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B & B QUICKSILVER MINE

Project 407

Esmeralda County, Nevada

Department of the Interior

Bureau of Mines

January 6, 1942

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Report by
Ellsworth Y. Dougherty
Mining Engineer

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INTRODUCTION AND SUMMARY

Field work on this property extended from November 26 to December 20, 1941. During this time the property was mapped and sampled. Office work occupied the period from December 21 to the date of this report. Surface topographic and geologic surveying was by Edger H. Bailey of the U. S. Geological Survey, with the assistance of U. S. Bureau of Mines employees. Underground workings also were surveyed by Mr. Bailey. The maps prepared from these surveys were used for plotting samples. Additional detailed assay maps have been prepared by the writer's assistants, mainly by Charles W. Yetter. Mr. Yetter also gave valuable assistance as chief sampler and in computations.

To estimate ore tonnages and potentialities, various plans and sections have been prepared. These plans and sections are mainly the work of Mr. Bailey. However, the writer is responsible for the calculations, interpretations, and conclusions, based upon these maps that are included in this present report.

The original tracings of most of the maps listed under LIST OF MAPS accompany Mr. Bailey's report to the U. S. Geological Survey. These maps also form an essential part of this present report. Original tracings of Figures 9 and 10, and of Figure 11 on detail paper, accompany this report and are being sent to the Bureau of Mines Tucson Office under separate cover. In addition, there are enclosed with Mr. Bailey's report one white print each of Figures 3 and 4 with notations by me upon them, and a white print of the Glory holes showing average

grade of various ore areas.

Because assays are incomplete, it is not possible to present final figures on grade in this report. The arithmetical average of 313 channel samples taken in the Glory Holes, received up to and including January 6, is 1.73 lbs. Hg. per ton. It is probable that the final grade figure of "reasonably assured ore" will be between 1-1/4 and 1-3/4 lbs. Hg. per ton.

Tonnage estimates are as follows:

Reasonably assured ore	110,000
Probable and possible ore combined. . . .	420,000
Total	530,000

Exploration is necessary in order to obtain data for calculating the grade of probable and possible ore, and to determine its tonnage, degree of continuity and extent.

Some suggestions for furhter exploration of the property are made. Vertical or steeply inclined shallow drill holes, or shafts, to intersect the flatly dipping shallow orebody in the area surrounding the glory holes are recommended.

The report summarizes the sampling and also says something about ore occurrence, mining methods, factors affecting treatment, plant and equipment, and other subjects noted in the Table of Contents.

PROPERTY

According to a legal notice posted on the property, the B & B Quick Company, Bankrupt No. 475, Edwin S. Giles, Trustee, is the owner of this property, and the Nevada Engineering Corporation, assignee of the Cinnoro Mines, Inc., holds a lease on the property. According to verbal information from Mr. Giles, T. Niceley, now residing in Tonopah, Nevada, has an option to purchase the property, obtained by agreement with the Nevada Engineering Corporation.

According to the same legal notice, the property consists of six claims, totaling 120 acres. The claims are designated as Valley View, Valley View Numbers 1 - 2 - 3 - 4 - 5, Survey Surface No. 4698, situated in the Oneota Mining District, Esmeralda County, Nevada.

Map No. 2, accompanying Mr. Bailey's report, shows the boundaries of the claims and of the property.

LOCATION AND ACCESSIBILITY

The Mount Diablo Meridian is about 500 feet north of the property. A prominent landmark in the region is Boundary Peak, which according to automobile road maps of Nevada, has an altitude of 13,145 feet and is the highest point in Nevada. As near as can be judged from available maps, this mountain peak is about 6-1/2 miles airline WSW from the property. The approximate location of the property is known by a red circle on the road map accompanying this report.

The town of Mina, which is on the railroad, and on Highway 95, is the most satisfactory point for mail, telegrams, express, freight and local supplies.

Access to the property is by dirt roads leaving paved Highway 6

either 6 miles west of Coaldale or at Basalt. From Highway 6 the route starting at Basalt and running in a general southerly direction is a shorter but rougher and less safe route for automobile travel than the alternative route. The latter route, therefore, is used commonly. Starting at Mina, travel data is as follows:

Route	Speedometer Mileage	Altimeter Readings-Ft.	Remarks
From Mina south over paved Highway 95 to intersection with paved Highway 6	30	Mina-4500	Excellent highway
West to intersection of Highway 6 and Fish Lake Valley Road	6	4500	Excellent highway
General south direction to intersection of Fish Lake Road and dirt road running west toward White Mts. (This intersection in near a state highway station.)	16	5100	Good dirt road
General west to northwest direction over dirt road to Red Rock and Container Mines (so marked)	8	7100	Gradual climb over rough road
General northwest to north direction to B & B Mine	4.7	8050	Generally rough, narrow, and winding road with a few steep, and many minor pitches
Total approximately	64.7		

CLIMATE AND PHYSICAL FEATURES

The summer climate is said to be dry usually and pleasant, with sunny days and cool nights. The winter climate is moderately cold with considerable snowfall at times. Compared to the higher altitudes to the

west, the snow precipitation is said to be relatively light.

There is a scattered growth of small trees, mainly pinion pines. Timber is unsuitable for mine or construction purposes, though good for firewood.

The principal streams in the region flow in a general easterly direction from the high White Mountains to Fish Lake Valley. Melting snow or ground water from melted snow furnish much of the stream water. During late November through middle December of this year, a small stream known as Trail Canyon Creek, about 1-1/4 miles airline south of the B & B Mine, maintained a steady flow.

As can be judged partly by Map No. 2, the relief in the vicinity of the mine is moderately rugged. A fairly steep canyon and hill lie to the south of the deposit. The region is mountainous, of Alpine aspect several miles to the west. The prevailing slope of the mountain block in which the property lies is eastward toward Fish Lake Valley. The deposit is mainly on the top of a ridge with variably inclined slopes. (See plans and sections.)

PLANT AND EQUIPMENT

An inventory of the major items of plant and equipment is attached to this report (Appendix 1). With some improvements, and possibly a few additions, buildings are adequate for operations. Equipment seems to be in fair to good shape. If the present plant is capable of producing satisfactory metallurgical results, it appears that operations can be started by rehabilitation and with low capital outlay. But probably the plant needs improvements and additions in order to put through the

considerable daily tonnage that is necessary for optimum results, and to make good quicksilver recovery.

WORKINGS

These are shown on maps accompanying this report. Data on the workings are given on the following chart:

CHART OF WORKINGS

Adits	Size		Length
Main Upper Adit	5' x 7'		800'
Lower Adit	5' x 7'		364'
Other Adits	5' x 7'		138'
		Total	1302'
Sub Level from Small Glory Hole	5' x 7'		50'

Approximate Measurements

Main Glory Hole	Max. length parallel to Section G	325'	Average length		240'
	Max. width perpendicular to Section G.	210'	Average width		134'
	Max. depth.	40'	Average		20'
	*Volume	911,486 cu. ft.			
Small Glory Hole	Diameter	Max. 60'	Average		50'
	Depth	Max. 33'	Average		11'
	Volume	20,680 cu. ft.			
Aerial Tram Cut (Cut #25)	Length	Max. 70'	Average		34'
	Width	Max. 54'	Average		28'
	Depth	Max. 12'	Average		5'
	Volume	4,760 cu. ft.			
Lower Open Cut (Cut #26)	Length	Max. 160'	Average		123'
	Width	Max. 85'	Average		57.5'
	Depth	Max. 32'	Average		25'
	*Volume	178,172 cu. ft.			

* Computed by planimeter on horizontal sections and on vertical cross-sections.

CHART OF WORKINGS
(Continued)

	Length Feet	Width Feet	Depth Feet	Volume Cu. Ft.
Pit No. 1	4	3	6	72
Pit No. 2	6	3	5	90
Pit No. 3	11	7	4	308
Pit No. 4	7	4	5	140
Pit No. 5	13	10	5	650
Shaft No. 6	6	3	33	594
Pit No. 7	8	4	4	128
Pit No. 8	8	4	4	128
Pit No. 9	8	4	4	128
Pit No. 10	8	4	9	288
Pit No. 11	8	4	3	96
Pit No. 12	15	5	10	750
Shaft No. 13	7	3	12	252
Pit No. 14	8	4	6	192
Pit No. 15	8	4	4	128
Pit No. 16	8	4	4	128
Trench No.17	40	3	4	480
Trench No.18	34	3	3	306
Trench No.19	51	3	3	459
Pit No. 20	4	4	4	64
Pit No. 21	6	4	5	120
Trench No.22	15	6	6 Bench	
	60	6	12 Trench	4860
Pit No. 23	8	4	6	192
Pit No. 24	8	6	6	288
			Total	10,841

By checking the weight of 1 cubic foot of broken ore, it is assumed that the approximate weight of ore in place will be 1 ton per 18 cubic feet.

On this basis the tons removed from the principal excavations are:

	Tons
Main Glory Hole	50,638.0
Small Glory Hole	1,149.0
Aerial Tram Cut (Pit #25)	264.0
Lower Open Cut (Pit #26)	9,898.0

GEOLOGY AND ORE OCCURRENCE

This is dealt with in the report by Edgar H. Bailey of the United States Geological Survey. Some points will be stressed here.

The main ore zone is a flatly dipping deposit with some steeply dipping elements but with a prevailing, if not invariable, bottoming at shallow horizons. The base of the ore is visible in many places. Commonly it is sharply delimited from waste. While there are some indications of ore below the bottom of the main body of flat-lying ore, their importance is uncertain. So far as is known they are patchy occurrences.

Certain flatly dipping beds of tuff or breccia are favorable host rocks for ore. Though the margins of the ore cut across bedding in places, broadly the main ore horizon appears to follow bedding. Fractures across the bedding have assisted penetration of ore-depositing solutions and emplacement of cinnabar. Though opalized rock is not necessary for ore, most of the cinnabar is in opalized rock.

In addition to the main ore zone, mined in the glory holes, ore occurs in and near the fault shown on Maps 3 and 4. It was mined in the Aerial Tram Open Cut in and near this fault and there are showings elsewhere along the fault.

Ore also occurs in the Lower Open Cut. Evidence is convincing that this ore is part of a landslide that slid downward from ore in place on the side of the hill above.

Some of the showings of cinnabar outside of the glory holes may be part of a continuous body of ore and some probably are patchy occurrences.

Exploration is necessary in order to determine the facts. There is a good possibility that the main orebody has considerable lateral extension outside of the glory holes.

Continuity of ore between that on the hill and in the Lower Open Cut is highly improbable.

It is clear that at least the part of the main orebody now remaining was formed by filling or replacing sub-surface rocks. It is not, as some have supposed,[1/] a so-called hot spring deposit which was spread

1/ Schuette, C. N. "Occurrence of Quicksilver Orebodies," Tech. Pub. No. 335, A.I.M.E., p. 44, 1930.

over the surface. Of course, eroded ore formerly may have extended to the surface in places.

KNOWN DISTRIBUTION OF CINNABAR

This is shown on maps and only brief comment is necessary.

The main ore zone, within and margining the Main Glory Hole, is essentially continuous. Margins of "reasonably assured ore" shown on Maps 6 and 8 enclose this essentially continuous ore.

Outside these margins, showings of cinnabar are noted on Figures 3, 4, and 7. Isolated showings extend over an area of some 600 feet NW-SE and 900 feet NE-SW. (Figure 3)

As Figure 4 indicates, there are occurrences of cinnabar below the bottom of the main ore zone.

SAMPLING

Samples taken on the property are listed and described on Form SM 17. Total samples taken were 623. Their distribution and character are as follows:

Location	Sample Numbers	Total Samples	Kind of Samples
Main Glory Hole	172-251, 260-423, 546-668, 705-721	384	Large channel samples reduced by quartering
Small Glory Hole	424-504	81	"
Aerial Tram Open Cut	722-741	20	"
Lower Open Cut	742-762	21	"
Minor Surface Excavations	505-545	41	25 channel samples 16 grabs from dump
Underground Tunnels	252-259, 669-704	44	Channel samples quartered
Dumps & Ore Bin	763-794	32	30 large channels 2 grab samples
		623	

Figures 8, 9, 10, 11 show the locations of the samples taken in surface and underground workings. The "lower south dump," sampled in shallow trenches, is the southwest lobe of the large dump just above the Lower Open Cut in Figure 3. The "upper waste dump" sampled (Sample 793) is near the east end of the Main Glory Hole. This dump is shown in Figure 3.

