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REPORT ON THE GRAY EAGLE MINE
Siskiyou County, California

GRAY EAGLE MINE

SISKIYOU COUNTY.

Field Work in September, 1913.

INTRODUCTION.

Siskiyou County, with an area of 3040 square miles, lies along the northern boundary of California, and has Del Norte adjoining it on the west, Modoc on the east and Shasta and Trinity counties on the south. It has an exceedingly broken and picturesque expanse of mountains, and canyons cut by many streams running westerly to the Klamath River and southward to the Sacramento River, the former stream coursing through the county for 70 miles.

The most prominent mountain ranges are the Klamath, Scott and Salmon. Mount Shasta, in the southern part, having an elevation of 14,380 feet, is a noted landmark. The Sierra Nevada lava sheet covers a portion of the eastern part of the county, forbidding both mining and agriculture.

The mineral wealth, which constitutes the basis of Siskiyou's prosperity, is concentrated in various belts and districts. There are two main agricultural sections, the Scott and Shasta valleys, which afford supplies for the surrounding country.

Although the day of simple placer mining has passed, the auriferous gravels still provide the bulk of the county's gold output. Gold dredging is being successfully pursued on McAdams Creek, near Fort Jones; and as there are many acres of gravel that will yield handsome returns by this method of mining, dredging bids fair to become one of the important industries of the county.

Hydraulic mining has been extensively pursued along the Klamath River and important tributaries, and large areas of pay gravel still remain to be worked. The old method of river mining by means of wing-dams has practically passed out of existence.

Quartz mining, which really gives stability to the industry, has made wonderful strides in Siskiyou County during the past ten years, in spite of the lack of transportation facilities, especially railroads. The Oregon branch of the Southern Pacific Railroad, which crosses the county, connects at Montague with the Yreka railroad, thus affording a rail connection for Yreka, the county seat. Wagon roads to the remote mining districts are being constructed as rapidly as the funds of the county will permit.

The unusual strikes of "high grade" ore in the Salmon range, especially in the Homestake and Highland mines, has stimulated lode mining and given the county the publicity it deserves. The Black Bear, with a production record of over $2,500,000, is the most noted gold quartz producer in Siskiyou County. There are many prospects that should develop into producers with the expenditure of a moderate amount of money. The conditions for mining are ideal, due to the abundance of both water and timber, and the California-Oregon Power Company affords cheap electrical power to many of the mining sections.

The minerals found within the borders of this county are many and widely distributed, among which may be enumerated, gold, platinum, silver, lead, chrome, copper, and coal. There are several mineral springs also, the most famous being the Shasta, on the line of the Oregon branch of the Southern Pacific railroad.

GEOLOGICAL AND TOPOGRAPHICAL FEATURES.

The formation and metalliferous belts of Siskiyou County are not so clearly defined as in the middle counties of the State; the Coast and Sierra Nevada ranges are here merged into one. The strike of the stratification has been changed from west of north to north 20° east.

In the Klamath, Salmon and Scott ranges, the mountains are rough and sharply defined, and table lands are seldom seen, as sharp serrated ridges have replaced them, with deep gorges and precipitous canyons.

Though the mountains of the western half belong to the Coast Range system, their general geological character is that of the Sierras, as granites, diorites and metamorphic slates and limestones, similar to the latter mountain system, comprise their mass. Between these western mountain systems and the lava beds, which cover a large area, including much of the drainage area of the Shasta and Little Shasta rivers and Cottonwood Creek, is a section, the characteristic rock of which is a fossiliferous sandstone. In the Shasta and Willow Creek valleys coal seams are found, stratified with the sandstone; these seams of lignite (coal) of good quality, vary from a few inches to four feet in width and rest on a quartzite substratum, which formed the rim rock of the basin.

Following the quartzite in a westerly direction for about 1 mile, a belt of magnesian rocks containing iron is observed, which continues for some 2 miles, when the main gold-bearing belt of the region is encountered.

DESCRIPTION OF STREAMS.

Klamath River.

This river and its tributaries have been important agents in the distribution of placer gold throughout the country (see photo No. 1). Its source is in the mountain ranges of northern California and southern Oregon, drawing from the Upper and Lower Klamath, Goose and Rhett lakes, and flowing southwesterly into the Pacific Ocean at a point forming the western extremity of the dividing line between Del Norte and Humboldt counties. The length of the Klamath is some

362 miles, the average grade being 12 feet to the mile, 70 miles of which is in Siskiyou County.

Gold is found wherever the river has deposited gravel, whether it be in an old channel a thousand feet above the present stream, or in the river bottom. Below the mouth of Scott River it has cut its way through the northern end of the Coast Range practically at right angles to its trend, and runs through a narrow canyon from a few hundred to several thousand feet in depth, with banks as steep as the material will stand and which are covered with a dense growth of timber and

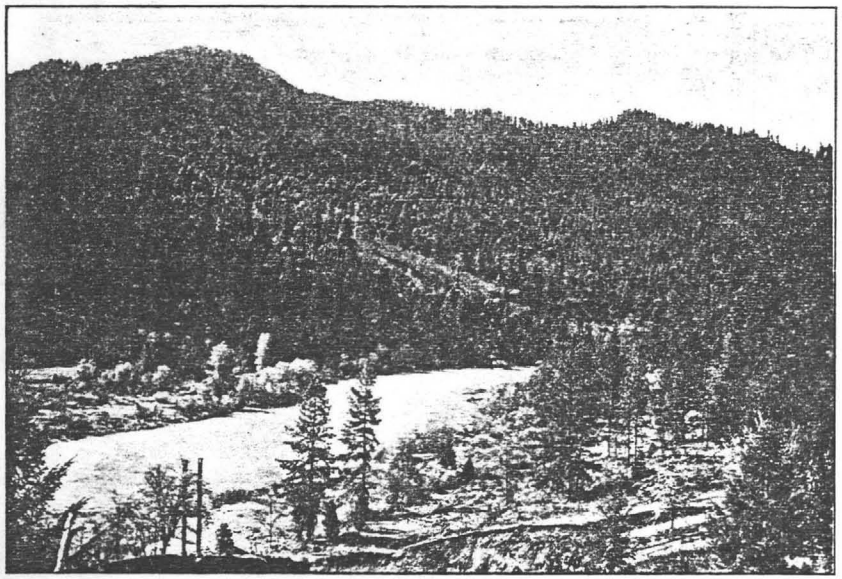


Photo No. 1. Klamath River near Happy Camp.

brush. At Oak Bar, Happy Camp, Hamburg Bar, Orleans Bar and a few other points, the mountains recede far enough from the stream to admit of a few acres of level land being farmed; the rest of the country is too steep for cultivation.

Bibl.: Report VIII, pp. 582, 584, 585.

Scott River.

Scott River, one of the important tributaries of the Klamath, enters this stream in Sec. 6, T. 45 N., R. 10 W., M. D. M., at an elevation of 1650 feet above sea level. It has a length of 61 miles, an average course of 20° to the northwest, and is fed by a watershed area of 812 square miles, with 26 miles of tributaries. This stream flows through the mineral districts of Oro Fino, Quartz Valley, Callahan and Scott Bar. In the vicinity of Callahan, on the headwaters of this stream and especially on the South Fork, rich deposits of gravel are found,

which have been mined for many years. Below Callahan the river runs through a portion of Scott Valley, a rich and fertile plateau, which is successfully cultivated, and in which are situated the flourishing towns of Etan and Fort Jones. The lower end of the river, for about 4 miles above its mouth, runs through a canyon, and here gold is found in the benches on the hillsides and in bars in the river. Scott Bar, in the center of this district and 2 miles from the mouth of Scott River, is the village from which supplies are distributed to the adjacent territory.

Bibl.; Report VIII, pp. 593, 594, 605, 606.

McAdams Creek.

This stream, a branch of Moffat Creek, tributary to Scott River, rises in the Forest Mountain Range and flows in a southerly direction. The placer ground on this creek, from its source to its junction, a distance of some 10 miles, has been rich, but the valley expands and the soil deepens so rapidly that only shallow depths were worked. It is good dredging ground, however, and the lower end of the stream is being worked by this method of mining.

Bibl.: Report VIII, p. 618.

Yreka Creek.

Yreka Creek, some 10 miles in length, rises in the Forest Mountains, flows in a northerly direction and empties into the Shasta River in Sec. 1, T. 45 N., R. 7 W., M. D. M. It is fed by several tributaries and has been an important gold producer in the past. Near Hawkinsville, 2 miles northeast of Yreka, the county seat, the valley is over 1 mile wide, and there is still a large area of auriferous gravel unworked, due to overburden and difficulty of drainage. Hydraulic elevators have been employed, with but poor success. The scarcity of water has also been another serious handicap.

Bibl.: Report VIII, p. 618.

Indian Creek.

Indian Creek, a tributary to the Klamath River, rises in the lofty snow-clad peaks of the Siskiyou Mountain Range, near the boundary line between California and Oregon. It has a length of 16 miles, flows in a southeasterly direction, and its tributaries, east and west, embrace 14 miles; its watershed area covers 144 square miles. Placer deposits are found along the entire length of Indian Creek. Happy Camp, a village on the west bank of the Klamath River at the junction of the Klamath and Indian Creek, is the distributing point for the country generally between Hamburg and Orleans Bar.

Bibl.: Report VIII, p. 599.

Substances	1913
Coal	$1,500 00
Gems	250 00
Gold	*180,125 00
Mineral water	120,000 00
Pumice stone	2,000 00
Silver	*1,228 00
Stone industry	4,883 00
Total	$309,986 00

*Production from dredging operations included in Stanislaus total.

ELECTRICAL POWER PLANTS.

The California-Oregon Power Company serves the following towns in Siskiyou County with cheap electrical power: Yreka, Montague, Hornbrook, Dorris, Ager, Hawkinsville, Thrall, Croy, Fort Jones, Oro Fino, Greenview, Walker, Etna, Weed, Sisson, Dunsmuir, and Castella.

The power plants are located at Fall Creek (capacity 2500 k.w.), Shasta River (380 k.w.), Klamath Falls (1500 k.w.), Gold Roy (2500 k.w.), Prospect (4750 k.w.), a total of 11,630 k.w. In addition to the plants mentioned, another is being installed on the Klamath River, near Fall Creek, with a capacity of 4000 k.w. and the system will then have a total generating capacity of 15,630 kilowatts.

CHROME.

Considerable float of chromite is found near the top of the Forest Mountains, in Sec. 13, T. 44 N., R. 8 W., Southern Pacific Railroad Company, owner; and in Sec. 18, T. 44 N., R. 7 W., Wm. Ramus and Carl Hill, Yreka, owners. The country rock is serpentine; the chromite is found in relatively small pieces. No development work has been done. Float of chromite is reported in the vicinity of the Dewey mine, about 10 miles southwest of Gazelle.

Bibl.: Bull. No. 38, pp. 272, 363.

CLAY PRODUCTS.

T. T. Garvey, of Yreka, owns a large bank of reddish colored clay, containing some minute quartz pebbles, in Sec. 27, T. 45 N., R. 7 W., M. D. M. A good quality of brick has been manufactured and used in Yreka.

Bibl.: Bull. No. 38, p. 257.

T. Hamilton, of Fort Jones, formerly made bricks from the surface clay from a deposit in Sec. 2, T. 43 N., R. 9 W.

Bibl.: Bull. No. 38, p. 257.

T. A. Reynolds, of Fort Jones, had an old brick kiln, using surface clay, from a deposit in Sec. 11, T. 43 N., R. 9 W.

Bibl.: Bull. No. 38, p. 257.

Peter Smith, of Etna, owns a bank of clay in Sec. 21, T. 42 N., R. 9 W., M. D. M. This deposit consists of 4 feet of clay of good quality, from which bricks were burned and used in buildings in Etna.

Bibl.: Bull. No. 38, p. 257.

J. Walker, of Greenview, has a deposit of grayish colored clay of good quality, located in Sec. 32, T. 43 N., R. 9 W., M. D. M.; a good grade of bricks manufactured at one time.

Bibl.: Bull. No. 38, p. 258.

COAL.

The coal deposits north of Yreka, in the vicinity of Hornbrook and Ager, have furnished a small amount of coal for domestic use for several years. It is a good grade of lignite, burns freely and leaves no klinkers.

The Black Butte Mountain Deposits near Ager, and the Kosh Creek deposits near Glazier along Kosh Creek in T. 38 N., R. 1 E., have not been developed at all.

The Siskiyou Coal Manufacturing Company's holdings near Hornbrook have been exploited by several open cuts along the croppings. The vein is 5 feet wide, with 30 inches of good lignite. Coal has been reported near Oak Bar, but is inferior in quality to the other deposits.

Bibl.: Report XI, p. 449.

COPPER.

The copper mines and prospects, while of recent development, are worthy of careful consideration, and are widely scattered over the central and northern portions of the county. The formations in which these deposits occur are either peridotite or gabbro, or a metamorphic schist overlying these eruptives, and several of the mountain peaks show the reddish-brown color which peridotite assumes in weathering. In the Happy Camp district, which has been noted for its placer gold production, there are several prospects of merit; and one property, the Grey Eagle, has been developed into a copper mine of considerable magnitude, with a large tonnage of ore blocked out.

Bibl.: Bull. No. 50, pp. 120–141.

Blue Ledge, owned by Blue Ledge Mining Company, of New York, is located in Sec. 21, T. 48 N., R. 11 W., M. D. M., in the Elliott mining district in the Siskiyou Mountain range and near the boundary line

tween California and Oregon. Elevation at mine is 4000 feet. Hut-n is the nearest post office. The mine is connected by wagon road ith Joe Bar, an old placer camp. The ore occurs in a north and uth vein, dip vertical, its outcrop being traceable for 3000 feet; walls micaceous schist. Ore consists of pyrite, chalcopyrite and other lphides and oxides of iron and copper, the average value being above copper and $5 per ton in gold. Two main tunnels 250 feet part are connected by winzes and stopes; both show ore and have ntermediate drifts showing over 150 feet in a solid body 40 feet wide places. The workings comprise over 3000 feet of development. A rge tonnage of ore blocked out. It is reported that the company has anned the erection of a smelter on the Applegate River.

Bibl.: Bull. No. 50, p. 128.

Copper Queen, in Sec. 3, T. 46 N., R. 7 W., in the Cottonwood min-g district, 10 miles northwest of Hornbrook. Owners, J. D. and R. bbott, of Yreka; comprises 20 acres on Hunter Creek; small ledge in ne and diorite-schist, 110-foot tunnel. Idle.

Bibl.: Bull. No. 50, p. 123.

Davis, in Sec. 12, T. 14 N., R. 6 E., in the Happy Camp mining district, 13 miles southwest of Happy Camp. Owner, R. Davis. Ledge 20 to 30 feet wide in schist and limestone; short tunnels; ledge not found in place as yet; strong gossan cropping, carrying some gold value; bonded to J. D. Farish and eight men employed; F. H. Dakin, superintendent; claims on Clear Creek.

Grey Eagle (formerly known as the *Dewey*), in Sec. 4, T. 17 N., 7 E., in the Happy Camp mining district, 8 miles northwest of ppy Camp. Owner, Incorporated Company, of New York; D. Farish, manager; Fred H. Dakin, superintendent; comprises 240 es, patented; on Indian Creek at an elevation of 2550 feet; a strong n from 10 to 80 feet wide in schist with a northwest and southeast ike and a dip of 45° E.; ore shoot over 300 feet long, consisting of alcopyrite and pyrite; eight tunnels from 50 to 600 feet in length, six ng crosscuts and two on the ledge; and several hundred feet of drifts d raises; large tonnage blocked out; ore carries from 2½% to 18% pper and $1.50 per ton in gold; strong gossan croppings on the sur-e; five men employed; property located in 1892 and sold to present npany in 1908.

Bibl.: Bull. No. 50, p. 132.

Tummer, in Sec. 18, T. 40 N., R. 7 W., in Callahan mining dis-t; owned by Mischler & Rollins, of Callahan. Claims worked to a ited extent by shallow shafts and open cuts; formation is serpen-e, though the ore deposits are connected with dikes of quartz-

porphyry which have penetrated the serpentine; ore lies in irregular bodies, consisting of pyrrhotite and other sulphides, carrying copper; ore said to contain nickel. Idle.

Bibl.: Bull. No. 50, p. 123.

Little, in Sec. 12, T. 46 N., R. 12 W., in the Seiad mining district; 10 miles west of Hamburg Bar. Owners, Little & Straisch; comprises 60 acres, located in 1899; ledge 39 feet wide, with northwest and southeast strike and dip of 20° E.; in schist and limestone; 40-foot tunnel. Idle.

Monarch, in Sec. 7, T. 40 N., R. 7 W., Callahan mining district; owned by Monarch Copper Mining Company, of Callahan; 240 acres, patented; tunnels and shafts (shallow); sulphide ore. Idle.

Bibl.: Bull. No. 50, p. 124.

