UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

MINERAL RESOURCE POTENTIAL OF THE FISHER GULCH ROADLESS AREA TRINITY COUNTY, CALIFORNIA

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STUDIES RELATED TO WILDERNESS

Under the provisions of the Wilderness Act (Public Law 88-577, September 3, 1964) and related acts, the U.S. Geological Survey and the U.S. Bureau of Mines have been conducting mineral surveys of wilderness and primitive areas. Areas officially designated as "wilderness," "wild," or "canoe" when the act was passed were incorporated into the National Wilderness Preservation System, and some of them are presently being studied. The act provided that areas under consideration for wilderness designation should be studied for suitability for incorporation into the Wilderness System. The mineral surveys constitute one aspect of the suitability studies. The act directs that the results of such surveys are to be made available to the public and be submitted to the President and the Congress. This report discusses the results of a mineral survey of the Fisher Gulch Roadless Area (A5299), Shasta-Trinity National Forest, Trinity County, California. The Fisher Gulch Roadless Area was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

SUMMARY

The results of geologic, geochemical, and mining and production surveys of the Fisher Gulch Roadless Area indicate a low potential for gold and related silver. The gold placer deposits within the study area are either mined out or too small to be significant. The East Wind No. 1 lode gold deposit also appears to be mined out. Although quartz veins are associated with the Salmon Hornblende Schist, there is no indication that hidden underground gold-bearing quartz veins exist in the roadless area. There is no evidence of a potential for nonmetallic or energy resources in the roadless area.

INTRODUCTION

The Fisher Gulch Roadless Area is located in the Klamath Mountains province, about 10 mi northwest of Weaverville, Trinity County, California (fig. 1). The area comprises 3,300 acres on the west slope of the Canyon Creek drainage. Elevation above sea level ranges from 2,400 ft on the east to 6,250 ft on the west. The north and west boundaries are shared with the proposed Salmon-Trinity Alps Wilderness. Access from the south is by an unimproved dirt road and foot trail along Fisher Gulch, and from the east by an unimproved dirt road to the Dedrick Lookout site and by foot trail into the area. Additional access is across Canyon Creek from Canyon Creek road. Manzanita and other plants of the chaparral community dominate the roadless area and are an impediment to hiking on steep slopes.

The roadless area is included on the geologic map of the Helena 15-minute quadrangle (Cox, 1967). In June 1980 and August 1981, the U.S. Geological Survey study included field checking and geochemical sampling of rock and stream-sediment sampling but no additional mapping was done. Ten reconnaissance lode and placer samples were analyzed specifically for gold and silver in addition to other elements.

The U.S. Bureau of Mines, Western Field Operations Center, searched published literature as well as records of the U.S. Bureau of Mines, U.S. Forest Service, U.S. Bureau of Land Management, and Trinity County for data concerning mineral deposits, claims, leases, and mining and production activity in the roadless area. The U.S. Bureau of Mines conducted field work in the summer of 1981 that involved geochemical sampling of rocks and stream sediments, searching for prospects and claim locations with the aid of a helicopter, and mapping mine workings and mineralized zones in the study area. Ten lode and six placer samples were taken from areas with suspected mineralization. Because of the rugged terrain and dense vegetation, some workings may have been overlooked.

GEOLOGY AND GEOCHEMISTRY PERTAINING TO MINERAL RESOURCE ASSESSMENT

GEOLOGY

The Fisher Gulch Roadless Area is located in the central metamorphic belt of the Klamath Mountains geologic province (fig. 2). The central metamorphic belt is one of several lithic belts that constitute the province. These imbricate arcuate lithic belts (convex side facing west) are thought to represent eastward-dipping thrust slices of oceanic crust and island arcs that were accreted to the continental margin by plate-tectonic processes during Mesozoic time (Irwin, 1977).

The central metamorphic belt extends for 99 mi and ranges in width from less than 0.5 mi in the north to 12 mi in the south. The belt underthrusts the eastern Klamath belt to the east, and in turn is underthrust by the western Paleozoic and Triassic belt on the west. Most of the granitic plutons that intrude the central metamorphic belt are along its east margin. The belt consists of two contemporaneous formations, the Salmon Hornblende Schist and the Abrams Mica Schist. Structurally the Salmon lies below the Abrams, and is a 0.5- to 1-mi-thick mafic metavocanic unit that underwent amphibolite-facies metamorphism during Devonian time. The Abrams is not exposed in the roadless area. Andesitic and dacitic dikes intrude the granitic rocks and the Salmon Horneblende Schist throughout the region. Dikes are often associated with gold-bearing quartz veins within the Salmon (Cox, 1967; Hotz and others, 1972; Irwin, 1977).

