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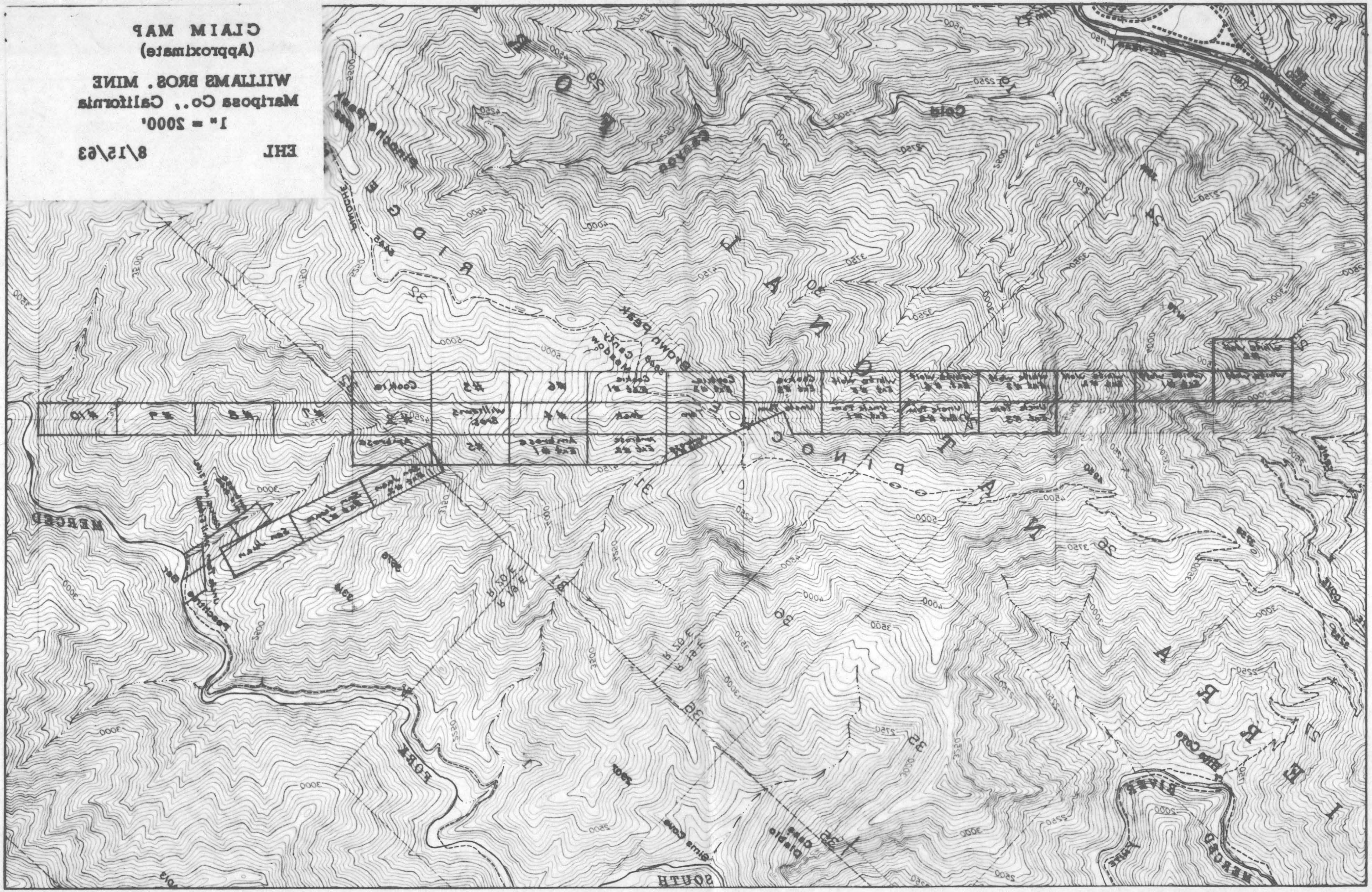

CLAIM MAP
(Approximate)
WILLIAMS BROS. MINE
Mariposa Co., California
1" = 2000'
EHL 8/15/63

CLAIM MAP
(Approximate)

WILLIAMS BROS. MINE
Mariposa Co., California
1" = 2000'

EHL 8/15/63

MANNING W. COX ASSOCIATES consulting geologists

57 post street san francisco, california YU 2-1436

Statement of: August 30, 1963

In Account With:
Mr. Edward Wisser
Star Route
Garden Valley, California

Re: Earl Williams Property, El Portal, California

E. H. Lindsey, time		
3 days @$75	$225.00	$225.00
Expenses Incurred:		
Truck mileage, 412 @15¢	61.80	
Lindsey travel expenses	5.33	
Telephone	6.77	
Maps printed	1.46	
	75.36	$75.36
TOTAL ACCOUNT		$300.36

Payment received
9/30/63
MANNING W. COX ASSOCIATES
CONSULTING GEOLOGISTS
57 POST STREET
SAN FRANCISCO, CALIFORNIA 94104
by Jane M. Johnson

September 6, 1963

Golden Eagle Mining Corporation
P.O.Box 46
El Portal, Calif.
Attention Mr.Earl Williams

To Edward Wisser, Dr.

To professional services,examination and writing report on Williams Bros.mine

Edward Wisser, 4 days @ $150.....	$600.00
Eugene Lindsey, 3 days @ $75.....	225.00
Expenses (accounts attached).....	130.36
	$955.36
Previously received	500.00
Amount due	$455.36

Wisser Expense account:

Travel, 350 miles @ 10c.....	$35.00
Motel, Mariposa.....	12.00
Meals.....	8.00
	$55.00

Lindsey Expense account

Travel, 412 miles @ 15c.....	$61.80
Meals.....	5.33
Telephone.....	6.77
Peinting maps.....	1.46
	$75.36

EDWARD WISSER
MINING GEOLOGIST
STAR ROUTE
GARDEN VALLEY, CALIF.
95633

TELEPHONE: AREA CODE 916
333-4613

August 23, 1963

Mr. Earl Williams
Golden Eagle Mining Corporation
P.O.Box 46
El Portal, California

Dear Sir:

Pursuant to your request, I submit herewith my report on the mining property of the Golden Eagle Mining Corporation.

Yours truly

Edward Wisser

REPORT ON MINING PROPERTY OF THE

GOLDEN EAGLE MINING CORPORATION,

MARIPOSA COUNTY, CALIFORNIA

Edward Wisser
August 23, 1963

CONTENTS

ILLUSTRATIONS

(In pocket at end of report)

REPORT OF MINING PROPERTY OF GOLDEN EAGLE MINING CORPORATION MARIPOSA COUNTY, CALIFORNIA

INTRODUCTION

The following report is based on field work on the property by my associate, Eugene Lindsey, mining geologist, August 13 and 14, 1963, and on my inspection to check his work, August 14. The article on "Mines and Mineral Deposits of Mariposa County", in the California Journal of Mines and Geology, January-April, 1957, p.35-343, was also consulted.