Phillips, in Sec. 6, T. 46 N., R. 12 W., in the Seiad mining district; 14 miles west of Hamburg Bar. Owner, S. Phillips; comprises 40 acres, located in 1900; ledge 30 to 100 feet wide, with northwest and southeast strike and dip 35° E.; in schist and limestone; 110-foot tunnel; strong gossan cropping traceable for 1500 feet; only do assessment work.

Polar Bear, in Sec. 12, T. 40 N., R. 8 W., in the Callahan mining district; owned by Welkes & Sons; comprises one claim; ore bodies 6 feet wide, consisting of chalcopyrite and pyrrhotite, in serpentine; 200 tons extracted, said to carry 17% copper. Idle.

Bibl.: Bull. No. 50, p. 124.

Preston Peak, at head of South Fork of Indian Creek, 1½ miles north of Preston Peak; owned by Preston Peak Copper Mining Company; ledge 20 to 30 feet wide, in diorite; ores are pyrite and chalcopyrite; 300-foot tunnel in ore; ore said to carry 12% copper with gold; one of the pioneer discoveries of the Siskiyou belt. Idle.

Bibl.: Bull. No. 50, p. 132.

Plutus, in Secs. 12 and 14, T. 40 N., R. 8 W., in Callahan mining district; owned by McCarter, of Callahan; comprises five claims; ore, (pyrrhotite with small percentage of copper); occurs in gabbro and serpentine. Idle.

Bibl.: Bull. No. 50, p. 123.

Rainbow, in Sec. 24, T. 40 N., R. 5 W., in the Mt. Eddy mining district, 4 miles southwest of Sisson; owned by Wood & Sheldon Lumber Company; comprises 300 acres; tunnels and open cuts; one tunnel 400 feet long; ledge is 6 feet wide, in serpentine; ore is massive sulphides; gossan croppings 100 to 600 feet wide are exposed for over

mile on a spur of Mt. Eddy, having a strike of 70° NW. and ip of 60°; company's railroad near property; property was first orked for gold, thirty years ago. Idle.

Bibl.: Bull. No. 50, p. 125.

Rothrop, in Secs. 5, 6, 7 and 8, T. 43 N., R. 8 W., 4 miles north- ist of Fort Jones; owned by George Henderson; comprises 15 claims; eveloped by shafts and tunnels; ledge 6 feet wide in serpentine; me of the ore is reported to carry 20% copper. Idle.

Bibl.: Bull. No. 50, p. 125.

Shiner, in Sec. 7, T. 46 N., R. 12 W., in the Seiad mining district; 12 miles west of Hamburg Bar. Owner, C. Shiner. Comprises 40 Acres, at an elevation of 2000 feet; located in 1899; ledge 30 to 100 Feet wide, with northwest and southeast strike and dip of 30° E., in Schist and limestone; 80-foot tunnel; strong gossan cropping; ore is Chalcopyrite. Only do assessment work.

Tebbe, in Sec. 32, T. 4 N., R. 9 W., in the Oak Bar mining dis- Trict; 4 miles north of Oak Bar. Owner, G. A. Tebbe. Comprises 40 Acres; ledge 30 feet wide in schist and limestone; 120-foot tunnel in ore. Idle.

Welch, in Sec. 1, T. 46 N., R. 12 W., in the Seiad mining district; 4 miles west of Hamburg Bar. Owner, E. Welch. Comprises 40 Acres, located in 1899; ledge 30 feet wide, with northwest and south- East course and dip of 40° E.; in schist and limestone; two tunnels, 30 And 60 feet long; strong gossan cropping. Only do assessment work.

Yellow Butte, in Sec. 25, T. 40 N., R. 5 W., 15 miles from Mon- ague, on the north slope of Mount Shasta; owned by Yellow Butte lining Company; L. D. Ball, superintendent; vein is 5 feet wide, in chist and granite; strike north and south; dip 60° W.; ore is massive ulphide; tunnels and shafts. Idle.

Bibl.: Bull. No. 50, p. 126.

GOLD.

The main gold-bearing belt of Siskiyou County consists of meta- morphic slates, granites, diorites, and limestones, with occasionally intrusive masses of porphyry, trap and syenite. This belt is from 5 To 12 miles in width and about 60 miles long, widening and narrowing At places on its line of strike, which varies from N. 20° to 30° E. In some places it is veined and seamed with stringers of quartz; in others it is soft, carrying talc in excess, with irregular bunches of quartz, Rich in gold, designated in hydraulic mining as "seam diggings" and being easily worked with a stream of water under a heavy pressure head. In other localities on the belt, where the formation has been fissured,

or near the line of contact, quartz veins occur either singly or in groups, and as a rule are small, but rich in gold.

This belt is interrupted and broken at several points and is by no means prolific in auriferous quartz veins throughout its entire extent, nor do the same rocks prevail in all the quartz districts.

A striking feature of the occurrence of the auriferous veins is their relation to the culminating peaks of the mountain systems crossed by the belt, for they conform to the lines of foliation of the ranges, being especially noticeable in the Salmon Range, New River, Knownothing, Deadwood and Humbug districts. Quartz Valley and Oro Fino, on opposite sides of a minor isolated mountain, are the only exceptions to the rule indicated.

Salmon Mountain, composed of eruptive rocks, porphyries and gran- ites, seems to have been a disturbing element, as auriferous rocks do not come to the surface for about 10 miles beyond. Reaching as far as the known southerly limit of this gold-bearing belt extends, and crossing it, a belt of argillaceous slate and porphyry, having a width of 2 miles, is encountered, and then a decided belt of serpentine from 3 to 6 miles in width is entered, traceable for several miles on its line of strike. A belt of micaceous schist is observed at Scott's Bar, and westerly from this point belts of granite, limestone, and syenite are alternately crossed, until another belt of auriferous slates is entered, which has been but slightly prospected.

DESCRIPTION OF MINING DISTRICTS.

Salmon River District.

This district, the largest in Siskiyou County, comprises its entire southwestern corner, and includes the drainage area of the Salmon River and its tributaries. Topographically, it is a tangle of mountain ridges separated by precipitous canyons and river gorges. A wagon road 43 miles in length connects Etna, in Scott Valley, with Forks of Salmon, a small town located at the junction of the North Fork of the Salmon River. All the fairly level land in the district consists of a few bars on the Salmon River and its branches, so that this section is practically dependent on supplies from the outside.

Its mining industry, which is much scattered, is diversified among the several branches of placer and quartz mining, the former being followed along the Salmon River and its two principal branches, and to a less extent in some of the smaller side canyons making up into the gold-bearing quartz belts; large deposits are still untouched on the main river and on the South Fork. It is in quartz mining, however, that the permanent value of the district is to be realized. The main gold-bearing rock belt of the county crosses through the middle of this section.

Beaver Creek.

This stream, a tributary to the Klamath River, rises in the Siskiyou Mountain Range, near Mount Sterling. It has a length of 12 miles, a general southwesterly course and is fed by the north and south forks of Hungary Creek, Bumble Bee, West Fork of Beaver and other smaller creeks. Placer mining has been pursued along these creeks for the past forty years, and although worked in a crude way considerable gold has been produced. The formations consist of granite, serpentine, slate and porphyrite-schist, cut by gold-bearing quartz ledges and porphyry dikes, which have fed these watercourses for ages.

Bibl.: Report VIII, p. 591.

Humbug Creek.

This creek, a tributary to the Klamath River, rises in the Humbug Mountains and flows in a northeasterly direction. It has a length of some 10 miles and has been a noted producer of placer gold. Near its source the banks of this stream are steep, the water being confined in a well defined canyon, of heavy grade, but as it approaches the river it widens out, forming large bars, which have been extensively mined. One claim of less than 7 acres has been constantly worked for the last thirty-five years, the output to date exceeding $260,000. Other creeks in this section tributary to the Klamath and which have been noted placer producers are Little Humbug and Barkhouse. From the head of Little Humbug over $2,000,000 was extracted by ground sluicing, and there is still considerable virgin ground to be worked, especially near its mouth, but there is only sufficient water in this creek to allow a two or three months' run each year. Barkhouse, the next creek below Little Humbug, has also been a noted producer, but mining operations are limited on account of the scarcity of water.

Bibl.: Report VIII, p. 591.

Mineral Production of Siskiyou County from 1894 to 1913 (incl.) from Records of State Mining Bureau.

Substances	1894	1895	1896
Gold	$760,781 83	$950,006 43	$1,091,264 82
Platinum	600 00		
Silver		177 30	652 65
Mineral waters		80,800 00	
Totals	$761,381 83	$1,030,983 73	$1,091,917 47

Substances	1897	1898	1899
Gold	$842,123 00	$768,804 00	$991,771 00
Silver	34 00	321 00	100 00
Totals	$842,157 00	$769,125 00	$991,871 00

Substances	1900	1901	1902
Gold	$951,397 00	$886,043 00	$906,989 00
Silver	13,986 00	6,408 00	233 00
Mineral water	45,000 00	175,000 00	187,500 00
Copper			23 00
Totals	$1,010,383 00	$1,067,451 00	$1,094,745 00

Substances	1903	1904	1905	1906
Gold	$613,576 00	$892,685 00	$803,035 00	
Silver	22 00	1,230 00	2,499 00	
Mineral water	50,000 00	50,000 00		
Platinum		21 00	93 00	
Sandstone			1,250 00	$1,500 00
Totals	$663,598 00	$943,936 00	$806,877 00	$1,500 00

Substances	1907	1908	1909
Copper	$39 00		
Gold	398,017 00	$504,156 00	$416,160 00
Lead	140 00	183 00	144 00
Lime	1,000 00	1,680 00	300 00
Limestone	300 00		2,200 00
Mineral water	36,250 00	80,000 00	10,000 00
Rubble	39,000 00		500 00
Sandstone	12,897 00	1,485 00	1,750 00
Silver	3,037 00	6,125 00	2,145 00
Pumice stone			500 00
Macadam			4,528 00
Unapportioned, 1900–1909, inclusive			1,202,742 00
Totals	$490,680 00	$593,629 00	$1,640,969 00

Substances	1910	1911	1912
Crushed rock	$9,475 00	$6,580 00	
Gems	14,745 00	1,000 00	$250 00
Gold	437,376 00	422,297 00	472,314 00
Lime	735 00	120 00	
Limestone	525 00	24 00	
Mineral water	60,000 00	120,000 00	120,000 00
Sandstone	2,000 00	455 00	250 00
Silver	2,322 00	2,561 00	2,980 00
Chrome			2,310 00
Stone industry			609 00
Totals	$527,178 00	$553,037 00	$598,713 00

In the geological center of the district, in the vicinity of Sawyer's Bar, several noted gold producers have been developed. They lie at the heads of Black Bear, Eddy's and White's gulches, from 4 to 10 miles distant from Sawyer's Bar. Quartz ledges on Jackass Gulch on the north side of the North Fork are being prospected and some pay ore developed. The Black Bear, Klamath, Gold Ball, Fagundez, Uncle Sam and Gold Run are the noted mines in this location. There are a number of prospects, also, which may develop into producers. In the same district near Snowden the recent strikes of "high grade" ore have caused considerable excitement. The Homestake, Highland, Overton, Zarina and Advance are the best known quartz properties, while the Big Cliff and Hardscrabble comprise two of the many promising prospects.

As a rule the country is heavily timbered and brushy, precipitous, and the surface broken, so that the quartz veins rarely show in place at the surface.

Bibl.: Report XI, p. 423.

Quartz Valley.

This district, occupying the northwest corner of Scott Valley, has two distinct kinds of placer mines. At the southern end of the valley the pay gravel lies on a flat, nearly level bedrock, without defined channel rims, covered with 60 feet of soft pebbly gravel and alluvium. The gold is coarse and water-worn and the deposit has been worked by drifting. Its source is probably the gravels of an old buried river, traces of which are observable in Douglas Hill, and in benches on the west side of the valley north of where Shackelford Creek enters it. Other traces of this old channel are found on the western edge of Scott Valley as far south as Callahan. The main placer deposit lies on the eastern side, and appears to be the result of the direct erosion of the ferruginous limestones that compose the western slope of the mountain separating Quartz Valley from the main Scott Valley. These limestones are seamed with auriferous quartz veins for some 5 miles. On the eastern slope of this mountain only one ravine seems to have been eroded deep enough to get to the gold bearing rocks, but on the Quartz Valley side there are four such ravines. These places consist of angular fragments of country rock and quartz with sand and clay, in depth from 1 to 30 feet, covered with a deposit of clay and surfaced with alluvium. The shallow placers near the heads of the ravines were worked out by the early-day miners. The gold is generally fine, rough and angular; and at one point from 8 acres of ground, over $200,000 was extracted, by means of hydraulic elevators.

Bibl.: Report XI, p. 434.

Oro Fino.

A low range of hills separates Quartz Valley from Oro Fino. This district is 22 miles southwesterly from Scott Bar by the course of the river. The auriferous dirt is evidently derived from the erosion and decomposition of the mountain sides in the immediate vicinity, as but few pebbles or gravel that show the action of running water or wash are found intermixed. A small ravine tributary to Oro Fino Creek constitutes practically all the placer ground in this district, and mining operations have been confined to the use of hydraulic elevators. The average fineness of the gold in this district is 785. Hydraulic washings have yielded from 75 cents to 85 cents per cubic yard of gravel. The two principal placer mines are the Eastlick Brothers and the Wright & Fletcher. The quartz veins, while numerous, all carry more or less gold and are small, and the gold generally occurs in pockets, in the limestone. The Green Mountain Tiger and Johnson have been the main quartz producers in this section.

Bibl.: Report VIII, p. 607; XI, p. 437.

Scott Bar.

This district, containing both placer and quartz mines, is situated on Scott River just above its junction with the Klamath, and was the first locality to be mined in Siskiyou County; it has been a remarkably

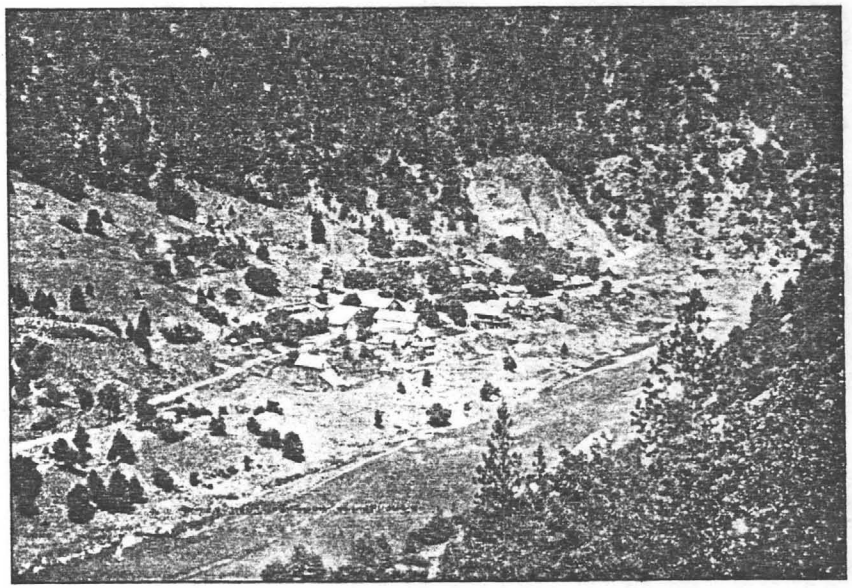


Photo No. 2. Scott Bar.

rich district, although it includes a very small area (see photo No. 2). The gold, generally found on the bedrock, occurs in the form of nuggets, and is smooth and water-worn.

There are several large quartz ledges on Quartz Hill, which is across the river from Scott Bar, and one ledge is said to have yielded the Quartz Hill Hydraulic and Quartz Mining Company considerable gold. The surface has been rich hydraulic ground.

Bibl.: Report VIII, p. 605; XI, p. 447.

Humbug Creek.

This district, on the northeastern slopes of Old Baldy, is exclusively a quartz mining region, and is situated in the headwater forks and canyons of Humbug Creek, about 16 miles northwest of Yreka. The first mining in the district was carried on in 1854, and since that time considerable gold has been produced, although the operations have been practically confined to surface workings, due to a theory that the pay ore did not go down. As a matter of fact, a more intelligent exploration of the ore bodies has disproved the conclusions of the pioneer miners, and the properties that have been worked to any depth at all have yielded good returns, the Spencer and Mountain Belle mines being examples. The ledges in the serpentine are small, averaging 1 foot in width, and upon reaching the water level carry the gold largely with the sulphurets. The adjacent slates and granites are full of ledges carrying low-grade gold ores. The sulphurets consist of pyrite, blende and galena.

Bibl.: Report XI, p. 444.

Cottonwood.