The Fisher Gulch Roadless Area is underlain almost entirely by the Salmon Hornblende Schist (fig. 3), a dark homogeneous medium-grained hornblende-oligoclase-clinozoisite schist. Quaternary deposits are present along the northeast boundary of the roadless area and consist of gravels, stream terraces, and placer-mine tailings. The gravels are primarily glacially derived and have been reworked by alluvial processes (Cox, 1967).

GEOCHEMISTRY

Five streams drain the Fisher Gulch Roadless Area, from Little Ripstein Gulch in the north to Fisher Gulch in the south. The streams range from 0.5 mile to 1.5 mi in length. A single stream-sediment sample was collected from each drainage near the boundary of the roadless area (fig. 3). Five samples of Salmon Hornblende Schist were also collected to establish geochemical background values. All samples were analyzed for 31 elements using a six-step semiquantitative emmission spectrographic method. Samples were also analyzed for gold by fire assay. The results (table 1) show both enrichment and depletion of elements in stream sediments, all of which can be attributed to erosional and stream-transport processes. The only anomalies of any significance are shown by the gold values of stream-sediment samples 4 and 5 taken from the two forks of Fisher Gulch.

The U.S. Bureau of Mines collected 10 rock samples from the Eastwind No. 1 mine (fig. 3), including samples taken across a quartz vein and from an irregular mass of quartz at the end of the vein. These samples contained only a minor amount of gold and less than 0.05 oz of silver per ton. One select sample of sulfide-bearing vein quartz from the mine dump assayed 0.25 oz of gold and 1.8 oz of silver per ton. In addition, six placer samples were collected from benches and bars along Fisher Gulch, but none contained more than $0.11 per cubic yard of recoverable gold at a gold price of $500 per ounce.

MINING DISTRICTS AND MINERALIZATION

The Klamath Mountain region was intensely prospected following the discovery of gold at Reading Bar (fig. 1) on the Trinity River in 1848. By 1852 most of the major placer deposits had been located (O'Brien, 1965). Today portable suction dredges are being used to recover gold from small submerged high-grade pockets in the gravels of most creeks, streams, and rivers in the Klamath Mountains, including those in Canyon Creek. Lode gold in the Klamath Mountains was discovered in 1852, and lode mining slowly increased as placer mining declined. Lode gold production was not significant until the discovery of gold in the Deadwood mining district in 1875. By the 1880's lode deposits were the dominant source of gold production in the Klamath Mountains (O'Brien, 1965; Albers, 1966).

Much of the early mining history of the Canyon Creek area in and near the Fisher Gulch Roadless Area is not known. The gravel benches of Canyon Creek and its tributaries were being hydraulically mined in 1874 (Miller, 1890), but mining probably began much earlier and continued intermittantly into the 1950's (O'Brien, 1965). River and bar mining of Canyon Creek and its tributaries probably preceded and later was concurrent with hydraulic mining. According to an early account (Miller, 1890), "In the days of river and bar mining [Canyon] creek proved to be wonderfully rich in the channel, and in later years the high benches of gravel have and are yielding handsome returns to the miner."

In 1889, lode gold mining began in the Canyon Creek drainage with the discovery of several gold-quartz veins on the north slope of Little East Fork Creek. At this time the Dedrick-Canyon Creek mining district was formed, the town of Canyon City was abandoned, and the town of Dedrick was founded (Dunn, 1893). The Globe-Bailey-Chloride group in this district yielded gold and silver from northeast-trending quartz veins in the Salmon Hornblende Schist. This group operated intermittantly until 1953, and yielded approximately $4 million in gold and silver (Hotz and others, 1972). Within 3 mi of the roadless area, the Alaska, Silver Grey, and Mason and Thayer mines also yielded gold-silver ore from veins in the Salmon Hornblende Schist.