LOCATION; TOPOGRAPHY

The underground workings, camp and mill lie in the Williams Brothers unpatented claim, mainly in Section 32, T.3 S., R. 20 E., Mt. Diablo Base & Meridan. The claim lies on the southeast slope of Brown Peak, about 700 feet below the divide at Canty Meadow (see Claim Map). Elevations at the mine workings range from 4300 ft. to 4450 ft. (see Surface Geology map). Drainage is southward, into the South Fork of the Merced River. Slopes are fairly steep, suitable for exploration by adits, but the country is wooded, lying within the Stanislaus National Forest, and the overburden is thick, making surface prospecting difficult.

The Williams Brothers claim is 3 miles south and 1 mile west of El Portal; but the truck road to the claim from El Portal is 8 miles long owing to the steepness and height of the Brown Peak ridge which it crosses.

MINERAL HOLDINGS

As shown on the Claim Map, the company holds 34 contiguous unpatented lode claims, extending from the South Fork of the Merced

River northwestward through Brown Peak and beyond for a distance of some 4.5 miles. There are two mill sites on the South Fork (see map) and two adjacent to Highway 140; one of these is where the truck road to the mine leaves Highway 140; the other is several miles west of this. (not shown on map.)

The Williams Brothers claim has been surveyed and located with respect to the northwest corner of Section 32; since the other claims have not been similarly surveyed, their position as shown on the claim map is approximate only.

HISTORY OF THE WILLIAMS BROTHERS (GIBBS) MINE

According to the California Journal of Mines & Geology, January-April, 1957, pages 185-187, the Gibbs gold mine, as it was known at first, was probably first worked in the 1860s, about the time of discovery of the highly productive Hite mine, 3 miles to the northwest, and the Mexican II mine, adjacent to the Gibbs. (see Claim Map). Some of the early development work was done in 1875, according to the Mining & Scientific Press of that year. The California Journal of Mines & Geology states (p. 185) that "There apparently had been considerable stoping from the upper levels in early days."

This is confirmed by the fact that when the William Brothers acquired the property in 1948 they had found high-grade ore on the dumps. To test this ore a 5-ton Gibson mill was packed in on horseback in 1949. Results were so encouraging that the present truck road to the property was started in 1950 and completed in December, 1952. A five-stamp mill was erected in 1953 and ran at first on ore from old dumps averaging $10 per ton in gold. Ore was later milled from development work, and mined from the stope shown on the accompanying plan of the Upper Level. From our measurements we

estimate that the stope produced about 1400 tons of ore. Since milling records are not available, the average grade of this ore is not known; but the Journal states that some of the ore mined in 1954 averaged $27.22 per ton in gold. A picture of the mill (which still exists) on page 186 of the Journal is accompanied by the statement that the Gibbs mine 'was reactivated in 1949 and had operated most of the time up to 1956, producing small tonnages of good-grade ore from development work.'

Little work was done at the mine from 1959 until January, 1963, but development work at the mine, and improvement of the road have been continuous since.

GEOLOGY OF THE CALIFORNIA GOLD BELT IN MARIPOSA COUNTY

The California gold belt, which extends for 250 miles along the foothills and western slopes of the Sierra Nevada, passes through western Mariposa County. The most important structural feature of the belt is the Mother Lode mineralized fault system, a long, narrow belt of reverse faults arranged in echelon and dipping steeply east. In Mariposa County, the Mother Lode passes through Coulterville and ends on the south not far southeast of Mariposa. The Williams Brothers mine lies about 13 miles northeast of the Mother Lode.

The Mother Lode fault system in Mariposa County separates rocks of the Paleozoic Calaveras formation on the east from rocks of Jurassic age on the west. The Calaveras formation consists of slate, schist, quartzite, limestone and greenstone. The Jurassic rocks include the Mariposa slate and the Amador group, consisting of volcanic flows,

The Williams Brothers mine lies in the Calaveras formation.

Eastern Mariposa County is underlain by the Granitic Sierra Nevada batholith; the Calaveras and Jurassic rocks to the west have been intruded by many granitic masses, dikes and sills, as well as by basic igneous rocks.

In the central part of the gold belt (Amador, Calaveras and Tuolumne Counties) the major mines were concentrated along the Mother Lode, although some important mines were located well east of the Lode, and a few west of it. But the gold belt extends for many miles north of the northern end of the Lode (Grass Valley, Alleghany, Plumas County) and here the mines form a broad belt many miles wide.

In the same way, in Mariposa County, although the Mother Lode persists, the gold belt is 20 to 25 miles wide. The gold production of mines, well away from the Mother Lode is probably at least as great as that of mines along the lode.

The estimated gold production of Mariposa County is placed at $48,000,000 (California Journal of Mines & Geology, January-April, 1957, p.56). Since nearly all this production came under the old price of gold ($20.67 per ounce), at the present price of $35 per ounce the production would have been about $81,000,000.

GEOLOGY OF THE WILLIAMS BROTHERS MINE

Rock Formation; Structure: The country rock at the Williams Brothers' mine consists of quartzite and slate of the Calaveras formation, and granodiorite. The quartzite and slate occur as bands trending northwestward, and dipping mainly northeast at angles from 50° to 80° (see plan of Surface Geology and the level maps.) Granodiorite occurs as a mass of considerable size, bounding the slate belt on the northeast, also as a sill-like mass along the contact

of the quartzite and the slate (plan of Surface Geology), and as smaller dikes and sills.

The attitude of the Calaveras formations at the mine conforms with its attitude throughout Mariposa County, namely, a northwest strike and steep dips.

Mineralization: The principal vein on the property, from which all the production has come, is presently exposed only in the area of the Upper and Middle levels (see surface plan, and plans of these levels).

The vein strikes N50° - 60° W and dips northeast at angles from 27° to 49°. It varies in thickness from 2 to 6 feet, except near the face of the Upper level, where it seems to break up into small stringers. However, straight down the dip from here, in the face of the Middle level, the vein is strong and about 2 feet wide. The vein strikes parallel with the bedding of the slate, and dips in the same direction (northeast) but less steeply. At the face of the Upper level the slaty cleavage turns over and dips southwest, probably owing to a local sharp fold; this may account for the splitting up of the vein, probably a very local feature. It is also possible that the Upper Level drift has turned too far westward and left the vein.

The vein shows a marked tendency to follow contacts between slate and granodiorite sills. As the surface map shows, the vein bear the portals of the Upper and Middle levels follows the hanging wall of the granodiorite sill between slate and quartzite mentioned above. The vein follows this contact for 100 feet in the Upper level, before veering off into the slate. In the Middle level the vein soon leaves this contact, but toward the face it follows the footwall of a narrow granodiorite sill.

The vein matter consists of milky quartz and commonly shows the "ribbon structure" characteristic of productive veins throughout the California gold belt.