This district, containing both placer and quartz mines, is located on the north side of the Klamath River, some 20 miles northeast of Yreka, and to the west of Hornbrook, a station on the Oregon branch of the Southern Pacific Railroad. It was originally noted for its rich, shallow diggings in Cottonwood Creek and the ravines tributary to it from the west. The old blue lead channel, famous for its rich gravel, is here exposed by erosion of the sandstone capping and cut through by the Klamath River. The gravel is blue and strongly cemented and compacted, while the bank contains considerable pipe clay hardened almost to the consistency of stone and filled with angular rock fragments. The gold is coarse, occurring mostly on or close to the bedrock. Both the channel and the capping are considerably displaced, and dip on an angle of about 12° to the east. In 1887 the outlet of the channel was discovered on the Klamath River, although the blue gravel had been mined in one of the ravines tributary to the Cottonwood, several years previous to that time. Some of the gravel on the bedrock gave returns of $6 per cubic yard.

The quartz prospects have been only partially developed and there is but little mining activity in this district at the present time. The country rocks, slate and quartz-porphyry contain many quartz ledges which carry gold values sufficient to warrant careful investigation.

The *Hazel*, with a gold production record of over $500,000, is the only quartz property that has been worked to any extent.

Bibl.: Report XI, p. 448.

Callahan.

The placer mines in this district are confined to the old gravel channel and bars of the South Fork of Scott River. The channel and high bars of the main Scott River, below the junction of the South and East Forks at Callahan, was mined for a distance of 3 miles, and a large annual gold output obtained. The high bars have been worked out and abandoned for a number of years, and the gold in the river channel is at such a depth that it cannot be profitably mined. On the South Fork, a few claims in the gulches and high bars are worked whenever water is available. On Jackson Creek, one of the headwater streams of the South Fork, 7 miles above Callahan, hydraulic mining is pursued on a small scale. The Montezuma River claim, 1 mile southwest of Callahan, was the largest gold producer, having a record of $50,000 annually.

Bibl.: Report XI, p. 433.

Happy Camp.

This district, also known as Indian Creek, is situated at the confluence of Klamath River and Indian Creek, some 70 miles west of Yreka, and contains both placer and quartz mines. The shallow and more easily removed gravel deposits have been worked out, but the benches are still being hydraulicked for their gold content. There is a large expanse of mineral land yet to be developed. The shallow diggings yielded large returns and were worked over by the Chinese after being abandoned by the white miner. The Classic Hill, on Indian Creek, one of the famous hydraulic mines of this district, was worked for a number of years by Chinese. The formation consists of a soft talcose slate, intercalated with stringers of quartz, which in places concentrate and form a well defined quartz vein, rich in gold, the deposit being known as "seam diggings." The quartz prospects are worked in a very limited way. The Grey Eagle copper mine is the only developed property in the district.

GOLD MINES—QUARTZ.

Advance, in Sec. 17, T. 40 N., R. 10 W., in the Liberty mining district, 13½ miles southeast of Etna Mills, in the Klamath Reserve. Owners, Advance Mining Company, of Denver; president, H. E. Wood; watchman, C. Ritz. Comprises 100 acres, patented, on Cow Creek. Short ore shoots in dioritic schist and limestone; 400-foot tunnel, drifts and stopes. Equipment consists of 1500-foot tramway, dwellings, and 5-stamp mill, driven by waterpower (water from Russian Creek,

through 2 miles of flume). Idle for several years. Ore low grade and free milling. Hardscrabble prospect to the south.

Bailey, in Sec. 35, T. 46 N., R. 9 W., in the Deadwood mining district, 7 miles northwest of Fort Jones, at an elevation of 5000 feet. Owner, L. Bailey. Comprises 80 acres on Indian Creek. Short ore-shoot, in diabase. Worked for pockets. Some rich ore on the surface. Small producer. Idle at present.

Bibl.: Report VIII, p. 624.

Baker, in Sec. 15, T. 44 N., R. 9 W., in the Deadwood mining district, 7½ miles north of Fort Jones, at an elevation of 5000 feet. Owner, George Baker. Comprises 60 acres on Indian Creek. Short ore-shoot in slate. Worked for pockets. 300-feet tunnel. Old 5-stamp mill, driven by waterpower. Small producer.

Bibl.: Report, VIII, p. 625.

Bender, in Sec. 18, T. 42 N., R. 11 W., in the Liberty mining district, 4 miles north of Etna Mills, in the Klamath Reserve. Owner, A. A. Chamberlain. Comprises 40 acres, at an elevation of 3300 feet. Short ore-shoot in limestone and diorite. 340-foot tunnel and 250 feet of drifts. One 3½-foot Huntington mill, in poor condition. Some rich specimens found near the surface. Idle at present.

Ben Neil, in Sec. 10, T. 44 N., R. 9 W., in the Deadwood mining district, 11 miles northwest of Fort Jones at an elevation of 7100 feet. Owner, B. Neil. Comprises 40 acres. Short ore shoot in diorite; 100-foot tunnel. Small pockets taken out. Idle.

Big Ledge, formerly known as the *Lewis,* in Sec. 8, T. 43 N., R. 9 W., in the Oro Fino mining distreit, 6 miles northeast of Greenview. Owner, G. Lewis. Comprises 20 acres. Pockets in diabase. One ore-shoot is 100 feet long and 15 inches wide; 360-foot tunnel. Only do assessment work. Idle.

Bibl.: Report XII, p. 277; XIII, p. 388.

Black Bear, discovered in 1860, is the most noted and largest quartz producer in Siskiyou County. It is in Sec. 13, T. 39 N., R. 12 W., in the Liberty mining district; 9 miles south of Sawyer's Bar in the Klamath Reserve. Owners, Black Bear Consolidated Mining Company, of Rollin; John Daggett, president; leased to Rollin Mining Company of San Francisco; J. L. Dunscomb, president; W. A. Farish, Jr., superintendent. The ore bodies occur in lenticular shaped deposits, which pinch out at times on the footwall side. The holdings comprise 70 acres of patented ground, consisting of the Black Bear, South Black Bear and Yellow Jacket claims, with 10 acres for millsite; workings consist of tunnels and two shafts; altitude, 3600 feet; water supply from Black Bear and Auges Creek, through two flumes, each 1 mile long, and

1600 feet of pipe; length along lode, 4500 feet; length of ore shoot, 150 feet; width of ore shoot, 3 feet; footwall, slate; hanging-wall, slate; number veins, two.

Black Bear and east and west crossing at right angles; character of ore, free milling; strike, north and south; dip, 40° E.; greatest vertical depth below outcrop, 600 feet; length driven on vein, 1500 feet; workings, six tunnels from 100 to 700 feet long; old shaft 550 feet deep (six levels); new shaft on Black Bear claim is 475 feet deep (size 10′ x 4′), sunk at an angle of 45° (3 levels); 4000 feet of drifts from old shaft, all to the west, several crosscuts; raise 3′ x 5′ x 30′, in new shaft from third level (200 feet); old stopes all filled; source of power, water and electricity; mine equipment, hoist, cars, compressor plant, compressor pump, tools, shops, assay office, dwellings, and 100 h.p. electric plant with 2 miles of power line; reduction equipment, 16 stamp mill, electrically driven (stamps weigh 650 pounds); number men employed, top 7, mine 2, total 9; cost (per ton): development, $2.00, mining $1.50, treatment $0.80, general $0.60; production to date, $3,100,000.

White Bear prospect to the north. From 1872 to 1881 the Black Bear mine paid $1,000,000 in dividends; most of the work performed on Black Bear claim; good wagon road from Sawyer's Bar to the mine.

Bibl.: Report VIII, pp. 620, 621; X, p. 656; XIII, p. 389.

Black Hawk, in Sec. 31, T. 46 N., R. 7 W., in Virginia Bar mining district; 5 miles north of Gottville in Klamath Reserve. Owners, Ladd & Ogden. Comprises 40 acres; formation granite and schist; ore found in small pockets; 100 foot tunnel; only do assessment work.

Blind Lode, in Sec. 18, T. 43 N., R. 9 W., in the Oro Fino mining district; 5½ miles northeast of Greenview. Owner, H. J. Diggles; comprises 20 acres of patented land, located in 1876; 150-foot ore shoot, 6 inches wide in diabase; four tunnels, longest being 600 feet; some rich ore extracted; said to have produced $40,000. Idle.

Bibl.: Report, XII, p. 278; XIII, p. 390.

Blue Jay, in Sec. 11, T. 47 N., R. 8 W., in Virginia Bar mining district; 5½ miles north of Gottville in Klamath Reserve. Owners, Blue Jay Mining Company; president, Mrs. P. D. Bennell; secretary, P. Billings; home office, Cleveland, Ohio; comprise 160 acres of patented land, purchased from Southern Pacific Railroad Company; formation, schist and diorite; one vein 150 feet long and 5 feet wide; low grade; two tunnels, 250 and 400 feet long; 10-stamp mill built by Union Iron Works; 1000-pound stamps; two Johnson concentrators; water power and steam; 2½ mile ditch from North Fork of Empire Creek; small production. Idle since 1907.

Blue Lead, in Sec. 26, T. 42 N., R. 9 W., in the Liberty mining district, 5 miles southeast of Etna Mills in the Klamath Reserve. Owner, L. H. Cory; comprises 40 acres of patented land; short ore shoot in diabase; rich on the surface; 580-foot tunnel, old 80-foot shaft and drifts comprise several hundred feet of development work; old 4-stamp mill (650-pound stamp); said to have produced $40,000. Idle since 1908.

Bonanza, in Sec. 14, T. 46 N., R. 7 W., in Cottonwood mining district; 10 miles southwest of Hornbrook in Klamath Reserve. Owners, Klondike Mining and Milling Company; president, J. P. Kleprock; secretary, L. P. Kleprock; home office, Long Beach; discovered in 1883 by C. Dovey; formation hornblende schist and granodiorite; short ore shoot; pocket mine; 1600-foot tunnel; equipment, dwellings and 5-foot Huntington mill; locator took out $10,000 in a pocket. Idle.

Boyle, in Sec. 8, T. 45 N., R. 8 W., in the Humbug mining district; 14 miles west of Yreka in the Klamath Reserve. Owner, C. E. Bunker; 100 acres located in 1880; two parallel veins, strike N. 40° W., and dip 60° S.; ore shoot is 200 feet long and 2 feet wide; formation is slate; five tunnels from 40 to 900 feet in length; only do assessment work. Idle.

Bibl.: Report XII, p. 278; XIII, p. 390.

Brown Bear, formerly known as *Golden* and *Eveleth's,* in Sec. 2, T. 39 N., R. 11 W., in the Liberty mining district; 3 miles southeast of Sawyer's Bar in the Klamath Reserve. Owners, Swain and Cleaver; comprises 100 acres on White's Gulch at an elevation of 3100 feet; 160-foot ore shoot, 18 inches wide, with a course of N. 20° E. and dip of 25° E.; 480-foot tunnel, drifts and stope; 4-stamp mill, driven by water power, from White's Gulch through 1½ miles of ditch and ½ mile of flume. Idle at present; has been a producer.

Bibl.: Report XII, p. 283; XIII, p. 402.

California Consolidated, formerly known as the *Golden Ball mine,* in Secs. 16 and 17, T. 39 N., R. 11 W., in the Liberty mining district; 3½ miles southwest of Sawyer's Bar in the Klamath Reserve. It is owned by the California Consolidated Mining Company; W. H. Young, of Oakland, president; Geo. Ball, superintendent; comprises 384 acres, 17 being patented; has been a producer and some ore still in sight, but no system of mining was pursued, so that much useless work was performed; altitude, 3800 to 4700 feet; fissure vein; length of ore shoot 1000 feet; width 6 feet; free milling; strike N. 20° to 40° E., dip 10° to 40° SE.; footwall, slate (soft); hanging-wall, slate; greatest vertical depth below outcrop, 600 feet; length driven on vein, 1000

feet; two levels, one at 50 and other at 125 feet; drifts, 160 feet, from 50-foot level, and 80 feet from 125-foot level; another from Stevens tunnel is 140 feet northeast and another 250 feet southwest; two crosscuts, 120 feet long; two winzes, each 60 feet deep; seven raises; two stopes in Stevens tunnel, each being 40 feet by 40 feet; several open cuts; equipment, 25 h.p. compressor, small hoist, 150 h.p. electrical plant (on North Fork of Salmon River at Sawyer's Bar) with 3 miles of power line, 1500-foot tramway, dwellings, and 20-stamp mill driven by electricity. Idle. Production to date is $473,500; idle since 1910; only assessment work being done; property should be a dividend payer if properly managed; said to be a continuation of the Black Bear lode.

Bibl.: Report XII, p. 282; XIII, p. 402.

Cape Cod, in Secs. 18 and 19, T. 45 N., R. 7 W., in Greenhorn mining district; 6 miles west of Yreka, in the Klamath Forest Reserve. Owners, Le May & Bulis; consists of 115 acres (40 acres patented); located in 1885; formation, slate and porphyry; two parallel veins, shoot 300 feet long and 14 inches wide; 300-foot tunnel; produced $12,000. Idle.

Central, in Sec. 34, T. 48 N., R. 8 W., in Hungry Creek mining district, 16 miles northwest of Hornbrook. Owners, Coil and Haslett. Located in 1893, 20 acres. Short ore shoots; ledge 2 feet wide; two tunnels, one 400 feet long; formation, granite and schist; free milling. Idle.

Champion, in Sec. 32, T. 12 N., R. 6 E., 10½ miles from Orleans, in the Cottage Grove mining district in Klamath Reserve. Owners, J. A. Hunter et al.; 180 acres, located in 1899; two veins, in porphyry; still in ore in workings; equipment, dwellings and one stamp mill (800-pound stamp) driven by water power, and 2-ton cyanide plant; water from Ten Eyck Creek through 2000 feet of ditch; claims are on the east slope of Prospect Hill; owner claims to have 14,000 tons of $15 rock in sight; three men employed; adjoins Twan & Hannan prospect.

Cherry Hill, in Sec. 25, T. 45 N., R. 8 W., in the Greenhorn mining district; 6½ miles southwest of Yreka in Klamath Reserve. Owner, Incorporated Company; several tunnels, longest being 200 feet; formation is diorite and porphyry; old 3-stamp mill, driven by steam power; adjoins Mt. Vernon on the west; been idle for a number of years; small production record.

Columbia, in Sec. 16, T. 45 N., R. 9 W., in the Scott River mining district, 7 miles northeast of Scott Bar in the Klamath Reserve; elevation of 4700 feet. Owner, Scott River Mining Company, of Seattle; C. F. Lee, president; comprises 40 acres, on Old Baldy Moun-

tain; located in 1882; short ore shoot in slate and diabase; workings consist of 700-foot tunnel and 120-foot shaft; ore is free milling near the surface, but base with depth; equipment consists of dwellings and 10-stamp mill driven by steam and water power; only do assessment work; said to have been a producer at one time.

Bibl.: Report XII, p. 280; XIII, p. 394.

Condensed, in Sec. 12, T. 38 N., R. 11 W., in the Liberty mining district; 15 miles southeast of Sawyer's Bar in the Klamath Reserve. Owner, W. H. Cady; comprises 60 acres at an elevation of 2400 feet; short ore shoot in granite; little high grade found on footwall side; 220-foot tunnel. Idle.

Connor, in Sec. 18, T. 43 N., R. 9 W., in the Oro Fino mining district; 5 miles northeast of Greenview. Owner, J. Connor; comprises 20 acres short ore shoot; pay in pockets; 500-foot tunnel; said to have produced $15,000. Idle.

Bibl.: Report XIII, p. 395.

Crawley, in Sec. 22, T. 40 N., R. 8 W., in the Callahan mining district, 1½ miles southwest of Callahan in the Klamath Reserve. Owner, C. A. Warden Estate; comprises 60 acres; short ore shoots; pay ore occurring in pockets; in hornblende schist; 600-foot tunnel and 500 feet of drifts, 30-foot stope; old 2-stamp mill, 650-pound stamps; said to have produced $60,000; only do assessment work.

Bibl.: Report XIII, p. 396.

Cub Bear and Blue Jeans, in Sec. 9, T. 40 N., R. 10 W., in the Liberty mining district, 12 miles southeast of Etna Mills in the Klamath Reserve. Owners, Siskiyou Syndicate, of Los Angeles; president, I. J. Luce; secretary, M. Marx; superintendent, C. Ritz; comprises 100 acres; elevation 5800 feet; veins, two in number, occur in hornblende schist and quartz-porphyry; three short tunnels and open cuts, and ore being removed from the latter at present; good prospect; 80 tons milled, which gave returns of over $20 per ton; five men are employed on the Highland lode; discovered in 1898 by Chas. Cory.

Cummings, formerly known as the *McKeen,* in Sec. 36, T. 40 N., R. 9 W., in the Callahan mining district, 3½ miles southwest of Callahan in the Klamath Reserve; has been one of the best quartz producers in this district. It is owned by the Shasta Mining Company, of Callahan, with James McKeen as manager-superintendent, and comprises 200 acres, patented, on Wildcat Creek at an elevation of 4200 feet; strike of the vein is N. 40° E., dip 40° SW.; ore shoots are short, being 130 feet long and 3 feet wide, all in granite; main tunnel is 800 feet long and, together with the drifts, crosscuts and stopes, comprise several thousand feet of work, but no depth has been

attained; old Kinkead mill (driven by water power) and a dwelling, on the property; has been a good producer, said to exceed $500,000, and ore is free and easily worked; idle at present; has been worked since 1874.

