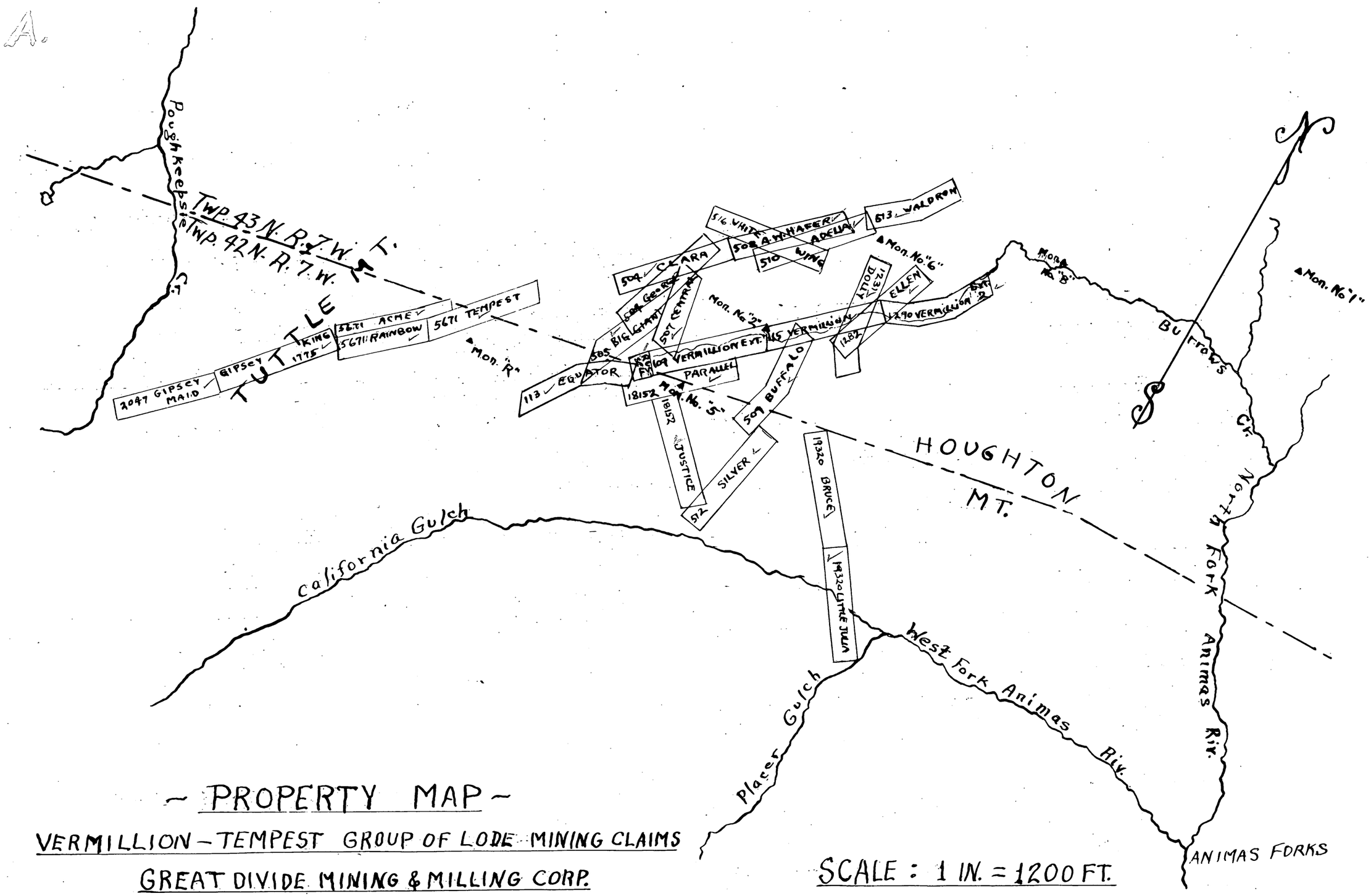
A.



~ PROPERTY MAP ~

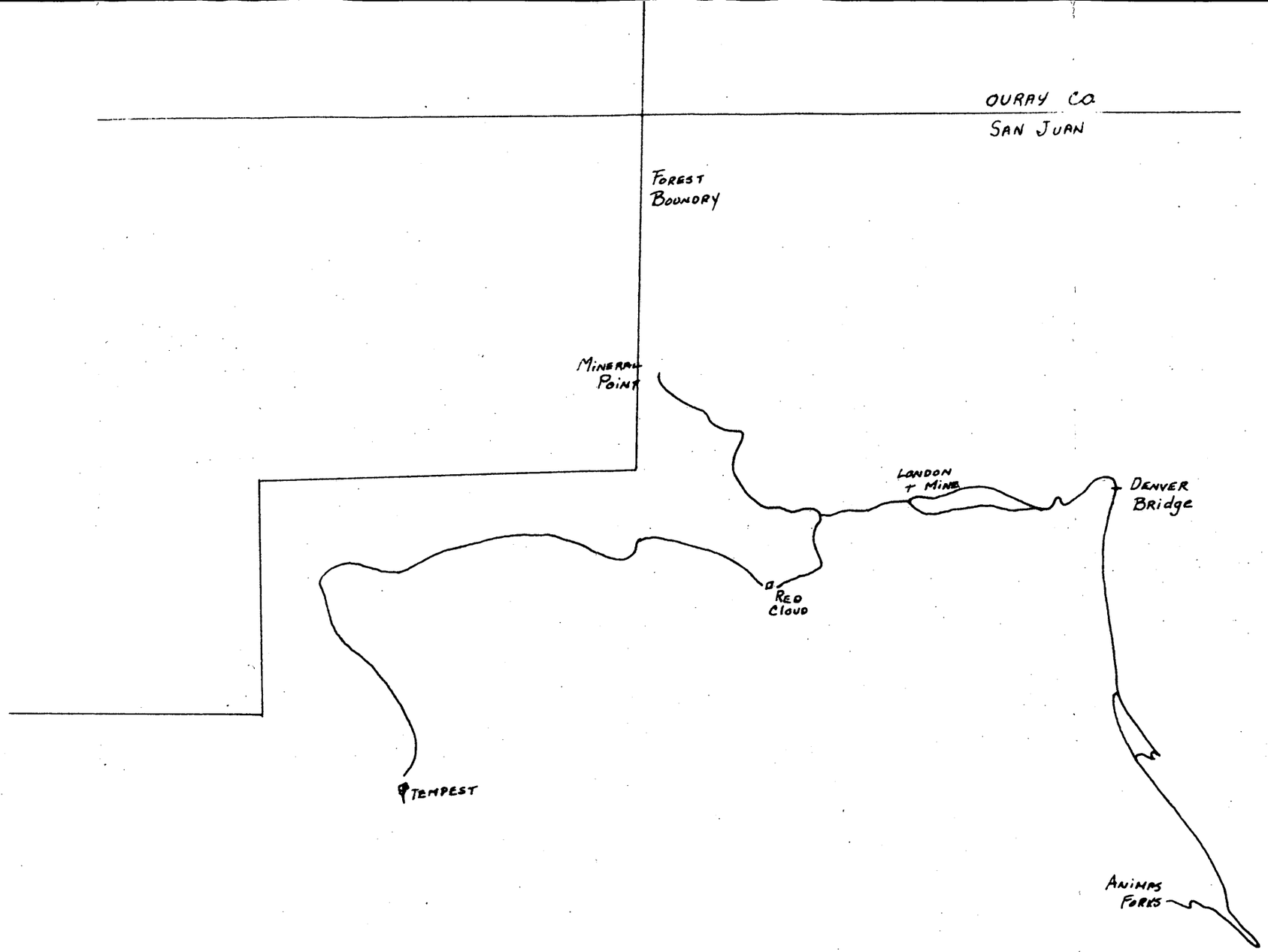
VERMILLION – TEMPEST GROUP OF LODE MINING CLAIMS

GREAT DIVIDE MINING & MILLING CORP.

SILVERTON, COLO.

SCALE : 1 IN. = 1200 FT.

OME Region III
RECEIVED
FEB 3 1967
Denver, Colorado



1" = 24,000 '''

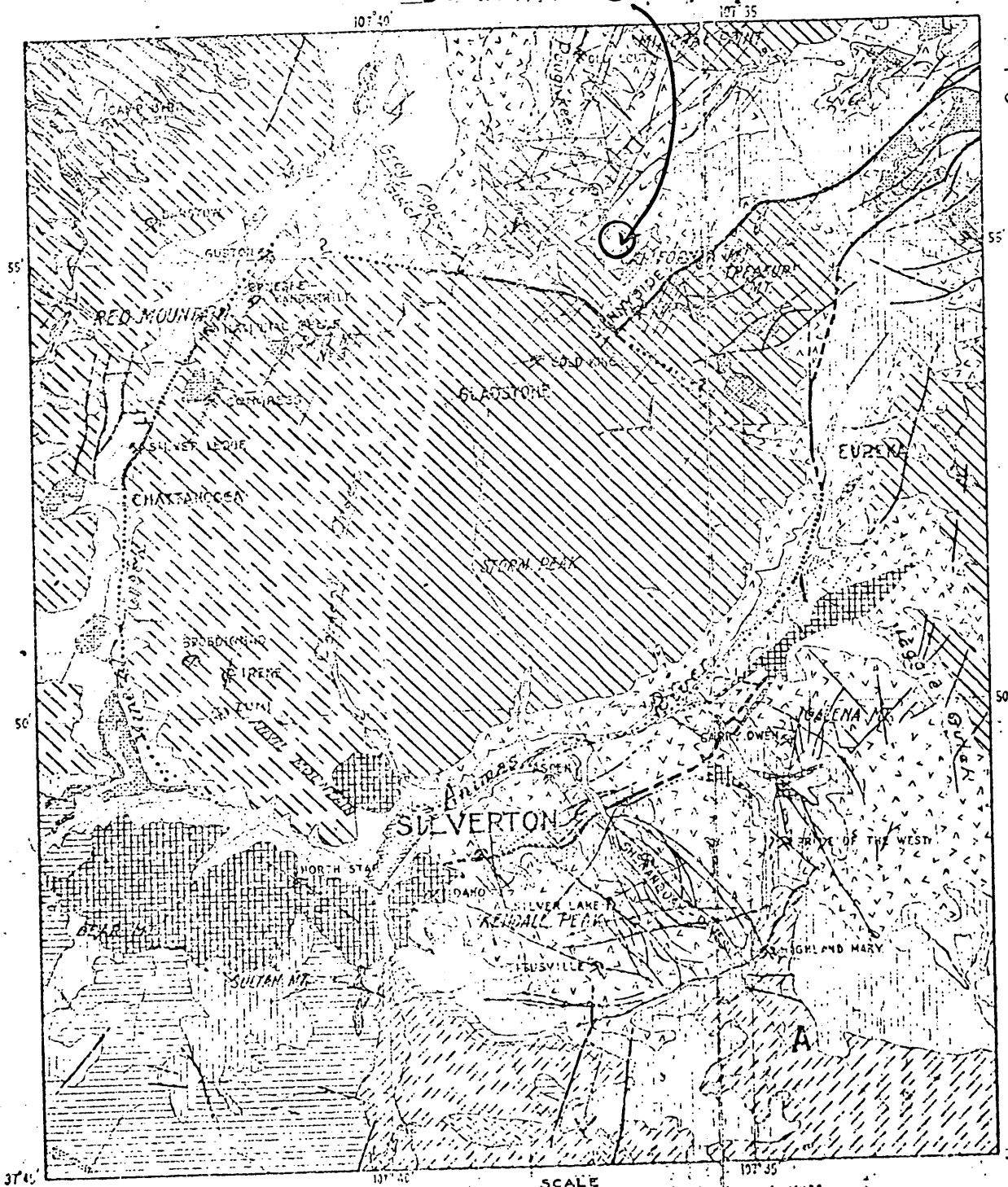
1" = 2,000'

Better than 5 MILES from red Cloud mine to the Tempest. and some road work necessary from London Mine to the red Cloud approx 6½ miles Total.

