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June 25, 1943

Mr. G.H.Grant
435 Bryant St.,
San Francisco, Calif.

Dear Sir:

Pursuant to your request and to that of your partners, I have examined the Black Oak quicksilver property, Sonoma County, California, and submit herewith report on the results of that examination.

Yours very truly,

Edward Wisser

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In Pocket.

Geologic Plan of Surface and of Underground Workings, scale 1"= 40 ft.

REPORT ON THE BLACK OAK QUICKSILVER PROSPECT
SONOMA COUNTY, CALIFORNIA.

INTRODUCTION.

The following report is based on a visit to the property June 12, 1943, in company with Ralph Thompson of Cloverdale, who discovered it, and C.H.Grant, 435 Bryant St., San Francisco. Messrs. Thompson andGrant each hold a third interest, the owner of the remaining third being Burdette V. Baird, 189 Lunado Way, San Francisco.

LOCATION. TOPOGRAPHY. HOLDINGS. WORKING CONDITIONS.

The Black Oak quicksilver prospect lies about 10 miles air line nearly due east from Cloverdale. Cloverdale is about 80 miles north of San Francisco via U.S.Highway 101. The prospect is reached from that town, the nearest purchasing center, by unimproved county road to the Cloverdale mine, 12 miles, thence 3 miles to the prospect by a road built by Mr. Thompson. This road crosses the divide between Sulphur Creek, on which the Cloverdale mine lies, and Squaw Creek, on the south slope of which the Black Oak prospect is situated. The road contains several very steep pitches as at present constructed, but the grade could be reduced at very moderate expense.

The elevation at the prospect is about 2500 ft. While the relief is strong, slopes are relatively gentle. (Photo 4).

The Black Oak holdings consist so far of but one claim, the Black Oak, unpatented,and of standard size, 1500 ft. by 600 ft. Part of this claim, and its location with respect to Public Land Surveys, is shown on the accompanying plan.

Squaw Creek valley is like a park (see photos). A number of springs furnish water for domestic use, and doubtless, with a little development, would furnish enough for a quicksilver plant. Cloverdale is an excellent purchasing center for most items, and is not far away. This district, however, probably offers no exception to the present universal shortage of mine labor.

EQUIPMENT.

Mining.- One 16 cu.ft. ball-bearing mine car; 400 ft. of 12-lb. rail. 100 ft. 2" pipe; 400 ft. 1" pipe; 100 ft. 3/4" pipe. 150 ft. air hose; 50 ft. 1" hose.

One 105 cu.ft.Gardner-Denver air compressor, portable, driven by Buda engine.

One Gardner-Denver S-55 sinker drill, with shell and bar.

Blacksmith shop complete. Drill steel etc.

Transportation.- One five-speed Ford pickup. One International 1 1/2 ton panel truck; one Chevrolet 1 1/2 ton flat bed truck.

All of the above items are new or in good condition.

Camp.- There are two excellent cabins (Photos 7 and 8) equipped with cooking ranges, running water, toilets with septic tank etc. There are 6 cots with mattresses, and a large tent, not set up.

GENERAL GEOLOGY.

Rock Formations.- The principal rocks of the area are Franciscan (Upper Jurassic) sediments- thin-bedded chert with intercalated shale; sandstone. Associated with the sandstone is a large mass of greenstone (altered volcanic rock), probably a thick sill. In the No.3 tunnel (see plan) what looks like a sill of altered diab

base is exposed. The slopes of Squaw Creek valley near the prospect bear a heavy talus mantle (Photo 3) so there may be rocks present other than those mentioned.

Structure.- The sandstone and greenstone, on the one hand, and the chert, on the other, are separated by the principal structural feature of the region, a major thrust fault, the sandstone and greenstone lying wholly above the flat surface of the fault, and the chert wholly below it. In Photo 1 the chert beds lie nearly perpendicular to the fault surface. The fault may have acted along a soft shale bed in this locality, for squeezed shale appears in several places within the fault zone. I have called the thrust surface "The Alta", the traditional quicksilver miners' name for a shaly, gougy layer beneath which many California Coast Range quicksilver ore bodies occur.

The alta is an important fault, because it separates everywhere radically different rock formations, because of the crushing along it, and because of the intense distortion of the thin-bedded chert beneath it. It strikes northwest like similar Coast Range faults. The dip as now exposed has plainly been modified byerosional creep, which would flatten or even reverse an original dip southwest into the ridge. Further, as shown below, a similar thrust fault at the Cloverdale mine has probably been crumpled by post-fault folding. The Black Oak fault near present workings lies nearly flat; but it may steepen to the southwest and dip into the ridge.

At the Cloverdale mine, 2 miles west of Black Oak and on the other side of the ridge, the crumpled thrust just mentioned has sandstone above it, chert below, as at Black Oak. This fault strikes also /

northwest, but it dips 35° northeast, into the ridge and toward the Black Oak.[1]

---

1. C.N.Schuette: Occurrence of Quicksilver Orebodies. Trans.A.I.M.E.,1931, p.427. C.P.Ross: Quicksilver Deposits of the Mayacmas and Sulphur Bank Districts. U.S.G.S. Bull.922-L, p.343,1940.

At the Socrates mine, about 8 miles air line southeast of Black Oak, a thrust fault strikes northwest and dips 45° southwest; it separates serpentine in the hanging from sandstone and shale in the foot. At the Geysers, only a mile or so southeast of Black Oak, a strong thrust fault strikes northwest and dips northeast. We are evidently dealing with a strong northwest zone of thrust faults, some of which dip southwest, others northeast.

Little can be said regarding the structure of the sediments at Black Oak. All exposures are close to the thrust fault, and the beds have been twisted and distorted by movement on that fault. Geologists of the U.S. Geological Survey told Mr. Thompson that the ridge between Squaw and Sulphur Creeks was a syncline, i.e. the general dip of the beds on the northeast side of the ridge was southwest, that of the beds on the southwest side was northeast. This statement seems probable.

Mineralization. Ore Deposits.- The Cloverdale, Buckeye and Black Oak properties lie at the northwest extremity of the Mayacmas quicksilver belt, 26 miles long and with a total production exceeding 400,000 flasks. Ore is directly associated with thrust faults at the Great Western, Socrates, Cloverdale, and by present indications at the Black Oak property. Mines near the Black Oak have had substantial production: Cloverdale, 16000 flasks; Culver-Baer (3 miles southeast), 11,000; Socrates, 4000 plus.

The mode of ore occurrence at the Cloverdale,the nearest producer,is of direct interest and is given briefly from the references cited on page 4.

The ore bodies lie under the gouge of the thrust fault. The fault surface, according to Schuette, is so crumpled that "locally almost any dip and strike may be measured." There are many dikes and bodies of diorite (diabase); ore is found near but not in contact with these. Most of the ore occurs in shattered chert and grades off from the fault hanging wall to an "assay footwall". The better ore is localized along steep fractures perpendicular to the strike of the thrust fault.

Schuette believes the marked irregularities in the fault surface resulted from post-fault folding.

BLACK OAK PROSPECT.

Workings and surface exposures are shown on the accompanying plan. Because of talus, brush and forest there were literally no exposures before Thompson started tunnelling and bulldozing. It is clear now that the course of the thrust fault is marked by a line of seeps extending far northwest of the mapped area.

Just north of No.3 Tunnel a thick lens of ledge rock panning cinnabar lies directly beneath the alta. (The ledge rock at Black Oak is mainly pure silica, white, black or iron-stained). Toward the north end of this lens, at Point 2472 is a well-defined cinnabar seam along a fracture roughly perpendicular to the plane of the alta above it. Near the south end of the ledge rock lens the brecciated zone marked "Probable Fault" is also perpendicular to the

alta surface; it pans better than the rock on either side.

Tunnel No.3 was driven before this fault was found by bulldozing; the tunnel parallels the fault without exploring it. About 50 ft. east of the tunnel face a band of black siliceous ledge rock seems to have made off from the alta above the tunnel down chert beds. This ledge rock pans. Near the face of the tunnel what looks like a diabase sill is exposed in the roof.

