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The Bank of Douglas, Douglas, Arizona

PLEASE EXAMINE THIS STATEMENT UPON RECEIPT AND REPORT AT ONCE ON FORM ENCLOSED HEREWITH. IF NO ERROR IS REPORTED WITHIN TEN DAYS THE ACCOUNT WILL BE CONSIDERED CORRECT. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT. PLEASE NOTIFY US IF ADDRESS SHOWN ABOVE IS NOT CORRECT.

Hill & E. P.
Mar. 1928

IN ACCOUNT WITH

The Bank of Douglas, Douglas, Arizona

NAME Hilltop Extension Mng. Co.
Mr. W. E. Hawley
 ADDRESS Douglas Arizona

WESTERN UNION

CHECKS IN DETAIL

DEPOSITS

NEW BALANCE

BALANCE

BROUGHT FORWARD

FEB 28 '29

1.01

MAR 7 '29

100.00

101.01 *

MAR 18 '29

1.01 *

MAR 20 '29

98.00

8.26 *

MAR 18 '29

100.00-

MAR 20 '29

90.75-

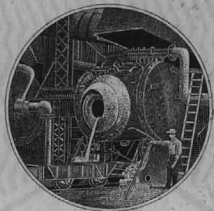
NT 4

Mar 29

THE LAST AMOUNT IN THIS
COLUMN IS YOUR BALANCE

PLEASE EXAMINE THIS STATEMENT UPON RECEIPT. IF NO ERROR IS REPORTED WITHIN TEN DAYS THE ACCOUNT WILL BE CONSIDERED CORRECT.
 ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT. PLEASE NOTIFY US IF ADDRESS SHOWN ABOVE IS NOT CORRECT.

HILLTOP EXTENSION
MINING COMPANY



Douglas, Arizona,

1/3

1930 No. 579

The Bank of Douglas

91-27

Pay to the order of Secretary of State of Delaware \$ 2

00
100

TWO HUNDRED DOLLARS

Dollars

HILLTOP EXTENSION MINING CO.

NP 18888

By

W. Stanley

Treasurer

Proctor

FOR DEPOSIT ONLY

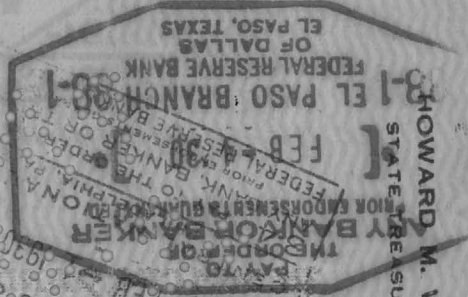
STATE OF DELAWARE
SECRETARY OF STATE

SECRETARY OF STATE OF DELAWARE

MOTOR VEHICLE DEPARTMENT
CHARLES H. GRANT, AND
SECRETARY OF STATE

TO THE CREDIT OF

HOWARD M. WARD,
TREASURER



3-26 FEB 26 1930
FEDERAL RESERVE BANK OF
DALLAS
PAY TO THE ORDER OF
PRIOR ENDORSEMENTS

62-27
GEORGE E. DAWSON, Cashier
FARMERS BANK, DOVER, DEL.
JAN 31 1930
PAY TO BANKER
PRIOR ENDORSEMENTS GUARANTEED
MY BANK OR BANKER

Handwritten signature or initials.

X T X

IN ACCOUNT WITH

The Bank of Douglas, Douglas, Arizona

NAME Hilltop Extension Mng. Co.
Mr. W. E. Hawley
 ADDRESS Douglas, Ariz.

WESTERN-UNION

CHECKS IN DETAIL

DEPOSITS

NEW BALANCE

| CHECKS IN DETAIL | DEPOSITS | NEW BALANCE |
|------------------|---|-------------|
| MAY 27 '29 48.74 | BALANCE BROUGHT FORWARD MAR 30 '29 8.26 MAY 27 '29 41.00 | .52 |

Hilltop Ext

May 1929

THE LAST AMOUNT IN THIS COLUMN IS YOUR BALANCE

PLEASE EXAMINE THIS STATEMENT UPON RECEIPT. IF NO ERROR IS REPORTED WITHIN TEN DAYS THE ACCOUNT WILL BE CONSIDERED CORRECT. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT. PLEASE NOTIFY US IF ADDRESS SHOWN ABOVE IS NOT CORRECT.

IN ACCOUNT WITH
THE FIRST NATIONAL BANK
 UNITED STATES DEPOSITARY
 DOUGLAS, ARIZONA

NAME CIA MINERA DOS REPUBLICAS

ADDRESS DEL, TO H. & H.