Channel samples taken were marked on the ground and unless erosion removes the identifying tags, or destroys the grooves, in surface excavations, it should be possible to locate the samples for checking or other purposes. A tag with a sample number on it is held by a metal pin driven into the ground where each sample was taken.

In minor excavations channel samples were taken where showings of cinnabar merited them. Otherwise grabs of the dumps were taken.

Samples taken in the Main Glory Hole during the early part of the sampling are at closer intervals than later ones. Early sampling indicated the relative uniformity of grade, thus justifying wider spacing of samples taken later.

Because of overburden in places, configuration of the ground, and time available and justified, and because it appears that this deposit is not susceptible to close selective mining, sample cuts are irregularly spaced in places and partly widely spaced. When assays are available, one can judge whether additional sampling is warranted.

TONNAGE AND GRADE OF RESERVES

General and Summary - Volumes of ore regarded as "reasonably assured" and as "probable and possible ore combined" are calculated from prepared plans and sections. In calculating tonnages for these volumes of ore, 18 cu. ft. per ton for ore in place is used. This is based on weighing measured volumes of broken ore. This averaged about 29 cu. ft. per ton. Because of the porous and generally loosely consolidated nature of the ore, satisfactory determination of its weight per unit volume in place is difficult without weighing ore removed from an excavation of measured volume.

Calculated tonnages of ore in and extending from the glory holes are:

	Tons
Reasonably Assured Ore	110,000
Probable and Possible Ore	420,000

Since there are no assays available now, no attempt is made to calculate tonnage in and adjacent to the Lower Open Cut.

Grade calculations cannot be completed at the present time, as assays are incomplete. As far as they go, however, the arithmetical average grade of assured ore, without weighing according to tonnage blocks, comes to 1.73 lbs. Hg. per ton. This is for 313 assays received up to and including January 6. Averages of various sampled blocks are shown on the attached plan. Some notes are made on this plan.

Reasonably Assured Ore - Ore of this designation is outlined in plan view in Figure 8 and in vertical sections in Figure 6. Calculations of tonnage are made by using vertical sections. In order to delineate the bottom of the ore, it is of course necessary to interpolate on rather meager evidence in some cases. Calculations are shown in detail in Appendix 2.

Probable and Possible Tonnage - The boundaries of this ore are based upon geological evidence, known cinnabar occurrences and a visualization of probabilities or possibilities. No attempt is made to distinguish between probable and possible ore, although such distinctions may be made validly in places.

The premises upon which calculations are made, and the calculations, are shown in Appendix 3. Maps should be consulted in order to follow details.

Known and Indicated Grade - So far as available assays permit, the average grade of certain locations are indicated on Figure 8.[2/] Assay data

2/ Temporary map sent to U. S. Geological Survey, Tucson.

suggest that the average grade of assured ore will run somewhere between 1-1/4 and 1 3/4 lbs. Hg. per ton. The possibility of mining certain zones selectively to give better than average grade can be judged better when more assays are available.

Little can be said at present of known or indicated grade of probable or possible ore.[3/]

3/ Assays just received for some excavations outside of the glory holes are noted on a white print of Figure 3, sent to U. S. Geological Survey, Tucson.

MINING METHODS AND MINING CONDITIONS

Because of the flat attitude of the ore and its usual light overburden, open cut mining is clearly the best method.

Glory hole mining appears unnecessary and more expensive than alternative methods.

The choice between power shovel and drag line is a question for calculated judgment by qualified experts. Both truck and conveyor belt transportation are feasible. They could be used in conjunction. Power shovel should be effective and cheap, but drag line probably would produce less waste. The sloping and in places irregular, bottom of the ore appears to favor drag line. But it might pay to handle more waste, selectively from the ore, of course, and use a power shovel. There is ample and convenient waste dump area.

The ore is easily shattered, and light blasting only should be necessary. Much digging or scraping can be done after shaking up the ore by blasting.

For much of the time the ore will be dry. The "clinkery" character

of the porous opalite ore which forms a large proportion of the ore suggests that even when wet, it will not be sticky. Minor associated tuffaceous rock may form somewhat sticky material.

The ore makes abundant dust when dry, and must have been a problem when the ore was drawn through glory hole chutes into adits below. For open cut handling, the dusty character will be less onerous, although judging from experience during sampling, even here respirators may be desirable in such dusty siliceous rock.

After the ore is trucked, conveyed, or scraped into a bin on the side of the hill above the furnace plant it can be moved by gravity to and through the plant.

COMMENTS REGARDING FACTORS AFFECTING TREATMENT

Determination of the feasibility of raising the grade of ore by sorting or screening, or both, is suggested. Possibly a considerable proportion of the rock mined can be discarded as waste lumps.

So-called opal is the principal gangue. This indicates a water content apart from that held in interstices. However, it has been found that other opalite deposits are composed dominantly of chalcedony; the original opal has either been dehydrated to chalcedony, or has been replaced by chalcedony. 4/ Probably then, the water content of B & B ore is less than would be supposed from the presumed opal content.

4/ Yates, Robert G. and Roberts, Ralph H., "The 'Opalite' Type of Quicksilver Deposit" - abstract, Econ. Geol, Vol. 36, No. 8, Page 839, December, 1941.

It appears that other gas-producing minerals, such as carbonates, are rare or absent in the B & B ore.

The dusty character of the ore treated in the plant is remarked upon by Schuette. He states, "The ore makes a great deal of dust, but as collected it is fairly clean and all of it is discarded."[5]

5/ Schuette, C. N., "Quicksilver," Bull. 335, Page 98, U. S. Bureau of Mines, 1931.

Since "the less the concentration of quicksilver vapor in the gases" (generated in quicksilver furnaces) the lower the temperature at which the quicksilver will condense,"[6] the content of gas-producing constituents

6/ Schuette, C. N., "Quicksilver in Oregon" - Bull, No. 4, State of Oregon, Dept. of Geology and Mineral Industries, Page 41, 1938.

in B & B ore is important. Also, raising the grade in quicksilver by beneficiation prior to furnacing is highly desirable, not only because of increase in capacity and probably lowering of cost by so doing; but because of the effect upon the temperature of condensation and therefore presumably upon the absolute losses of quicksilver vapor. Generous condensing conduits would appear to be necessary if the B & B ore is to be treated without prior concentration.

It has been suggested that the technical and economic advantage of concentrating the B & B ore by flotation be investigated. Although the advantage of this has been questioned for other quicksilver ores, it seems to merit consideration.

For both concentration and furnacing, the mode of occurrence of the quicksilver in the host rock is fundamental. Casual inspection suggests that most of the cinnabar occurs in former or present openings as films, layers, or veinlets, but more thorough examination indicates that much of it may be thoroughly "diffused" through siliceous rock. Ready separation by mechanical methods should not be assumed without test. The ease

of separation by heat also needs investigation.

SUGGESTIONS FOR FURTHER WORK

To determine extent, continuity, tonnage and grade of exposures in excavations, a number of openings that will yield reliable intersections and samples are essential. For most of the deposit, such openings should be vertical or steeply inclined intersections approximately at right angles to the flatly inclined ore.

The best method to use to explore the deposit is by small diameter vertical shafts. However, the time required and the cost oppose sinking many of these. Short-hole vertical drilling is the quickest and cheapest way to explore the main deposit. However, core drilling would be unsatisfactory, as much of the ore is cavernous and rather loosely consolidated.

Among alternative methods are (a) churn drilling, (b) cesspool drilling, (c) stand-piping, (3) sectional steel rock drilling. Churn drilling using special care to prevent loss of sludge into openings surrounding the hole might be satisfactory. Cesspool drilling might encounter difficulties, as the opalite ore is relatively abrasive. Stand-piping, such as is used by diamond drillers to get through overburden,might make good progress, but it is doubtful or at least uncertain whether good samples could be obtained. It does not seem likely that sectional steel rock drilling would work well in such formation. It is suggested that the question of the best type of drill to use be investigated. Drills capable of making good progress and of indicating the presence of cinnabar, even if they do not yield a sample satisfactory for grade determinations, might be used for general exploration. To get reliable determinations of grade, it may

be necessary to sink shafts. Such shafts can be sunk cheaply to shallow depths, say to about 10 to 30 feet.

In his report Edgar Bailey will recommend locations for drill holes or shafts. These will be exploratory intersections to be followed by others, if desirable, based upon information obtained in them.

Ellsworth Y. Dougherty,
Engineer in Charge,
Project 407

Reno, Nevada
January 6, 1942

APPENDIX I.

Inventory of Plant and Equipment at
B & B Cinnoro Mine, Esmeralda County,
Nevada

December 20, 1941

1	200 Gal. Portable Water Tank
1	4' x 4' Galv. Oil Tank
1	6' x 5' Galv. Oil Tank
1	Matteson Ore Car (1600#)
1	Hendy Ore Car (1600#)
1	10' x 12' Steel Water Tank
1	25 H. P. Fairbanks-Morse Diesel Motor
1	4' x 5' Redwood Water Tank
1	2' Blake Type Jaw Crusher
2	Inclined Tramway Cars (1600#)
2	9' x 12' Steel Oil Tanks
1	10' x 12' Steel Oil Tank
1	8' x 20' Galv. Storage Tank
1	4' x 6' Hooded Hot Plate
1	2' x 4' Amalgamator
24	15" x 15' Cast Iron Condenser Tubes
500'	Vitreous Condenser Tubes (24" Dia.)
100	Tons of Ore in Bin (App.)
3	5 H. P. F-M Induction Motors
2	15 H. P. F-M Induction Motors
1	Laboratory Braun Disc Pulverizer
	Blacksmoth Forge and Equipment
1	Sullivan Single-Stage Air Compressor
1	Buffalo Forge Belt Driven Drill Press
1	#9 New Haven 3" Lathe and Equipment
1	3' x 50' Gould Rotary Furnace with Bump Feed
1	4' x 45' Gould Rotary Furnace with Bump Feed
1	12" x 60" Air Receiver
1	18" x 120" Air Receiver
2	24" x 60" Vertical Air Receivers
1	80 H. P. Fairbanks-Morse 2-Cylinder Diesel Motor (300 RPM) (Vertical)
1	60 KVA, 3 Phase, 440 Volt F-M Alternator
1	5 KW D.W. Generator (Excitor)
1	440-Volt Westinghouse Instrument Panel
1	3 3/4" x 3 3/8" Two-Stage F-M Air Compressor
	Assorted Switches and Starters
2	Cycline Dust Collectors
1	Two-Deck 3' x 5' Vibrating Screen
2	3 H. P. F-M Gasoline Motors
1	6' x 3' Redwood Water Tank
1	Fairbanks-Morse Water Pulp and Motor
1	12' x 4' Plat-O Concentrating Table

	Assorted Pipe Fittings
	Assorted Pulleys and Belting
2	4' x 18' Steel Dust Collectors
1	Frick Ammonia Ice Machine and Ice House and Walk-In Ice Box
1	5-Room and Bathroom Staff House
1	Dining Room and Kitchen
6	4-Man Bunk Houses
1	Assay Office (No Equipment)
1	Change House (No Equipment)
1	2-Car Garage
1	Oil Storage Shack
700'	12# Track (App.) 1400 Feet of Rail

APPENDIX 2

Calculations of Tonnage of Reasonably Assured Ore

This ore is practically known to be continuous and to extend laterally for short distances outside of the margins of glory holes. Its bottom limit is interpolated between exposures in and below the glory holes. The margins of the ore and of various blocks are shown in plan and sections in Figures 8 and 6. The principal uncertainty, which makes the designation "reasonably assured ore" more appropriate than "assured ore," is the position of the lower limit of the ore.