The lake northwest of Tunnel No.3 has no leakage and has its bottom sealed, presumably, by the alta. Since the lake bottom lies some 13 ft. lower than the alta exposed 100 ft. east of it, the alta probably dips gently southeast here, possibly at about 15°.

There are no exposures other than of greenstone above the alta between No.3 Tunnel and the area of No.1 Tunnel. The latter was driven directly beneath the alta, which must lie nearly flat here because the tunnel runs 65 ft. southwest without cutting alta. The tunnel shows spotty ore (see Thompson samples on plan) throughout its inner 30 ft. The chert here is intensely distorted, thrust-faulted by faults sympathetic to the alta above them, and fractured by steep southwest breaks perpendicular to the alta, some of which carry ledge rock lenses. The ore is associated with the southwest fractures, and in altered chert more than in ledge rock. The cinnabar is crystalline, heavy, but seldom penetrates chert fragments, forming rather in interstices between fragments, so that in general the grade depends on the degree to which the chert of shattered.

The original tunnel at the southeast end of the map is caved. The chert near its portal pans.

No. 2 Tunnel at the time of my visit was being run in talus (Photo 3) but shortly after cut a southwest steep silicified brec-

ciated zone with gouge and slickensides, on the southeast side of which ore in chert was encountered. The tunnel has been turned to follow the ore along the fracture southwest, in the hopes of finding high-grade ore at the intersection of the fracture zone with the alta.

Comparison with Cloverdale.- Notwithstanding the meagerness of Black Oak exposures, similarities to Cloverdale are striking. At both properties ore lies in shattered chert beneath a thrust fault and is controlled in part by steep fractures roughly perpendicular to the fault surface. At both properties the fault surface appears to have been deformed by later folding; if the deformation was great enough the Cloverdale and Black Oak thrusts may even be one and the same.

CONCLUSIONS.

The ore already encountered with a minumum of effective work, together with the striking similarities to Cloverdale stamp the Black Oak as an exceptionally worthy quicksilver prospect. Heavy talus and overgrowth prevented its discovery by old-timers; Thompson found it more or less by chance, in panning the stream near the original tunnel. Here is surely a prospect worth developing.

RECOMMENDATIONS.

Developing therefore is recommended; the flat thrust, however, presents a difficulty. Plainly the object of exploration is to examine the ground immediately beneath it, and especially where steep fractures abut against it from below. Were the thrust steep, and with a consistent dip in one direction, it could be explored by drifting in its footwall, thereby cutting all steep fractures

approaching it. Drifting could be done on various levels, say 50 ft. vertically apart. But with a flat thrust, or one that rolls in various directions, no drifts are possible beneath the thrust plane; exploration would become a maze of crosscuts, like a coal mine; every cross-fracture, instead of being cut on various levels near a steep fault, would have to be followed its entire length, and if the thrust should roll upwards, raises and sub-levels would be needed along the steep fracture to reach its intersection with the thrust. Such exploration is justified with a consistent coal seam, but not with erratic quicksilver ore.

There are two main hopes for the Black Oak prospect: (1) that the alta assumes a consistently steep attitude; (2) that a cross-fracture be found strong enough to make important ore well away from the alta, in case the latter stays flat or rolling. Such a fracture would be worth drifting on even where the rolling alta is well above the drift. The following exploration is based on these two notions.

Recommendation 1.- (See plan, blue crayon lines). Continue southwest drift, No.2 Tunnel, in ore along the cross-fracture. If the alta dips southwest it should be encountered by this drift. If so, drive just in footwall of alta northwest across the cross-fracture to see if it carries ore on that side; and drive southeast at least 200 ft. ,keeping the bottom of the alta in the southwest upper corner of the drift, to cut any further cross-fractures such as those in No.1 Tunnel.

If this work establishes a persistent southwest dip of the alta,it should indicate also the most favorable place to sink. Quicksilver mineralization took place at a date so recent that the

present topography was essentially then in existence. The best ore did not deposit as close to the surface as the ore now exposed at Black Oak, therefore the hope of the prospect lies in our finding some structure we can follow to depth, whether into the ridge or down. Since the alta was the major ore-control, it is that structure we must try to follow in depth. If the crosscutting and drifting of this recommendation shows we can follow the alta down, we can then lay out an incline shaft from the most favorable place in the drift.

The work may show something else, however. Ore and fracture may continue a good way into the hill, but no alta be found: the drift will stay in chert. In this case, we must raise to the alta from the southwest end of the ore, i.e. that under the most cover. Or the ore may soon give out but the fracture continue. In this case continue drift on fracture several hundred ft.- it seems to be strong enough, according to Thompson, to warrant this. At the end of the drift raise to find the alta, if it is not found on the level. If the raise discloses the alta dipping northeast, that is all to the good, because the mine, if any, lies then in the hill above the horizon of the present tunnels; no shaft will be needed to develop it.

Recommendation 2.- No.3 Tunnel, as has been mentioned, never cut the cross-fracture or breccia zone labelled Probable Fault on the plan. It has been shown (p.6) that the alta probably dips gently southwest here. The fault should be examined where it meets the alta. Hence crosscut northwest as shown on plan, through the diabase sill (probably thin) to the fault, and drive west on the fault.

Recommendation 1 has priority over 2, for it starts in ore.

These recommendations will be modified as work proceeds and new facts develop. But they are something to start on.

Cost of the Work.- This is impossible to predict now. If present ore showings fizzle out, not over $3000 might be spent; if a big mine exists, not easily found, $150,000 might be spent before bringing it into production. Whatever results of work prove to be, a sum large enough to cover reasonable contingencies of exploration should be made definitely available, in the treasury. Assume that 400 ft. of drifting and crosscutting from present tunnels discloses a situation favoring a 200 ft. shaft, and that 200 ft. of drifting and crosscutting from the shaft opens up sufficient ore to justify a plant, thus completing the exploration stage.