Bibl.: Report XII, p. 280; XIII, p. 396.

Dewey, one of the noted quartz mines of Siskiyou County, is located in Sec. 23, T. 42 N., R. 8 W., in the Gazelle mining district; 12 miles southwest of Gazelle in the Klamath Reserve. It is owned by the Squaw Mining Company and comprises 100 acres, patented, at an elevation of 6800 feet; the strike of the vein is N. 40° E., dip 30° SE. The ore occurs in granodiorite, having a width of 3 feet; workings consist of a shaft 400 feet deep, a tunnel 920 feet in length, drifts, raises and stopes, all comprising several thousand feet of development work; equipment consists of hoist, dwellings, and old 10-stamp and Huntington mills (poor condition) operated by steam and water power; property said to have produced $900,000; discovered in the early eighties; idle since 1907.

Double Eagle and Little Quartz, in Sec. 26, T. 46 N., R. 9 W., in Oak Bar mining district in Klamath Reserve, 30 miles west of Hornbrook. Owner, H. H. Barton; comprises 20 acres; pocket mine; ore is hornblende schist and granitic-porphyry; 120-foot tunnel; produced $10,000, ore being crushed in an arrastra. Idle.

Bibl.: Report XIII, p. 397.

Eliza, in Secs. 4 and 9, T. 45 N., R. 8 W., in the Humbug mining district, 15 miles west of Yreka in the Klamath Reserve. Owners, Shur, Yunker & DeWitt, of Yreka. Group comprises 100 acres, located in 1865 by D. M. Lash; relocated in 1892 by present owners. Elevation is 4500 feet. There is a good wagon road from the property to Yreka. The location covers the lode for a distance of 4500 feet. The fissure vein occurs in quartz-porphyry and diabase, the former being the footwall and the latter the hanging-wall. The strike is N. 20° E. and dip 45° E.; ore shoot is 200 feet long and 5 feet wide; a 1400-foot tunnel has been driven on the vein, giving 360 feet of backs; above this lower tunnel there are four others from 100 to 800 feet in length; there are five stopes in all; equipment consists of dwellings and 10-stamp mill. Owners claim an ore reserve of 40,000 tons of value of $5 per ton and a production to date of $150,000; two men are employed doing development work in the lower tunnel; ore free near surface, but somewhat base with depth.

Elk Creek, in Sec. 3, T. 45 N., R. 7 W., in Hawkinsville mining district, 6 miles north of Yreka. Owners, Elk Creek Mining Company; president, L. F. Colburn; secretary, J. E. Harmon; home office, Yreka;

100 acres located in 1903, in Klamath Reserve; three parallel veins; 100-foot ore shoot 14 inches wide; formation, slate and porphyry; two tunnels 600 and 450 feet long; 10-stamp mill driven by electricity; production $20,000. Idle.

Fagundez (see *Humpback*).

Fleetwood and Nannie S., formerly known as *Old Jackson*, in Sec. 5, T. 45 N., R. 8 W., in the Humbug mining district, 16 miles west of Yreka. Owner, L. W. Cousins; comprises 80 acres; short ore shoots in granitic-porphyry; seven tunnels from 5 to 800 feet in length. Idle; only do assessment work.

Franklin, in Sec. 16, T. 44 N., R. 9 W., in the Deadwood mining district, 8 miles north of Fort Jones at an elevation of 5500 feet. Owners, Miller & Arnold; comprises 40 acres on Indian Creek; ore shoot is 120 feet long and 22 inches wide, with slate footwall and quartz-porphyry hanging-wall; 600-foot tunnel, drifts and 60-foot stope; claim production of $90,000; ore runs about $25 per ton and is worked in Baker's mill; leased to Wells & Brown. Idle since July, 1913; 20 tons of $25 rock on the dump.

Golden Eagle, formerly known as the *Sheba*, in Sec. 7, T. 44 N., R. 9 W., in the Deadwood mining district; 10 miles north of Fort Jones; was one of the producers in this section. It is owned by the Indian Creek Mining Company of San Francisco; president, I. J. Coe, and superintendent, T. E. Morrison; comprises 80 acres, patented; ore shoots are 200 feet long and 15 inches wide, with diabase footwall and quartz-porphyry hanging-wall; 750-foot tunnel, drifts and stopes, making several thousand feet of development work; the equipment, consisting of 50 h.p. boiler and 5-stamp mill, have been removed from the property and company has closed down and practically abandoned the buildings; has paid some dividends.

Bibl.: Report VIII, p. 625.

Golden Seal, in Sec. 18, T. 43 N., R. 9 W., in the Oro Fino mining district, 5 miles northeast of Greenview at an elevation of 3200 feet. Owner, V. Pitz; comprises 20 acres, located in 1885; 300-foot ore shoot, 8 inches wide, in syenite and quartz-porphyry; 525-foot tunnel on the vein; a few pockets of high grade taken out. Owner works the claim in the winter.

Golden West, formerly known as the *King*, in Sec. 15, T. 39 N., R. 10 W., in the Salmon River mining district, 13 miles west of Callahan, in the Klamath Reserve. Owner, J. S. Baggs; comprises 60 acres on Trail Creek at an elevation of 7000 feet; fissure vein, in schist; 200-foot tunnel, still in ore; one man is employed; good prospect, with well-defined ledge of free milling ore, 4 feet wide and running from $8 to $15 per ton; discovered in 1904.

Gold Hill, formerly known as the *Gilta*, in Sec. 12, T. 9 N., R. 7 E., in the Liberty mining district, in Klamath Reserve, at an elevation of 3500 feet. Owner, E. A. Dannenbrink; comprises 60 acres of patented land; ore shoot is 250 feet long and 3 feet wide, in slate and diorite; several thousand feet development work, consisting of tunnels, crosscuts and stopes; equipment consists of dwellings, and 10-stamp mill operated by steam and water power, idle at present; twelve men employed, doing prospect work; property has been a producer.

Grizzly Gulch, in Sec. 14, T. 44 N., R. 9 W., in the Deadwood mining district, 10 miles north of Fort Jones at an elevation of 7000 feet. Owner, J. Shelly; comprises 60 acres; short ore shoots in diabase; worked for pockets; said to have produced $4000 from 80-foot tunnel. Idle.

Gumboat, in Sec. 15, T. 45 N., R. 9 W., 8 miles east of Scott Bar, in the Scott River mining district in the Klamath Reserve. Owner, A. Simon; comprises 40 acres; ore is base with depth (some chalcopyrite), occurring in slate; length of ore shoot not determined; 120-foot tunnel; 60-foot shaft; only do assessment work.

Bibl.: Report XIII, p. 404.

Hansen, formerly known as *Knownothing Creek*, in Secs. 1 and 12, T. 9 N., R. 7 E., in the Liberty mining district, 8½ miles southwest of Forks of Salmon, in Klamath Reserve. Owners, Roberts & Hagland; comprises 60 acres of patented land, located in 1880; short ore shoot, in slate and quartz-porphyry; several tunnels, longest being 850 feet, equipment, dwelling and old arrastra; two men employed doing prospect work; has been a small producer.

Bibl.: Report VIII, p. 622.

Hardscrabble, in Sec. 17, T. 40 N., R. 10 W., in the Liberty mining district, 14 miles southeast of Etna Mills in the Klamath Reserve. Owner, Hardscrabble Mining Company, of Los Angeles; C. B. Parrott, president; John Nefroney, superintendent; comprises 140 acres, at an elevation of 6100 feet; length of ore shoot not determined; country rock in dioritic-schist; 400-foot tunnel; two men employed. Highland Mine to the northeast.

Hazel, in Sec. 25, T. 47 N., R. 8 W., in the Cottonwood mining district, 4 miles southwest of Hornbrook, is the only large producer in this district. It is owned by the Hazel Gold Mining Company, of Chico; J. A. Jillson, president, and J. W. Roper, secretary. The group comprises 80 acres of patented land in the Klamath National Forest Reserve at an elevation of 2800 feet. There are three veins, known as the Potato Patch, "C" and Hazilett, which occur in the slate, the last two being practically parallel. The ore shoot is 150 feet long and 3 feet in

width, with a 40° dip to the south. There are five tunnels from 100 to 1500 feet in length, all in the vein, comprising, with the drifts and stopes, several thousand feet of development work. The equipment consists of dwellings, assay office, and a 10-stamp Hendy mill (850-pound stamps) driven by waterpower from Ditch Creek through 1 mile of ditch. The property is said to have produced $800,000, but is idle at the present time. It was discovered in 1883 by H. Hazilett and then sold to the present owners.

Hicks, formerly known as *China Gulch.* In Sec. 2, T. 46 N., R. 7 W., 7 miles northwest of Hornbrook in the Klamath Reserve. Owner, J. T. Hicks. Comprises 40 acres. Ore shoot said to be 600 feet long, but only 3 inches wide on the surface, occurring in granite. Surface stripped of overburden and ore exposed a few feet below, which was crushed in an arrastra; 150-foot tunnel; 8-foot arrastra, run by water power; tailings impounded (150 tons on hand), which are to be treated in cyanide plant soon; said to assay from $5 to $15 per ton. Idle at present. Small producer.

Highland, in Sec. 16, T. 40 N., R. 10 W., in the Liberty mining district, 11 miles southeast of Etna Mills in the Klamath Reserve, is one of the noted quartz mines of this county. It is owned by the Belgium-Bohemian Mining Company, of Belgium. H. E. Mattern, superintendent. Comprises 100 acres at an elevation of 6400 feet. Supplies are brought over a 3-mile trail by means of pack animals; ore shoots are about 130 feet long and 2 feet wide, having a strike of N. 40° E and a dip of 30° SE.; footwall is dioritic-schist and hanging-wall is quartz-porphyry; workings consist of tunnels, the main tunnel having a length of 600 feet; there are several thousand feet of development work, all near the apex of the mountain, so that only a shallow depth has been obtained; equipment consists of cars, mining tools, assay office, dwellings, and a 10-stamp mill (modern pattern) run by gasoline; twenty-six men are employed; said to have produced over $350,000; best ore found in pockets; discovered in 1899 by P. Musick, who extracted $80,000 from pockets.

Highland, known also as the *Old Highland.* In Sec. 12, T. 39 N., R. 10 W., in the Salmon River mining district, 12½ miles northwest of Callahan in the Klamath Reserve. Owners, Denny-Bar Company. Comprises 60 acres on Trail Creek; fissure vein between walls of granite and schist, being an extension of the Trail Creek ledge; 200-foot tunnel, and 400 feet of drifts; ore is free and easily worked; idle at present; owners only do assessment work; Trail Creek prospect to the south.

Bibl.: Report XIII, p. 405.

Highland, in Sec. 25, T. 46 N., R. 7 W., in the Cottonwood mining district, 3 miles west of Hornbrook in the Klamath Reserve. Owner,

C. A. Myers. Comprises 60 acres; ore shoot is 125 feet long and 10 inches wide, being free milling and high grade; formation is slate; 1500-foot tunnel on the vein; idle at present; discovered in 1903 by Donnelly Bros.; then abandoned and relocated by Rogers, who abandoned it, and was relocated by present owner; small producer.

Hoboken, in Sec. 21, T. 45 N., R. 8 W., in the Deadwood mining district, 11 miles north of Fort Jones. Owner, T. A. Walker. Comprises 40 acres, patented, on Cherry Creek; 120-foot ore shoot, 10 inches wide, with diabase foot and slate hanging-walls; 600-foot tunnel and 250-foot drift; small producer at one time, the ore being crushed in an arrastra; idle since 1907.

Bibl.: Report XII, p. 284; XIII, p. 406.

Homestake, in Sec. 15, T. 40 N., R. 10 W., in the Klamath Reserve. Owners, Taylor & Bobs; J. F. Boyle, superintendent. Comprises 120 acres on the same lode as the Highland mine; formation is quartz-porphyry and dioritic schist; worked by means of tunnels; high grade (pocket) gold extracted, which has made the property noted; discovered in 1902; elevation is 6100 feet; eight men are employed; has produced several thousand dollars in high grade; 2-mile trail from wagon road.

Humpback, formerly known as *Fagundez,* in Secs. 4, 5, 8 and 9, T. 39 N., R. 11 W., in the Liberty mining district; 3 miles south of Sawyer's Bar in the Klamath Reserve. Comprises 80 acres of patented land on Eddy's Gulch; elevation 3400 feet; length along lode 6000 feet; ore shoot is 80 to 100 feet long and 1 foot wide; strike N. 20° E., dip 25° NE.; formation is slate; workings consist of 250-foot tunnel, drifts and crosscuts; small producer; idle for several years.

Bibl.: Report VIII, p. 619.

Inyo, in Sec. 2, T. 45 N., R. 8 W., in the Humbug mining district, 11 miles west of Yreka in Klamath Reserve at an elevation of 3100 feet. Owner, J. D. Fairchild. Comprises 20 acres, discovered in 1909; short ore shoots in quartz-porphyry pocket mine; produced $4000. Idle. Only do assessment work.

Ironsides, formerly known as *Little Wonder,* in Sec. 26, T. 45 N., R. 8 W., in Greenhorn mining district, 7 miles southwest of Yreka, in Klamath Reserve. Owner, James Ironsides; worked as a pocket mine; three short tunnels; small producer of high grade ore.

Bibl.: Report XII, p. 285; XIII, p. 408.

Johnson and China Paul, in Sec. 12, T. 43 N., R. 10 W., in Quartz Valley mining district, 7 miles north of Greenview. Owner, S. H. Holgate. Comprises 80 acres; 200-foot ore shoot, 10 inches wide, in diabase;

680-foot tunnel; some rich pockets extracted from Johnson claim; idle since 1910.

Bibl.: Report VIII, p. 626.

Kangaroo, in Sec. 29, T. 40 N., R. 7 W., in the Callahan mining district, 9 miles southeast of Callahan in the Klamath Reserve. Owner, C. O. Johnson. Comprises 60 acres; short ore shoot, in diorite and granitic-porphyry, 220-foot tunnel and 400 feet of drifts; worked for pockets; some high grade ore extracted.

Katie May, in Sec. 24, T. 45 N., R. 8 W., in the Greenhorn mining district, 6 miles west of Yreka in Klamath Reserve. Owner, A. S. Calkins; comprises 20 acres; located in 1886; relocated in 1900; short ore shoots in diorite and slate; 250-foot tunnel and 80-foot shaft; one stope, 60 feet by 4 feet by 50 feet; ore in sight consists of 100 tons, valued at $14 per ton; only do assessment work.

Bibl.: Report XIII, p. 409.

King Solomon, in Secs. 6 and 7, T. 38 N., R. 11 W., in the Liberty mining district, 12 miles southeast of Sawyer's Bar in the Klamath Reserve, is another of the quartz producers of Siskiyou County. It is owned by C. B. Cottrell, of Westerly, R. I.; W. H. Young, superintendent, and comprises 40 acres located in the eighties by P. Dannenbrink; length along lode 3000 feet; length of ore shoot, 230 feet; width 5 feet; strike north and south; dip 60° E.; footwall, quartz-porphyry; hanging-wall slate; ore free milling; workings: 130-foot shaft, tunnels, longest being 460 feet, over 1000 feet of drifts, cross-cuts and stopes, making in all several hundred feet of development work; equipment; cars, 30 h.p. boiler, small hoist, dwellings and an 8-stamp mill; has been a good producer and pay ore in sight; five men employed at present; mine being opened up so as to have a considerable tonnage blocked out.

Little Bonsa, in Sec. 9, T. 45 N., R. 7 W., in Hawkinsville mining district, 4½ miles north of Yreka. Owner, C. N. Gordon; in Klamath Reserve; 20 acres, located in 1910; short ore shoot, 6 inches wide; two tunnels, longest 40 feet; idle since 1912.

Lucky Strike, in Sec. 33, T. 41 N., R. 10 W., in the Liberty mining district, 9 miles southeast of Etna Mills in the Klamath Reserve. Owners, Lucky Strike Mining Company, of Los Angeles; president, T. Eagerly; superintendent, W. F. Smith. Comprises 80 acres; short ore shoot in hornblende schist; 450-foot tunnel; some high grade ore found near the surface; two men employed.

Lucky Strike, in Sec. 28, T. 45 N., R. 7 W., in Greenhorn mining district, 1½ miles northwest of Yreka. Owner, F. M. Osgood; superintendent, J. M. Beale; 160 acres, located in 1865; formation, slate; doing development work; 1000 tons of ore in sight; four tunnels and one 80-foot shaft; nine men employed. Some ore treated in custom mill at Yreka.