The length and average widths of the various blocks listed in the following table were obtained by scaling from the plan of Figure 8. The average depths were obtained by scaling from sections of Figure 6 and averaging. Areas were obtained by multiplying lengths by average widths; volumes by multiplying areas by average depths; tonnages by dividing volumes by 18 cu. ft. per ton.

Block	Length Ft.	Average Width Ft.	Horizontal Area Sq. Ft.	Average Depth Ft.	Volume Cu. Ft.	Tons
A	30.0	64.5	1,935	30	58,050	3,200
B	63.0	189.0	11,954	30	358,600	19,900
C	64.0	231.0	14,784	26	384,400	21,350
D	71.5	207.0	14,800	32	473,600	26,300
E	73.5	171.0	12,600	36	453,600	25,200
F	84.0	124.5	10,500	29	304,500	16,900
Totals and Averages	386.0	172.0	66,573	30.5	2,032,750	112,850

Other methods were used in which areas of ore in vertical sections were planimetered and volumes calculated. Two separate calculations gave 107,350 and 109,400 tons respectively. The average of the three calculations is 109,870 tons or, say, 110,000 tons.

APPENDIX 3

Calculations of Tonnage of Possible and Probable Ore Combined

This ore is assumed to extend to possible outcrops of the base of the ore, as indicated in Figures 3 and 7. The trace of the base of the ore on the surface, shown in Figure 3, was obtained by extending the basal surface of the ore as iddicated by known points in and below the glory holes. These known points are shown in Figure 5, which also shows contours on the base of the supposed ore (opalized zone). In the colored copies of Figure 3, accompanying Mr. Bailey's report, possible ore is not shown extending to this trace southeast of the glory holes, but the following calculations assume ore in the area between this trace and the "weakly opalized coarse tuff." North and northeast of the glory holes, possible ore is assumed to extend to the "weakly opalized coarse tuff" shown on Figure 3.

"Probable ore" is outlined on the colored copies of Figure 3, but because of the indefiniteness of the contact between it and "possible ore" I have not attempted to estimate probable ore separately. However, Mr. Bailey has estimated 210,000 tons of probable ore, using the areas shown in plan on Figure 3 and in the sections of Figure 7.

The lengths and average widths and average depths of the various blocks listed in the following table were obtained by scaling from the plan of Figure 3 and the vertical sections of Figure 7. Areas, volumes and tonnages were computed in the same way as was "reasonably assured ore."

Blocks shown in the following table are separated by various vertical sections as follows:

Block

B" extends from the northwest limit of the ore to Section A'.
B' extends from Section A' to Section A.
B extends from Section A to Section B.
C extends from Section B to Section C.
D extends from Section C to Section D.
E extends from Section D to Section E.
E' extends from Section E to Section F.
E" extends from Section F to the southeast limit of the ore.

Blocks B, C, D, and E have the same vertical section boundaries as the blocks with the same letters listed in Appendix 2.

Calculations of All Ore

Block	Length Ft.	Average Width Ft.	Horizontal Area Sq. Ft.	Average Depth Ft.	Volume Cu. Ft.	Tons
B"	67.0	265	17,750	9.5	168,625	9,380
B'	65.0	625	40,625	20.0	813,500	44,700
B	63.0	780	49,140	24.5	1,203,830	66,900
C	64.0	775	49,600	27.0	1,339,200	74,400
D	71.5	760	54,340	31.0	1,684,500	93,500
E	73.5	745	54,760	32.5	1,779,670	98,400
E'	69.0	750	51,750	26.0	1,345,500	74,800
E"	195.0	625	121,870	10.0	1,218,700	67,800
Totals and Averages	668.0	657	439,835	21.7	9,553,525	529,880

Deducting 110,000 tons of reasonably assured ore, the totals of probable and possible ore combined come to 420,000 tons in round figures.

B and B Quicksilver Property

Name - According to a legal notice posted on the property, the B & B Quick Company, Bankrupt No. 475, Edwin S. Giles, Trustee, is the owner of this property, and the Nevada Engineering Corporation, assignee of the Cinnoro Mines, Inc., holds a lease on the property. According to verbal information from Mr. Giles, T. Niceley, now residing in Tonopah, Nevada, has an option to purchase the property, obtained by agreement with the Nevada Engineering Corporation.

Location - The property is situated in Fish Lake Valley, Nevada. The nearest railroad point is Mina, 65 miles distant. Mina is on Highway 95. The mine is reached by 29 miles of dirt road to the south leaving Highway 6 about 6 miles west of Coaldale.

Water supply - A small stream about 1-1|2 miles distant known as Trail Canyon Creek maintains a steady flow throughout the year.

Development - The property is developed by a number of adits. Ore has been mined from open cuts.

Surface plant - The property is equipped with a complete reduction plant containing a 3- by 50-foot and a 4- by 45-foot Gould Rotary furnace and a 12- by 14-foot concentrating table. The flow sheet or the daily capacity is not given by Mr. Dougherty.

Geology - The ore occurs in flatly dipping beds of tuff or breccia. Most of the cinnabar is in opalized rock.

Production - By the size of the open pits shown in Mr. Dougherty's report, considerable ore has been mined but he does not give any tonnages. Apparently, the grade of ore was too low to be commercial on the size of the operations conducted.

Ore Reserves - Dougherty reports 110,000 tons of reasonably assured ore with an average assay of 1.7 pounds per ton. He estimates 420,000 tons of geological ore is of the same grade but further geological study has cast doubt on the chances of finding such a large tonnage.

Summary of co-operative investigation of

QUICKSILVER DEPOSITS IN NEVADA

by

U. S. Geological Survey and U. S. Bureau of Mines

December 1941 to August 1942

Edgar H. Bailey

Summary of co-operative investigation of
Quicksilver deposits in Nevada by
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SUMMARY STATEMENT

More than 60 quicksilver deposits in Nevada and nearby parts of adjacent states (see table 1) were examined by the U. S. Geological Survey and the U. S. Bureau of Mines in the period from December 1941 to August 1942. In nearly all of these a few samples were cut and at least a hasty geologic examination was made. The most promising deposits, only 15 of the 60 examined, were thoroughly sampled, and detailed geologic maps were made of each mine and vicinity.

Sampled ore which contains 1.5 or more pounds of quicksilver to the ton found on these properties amounts to about 500,000 tons, or about 10,000 flasks of quicksilver (see Table 2). Geologic ore of similar grade is estimated to amount to 300,000 tons, or about 6,000 flasks of quicksilver, but additional exploration may be expected to increase these estimates. About one half of the reserve of sampled ore, and all of the geologic ore, is contained in deposits which were not being mined when the deposit was examined.

Several suggestions are made on how the quicksilver production of Nevada might be increased.

GEOLOGIC RESULTS

None of the mines examined, except those formerly studied by the Geological Survey, was found to have an adequate geologic map, and much useless exploration has resulted from this lack. In most of the mines it was possible to work out the geologic control of the various types of ore bodies. It is hoped that the maps made during this program and the knowledge of the localization of the ore bodies can be made available to the mine operators in the immediate future.

ORE DEVELOPED

Although it was not the intent or purpose of this program to directly develope any ore, in at least three mines new small ore bodies were found. All of these have either been mined or are being mined at the time this report is written.

ECONOMIC RESULTS

The calculated reserves of ore in the various deposits is shown in detail in table 2 which accompanies this report. If the Nevada deposits may be considered as representative of the deposits of the entire country certain economic conclusions can be drawn from the findings of this program. These are summarized as follows:

1. Essentially all properties which can be profitably operated with present prices are now being worked.
2. On a few properties the installation of a furnace with a larger capacity would increase both the rate and total amount of production.
3. In some districts the installation of a "custom-ore" furnace would increase production somewhat. And in one district an idle furnace could be operated on ore from a nearby mine.

4. Because of the erratic occurrence of quicksilver ore bodies it is extremely difficult to point them out prior to their discovery. Most of the operators of large mines are able to finance development work within their mine, but probably many new ore bodies could be found by small operators following a "streak" and retorting their ore to make expenses. These operators are at present being drawn to more lucrative jobs. To raise the price of quicksilver would afford unfair profits to a few large mines, but to pay a bonus to operators of mines with small or no production as of last year would probably stimulate quicksilver production at a relatively small cost. In Nevada such a bonus system can be expected to not only results in the finding of some new ore bodies, but should also result in the mining of the sampled slightly submarginal ore which contains at least 5000 flasks.

IDLE FURNACES

It is thought advisable to call attention to the following long list of idle quicksklver furnaces which appear to be in usable condition.

Property	Type	Capacity in tons
McAdoo	Herreschoff	40
Cahill	Rotary	20 (?)
Castle Peak	Rotary	30
B. & B.	Rotary	2 of 60 each.(To be used soon(?))
Mina Mercury	Rotary	10
Pershing	Rotary	40
Van Ness	Rotary	15
Red Rock	Rotary	Small (Possibly being used)

RECOMMENDATIONS FOR SIMILAR PROJECTS

Not only has the Silver Spot program resulted in close estimates of the reserve of quicksilver ore on many properties and recommendations for further exploration on some of these, but also many other deposits are now known to be worth no further investigation. However, even though this project appears to have been worth while, it should be borne in mind

that the results were directly dependent from the first on what reserves were in the ground. Consequently any future program of similar type should not be so much expected to develop ore as to give positive knowledge as to how much orhow little ore exists in the area, and the results are nearly as worth while either way.

In order for similar projects to operate as smoothly and economically as possible, it is recommended that the Bureau engineer and the Survey geologist who are to be assigned to the project first visit most of the properties. During this brief visit a few samples should be cut and the geologic setting grasped. By doing this preliminary work it will be possible to arrange the rest of the sampling project so as to avoid the sampling of deposits which are worthless and to spend the most time in the better ones.

One factor which was neglected on this project was the possibility of beneficiating the ore by screening, hand-sorting, etc. It probably would be wise in the future to make such tests, where warranted, at the time the samples are cut as the possibility of increasing the tenor of the ore enters directly into any estimate of the value of the deposit.

Table 1

List of Quicksilver properties examined by U. S. Geological Survey and U. S. Bureau of Mines Silver Spot Program, December 1941 to August 1942

Edgar H. Bailey U.S.G.S.
M. Clair Smith U.S.B.M.

DISTRICT and Mine	Examined by	No. of Samples	Recommendations for exploration
BARE MOUNTAIN			
Thompson property	USBM	60	None
BOTTLE CREEK			
Ant Hill	USBM	20	None
Baldwin (Blue bucket)	USGS-USBM	101	None
Birthday	USBM	10	None
McAdoo-Blue Can	USGS-USBM	53	Geophysical
White Peaks	USGS-USBM	70	Geophysical
BUCKSKIN PEAK			
Buckskin Peak	USGS-USBM.	305	Drilling
CAHILL-PARADISE			
Coss	USBM	5	None
Holt	USBM	19	None
Trullas	USGS	0	None
Wholey	USGS	0	None
CASTLE PEAK			
Castle Peak	USGS	0	None
Steamboat Springs	USGS-USBM.	0	None
Washington Hill	USGS-USBM	229	None
FISH LAKE VALLEY			
B. & B.	USGS-USBM	623	Drilling
Container	USGS-USBM	0	None
F. & F.	USGS-USBM	58	None
Red Rock	USGS-USBM	0	None
GOLDBANKS			
Goldbanks	USGS-USBM	0	None
Wootan	USBM	3	None
HOT CREEK			
A. & B.	USGS	5	None
Mercury Mountain	USGS	0	None
IVANHOE			
Rand (Butte)	USBM	224	Drilling
Silver Fox	USBM	28	None
Shoshone	USBM	5	None
OPALITE			
Bretz	USGS-USBM	1,067	Drilling or trenching
Cordero	USGS-USBM	0	Geophysical
Disaster Peak	USBM	5	None
Opalite	USGS-USBM	0	None