STATEMENT FOR MONTH OF _____

| OLD BALANCE | DATE | CHECKS | AMOUNT BROUGHT FORWARD | DATE | DEPOSITS | DATE | NEW BALANCE |
|-------------|-------------|---------|------------------------|-------------|----------|-------------|-------------|
| 1828 | JAN 2 5 129 | | | JAN 2 5 129 | 149.41 | DEC 31 128 | 1828 |
| 167.69 | JAN 2 8 129 | 109.12- | | JAN 2 8 129 | | JAN 2 8 129 | 58.57* |
| 58.57 | JAN 2 9 129 | 1.65- | | JAN 2 9 129 | | JAN 2 9 129 | 56.92* |

BALANCE

JAN 31 1929

56

92

PLEASE EXAMINE THIS STATEMENT AT ONCE AND REPORT ANY ERROR. IF NO ERROR IS REPORTED IN TEN DAYS, THE ACCOUNT WILL BE CONSIDERED CORRECT. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT.



THE BANK OF DOUGLAS
PAID TO THE ORDER OF
JAN 26 1929
G. M. ACCOTT, Assistant Treasurer
FOR CREDIT OF
NACOGARI RAILROAD COMPANY





COMPANIA MINERA DOS REPUBLICAS, S. A.

No. 150

DOUGLAS, ARIZONA.

1/24/29

192

PAY TO THE
ORDER OF

Moctezuma Copper Co.

\$

65
100

DOLLARS

TO THE FIRST NATIONAL BANK,
OF DOUGLAS, ARIZONA.

CIA. MINERA DOS REPUBLICAS, S. A.

W. E. Hawley

SECTY. - TREAS.

91-28

PAY TO THE ORDER OF
THE MOCTEZUMA COPPER CO.
For Collection Account of
MERCANTILE DEPARTMENT
MOCTEZUMA COPPER CO.
PILARES, SONORA, MEXICO

Pay to the order of
THE BANK OF DOUGLAS
Douglas, Ariz. M3
MOCTEZUMA COPPER CO.



IN ACCOUNT WITH

The Bank of Douglas, Douglas, Arizona

NAME Hilltop Extension Mg. Co.,

ADDRESS % Mr. W. E. Hawley,

Douglas, Arizona.

STATEMENT OF YOUR ACCOUNT TO CLOSE OF BUSINESS

WESTERN - WICHITA

| CHECKS IN DETAIL | | | DEPOSITS | NEW BALANCE |
|------------------|----------|-------------------------|-----------------|-------------|
| | | BALANCE BROUGHT FORWARD | JAN 31 '28 3.55 | |
| FEB 1 '28 | 2.00 - | | FEB 1 '28 | 1.55 * |
| | | | FEB 20 '28 | 382.12 * |
| FEB 21 '28 | 7.50 - | 7.10 - | FEB 21 '28 | 367.52 * |
| FEB 24 '28 | 73.90 - | | FEB 24 '28 | 293.62 * |
| FEB 28 '28 | 101.11 - | 160.00 - | FEB 28 '28 | 32.51 * |

THE LAST AMOUNT IN THIS COLUMN IS YOUR BALANCE

PLEASE EXAMINE THIS STATEMENT UPON RECEIPT AND REPORT AT ONCE ON FORM ENCLOSED HEREWITH. IF NO ERROR IS REPORTED WITHIN TEN DAYS THE ACCOUNT WILL BE CONSIDERED CORRECT. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT. PLEASE NOTIFY US IF ADDRESS SHOWN ABOVE IS NOT CORRECT.

THE BANK OF THE STATE OF NEW YORK

(IN ACCOUNT WITH)

Feb 1928

H.T. X

Notice of Mining Location

LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the WHAILE No. 2 Mining Claim, situate on lands belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by G. T. Colvin,

(Locator must insert either "a citizen of the United States," or "who has declared his intention to become a citizen of the United States.")
the undersigned, on the 10th day of Feb., 1916.

The length of this claim is 1500 feet,
and I claim 400 feet,
in a Northerly direction and 1100
feet in a Southerly direction from
the center of the discovery shaft, at which this notice is posted, lengthwise of the claim, together with
300 feet in width of the surface grounds, on each side
of the center of said claim. The general course of the lode deposit and premises is from the

North to the South

The claim is situated and located in the California Mining District, in
Cochise County in the State of Arizona, about 1 mile
in a Southerly direction from Hill Top Camp

The surface boundaries of the claim are marked upon the ground as follows: Beginning at

Monument
at a point in a Northerly direction 400 feet from
the discovery shaft (at which this notice is posted), being in the center of the Northerly
end line of said claim; thence 300 feet to a monument
being the northeast corner of said claim;
thence 1500 feet to a Monument, being at the
southeast corner of said claim; thence 300 feet
to a monument at the center of the southerly end of said claim;
thence 300 feet to a monument, being at the
southwest corner of said claim; thence 1500 feet
to a monument at the northwest corner of said claim;
thence 300 feet to the place of beginning.