Marrian & Goodale, in Sec. 15, T. 40 N., R. 10 W., in the Liberty mining district, 9½ miles southeast of Etna Mills in the Klamath Reserve. Owner, Incorporated Company, of San Francisco; James Hogan, manager; comprises 80 acres, located in 1903; short ore shoot, in hornblende schist; 480-foot tunnel; rich bunches of high grade found; 2-stamp mill driven by steam power; dwellings; has been a small producer; idle at present.

McClaughry Group, in Sec. 8, T. 45 N., R. 8 W., in the Humbug mining district, 14 miles northwest of Yreka in Klamath Reserve. Owner, C. Humphreys; comprises 80 acres; formation is dolomite; 160-foot ore shoot, 2 feet wide; free milling; 600-foot tunnel; ore reserve consists of 1500 tons, assaying $20 per ton. Idle.

Monarch, in Sec. 8, T. 39 N., R. 11 W., in the Liberty mining district. Owner, G. R. Godfrey; comprises 40 acres, on Eddy Creek, at an elevation of 3300 feet; pocket mine; 150-foot tunnel; pockets occur in slate; only do assessment work.

Morrison & Carlock, formerly known as the *Little Queen,* is located in the Quartz Valley mining district, in Sec. 13, T. 43 N., R. 10 W., 4 miles northwest of Greenview, and comprises 60 acres of patented land. It is owned by the Richman Company of Fort Jones and has a production record of $500,000. Idle since 1907 on account of law-suits. Altitude, 2800 feet; course of vein, N. 20° E, dip 45° E.; vertical depth 400 feet (shaft, size 5′ x 7′); number of levels, eight; 1200-foot drift to the west on this level; walls, limestone and quartz-porphyry; length of ore shoot, 350 feet; width 16 inches; 1500-foot tunnel on vein; character of ore, brittle smoky quartz, free milling; mine equipment: 35 h.p. steam hoist, Gould water pump, cages, dwellings, assay office; reduction equipment: 10-stamp mill built by Union Iron Works, operated by electricity.

Mount Vernon, in Sec. 25, T. 45 N., R. 8 W., in the Greenhorn mining district; 6 miles southwest of Yreka in Klamath Reserve. Owner, Incorporated Eastern Company; ore shoots are 150 feet long and 2 feet wide, occurring in slate; strike N. 40° E.; dip 50° S.; three tunnels, longest being 1200 feet on the vein; equipment; dwellings, assay office and 10-stamp mill driven by electricity, power being obtained by California-Oregon Power Company; has been a producer; worked at times by leasers; idle at present.

Nigger Boy, in Sec. 2, T. 46 N., R. 7 W., in the Cottonwood mining district, 5 miles southwest of Hornbrook in the Klamath Reserve. Owner, W. H. Allison; comprises 60 acres, located in 1898; formation

is slate and diorite; ore shoot is 180 feet long and 2 feet wide; two tunnels, 1000 and 80 feet long on vein; equipment: dwellings, mining tools, blacksmith shop, 2-stamp mill driven by steam and water power; 1½ mile ditch from Ash Creek; under bond to Commercial Copper and Gold Mining Company, of Tallant, Oregon; three men are employed; some production, and ore reserves, claimed.

Ohio Group, in Sec. 8, T. 46 N., R. 6 W., in Fool's Paradise mining district; 7 miles south of Hornbrook. Owner, W. Seeman; 60 acres, patented, located in 1903; formation, syenite and diorite; base ore; 300-foot oreshoot, 1 foot wide; 500-feet tunnel. Idle.

Old Indian, in Sec. 4, T. 9 N., R. 8 E., in Liberty mining district; 9 miles southwest of Forks of Salmon, in Klamath Reserve. Owner, A. Nally; comprises 40 acres, located in 1892; short ore shoot in serpentine; 200-foot tunnel; old 120-foot shaft (caved); worked as a pocket mine; only do assessment work.

Old Vet and Eclipse, in Secs. 10 and 11, T. 45 N., R. 8 W., in the Humbug mining district, 10 miles northwest of Yreka in Klamath Reserve at an elevation of 3900 feet. Owner, J. P. Horn; comprises 40 acres; two parallel veins in granite; three tunnels, longest being 100 feet; few tons of ore milled, gave returns of $14 on plates.

Bibl.: Report XIII, p. 418.

Oregonian Group, formerly known as the *Malloy,* in Secs. 15, 16, 21 and 22, T. 40 N., R. 11 W., in the Liberty mining district; 3 miles northeast of Sawyer's Bar in the Klamath Reserve. Owner, D. Malloy; comprises 60 acres, located in 1886; 160-foot ore shoot 5 feet wide, strike N. 30° E., dip 40° NE.; strong ledge in granite; 420-foot tunnel; only do assessment work.

Bibl.: Report XII, p. 289; XIII, p. 419.

Oro Grande, in Secs. 10 and 11, T. 45 N., R. 7 W., in the Humbug mining district, 12 miles northwest of Yreka in the Klamath Reserve. Owners, Trask & Corinson; comprises 100 acres, located in 1860 and relocated in 1892 by present owners; four parallel veins, having dolomite foot and porphyry hanging-walls; 300-foot ore shoot, 2 feet wide; 300-foot tunnel and 160-foot shaft; one stope 80 feet by 4 feet by 40 feet; 10-foot arrastra run by water from Humbug Creek; owners claim ore reserve of 1000 tons, value $16; produced to date $20,000; some of the ore pans $40 per ton; owners do all the work.

Bibl.: Report, XIII, p. 419.

Overton, in Sec. 16, T. 40 N., R. 10 W., in the Liberty mining district; 13 miles southeast of Etna Mills in the Klamath Reserve. Owners, Overton Gold Mining Company; C. E. Overton, president;

L. E. Buckner, superintendent; comprises 80 acres; ore shoots are 100 feet long and 20 inches wide, in dioritic schist; 420-foot tunnel, drifts and stope; 120 tons of ore on the dump, which is carried on mules to the Advance mill, a distance of 2 miles (5 mules handle 1 ton each trip, or 8 tons per day); property is idle at present; small producer.

Pilot Knob, in Secs. 23, 24 and 26, T. 47 N., R. 7 W., in the Virginia Bar mining district, 3 miles north of Gottville in Klamath Reserve. Owners, Pilot Knob Mining Company; president, W. D. Wall; secretary and superintendent, T. K. Anderson; home office, Gottville; comprises 310 acres; formation, hornblende schist; three veins; length and width of ore body not determined; crosscut tunnel 340 feet long, not in ore as yet; several small tunnels in ore; ore is free milling and runs $20 per ton; equipment consists of assay office, several dwellings, 600 feet of aerial tramway; 5-stamp Risdon Iron Works mill (850-pound stamps) run by water power; two men employed; last ore milled gave returns of $18 per ton from 16 tons; located in 1882.

Prospect Hill, in Sec. 30, T. 12 N., R. 6 E., 11 miles from Orleans in the Cottage Grove mining district in Klamath Reserve. Owners, C. S. Little; several small tunnels in porphyry; free milling, 3-stamp mill; small production.

Providence, in Sec. 18, T. 43 N., R. 9 W., in the Oro Fino mining district, 5 miles northeast of Greenview. Owners, Kradel Brothers; comprises 40 acres; short ore shoot in diabase; worked for pockets; 650-foot tunnel; small producer. Idle; only do assessment work.

Bibl.: Report XIII, p. 421.

Quartz Hill, in Sec. 16, T. 45 N., R. 10 W., in the Scott River mining district, ½ mile south of Scott Bar on Scott River in Klamath Reserve. Owner, H. G. Noonan, of San Francisco; comprises 45 acres of patented land on Quartz Hill, located in 1862; ore occurs in slate, and has been worked both as a quartz and hydraulic mine, the surface having been worked as a placer deposit at one time; water is obtained from Mill Creek through two ditches, one 6 miles and the other 5 miles in length; the strike is northeast and southwest; the bedrock, so-called, consists of alternate beds of slate and quartzite, enclosed by two parallel dikes, 1800 feet apart. The whole mass is crushed by these dikes of quartzite; practically only the surface has been worked; yearly production is from $10,000 to $12,000; equipment consists of old 10-stamp mill, two giants, and 1500 feet of pipe; some rich pockets found in the quartz seams. Idle at present.

Bibl.: Report XII, p. 290; XIII, p. 421.

Red Hill, in Sec. 4, T. 45 N., R. 7 W., in the Hawkinsville mining district; 5 miles north of Yreka. Owner, J. Phillips; in Klamath

Reserve; 13-inch vein; free milling; 40 acres, located in 1903; three tunnels, one 304 feet long; formation quartz-porphyry; ore treated in custom mill at Yreka. Produced $6,000.

Reeder Group, in Sec. 8, T. 46 N., R. 7 W., in Fool's Paradise mining district; 6½ miles south of Hornbrook. Owner, B. C. Reeder; 120 acres, located in 1875; formation slate; three tunnels, longest 250 feet; rich pockets taken out on Bonanza claim, largest being $20,000; said to have produced $50,000 to date; owner works claims.

Robinson Gulch, in Sec. 18, T. 40 N., R. 10 W., in the Liberty mining district, 14 miles southeast of Etna Mills at an elevation of 5400 feet. Owners, Robinson Gulch Mining Company, of Etna Mills; C. M. Chase, president; A. A. Dyer, superintendent; comprises 80 acres, located in 1903; short ore shoot in hornblende schist; 100-foot tunnel; only do assessment work; small pocket discovered on the surface.

Rough & Frye, in Sec. 30, T. 12 N., R. 6 E., 11½ miles from Orleans, in the Cottage Grove mining district in Klamath Reserve. Owner, C. Frye; 40 acres located in 1913; 175-foot tunnel and open cuts on surface for 600 feet; vein is 11 feet wide; free milling; some ore runs $15 per ton; doing development work.

Ruby Basin, formerly known as the *Jumbo,* in Sec. 36, T. 40 N., R. 11 W., in the Liberty mining district; 4 miles east of Sawyer's Bar in the Klamath Reserve. Owner, I. Cullberg, Jr., of Arcata; comprises 100 acres on White's Gulch; 160-foot ore shoot; free milling, 3 feet wide, north and south strike and dip 40° E.; in slate; 800-foot tunnel, 500 feet of drifts and 60-foot stope; old 10-stamp mill, driven by water power; small producer at one time. Idle at present.

Saint Lawrence, in Sec. 12, T. 43 N., R. 10 W., in the Quartz Valley mining district, 6 miles north of Greenview. Owner, A. G. Myers; comprises 20 acres; pockets in the quartz-porphyry; 220-foot tunnel. Idle.

Skelton, in Sec. 26, T. 41 N., R. 9 W., in the Liberty mining district, 5 miles southeast of Etna Mills in the Klamath Reserve. Owner, D. Skelton; comprises 20 acres, located in 1893; 130-foot vein, 4 feet wide, but base in character and probably too low grade to pay to work, as it only carries $3 in gold per ton, 2% copper and a little silver. Idle at present.

Specimen, in Sec. 15, T. 40 N., R. 9 W., in the Callahan mining district, 5 miles west of Callahan in the Klamath Reserve. Owner, W. Ellis; comprises 60 acres, on Craig's Gulch; short ore shoot in hornblende schist; worked for pockets, and some rich specimens extracted; 150-foot tunnel. Idle at present.

Bibl.: Report XIII, p. 427.

Star, in Sec. 12, T. 43 N., R. 10 W., in the Quartz Valley mining district, 6 miles north of Greenview. Owner, F. Star; comprises 20 acres, located in 1882; pockets in the quartz porphyry; 700-foot tunnel. Idle.

Sterling, in Sec. 20, T. 42 N., R. 8 W., in the Deadwood mining district, 13 miles northwest of Fort Jones at an elevation of 7300 feet. Owner, W. Crocker; comprises 40 acres on east fork of Deadwood Creek; short ore shoot in slate and diabase; worked for pockets; some rich ore extracted; 620-foot tunnel; only do assessment work.

Bbl.: Report XIII, p. 428.

Sundown, in Sec. 19, T. 47 N., R. 7 W., in Virginia Bar mining district, 4 miles north of Gottville in Klamath Reserve. Owners, Denver Mining Company, C. A. Von, president; home office, Denver, Colorado; comprises 60 acres; formation, diorite and schist; ore shoot 100 to 120 feet long, 2 feet wide; two tunnels, 150 and 800 feet long; 5-stamp mill driven by water power; 1 mile ditch from Dutch Creek; small production. Idle.

Taft, in Sec. 30, T. 11 N., R. 8 E., in Liberty mining district, 9 miles northeast of Forks of Salmon by trail; in Klamath Reserve; at an elevation of 2800 feet. Owner, C. Taylor; comprises 40 acres, located in 1908; pocket gold in slate; 100-foot tunnel; small production. Idle.

Teddy-Avalon, in Sec. 18, T. 47 N., R. 7 W., in Virginia Bar mining district, 7 miles north of Gottville in Klamath Reserve. Owner, E. J. Durkee; comprises 40 acres; formation is granite; short ore shoot, 1 foot wide; 125-foot tunnel; little high grade taken out; free milling.

Trail Creek, in Sec. 12, T. 39 N., R. 10 W., in the Salmon River mining district, 12 miles west of Callahan in the Klamath Reserve. Owner, Trail Creek Mining Company, of Callahan; George A. Foster, president and superintendent; George Hart, secretary; comprises 100 acres on Trail Creek at an elevation of 7200 feet, reached by trail from Callahan. The fissure vein occurs between schist walls, with a strike of N. 40° W., and a dip of 60° N.; ore shoot is 300 feet long and 2 feet wide; workings consist of an 850-foot tunnel, several small drifts and a stope 200 feet in length; equipment consists of two 3½-foot Huntington mills (capacity is 20 tons in twenty-four hours, through 50-mesh screen) run by waterpower; tools, ore cars and dwellings; seven men are employed; owner claims an ore reserve of 3000 tons of rock; free milling; yearly production 1912 (seventy days' run) was $15,000; production to date $40,000; best prospect in the district.

Twan & Hannan, in Sec. 30, T. 12 N., R. 6 E., 11 miles from Orleans in the Cottage Grove mining district in Klamath Reserve.

Owners, Twan & Hannan; comprises 40 acres; 400-foot crosscut tunnel, in porphyry; only do assessment work; ledge 4 feet wide on the surface; some ore crushed and treated in cyanide mill at Champion.

Uncle Sam Consolidated, formerly known as the *Sheffield*, in Secs. 3 and 10, T. 39 N., R. 11 W., in the Liberty mining district, 7 miles south of Sawyer's Bar in the Klamath Forest Reserve. Owners, Sheffield Estate; comprises 60 acres between White and Eddy gulches, located in 1873. Length along the lode, 3000 feet; length of ore shoot, 110 feet, and width 2 feet; vertical depth below outcrop, 300 feet; strike N. 20° E., dip 25° NE.; footwall, slate; hanging wall, quartz-porphyry; length driven on vein, 420 feet; ore free milling; water supply from White's Gulch through 1½ miles of ditch and ½ mile of flume; old workings consisting of stopes and drifts are caved; equipment consists of dwellings and old 8-stamp mill, 780-pound stamps; producer for several years; some good ore in workings. Idle at present.

Bibl.: Report VIII, p. 619; XI, p. 433; XII, p. 293; XIII, p. 431.

Wicks, in Sec. 13, T. 44 N., R. 10 W., in the Deadwood mining district, 12 miles northwest of Fort Jones at an elevation of 6200 feet. Owner, Weeks Bros.; comprises 40 acres; short ore shoot in diabase, badly faulted; little high grade extracted on the surface; 150-foot tunnel. Idle.

White Bear, in Sec. 13, T. 39 N., R. 12 W., in the Liberty mining district, 9 miles southwest of Sawyer's Bar in the Klamath Reserve. Owners, Daggett & Smith; comprises 20 acres, north of the Black Bear, on an east and west vein; ore shoot is 100 feet long and 2 feet wide, with a dip of 30° E.; 400-foot tunnel and 2 drifts, each 80 feet in length; equipment: dwelling and 5-stamp mill; good prospect, but only small amount of development work; owners expect to employ several men during the winter. One man at work at present.

Zarina, in Sec. 33, T. 41 N., R. 10 W., in the Liberty mining district, 9½ miles southeast of Etna Mills in the Klamath Reserve. Owners, Zarina Mining Company, of Etna Mills; J. W. Harris, superintendent; comprises 100 acres, located in 1900; elevation, 6500 feet; ore shoot, 130 feet long and 2 feet wide; dioritic schist walls; 350 and 80-foot tunnels, drifts and stopes; equipment consists of dwellings and 5-stamp mill, driven by water power from lake above the property; small producer; not worked on any scale since 1911. One man employed at present; best ore found in pockets, similar to the Highland.

GOLD MINES—PLACER.

A succession of terraces or benches of considerable width covered with trees and shrubbery and containing auriferous gravel banks, which range from 50 to 200 feet in height, are frequent along the Klamath River and its tributaries. These benches are often miles in extent, being frequently cut by the more modern and deeper channels, and were probably formed by glacial action, causing the river to seek a new channel, for the rim rocks are intact and sharply defined and were not worn away gradually. These old gravel channels have played an important part in the mining production of this county.