DISTRICT and Mine	Examined by	No. of Samples	Recommendations for exploration
PILOT MOUNTAINS			
Mina Mercury	USGS	0	None
Drew	USGS	0	None
Lost Steer	USGS	0	None
Mammoth	USGS-USBM	0	None
Reward	USGS-USBM	113	None
Other mines being investigated by USGS in October 1942			
RELIEF (ANTELOPE SPRINGS)			
Crawford	USGS-USBM	?	None
Montgomery	USGS-USBM	424	None
Nevada Quicksilver	USGS	0	None
Pershing	USGS-USBM	423	Possibly drilling
Red Bird	USGS	0	None
SPANISH PEAK (BARCELONA)			
Van Ness	USGS	4	None
UNION			
Mercury Mining Company	USGS-USBM	203	None
Nevada Cinnabar	USGS-USBM	170	Drilling-trenching
San Pedro	USGS	0	None
WILD HORSE			
McCoy (Quick.Corp.ofAm.)	USGS	1	None
Wild Horse	USGS	3	None
NOT CLASSIFIED AS TO DISTRICT			
Antelope game refuge	USGS-USBM	6	Trenching
Beowawe	USGS	0	None
Cinnabar King	USGS	0	None
Cinnabar Queen	USGS	0	None
Finger rock	USGS	3	None
Hanley lease	USGS	0	None
Hot Spgs. (20 mi.S. Battle Mt.)	USGS	1	None
Noguez	USGS	2	None
Rosebud (De Kinder)	USGS-USBM	23	None
Plymouth (5 Mi.E.Winne.)	USGS	0	None
CALIFORNIA			
McDow (S.W. of Susanville)	USGS	0	None
Perini (E. of Bridgeport)	USGS	18	None
Red Hawk	USGS	0	None
Wendell Hot Spgs.	USGS	3	None
OREGON			
Currier	USGS	1	None
IDAHO			
Juniper Hill (nr.Am.Falls)	USGS	0	None

Number of properties examined is 61
Number of samples assayed is 4,284

Table 2

Table to accompany report on the results of the
Nevada Silver Spots program
December 1941 to August 1942

DISTRICT and Mine	Maps made	Reserves, in tons.	Grade of sampled ore, Lbs.Hg/Ton	Flasks Sampled	Flasks Geologic
BUCKSKIN PEAK					
Buckskin Peak	Surface	19,200	1.9	450	2,400
	Workings	100,000**			
BOTTLE CREEK					
Baldwin	Surface Workings	2,000	2.2	100	
McAdoo-Blue Can	Workings	None	---	---	
White Peaks	Workings	25,000***	2.5	825	
CASTLE PEAK					
Castle Peak	Surface Workings	Not sampled, no ore in sight.			
Washington Hill	Surface	1,400	2.3	50	
FISH LAKE VALLEY					
B. & B.	Surface	110,000	1.5	2,175	
	Detail Workings	200,000**	1.5		4,000
F. & L.	Surface	Small			
IVANHOE					
Rand	---	2,000*	3.5	100	
Silver Fox	---	20	3.0	---	
OPALITE					
Bretz	Surface	160,000*	1.5	3,100	
Cordero	Surface Workings	Not sampled, geophysical work recommended			
RELIEF					
Montgomery	Surface Workings	2,000*	1.5	40	
Pershing	Surface Workings	17,600	2.5	600	
UNION					
Merc.Min.Co.	Surface Workings	2,000*	2.9	75	Probably more ore than indicated.
Nevada Cinnabar	Surface Workings	70,000	2.5	2,300	
San Pedro	---	Not sampled	10.0	200	
	Totals	511,220		10,015	6,400
		300,000**			

* Tonnage estimates by M. C. Smith, U.S.Bureau of Mines
** Geologic ore
*** Includes both sampled and geologic ore

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Calculation of Tonnage of "Reasonably Assured Ore"
B & B Mining Property, Esmeralda County
Project No. 407

"The main ore zone is a flatly dipping deposit with some steeply dipping elements but with a prevailing, if not invariable, bottoming at shallow horizons. The base of the ore is visible in many places. Commonly it is sharply delimited from waste."[1/]

The following estimate of tonnage is based upon the plans and sections that accompany the B & B Quicksilver Report. Horizontal distances were scaled from Figure 3 and the vertical distances or depths from Figure 6. From these three dimensions the volume of the various ore blocks was determined. The tonnage was then determined by dividing the volume by the factor 18. From experiments conducted in the field, it was found that 18 cu. ft. equaled one ton of ore in place.

My interpretation of the term "reasonably assured ore" is, that ore the existence of which can reasonably be assured by the examining engineer. It, therefore, must of necessity represent a minimum quantity. A term which might have been more suited to this deposit would have been "ore indicated by surface sampling."

The boundaries of reasonably assured ore have been clearly designated in plan and section and the following calculations have been based entirely upon these designations.

The lateral limits of the "reasonably assured ore" are shown on Figure 3. In addition, several sections have been prepared running in a north easterly direction throughout the deposit. These sections are

1/ Report on B & B Quicksilver Property by E. Y. Dougherty.

shown on Figure 6.

For ease in estimating volume and grade, the "reasonably assured ore" body has been divided into a number of blocks designated as Blocks A, B, C. D, E, and F. The lengths and widths of these blocks were obtained from Figure 3. The depths of the various blocks were determined by scaling the average depth or thickness of the bed as shown on Figure 6.

In the case of Block "A" the average depth of the easterly side of the block was found to be 30'. The average depth of the block at the westerly and northerly limits of the block could not be accurately determined; however, it was noted that the depth of the bed at the intersection of Section H and the westerly limit of the block and the depth of the bed at the intersection of Section G, and the westerly limit of the deposit were still very nearly 30'. It is, therefore, safe to assume that the average depth of Block A is 30'.

The average depth of Block B was determined by averaging the average depth of the bed along Section A with the average depth of the bed along Section B.

The average depths of the remaining blocks were determined in a similar manner.

The following table shows the results of the tonnage calculations for the various blocks.

Block	Length Feet	Average Width, Ft	Average Depth, Ft	Projected Area, Sq Ft	Volume Cu Ft	Tons
A	30.0	64	30	1,920	57,600	3,200
B	63.0	205	27	12,915	348,705	19,372
C	63.5	228	25	14,478	361,950	20,108
D	74.0	206	32	15,244	487,808	27,100
E	73.0	171	35	12,568	439,880	24,437
F	84.0	126	30	10,584	317,520	17,640
					Total Tons	111,857

Calculations of Grade of "Reasonably Assured Ore"

"Because of the flat attitude of the ore and its usually light overburden, open cut mining is clearly the best method."[2/]

In view of the above statement, in view of the fact that there are no large areas of apparent concentration, and in view of the generally low assay value of the deposit, it is the writer's opinion that selective mining would not be effective. No attempt, therefore, has been made to segregate certain areas of high assay value, and the average grade has been calculated for the body as a whole.

Block A - It is difficult to arrive at a sensible grade for this block, as only one surface and one underground assay is reported. It does not seem unreasonable, however, to assume that the 149 samples taken in the adjacent block, B, are more representative of the average grade of Block A than the two assays actually taken in Block A. If this is assumed

2/ Report on B. & B. Quicksilver Property by E. Y. Dougherty.

to be true and weight given the assays is in accordance with the number of samples taken, the following calculation will determine the average grade of Block A.

Average of 150 samples in Block B = 1.8 lbs. Hg/ton
Average of 2 samples in Block A = 3.1 lbs. Hg/ton

150 samples @ 1.8 = 270.0 sample lbs. Hg/ton
2 samples @ 3.1 = 6.2 sample lbs. Hg/ton
152 276.2

$\frac{276.2}{150}$ = 1.8 lbs. Hg/ton Average Grade of Block A.

It might well be stated that this method of determining the grade of Block A is only a rough estimate at best.

Block B - The average of 149 surface samples of this block shows the average grade of ore to be 1.8 lbs. Hg/ton. The sample lengths of this block, with one exception, are all five feet. It therefore is unnecessary to take a weighted average with respect to the sample lengths.

Only two samples were taken in the drift directly below this block; further, these assays were taken at a considerable distance below the contended lower limit of the "reasonably assured ore." The assays of these samples indicate that the value of the ore decreases with depth - this fact is also brought out in Figure 4. It is, therefore, reasonable to assume that the grade of the ore at the lower limit of the "reasonably assured ore" has decreased in grade in an amount proportional to its distance from the surface as compared to the distance from the surface to the sample taken in the drift.

By this calculation, the average grade of the lower limit of the ore proves to be 1.0 lb. Hg/ton.

The average grade for Block B can be determined by weighing the surface samples and the underground sample in accordance with the number of samples taken at each limit.

149	surface samples @ 1.8 =	268.2
1	subsurface sample @ 1.0 =	1.0
150		269.2

$\frac{269.2}{150}$ = 1.7 lbs. Hg/ton = grade of Block B

Block C - The grade of Block C was calculated in the same manner as that of Block B.

Average of 151 surface samples = 1.7 lbs. Hg/ton
Average of 3 underground samples = 0.9 lbs. Hg/ton

Computed average grade of ore at lower limit of "reasonably assured ore" = 1.3 lbs. Hg/ton

151	samples @ 1.7 =	256.7
3	samples @ 1.3 =	3.9
154		260.6

$\frac{260.6}{154}$ = 1.6 lbs. Hg/ton = grade of Block C

Block D

Average of 82 surface samples = 1.1 lbs. Hg/ton
Average of 13 underground samples = .8 lbs. Hg/ton

Average grade of ore at lower limit of "reasonably assured ore = 0.8 lbs. Hg/ton 3/

82	samples @ 1.1 =	90.2
3	Samples @ 0.8 =	2.4
85		92.6

$\frac{92.6}{85}$ = 1.1 lbs. Hg/ton = grade of Block D

3/ Due to the general slope of topography and the thickening of the bed, it is assumed that the tunnel assays equal the average grade of ore at the lower limit of the "reasonably assured ore."

Block E

Average of 54 surface samples = 1.8 lbs Hg/ton
Average of 4 underground samples = 2.6 lbs Hg/ton

54	samples @ 1.8 =	97.2
4	samples @ 2.6 =	10.4
58		107.6

$\frac{107.6}{58}$ = 1.8 lbs Hg/ton = grade of Block E

Block F

Average of 25 surface samples = 1.8 lbs Hg/ton
Average of 12 underground samples = 1.8 lbs Hg/ton

Grade of Block F = 1.8 lbs Hg/ton

Total "Reasonably Assured Ore"

Block	Tons		Pounds Metal
A	3,200	@ 1.8	5,760
B	19,372	@ 1.7	32,932
C	20,108	@ 1.6	32,173
D	27,100	@ 1.1	29,810
E	24,437	@ 1.8	43,986
F	17,640	@ 1.8	31,752
	111,857	@ 1.57 [4/]	176,413

4/ $\frac{176,413}{111,857}$ = 1.57 lbs. Hg/ton.

Hg 366

U. S. B. M.

May 1943

WAR MINERALS REPORT *

Report of the Bureau of Mines to Secretary of the Interior, Harold L. Ickes

B & B QUICKSILVER MINE
PROJECT 407
Esmeralda County, Nevada

- Quicksilver -

Summary

The B & B Quicksilver mine has produced approximately 61,949 tons of ore. Exploration by the Bureau of Mines indicates a reserve of 111,857 tons of ore averaging 1.57 pounds of mercury per ton, and a possible additional 420,000 tons of unknown grade. The main ore zone is a gently dipping deposit with some steeply dipping segments. A tuft or breccia is the host rock. The mine is well equipped (December 1941) so that operations could start with a small capital outlay. Open-cut mining is suggested as the most economical method. Further exploration to prove the tonnage and grade of the exposures in excavations could be made by drilling vertical or steeply inclined shallow holes or by sinking small-diameter vertical shafts.

Introduction

The B & B Quicksilver mine, Esmeralda County, Nevada was examined by the Bureau of Mines over a period extending from November 26 to December 20,

* The War Minerals Reports of the Bureau of Mines are issued by the United States Department of the Interior to give official expression to the conclusions reached on various investigations relating to domestic minerals. These reports are based upon the field work of the Bureau of Mines and upon data made available to the Department from other sources. The primary purpose of these reports is to provide essential information to the war agencies of the United States Government and to assist owners and operators of mining properties in the production of minerals vital to the prosecution of the war.