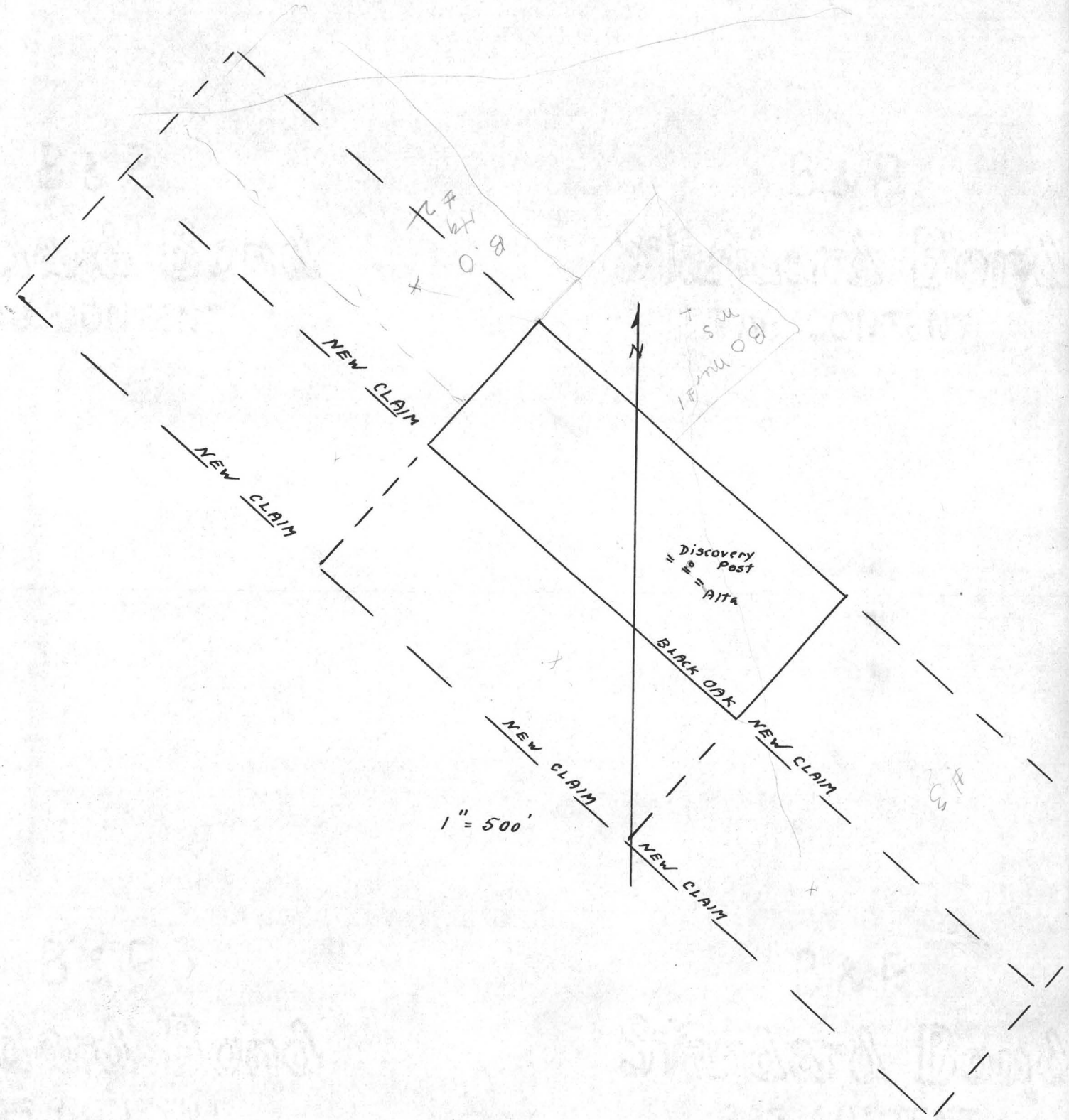
400 ft. drifting and crosscutting @ $10/ft.....	$4000
200 ft. sinking @ $30/ft.....	6000
200 ft. drifting and crosscutting @ $15/ft.	3000
Additional equipment and supplies.....	10000
Contingencies.....	7000
	$30000

As I have said, this may not be nearly enough; but as a rough guess for an initial appropriation it may suffice. If the work done justifies a furnace, an additional, possibly equal appropriation will be needed to make the mine a producer.

Additional Claims.- The Black Oak claim affords clear extralateral rights only if the alta dips southwest. If it lies flat or passes up a northeast dip into the ridge southwest of the claim, some claim to such rights might exist provided it has no other outcrop, but the seed of a lawsuit would exist. I recommend therefore staking additional claims as shown on the sketch on page 11.

San Francisco, Calif.
June 25, 1943.

Edward Wisser
Edward Wisser
Mining Geologist


NEW CLAIM
NEW CLAIM
N
Discovery
Post
Alta
BLACK OAK
NEW CLAIM
NEW CLAIM
NEW CLAIM
1" = 500'

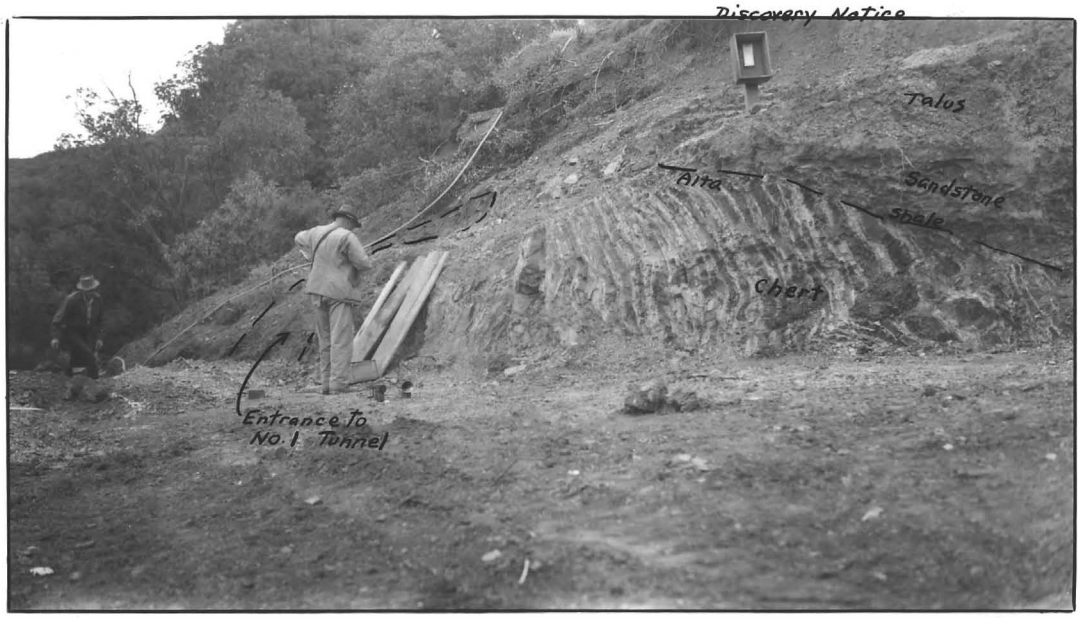


Photo 1.- Thrust fault or "alta" at No.1 Tunnel.

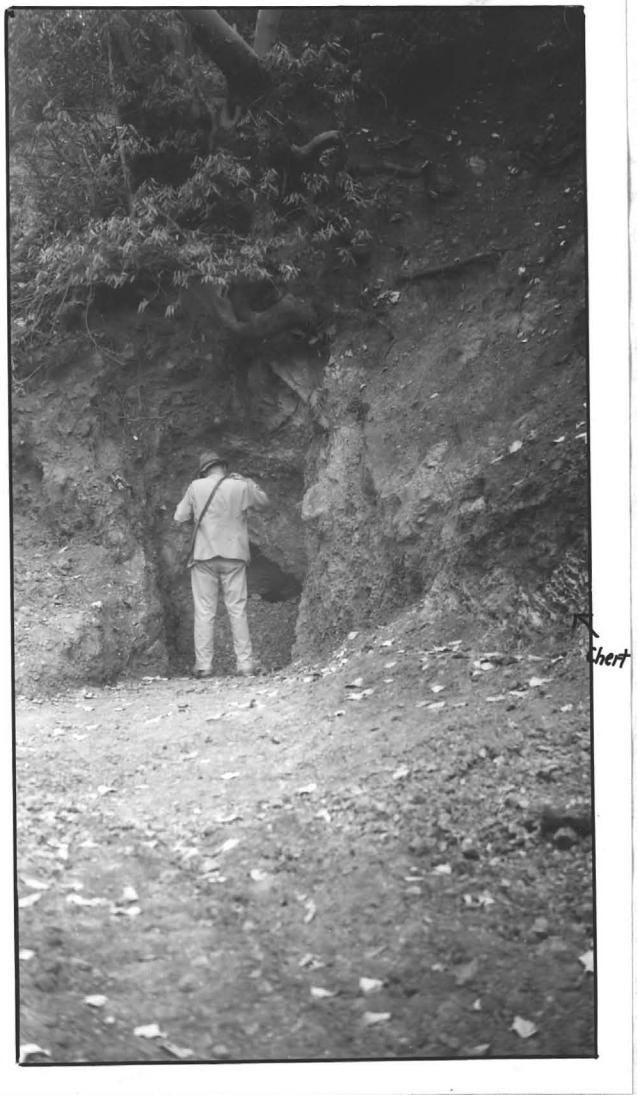


Photo 2.- Caved entrance of original tunnel, showing chert below thick talus.