Less significant lode activities occurred on Fisher Gulch, and several claims were located on promising quartz outcrops (Miller, 1890). The Fisher Gulch and Bonanza mine consisted of two claims near the head of Fisher Gulch at the elevation of 2,600 ft and had a 0.5- in to 2-ft-wide vein striking northeast and dipping 50° to 70° southeast along a contact between slate and diorite (Dunn, 1893; Crawford, 1896). Workings in 1896 consisted of a 100-ft crosscut to the vein, and short drifts extending northeast and southwest along the vein. The north drift intersected a 60-ft shaft (Crawford, 1896).

The East Wind No. 1 claim on Fisher Gulch was the only developed lode claim found within the study area (fig. 3). A northeast-trending quartz vein is exposed for about 130 ft in an adit. The vein averages about 3 in thick, with an irregular mass of quartz about 8 ft in diameter along the strike of the vein at one end. It is not clear whether the East Wind No. 1 claim is the same as the Fisher Gulch and Bonanza mine, but the descriptions and locations are quite similar.

Present-day claimants report that Fisher Gulch has yielded large gold nuggets in recent times, although none were found during this investigation.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

The results of this investigation indicate a low potential for gold and related silver in the Fisher Gulch Roadless Area.

The gravels of Canyon Creek, along the northeast edge of the roadless area have been extensively mined and probably contain insignificant amounts of gold. Small portable underwater suction-dredge operations may recover small amounts of gold from present-day river gravels and bars. Analyses of stream-sediment samples from Little Ripstein and Jones Gulches show no significant gold, indicating that the gold found in Canyon Creek adjacent to and within the northeast boundary of the roadless area was derived from other drainages.

Analyses of gravels of Fisher Gulch and its tributary show insignificant amounts of gold. Local prospectors claim that gold nuggets have been recently recovered from Fisher Gulch; however, the potential for placer gold in Fisher Gulch is low; gravel volumes are limited and only occasional nuggets and small amounts of fine gold particles have been recovered.

Analyses of lode samples from the East Wind No. 1 claim and the presence of placer gold in the gravels of Fisher Gulch indicate that lode gold exists within the Fisher Gulch drainage area, most of which lies within the roadless area. The East Wind No. 1 deposit appears to be mined out because both ends of the quartz vein pinch out in the adit, and assays of samples from the vein show insignificant amounts of gold. A stockpile sample assayed 0.25 oz of gold per ton indicating that high-grade pockets probably occurred along the vein. Exploration along the vein might reveal additional pockets. There are no other mines or claims within the roadless area and the extensive past exploration and prospecting in this area probably precludes the presence of additional surface lode gold deposits.

Undiscovered subsurface quartz veins with gold may be present in the roadless area, considering the frequency with which quartz veins occur in the Salmon Hornblende Schist (Cox, 1967). Quartz veins associated with dikes are most likely to contain gold (Hotz and others, 1972). Analyses of samples from the quartz vein in the East Wind No. 1 claim indicate that the gold content would be sporadic. However, the ore shoots in the gold-quartz veins of the Globe-Bailey-Chloride group, located 1 mi east of the roadless area, in the Salmon Hornblende Schist contained gold values sufficiently uniform to support the largest gold production in the Salmon-Trinity Alps Primitive Area. The Globe-Bailey-Chloride group contains identified marginal gold-silver reserves (Peters, 1983). Underground quartz veins would be difficult to locate by present-day methods, and underground veins with gold contents similar to the Globe-Bailey-Chloride group would be even more difficult to locate. There is no evidence of a potential for nonmetallic or energy resources in the roadless area.