An important change has taken place at the junction of the Scott River with Klamath, for here are found terraces or benches, usually three in number, with well defined trough-shaped depressions, rims intact, receding and ascending gradually from the river bed or its banks and forming a series of steps from 200 to 300 feet apart and from 50 to 200 feet between respective channels. These are evidently the old river courses, buried in places 100 feet deep under the rocky debris that had slid from the mountain side during a cataclysm of nature, causing new channels cutting deeper into the rocky formation, to be formed. These deposits have been worked by both drift and hydraulic mining.

Approximate production of placer mines, along the Klamath River from Humbug Creek to Scott River (from a known area):

Name of property	Size of ground worked			Number of cubic yards	Value taken out	Average per cubic yard
	Length in feet	Width in feet	Depth in feet			
Virginia Bar	100	50	10	1,851	$30,000	$16 20
M. Mott, at head of Virginia Bar	50	16	10	296	8,000	27 00
Centennial	685	40	40	40,000	97,000	2 42
Manzanita Bar	1,600	200	25	296,296	300,000	1 01
Yankee Dam	100	60	4	888	13,000	14 62
Vatinell & Co.	150	50	6	1,666	8,000	4 80
Pierson & Co. below Oak Bar	150	20	3	836	7,300	8 72
Poverty Point drift mine	1,500	30	6	10,000	23,000	2 36
Maplesden wing dam	150	30	30	5,000	30,000	6 00
Daggett	200	50	5	1,851	25,000	13 50
Kols wing dam	60	30	6	400	1,100	2 75

Portuguese Company, at Oak Bar, took out, with eleven men and use of derrick, in three days, by hand shoveling, $3000, or at rate of $1000 per day.

China Sam took out in one tub, or 5 cubic yards, 8 ounces of gold, valued at $134.

Wm. McConnell's claim, Humbug Creek, took out in one season, $34,000; same claim, next season, $28,000; same claim, next season, $22,000; total, $84,000; pick and shovel, and use of derrick, from one acre.

Parker, in Sec. 32, T. 42 N., R. 9 W., near Etna. Owned by A. Parker, Jr.; belt from 100 to 200 feet wide at elevation of 4000 feet; marble heavily bedded, in places being perfectly white and fine-grained, while in other places it is pink-colored and very coarsely crystalline; worked to a limited extent.

Bibl.: Bull. No. 38, p. 107.

Thompson Creek, in Sec. 8, T. 17 N., R. 8 E., H. M., in the Happy Camp mining district, 8½ miles northeast of Happy Camp on Thompson Creek. Owner, J. C. Wood; comprises 40 acres, located in 1890; large massive beds in schist and serpentine, few open cuts, so that extent of marble deposit not determined; it is hard and takes a good polish; the crystals are large, white and translucent. Idle.

Bibl.: Report XIII, p. 632.

MINERAL WATER.

Shasta Springs, on the Oregon branch of the Southern Pacific Railroad in Sec. 12, T. 39 N., R. 3 W., are owned by the Shasta Springs Mineral Water Company, and the only water from Siskiyou County on the market. These springs were first brought to notice during the construction of the railroad in 1887.

The three springs—Shasta, Glacier and Keystone—are all about 300 feet apart. The water has a temperature of 51° F., and contains considerable carbonic acid gas, magnesium, potassium, iron, and a little manganese, lithium and arsenate. The bedrock is tufa, overlaid with doleritic lava. The equipment consists of bottling works and dwellings.

Bibl.: Report XI, pp. 449–451; Mineral Springs of California, Anderson, p. 244.

Upper Soda Springs, in Sec. 24, T. 39 N., R. 4 W., 2 miles north of Dunsmuir. Owned by George McCloud; water is heavily charged with carbonic acid gas; formation is similar to the Shasta Springs section; water not on the market.

Bibl.: Report XI, p. 452; Mineral Springs of California, Anderson, p. 260.

Scott Springs, in Sec. 7, T. 39 N., R. 3 W., 3 miles north of Dunsmuir; water and formation similar to Shasta Springs. Owned by J. J. Scott & Company.

Bibl.: Report XI, p. 452.

Castle Crag Soda Springs, at Castle Crag. Owned by Pacific Improvement Company; water has a temperature of 53° F., and contains sodium, potassium, magnesium, calcium, with a trace of iron, silicia, alumina, manganese, barium, lithium, borates, ammonium carbonate; it is a well known summer resort.

Klamath Hot Springs, in Sec. 27, T. 48 N., R. 3 W., at Klamath Springs. Owned by Edson Estate; claimed good for rheumatism and blood diseases; several dwellings on the property.

Bibl.: Mineral Springs of California, Anderson, p. 183.

Siskiyou Mineral, in Secs. 33 and 34, T. 48 N., R. 9 W., 14 miles northwest of Walker. Owned by J. Garreston; water contains considerable iron and magnesia, and said to be good for blood diseases; conducted as a summer resort; several dwellings on the property.

Bibl.: Report XIII, p. 521.

Warmcastle Soda Springs, in Sec. 13, T. 39 N., R. 3 W., 1 mile south of Nabar. Owned by Estate of Judge Warmcastle; elevation is 3000 feet; water contains considerable soda.

ORNAMENTAL STONES.

Vesuvianite is found on the South Fork of Indian Creek, 12 miles north of Happy Camp, on land owned by Dr. A. E. Heighway; discovered in 1901; outcrops for 300 feet along the hillside, above the creek, and large masses have fallen into the bed of the creek below. It is a hard and handsome stone, olive to green in color, and takes a fine polish. The associated rock is serpentine; the rich translucent green color, fine-grained sub-splintery fracture and brilliant luster, when polished, strongly suggest jade, and many have called it by that name; deposit has not been worked. This variety of vesuvianite is also known as *californite.* F. H. Dakin of San Francisco also has claims covering portions of the deposit.

Bibl.: Bull. No. 37, pp. 93–94; Bull. No. 67, pp. 125–126.

Brusse, in Sec. 34, T. 17 N., R. 7 E., in the Happy Camp mining district, 3 miles north of Happy Camp on Indian Creek. Owned by F. A. Brusse; discovered in 1899; not in place, but pieces of float weighing several pounds found along the creek; associated with serpentine; resembles the Heighway mineral.

Griffin Onyx Quarries are situated 6 miles south of Berryvale. Specimens in the State Mining Bureau are 7355 and 8969.

Bibl.: Bull. 37, p. 112.

PLATINUM.

Small amounts of platinum are obtained with the gold in some of the placer mines of Siskiyou County, particularly on the streams traversing serpentine areas.

QUICKSILVER.

A cinnabar deposit in the northern part of the county on the headwaters of the West Fork of Beaver Creek above Oak Bar has been worked to some extent by the Siskiyou Quicksilver Mining Company. There is another small deposit on Horse Creek, which has not developed at all.

The holdings of the *Siskiyou Quicksilver Mining Company,* of San Francisco, comprise several acres on the headwaters of the West Fork of Beaver Creek, some 15 miles west of Cole's Station. The development consists of several hundred feet of tunnelling and drifts. The reduction plant consists of a 10-ton furnace; time; had a small production.

Bibl.: Report XII, p. 370; XIII, p. 602; Bull. 27, p. 196.

Barton & Lange, in Sec. 22, T. 46 N., R. 9 W., in the Klamath Reserve, 4 miles west of Oak Bar in the Oak Bar mining district. Owners, Barton & Lange; comprises 60 acres of patented land, located in 1890; massive dike with no definite strike or dip; the country rock (schist and diorite), impregnated with cinnabar; deposit 160 feet wide and can be traced 2000 feet; short tunnel and open cuts comprise the workings; a few pounds (selected) of the semi-transparent crystals of cinnabar sold to Chinese for $4 per pound, to be used in paints and for medicinal purposes. Idle several years.

Bibl.: Report XIII, p. 602. Bull. No. 27, p. 196.

SANDSTONE.

A very extensive bed of sandstone runs along the east side of the Klidal Hills, Black Mountain Range, and Cottonwood Mountains, into Oregon; also found east of Yreka in two large exposures. It forms the rim of the Shasta Valley, having a northeast direction in Sec. 13, T. 45 N., R. 7 W., and also crops out a few miles south of Ager on the Herr ranch, where coal is found. Same belt exposed in the vicinity of Hornbrook in the ridges surrounding the valleys of the Klamath River and the lower part of Cottonwood Creek. A belt of fine-grained sandstone about ¼ mile in width west of Hornbrook along the rim of Cottonwood Creek forms a landmark, as its surface sloping east comprises the bare lower slope of the mountains, its gray color being distinguishable from a long distance; it is very fine grained, compact and hard, consisting of small granules of quartz, intermixed with some small ones of hornblende.

Bibl.: Bull. 38, pp. 139–140.

Antone, formerly known as the Weeks Quarry, in Sec. 2, T. 45 N., R. 7 W., 2 miles northeast of Yreka. Owned by Mrs. C. Antone; comprises 160 acres, patented, at an elevation of 2700 feet; occurs in stratified layers from 6 inches to 8 feet thick, and these sheets are pried from the deposit by hand; very little blasting needed; equipment at quarry consists of derrick of 2400 pounds capacity and mining tools; three men employed; stone of good quality, and has been used since 1860; new high school and other buildings in Yreka constructed with this stone; also used for tombstones; leased to J. P. Russell.

Fiock Bros. Quarry, in Sec. 13, T. 45 N., R. 7 W., near Yreka; considerable stone removed; face of the quarry shows massive sandstone, nearly horizontal, dipping slightly east; upper bed is 10 feet thick, coarse grained; of a very uniform texture, and tawny in color.

Bibl.: Bull. No. 38, p. 140.

Southern Pacific Railroad Company owns several quarries in Sec. 29, T. 47 N., R. 6 W., near Hornbrook; stone breaks in large blocks, some weighing 4 to 5 tons; quarries worked by plug and feather method; sandstone used in construction of Jones & Horn buildings in Hornbrook, built in 1888 and shows no signs of weathering.

Bibl.: Bull. No. 38, p. 140.

SOAPSTONE.

Talc is a hydrous silicate of magnesia ($4\ MgO,\ 5\ SiO_2,\ H_2O$) that occurs in different varieties, of which soapstone is one of the most important.

Soapstone is more compact and harder than talc and is used in the manufacture of many articles, such as bath and laundry tubs, switchboards for electrical plants, sinks, griddles and many other articles.

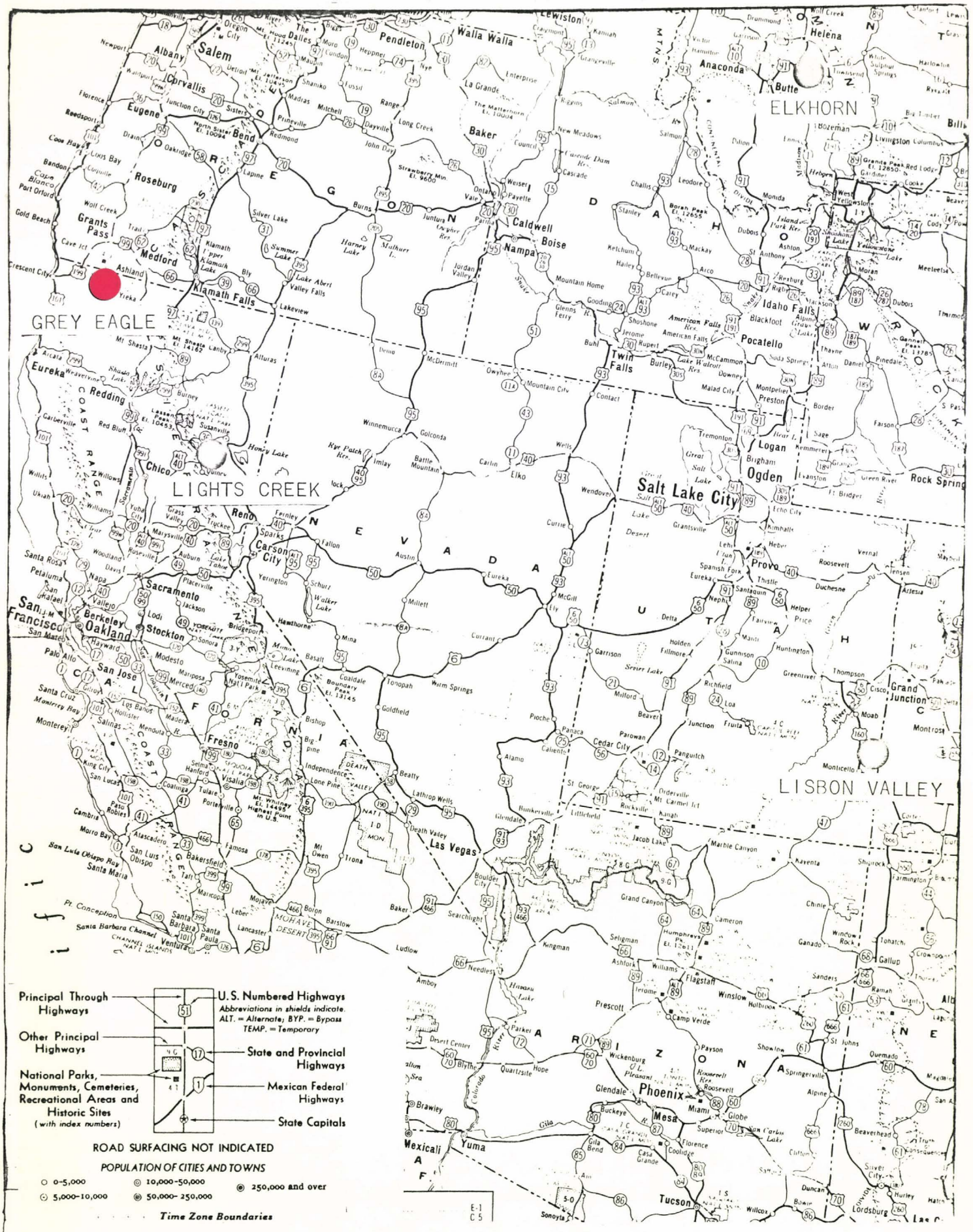
Talc is used as a powder, or flour talc, and as pieces sawed into various sizes and shapes. The flour talc is used in fireproof paints, electric insulators, boiler and steam pipe coverings, toilet powder, in the manufacture of powder and other articles.

Soapstone is found in several places in Siskiyou County, a large expose being noted in the northeast sections of T. 45 N., R. 11 W., southeast of Hamburg Bar, having a course of N. 50° E. and can be traced toward the ridge west of Scott River and is 50 feet wide; it is of good quality and resists the effect of fire for years in fireplaces; also used in sheets ½ to ¾ of an inch thick for stove backs. There is another large belt south of Marble Mountain, in T. 13 N., R. 8 E., H. M., near the head of Wolley Creek.

Bibl.: Bull. No. 38, p. 352.

Talc is found in the Cottonwood Mountains, 30 feet wide, on the top of the divide between Beaver and Bumblebee creeks; it has no grit and the iron content gives it a light ochreous color; located by E. Caldwell

WESTERN U.S.A. INDEX MAP



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One inch equals approximately 112 miles.

REPORT ON THE GRAY EAGLE MINE

Siskiyou County, California

INTRODUCTION

Information on the Gray Eagle Mine in Siskiyou County, California, was examined by D.P. Bellum and J.K. Jones on August 28 and 29, 1974, in the office of Standard Slag Company at 900 Industrial Way, Sparks, Nevada. Standard Slag has an option on the Gray Eagle property from the owner, Siskon Corporation of Reno, Nevada, involving $1250 per month advance royalties and a 7½% net smelter royalty.

DEVELOPMENT

During World War II Newmont mined 463,466 tons from which were recovered an average of 3.17% copper and .013 ounce gold per ton. Newmont mined by selective room and pillar methods and left a substantial amount of lower grade copper mineralization above, below, and adjacent to their stopes. Bear Creek Mining Company drilled a row of exploration holes of 500 to 1200 feet east of the Newmont orebody and encountered mineralization, but apparently the indicated orebody was not of sufficient size to justify continued interest. In 1967, 1968, and 1969 Standard Slag drilled 26 holes totalling 7575 feet of ore drilling spaced on 200 foot centers.

ORE RESERVES

Standard Slag drilling has developed 3,041,000 tons at a grade of 1.27% copper, and extending the orebody to the Bear Creek hole indicates the possibility of an additional 3,258,000 tons. About 90% of the copper in the developed ore reserve is contained in a relatively high grade portion of the orebody and could be mined at an average grade of 1.72% copper using a 1.00% cut-off grade.

Standard Slag has considered mining the orebody by open pit methods with a stripping ratio ranging from 7.48 to 12.18 to 1, depending on the cut-off grade. Although ore is known to continue to the east the drilling program was stopped because ore was too deep to be mined by open pit methods. However, it appears that Standard Slag has been very conservative in determining grade of their ore reserve. Some high grade assays have been excluded for various reasons, and core recovery from ore zones was not good. The possibility is raised that the orebody could be mined by underground methods and therefore depth of mineralization would become less critical.