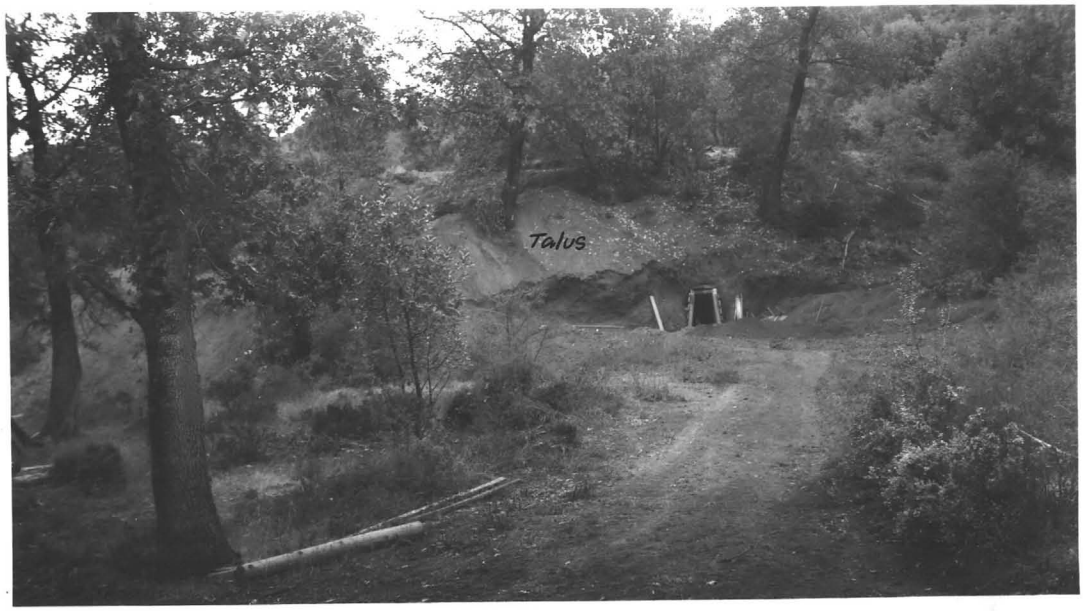


Photo 3.- No.2 Tunnel. Passed through 30 ft.of talus before reaching chert and ore.

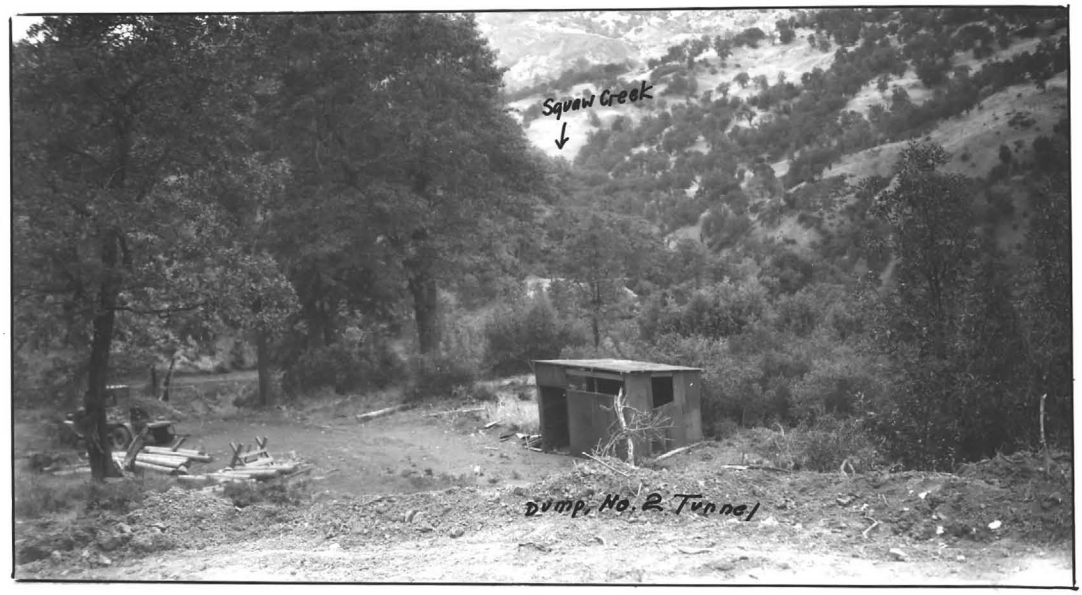


Photo 4.- Looking north from No.2 Tunnel toward Squaw Creek.

Photo 5.- Looking north toward No.3 Tunnel.

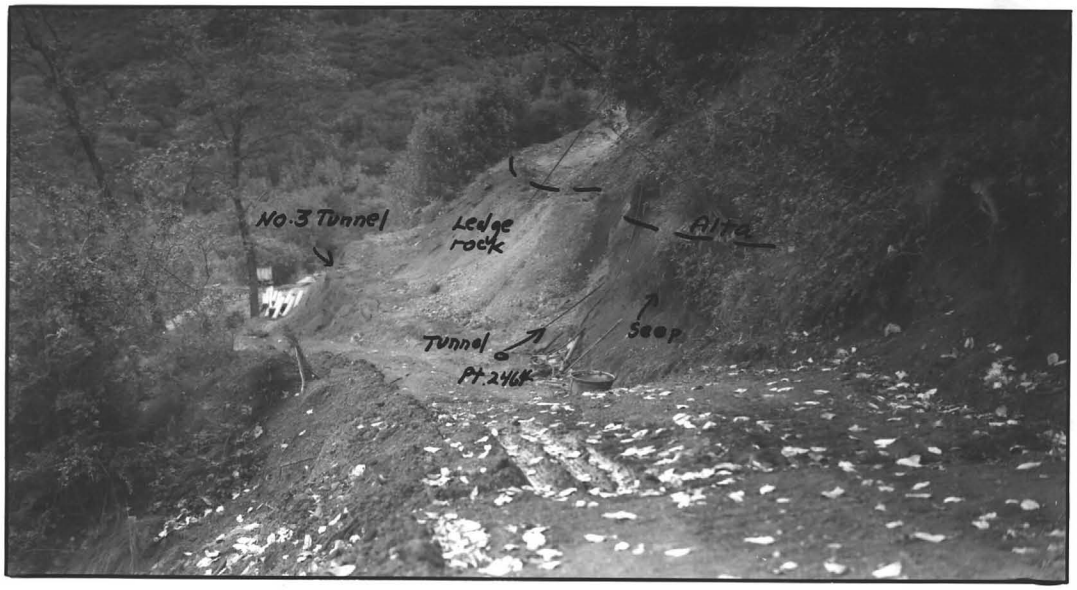


Photo 6.- Looking south along cat-road north of No.3 tunnel, showing alta, seep and ledge rock.

Photo 7.- Main living quarters.

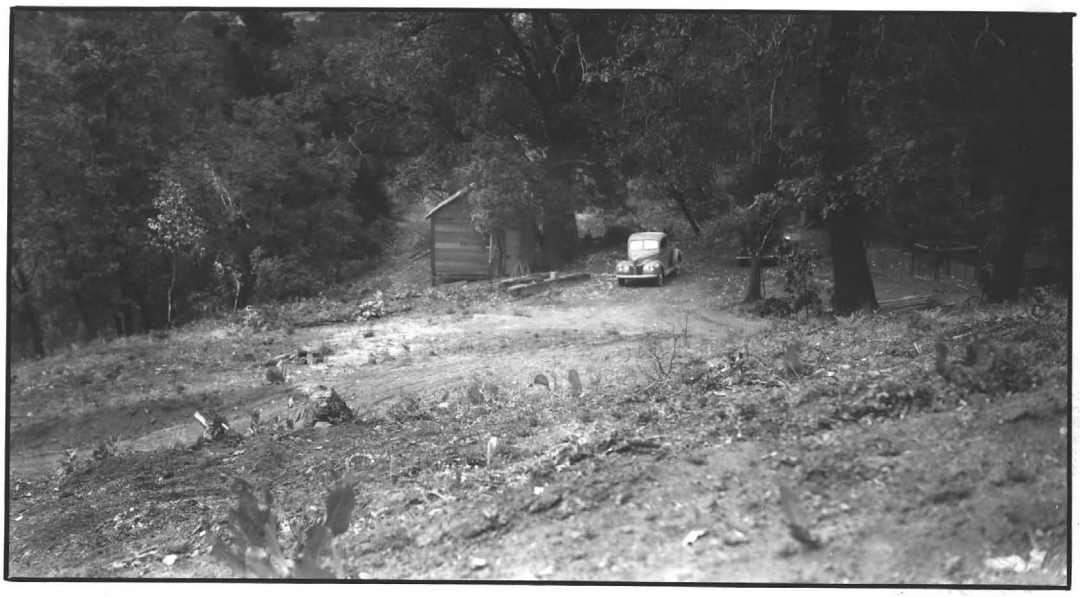


Photo 8.- Smaller dwelling.