The photograph of the Original vein of the Clearinghouse mine (4.5 miles NW of the Williams Brothers mine) shown on page 87 of the California Journal of Mines and Geology, January-April, 1957, gives an excellent idea of the Williams Brothers vein.

The vein carries sulfides, chiefly pyrite and arsenopyrite, with minor sphalerite and galena. According to the California Journal of Mines & Geology (op.cit. p. 185), the gold is associated with the pyrite.

APPRAISAL OF THE WILLIAMS BROTHERS MINE

No ore is exposed at present, according to Mr. Earl Williams, and therefore I took no samples. However, the vein is exposed for only 60 feet in the Middle level, and probably for not over 100 feet in the Upper level. It was mentioned under "History" that there was probably considerable stoping from the upper levels in early days. This area would be up the hill from, and west of, the Upper level. (Owing to the topography combined with the flat dip of the vein, the outcrop here trends nearly west - see Surface Plan).

The mine lies in a well mineralized area. Neighboring mines and prospects are shown on the Claim Map. The following data are taken from the California Journal of Mines & Geology (op. cit.)

The Kaderitas vein, less than half a mile southwest of the Williams Brothers mine, strikes NW and dips NE like the Williams Brothers vein; although development is limited, there was probably a small production. (P. 272).

At the Mexican II mine, adjoing the Williams Brothers property on

the southwest, two parallel veins strike northwest and dip northeast. The ore was high-grade but pockety. P. 284). Development was limited.

There are two veins striking northwest and dipping northeast at the Emma I mine. Ore shoots were small but commonly rich. Development is scanty. (P. 257). The Emma I lies 1.5 miles west of the Williams Brothers mine.

The Bunker Hill mine, 1.25 miles west of the Williams Brothers mine, had one of the first quartz mills in the State. (P. 246).

Much of the ore mined at the Eureka III mine, 2.5 miles northwest of the Williams Brothers mine, between 1868 and 1880, ran between $70 and $175 per ton at the present price of gold. (P. 258).

The Hite mine, 3.2 miles west-northwest of the Williams Brothers mine, had a production of $3,000,000 at the old price of gold, or over $5,000,000 at the new price.

Geologic conditions at the Hite mine resemble those at the Williams Brothers mine: The country rock includes slate, quartzite, and small dikes and sills of granitic rock; the bedding and schistosity strike N 50°W and dip 75° -80° northeast. The vein strikes N 50° to N 70° W and dips 75° to 80° northeast. The dip is steeper than that at the Williams Brothers mine, based on present exposures, but the California Journal of Mines & Geology states that the dip of the Williams Brothers vein is in places nearly vertical (p.185).

A large percentage of the ore mined at the Hite mine prior to 1879 (i.e. the bulk of the production) averaged $70 per ton at the present price of gold. In 1912 the mine produced a small tonnage of ore averaging $122 at the

present gold price. (P. 108-112).

The Clearinghouse mine, 4.5 miles northwest of the Williams Brothers mine, and almost on the prolongation of a line drawn between that mine and the Hite, produced over $3,350,000 at the present price of gold. The geology of the Clearinghouse mine is of interest with respect to the Williams Brothers mine. One of the two productive veins follows the hanging wall of a thick granitic sill and Calaveras metasediments. (Pp. 85-90).

In summary, the Williams Brothers vein is of the productive type; it has produced ore; the geology of the area resembles that of nearby productive mines; the vein is fairly strong structurally.

It is true that under present economic conditions gold ore must be high-grade ~~and~~ to yield a profit. The cut-off grade for a small mine is probably about $25 per ton. Several of the nearby mines have produced ore yielding $70 per ton or more at the present gold price; a good profit could be made on such ore, even today.

I consider the Williams Brothers mine an attractive speculative venture, without taking into consideration the possible value of the 33 outlying claims, located in a well mineralized and only partly explored area.

RECOMMENDATIONS FOR EXPLORATION

The probability of early stoping on the Earl Williams vein at upper levels has been mentioned under "History". Surficial stopes should lie up the hill from, and west of, the Upper level, as suggested by the projected

outcrop on the surface plan. Search sould be made for evidence of this stoping, but even if no evidence is found the vein looks promising enough in the face of the Middle level to warrant further drifting northwestward.

Recommendation (1): On the Middle level, drive on the vein northwestward for 500 feet. If the vein peters out or looks very discouraging within this distance, the work should be stopped.

In view of the control over the vein by granodiorite-slate contacts, the major such contact, shown in the eastern part of the surface plan, arouses interest. In the area of the Lower level, this contact must dip eastward at less than 45°, because the face of the northeast crosscut is still in slate although well east of the contact on the surface. A flat east dip of the contact would conform to that of the vein; if the vein should reach the contact it might follow it and possibly strengthen.

Referring to the plan of the Middle level, it is not known whether the slip or fault dipping 55° east, exposed at the portal, is itself the vein or whether it faults the vein. If it is a fault, displacement is probably small. If the vein coincides with the supposed fault, it is not heading for the contact; but if this slip is in fact a fault, the vein might lie about in the position suggested on the surface plan.

Recommendation (2): Dig a trench to bedrock, about as shown on the surface plan, preferably with a small power shovel rather than a bulldozer, which tends to smear out the evidence. If the vein is found, about as shown, follow it by trenching up to and along the contact.

The same trench will furnish information on the vein if it coincides with the possible fault.

The Lower level exposes, toward its northeast face, quartz stringers carrying pyrite and arsenopyrits (see plan of that level). The granodiorite contact cannot be more than a few feet northeast of the face.

Recommendation (3): Continue northeast crosscut, Lower level, 20 feet (?) to granodiorite contact.

ESTIMATED COST OF PROPOSED EXPLORATION

Equipment Needed: The equipment on hand at the mine is listed in the Appendix. It includes a compressor capable of running 3 small drills, 3 mine cars, etc. Rails are lacking. About 1100 linear feet of #12 rails would be required. Used rails would cost about $350; with spikes, etc., perhaps $500.

There is some compressed-air pipe on hand, but to be safe, I estimate a need for 550 feet of 2 1/2" black iron pipe (new) at $1 per foot, or $550.

Artificial ventilation will probably be needed for the 500 feet drift. A used mine fan (10", gas engine drive) might be purchased for $300 while 500 feet of 10" galvanized sheet metal pipe would cost about $750.

Summary of Exploration Costs:

Minerail, etc	$500
Compressed-air pipe	550
Mine fan	300
Vent pipe	750
Recommendation (1) 500' @ $35	17,500
" (2)Trenching	500
" (3)20' @ $35	700
Contingencies	1,000
	31,800

GENERAL RECOMMENDATIONS FOR EXPLORATION

An accurate topographic map should be made of the mine area, and the surface geology mapped in detail, with special emphasis on an attempt to follow the vein outcrop up the hill from the Upper level, as suggested on the surface map, and on a study of the main granodiorite-slate contact to detect any mineralization along it.

The 33 outlying claims should be surveyed, at least roughly, and any mineralizee showings on them sampled and explored by trenching.