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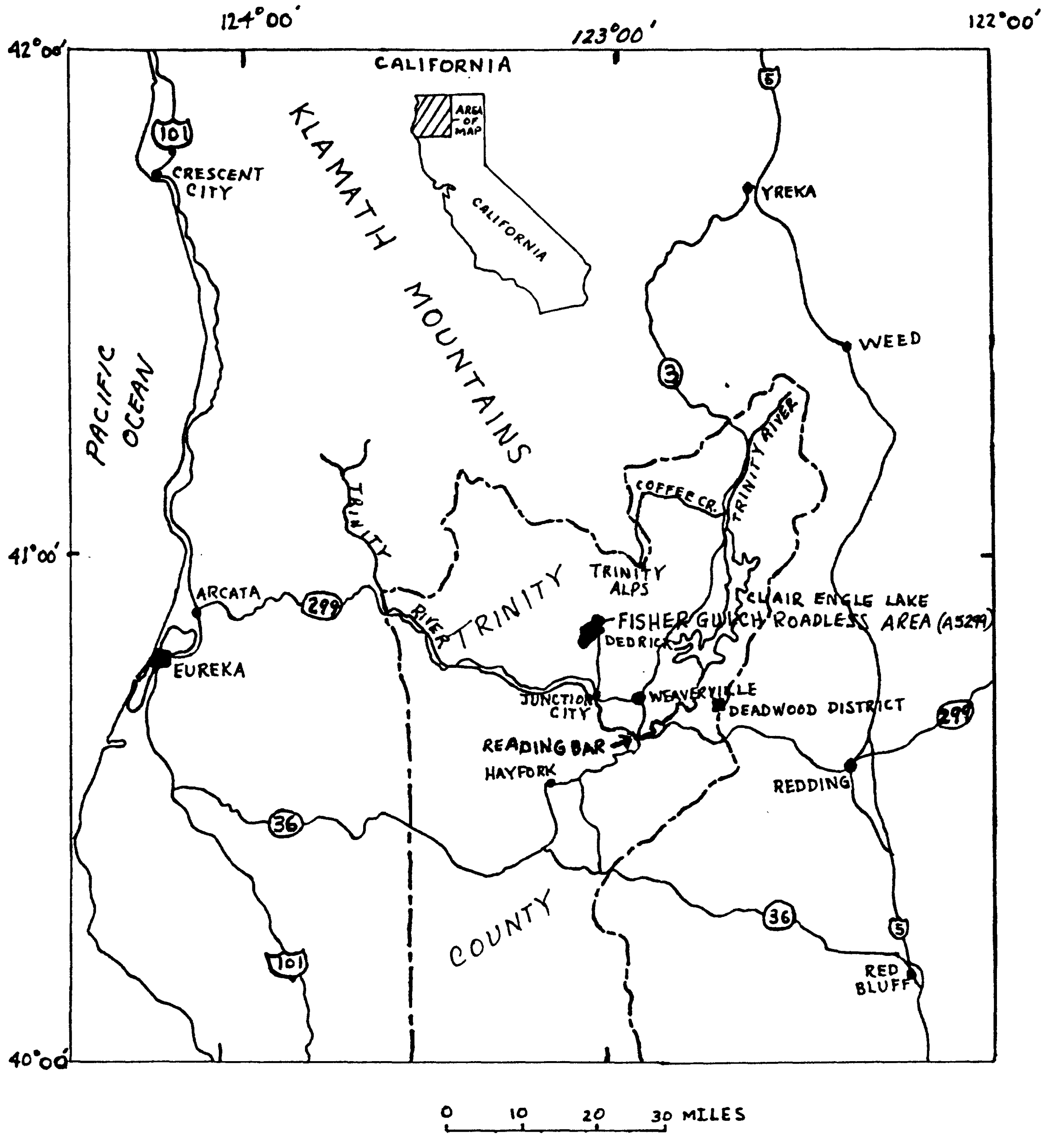

Figure 1.—Location of the Fisher Gulch Roadless Area in the Klamath Mountains, Trinity County, California.