Eleven Twenty-Nine Cowper Street
Palo Alto, California

July 31, 1943

Mr. C. H. Grant,
435 Bryant Street,
San Francisco, California.

Dear Mr. Grant:

Herewith is a progress report on the Black Oak Mercury Prospect, which brings development to date as of July 30, 1943.

Respectfully submitted,

Chas. A. Dobbel.

CC
Two copies enclosed.
CC
Mr. E. H. Wisser,
Grand Junction, Colorado.

PROGRESS REPORT ON THE BLACK OAK PROPERTY,

Sonoma County, California.

In the absence of Mr. E. H. Wisser, the writer visited the Black Oak Quicksilver Prospect on July 30th, 1943, in company of C. H. Grant. The purpose of this visit was to become familiar with the showings to date, check up on development work since the date of Mr. Wisser's last report, and obtain certain information necessary for the filing of an application for loan. The results of this visit are detailed below:

PROGRESS IN NO. 2 TUNNEL:

Since July 18th, No. 2 Tunnel advanced eastward following the Alta for a distance of 48 feet. Two small slips have been crossed. The first of these seems to have displaced the Alta slightly to the south, while the slip near the present face, dipping 52° northeastward appears to have dropped on its hanging-wall side a distance of about 30 inches, displacing the Alta northward for the width of the drift. The fractured condition of the ground between these two slips has improved to a marked degree and now appears as ground which may be very favorable to mineralization. Values so far are limited to a few colors in the pan.

Two very definite dips were taken on the Alta as noted on the accompanying sketch, showing the attitude of 34° South. This changes the position of the possible projection of the Alta on the level 50 feet below, and the corrected projection is also to be noted on the sketch map.

RECOMMENDATION ON NO. 2 TUNNEL:

The writer is in hearty accord with the recommendation of Mr. Wisser to continue this drift eastward on the Alta. It will be necessary to turn northward for a round or two at the present face, in order to stay under the Alta,

but this can be done with an easy curve, especially if slabbing is started from 5 to 10 feet back from the present face.

NO. 3 TUNNEL:

No work has been done in the No. 3 Tunnel since Mr. Wisser's visit. Recommendation No. 2 in the report of July 19th is important. The writer fully concurs that this piece of work should be done as soon as possible.

It is quite probable that the Alta is to be reached in a shorter distance than was noted on the map submitted in the report of July 19th, and the Alta may lie within 20 or 25 feet of the present face of Tunnel No. 3 as noted on the accompanying sketch.

RECOMMENDATION ON NO. 3 TUNNEL:

In order to double the value of current work in progress, it is recommended that the continuation of Tunnel No. 3 proceed concurrently with the drifting in Tunnel No. 2. This may be done by working both crews on day shift (one shift in each tunnel). The important gain in this move would be the elimination of a night shift during the present hot weather and the accomplishment of two very important objectives in the development of this prospect.

DOWNTHROWN BLOCK BETWEEN TUNNEL 2 AND TUNNEL 3:

It appears possible that the downthrown block between the First Southwest Fault and the probable fault north toward Tunnel 3 may contain an area of highly fractured material quite susceptible to mineralization. For this reason, it is important to locate the Alta as suggested by the Wisser Recommendation No. 3 as soon as practicable.

It is the writer's belief that if this section of the Alta carries a showing of quicksilver, the whole plan of sinking in the present showings may be changed. Hence, all future plans should be held in abeyance until this work is completed.

NOTES ON CLAIM LOCATIONS AND SURVEYS:

Accompanied by Ralph Thompson, the writer went over a portion of the ground northwest, northeast and southeast of the Black Oak Mercury No. 1 Claim, and later checked the neighboring ownerships on the Assessor's Plats at the County Court House. It appears highly desirable that added ground be taken up as soon as possible. A sketch map entitled "Location Map" accompanies this report and the following claims are thereon suggested as of importance in protecting the showings on this prospect:

Black Oak Mercury No. 2 -- Northwest of present claim.
Black Oak Mercury No. 3 -- Southeast of present claim.
Black Oak Mercury No. 4 -- Northeast of present claim.
Black Oak Mercury No. 1 Millsite -- Northeast of No. 4 to cover ground for future plant if necessary.

No. 2 and No. 4 can be located by using existing cuts that have been made by a bulldozer. No. 3 can be located by opening up a seep to the southeast and approximately on the continuation of the lode line of No. 1. After locating, sixty days are allowed for staking these claims and ninety days are allowed for f nishing the actual location work. Location notice alone, th refore, would hold this added ground for a period of sixty days, and in this interim a check on the present survey may be run to confirm the need of the ground in question.

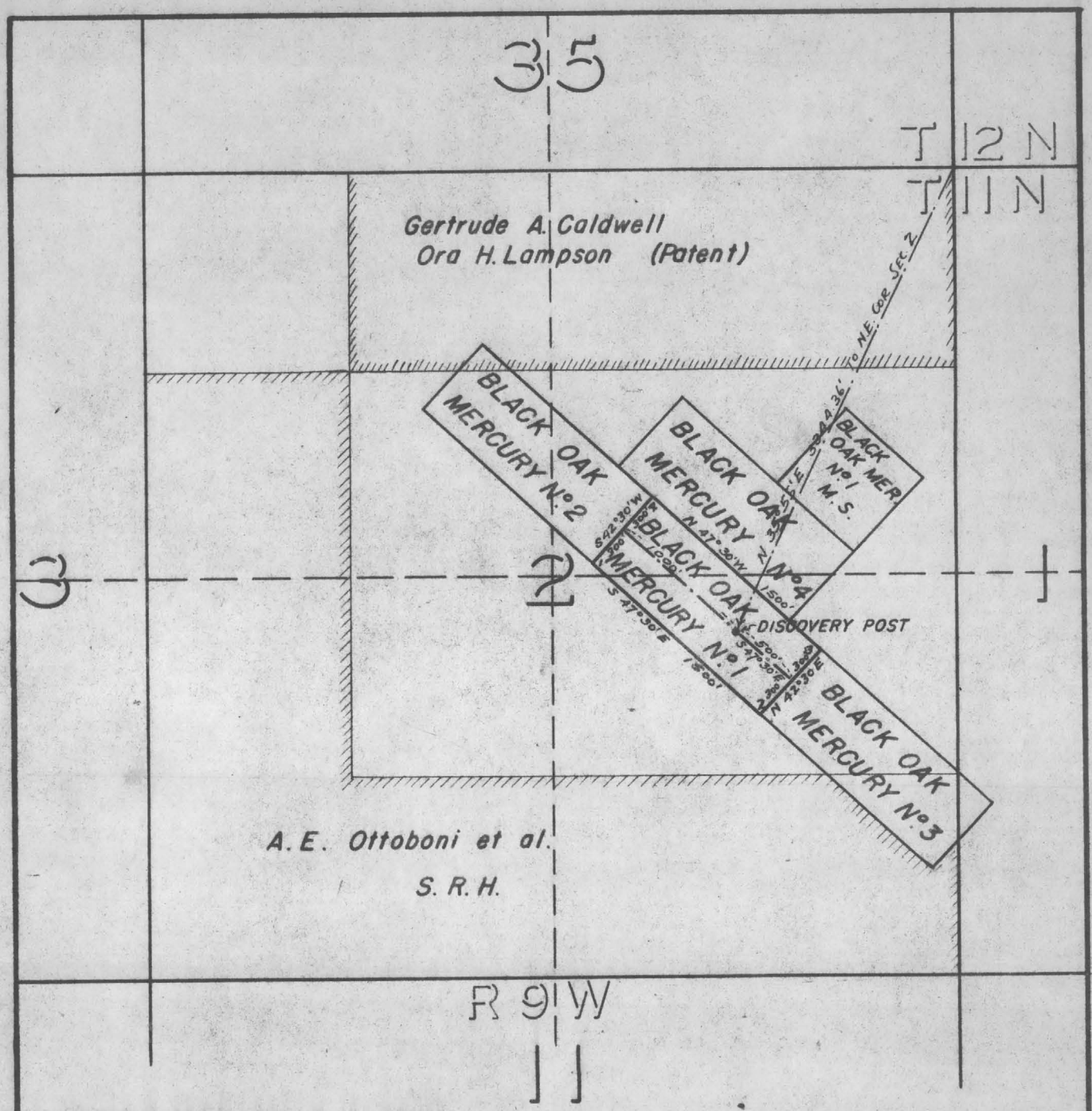
Taking up this added ground is in accord with the Wisser report of July 19th. It should be noted that corner No. 4 of the Black Oak Mercury No. 1 was not set by survey. This post is only in an approximate position and its location should be corrected. There is also an error in the ties given to the Discovery Post of Black Oak Mercury No. 1. If the tie to the Northeast corner of Section 2 is correct, the tie to the center quarter corner is in error. This item must be corrected before maps are submitted for R. F. C. approval.