GEOLOGY OF A PORTION OF THE

ADAPTED FROM ECONOMIC GEOLOGY SHEET, U.S.G.S. FOLIO 120, WITH CHANGES AND ADDITIONS BY W.S. BURBANK.

Vermillion Group of Claims.

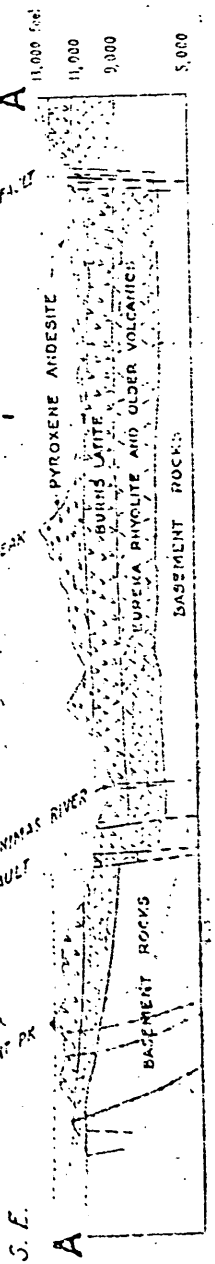


LEGEND

Quaternary
- Alluvium, Glacial deposits, and landslides

Tertiary
- Quartz Monzonite
- Intrusive porphyries
- Intrusive rhyolite
- Intrusive andesite
- Potosi volcanic series
- Pyroxene andesite
- Burns latite
- Silverton volcanic series.
- Telluride conglomerate, San Juan tuff, Picayune volcanic group, and Eureka rhyolite

Archean Algonkian Paleozoic
- Rico and Cutler formations, Molas and Hermosa formations, Leadville ls, Elbert fm and Ouray ls. Ignacio quartzite.
- Granite
- Schist and gneiss
- Faults
- Veins, fissures and dykes (marked on crosses)



To accompany Report of Warren C. Prosser

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C. M. D.
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ECONOMIC ANALYSIS OF MINING OPERATION

VIA VERMILLION TUNNEL FOR 1967

ECONOMIC ANALYSIS OF MINING OPERATION VIA VERMILLION TUNNEL FOR 1967

The following is an estimate of the capital requirements, operating costs, and anticipated returns to be derived from operating the Vermillion properties of GDMM Corporation during the 1967 season. It is based on a scale of 100 tons per day, of ore, mined and shipped to the mill. Costs are based either on figures obtained during the 1966 exploration by Ray Bennett and A. M. Garbade, or on rate schedules published in the Denver Equipment Company Handbook.

Since the proposed mining operation must be initiated during the 1967 season, the essential tasks involve three phases:

(1) Mine development -- work that must be done to bring production and shipment up to at least 100 tons/day.

(2) Mine operations -- continuing production of 100 tons/day of ore.

(3) Exploration -- core drilling, sampling, geological inspections, etc., to locate and block out sufficient ore reserves to maintain uninterrupted operations throughout the season.

The mine development program includes cleaning out transportation tunnel, repairing access road from tunnel portal, installing car rails (where needed), installing air and power lines, and sufficient exploration (core drilling) to block out enough ore for 10 weeks' full operation (i.e., 6000 tons) before operations actually begin. The core drilling portion of this program also requires roadwork to haul drill rigs to vein outcrops. It is estimated that 5 weeks will be required to complete the deadwork (i.e., all development work done prior to the time mining and shipping ore first begins.). Capital outlay is estimated from the cost of all deadwork plus working capital for an additional four weeks of operation, including continued exploration. Following this period, smelter returns

Not exactly exploration work

will be utilized to cover operating expenses and further exploration. A 20 week mining season has been assumed on the basis that development will start June 1, 1967, and that operations will continue through October. This in turn is based on the premise that in case of early heavy snows the county will (as in the past) clear the main road to the mill. Thus, a 15 week production season is assumed for 1967 and a 20 week season for succeeding years.

I - Capital Requirements

A. Fixed Capital Outlay

1. Roadwork

Improve or build transportation road (suitable for 20 ton ore trucks) from portal of Vermillion Tunnel to main Animas Canyon road. Blaze trails to vein outcrops, suitable for hauling drill rigs to designated sites.

Total Roadwork $8,000.00

2. Mine Development

Clean out adit tunnel, repair rails, shore up caved sections, install air and power lines, erect storage shed for mining supplies and equipment (tools, dynamite, compressor, etc.) Basis: 3 man weeks per week for 3 weeks @ $3.00/hr plus 50¢/hr. for social security and fringe benefits; total cost, assuming 8 hour day, 6 day week ($168.00/man-week) = $1,512.00. Tools, rails, supplies, rental of compressor and generator estimated @ $4,500.00.

Total Mine Development 6,000.00

3. Core Drilling

Rental of drill rigs, haulage to and from drill sites, and labor to man drill rigs: 2 man-weeks per week for 3 weeks = 6 man-weeks.

Equipment and supplies	$6,000.00	
Drilling labor	1,000.00	
Total Core Drilling		7,000.00

4. Mine Development supervision

5 weeks @ $250.00/week	1,250.00

5. Assays of Core Samples

(Basis: 10 assays per hole x 8 holes @ $7.50/assay)	600.00

6. Consultant Geologist

1 day per week @ $150.00/day x 5 weeks	750.00
Total Fixed Capital Outlay	$ 23,600.00

B. Working Capital

1. Direct operating expenses

Basis: 4 weeks operating expenses at full production.

Labor: 6 man-weeks per week for 4 weeks = 24 man-weeks

$4,032.00

Equipment and supplies, including dynamite, fuel, drill-bits, etc., plus ore cars, compressor and generator rentals, estimated at $800.00/week x 4 weeks = $3,200.00

Total labor, equipment and supplies	7,300.00

2. Freight Haulage to Mill

$100.00/day @ $3.00/ton = $300.00/day x 24 days		7,200.00 out
3. Operations Supervision		1,000.00 "
4. Mill Assays		
(Analyses of Concentrate pulp)		
4 per day @ $7.50 each = $30.00/day x 24 days		720.00 "
5. Exploration		
2 man-weeks/week	$336.00/week	?
equipment & supplies	2,000.00/week	
sample assays	200.00/week	
geologist	150.00/week	
Total	2,700/week x 4 weeks	10,800.00
6. Miscellaneous		
Corporate supervision, travel, communications, etc. @ $350.00/week	no	1,400.00
Total Working Capital		$28,500.00

Is this not part of blocking out ore?

Capital Requirement Summary

A. Fixed Capital Outlay	23,600.00
B. Working Capital	28,500.00
C. Reserve Capital	7,900.00
Total Capital Requirement	60,000.00

II Operating Costs

	Weekly Cost
A. Direct Costs	
1. Labor, 8 man-weeks/week @ $168/man-week	1,350.00
2. Supervision (operations)	250.00
3. Rental of mining equipment (including drilling rigs, compressor, generator and ore cars)	2,000.00
4. Tools, mining and maintenance supplies, fuel, etc.	800.00
Total Direct Costs	4,400.00
B. Indirect Costs	
1. Haulage, 600 tons/week @ $3.00/ton	1,800.00
2. Mill assays, 24 per week @ $7.50 each	180.00
3. Drill-core assays, 20 per week @ $7.50 each	150.00
4. Geologist	150.00
Total Indirect Costs	2,280.00
C. Fixed Costs	
Property taxes, $5,000/year apportioned to 15 operating weeks	333.00
Insurance (estimated)	122.00
Total Fixed Costs	450.00

D. General Expenses

1. Administration (corporate supervision)	250.00
2. Communications, travel, accounting, legal fees and miscellaneous general expenses	250.00
Total general expenses	500.00

Recapitulation

	Weekly Cost	
A. Direct Costs	4,400.00	
B. Indirect Costs	2,280.00	
C. Fixed Costs	450.00	
D. General Expenses	500.00	
Total operating Cost, (not including Federal taxes and amortization)		7,630.00

Total mining cost per ton = 7,630/600 = $12.71 per ton mined ore delivered to mill.

III Estimated Profit

In order to estimate profits from the mining operation, the run-of-mine ore values must be known. For the present analysis this was obtained by averaging the assays of 21 samples of ore taken in the Rattle and Vermillion Tunnels during the past season. These are presented in Table I. Also, to obtain maximum smelter returns it is assumed that the mill flow sheet will provide three separate concentrates (Pb, Zn, and Cu) each of which is shipped individually to separate smelters designed for the respective metals.

Figures for mill losses, concentrate freight rates (mill to smelter) and smelter returns were obtained from the Denver Equipment Company Handbook. Milling cost figure was supplied by A. M. Garbade.

TABLE I - ASSAYS OF SAMPLES FROM RATTLE & VERMILLION TUNNELS

Rattle Tunnel	Au oz/ton	Ag Oz/ton	Pb %	Zn %	Cu %
1.	.005	2.78	18.2	22.0	2.0
2.	.01	3.36	10.7	9.8	2.0
3.	.01	3.4	21.8	25.4	2.0
4.	.02	43.35	33.6	15.3	2.0
5.	.005	1.36	5.4	2.2	-
6.	.03	6.06	26.0	23.7	-
7.	.02	5.62	32.8	19.8	-
8.	.005	1.76	0.2	0.1	-
9.	.01	15.2	64.6	5.1	-
10.	.025	4.42	9.1	-	-
11.	.02	3.24	-	-	-
Vermillion Tunnel					
12.	.015	0.128	11.2	26.8	0.15
13.	.01	0.125	13.0	20.4	0.12
14.	tr	0.54	0.2	0.3	-
15.	.01	0.86	2.3	4.2	-
16.	.005	1.88	8.9	12.6	-
17.	.015	3.3	5.8	14.2	-
18.	.01	1.7	9.4	13.7	-
19.	.01	1.24	8.1	2.0	-
20.	.02	3.36	14.2	23.2	-
21.	.02	2.9	13.6	27.2	0.3
Average	.0117	5.122	15.46	14.16	1.22

A. Gross Values in Ore

Amounts based on assay average.

Values based on current market price:

Au	$35.00/oz
Ag	1.30/oz
Pb	.16/lb .14
Zn	.16/lb .145
Cu	.35/lb .38

	Au oz/ton	Ag oz/ton	Pb lbs/ton	Zn lbs/ton	Cu lbs/ton
Amounts	.0117	5.122	309	283	24.4
Values	$0.41	$6.65 6.62	$49.40 49.26	$45.30 41.03	$8.54 9.27

Total Gross Value in Ore -- $110.30/ton

B. Gross Values in Concentrates

Based on recovery factors quoted in DECO Handbook for selective flotation to yield separate Pb. Zn and Cu concentrates, each shipped to appropriate smelter:

Metal	Recovery Factor (%)	Net Amount Shipped to Smelter	Gross Value of Concentrates
Au	71.0	.083 oz	$0.29
Ag	74.0	3.78 oz	4.91
Pb	85.7	265 lbs.	42.30
Zn	67.0	190 lbs.	30.40
Cu	89.0	21.7 lbs.	7.60
Total Gross Value in Concentrates			$85.50

C. Net Smelter Returns

Based on 64% of gross concentrate values quoted in DECO Handbook for marketing Pb, Zn and Cu concentrates separately:

Metal	Smelter Return
Au	$ 0.19
Ag	3.16
Pb	26.20
Zn	19.50
Cu	4.87
Total gross smelter returns	$ 53.92/ton of mined ore

only $8.22 eligible

Less shipping charges between mill and smelter.