Dated and posted on the grounds this 8th day of Feb., 1916.

G. T. Colvin.

Filed and recorded at request of G. T. Colvin, May 8th, 1916, at
9 A. M., in book 55, Record of Mines, page 35.

Excerpts from the Mining Laws of the State of Arizona.

Title XLVII of the Revised Statutes of 1901, and Amendments thereto.

Sec. 2. Such location shall be made by erecting at or contiguous to the point of discovery a conspicuous monument of stones not less than three feet in height, or an upright post, securely fixed, projecting at least four feet above the ground, in which monument of stones or on which post there shall be posted a location notice which shall be signed by the name or names of the locator or locators.

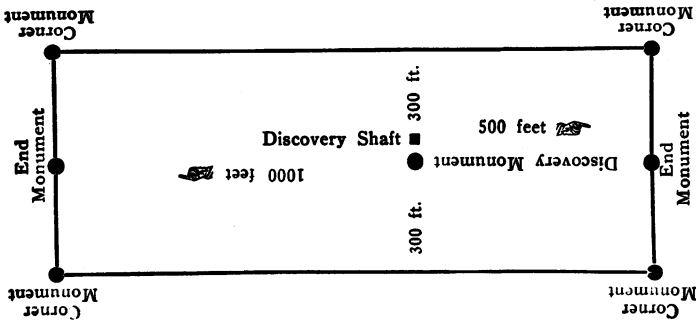
Sec. 4. From the time of the location of a mining claim, as above specified, the locator shall be allowed ninety days within which to do or cause to be done the following things:

* * * * *

2. To sink a discovery shaft in the claim to a depth of at least eight feet from the lowest part of the rim of the shaft at the surface, and deeper, if necessary, until there is disclosed in said shaft mineral in place.

Sec. 6. Such surface boundaries shall be marked by six substantial posts projecting at least four feet above the surface of the ground, or by substantial stone monuments at least three feet high, to-wit: One at each corner of said claim and one at the center of each end-line thereof.

Sec. 8. Location notices may be amended at any time and the monuments changed to correspond with the amended location; Provided, That no change shall be made that will interfere with the rights of others.



This diagram is to give locator a general idea of plan of location under the new law. The Discovery Shaft can be in the center of claim or any distance from either end and 500 feet from one end and 1000 feet from the other. Commence description of claim at a center end monument, giving its distance and direction from center of Discovery Shaft; thence bound the claim in either direction. In description be careful to state locality of claim with reference to some natural object, or permanent monument, as will identify the claim.

Notice of Location LODE CLAIM

STATE OF ARIZONA,
County of _____ } ss.

I, _____, County Recorder in and for the County and State aforesaid, do hereby certify that the within instrument was filed for record at _____ o'clock _____ M., on this _____ day of _____, 19____, and duly recorded in Book No. _____ of _____ Records of _____ County, Arizona, at pages _____.

WITNESS my hand and official seal the day and year first above written.

County Recorder.

Dated _____, 19____
Filed and Recorded at Request of _____
_____, A. D. 19____
at _____ M.,
Book _____
Pages _____

County Recorder.
By _____ Deputy Recorder.

OFFICE OF THE COUNTY RECORDER
COCHISE COUNTY, ARIZONA

Certificate

7090

STATE OF ARIZONA,)
 (SS
County of Cochise)

I, RAY B. KREBS, County Recorder in and for the County of Cochise, State of Arizona, do hereby certify that the annexed and foregoing is a full, true and correct copy of the Whaile No.2 Lode Mining Claim

as appears of record now in this office in Book 55 Record of Mines at Pages 35

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in Tombstone, this 19th day of November A. D. 19 19

Ray B. Krebs,

COUNTY RECORDER

By

H. L. Hutchison

Deputy

Notice of Mining Location

LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the WHALE Mining Claim, situate on lands belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase by G. T. Colvin and G. R. Hall

citizens

(Locator must insert either "a citizen of the United States," or "who has declared his intention to become a citizen of the United States.")

the undersigned, on the First day of Jan, 1913

The length of this claim is fifteen feet, and we claim 900 feet, in a North West direction and 600

feet in a South East direction from the center of the discovery shaft, at which this notice is posted, lengthwise of the claim, together with 300 feet in width of the surface grounds, on each side

of the center of said claim. The general course of the lode deposit and premises is from the North West to the South East

The claim is situated and located in the California Mining District, in Cochise County in the State of Arizona, about 2 miles in a South West direction from Hall Ranch on White Tail this claim in in the head of Mackeys Canyon and joins the Hands Property on the South east end

The surface boundaries of the claim are marked upon the ground as follows: Beginning at a monument of Stones

at a point in a North West direction 900 feet from the discovery shaft (at which this notice is posted), being in the center of the North West end line of said claim; thence 300 feet to a Monument, being the North east corner of said claim; thence 1500 feet to a Monument, being at the South East corner of said claim; thence 300 feet to a Monument at the center of the South East end of said claim; thence 300 feet to a Monument, being at the South West corner of said claim; thence 1500 feet to a Monument at the North West corner of said claim; thence 300 feet to the place of beginning.