1941, in connection with the Silverspots Project 407. During this time topographic and geologic mapping and underground surveying were accomplished by the U.S. Geological Survey and the Bureau of Mines. Maps prepared from these surveys, together with additional detail maps prepared by the Bureau of Mines, were used for plotting samples.

History

The history of the B & B property is not available. According to a legal notice posted on the property at the time of the examination, the B & B Company, bankrupt No. 475, Edwin S. Giles, trustee, was the owner of the property. The Nevada Engineering Corporation, assignee of the Cinnamoro Mines, Incorporated, held the lease on the property. However, on August 13, 1942, all the assets of the B & B Quicksilver Company were purchased by the present owners, the Nevada Minerals Company, 315 W. 5th Street, Los Angeles, California. Assumed past production was calculated by mapping and measuring glory holes on the property. From experiments conducted in the field, it was found that 18 cubic feet equals 1 ton of ore in place. The following figures are based on this assumption:

Main glory hole,	50,638 tons
Small glory hole,	1,149 tons
Aerial Tramway Cut,	264 tons
Lower Open Cut,	9,898 tons
TOTAL	61,949 tons

Physical Features and Communications

The summer climate is said to be usually dry and pleasant with sunny days and cool nights. The winter climate is moderately cold with considerable snowfall at times. Compared with higher altitudes in the west, the snow precipitation is said to be relatively light. There is a scattered growth

of small trees, mainly pinon pines but the timber is unsuitable for mine construction purposes, although good for firewood. The region is mountainous with an Alpine aspect several miles to the west. Prevailing slope of the mountain block in which the property lies is eastward, although, the deposit is mainly on the top of a ridge with variable inclined slopes. The town of Mina, which is on the railroad and on highway 95, is the most satisfactory point for mail, telegrams, express, freight and local supplies. Access to the property is by dirt roads leaving paved highway 6 either at Coaldale or at Basalt. From Highway 6 the route starting at Basalt and running in a general southerly direction is much shorter, but rougher and less safe for automobile travel than the alternate route. The alternate route, leaving highway 6 at Coaldale, is most commonly used.

Labor and Living Conditions

The housing facilities at the mine are sufficient to accommodate a fair sized crew. There is a 5-room staff house containing a bathroom, a building used as a kitchen and dining room, and 6 bunk houses each of which will accommodate 4 men.

No doubt the labor situation is somewhat acute as it is in most sections of Nevada. As this operation, however, would not require many men, sufficient labor could probably be obtained at the prevailing wage rate, which is somewhat higher than has usually been paid miners in Nevada.

Ownership

The Nevada Minerals Company, 315 W. 5th Street, Los Angeles, Californnia, with J. B. Kahn as manager, is the present owner. They purchased all the assets of the B & B Quicksilver Company, Bankrupt No. 475, from Edwin S. Giles, trustee, August 13, 1942.

Description of Deposit

The main ore zone is a gently dipping deposit with some steeply dipping areas. The grade decreases sharply in most places at shallow horizons; in many places the base of the ore is visible. While there is some evidence of ore below the main body, its importance is uncertain. Certain beds of tuff or breccia are the favorable host rocks. Although the margins of the ore cut across the bedding in places, usually the main ore horizon appears to follow bedding. Fractures across the bedding have assisted the penetration of ore-depositing solutions. Although opalized rock is not necessary for ore, most of the cinnabar is in opalized rock. In addition to the main ore zone mined in the glory holes, ore occurs in and near a fault. Some of it has been mined in the aerial tram open cut and there are showings elsewhere along the strike of the fault. The ore that occurs in the lower open cut was probably due to a land slide. Therefore, the continuity of the ore between the hill and the lower open cut is improbable. Some of the showings of cinnabar outside the glory holes may be part of the continuous body of ore and some probably are patchy occurrences. Further exploration will be necessary to determine these facts. There is a good possibility that the main ore body has considerable lateral extension. The main ore zone within and on the margin of the glory holes is essentially continuous. Isolated showings, however, extend over an area of 600 feet in a northwest-southeast direction and 900 feet in a northeast-southwest direction. Directly below the main ore zone are some occurrences of cinnabar, but they are usually small.

Mine Workings

The mine workings consist of a main adit approximately 800 feet in length, a lower adit 364 feet in length and other adits totaling 138 feet. The main glory hole is 325 feet by 210 feet with a maximum depth of 40 feet; the small glory hole has a diameter of 60 feet and a depth of 33 feet; the aerial tramway cut is 70 feet by 54 feet with a depth of 12 feet; the lower open cut is 165 feet by 85 feet with a depth of 32 feet. There are a number of smaller pits and trenches from which approximately 11,000 cubic feet of ore has been taken.

The Ore

The ore occurs in flatly lying opalized tufts or breccia and is of rather poor grade, as the samples taken by the Bureau of Mines averaged only 1.57 pounds of mercury per ton. Casual inspection suggests that most of the cinnabar occurs in openings of the rock as films, layers, or veinlets, but a closer examination indicates that in places it may be entirely diffused through the siliceous material.

Ore Reserves

This estimate is based on maps made by the U.S. Geological Survey and the Bureau of Mines, and on samples taken by the Bureau of Mines. A total of 632 samples were taken; most of them were channel samples and were reduced by quartering. However, 18 grab samples were taken. The assays indicate that the grade of the ore decreases with depth. The flat attitude of the ore and light overburden makes open-cut mining the best method. As there are no large areas of concentration and as the grade is low, selective mining would be ineffective. Therefore, the average grade calculations are for the ore

body as a whole. Calculation of the tonnage is based on the assumption that there are 18 cubic feet to the ton, as experiments in the field indicated. On this basis, there are approximately 111,857 tons of ore averaging 1.57 pounds of mercury per ton. This would indicate 176,413 pounds of mercury. (See following table)

Four-hundred twenty-thousand tons of possible ore is inferred from geological evidence and known occurrences. In order to prove this tonnage and its grade, additional work would have to be done.

For ease in estimating the volume and grade, the ore body has been divided into blocks designated as A, B, C, D, E, and F. The length and width of these blocks were measured on a surface map of the deposit. The depths of the various blocks were determined by scaling the average depth or thickness of the bed shown in sections through the ore body.

The following table gives the estimated tons and grade of ore.

Block	Length Feet	Ave. Width	Ave. Depth	Tons1/	Lbs. Mercury Per Ton	Pounds Metal
A	30	64	30	3,200	1.8	5,760
B	63	205	27	19,372	1.7	32,932
C	63.5	228	25	20,108	1.6	32,173
D	74	206	32	27,100	1.1	29,810
E	73	171	35	24,437	1.8	43,986
F	84	126	30	17,640	1.8	31,752
				111,857	1.572/	176,413

1/ 18 Cubic feet = 1 ton

2/ $\frac{176,413}{111,857}$ = 1.57 pounds mercury per ton

Suggestions for Further Exploration

To determine the extent, continuity, tonnage and grade of ore exposed in excavations, additional exploration is necessary. This could best be accomplished by small diameter vertical shafts. However, the time required and the cost opposes sinking many of these. Short-hole vertical drilling would be the quickest and cheapest way to explore the main deposit. Core drilling, however, would be unsatisfactory as much of the ore is cavernous or rather loosely consolidated. Alternative methods are churn drilling, cesspool drilling, standpiping, and sectional steel rock drilling. Since none of the suggested methods of drilling are satisfactory, test pitting probably should be used for exploration.

Conclusions

The Bureau of Mines after examining the property and sampling the ore bodies concludes that:

1. The B and B Quicksilver mine contains an indicated ore reserve of 111,857 tons assaying 1.57 percent mercury per ton. In addition 120,000 tons of ore inferred by geologic evidence of unknown grade may be developed by further exploration.

2. The ore bodies occur at and near the surface in a flat lying deposit and probably can be mined cheaply by open-pit methods. The nature of the mineralization is such that selective mining with the object of only mining high grade spots probably would be unsuccessful.

3. Although the ore reserves are large, the grade of the ore is so low that at present mercury prices the operation would be marginal or submarginal. Should the war need for mercury warrant the operation of marginal deposits this property would warrant consideration by the War Production Board.

ASSAY RESULTS FROM MINOR EXCAVATIONS

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
505	5'	2.8
506	5'	3.0
507	4'	0.4
508	4'	0.4
509	3'	0.4
510	3'	0.9
511	3'	0.4
512	3'	0.7
513	4'	0.8
514	4'	1.0
515	4'	4.5
516	4'	5.1
517	4'	14.2
518	5'	1.5
519	5'	1.3
520	5'	0.5
521	5'	0.4
522	5'	1.2
523	2'	0.3
524	GRAB	0.5
525	"	0.1▲

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
526	GRAB	0.3
527	"	0.1▲
528	"	1.2
529	6'	2.4
530	6'	3.8
531	6'	3.3
532	6'	0.5
533	6'	0.4
534	GRAB	0.1▲
535	"	0.1▲
536	"	0.1▲
537	"	0.2
538	"	0.7
539	"	0.7
540	"	0.2
541	"	0.1
542	"	1.3
543	5'	0.5
544	5'	1.2
545	GRAB	0.1

▲ QUARTERED

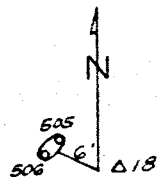
FIG-11A

ASSAY RESULTS FROM LOWER OPEN PIT

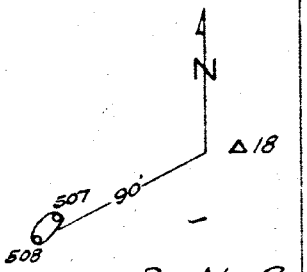
SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
733	5'	1.6
734	5'	*0.1
735	5'	1.3
736	5'	3.0
737	5'	2.8
738	5'	2.1
739	5'	2.2
740	5'	4.5
741	4'	6.3
742	5'	3.3
743	5'	1.9
744	5'	1.1
745	5'	1.8
746	5'	3.7
747	5'	0.8
748	5'	5.0
749	5'	2.7
750	5'	2.4
751	5'	1.6
752	5'	1.5
753	5'	2.1
754	5'	7.4
755	5'	2.6
756	5'	0.6
757	5'	2.0
758	5'	2.2
759	5'	4.9
760	5'	2.4
761	5'	0.2
762	5'	*0.1

* INDICATES LESS THAN

FIG-10A



PIT No. 1



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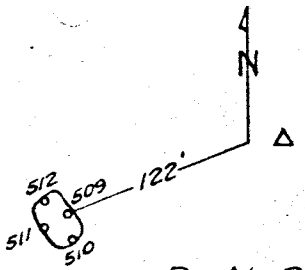

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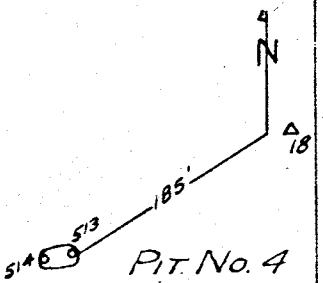

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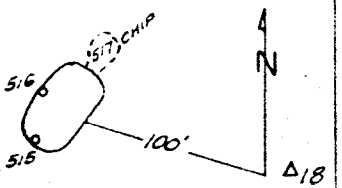

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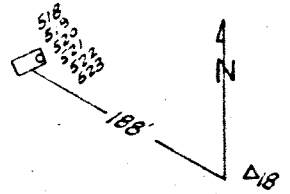

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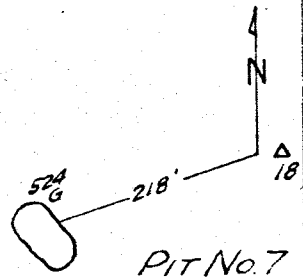
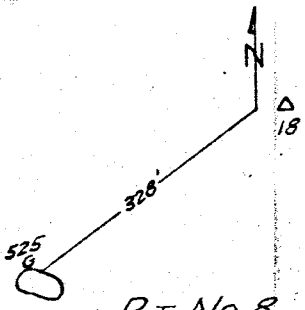


PIT No. 7



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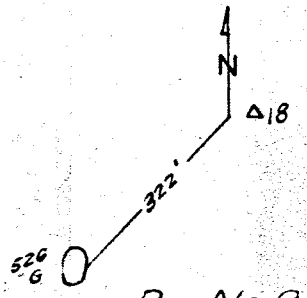