I am unable to estimate the cost of the above recommendations, because it would depend on whether or not the outlying claims contain promising showings, and the amount of work done in exploring them.

It cannot be said that the exploration work recommended would definitely prove or disprove the property; but if results were entirely disappointing I would recommend no further work because the odds against finding a mine would seem too great. But the property deserves the work recommended in view of its past production, situation in a well mineralized area, and especially because of the good record of surrounding mines in yielding high-grade ore capable of producing a profit under present economic conditions.

DEVELOPMENT AND PRODUCTION STAGE

The object of exploration is to find ore bodies; when found these must be delimited and prepared for stoping; this is mine development. A proper mill must be designed and built, and arrangements made to deliver the ore from the mine to mill; the mine is then ready for production.

It is far too early to discuss this stage; not knowing the size, shape,

and location of the ore bodies, if any, neither the cost of development nor that of mining can be estimated. Suffice it to say that if sufficient ore is found to revive the Williams Brothers mine, the new mine, like the old, will probably be a small one, i.e, capable of producing only a moderate daily tonnage of ore. The correct mining procedure will probably be to keep the grade of ore high at the expense of tonnage. The mill, using flotation, would probably be designed to treat about 35 tons or ore daily. For reasons just given, no estimate of the cost of the development and final equipment stage is attempted.

Garden Valley, California
August 23, 1963

Edward Wisser
Mining Geologist

BY DATE

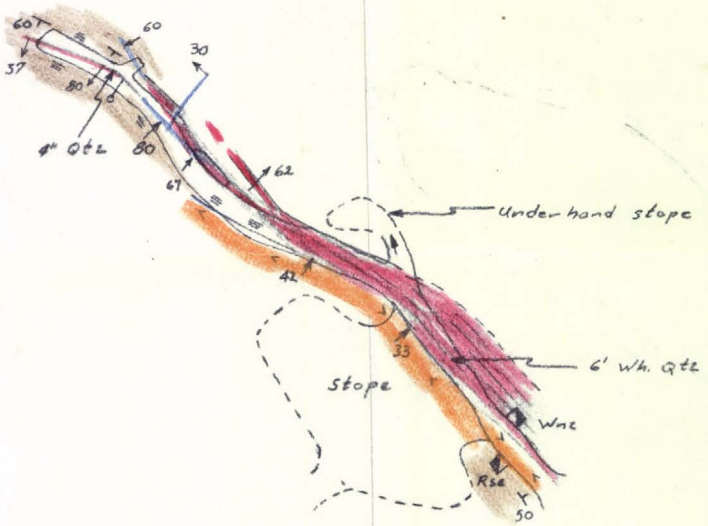
CHKD. BY EHL DATE 8/15/63

SUBJECT Upper Level
Williams Bros. Mine
Mariposa County, California

SHEET NO. 1 OF 1

JOB NO

Scale: 1" = 50'



Legend

62 Vein

23 Wall, slip, fault

53 Attitude of slate

UPPER LEVEL

BY EHL DATE 8/15/63 SUBJECT Middle Level

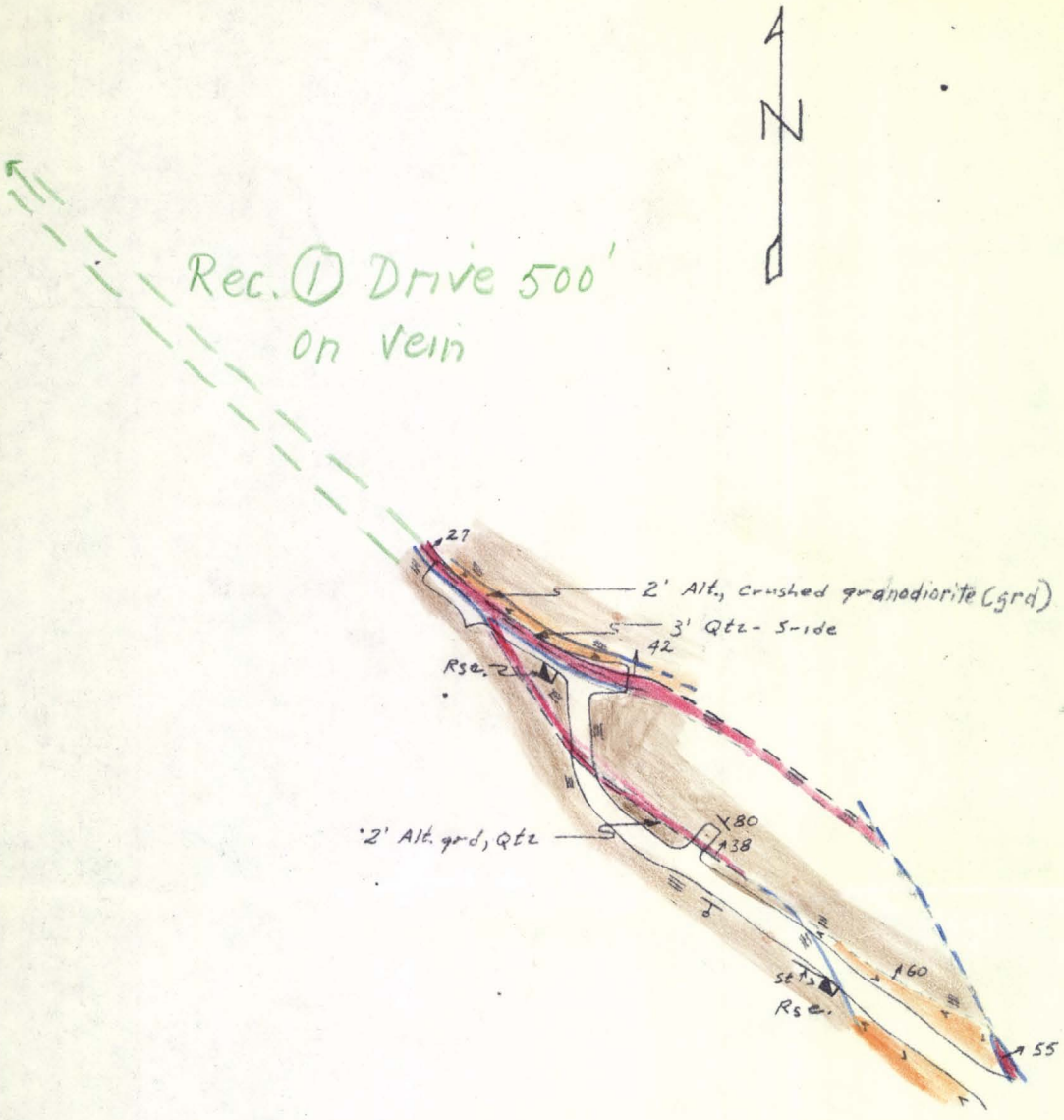
CHKD. BY DATE Williams Bros. Mine

Mariposa County, California

SHEET NO. 1 OF 1

JOB NO.