Based on estimated $20/tpn of concentrate = 0.31 tons of conc/ton ore x 20 = $6.30

Net smelter returns $47.62/ton of mined ore

D. Profit

Charges	Cost/ton
Mining (including exploration)	$ 12.71
Milling	6.50
Amortization (5% of gross ore value)	5.50
Total charges	$ 24.71
Smelter returns	47.62
Total charges	24.71
Net profit (before Federal Tax)	22.91/ton
Weekly profit (600 tons)	$13,746.00
Total profit for 15 weeks	206,190.00
Federal taxes (less depletion allowance = 35%)	82,167.00
Net return on investment of $60,000.00	$124,023.00

IV - Conclusions

(1) Comparing estimated charges with smelter returns, this small scale operation would still remain profitable if ore values mined were only 50% of those indicated in the assay average of Table I.

(2) The above figures should be checked out carefully and amended when firm quotes are obtained. The estimates used above may be over conservative, particularly with regard to equipment rental costs.

(3) Subject to such checking and amendment, the risk portion of the capital requirement may be allocated to that fraction of the capital outlay required to perform the initial core drilling, i.e., to cover the first three weeks of the mine development program. This is estimated at roughly $20,000.00. When sufficient drill core assays have been made to block out the required ore tonnage and verify the assumed ore grade, the only remaining risk thereafter involves maintenance of current metal prices, which are not likely to change much within the next several years.

(4) Efforts to raise the necessary capital by OME loan and otherwise should be initiated immediately and prosecuted vigorously.

Charles Sheer

CHARLES SHEER.

December 19, 1966

Mr. Robert Sterling
Vice President
Central Bank & Trust Co.
15th & Arapahoe Street
Denver, Colorado 80202

In re: Loan to Great Divide Mining & Milling Corporation, Silverton, Colorado
Home Office: 105 - 8th Ave., Seacliff, New York

Dear Mr. Sterling:

I am writing you in reference to a development loan for mining operations.

Enclosed herewith is an "Economic Analysis" prepared by Dr. Charles Sheer, of Columbia University, which states the salient facts in connection with this proposed operation. You will note on page #4 that the total capital requirement is $60,000.00, of which the company will have available $10,000.00 to $12,500.00, so that a loan of $47,500.00 to $50,000.00 is required. The loan would be secured by a mortgage on 28 claims to be developed.

Should you require any further particulars, please advise. Your prompt consideration would be greatly appreciated.

Very truly yours,

Ray A. Bennett, Pres.

RAB:mb

Encl.

MAX G. BROOKS
CHAIRMAN OF THE BOARD AND PRESIDENT

THE CENTRAL BANK AND TRUST CO.

ESTABLISHED 1892 Central Park DENVER • PHONE 825-3181

December 28, 1966

Mr. Albert Garbade, President
Great Divide Mining & Milling Corporation
105 Eighth Avenue
Seacliff, New York

Dear Mr. Garbade:

Your letter addressed to Mr. Robert Sterling dated December 19 has been referred to the undersigned for reply.

We have given careful consideration to the request for a loan of $47,500 to $50,000 and to the Economic Analysis of Mining Operation presented with the request. We have not attempted to judge the merit of the economic analysis nor have we sought opinion of consultants in this matter. Due to several factors such as tight money, the term of the loan, and the degree of risk involved, Central Bank and Trust Company declines the request.

We would like to further state that our past experience with Moreno Uranium Corporation and Mr. Ray Bennett has been satisfactory and that our unwillingness to make this loan requested in no way reflects the good record of Moreno and Bennett.

Yours very truly,

THE CENTRAL BANK AND TRUST COMPANY

Marvin F. Owens

Marvin F. Owens
Senior Vice President

MFO:dh

cc: Mr. Ray A. Bennett

XXXXXXXXXXXXXXXXX XXXXXXXXXXX XXXXXX XXXXXXXXX
105 8th Avenue, Sea Cliff, N. Y. 516 Or 6-2975

December 14th, 1966.

Mr. Raymond Riley, V. P.,
Marine Midland Grace Trust Co.,
89-64 163rd Street,
Jamaica, N. Y.

Dear Mr. Riley:

With reference to our recent discussion regarding a development loan for mining operations. Enclosed herewith is an " Economic Analysis " prepared by Dr. Charles Sheer, of Columbia University, which states the salient facts in connection with this proposed operation.

You will note on page #4, that the Total Capital Requirement is $60,000.- of which the company will have available $10,000.- to $12,500.- so that a loan of $47,500.- to $50,000.- is required. The loan would be secured by a mortgage on the 28 claims to be developed.

Should you require any further particulars please advise.

Your prompt consideration would be greatly appreciated.

Yours very truly,

Pres.

P.S. Please send duplicate of reply.

MARINE MIDLAND GRACE TRUST COMPANY OF NEW YORK

89-64 ONE HUNDRED SIXTY THIRD STREET

JAMAICA, NEW YORK 11432

RAYMOND F. RILEY
VICE PRESIDENT

JAMAICA 6-8400

December 16, 1966

Mr. Albert M. Garbade
Great Divide Mining & Milling Corp.
105 Eighth Avenue
Sea Cliff, N. Y. 11579

Dear Mr. Garbade:

You have asked that we consider a loan to your corporation in the amount of $50,000.00 and have submitted with your application an "Economic Analysis of Mining Operation" of subject's mining properties in Colorado. The analysis indicates that a budget of $60,000.00 is required for development purposes covering mining and operations. It was suggested that any such loan be secured by a mortgage on certain claims to be developed and the loan would be paid over an extended period.

Under present conditions we regret that we are not in a position to act favorably on this request.

Sincerely,

Vice President

PRELIMINARY EVALUATION

VERMILLION GROUP
of
LODE MINING CLAIMS

EUREKA MINING DISTRICT

SAN JUAN COUNTY COLORADO

By

Warren C. Prosser
Consulting Mining Engineer
Professional Engineer
Registered in Colorado No. 30

430 Cooper Bldg.
Denver Colorado 80202
Phone 255 9827

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ILLUSTRATIONS

Plat 1. Claim Map, Scale 1 inch to 300 feet.

Plat 2 Rattle Tunnel, Claims and Vein, Scale 1 inch to 100 feet.

Plate IV Silverton Block Fault after U.S.G.S.

Plate 111 Geology Silverton Quadrangle

Panaram Photo Mountains of subject area.

U.S.G.S. Topography Sheet Silverton Quadrangle

BIBLIOGRAPHY

U.S.Geological Survey Bulletin No. 182 F.L.Ransome

Colorado Scientific Society Proceedings Vol. 14 No. 5 by W.S.Burbank

Colorado Scientific Society Proceedings Vol. 14 No. 7 by V.C.Kelley

Various Reports of Mining Engineers

Sources of Local History, and results of personal contact.

PRELIMINARY EVALUATION

of the

VERMILLION GROUP OF LODE MINING CLAIMS

EUREKA MINING DISTRICT

SANJUAN COUNTY COLORADO

INTRODUCTION.

This preliminary exaluation of the Vermillion Group of lode mining claims was undertaken for the purpose of determining as possible, its metallic mineral potential.

It was begun at the request of Ray A. Bennett of Denver Colorado. It consists of reviews, research and development of personal surveys and examinations, made on many occasions, over a long period of time.

It involves the application of well known geological principles and those developed and reported in great detail, especially in recent times. The effect of present economy is considered.

Official Government publications were consulted as to Regional and Local geology and as to the History of mining in the area.

LOCATION.

This group of mining claims is located in the Eureka Mining District of San Juan County, Colorado. It occupies a position on a favorable south slope of a mountain ridge, extending from California gulch toward Mineral Point and between Houghton and Tuttle peaks, at surface elevations above sea level of 11,500 feet to 12,750 feet.

The group is made up of the following patented lode mining claims:-

Name of Claim	U.S.Patent Survey number.
Acme	5671
Adelia	12312
Bruce	19320
Big Giant	504
Clara	506
Dolly	1231
Ellen	1232
Equator	113
Franklin	1209
Georgia	504
Justice	18152
My Choice	2397

Name of claim, con't.	U.S.Patent survey number.
Parallel	18782
Rainbow	5671
Silver	512
Silver Cloud	273
Tempest	5671
Vermillion Extension	109
W. Hafer	508

ENVIRONMENT---LOGISTICS

Animas Forks, a rapidly disappearing mining camp is at one and three quarter miles easterly, down California Gulch at 11,000 feet elevation.

Eureka, the site of a completely dismantled mining camp, is three and three quarter miles south of Animas Forks, down the Animas River Canon, at 10,000 feet.

Silverton, the commercial center of the central San Juan mountains is seven and one half miles southwest of Eureka, at 9300 feet.

The town of Silverton is the terminus of the Denver and Rio Grande Western Railroad, ome of the few narrow gauge lines remaining, which now limits its activity to hauling Tourists in the summer time, between Durango and Silverton.

Colorado State Highway No. 550, passes through Silverton between Montrose and Durango, Colorado. It is a well graded paved highway, originally termed the Million Dollar Highway, because its cost was estimated at that figure in earlier years, then considered quite a large sum of money. Many hundreds of thousands of dollars have been spent in improving the highway since.

From Silverton, a good grade County road, extends to Eureka. From here the road is an improved mountain road, built partly on the old grade of the abandoned Silverton Northerly Railroad to Animas Forks. Above Animas Forks one road follows California Gulch to the Vermillion Tunnel and beyond to the Mountain Queen mine.

A Reclamation Service project is planned and surveyed, having a dam on the Animas River, three miles above Silverton, which will, if completed, back water up the Animas valley toward Eureka, but according to Officials, this will not interfere with the mining indistry in this region.

From Animas Forks a mountain road leads northerly to Mineral Point, a mile northeast of this property, at 11900 feet. From here it enters Miners Creek, into the Uncompaghre drainage Gulch to join Colorado State highway No. 550 at a place which is 9000 feet elevation, two miles south of Ouray,Colorado , the latter being at 7600 feet elevation.

From Animas Forks, two routes, at present jeep roads over Engineer Mountain to Roses Cabin and over Cinnamon Pass to White Cross, extend to Lake City, from where is presented the shortest connection, over paved highways to Gunnison and other parts of Colorado.

A broadgauge railhead is at Ridgeway, eleven miles north of Ouray on State highway 550.

The ores of this region are mostly sulphide, being oxidized partially in outcrop areas, containing gold, silver, lead copper and zinc. They are amenable to concentration altho at times rich enough to ship crude. In this connection lead and copper smelters are available at Tooele, Utah and El Paso, Texas. Zinc smelters are available at Amarillo, Texas and Black Eagle, Montana.

Trucking is the established means of serving the mining industry in the San Juan area. Forty Ton trucks are in operation at this time on at least one mining enterprise at Silverton.