R. F. C. APPLICATION FOR LOAN:

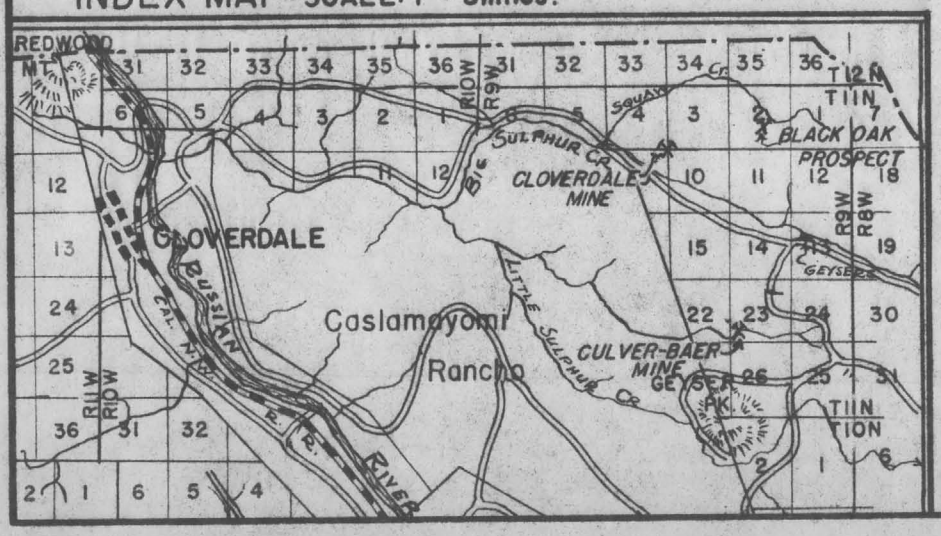
The writer is completing the R. F. C. Application for Loan, and this will be submitted under separate cover as soon as final data are complete.

Chas. A. Dobbel

Palo Alto, California,
July 31, 1943.



INDEX MAP: SCALE: 1" = 3 miles.



LOCATION MAP
BLACK OAK PROSPECT
NEAR CLOVERDALE, CALIF.
IN SEC. 2 T11N-R9W. M.D.M.
Scale: 1" = 1000'

Eleven Twenty-Nine Cowper Street
Palo Alto, California

August 23, 1943

Mr. C. H. Grant,
435 Bryent Street,
San Francisco, California.

Dear Mr. Grant:

Herewith is a progress report on the Black Oak Mercury Prospect, which brings development to date, as of August 21, 1943.

Respectfully submitted,

Chas. A. Dobbel.

CC
Two copies enclosed.
CC Mr. E. H. Wisser.

PROGRESS REPORT ON THE BLACK OAK PROPERTY

Sonoma County, California.

In Mr. E. H. Wisser's absence, the writer visited the Black Oak Quicksilver Prospect on August 20th, 1943. The purpose of this visit was to check up on the trenching which had been recommended in the Wisser Report, to check the advance in tunnels 2 and 3, and to establish definite survey tie-points on the property which can be used as reference points in laying out future prospecting and development. A summary of the progress follows:

NO. 2 TUNNEL -- Recommendation 1:

As shown on the attached sketch, No. 2 Tunnel had been turned and had advanced 27 feet in a northeast direction from the cross slip noted in the report of July 31st.

When this turn was recommended in the report referred to, it was not the writer's intention that this turned direction be followed indefinitely. The report stated: "It will be necessary to turn northward for a round or two at the present face, in order to stay under the Alta."---

The purpose of this working is to prospect eastward, under the Alta, and the drift is now too far in the footwall. It is not following the strike of the Alta, as it should, and, hence, must be turned back to a more easterly direction, as indicated on the attached sketch, to be of value as a prospect.

The advance for this period is in chert, without metal value.

NO. 3 TUNNEL -- Recommendation 2:

Track-laying is in progress in Tunnel 3 in accord with the second recommendation of the Wisser Report. To date this job has been completed to a point about eighty feet in from the mouth of the tunnel. This work is important, and

should be stressed, if possible, for, the opening of a showing in the alta at this point would add weight to the justification for the pending loan.

BLOCK BETWEEN TUNNEL 2 AND TUNNEL 3 -- Recommendation 3:

Trenching had been done at a point about 2890 North and 2670 East, to search for the Alta on the west side of the First S. W. Fault, but this work is clearly too far down the hill to fit recommendation No. 3 of the Wisser Report.

While on the property, a point further up the hill and close to the point picked by Wisser for this trenching was selected and the work was under way at the time of the writer's departure. These points are noted on the attached sketch.

SURVEYS AND MAPS:

A transit and tape traverse was run through the property, to tie in the main workings and establish definite points on the surface to facilitate future plans and work and to form the basis of sectional maps through the property to aid in the correlation of geologic data. Elevations were carried to all points and at least two points were established in the tunnels so as to bring the tunnel surveys to point from which they can be carried forward. The line through the property to what had been pointed out as the West End Center of the Black Oak No. 1 Claim proved thatthe stake so called is the Northwest corner of the claim. Results of this survey will be plotted and submitted as a base working map as soon as possible.

GENERAL NOTES:

The crew, at the time of the writer's visit, consisted of one man and the cook. It is expected that upon the final arrival of equipment this man will devote his time to hauling so not much underground progress is to be expected during the coming two weeks.

CLAIM STAKING:

The added claims, Black Oak Mercury No. 2, Black Oak Mercury No. 3, and Black Oak Mercury No. 4, as outlined on the sketch formerly submitted, were located on July 30th. This will be sufficient to hold the ground for the present until a decision can be made concerning what ground will be necessary for this operation. At the present time a former employee is prospecting in the area. So far as is known, his activity has been confined to the area above the mine and has not become a menace.

Palo Alto, California
August 21, 1943.

Chas. A. Dobbel.

July 19, 1943.

PROGRESS REPORT ON THE BLACK OAK PROPERTY,

SONOMA COUNTY, CALIF.

The writer first examined the Black Oak quicksilver prospect on June 12,1943,and described his findings in his report of June 25th. On July 18th he revisited the property in company with Mr. B.V, Baird to inspect results of further exploration in No.2 Tunnel. These results, with some new general ideas on the property, are described below.