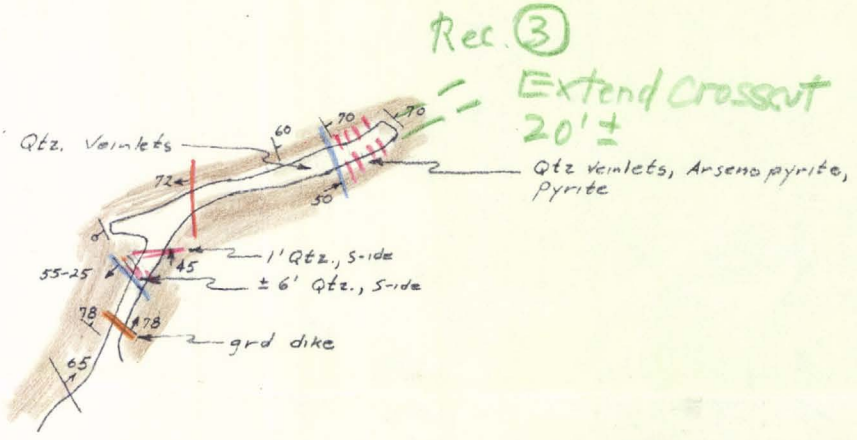
Scale: 1" = 50'



MIDDLE LEVEL

BY EHL DATE 8/15/63 SUBJECT Lower Level
CHKD. BY DATE Williams Bros. Mine
Mariposa County, California

SHEET NO. 1 OF 1
JOB NO.
Scale: 1" = 50'

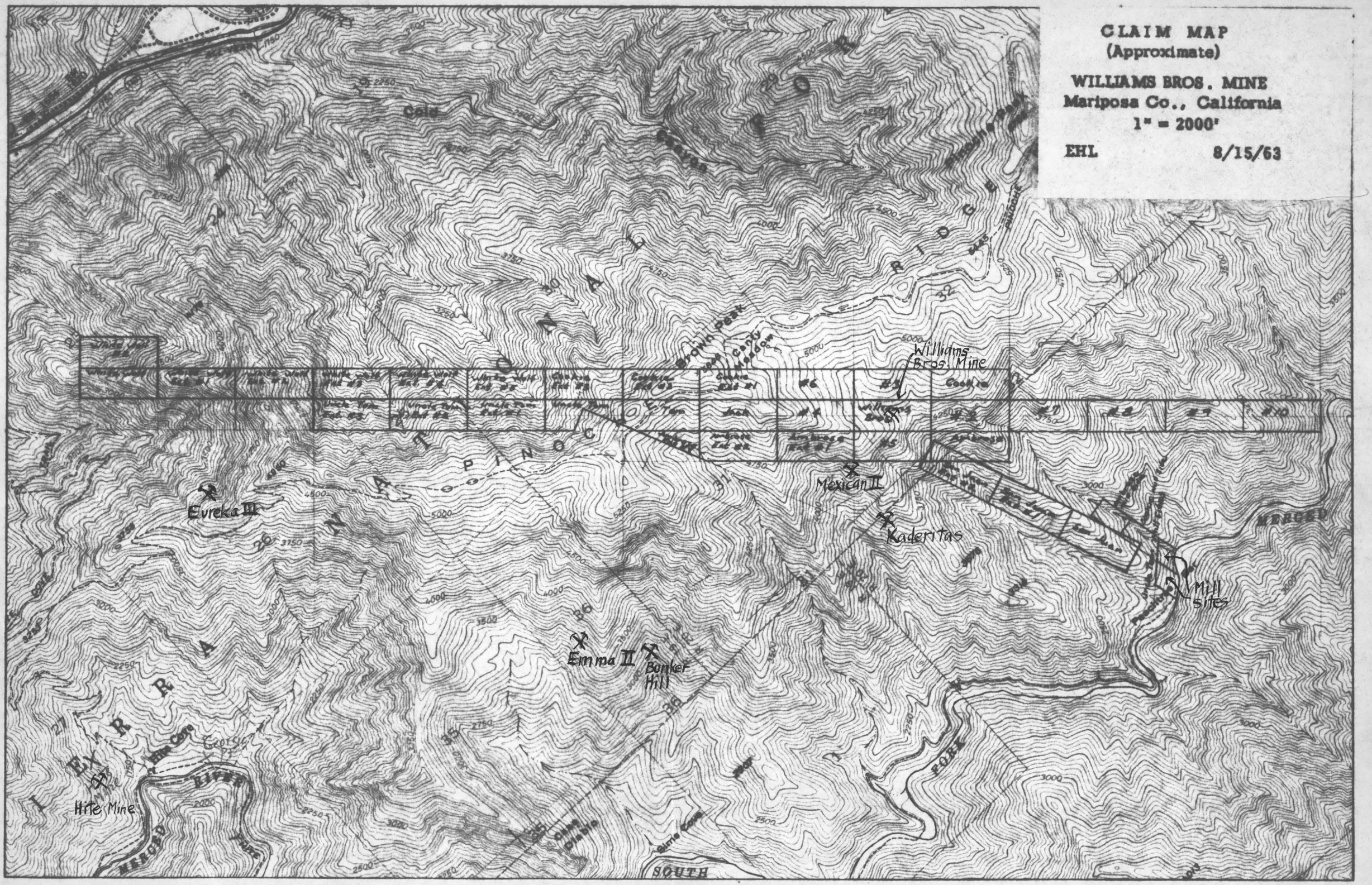


LOWER LEVEL

CLAIM MAP
(Approximate)

WILLIAMS BROS. MINE
Mariposa Co., California
1" = 2000'

EHL **8/15/63**



CLAIM MAP

REPORT ON MINING PROPERTY OF THE GOLDEN EAGLE MINING CORPORATION, MARIPOSA COUNTY, CALIFORNIA

Edward Wisser

August 23, 1963

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ILLUSTRATIONS

(In pocket at end of report)

~~Plan of Surfad~~
Claim Map
Plan of Surface Geology
" " Upper Level
" " Middle Level
" " Lower Level

} Double Space

REPORT ON MINING PROPERTY OF GOLDEN EAGLE MINING CORPORATION
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The attitude of the Calaveras formations at the mine conforms with its attitude throughout Mariposa County, namely, a northwest strike and steep dips.

Mineralization: The principal vein on the property, from which all the production has come, is exposed only in the area of the Upper and Middle levels (see surface plan, and plans of these levels.

The vein strikes N50°-60°W and dips northeast at angles from 27° to 49°. It varies in thickness from 2 to 6 feet, except near the face of the Upper level, where it seems to break up into small stringers. However, straight doen the dip from here, in the face of the Middle level, the vein is strong and about 2 feet wide. The vein strikes parallel with the bedding of the slate, and dips in the same direction (northeast) but less steeply. At the face of the Upper level the slaty cleavage turnsover and dips southwest, probably owing to a local sharp fold; this may accounnt for the splitting up of the vein, probably a very local feature. It is also possible that the Upper Level drift has turned too far westward and left the vein.