For custom milling, it is now understood that the Standard Metals Corp. will enlarge their mill near Silverton from 600 to 1200 tons per day, assigning part of their capacity to custom milling for those who may need it.

CLIMATIC CONDITIONS.

Being above timber line (11500 feet) at the subject property, grazing of live stock is one of the multiple purpose enterprises carried on in the summer time, with little interference from the mining industry. The surface of the mountain ridges and slopes show visible evidence of glacation, some of the rock and vein exposures being heavily scored. The summer months are ideal for conducting mining operations.

In winter months, sub arctic conditions prevail at these high altitudes. Intermittent snow and blizzard conditions occur, sometimes closing roads to outlying mining properties. There are no serious snowslides at the Vermillion property. Between Animas Forks and Eureka and on to Silverton, snowslides of great severity do run. The County and State highway crews are well experienced in shooting down snowslides prematurely and removing them so normal traffic can resume.

There are however, times when good weather prevails for long stretches and the restored roads permit the continuance of mining operations. Generally speaking, exploration, mining and shipping operations are stressed in summer months and development in winter months, until ore production is had on a continuous basis, when long tunnels or aerial tramways permit.

HISTORY

Discovery and Location of the first mining claims in this area were in the 1870's. It will be noted that the patent survey numbers of many of them are very low. Persistent prospecting was carried on clandestinely even when it was acknowledged Ute Indian territory. Miners were frequently driven out or harassed by the Indians. The Brunot Treaty with the Utes was signed in 1876 and mining activity came alive. Many hundreds of prospectors flocked into the Area.

Mineral Point was established as a mining center and grew to several hundred inhabitants. Scheduled Concord Coach routes were established from Lake City, fifteen and three quarters miles to the East, on the Lake Fork of the Gunnison River. Railroad donnections from Gunnison to Lake City was proven advantageous.

In 1874 prospecting and claim locating had been active, but little development of the mines was accomplished then. By 1884 some substantial production had been accomplished at the Frank Hough, Palmetto, Old Lout and other scattered mines and it was estimated that the area produced ores of the value of $2,000,000 In 1893 however the Silver Panic that swept the Country, all but closed the area to mining.

In 1910 the subject Vermillion property had built a mill and contributed 2763 tons of ore to the production. It made besides a lead concentrate, a zinc product which was shipped to Bartelsville Okla, the metallic residues of which were also paid for. The records show that the Blend zinc smelter met this offer also. No mines excepting the Sunnyside has had the advantage of treating their ores by the selective flotation process. The Sunnyside separated and saved its zinc concentrates and finally sold 33,000 tons of their stockpile of zinc concentrates to Blende.

VERMILLION TUNNEL ORE PRODUCTION.

My records show that in 1913, between July 3rd and September 29th, 19 carloads of crude ore, 347 tons, were shipped to the Durango Smelter of the American Smelting and Refining Co. The weighted average of these shipments carried the following metallic values. Gold 0.055 ozs., Silver 5.13 ozs., Lead 13.25%, Copper 0.40%, Zinc 16.14%. At that time the prices were Gold $20.67 oz. Silver 52.63¢ oz., Lead 4.49¢ lb. and Zinc 5.695¢ oz. At the present time with Gold at $35 per oz., Silver at $1.29 per oz. Lead 16.50 ¢ lb. and Zinc 14.5¢ lb. this ore would bring on the Midvale mill schedule of the United States Smelting, Mining and Refining Co..... $39.22 per ton.

Deductions would be

Treatment per ton	$4.00	
Trucking to R.R.	4.50	
Freight	10.60	15.10
Net		$24.12 per ton.

Altho I am sure there was other production of both crude ore and concentrates from the highest surface workings, the Rattle Tunnel and the Vermillion Tunnel, the records are not available.

FRISCO TUNNEL ORE.

This tunnel, just east of the subject property, was driven to cut the Red Cloud vein. The Red Cloud shaft is located northwest of Houghton Mountain at an altitude of 12,110 feet. The mine is said to have been probably the most worked if not the most productive mine in the District. It comprises three levels containing 2000 feet of drifts, crosscuts and raises. The Frisco Tunnel cuts the vein at 11,450 feet elevation. A gravity mill was established at the portal of the tunnel. The production records of crude ore and concentrates are not available, however we do have the results of a test run. A test lot of ore was shipped to the Colorado School of Mines Experimental Plant in 1927. A.J.Weinig, Director, reported on it as follows:

"Referring to the ore in the Frisco Tunnel at that level in the Red Cloud vein, the analysis given was: Gold 0.02 ozs., Silver5.1 ozs., Lead 6.6%, Copper 0.40%, Zinc 13.6%, Iron 5.8%, Insoluble 61.3%, Manganese 0.4% "

"In view of the coarsely crystalline quartz with very little oxidation and the analysis above, it appears that the ore is a very desirable type for straight, uncomplicated, selective flotation; making first, a galena concentrate and second, a sphalerits concentrate." The Galena concentrate should be high grade and would contain some if not all of the silver" "As the zinc is in the form of true Sphalerite, not marmatite, a high grade zinc concentrate, about 55% zinc can be expected." "Milling should be not less than 150 tons per day, after the mine development gives a positive assurance of a five year life at full tonnage. A recovery of 85% of the lead and 85% of the zinc appears to be possible."

GEOLOGY

REGIONAL STRUCTURE.

The most profound structure of the San Juan Mountains is the Silverton Block Fault, referred to also as the Silverton Volcanoe or the Silverton Caldera. It is a sunken and tilted Block about 8 miles long and 8 miles wide. The displacement at its north end, at the Sunnyside mine, being about 1000 feet and at its south end at Silverton about 3000 feet.

Around the faulted edges of this huge block intrusives have welled up in the form of injected bodies, breccia pipes and volcanic necks which offer evidence of intense volcanic activity. Both the rock alteration and the intrusive bodies suggest that at moderate depths below the surface, the margin of the Caldera is underlain by a more or less continuous ring of intrusive rock.

Outside of the Block Fault the formations are relatively undisturbed and are cut by numerous dikes and fissures of radial tendency. It is in this latter area that the subject property is situated. There are exterior intrusive centers outside the block fault that may be along certain main structural trends or rifts of the region, such as the Rhyolite dike and stock on Denver Hill to the East of this property. Some of these are connected with the main center by swarms of curved and straight fissures and dikes, along which many of the prospective vein deposits of the region are found. (Reference is made to Volume 14, No. 5 of the Colorado Scientific Society proceedings, by W.S.Burbank for further detailed descriptions) Attention is called to Plate IV, herewith, which displays this situation.

On this plate it can be seen that from Stony Mountain, extending southeasterly toward the margin of the Block Fault at Red Mountain No. 3, there is a vast swarm of dikes and veins, radial and tangential to it that is known to constitute a radial band of subsidence, the production from which has been several hundreds of millions of dollars.

East of Silverton is the Silver Lake Basin swarm of veins which have also been highly productive in the Silverton Volcanic Series, which includes the Burns Latite.

Along the northern border the block fault has had the most production from the Gold King and Sunnyside mines in that area.

Referring again to the swarm of veins that include the subject property, it is now indicated that they may also form a radial area of subsidence which could be highly productive.

It is about five miles from this property to the Lake City Caldera where conditions are similar to those of the Silverton Caldera altho the subsidence is not so profound.

LOCAL STRUCTURE

The Vermillion property is located in the swarm of veins, with northeasterly trend, close to the North border of the Silverton Caldera, as indicated on Plate 1V It can readily be seen that its position is intimately tied up with the major structure of the Caldera. In this area the Geological Survey states that more than 100 miles of these veins have been mapped by it. Volume 14 No. 7 of the Colorado Scientific Society proceedings describe this local situation is detail, by V.C.Kelly. Plate No. 1 of this publication maps the veins and incidentally show the positions of the Rattle and Vermillion tunnels of this property.

It is generally acknowledged that there are few places where lodes and veins of such great size and extent outcrop as numerously and persistently as they do in this Mineral Point area. They range in width from 4 feet up to 100 feet or more of solid quartz. Altho crossing and intersecting they show no faulting of each other, as far as is discernable. I therefore believe that they occupy fissures created simultaneously, by the same series of movements, that were developed at the time of the Silverton and Lake City Calderas origin. The wall rocks of the veins are sometimes eroded away leaving the quartz standing up like a huge wall.

Much of the prospecting done on the ridge between Houghton and Tuttle mountains was done by short shafts and open cuts. It seemed to be an irresistable temptation for the early prospectors to sink them in the bold quartz outcrops. Experience has shown that in this area many of the ore bodies have been found on the walls of the huge veins, altho there are some exceptions.

LOCAL GEOLOGY

The geological formation at this property is Burns Latite of the Silverton Series of volcanics. This exists from the vein outcrops at 12770 feet elevation to 11,800 feet at the Vermillion Tunnel. It is recognized as a very favorable host rock for metallic mineralization in this area.

It is underlain directly by the Eureka Rhyolite formation, which is regarded as less favorable, unless the vein is accompanied by an intrusive dike or other structural occurence, favorable to ore deposition, such as is known to exist at the Shenendoah Dives Mine, in the same formation near Silverton.

In this area under consideration here, a dike of intrusive rhyolite is outcropping on Denver Hill, a mile easterly, which is evident for a length of 1.6 miles and widths up to 500 feet. On Engineer Mountain, dikes and pipes of intrusive obsidian are present, some extending easterly to Henson Creek, where one dike on the road, shows 20 ft. width of solid obsidian. Many of the huge faults existing between the Sunnyside mine and the Lake City Caldera, are bordered by dikes and lenses of intrusive rhyolite and huge masses of andesite porphyry.

It can be assumed that in the Eureka Rhyolite formation, many favorable structures involving the veins will be encountered and provide some ore bearing insurance.

Below the Eureka Rhyolite is the San Juan andesite, the prime ore carrier of the San Juan region, in which great mines like the Camp Bird, Revenue, Smuggler Union, Black Bear and others just as famous, have been made.

In connection with the question of depth of possible ore in this subject area, W.S.Burbank, of the U.S.Geological Survey, states as follows: "The area as a whole deserves more recognition as a potential source of low grade, base and precious metal ores than would be indicated by the past production, relative to other parts of the Volcanic Center and as to mineralization at depth."

He continues "Because of relatively poor access to parts of the area, there has been little large scale exploration that would permit an accurate, reliable estimate of the average value and continuity of ore shoots. Mine workings are relatively shallow so that the area is essentially virgin for deep developmeent to the base of the volcanic series. Throughout much of the high country adjoining the Engineer Mountain and Mineral Point areas, the depth of the Volcanic Series is estimated to be 3000 feet. Also, since the volcanic rocks are probably underlain by pre-cambrian rocks, favorable to fissuring and mineralization, potentially productive ground is not necessarily limited to rocks above the Telluride erosion surface" Note, this is at the base of the volcanics.

Under Exploration and Prospecting, V.C.Kelly states about the California Gulch area, of which the subject property is a part: "The mines and deposits of the California Gulch area are generally more accessible than those of the Lake Como and Mineral Point because of a better means of entry. Large blocks of ore may be developed by relatively short tunnels" "In general the possibility of productive mining from California Gulch, in the near future, are brighter than from either the upper Poughkeepsie gulch of Mineral Point."