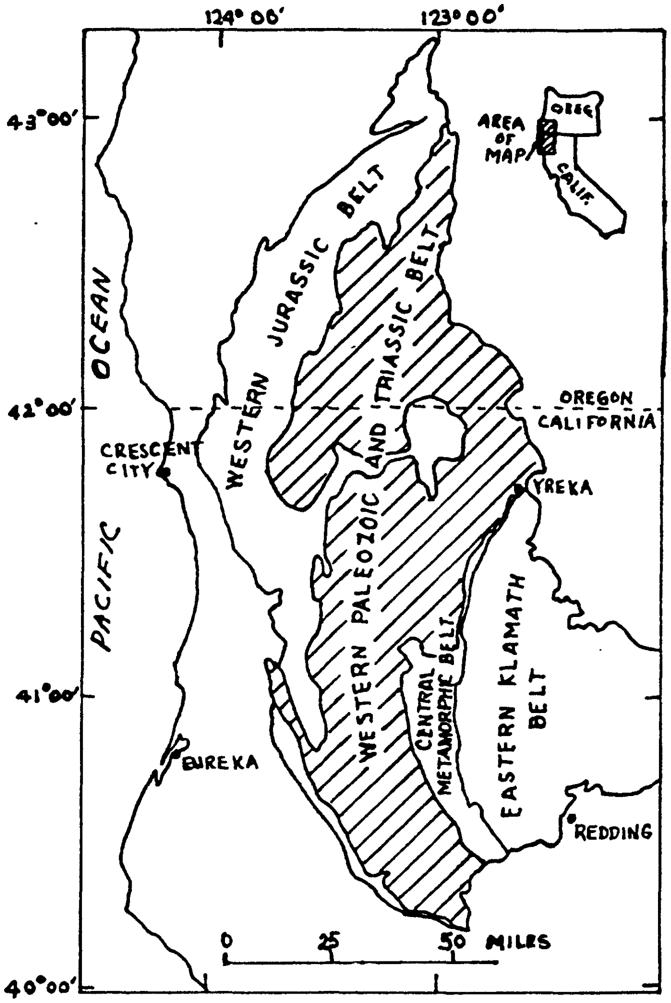

Figure 2.--Generalized map showing the lithic belts of the Klamath Mountains geologic province, California and Oregon (after Irwin 1977).