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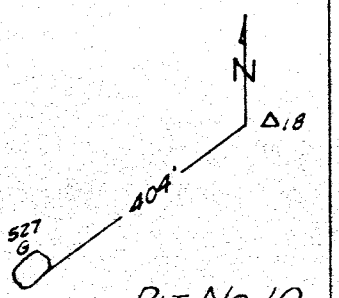

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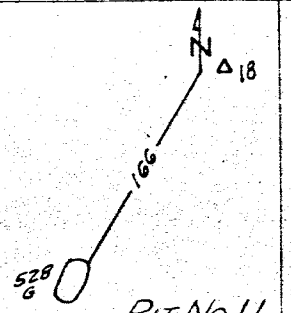

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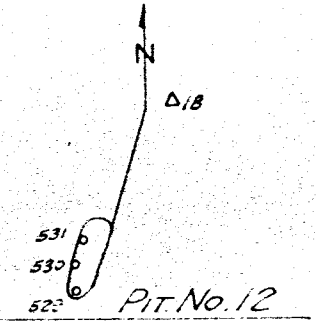

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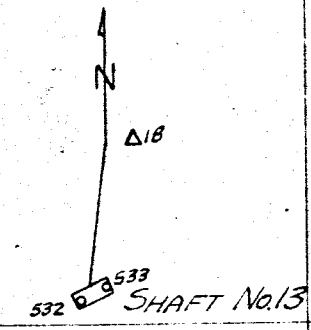

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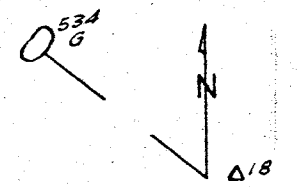

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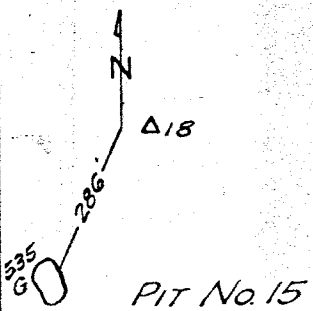

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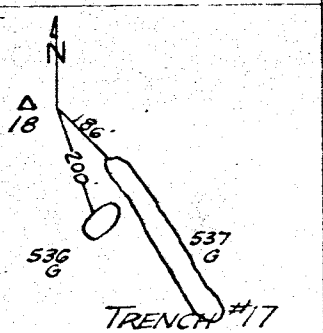

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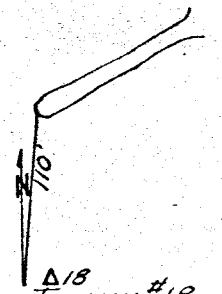

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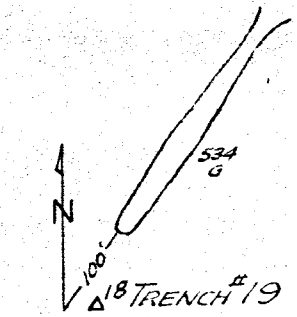

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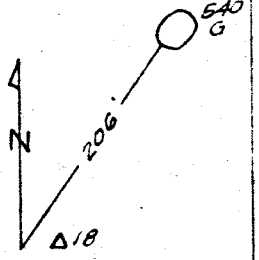

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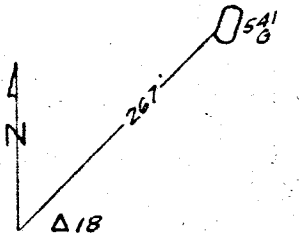

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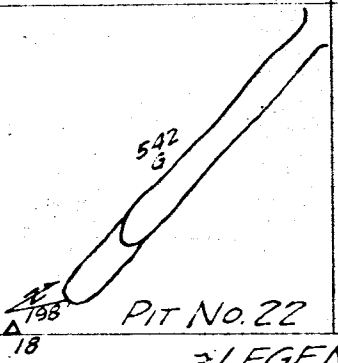

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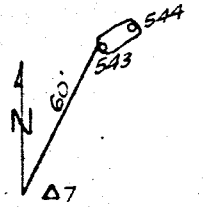

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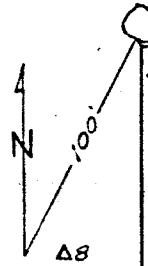


PIT No. 24

=LEGEND=

o = Vertical Channel Samples

G = Grab Sample of Dump

DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

PROJECT 407

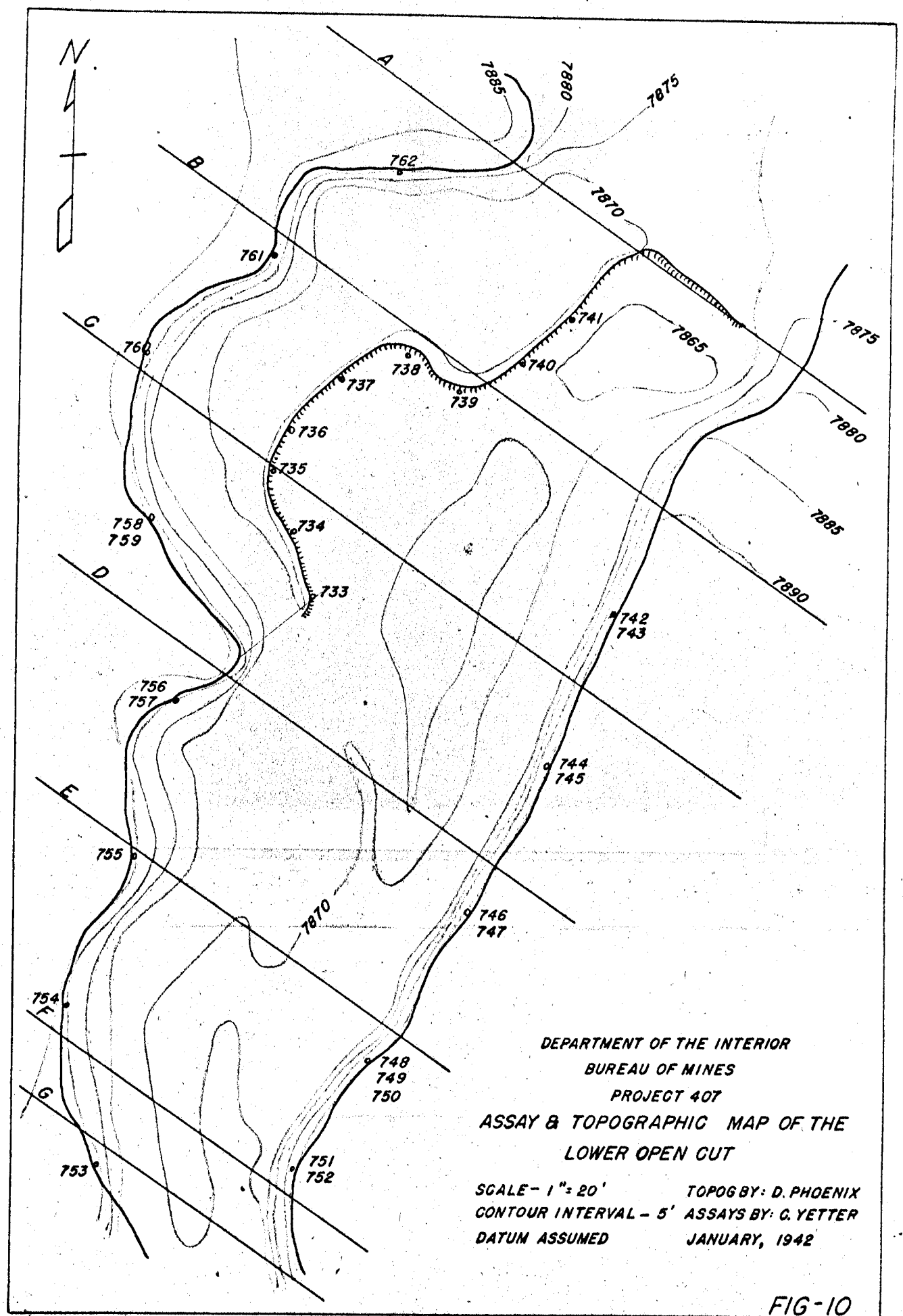
SAMPLE PLANS OF MINOR EXCAVATIONS

SEE 100 SCALE MAP FOR LOCATIONS

SCALE: 1" = 40'

JAN-22-1942

FIG.-11-


N
A
B
C
D
E
F
G
7885
7880
7875
7870
7865
7890
762
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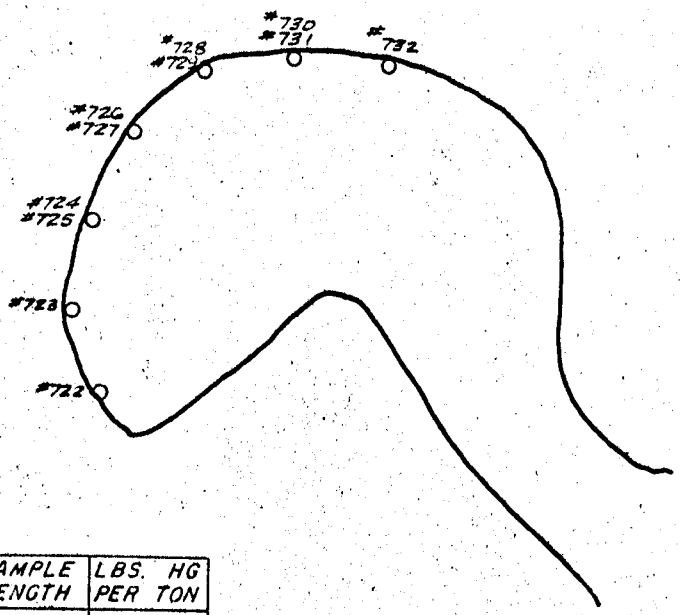
751
752
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
PROJECT 407
ASSAY & TOPOGRAPHIC MAP OF THE
LOWER OPEN CUT
SCALE - 1" = 20'
CONTOUR INTERVAL - 5'
DATUM ASSUMED
TOPOG BY: D. PHOENIX
ASSAYS BY: C. YETTER
JANUARY, 1942
FIG-10



SAMPLE NO.	SAMPLE LENGTH	LBS. HG PER TON
722	3'	4.2
723	5'	5.8
724	5'	4.1
725	5'	6.6
726	5'	6.0
727	5'	5.1
728	5'	1.4
729	5'	1.4
730	5'	2.2
731	5'	6.4
732	4'	4.3

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
PROJECT 407

ASSAY MAP OF AERIAL TRAM CUT

SCALE: 1" = 20' TOPOG. BY: DAVID PHOENIX
JAN. 1942 ASSAYS BY: C. YETTER

FIG-10a

Mohawk MINE FROM 423Y Drift TO

DATE	PLACE	TONS	ASSAY AU.	ASSAY AG.	ASSAY CU.	TOTAL OZS. GOLD	TOTAL OZS. SILVER	TOTAL LBS. COPPER
APR-1914	423Y-DR.	12	1 80				21 60	
MAY- "	" " "	35	22				7 85	
TOTAL								
TO SMELTER								
TO MILL		47	0.63			29.45		
TO SUSPENSE DUMP								