THE VERMILLION PROPERTY

The mining claims of this group and a few adjoining ones are shown on Plat No. 1. On Plat No. 2, my survey of the Rattle Tunnel of 1912 is shown on a larger scale in Plan and Elevation. On this plat I have superimposed parts of the Vein system which have been developed in particular by this tunnel, as mapped by the U.S.Geological Survey in the Kelly Report. The position of the Vermillion Tunnel is also shown.

THE RATTLE TUNNEL

is driven at 12436 feet elevation. It consists of a crosscut 350 feet long with drifting on a part of the vein system, to the southeast, for about 1000 feet. No drifting to the northeast was mapped at that time altho it can be assumed that there was some.

At 320 feet southwest from the crosscut a stope on ore had been made 245 feet long. At 760 feet southwest of the crosscut a stope 140 feet long had been made. The height of these stopes was not recorded at that time.

The splitting up and widening of the Vermillion Lode to the northeast apparently encouraged the driving of the lower Vermillion tunnel, which is headed for the wide lode where it is intersected by the Central vein. It is doubtful if the Vermillion tunnel was driven beyond the Ednah vein.

VERMILLION TUNNEL.

At the time of my survey the property was equipped with a small gravity mill located just below the portal of the tunnel. In 1910 part of the production from the tunnel was recorded as 435 tons of ore, shipped to the Durango smelter of the American Smelting and Refining Co. The ore carried Galena, gray and yellow copper as well as pyrite and sphalerite, and in the Gravity mill would have a tendency to slime and be carried off on the wash water. Probably no more than 55% of the values were saved in any concentrates made. It was customary therefore to make shipment of crude ore direct to the smelter when it would pay its way.

During the course of my survey of the Rattle tunnel, in 1912, I entered the first stope, southwest of the crosscut and found there in a wide quartz vein with sulphide ore, a lens of gray copper ore about 8 ft. long and 2 to 3 feet wide. I took a specimen from this ore and held it in my mineral collection ever since. Recently a piece of this ore was assayed by Charles O Parker of Denver. It carried Gold 0.12 ozs. Silver 557.6 ozs. and copper 23.7% It is an example of the high grade ores frequently found in the upper areas of the veins in this area.

There are very few records of the ores extracted from the Vermillion property. Evidently a shallow tunnel near the outcrop of the Equator vein encouraged the driving of the Rattle tunnel. The results obtained here led to the driving of the Vermillion Tunnel, above the California Gulch road at an altitude of 11687 feet. It was driven on a course apparently N 31° W From all the evidence I have seen it was driven 8-900 feet to the Ednah Vein. It was planned apparently to cut the Vermillion vein in a widened part, where the Central Vein cut it, all exposed by outcrops on the ridge above. To reach the Vermillion vein would have been a distance of 1800 to 1900 feet, thus leaving perhaps 1000 feet of crosscut to drive. This tunnel should cut the Vermillion vein 580 feet below the Rattle tunnel and 800 feet below the vein outcrop.

OTHER ORE BODIES IN THE VICINITY.

LITTLE IDA.

To the southwest the adjoining Little Ida vein has been developed by a few short tunnels and numerous open cuts. According to Oscar O. Fisher, while with the U.S.Bureau of Mines, the ore in the vein at one point was 2.67 ft. wide and 9 samples averaged Gold 0.02 oz. Silver 4.56 ozs. Lead 7.52%, zinc 10.27%, and Copper 0.43% A sample from a short tunnel at the outcrop of the vein taken over a 48 inch width was reported as carrying Gold 0.01 oz. Silver 4.2 ozs. Copper 0.3%, Lead 19.6%, Iron 2.8% and zinc 15.4% In a horizontal distance of 700 feet and a vertical distance of 500 feet it appeared that this vein made ore at every intersection with another vein and these intersections were so numerous that the ore may have been continuous.

The Little Ida vein is a curved extension of the curving Equator vein.

BURROWS EXTENSION VEIN.

Ore shipped from a tunnel on this vein in 1947 and 1948, consisted of 884 tons of the following reported value; Gold 0.01 oz. Silver 1.8 Ozs. Lead 6.3%, Copper 0.21%, Zinc 5.2%. This drift was extended 150 feet and the average vein value was Gold 0.10 ozs. Silver 2.43 ozs., Lead 3.3%, Copper 0.41% and Zinc 4.2% per ton.

RED CLOUD VEIN AND FRISCO TUNNEL.

At the extreme right of Plat 1 is shown the position of the Frisco tunnel, which came under an old producing mine on the Red Cloud vein. The workings comprised three levels with about 2000 feet of drifts crosscuts and raises. The Red Cloud vein, through the Deposite vein, extends southwesterly to join the Vermillion vein. The entire stronger vein area, 500 feet in width may be regarded as one lode. Smaller stringers, 8 ft. wide abruptly become 12 to 15 feet wide. High Grade silver ore in the form of Proustite was reported present in some of the better ore.

Between 1874 and 1881, Ransome of the U.S.Geological Survey reported that 800 tons of gray copper galena ore was produced. In 1914 the Red Cloud Leasing Co. produced 23 tons of lead ore containing Gold 0.208 ozs. Silver 18.5 ozs. Copper 0.25% Lead 28.8%

BILL YOUNG MINE.

This mine is at Mineral Point about 4500 feet north of the subproperty. It is made on a vein parallel to the Vermillion in the same swarm. Three veins meet on the property, the Senator, 12 to 15 feet wide, opened by shallow cuts; the Mastadon-Morning Star vein, 50 feet wide, opened by shallow cuts and shafts; the Bill Young vein 10 to 12 feet wide, having received the bulk of the development. The intersection of these three make a vein 105 ft. wide extending southwesterly on the Rip Van Winkle claim.

A two compartment shaft is sunk on the vein for 214 feet. The work was done chiefly between 1875 and 1885, and developed an irregular ore body. On the 90 ft. level the vein is 12 ft. wide. A sample taken by me across the entire width carried Gold 0.14 ozs., Silver 12 ozs. per ton. Pockets of bismuth silver ore was encountered by each operator, according to reports. Oral report by Otto Mears to me was that he had made $40,000 out of his share of this property operation. Samples from the mine, assayed by Ed. M. Brown, resident assayer of Mineral Point, in the 80's between Aug. 7, 1881 and August 9, 1886 was stated by James L. Hill to be 37 in number carrying trace to 16.4 ozs. Gold, 6 to 1134 ozs. silver

FRANK HOUGH MINE.

This mine is at the north end of Engineer Mountain. It was credited in 1882 with having hundreds of tons of heavy ore on the dump of a 350 foot shaft, during development. On one level this ore body was 60 feet long, carrying 30% copper and 80 ozs.

of Silver. Having seen the massive ore of this property I can say it has the appearance of the massive pipe ores of the Red Mountain District, westerly from the Vermillion property. The shaft was eventually sunk to 600 feet, but fire destroyed the Mine buildings and little has been done since.

THE PALMETTO, RUBY QUEEN, MINERS BANK

CLAIMS , on the eastern slope of Engineer mountain were developed by a 200 foot shaft and 1600 feet of drifts in 1881. 400 tons of ore yielded $28,000 in Silver that year.

SUNNYSIDE MINE.

This mine is the best example of the continuity of ore in lateral extent and depth located in the swarm of veins at the north end of the Silverton Block Fault. This mine has been made on a series of claims, starting on the Sunnyside, No Name, Wedge, and Terry Claims, running through the Hidden Treasure, Gold Prince, Crown Jewel and Pride of the Rockies claims, trending toward Animas Forks.

Under the guidance of Judge J.H.Terry and the United States Smelting, Refining and Mining Co. its production reached 1000 tons in the 1940's More recently the Standard Metals Corp. has completed a two mile tunnel from Gladstone, coming under the old workings at an elevation of 10600 feet, the outcrop of the Sunnyside vein being at 12,100 ft. elevation, a depth of 1425 feet. This Company is today said to be producing 600 tons of ore per day, transporting the same to its mill 2 miles north of Silverton. It is reported as planning to increase its mill capacity to 1200 tons per day in order to accept some custom ore to mill,

HIGH GRADE SILVER AND GOLD ORES.

Several mines of the Mineral Point area have produced substantial amounts of silver-bismuth ore in the form of Alaskite or Bismuthenite. Some of these I have known personally as the Old Lout, Bill Young, Alaska and Poughkeepsie mines.

Many times in the history of others the rich silver minerals Proustite, Argentite and Argentiferous gray copper are mentioned as appearing in their better ores.

Carriers of Free Gold in their ores were numerous, notably the Sunnyside, Hidden Treasure, Gold Queen, Golden Fleece, and Scotia.

The Columbus mine at Animas Forks produced some high grade gold ore in the form of black specks and blotches in white quartz. In 1913 the Johnson Leasing Co. produced two railroad carloads of this ore in its upper tunnel. James L. Hill had previously called my attention to the presence of this gold ore in the vein of the Ben Butler property. I checked this out and found it to be true. The same ore was found in the dump of the Hero mine on Wood mountain. Samples of this were sent to the Colorado School of Mines at that time and it was identified by them as Altaite, the telluride of lead.

From an open cut on the Silver Doctor vein, located near the Little Ida mine, I took a handful of native silver wire from a vug in the vein in the breast of an open cut.

Because of Packing and Hauling costs and high Smelter charges, the early prospector and miner was compelled to ship only his better grade ores, leaving the lower grade, obviously unprofitable ores in the mine. The lull in mining created by the Silver Panic of 1893 could be ascribed as evidence that substantial silver values were present in the upper levels of their prospects and mines.

Naturally it follows that the ore left and now being re-opened, were ores that they were formerly unable to ship. However with higher metal prices, these ores now take on new significance and most of them are on a par, surprisingly, with actual values in the ores of mines now operating successfully today, but of course in greater tonnages.

An example given by V.C.Kelly is the Frank Hough mine already mentioned. He reported that Hessite the telluride of silver had been seen in the ore of this mine, where shipments over long periods of time carried 50 to 60 ozs. of silver per ton. He also stated that the Production of the Frank Hough mine was $600,000.

SUMMARY.

The Vermillion Group of mining claims is an integral part of the extensive swarm of large quartz veins that are genetically connected and associated with the major Geological Structures of the San Juan mountains of Colorado.

A limited amount of surface prospecting has been done, the results of which show the existence of sizable ore bodies, not however explored to satisfactory depths, excepting possibly at the Sunnyside mine.

Limited development of an encouraging nature has been accomplished at a few of the mines, such as the Mountain Queen, Bill Young, Columbus, San Juan Chief, Polar Star and Frank Hough, among others.

The Columbus and Frisco tunnels, have demonstrated that metallic mineralization exists at the levels they have attained. Early development of many prospects disclosed ore bodies with good values in silver, lead and copper. The Silver Panic of 1893 saw the end of this early activity and little has been accomplished since.

Deep erosion of the Volcanic Complex in every direction from this property has served to also demonstrate the downward extension of ore bodies and serve as a gauge of the possibilities of successful exploration of the veins of the Vermillion group at lower levels than presently opened.

The huge quartz veins present may be the result of highly acid solutions attacking the siliceous wall rocks and filling the fissures with the released quartz. The rich ore bodies found near the surface may have been introduced into later re-openings in and along the walls of the veins and occasionally in the interior of the veins. They are indicative of the ore that may be found at lower levels, in the same veins.

Further exploration of the veins of this property is fully warranted and should disclose sizable ore bodies of a profitable

nature.

Respectfully Submitted

Warren C. Prosser

Warren C. Prosser
Consulting Mining Engineer
Professional Engineer
Registered in Colorado No. 30

Supplement to Report on Vermillion Vein System.