GRAY EAGLE CALIFORNIA PROJECT

PROJECTED COSTS

October 1974 thru March 1975

1.	Property Payments $1250 per month for 6 months = $7,500	$ 7,500
2.	Drilling 6 core holes totalling 7500 feet @ $15/foot	112,500
3.	Drill Site Preparation, Roads	4,000
4.	Storage, Supplies Core racks, rental of storage space, core splitter, sample bags, core boxes, sample shipment and packaging	6,000
5.	Surveying Survey old drill holes, establish new drill sites, grid system, claim corners	5,000
6.	Transportation Rental pickup @ $500/mo for 3 months	1,500
7.	Assaying Determinations for Au, Ag, Cu on drill core	12,000
8.	Labor 1 helper, 3 months @ $800 = $2,400 Watchman, 6 months @ $800 = 4,800	7,200
	Total	$155,700

GEOLOGY

The orebody occurs in volcanics rocks which have been strongly metamorphosed and altered. No age dates are known in the area, but the rocks probably are Jurassic age or older. The orebody represents a type of deposit known as "massive sulfide" which typically is much smaller than a porphyry copper but can be considerably higher in grade. Mineralization consists of layered bands of pyrite, chalcopyrite, and quartz. Very little raw data was examined, but some core is available in Sparks, Nevada and at the property, and some underground workings are open

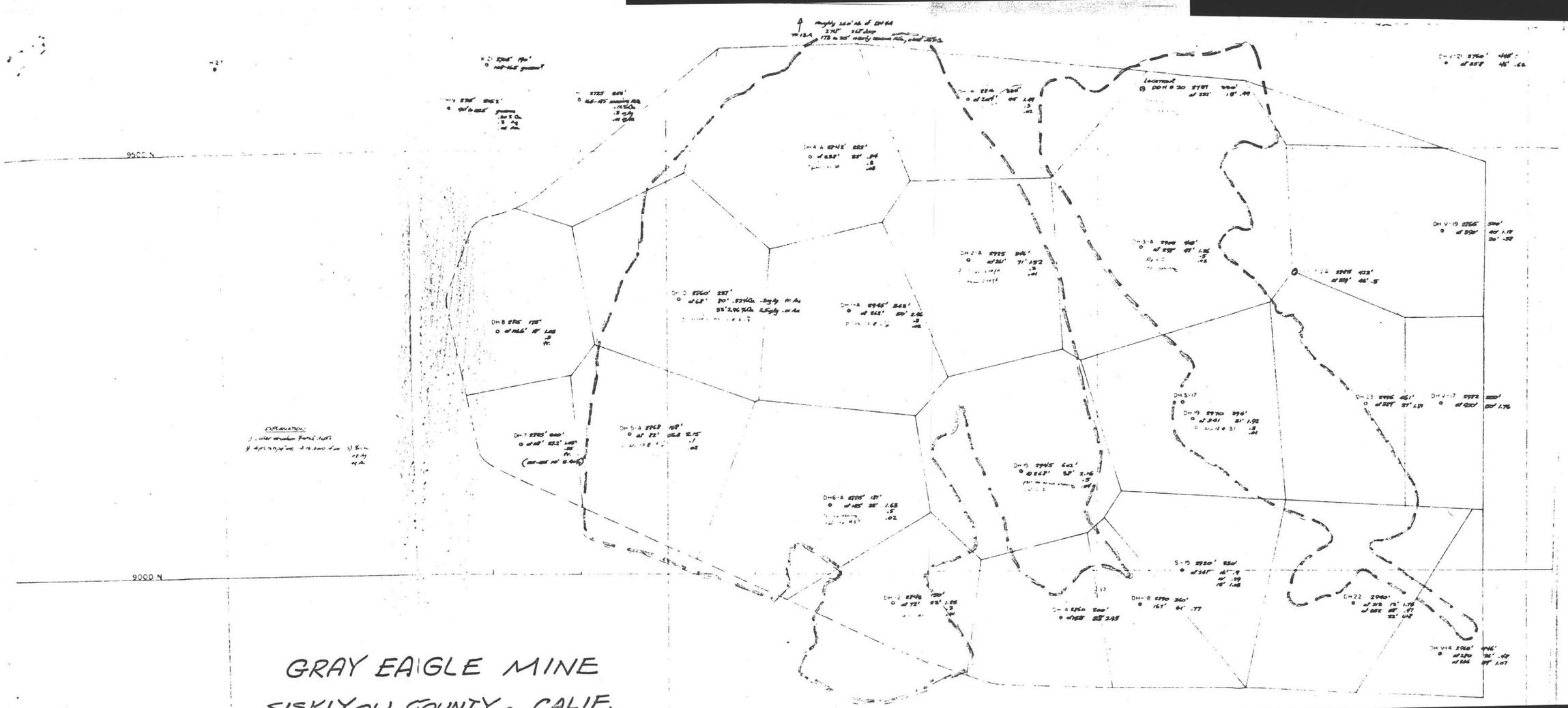
RECOMMENDATIONS

A good chance exists at Gray Eagle for development of a 6-million ton orebody at a grade of 1.5 to 2% copper that could be mined by trackless, underground, room and pillar methods. Exploration potential for additional ore is present, but it must be recognized that orebodies of this type seldom reach the size of porphyry copper deposits. Preliminary evaluation by D.P. Bellum indicates that underground mining would be feasible if sufficient ore can be developed.

Negotiations should be undertaken to obtain an option on the property and reduce the 7½% royalty payable to Siskon Corporation. A RFA is being prepared to cover the first six months of the exploration and development program. If results are encouraging, additional money will be needed in 1975 for further development drilling and underground work. Weather conditions probably will prohibit efficient exploration activity from mid-November or early December until late March.

J.K. Jones

JKJ:td
attachment



GRAY EAGLE MINE

SISKIYOU COUNTY, CALIF.

MEMO TO FILE

By: D.P. Bellum
Sept. 3, 1974

NOTES ON GREY EAGLE PROPERTY

The Grey Eagle data were reviewed on August 28 and 29 at the Standard Slag office at 900 Industrial Way, Reno, by Ken Jones and D. Bellum. These notes supplement a report prepared by Ken Jones regarding examination.

Location: Approximately 5 miles north of Happy Camp in northwestern California.

Ownership: The property is owned by Siskon Corporation of Reno and Standard Slag has a 20-year operating lease (summary of lease is attached).

Property: The property is located in the Happy Camp Mining District of Siskiyou County, Calif. and consists of 16 patented claims covering the presently drilled orebody and 70 unpatented claims surrounding the patented claim.

Terrain and Climate: The property is located at an elevation of 2500 to 2900 feet and the orebody dips under a ridge. The annual precipitation ranges between 50 and 60 inches per year and the monthly mean daily temperature ranges between 37° and 70°. Average monthly data are included.

History: The property was operated by Newmont between 1943 and 1945. Approximately 463,000 tons of ore were mined from underground operation and processed through a 500 TPD concentrator that was moved from Nevada City, Calif. Mining ceased concurrently with World War II. Records indicate that 29,364,000 lbs. of copper and 6,208 oz. of gold were recovered. A cursory examination of the mill records indicates that the mill recovery was in the range of 85% to 87% which would indicate that the grade of the ore milled was approximately 3.7% copper. Reports also indicated that the mill had inadequate grinding capacity to maximize the recovery and concentrate grade. The mine

History - continued

records and subsequent drilling indicate that Newmont hi-graded the deposit. The mining method was room and pillar and the stope maps indicate relatively wide spans between pillars and a high extraction rate, probably in the range of 70% to 80%.

Present Ore Reserves:

Standard Slag and several previous lessees have conducted drilling to determine the limits of the orebody. There are 24 holes at 200 to 300 feet centers which indicate an ore reserve of 3 million tons. In addition there are two holes drilled by Bear Creek, 800 to 1500 feet east of the drilled reserve with intercepts of plus 1.0% copper. Projections to these holes indicate possible additional reserves of 3 million tons. The massive sulfide orebody is roughly 700 feet by 1200 feet and ranges from 20 to 90 feet thick. The orebody strikes approximately east-west and dips 10% to 25% to the north.

Standard Slag has planned to mine the drilled reserves by open pit and did not drill between the known reserves and the Bear Creek holes because any ore in this area would have too high a stripping ratio to be economic. The reserves developed by Standard Slag are as follows:

	Ore Tons (000)	Grade % Cu	Pounds Cu (000)	% of Total Cu
+ 1.00 Cu	1,948	2.40%	94,837	90%
1.00% to 0.70% Cu	169	0.84	2,831	3%
0.70% to 0.40% Cu	357	0.47	3,380	3%
0.40% to 0.20% Cu	567	0.33	3,715	4%
Total	3.041	1.72%	104,763	100%

The tons of waste corresponding to the total tons of ore (3,041,000) was 22,744,000 with a 7.48/1.0 stripping ratio. With the cut-off of 1.0% the tons of waste are increased to 23,716,000 by the amount of excluded ore.

Present Ore Reserves - continued

The 463,000 tons mined by Newmont are excluded by deduction from the computed reserves. The reserves indicated in the enclosed memo from Gaylord to Harmon, May 5, 1970, have been arbitrarily reduced by 463,000 of 3.0% Cu. There is no justification to arbitrarily reduce the grade to compensate for the mining because the mining preceded the drilling and therefore the mined ore was not sampled by the drilling. A cursory examination of the drill logs indicates that of the 11 holes intersecting the stoped area, 4 appeared to have intersected open ground, 4 intersected high grade ore that was probably in the pillars, and 3 intersected waste pillars. A further study should be made of this problem but for the present no grade adjustments should be made for mine-out ore grade.

Gold and silver were not assayed routinely for the core drilling and there is some doubt about the accuracy of the assaying that was done. The indications are that the ore will average 0.3 to 0.4 oz silver and 0.01 to 0.02 oz gold.

Metallurgy: A considerable amount of metallurgical testing was done by Newmont and by Galligher (for Standard Slag) to determine copper recovery, but little was done to recover gold and silver. Gold and silver were not considered to be of importance when the test work was done in 1943 and 1968, but with the increase in price these metals may make a substantial contribution.

The copper recovery in the Newmont and Galligher tests is consistently in the range of 93% to 96% with concentrate grades of 20% to 25% copper when the grind is at least 70% -200 mesh. The work indices for a -200 mesh grind range from 9.7 to 11.4. Tests indicate that a concentrate regrind section will be required if a satisfactory concentrate grade and copper recovery are obtained.

An analysis of the concentrate produced by the Galligher test work indicated that there possibly is sufficient zinc in the ore to be recovered, but the precious metal content is disappointing. The analysis is as follows:

Cu	22.0%	Se	.009	Zn	2.36
S	40.3	Te	.002	Au	0.04
Fe	34.8	Pl	.060	Ag	0.20

Comments and Recommendations: Gray Eagle is a relatively small deposit but because of the grade it has interesting possibilities, particularly if Essex participated in the development of Lights Creek and constructed a smelter on the West Coast.

The grade is sufficiently high to permit underground mining or open pit mining of present reserve, however, the terrain will probably make stripping of any additional reserves developed to the east prohibitive. Therefore, trackless room and pillar mining is probably the lowest cost and most likely mining method to be used if additional reserves can be developed.

I recommend that additional exploration be done to expand the proven ore reserves if a reasonable agreement can be negotiated with Standard Slag. The agreement between Standard Slag and Siskon requires a royalty based on 7½% net smelter return. Standard believes that this can be re-negotiated. The present agreement could have an adverse effect on the economics of an operation of this size.

I believe the exploration program should be conducted in three phases:

(1) Surface drilling to develop additional ore reserves.
(2) Rehabilitation and mapping of the underground workings to determine the continuity of the ore and the degree of faulting.
(3) Drifting into areas of new ore development to determine the continuity and degree of faulting.

There is some indication that the ore is offset by faulting and this could cause mining problems in a trackless mining operation and could increase the mining costs. Underground exploration will provide better data on faulting and ore continuity than surface drilling, as well as providing information on ground conditions, stope spans, and support requirements.

cc: H. Lanier
R. Holt
K. Jones
attachments

D.P. Bellum

SUMMARY OF STANDARD SLAG-SISKON AGREEMENT

Siskon Corporation and Standard Slag Co.
Feb. 22, 1968

Term:	20 years with option with 10-year extension.
Owners Covenants:	Warrants full ownership of patented claims but does not warrant full title to unpatented claims. Warrants that there are no liens or claims against potential claims but not against unpatented claims.
Drilling Obligations:	May 1, 1967 - Apr. 30, 1969: 600 feet drilling per quarter or pay Siskon $1500 per quarter in lieu of drilling, such payments applicable to royalties.
Royalties:	7½% net smelter or mint return on all ores, concentrates, metals, minerals, or products. Transportation costs of concentrates are deductible in net smelter return.
Minimum Royalties:	$15,000 per year in $1250 monthly payments - applicable to future production.
Records:	Separate and accurate records of ore shipped. Siskon to be furnished, upon request, all reports, data, maps, records, etc.
Assessment:	Standard Slag do all assessment work, unless agreement terminated 3 months prior to end of assessment period.
Taxes:	Standard Slag pays on property and improvements.
Improvements:	Improvements remain if lease is terminated. Standard Slag must maintain a watchman at Standard Slag.
Liens, Claims, & Insurance:	Standard Slag hold Siskon harmless from all claims.
Assignment:	Not assignable without Siskon consent.
Termination:	By Standard Slag only on 3 months notice.
Default:	Standard Slag has 30 days after written notice to correct default.

GREY EAGLE CLIMATIC DATA

1961 through 1969 (9 years)

Month	Ave. Temp.	Ave. Precip.	High	Low
Jan.	37	10.8	15.9	2.7
Feb.	44	5.4	10.6	1.2
March	47	6.4	12.8	0.3
April	52	3.1	9.4	0.2
May	60	1.4	3.6	0.1
June	68	0.4	1.0	0.0
July	74	0.3	1.2	0.0
Aug.	73	0.7	2.7	0.0
Sept.	67	0.5	1.2	0.0
Oct.	56	4.1	11.48	0.9
Nov.	46	8.9	14.7	1.8
Dec.	40	12.5	30.4	3.5

Data from Happy Camp Ranger Station
Elev. 1165 Siskiyou County, Calif.

STANDARD SLAG COMPANY

INTER-OFFICE CORRESPONDENCE

TO: J. R. Harmon

DATE: May 5, 1970

FROM: G. B. Gaylord

COPIES TO:

SUBJECT: GRAY EAGLE - Estimated Ore Reserves

From the plan and cross sections designed early this year, it is estimated that the pit contains the following ore and waste:

Grade, % Cu	Ore Tons	Cu, Lbs.	Waste		W/O	
			Cu Yd.	Tons	Yd^3	Tons
+0.20 Avge 1.27	3,041,313	76,982,931	9,476,689	22,744,053	3.12	7.48
+0.40 " 1.48	2,474,438	73,268,625	9,686,643	23,247,943	3.91	9.40
+0.60 " 1.63	2,150,313	70,289,975	9,806,689	23,536,053	4.56	10.95
+0.70 " 1.65	2,116,813	69,887,976	9,819,096	23,565,830	4.64	11.13
+1.00 " 1.72	1,947,688	67,056,876	9,881,735	23,716,164	5.07	12.18

In calculating the above quantities, factors of 10.0 cubic feet per ton of ore and 11.25 cubic feet per ton of waste were used. Allowance was made for mining by Newmont by deducting the reported 463,000 tons at the highest grades indicated by our sampling.

In addition to the above, the following ore and waste have been estimated as probable and possible.

	Tons	% Cu	Lbs Cu	Cu Yd Waste
Probable	673,588	0.94	12,659,018	810,852
Possible	2,381,000	0.99	47,188,200	
Possible	203,220	0.97	3,951,516	128,177
TOTAL	3,257,808	0.99	63,798,734	

Probable ore is principally in southern and western extensions. That estimated for a downfaulted block west of DD7 is considered quite conservative and may amount to several times the 132,750 tons allowed for it, based on an extension of 100 feet.

Most of the possible ore has been estimated in the east extension of the main orebody and waste has not been estimated for this. It appears to be excessive for open pit mining.