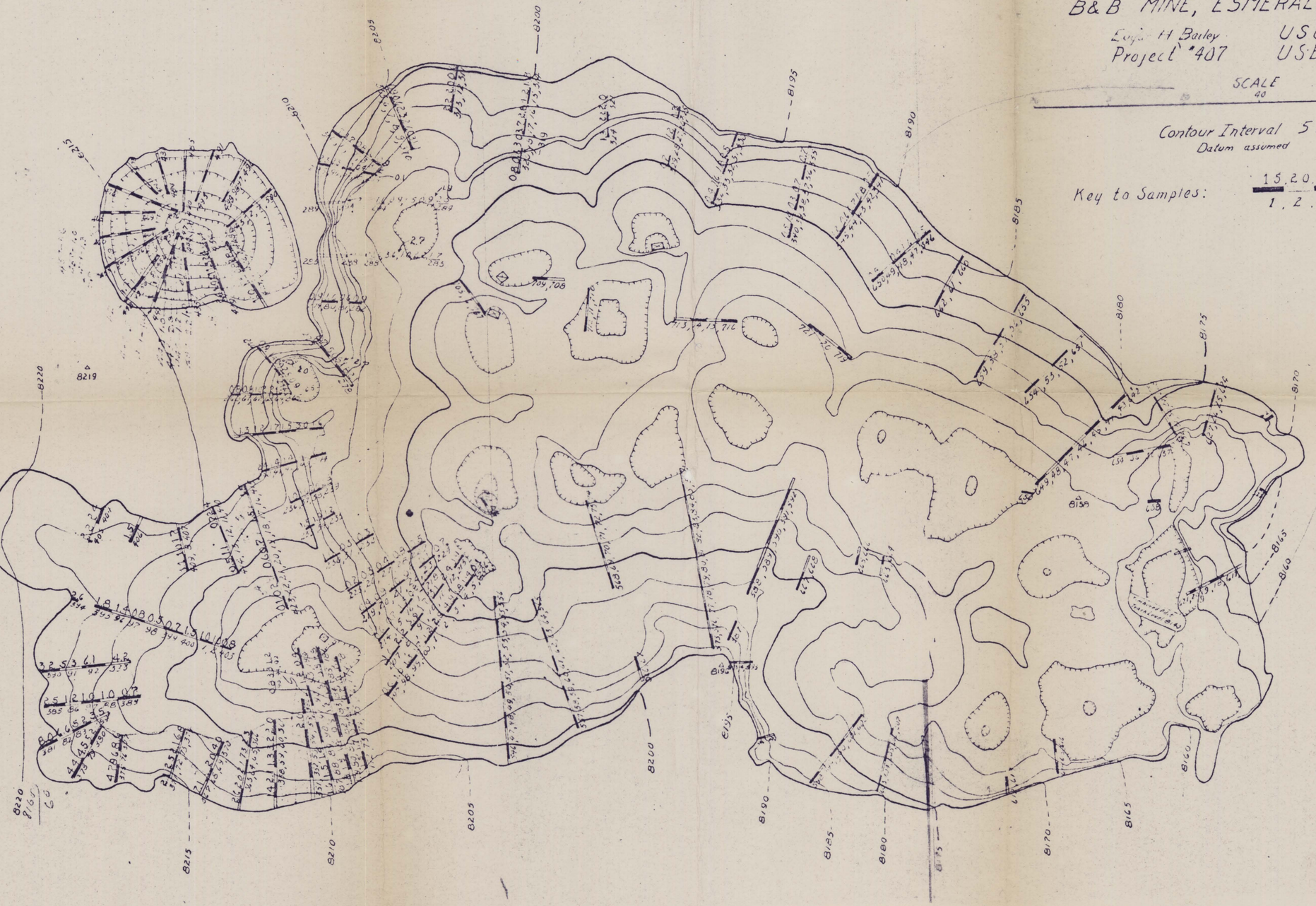
SAMPLE & TOPOGRAPHIC MAP of GLORY HOLE of the B&B MINE, ESMERALDA CO, NEV.

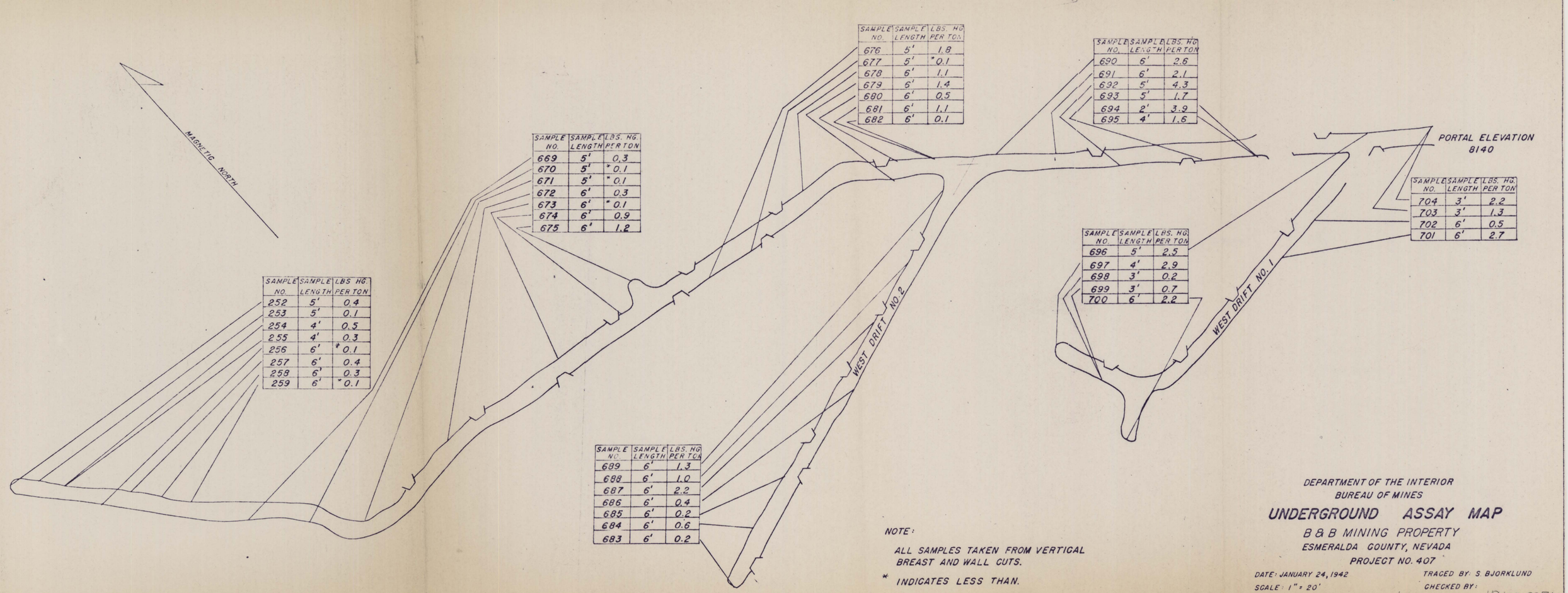
Engr. H Bailey USGS 1941
Project #407 USBM 1941

SCALE 40 60 80 100 ft.

Contour Interval 5 Feet
Datum assumed

Key to Samples: 15.20.09 = Lbs Hg / Ton
1, 2, 3 = Sample numbers





SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
252	5'	0.4
253	5'	0.1
254	4'	0.5
255	4'	0.3
256	6'	* 0.1
257	6'	0.4
258	6'	0.3
259	6'	* 0.1

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
669	5'	0.3
670	5'	* 0.1
671	5'	* 0.1
672	6'	0.3
673	6'	* 0.1
674	6'	0.9
675	6'	1.2

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
676	5'	1.8
677	5'	* 0.1
678	6'	1.1
679	5'	1.4
680	6'	0.5
681	6'	1.1
682	6'	0.1

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
689	6'	1.3
688	6'	1.0
687	6'	2.2
686	6'	0.4
685	6'	0.2
684	6'	0.6
683	6'	0.2

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
690	6'	2.6
691	6'	2.1
692	5'	4.3
693	5'	1.7
694	2'	3.9
695	4'	1.6

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
696	5'	2.5
697	4'	2.9
698	3'	0.2
699	3'	0.7
700	6'	2.2

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
704	3'	2.2
703	3'	1.3
702	6'	0.5
701	6'	2.7

NOTE:

ALL SAMPLES TAKEN FROM VERTICAL BREAST AND WALL CUTS.

* INDICATES LESS THAN.

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

UNDERGROUND ASSAY MAP

B & B MINING PROPERTY
ESMERALDA COUNTY, NEVADA
PROJECT NO. 407

DATE: JANUARY 24, 1942
SCALE: 1" = 20'
ENGINEER:

TRACED BY: S. BJORKLUND
CHECKED BY:
APPROVED BY:

18600076

FIG. 9

Topographic and Geologic sketch map of the area surrounding the B.& B. property, Esmeralda Co., Nevada

Scale: 1 inch = 500 feet

Contour interval 25 feet

Datum assumed

Area of 1 inch = 100 feet map

Approximate Boundary of T & L Map

Large Open Cut Altitude 8076

Magnetic North

Basic breccia

Vitrophyre and rhyolite

S.W. Cor. Sec. 31 T. 1N., R. 34E.

Alluvium

Vitrophyric tuff

Mt. Diablo Base Line

Opalized andesite(?) breccia

Basic breccia

Altered basic breccia

Fresh tuff

tuff

Landslide

Basalt

Fresh tuff

VALLEY VIEW PATENTED CLAIMS

Section along Y-Y'

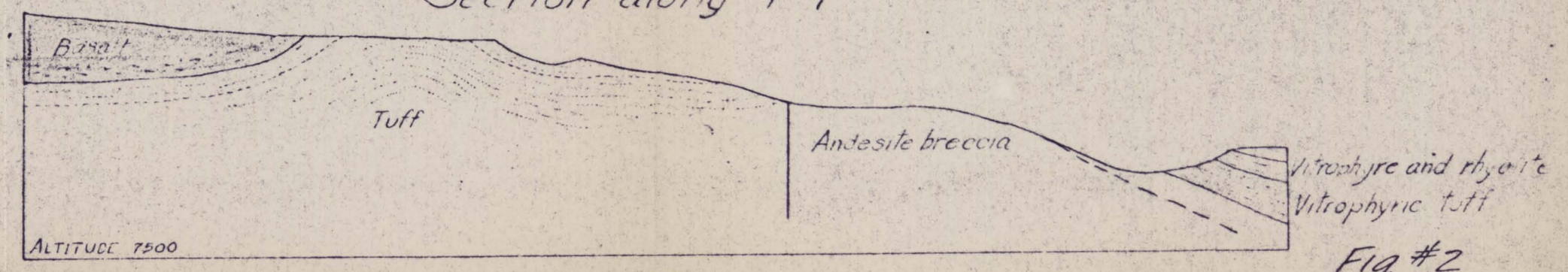
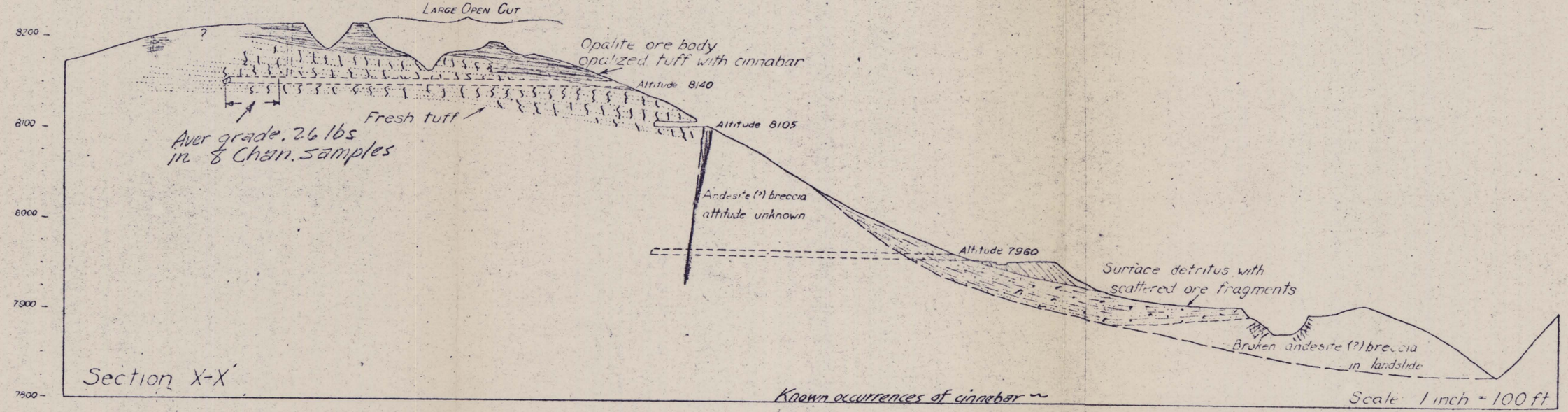