This supplement to my report of December 13,1965 is made to refer to information taken from the files of the Silverton Standard, a weekly newspaper, in the issues of January 15,1910, February 4,1910. and February 19,1910, which described operations at the Vermillion property. Copies of these extracts are attached.

I was personally well acquainted with R.W.Hollis, Wm. Rattle and Jack Barry, while they were developing the Vermillion property. In my opinion, information furnished to the Standard,which seems to have been the case here, would be reliable.

Further search of my survey notes reveals a sketch made of the Rattle Tunnel on July 31,1910, one month before making my instrument survey of the Rattle tunnel and the southwestern drift therefrom, on the Russell and Equator veins as shown in my report.

The Standard described a raise driven from the drift at the end of the Bonanza (Vermillion) tunnel, connecting to the Rattle tunnel drift. My sketch fixes the position of this raise at the Rattle tunnel level and describes it as a winze connecting to the lower tunnel, a distance of 600 feet.

My survey shows the average dip of the vein in the Rattle tunnel drift was 66° 8' with the horizontal, to the south. Assuming this dip to be maintained the bottom of this winze on the Bonanza tunnel level would be 250 ft south of its top on the Rattle tunnel level. On the dip the length of the raise would be approximately 600 feet.

The sketch also indicates that the drift to the east on the Rattle tunnel level was 1185 feet, with two crossveins cut and drifted upon for 100 ft. eahh way. One of these veins cut may correspond to the vein on the Center claim.

I was well acquainted with Louis Bastian, who built the Vermillion Mill in 1909. At that time the usual flowsheet was crusher, rolls, trommel screens, jigs and tables and the saving of the metallic values not over 80% and probably much less, in the concentrates. A cut of the table concentrates into Lead and Zinc concentrates was usual, this being before the advent of the flotation process. The iron pyrite was not removed and might run from 15 to 25% or more of the concentrates, divided between the lead and zinc products.

One reference by V.C.Kelly in the U.S. Geological Treatise on the Vermillion area in 1946 is that 2763 tons of ore, milled into 435 tons of concentrates yielded a product consisting of Gold 0.07 ozs., Silver 15 ozs., Lead 31.2%, Zinc 29% and copper 0.023% This does not match up with concentrates referred to in the Silverton Standard January 15,1910, wherein the lead concentrates were quoted as running "upward of 63% lead and well in gold and silver" and a "zinc concentrate of 47% zinc" which in my opinion are more reasonable.

My reference on Page 4 of my report to the shipment of 347 tons of crude ore shows a much better grade. This was probably hand sorted for shipment.

Another reference is to 1728 tons of ore delivered to the Vermillion Mill in the period July 7 to July 26,1912. This was reported to me as carrying Gold 0.06 ozs., Silver 10.0 ozs. Lead 20%, Zinc 15%, Copper not given. It was reported settled for at $16.35 per ton, with a saving calculated at 80%, which would make the crude ore worth $20.40 per ton. This ore came from

Little Ida mine on the same vein system as the Vermillion.

There is another reference in my notes to 9 tons of crude ore shipped from the Alice workings, an unpatented claim near by which carried Gold0.29 ozs. Silver 80 ozs. Silica 90%, per ton with a net value of $287 per ton. This was an ore without sulphides excepting pyrite and is an example of ore frequently found in the Eureka Mining District area. It indicates that the quartz veins cannot be overlooked, when even lightly mineralized with pyrite.

Another note indicates a strong vein showing in the open cut at the portal of the Rattle Tunnel, the width and course not given.

In summary, the Vermillion vein system was developed in the Rattle tunnel on the Equator, Russell and Vermillion claims for a length of 2265 feet. Two cross veins were encountered and developed short distances on each side of the Rattle drift.

The lower Bonanza tunnel was approximately 1600 feet long with probably several hundred feet of drift on the Vermillion vein. The Ednah vein may also have had some drifting on it. The raise to the Rattle tunnel was made with working stations at 200 and 400 feet. Whether these levels were developed is not known. An oral report indicate that air circulation was noted at the portal of the Bonanza tunnel, so that the raise and crosscuts may be open.

Sulphide ore exists in the vein system in known widths developed up to 8 ft., some being high grade gold and silver ore and native silver has been found in at least one vein.

The Vermillion vein system itself, has been developed in the Equator, Russell, Vermillion Extension and Vermillion claims and the same vein system has been traced through the Red-Cloud, Boston, DeWitt, Washington and Ben Butler claims, a distance of over 11000 feet. In no place on this vein system has the development been carried to a conclusive extent as to the known vein widths of 12 to 500 feet.

Recommendations.

The logical proceedure would be to reopen the Bonanza and Rattle tunnels and evaluate the relationship of this development to the entire vein system under consideration. This would then enable the existing ore bodies to be ascertained and further development planned, where economy indicated.

The great amount of quartz in these vein systems is evidenve that extreme silicification of the country rock took place simultaneously with the action of the mineralizing solutions. It is expected that more extensive ore deposition will be found at lower elevations in the favorable formations, much as shown at the Sunnyside mine, which presents the sole example of the possibilities so far developed.

The further exploration of the Vermillion vein system is fully warranted by the existing geological and economic conditions.

Respectfully Submitted

Warren B Rosser

April 11,1966 Consulting Mining Engineer.

U. S. Survey No.

Vermillion	115
Vermillion Extention	109

"STANDARD JAN. 15, 1910"

The developments of the past years at the Vermillion Mine at Animas Forks, under the management of R. W. Hollis, and his superintendent, Jack Barry, has gone far toward placing the group in the category of San Juan's producing mines, and unless all signs by some miraculous revolution of nature should fail, it will join the list of shippers late in the season, that will attract more than ordinary attention.

The Bonanza Tunnel, driven on the great vein, has reached a distance of over 1500 feet from its portal. Near the breast of the tunnel an upraise driven to connect with the Rattle Tunnel 600 feet vertically above, has now only a few feet further to go to make the connection. This upraise is five by eleven feet in the clear, containing both ore chute and manway, timbered with exceptional care so as to produce superior strength and durability. At each 200 feet stations have been cut and a working level started each way on the vein, thus establishing three excellent and roomy working levels above the Bonanza Tunnel to the Rattle Tunnel level, above which the vein extends to the surface where its croppings show plainly for upwards of 1,000 feet and containing the same character of fine milling ore as that cut in each of the levels described. The general average of the width of the vein showing

an excellent quality of milling ore the entire distance of the upraise and to the outcroppings is about five feet. The character of the ore is a lead-zinc-sulphide in quartz, carrying fair values in lead and silver. It is not only easy of concentration, but also of separation, as shown conclusively by recent mill run tests made by Louis Bastain in the new mill which was built during the summer for the express purpose of treating the ores of this mine. Mr. Bastain who is one of the most experienced mill men of the district, and for many years superintendent of the Great Silver Lake mill, made an eleven day run on the ore at the mill, making an exceptionally close savings for a new mill and effecting a beautiful separation, and producing lead concentrates running upward of sixty-three percent lead and well in gold and silver, and a zinc concentrate of forty-seven percent zinc, at a very small ratio of loss, thus proving the entire run of the mine to be first-class milling ore capable of yeilding very desirable and profitable products.

"STANDARD FEB. 19, 1910"

The contractor of the big upraise being driven in the Vermillion mine at Animas Forks to connect the Bonanza Tunnel, which will be the main working level of the mine with the old Rattle Tunnel 600 feet above, expected to complete the work by last Wednesday evening and it is more than likely that connections have been made by this time. The upraise followed a fine vein of milling ore the entire distance which will average more than five feet in width all the way. Stations have been cut at regular

intervals which will now be pushed ahead as rapidly as possible in order that by the opening of spring sufficient stoping ground will be opened up to keep the new mill in constant operation, after it is once put in motion.

"STANDARD APRIL 16, 1910"

In the Vermillion group on Houghton Mt. immense bodies of ore have been blocked out and ready for the new mill which was built last year and which will begin operations as soon as the railroad is cleared.

"STANDARD FEB. 4, 1911"

A strike of rich ore has been made in the Rattle Tunnel of the Vermillion mine at Animas Forks. From the latest reports we find that the vein has opened up eight feet wide and consists of a sulphide ore assays from which return 62 ounces in silver and 0.80 ounces in gold to the ton.

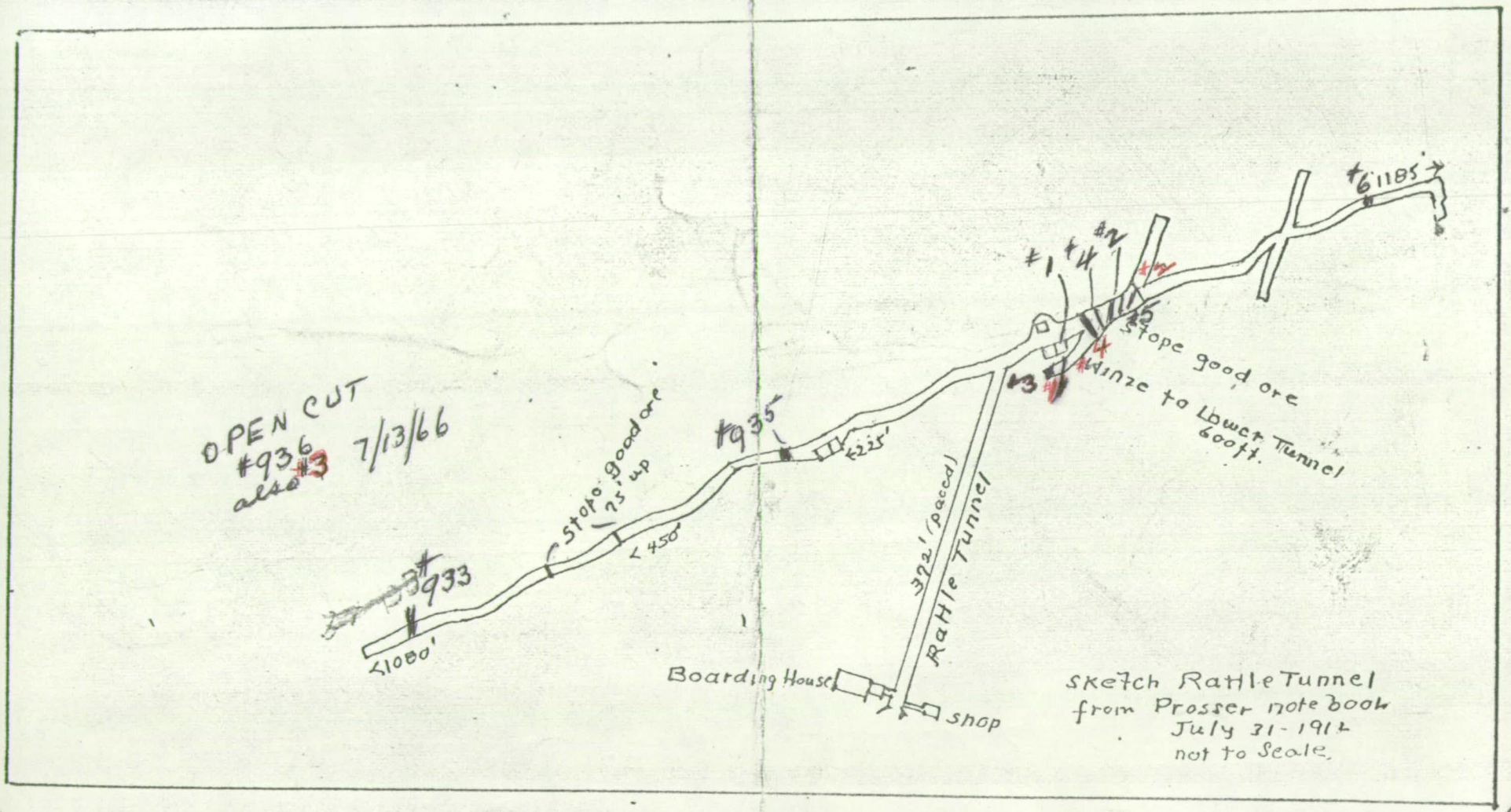
This strike has greatly encouraged the operations at the Vermillion and gives assurance that plenty of ore will be opened up to keep the mill going during the season of 1911.