The vein shows a marked tendency to follow contacts between slate and granodiorite sills. As the surface map shows, the vein bear the portals of the Upper and Middle levsl follows the hanging wall of the granodiorite sill between slate and quartzite mentioned above. The vein follows this contact for 100 feet in the Upper level, before veering off into the slate. In the Middle level the vein soon leaves this contact, but toward the face it follows the footwall of a narrow granodiorite sill.

The vein matter consists of milky quartz and commonly shows the "ribbon structure" characteristic of productive veins throughout the California gold belt. The photograph of the Original vein of the Clearinghouse mine(4.5 miles NW of the Williams Brothers mine)shown on page 87 of the California Journal of Mines and Geology, January-April, 1957, gives an excellent idea of the appearance of the Williams Borothers vein.

The vein carries sulfides, chiefly pyrite and arsenopyrite, with minor sphelarite and galena. Acording to the California Journal of Mines & Geology (op.cit. p.185, the gold is associated with the pyrite.

APPRAISAL OF THE WILLIAMS BROTHERS MINE

NO ore is exposed at present, according to Mr. Earl Williams, and therefore I took no samples. However, the vein is exposed for only 60 feet in the Middle level, and probably for not over 100 feet in the Upper level. It was mentioned under "History" that there was probably considerable stoping from the upper levels in early days. This area would be up the hill from, and west of, the Upper level. (Owing to the topography combined with the flat dip of the vein, the outcrop here trends nearly west).

The mine lies in a well mineralized area. Neighboring mines and prospects are shown on the Claim Map. ~~The Kaderi~~ The following data are taken from the California Journal of Mines & Geology (op.cit.)

The Kaderitas vein, less than half a mile southwest of the Williams Borthers mine, strikes NW and dips NE like the Williams Brothers vein; although development is limited, there was probably a small production. (P.272).

At the Mexican II mine, adjoiningthe Williams Brothers property on the southwest, two parallel veins strike northwest and dip northeast. The ore was high-grade but pockety. (P.284). Development was limited.

There are two veins striking nothwest and dipping northeast at the Emma I mine. Ore shoots were small but commonly rich. Development

is scanty. (P.257). The Emma I lies 1.5 miles west of the Williams Brothers mine.

The Bunker Hill mine, 1.25 mileswest of the Williams Brothers mine, had one of the first quartz mills in the State.(P.246).

Much of the ore mined at the Eureka III mine, 2,5 miles northwest of the Williams Brothers mine, between 1868 and 1880, ran between $70 and $175 per ton at the present price of gold.(P.258).

The Hite mine, 3.2 miles west-northwest of the Williams Brothers mine, had a production of $3,000,000 at the old price of gold, or over $5,000,000 at the new price.

Geologic conditions at the Hite mine resemble those at the Williams Brothers mine: the country rock includes slate, quartzite, and small dikes and sills of granitic rock; the bedding and schistosity strike N 50°W and dip 75°-80° northeast. The vein strikes N50° to N70° ~~northwest, and dips~~ and dips 75° to 80° northeast. The dip is steeper than that at the Williams Brothers mine, based on present exposures, but the California Journal of Mines & Geology states that the dip of the Williams Brothers vein is in places nearly vertical (p.185).

A large percentage of the ore mined prior to 1879 (i.e. the bulk of the production) averaged $70 per ton at the present price of gold. In 1912 the mine produced a small tonnage of ore averaging $122 at the present gold price. (Pp .108-112).

The Clearinghouse mine, 415 miles northwest of the Williams Brothers mine, and almost on the prlongation of a line drawn between that mine and the Hite, produced over $3,350,000 at the ~~old~~ present price of gold, ~~or nearly $5,700,00 at the new.~~ The geology of the Clearinghouse mine is of interest with respect to the Williams Brothers mine. One of thetwo productive veins follows the hanging wall of a thick granitic sill and Calaveras metasediments.

In summary, the Williams Brothers vein is of the productive type; it has produced ore; the geology of the area resembles that of nearby productive mines; the vein is fairly strong structurally.

It is true that under present economic conditions gold ore must be high-grade to yield a profit. The cut-off grade for a small mine is probably $20 per ton or more. Several of the nearby mines have produced ore yielding $70 per ton or more at the present gold price; a good profit could be made on such ore, even today.

I consider the Williams Brothers mine an attractive speculative venture, without taking into consideration the possible value of the 33 outlying claims, located in a well mineralized and only partly explored area.

RECOMMENDATIONS FOR EXPLORATION

The probability of early stoping on the Earl Williams vein at upper levels has been mentioned under "History". Surficial stopes should lie up the hill from, and west of, the Upper level, as suggested by the projected outcrop on the surface plan. Search should be made for evidence of this stoping. but even if no evidence is found the vein looks promising enough in the face of the Middle level to warrant further drifting northwestward.

Recommendation (1): On the Middle level, drive on the vein northwestward for 500 feet. If the vein peters out or looks very discouraging within this distance, the work should be stopped.

In view of the control over the vein by granodiorite-slate contacts, the major such contact, shown in the eastern part of the surface plan, arouses interest. In the area of the Lower level, this contact must dip eastward at less than 45°, because the face of the northeast

crosscut is still in slate although well east of the contact on the surface. A flat east dip of the contact would conform to that of the vein; if the vein should reach the contact it might follow it and possibly strengthen.

Referring to the plan of the Middle Level, it is not known whether the slip or fault dipping 55° east, exposed at the portal, is itself the vein or whether it faults the vein. If it is a fault, displacement is probably small. If the vein coincides with the supposed fault, it is not heading for the contact; but if this slip is in fact a fault, the vein might lie about in the position suggested on the surface plan.

Recommendation (2): Dig a trench to bedrock, about as shown on the surface plan, preferably with a small power shovel rather than a bulldozer, which tends to smear out the evidence. If the vein is found, about as shown, follow it by trenching up to and along the contact.

The same trench will furnish information on the vein if it coincides with the possible fault.

The Lower level exposes, toward its northeast face, quartz stringers carrying pyrite and arsenopyrite (see plan of that level). The granodiorite contact cannot be more than a few feet northeast of the face.

Recommendation (3): Continue northeast crosscut, Lower level, 20 feet(?) to granodiorite contact.

ESTIMATED COST OF PROPOSED EXPLORATION

Equipment Needed: The eqipment on hand at the mine is listed in the Appendix. It includes a compressor capable of running 3 small drills, 3 mine cars etc. Rails are lacking. About 1100 linear feet of 12# rails would be required. Used rails would cost about $350.

There is some compressed-air pipe on hand, but to be safe, I estimate a need for 550 ft. of 2½" black iron pipe (new) at $1 per foot, or $550.

Artificial ventilation will probably be needed for the 500 ft. drift. A used mine fan (10", gas engine drive) might be purchased for $300 while 500 ft. of 10" galvanized sheet metal pipe would cost about $750.