Fig #2

Edgar H. Bailey, 1941

Silver Spot Program, U.S. Geological Survey & U.S. Bureau of Mines

1860 0076



B & B. property, Esmeralda Co., Nevada 1941

1/12/42

Edgar H. Bailey, U.S. Geological Survey

1860 0076

FIG. 4

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
477	5'	14.2
478	5'	2.4
479	5'	1.3
480	5'	1.0

470	5'	6.2
471	5'	1.0
472	5'	0.4
473	5'	1.1
474	5'	1.1
475	5'	0.8
476	5'	2.3

465	5'	2.2
466	5'	0.6
467	5'	0.7
468	5'	1.1
469	5'	1.8

460	5'	1.2
461	5'	0.7
462	5'	1.3
463	5'	1.1
464	5'	2.2

453	5'	2.0
454	5'	1.9
455	5'	1.5
456	5'	1.1
457	5'	1.6
458	5'	1.0
459	5'	1.3

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
491	5'	1.9
492	5'	1.3
493	5'	0.7
494	5'	1.6
495	5'	1.1

485	5'	2.6
486	5'	0.9
487	5'	1.2
488	5'	0.8
489	5'	0.9
490	5'	1.3

481	5'	1.5
482	5'	2.2
483	5'	3.2
484	5'	1.6

448	5'	1.2
449	5'	1.7
450	5'	1.4
451	5'	1.6
452	5'	1.4

441	5'	1.0
442	5'	0.8
443	5'	1.2
444	5'	1.0
445	5'	2.3
446	5'	1.2
447	5'	2.2

435	5'	1.0
436	5'	0.8
437	5'	0.6
438	5'	1.2
439	5'	3.3
440	5'	1.4

429	5'	2.4
430	5'	1.9
431	5'	1.1
432	5'	1.3
433	5'	
434	5'	0.4

273	5'	0.7
274	5'	0.8
275	5'	1.5
276	5'	2.7
277	5'	1.8
278	4'	2.1

266	5'	0.7
267	5'	0.9
268	5'	0.9
269	5'	1.4
270	5'	1.0
271	5'	2.5
272	5'	0.9

260	5'	0.8
261	5'	0.8
262	5'	1.0
263	5'	2.2
264	5'	1.8
265	5'	2.5

245	5'	1.0
246	5'	1.3
247	5'	1.2
248	5'	1.7
249	5'	1.5
250	5'	3.0
251	5'	1.6

240	5'	2.4
241	5'	1.4
242	5'	1.4
243	5'	1.5
244	5'	2.3

236	5'	1.0
237	5'	1.6
238	5'	2.0
239	5'	2.8

233	5'	1.5
234	5'	1.9
235	5'	1.2

404	5'	2.4
405	5'	2.2
406	5'	1.5
407	5'	1.7
408	5'	1.0
409	5'	1.1
410	5'	2.4
411	5'	0.7
412	5'	0.8
413	5'	1.1
414	5'	0.5
415	5'	1.5
416	5'	2.0
417	5'	1.5
418	5'	2.0
419	5'	0.7
420	5'	0.6
421	5'	0.4
422	5'	0.2
423	5'	0.1

394	5'	2.6
395	5'	1.8
396	5'	1.4
397	5'	0.8
398	5'	0.5
399	5'	0.7
400	5'	1.5
401	5'	1.0
402	5'	1.0
403	5'	0.8

390	5'	3.2
391	5'	5.3
392	5'	6.1
393	5'	4.2

385	5'	2.5
386	5'	1.2
387	5'	1.0
388	5'	1.0
389	5'	0.7

381	5'	8.0
382	5'	6.6
383	5'	5.2
384	5'	3.5

378	5'	4.4
379	5'	4.5
380	5'	5.2

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
424	5'	1.0
425	5'	1.5
426	5'	0.8
427	5'	2.8
428	5'	0.9

496	5'	1.9
497	5'	1.4
498	5'	0.6
499	5'	1.4
500	5'	2.1
501	5'	1.7
502	5'	1.1
503	5'	2.8
504	5'	1.5

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
279	5'	0.9
280	5'	1.6
281	5'	0.6
282	5'	0.9
283	5'	1.7
284	5'	2.2
285	5'	1.0
286	5'	2.7
287	5'	3.6
288	5'	2.6
289	5'	2.3
290	5'	1.9
291	5'	0.9
292	5'	1.5
293	5'	0.9
294	4'	1.6
295	5'	2.3
296	5'	2.3
297	5'	1.0
298	5'	0.4
299	5'	0.1

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
300	5'	1.7
301	5'	3.7
302	5'	0.8
303	5'	1.0
304	5'	0.9
305	5'	1.3
306	5'	0.9
307	5'	2.3
308	5'	2.6
309	5'	0.3
310	5'	1.1
311	5'	0.6
312	5'	2.0
313	5'	2.2
314	5'	1.3
315	5'	1.2
316	5'	2.8
317	5'	3.7
318	5'	3.0
319	5'	0.6
320	5'	0.8

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
321	5'	2.0
322	5'	2.2
323	5'	1.6
324	5'	1.3
325	5'	1.2
326	5'	0.9
327	5'	1.2
328	5'	0.7
329	5'	0.7
330	5'	0.7
331	5'	2.5
332	5'	1.8
333	5'	1.6
334	5'	0.9
335	5'	0.7
336	5'	0.3
337	5'	0.7
338	5'	0.3
339	5'	1.4
340	5'	0.5
341	5'	0.5
342	5'	0.8
343	5'	0.7
344	5'	0.6
345	5'	1.2

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
705	5'	2.6
706	4'	3.8
707	5'	1.3
708	5'	0.9
709	5'	3.8
710	5'	0.8
711	5'	1.2
712	5'	0.6
713	5'	0.7
714	4½'	1.3
715	4'	0.9
716	4'	0.7
717	5'	1.4
718	5'	0.6
719	5'	1.6
720	5'	2.2
721	5'	1.6

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
346	5'	1.6
347	5'	1.6
348	5'	0.4
349	5'	0.1
350	5'	0.8

660	5'	1.7
661	5'	2.5
662	5'	0.9

655	5'	1.3
656	5'	0.2
657	5'	0.6
658	5'	0.4
659	5'	3.6

651	5'	1.3
652	5'	1.0
653	5'	2.3
654	5'	7.3

642	5'	0.6
643	5'	2.5
644	5'	2.9
645	5'	1.7
646	5'	0.6
647	5'	2.2
648	5'	0.7
649	5'	1.2
650	5'	2.3

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
628	5'	*0.1
629	5'	1.0
630	5'	1.7
631	5'	0.5
632	5'	*0.1
633	5'	0.2
634	5'	1.2
635	5'	*0.1
636	5'	0.6
637	5'	1.9

617	5'	0.5
618	5'	3.2
619	5'	3.0
620	5'	2.9
621	5'	0.7
622	5'	1.8
623	5'	3.1
624	5'	1.5
625	5'	0.9
626	5'	*0.1
627	5'	0.3

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
638	4'	1.7
639	1'	0.8
640	1'	1.2
641	2'	1.0

663	5'	2.4
664	5'	1.3
665	5'	1.3
666	5'	0.6
667	5'	0.7
668	5'	1.0

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
357	5'	1.4
358	5'	2.1
359	5'	1.3
360	5'	32
361	5'	2.0
362	5'	2.6
363	5'	2.0
364	5'	2.1
365	5'	7.3
366	5'	2.3
367	5'	7.1
368	5'	5.0
369	5'	2.0
370	5'	4.0
371	5'	2.1
372	5'	2.5
373	5'	2.1
374	5'	6.8
375	5'	4.7
376	5'	9.6
377	5'	8.6

196	5'	1.7
195	5'	1.2

351	5'	1.2
352	5'	1.9
353	5'	1.7
354	5'	1.3
355	5'	2.0
356	5'	0.5

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
172	5'	1.5
173	5'	1.7
174	5'	0.7
175	5'	0.6
176	5'	0.7
177	5'	1.1
178	5'	1.2
179	5'	1.8
180	5'	1.5
181	5'	1.4
182	5'	0.5
183	5'	1.2
184	5'	1.2
185	5'	0.5
186	5'	1.8
187	5'	1.6
188	5'	1.5
189	5'	1.4
190	5'	0.8
191	5'	3.3
192	5'	1.0
193	5'	1.2
194	5'	0.4

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
197	5'	0.6
198	5'	1.0
199	5'	1.3
200	5'	1.7
201	5'	1.8
202	5'	2.9
203	5'	4.9
204	5'	1.8
205	5'	1.4
206	5'	*0.1
207	5'	1.6
208	5'	2.2
209	5'	2.9
210	5'	1.7
211	5'	3.1
212	5'	2.4
213	5'	0.9
214	5'	0.6
215	5'	0.7
216	5'	1.5
217	5'	0.8
218	5'	1.0
219	5'	0.4
220	5'	0.9
221	5'	1.0
222	5'	0.4
223	5'	0.1
224	5'	0.7
225	5'	0.2
226	5'	0.3
227	5'	0.4
228	5'	0.8
229	5'	0.5
230	5'	1.0

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
566	5'	0.7
567	5'	2.0
568	5'	1.0
569	5'	1.4
570	5'	0.9
571	5'	2.0
572	5'	1.7
573	5'	0.9
574	5'	0.8

557	5'	0.8
558	5'	0.7
559	5'	0.9
560	5'	1.1
561	5'	0.5
562	5'	0.8
563	5'	0.4
564	5'	1.6
565	5'	1.7

546	5'	0.6
547	5'	0.8
548	5'	0.9
549	5'	1.1
550	5'	1.1
551	5'	1.4
552	5'	1.7
553	5'	0.9
554	5'	0.5

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
596	5'	3.1
597	5'	1.0

593	5'	1.8
594	5'	1.4
595	5'	0.8

587	5'	0.7
588	5'	1.1
589	5'	0.6
590	5'	0.9
591	5'	0.9
592	5'	0.6

575	5'	0.9
576	5'	0.8
577	5'	1.3
578	5'	1.4
579	5'	1.7
580	5'	2.1
581	5'	1.4
582	5'	0.7
583	5'	0.7
584	5'	1.0
585	5'	0.9

SAMPLE NO.	SAMPLE LENGTH	LBS. HG. PER TON
612	5'	0.2
613	5'	2.0
614	5'	1.8
615	5'	2.0
616	5'	2.4

598	5'	2.1
599	2'	3.3
600	5'	2.5
601	5'	2.7
602	5'	2.8
603	5'	3.4
604	5'	2.9
605	5'	2.5
606	5'	2.4
607	5'	4.2
608	5'	1.7
609	5'	2.0
610	5'	3.5
611	5'	2.5

8220 8210 8200 8190 8180 8175 8170 8165 8160 8150

MAGNETIC NORTH

* INDICATES LESS THAN

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

ASSAY & TOPOGRAPHIC MAP

B & B MINING PROPERTY
ESMERALDA COUNTY, NEVADA
PROJECT NO. 407

DATE: JANUARY 22, 1942
SCALE: 1" = 20'
TRACED BY: D.D.W. & S.B.
ENGINEER:

CONTOUR INTERVAL: 5'
DATUM ASSUMED
CHECKED BY:
APPROVED BY:

Fig 8

1860 0076

Geologic Ma
of the vicinity of the ma
B. & B. property, Esmer

Scale: 1 inch = 100
Contour interval 10 feet
Datum assumed

Trace on surface of base of ore, projected from exposures in and below Main Glory Hole

Av. 2 c. 85 Average Value of
or Av. 2 Chan 5:85 2 Channel Samples
is 85 lbs Hq/Ton

Fresh Tuff Float Contact Tuff Float
Opalized Tuff Float and Opalized Float

D-6' = Depth 6'

A - - - A Line of vertical sections

Grab Grab sample of Dump

*0.1 Less than .1 lbs Hq/Ton

⊗ Suggested test holes

Reasonably Assured Ore
Probable Ore
Possible Ore

Geology and topography by
Edgar H. Bailey & David A. Phoenix

Silver Spot Program
U.S. Geological Survey & U.S. Bureau of Mines 19-

Figure 3