No.2 Tunnel.- See accompanying plan. The tunnel passes through talus carrying abundant greenstone float, from the portal to a point 32 ft. inside, where a strong southwest fault was encountered. The fault dips northwest and carries 4 or 5 ft.of greenish gouge or clay on its hanging wall. Ore in shattered and twisted chert was encountered just south of the fault;it was at first supposed that the ore followed the foot wall of the fault,and so the footwall was followed for 40 ft. southwest, practically to the alta,as shown on the plan. The fault proved barren, however,so that Thompson returned to the point where ore was first found and followed this south as shown. The ore seems to follow a sharp local anticline in the chert beds; it dies out gradually toward the south. At 30 ft. south of the fault mentioned,a second southwest fault was encountered, dipping steeply southeast. About 6 ft.south of this fault,the flat-dipping alta was exposed. A round had been taken out to the east in the footwall of the alta,following Recommendation 1 of my Report of June 25. Such

was the situation on July 18.

The petering out of the ore found just south of the first southwest fault in No.2 Tunnel is disappointing; but from a more general standpoint the results of the recent exploration in that tunnel are decidedly encouraging, because the alta has been found dipping regularly, and fairly steeply, into the mountain (southwest or south). The hope that this would prove the case, and the reasons for desiring it, are expressed on pages 7 to 9 in my report of June 25.

The alta is exposed near the south face of the east fork of No. 2 Tunnel. Drive east in its footwall, as suggested in the first paragraph of Recommendation 1, page 8, Report of June 25, and as indicated on the accompanying plan.

General.- Beside finding the alta where we hoped to find it, and dipping into the hill as we had hoped, the recent work in No.2 Tunnel has advanced our knowledge of local geologic structure in a way that should help the planning of future exploration.

The first southwest fault met in No.2 tunnel is strong, and has apparently dropped the block in its hanging wall down a considerable vertical distance with respect to the block in its footwall, so that on the No.2 Tunnel level, the greenstone above the alta lies in the hanging wall of the southwest fault, while the chert below the alta lies in the footwall. The extent of this vertical displacement is suggested on the plan, where the seep at Point 2436, about 230 ft. NNE of the No.2 Tunnel portal, probably marks the position of the alta and lies some 64 ft. lower in elevation than the alta as exposed near the portal of No.1 Tunnel. The block probably dropped about 64 ft.

The second southwest fault cut in No.2 Tunnel is far less important, having dropped the alta down on the southeast side some 20 ft. as indicated on the plan.

The salient feature brought out in No.2 Tunnel is the fact that all the best showings on the property so far occur in the wedge between the first southwest fault and the alta.(See plan). This wedge enlarges with depth; I have shown on the plan where the first and second southwest faults and the alta would lie on a level 50 ft. vertically below the No.2 Tunnel. Both the alta and the first southwest fault carry heavy gouge; the inverted trough, pitching down to the southwest, made by their intersection would form an ideal trap for cinnabar solutions; this is the "line of intersection" on the plan. While present showings would suggests sinking an incline not far below, and parallel to,this line of intersection, we should go ahead with the tunnel exploration first and complete Recommendation 2 as urged above.

The additional data secured by the recent advance in No.2 tunnel, together with further general study,has indicated that the alta, and to some extent the chert below it, tends to form anticlines and synclines plunging southwest. A syncline is shown in plan by a bulge of the strike-line or outcrop outward to the northeast, an anticline, by a similar bulge southwest. Thus north of No.3 Tunnel alta and beds seem to form a syncline, south of it, an anticline. Near Tunnels 1 and 2,the beds are more intensely folded than the alta,and folded differently. At Tunnel 2,the alta seems to form a rather sharp anticline plunging southwest, while the chert beds in the footwall are folded into a sharp minor anticline plunging north;this localized the ore. The same condition prevails at the original Tunnel 1 the alta probably swings into another anticline,with a syncline between this anticline and the

one at Tunnel 2.

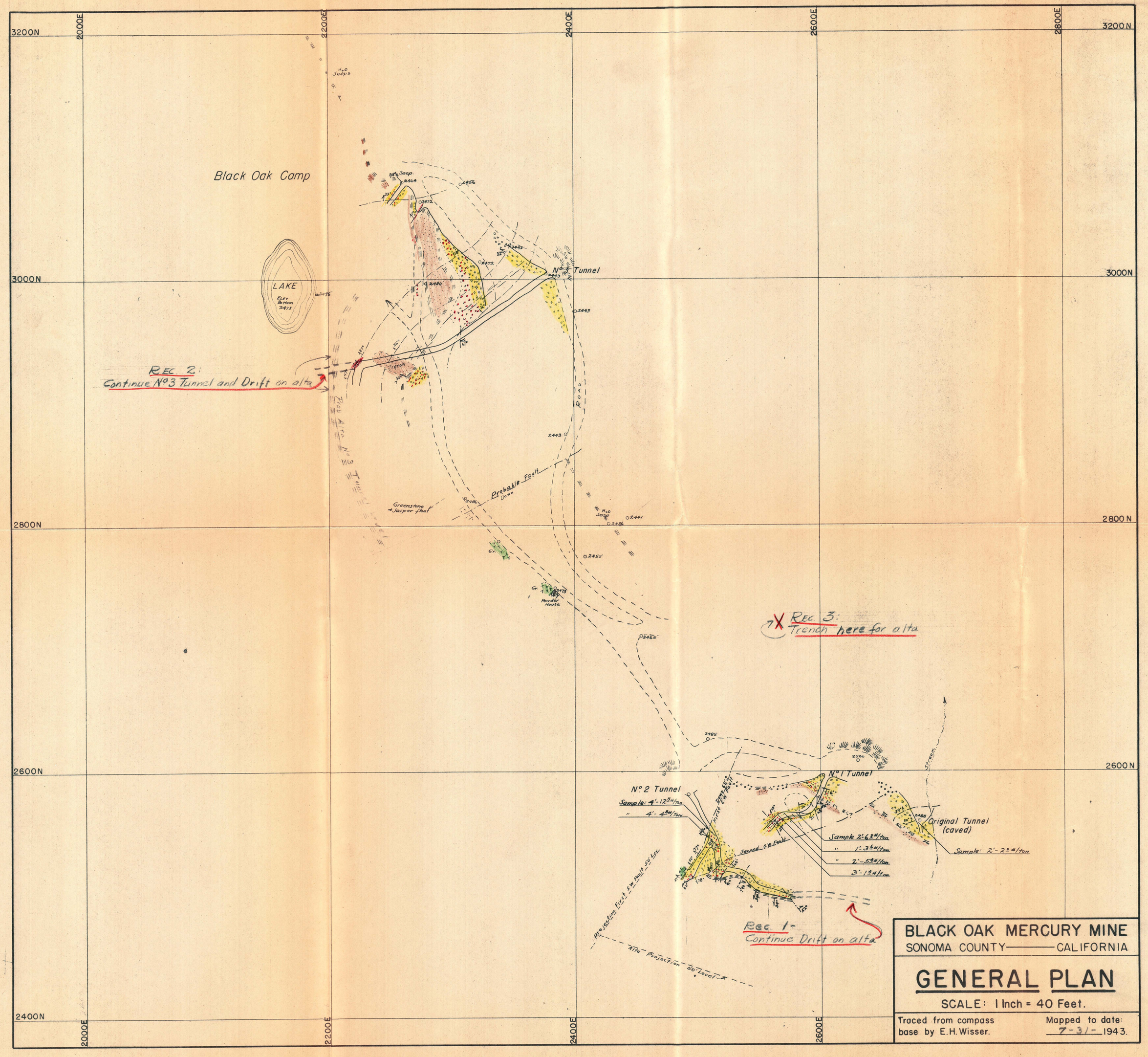
Study of the Cloverdale maps, and of other California quicksilver deposits shows that the anticlines, either formed by altas, beds, or both in combination, favor ore. The sharp anticline in Tunnel 2 obviously localized the ore there. It was pointed out in the previous report how northeast fractures favor ore; obviously the places to explore are anticlines and northeast fractures, close to ~~or~~ at the alta.