Summary of Exploration Costs:

Minerail etc.	$500
Compressed-air pipe	550
Mine fan	300
Vent pipe	750
Recommendation (1), 500' @ $35	17,500
" (2), trenching...	500
" (3), 20' @ $35..1	700
Contingencies..1	1,000
	$31,800

GENERAL RECOMMENDATIONS FOR EXPLORATION

An accurate topographic map should be made of the mine area, and the surface geology mapped in detail, with special emphasis on an attempt to follow the vein outcrop up the hill from the Upper level, as suggested on the surface map, and on a study of the main granodiorite-slate contect to detect any mineralization along it.

The 33 outlying claims should be surveyed, at least roughly, and any mineralizee showings on them sampled and explored by trenching.

I am unable to estimate the cost of the above recommendations, ~~but feel that it might bring~~ because it would depend on whether or not the outlying claims contain promising showings, and the amount of work done in exploring them.

POSSIBLE PRODUCTION PHASE

It cannot be said that the exploration work recommended, which might total $35,000 of $40,000, would definitely prove or disprove the property; but if results prove entirely disappointing I would recommend

no further work because the odds against finding a mine would seem too great. But the property deserves the work recommended in view of its past production, situation in a well mineralized area, and especially because of the good record of surrounding mines in yielding high-grade ore capable of producing a profit under present economic conditions.

DEVELOPMENT AND PRODUCTION STAGE

The object of exploration is to find ore bodies; when found these must be delimited and prepared for stoping; this is mine development. A proper mill must be designed and built, and arrangements made to deliver the ore from mine to mill; the mine is then ready for production.

It is far too early to discuss this stage: not knowing the size, shape, and location of the ore bodies, if any, neither the cost of development nor that of mining can be estimated. Suffice it to say that if ~~a mine is found~~ sufficient ore is found to revive the Williams Brothers mine, the new mine, like the old, will probably be a small one, i.e. capable of producing only a moderate daily tonnage of ore. The correct mining procedure will probably be to keep the grade of ore high at the expense of tonnage. ~~This would call~~ The mill, using flotation, would probably be designed to treat about 35 tons of ore daily. For reasons just given, no estimate of the cost of the development and final equipment stage is attempted.

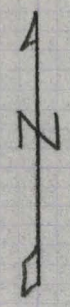
Garden Valley, California
August 23, 1963

Edward Wisser
Mining Geologist

BY DATE SUBJECT Upper Level SHEET NO. 1 OF 1

CHKD. BY EHL DATE 8/15/63 Williams Bros. Mine JOB NO.

Mariposa County, California Scale: 1" = 50'

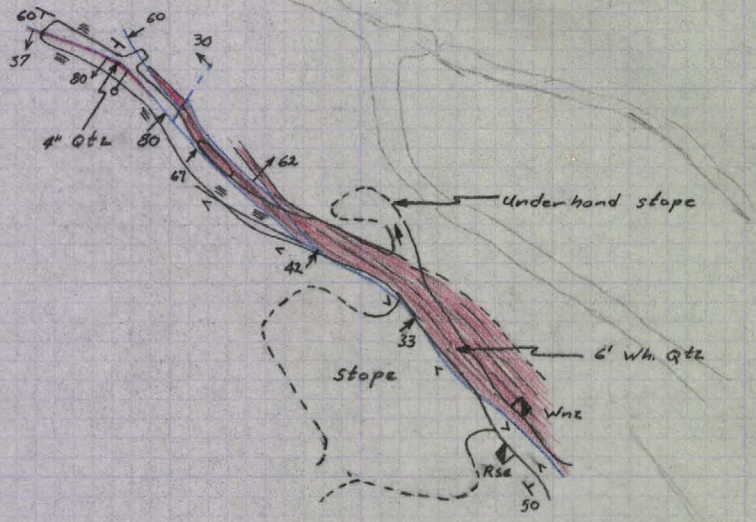


Legend

62 Vein

23 Wall, slip, fault

53 Attitude of slate



155

BY EHL DATE 8/15/63 SUBJECT Lower Level

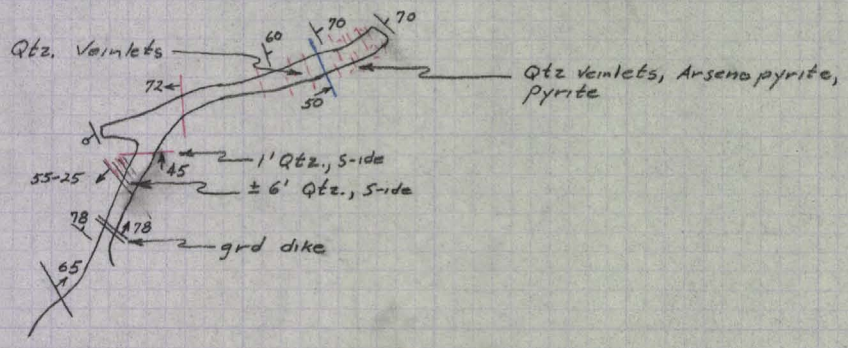
CHKD. BY DATE

Williams Bros. Mine
Mariposa County, California

SHEET NO. 1 OF 1

JOB NO.

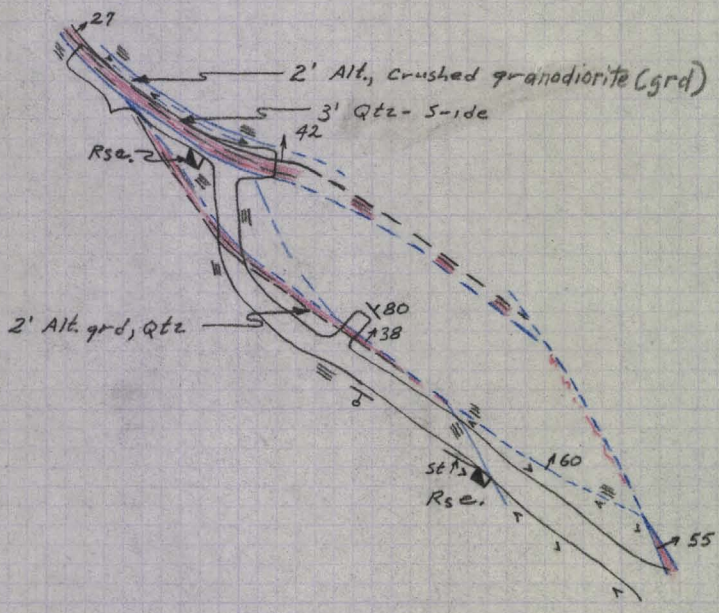
Scale: 1" = 50'



BY EHL DATE 8/15/63 SUBJECT Middle Level SHEET NO. 1 OF 1

CHKD. BY DATE Williams Bros. Mine JOB NO.