It also adds a point in favor of the existence of splendid mineral in this section and the revival of the industry in this wonderful district. Houghton mountain is coming to the front, proving its capabilities step by step; first on the Columbus, then on the Bagley Tunnel and Silver Doctor Mines and now on the Vermillion.

"STANDARD JUNE 24, 1911"

As we go to press word has been received that a very rich strike has been made in the Vermillion Mine situated near Animas Forks. Full particulars cannot be given as yet, but we understand that the ore was as high as 4,400 ounces in silver in spots, the ore that they are now shipping runs $250.00 a ton.

V.



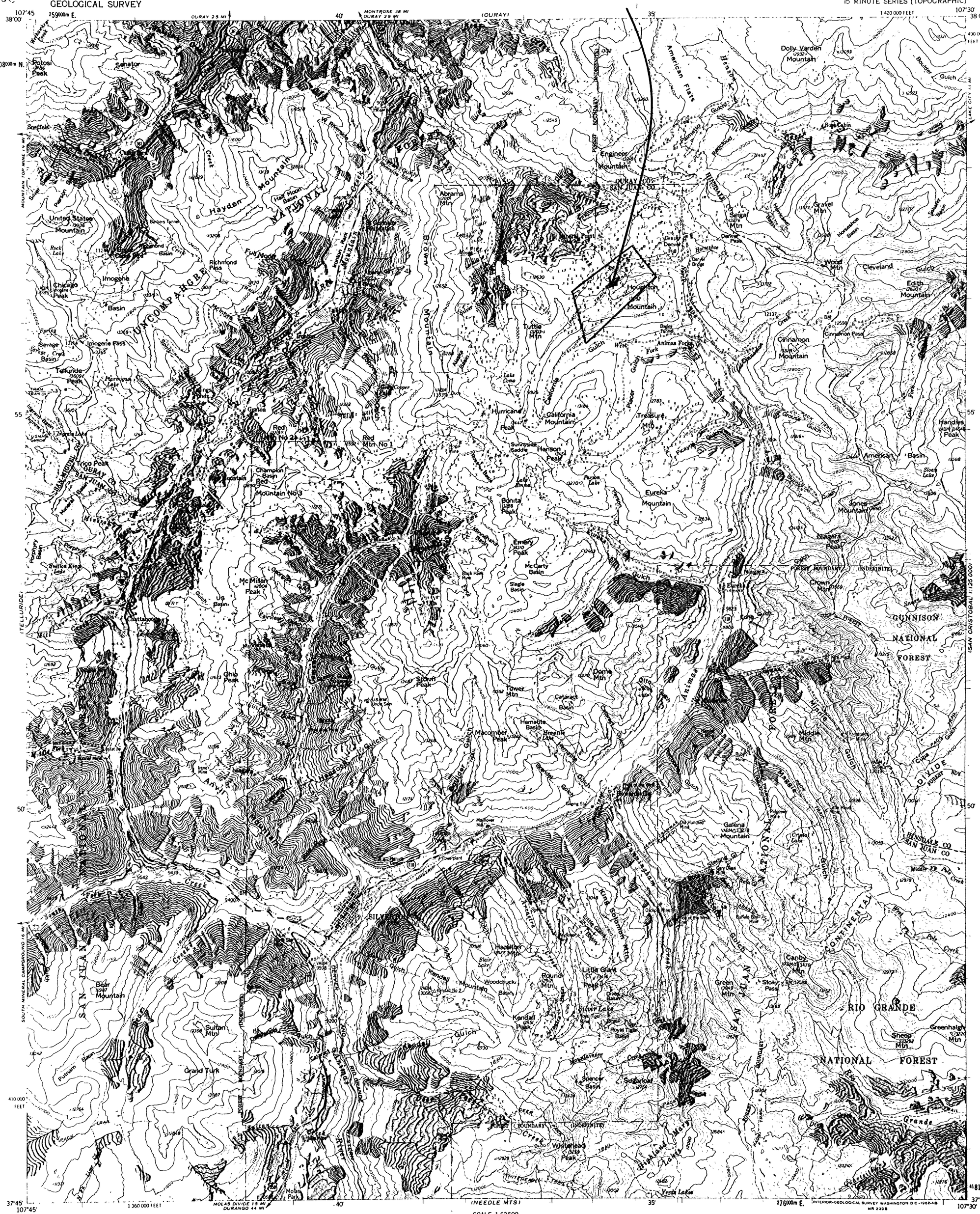
Sketch Rattle Tunnel
from Prosser note book
July 31-1912
not to Scale.

1-2-3-4-56 Assayed 6/23/66
933-935-936 " 7/29/66
1-2-3-4 (~~Pencil~~ Red) " 7/13/66

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Approximate Position
Vermillion Group Claims

SILVERTON QUADRANGLE
COLORADO
15 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Compiled in 1959 from 1 24 000 scale maps of Handies Peak, Ironton, Silverton, and Howardsville 7 5 minute quadrangles, surveyed 1955

Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1951

Polyconic projection 1927 North American datum
10 000 foot grid based on Colorado coordinate system, south zone
1000 meter Universal Transverse Mercator grid ticks, zone 13, shown in blue

All land lines omitted because of alleged fraud or defects in the surveys

14°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1955

SCALE 1 62 500

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 80 FEET
DATUM IS MEAN SEA LEVEL

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U S GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D C
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

COLORADO
QUADRANGLE LOCATION

ROAD CLASSIFICATION
Medium duty — Light-duty
Unimproved dirt
U S. Route — State Route

This area also covered by 1 24 000 scale maps of Handies Peak, Ironton, Silverton, and Howardsville 7 5 minute quadrangles surveyed 1955

SILVERTON, COLO
N3745—W10730/15

1955

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON D C—1962—N8
MR 2308

To accompany Report of Warren C. Prosser

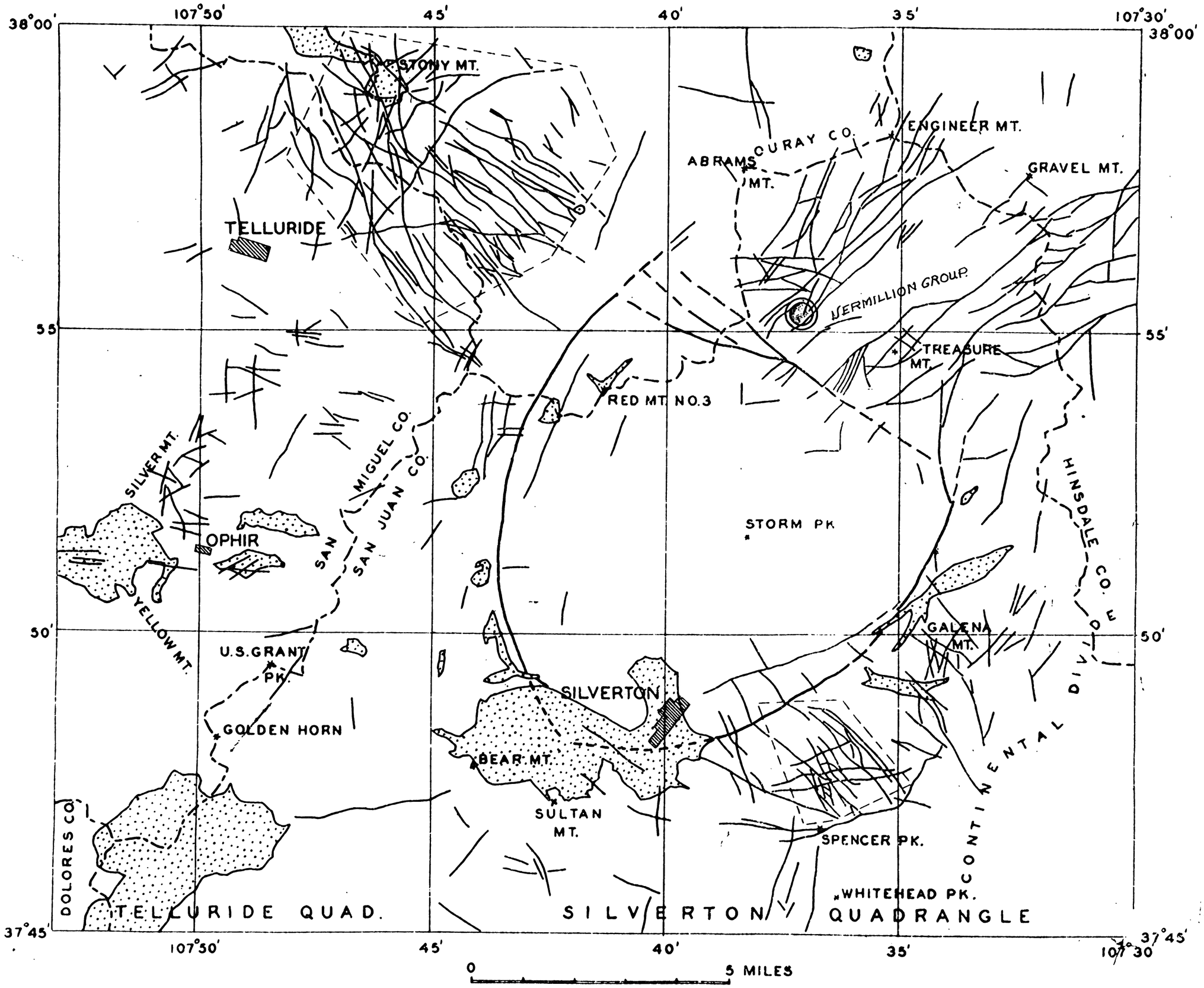
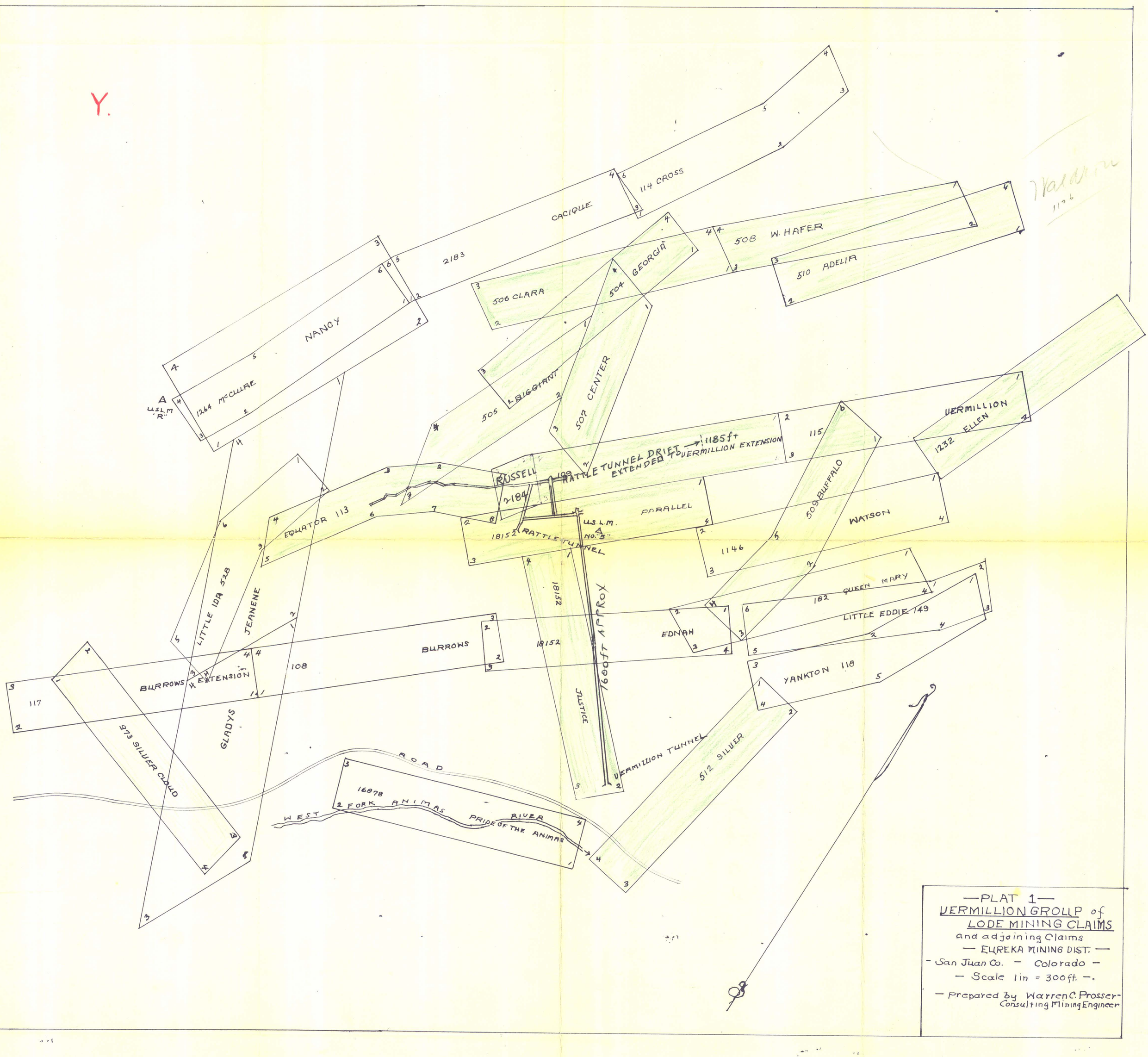