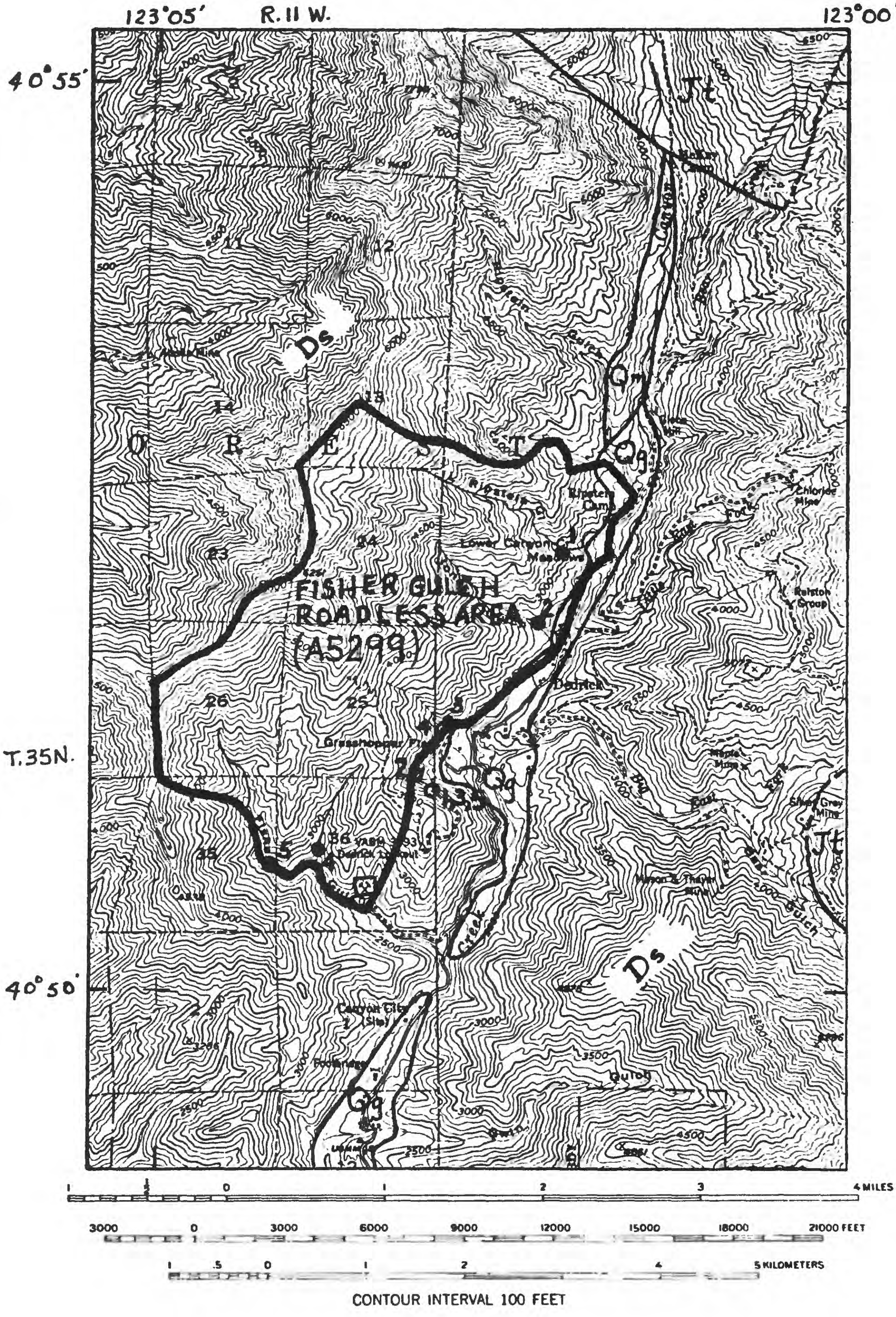

Figure 3.--Geologic map of the Fisher Gulch Roadless Area. Geology after Cox (1967). Base from U.S. Geological Survey, Helena, California 15-minute quadrangle, 1951.

EXPLANATION

Qg	RECENT GRAVELS, STREAM TERRACES, AND PLACER-MINE TAILINGS (QUATERNARY)
Qm	MORAINE (QUATERNARY)
Jt	TONALITE (CRETACEOUS OR LATE JURASSIC)
Ds	SALMON HORNBLENDE SCHIST (DEVONIAN)

	APPROXIMATE BOUNDARY OF ROADLESS AREA
	CONTACT--Dashed where inferred
	EAST WIND NO. 1 MINE
	ADIT, MINE
●3	STREAM-SEDIMENT SAMPLE--Station number, refer to table 1
o4	ROCK SAMPLE--Station number, refer to table 1

Table 1.--Six-step semiquantitative spectrographic analyses of five rock and five stream-sediment samples from Fisher Gulch Roadless Area, Trinity County, California (see figure 3 for locations of samples).

UNITS	---- percent			------	------------------------------ parts per million																										------------
ELEMENTS	Fe	Mg	Ca	Ti	Mn	Ag	As	Au*	B	Ba	Be	Bi	Cd	Co	Cr	Cu	La	Mo	Nb	Ni	Pb	Sb	Sc	Sn	Sr	Th	V	W	Y	Zn	Zr
Lower limit of determination	.05	.02	.05	.002	10	.5	200	.001	10	20	1	10	20	5	10	5	20	5	20	5	10	100	5	10	100	100	10	50	10	200	10
Rock 1	5	3	3	.7	2000	N	N	.001	10	30	N	N	N	50	300	20	N	N	N	100	N	N	50	N	150	N	200	N	30	L	50
Rock 2	1.5	1	1	.2	500	N	N	N	50	500	L	N	N	10	30	10	L	N	N	20	15	N	7	N	300	N	70	N	10	N	50
Rock 3	2	5	2	.5	1000	N	N	.003	10	20	N	N	N	30	200	70	N	N	N	100	L	N	20	N	150	N	150	N	15	N	30
Rock 4	2	5	2	.5	1000	N	N	.003	20	200	N	N	N	30	300	50	N	N	N	150	10	N	20	N	200	N	150	N	20	N	50
Rock 5	7	3	3	.7	2000	N	N	.002	15	70	N	N	N	50	200	15	N	N	N	100	10	N	30	N	200	N	300	N	50	200	50
Background level (rock average)	3.5	3.4	2.2	.52	1300	-	-	.0018	21	164	-	-	-	34	206	33	-	-	-	94	7	-	25.4	-	200	-	174	-	25	-	46
Stream sediment 1	5	2	2	1	1000	N	N	.007	10	50	N	N	N	30	100	100	N	N	N	50	10	N	30	N	150	N	200	N	50	N	50
Stream sediment 2	5	2	3	1	1500	N	N	.005	20	20	N	N	N	30	100	150	N	N	N	50	10	N	30	N	100	N	200	N	50	L	50
Stream sediment 3	5	1.5	2	1	1000	N	N	.020	20	50	N	N	N	20	70	100	N	N	N	50	10	N	30	N	150	N	200	N	50	N	50
Stream sediment 4	5	1.5	3	.5	1000	N	N	.050	10	30	N	N	N	30	100	100	N	N	N	50	15	N	30	N	150	N	200	N	50	N	50
Stream sediment 5	2	1	2	.5	1000	L	N	.030	10	50	N	N	N	20	50	50	N	N	N	30	10	N	20	N	100	N	150	N	20	N	50

N = Not detected at limit of determination .
L = Detected, but below limit of determination .
* = Gold values determined by fire assay.
- = Data unavailable.