Mariposa County, California Scale: 1" = 50'



ORIGINAL MINE

GOLD STAR MINE

HITE MINE

sheets measuring about 16½ by 20 inches. Under the general plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, they represent areas of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, and miles. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale $\frac{1}{62,500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 similar units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys for the United States proper and the resulting maps have for many years been divided into three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swamp areas—are made with sufficient accuracy to be used in the publication of maps on a scale of $\frac{1}{31,680}$ (1 inch = one-half mile), with a contour interval of 1, 5, or 10 feet.

2. Surveys of areas in which there are problems of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient accuracy to be used in the publication of maps on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile), with a contour interval of 10 to 25 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, are made with sufficient accuracy to be used in the publication of maps on a scale of $\frac{1}{125,000}$ (1 inch = nearly 2 miles), with a contour interval of 25 to 100 feet.

A topographic survey of Alaska has been in progress since 1898, and nearly 43 per cent of its area has now been mapped. About 10 per cent of the Territory has been covered by reconnaissance maps on a scale of $\frac{1}{625,000}$, or about 10 miles to an inch. Most of the remaining area surveyed in Alaska has been mapped on a scale of $\frac{1}{250,000}$, but about 4,000 square miles has been mapped on a scale of $\frac{1}{62,500}$ or larger.

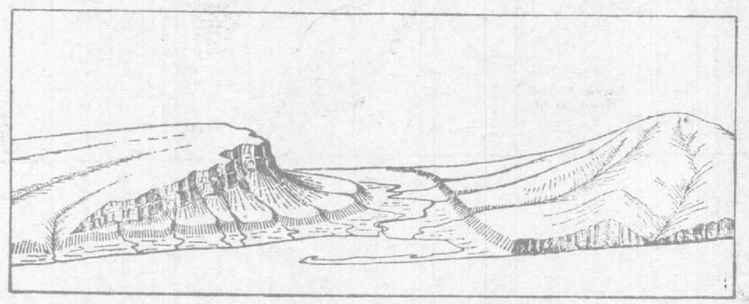
The Hawaiian Islands, with the exception of the small islands at the western end of the group, have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62,500}$.

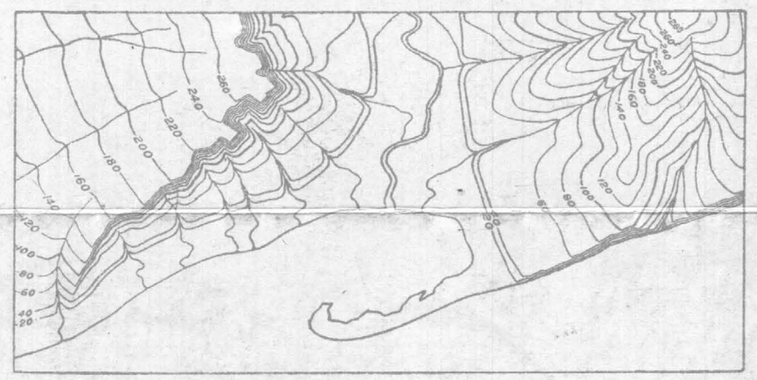
The features shown on these maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture

streams and canals by single blue lines and the larger streams, the lakes, and the sea by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on some maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The line of the seacoast itself is a contour, the datum or zero of altitude being mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. Successive contour lines that are far apart on the map indicate a gentle slope; lines that are close together indicate a steep slope; and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.





The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly inclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently slop-

sketch, by contour lines.

The contour interval, or the vertical distance in feet betwee one contour and the next, is stated at the bottom of each map This interval differs according to the topography of the are mapped: in a flat country it may be as small as 1 foot; in mountainous region it may be as great as 250 feet. Certai contour lines, every fourth or fifth one, are made heavier tha the others and are accompanied by figures showing altitude The heights of many points—such as road corners, summits surfaces of lakes, and bench marks—are also given on the ma in figures, which show altitudes to the nearest foot only. Mor exact altitudes—those of bench marks—as well as the geodeti coordinates of triangulation stations, are published in bulletin issued by the Geological Survey.

Lettering and the works of man are shown in black. Bound aries, such as those of a State, county, city, land grant, town ship, or reservation, are shown by continuous or broken line of different kinds and weights. Good motor or public road are shown by fine double lines, poor motor or private roads b dashed double lines, trails by dashed single lines.

Each quadrangle is designated by the name of a city, town or prominent natural feature within it, and on the margins o the map are printed the names of adjoining quadrangles o which maps have been published. Over 3,300 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

The topographic map is the base on which the geology and mineral resources of a quadrangle are represented, and the maps showing these features are bound together with a descriptive text to form a folio of the Geologic Atlas of the United States. More than 220 folios have been published.

Index maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 per cent is allowed on an order for maps amounting to $5 or more at the retail price. The geologic folios are sold for 25 cents or more each, the price depending on the size of the folio. A circular describing the folios will be sent on request.

Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

September, 1928.

STANDARD SYMBOLS

CULTURE
(printed in black)

City or village
Roads and buildings
Ruins
Cliff dwelling
Good motor road
Poor motor or private road
Trail
Railroads
Electric railroad
Tunnel
Power-transmission line
Wharves
Breakwater and jetties
Bridge
Drawbridges
Ferry *(point upstream)*
Ford
Dam
Dam with lock
Canal lock *(point upstream)*
U.S. township and section lines and recovered corners
State line
County line
Civil Township or district line
Reservation line
Land grant line
City, village, or borough line
Small park or cemetery line
Triangulation point or transit traverse station
U.S. mineral monument
Boundary monument
Bench mark *(supplementary bench mark shown by cross and black figures without lettering)*
BM × 1232
Cemeteries
CEM
Church, School *(distinguished on recent maps)*
Coke ovens
Tanks and oil reservoirs
Oil and gas wells
Mine or quarry
Prospect
Shaft
Mine tunnel
Mine tunnel *(showing direction)*
Lighthouse or beacon
L.S.S.
C.G.S.
Coast Guard station

RELIEF
(printed in brown)

5463
Elevation above mean sea level *(in black on recent maps)*
Contours *(Contours showing depth of water printed in blue)*
Depression contours
Levee
Wash
Cliffs
Mine dumps
Tailings or
Sand and

WATER
(printed in blue)

Streams
Falls and rapids
Intermittent streams and ditches
Canals or ditches
Aqueducts or waterpipes
Aqueduct tunnels
Lake or pond
Unsurveyed stream and abandoned canal
Intermittent

Surface Geology

Williams Bros Mine
Mariposa Co. Calif
1" = 50'
E.H.L. 8/15/63

Rec ① Drive 500' on Vein

Probable position of outcrop

4550

4500

4450

4400

4350

4300

4450 Upper level

4400 Middle level

4296 Lower level

Discovery Pom. Williams Bros. Claim

Vein ?

Rec ② Trench

Rec. ③ Extend Crosscut 20' ±

Mill

55

33

65

Legend

- granodiorite
- slate
- quartzite
- vein
- fault

SURFACE GEOLOGY

Surface Geology

Williams Bros Mine
Mariposa Co. Calif
1" = 50'
E.M.L. 8/15/63