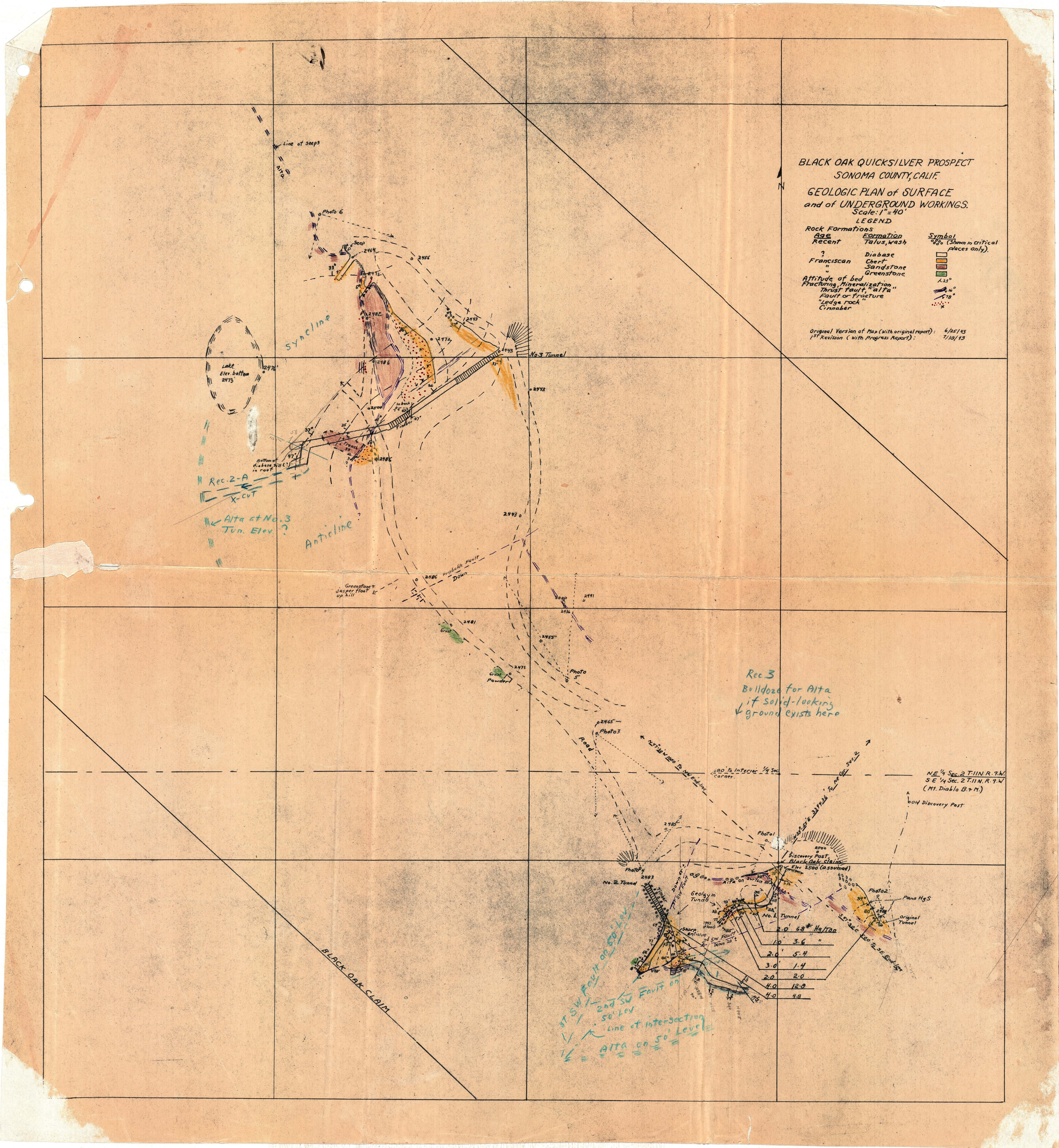
Tunnel No.3.- There is probably an anticline, both in the alta and in the chert beds, just south of the ~~alta~~ Tunnel, and the alta lies at the elevation of No.3 Tunnel probably about as shown. The two most likely locations for an incline shaft in the footwall of the alta are, (1) near Tunnel 2, and (2) near Tunnel 3. The two localities are nearly 500 ft. apart, so that it would be an expensive policy, at least at the start, to explore both by a single shaft. We shall have to decide at which place to sink, and therefore should explore both at shallow levels before deciding. Hence Recommendation 2-A (modified from 2 of previous report): Crosscut as shown on plan to alta.

Surface.- There is probably another southwest fault about 150 ft. south of No.3 Tunnel, as suggested on the plan. The block between this fault and the first southwest fault of Tunnel 2 has been dropped about 65 ft. A seep shows the position of the alta at one point in this block; we should try to have a look at the alta within this block, if solid ground instead of slide can be found (the block is mainly slumped, slid ground). Recommendation 3: If a rib of fairly solid ground exists at the point shown on the plan, trench with bulldozer in search of the alta.

Conclusion.- On completion of above recommendations we should be able to spot the location of the proposed shaft.

Edward Wisser
Mining Geologist


3200N
3000N
2800N
2600N
2400N
2000E
2200E
2400E
2600E
2800E
Black Oak Camp
LAKE
Elev Bottom 2472
H2O Seeps
No. 3 Tunnel
Trench
Rec 2:
Continue No 3 Tunnel and Drift on alta
Probable Fault
Down
Greenstone
Jasper float
Powder House
ROAD
Rec. 3:
Trench here for alta
No. 1 Tunnel
No. 2 Tunnel
Sample: 4'-12 oz/ton
" 4'-4 oz/ton
Sample 2'-6 oz/ton
" 1'-3.5 oz/ton
" 2'-5 oz/ton
3'-1 oz/ton
Original Tunnel (caved)
Sample: 2'-2 oz/ton
Second S.W. Fault
First S.W. Fault
projection First S.W. Fault 50' Lev.
Alta Projection 50' Level
Rec. 1:
Continue Drift on alta
BLACK OAK MERCURY MINE
SONOMA COUNTY——CALIFORNIA
GENERAL PLAN
SCALE: 1 Inch = 40 Feet.
Traced from compass base by E.H. Wisser.
Mapped to date: 7-31-1943.


BLACK OAK QUICKSILVER PROSPECT
SONOMA COUNTY, CALIF.
GEOLOGIC PLAN of SURFACE
and of UNDERGROUND WORKINGS.
Scale: 1" = 40'
LEGEND
Rock Formations
Age
Formation
Symbol
Recent
Talus, wash
(Shown in critical places only).
?
Diabase
Franciscan
Chert
"
Sandstone
"
Greenstone
Attitude of bed
Fracturing, Mineralization
Thrust fault, "alta"
Fault or fracture
"Ledge rock"
Cinnabar
Original Version of Map (With original report): 6/25/43
1st Revision (With Progress Report): 7/19/43
N
Line of seeps
Alta
Photo 6
Seep
Syncline
Lake
Elev. bottom
2473'
No. 3 Tunnel
Bottom of diabase sill (?) in roof
Rec. 2-A
X-cut
Alta at No. 3 Tun. Elev. ?
Anticline
Greenstone & jasper float up hill
probable fault
Down
Grass
Grass
Powder
Photo 5
Rec 3
Bulldoze for Alta if solid-looking ground exists here
Photo 3
Road
80' to Interior 1/4 Sec. Corner.
NE 1/4 Sec. 2 T.11N. R.9.W.
SE 1/4 Sec. 2 T.11N. R.9.W.
(Mt. Diablo B. & M.)
old Discovery Post
Photo 1
Discovery Post, Black Oak claim
Elev 2500' (assumed)
Alta on surface
Photo 4
No. 2 Tunnel
Geology in Tunnel
No. 1 Tunnel
Photo 2
Pans HgS
Original Tunnel
Sharp anticline
2nd SW Fault
Down 20'
2.0' 68# Hg/Ton
1.0 3.6 "
2.0 5.4
3.0 1.4
2.0 2.0
4.0 12.8
4.0 4.8
1st SW Fault on 50' Lev
2nd SW Fault on 50' Lev
Line of intersection
Alta on 50' Level
BLACK OAK CLAIM