GBG:nw

REQUEST FOR APPROPRIATION

NUMBER _____

REQUESTS MUST BE FILED FOR ITEMS COSTING $250.00 OR MORE

LOCATION Tucson, Arizona DIVISION Metallurgical & Mining DATE 9-12-74

REQUEST IS HEREBY MADE FOR AN APPROPRIATION OF $ 155,700.00 FOR ITEMS NOTED BELOW

APPROVED BY

REQUESTED BY R.E. Holt DATE	PRESIDENT DATE
VICE PRESIDENT DATE	CHM. OF BOARD DATE

COMPLETE DESCRIPTION AND ANALYSIS OF ESTIMATED COST OF ITEMS TO BE EXPENSED

W.O. NUM.	ACC'T NUM.		$
		GRAY EAGLE MINE, CALIFORNIA	
		Property Payments	7,500
		Surveying	5,000
		Road & Drill Site Preparation	4,000
		Labor – Helper and Watchman	7,200
		Storage & Supplies	6,000
		Transportation	1,500
		Drilling	112,500
		Assaying	12,000
		TOTAL EXPENSED	$ 155,700

AUTHORIZED BUDGET ADDER YES ☐ NO ☐ DIV. CONTROLLER _____

COMPLETE DESCRIPTION AND ANALYSIS OF ESTIMATED COST OF ITEMS TO BE CAPITALIZED

W.O. NUM.	ACC'T NUM.		$
		These costs will be capitalized if the project becomes an operating property.	
		TOTAL CAPITALIZED	$

GRAND TOTAL → $155,700.00

INDICATE BELOW THE COST SAVINGS RESULTING FROM THIS EXPENDITURE AND HOW THE EXPENDITURE WILL BE RECOVERED, OR WHY THE EXPENDITURE IS NECESSARY.

This will provide funds to option and conduct step out drilling and exploration on a massive sulfide copper deposit in Siskiyou County, California. If results of this work are positive a second phase at a cost of approximately $300,000 will be necessary. This RFA will be expended in 6 months or less and the second phase will commence in March or April of 1975. An agreement with the property owners has not yet been consummated on this property.

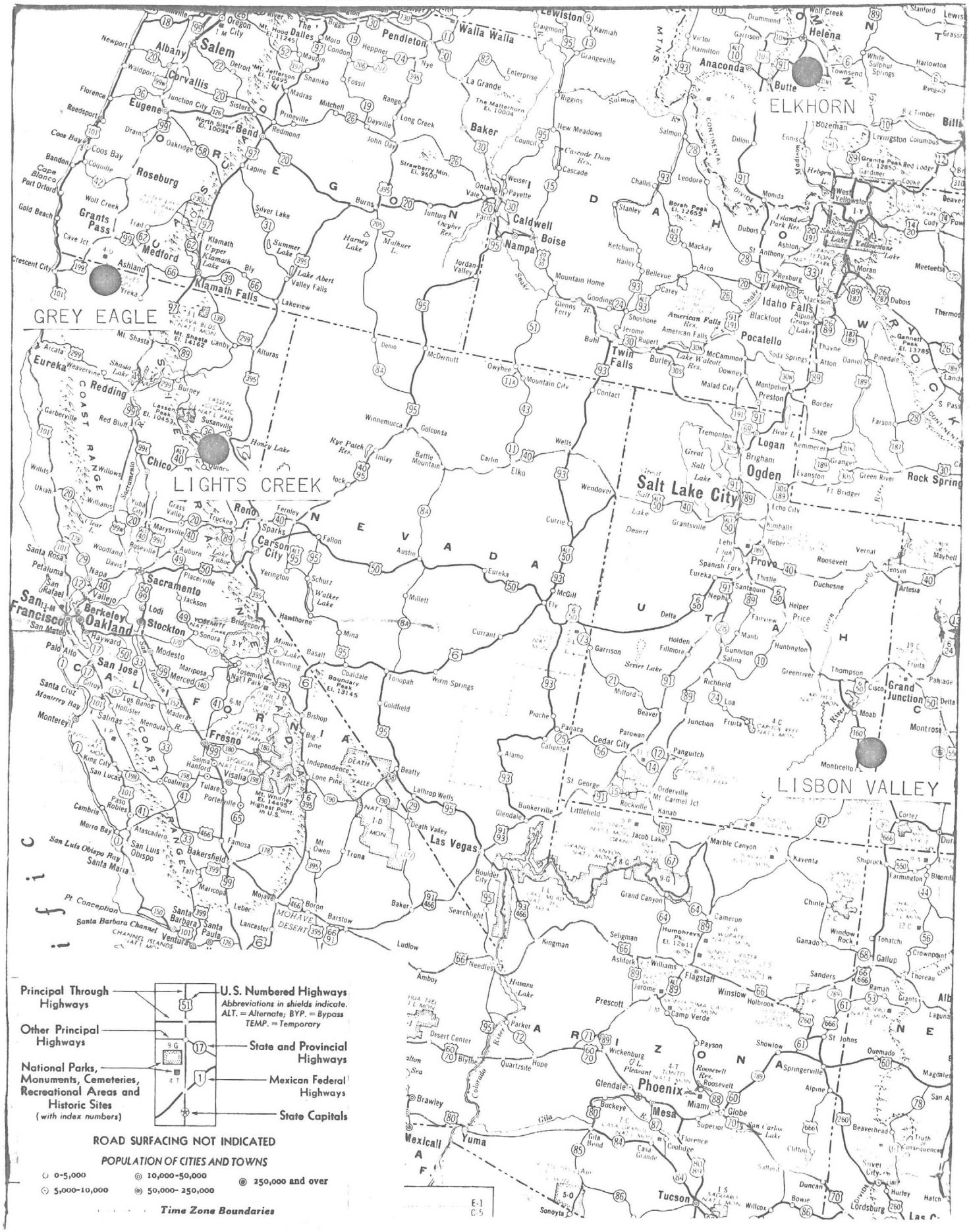
Sufficient core drilling has been completed to give proven reserves of 2,000,000 tons of ore assaying 1.72% copper. Additional drilling has also been done which indicates this reserve could be doubled or trippled.

Further details are summarized in the attached reports by K. Jones and D. Bellum.

WHITE COPY . . . . ORIGINATOR
YELLOW COPY . . . CORPORATE
PINK COPY . . . . DIVISIONAL COPY

USE REVERSE SIDE IF NEEDED

WESTERN U.S.A. INDEX MAP



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1704 WEST GRANT RD., TUCSON, ARIZONA 85705
PHONE (602) 624-7421

One inch equals approximately 112 miles.

Scale: 0 25 50 100 150 200 miles

February 7, 1976

Bob Helming

Dear Bob:

It was good to hear from you the other day after all these many months and to learn how you and your family are doing. It must have been rough for you and your family after the Shangri-La existance in Safford.

Lyall and I are still holding down the Essex fort and the many lawsuits are gradually diminishing, most of them to Essex's disadvantage and it is probably best that I not elaborate on this in writing.

We have moved into a nice new house way out on the East side and we enjoy it very much. The drive is a little more than I am used to making but I don't mind it and we are living kind of a countrified existance. If you should ever be in Tucson please look us up.

We moved our office last September about a block west of the old office and I have gradually been selling off office equipment and paring back the operation.

Essex will give up the San Juan as of February 20 and also the Knov Hill claims. We have maintained every thing else and plan to continue for the immediate future holding on our position on the Bohemias Nail Kegs et al.

I get back up to Safford about twice a month and it seems rather like, I suppose, like an old soldier visiting the old battlefield particularly when I go up on the hill on the Pick Up. Essex bought the Pick Up from Les West a few weeks ago.

It is getting rather late and supper is on the table so I shall close for now.

Oh, how is your tennis coming?

Very Truly Yours,

Grover
9101 E. Indian Canyon Rd.
Tucson, AZ 85715

kh/EGH

GRAY EAGLE MINE

AC-042

REQUEST FOR APPROPRIATION

NUMBER _____

REQUESTS MUST BE FILED FOR ITEMS COSTING $250.00 OR MORE

LOCATION Tucson, Ariz DIVISION Met & Mng DATE _____

REQUEST IS HEREBY MADE FOR AN APPROPRIATION OF $ $155,700 ? FOR ITEMS NOTED BELOW

APPROVED BY

REQUESTED BY R. E. Holt	DATE	PRESIDENT	DATE
VICE PRESIDENT	DATE	CHM. OF BOARD	DATE

COMPLETE DESCRIPTION AND ANALYSIS OF ESTIMATED COST OF ITEMS TO BE EXPENSED

W.O. NUM	ACC'T NUM		$
		Property Payments	7,500
		Surveying	5000
		Road and Drill site Preparation	4000
		Labor - Helper and watchman	7200
		Storage & Supplies	6000
		Transportation	1500
		Drilling	112,500
		Assaying	12,000
		TOTAL EXPENSED	$ 155,700

AUTHORIZED BUDGET ADDER YES ☐ NO ☐ DIV. CONTROLLER _____

COMPLETE DESCRIPTION AND ANALYSIS OF ESTIMATED COST OF ITEMS TO BE CAPITALIZED

W.O. NUM.	ACC'T NUM.		$
		this will provide funds to option and conduct step out drilling and exploration on a massive Sulfide Copper deposit in Siskiyou County, California. If results of this work are positive a second phase at a cost of approximately $300,000 will be necessary this RFA will be expended in 6 months or less and the second phase will commence in March or April of 1973. A deal has not yet been consumated on this property.	
		TOTAL CAPITALIZED	$
		GRAND TOTAL →	

INDICATE BELOW THE COST SAVINGS RESULTING FROM THIS EXPENDITURE AND HOW THE EXPENDITURE WILL BE RECOVERED. OR WHY THE EXPENDITURE IS NECESSARY.

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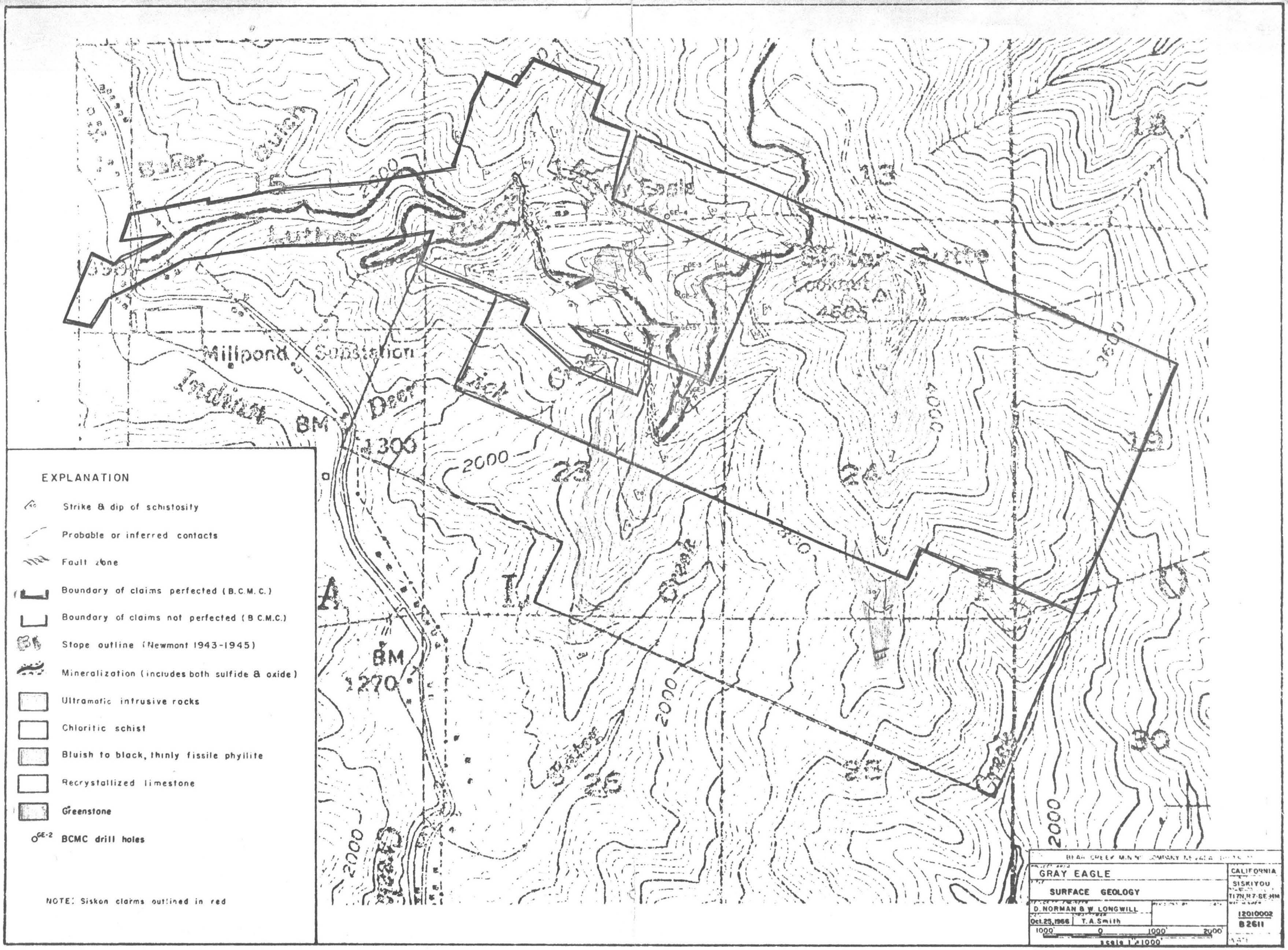
YELLOW COPY . . . CORPORATE
BLUE COPY . . . . DIVISIONAL COPY
GOLDENROD . . . . DIVISIONAL COPY

USE REVERSE SIDE IF NEEDED


Baker Gulch
Luther
Millpond
Substation
Indian
Deer
Lick
BM
1300
BM
1270
2000
Creek
Lookout
4505
EXPLANATION
Strike & dip of schistosity
Probable or inferred contacts
Fault zone
Boundary of claims perfected (B.C.M.C.)
Boundary of claims not perfected (B.C.M.C.)
Stope outline (Newmont 1943-1945)
Mineralization (includes both sulfide & oxide)
Ultramafic intrusive rocks
Chloritic schist
Bluish to black, thinly fissile phyllite
Recrystallized limestone
Greenstone
GE-2 BCMC drill holes
NOTE: Siskon claims outlined in red
GRAY EAGLE
SURFACE GEOLOGY
D. NORMAN & W. LONGWILL
Oct.25,1966
T.A.Smith
1000' 0 1000' 2000'
scale 1"=1000'
CALIFORNIA
SISKIYOU
T17N,R7-8E HM
12010002
B2611

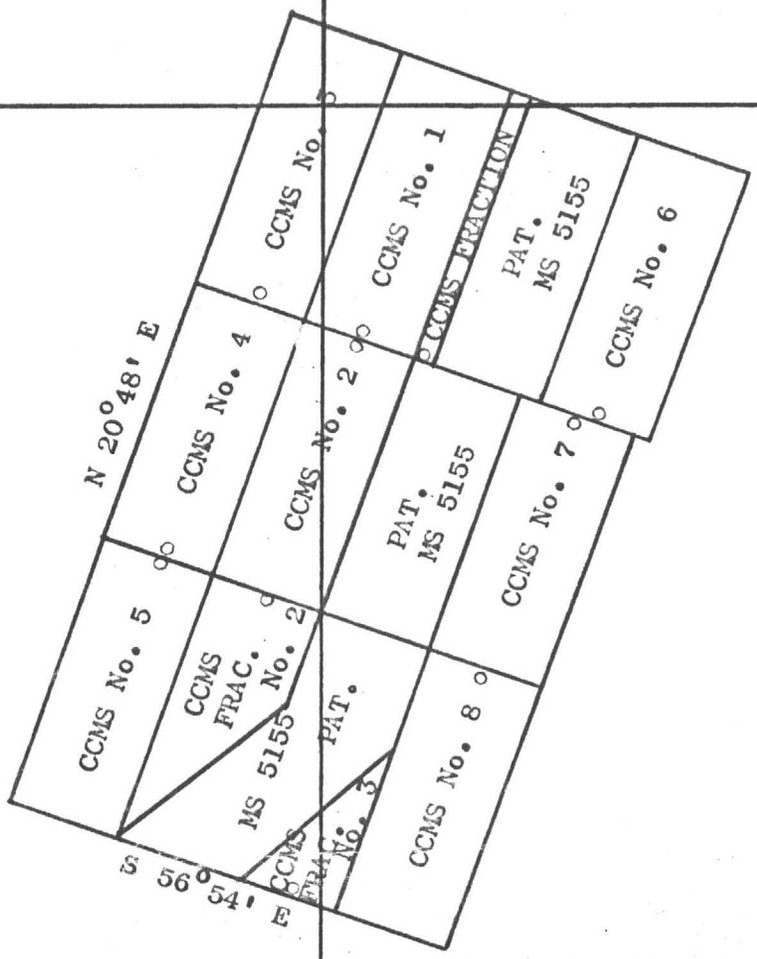
T 15 N, R 6 E
HUMBOLDT MERIDIAN

NORTH

T 15 N, R 7 E
HUMBOLDT MERIDIAN

SEC. 12

SEC. 7



SEC. 13

SEC. 18

SEC. 24

SEC. 19

PRELIMINARY PLAT
CCMS MINING CLAIM GROUP
SITUATED IN
T 15 N, R 6 E, SEC. 12 & 13
T 15 N, R 7 E, SEC. 7 & 18
HUMBOLDT MERIDIAN
SISKIYOU COUNTY, CALIF.
SCALE: 1" = 1000' approx.
APRIL 1978