have not been found in sufficient quantity to mine except for small deposits in quartz and calcite veins just north of Chicken.

Foster and Clark (1970) stated: the present geochemical studies in the Fortymile area "...have not conclusively indicated either the presence or the absence of undiscovered gold deposits....It is likely that anomalies in some areas are due to sulfide minerals in greenschist and greenstones are not indicators of mineral deposits...."

In a few places the high-level terraces have been prospected for gold but because of the difficulty of getting water to them, the only significant mining in the proposal area has been on the terraces of Napoleon Creek. However, the high terraces are one of the most promising sources of placer gold and possibly the only remaining source that might produce significant amounts in the

Fortymile area. The gold is spotty in occurrence and would require moving very large amounts of gravel for recovery.

Between 1886 and 1942 an estimated \$8.7 million in gold was recovered in the Fortymile Mining District. Production was for all practical purposes at a standstill during the war years 1943 to 1946. From 1946 to 1962, an additional \$1.5 million in gold was recovered.

Although the Fortymile Mining District includes more than the Fortymile River basin, it is important to note that almost all gold in the district comes from areas in the Fortymile River area: upper eastern tributaries of O'Brien Creek, Steele Creek, Wade Creek, Franklin Creek, Chicken and Boundary.

Of these, Boundary and the tributary areas to O'Brien Creek are completely outside the proposal.

Early mining activities were conducted by utilizing rockers or pans on the bars and sluices in the small gulches. In 1907 the first dredge became operational and 1909 there were two: one on Walker Fork, the other on South Fork. In 1910 five different dredges were operating on the Fortymile River and its tributaries. These were moved as placer deposits became unprofitable or when wood to fuel the steam boilers was no longer readily available. During the 1920's small individual operations began to merge and by the late 1920's most of the production came from dredges and consolidated enterprises. With an increase in the fixed price of gold from \$20.67 to \$35.00 an ounce in 1934, gold mining increased each year. In 1940 diesel engines replaced wood-fired steam boilers on the Wade Creek dredge. Between 1943 and 1946 the war effort diverted men and machinery from mining. In 1946 some 19 placer mines produced gold. Two mining companies, the Yukon Placer Mining Company

operating in the headwaters Walker Fork, and the Wade Creek Dredging Company operating on Wade Creek, together produced 8,008 ounces of gold and 1,397 ounces of silver, approximately 75 percent of the total gold and silver produced in the Fortymile Mining District that year. Increasing costs reduced the number of operating placer mines to five in 1961. This downward trend continued until this past year when the price of gold was raised.

Map 5 shows the approximate location of mining claims assembled for the Joint Federal-State Land Use Planning Commission (Anchorage) by the U.S. Bureau of Mines. These data were compiled from records of the Alaska State Division of Geology and Geophysical Survey. It is important to note that each map symbol does not necessarily represent a single mining claim (range is from 1 to 199 and some have an unknown number). For example the two dots denoting asbestos claims between the North and Middle Forks represent a total of 109 separate lode claims.

Recorded claims associated with the proposal are: 31 lode claims, 390 placer claims, and 9 claims which are not identified as either lode or placer. Of these, 5 lode, 14 placer and 1 unidentified (all for gold) are associated with areas proposed for Wild River designation; while 7 claim groups with more than 89 claims are associated with the proposed Recreational River designation. The remainder are associated with proposed Scenic River areas. An estimated 90 percent of all claims associated with the proposal are on placer gold. The remainder are lode deposits or placer gold in combination with some other mineral. A single coal lease is located at Chicken. Asbestos claims between the North and Middle Forks are not included within the proposal.

Although the oldest mining area in Alaska, only 507 acres in 7 claims have been patented (see Land Ownership Map 3).

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