PLATE IV. Pattern of the fracture systems and principal cross-cutting intrusive bodies in the Silverton quadrangle and eastern part of the Telluride quadrangle. Two areas which have been mapped on a scale of 1 in 1,000 feet are outlined by light dashed lines.

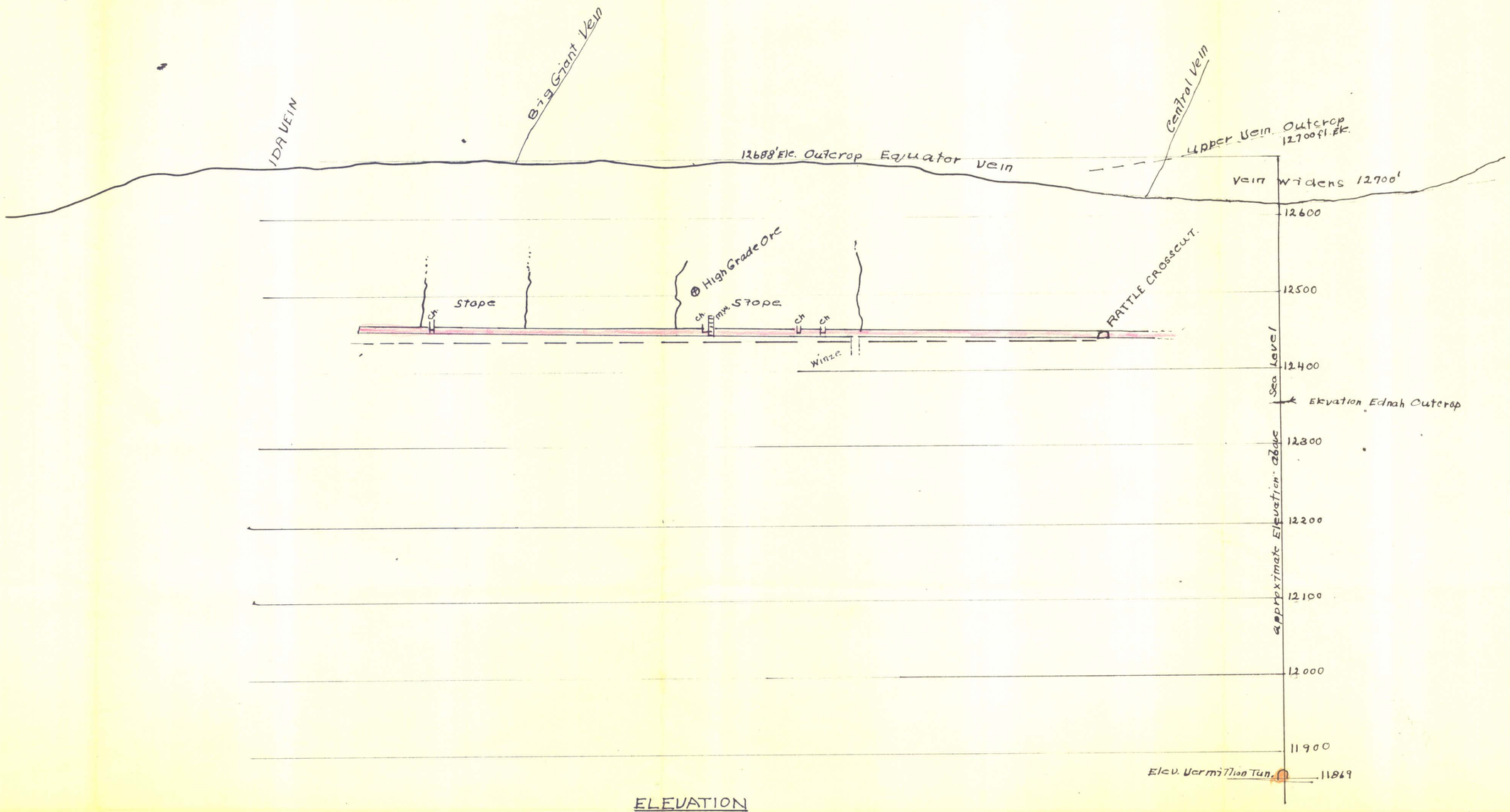
To accompany Report of Warren C. Prosser

Y.

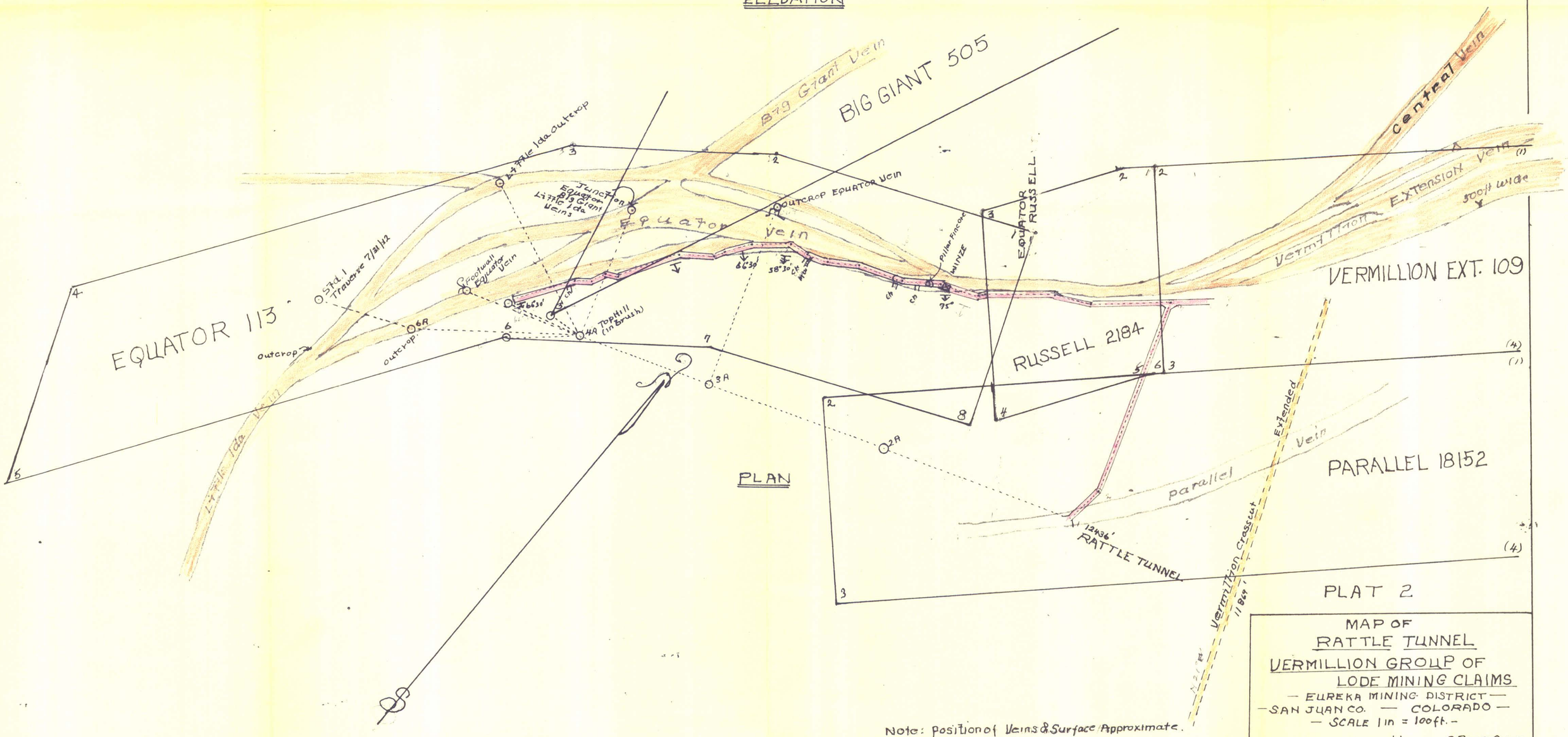


—PLAT 1—
VERMILLION GROUP of
LODE MINING CLAIMS
and adjoining Claims
— EUREKA MINING DIST. —
- San Juan Co. - Colorado -
— Scale 1 in = 300 ft. —.
— Prepared by Warren C. Prosser -
Consulting Mining Engineer

Z



ELEVATION



Note: Position of Veins & Surface Approximate.

PLAT 2

MAP OF
RATTLE TUNNEL
VERMILLION GROUP OF
LODE MINING CLAIMS
— EUREKA MINING DISTRICT —
— SAN JUAN CO. — COLORADO —
— SCALE 1 in = 100 ft. —

Prepared by Warren C. Prosser
— Consulting Mining Engineer —