•• Dated and posted on the grounds this first day of Jan, 1913

All done under the provisions of Chapter Six, of Title G. T. Colvin XXXII, of the Revised Statutes of the United States and of an Act of the General Assembly of Arizona, G. R. Hall. entitled "An Act to Revise and Codify the Laws of the Territory of Arizona," approved March 16, 1901

Excerpts from the Mining Laws of the State of Arizona.

Title XLVII of the Revised Statutes of 1901, and Amendments thereto.

Sec. 2. Such location shall be made by erecting at or contiguous to the point of discovery a conspicuous monument of stones not less than three feet in height, or an upright post, securely fixed, projecting at least four feet above the ground, in which monument of stones or on which post there shall be posted a location notice which shall be signed by the name or names of the locator or locators.

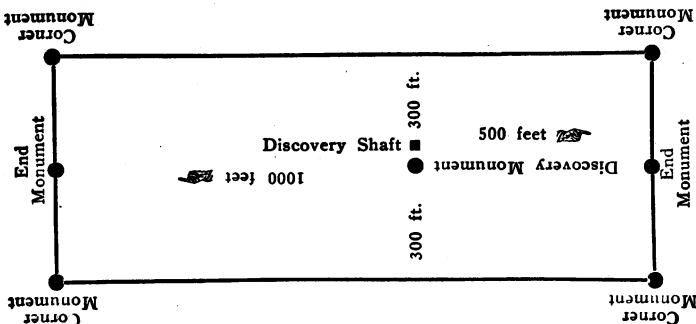
Sec. 4. From the time of the location of a mining claim, as above specified, the locator shall be allowed ninety days within which to do or cause to be done the following things:

* * * * *

2. To sink a discovery shaft in the claim to a depth of at least eight feet from the lowest part of the rim of the shaft at the surface, and deeper, if necessary, until there is disclosed in said shaft mineral in place.

Sec. 6. Such surface boundaries shall be marked by six substantial posts projecting at least four feet above the surface of the ground, or by substantial stone monuments at least three feet high, to-wit: One at each corner of said claim and one at the center of each end-line thereof.

Sec. 8. Location notices may be amended at any time and the monuments changed to correspond with the amended location; Provided, That no change shall be made that will interfere with the rights of others.



This diagram is to give locator a general idea of plan of location under the new law. The Discovery Shaft can be in the center of claim or any distance from either end desired. In the diagram it is placed 500 feet from one end and 1000 feet from the other. Commence description of claim at a center end monument, giving its distance and direction from center of Discovery Shaft; thence bound the claim in either direction. In description be careful to state locality of claim with reference to some natural object, or permanent monument, as will identify the claim.

Notice of Location LODE CLAIM

STATE OF ARIZONA,
County of _____ ss.
I, _____, County Recorder in and for the County and State aforesaid, do hereby certify that the within instrument was filed for record at _____ o'clock _____ M., on this _____ day of _____, 19____, and duly recorded in Book No. _____ of _____ Records of _____ County, Arizona, at pages _____.

WITNESS my hand and official seal the day and year first above written.

County Recorder.

Dated _____, 19____
Filed and Recorded at Request of
G. T. Colvin
Mar 29 1913, A. D. 19____
at _____ 9 A. _____ M.,
Book 51 Record of Mines
Pages 376
County Recorder.
By _____ Deputy Recorder.

OFFICE OF THE COUNTY RECORDER
COCHISE COUNTY, ARIZONA

Certificate

7089

STATE OF ARIZONA,)
 (SS
County of Cochise)

I, RAY B. KREBS, County Recorder in and for the County of Cochise, State of Arizona, do hereby certify that the annexed and foregoing is a full, true and correct copy of the Whale

Lode Mining Claim

as appears of record now in this office in Book **51 Record of Mines**
at Pages **376**

IN WITNESS WHEREOF, I have hereunto set my
hand and affixed my official seal, at my
office in Tombstone, this **19th** day of
November A. D. 1919.

Ray B. Krebs,

COUNTY RECORDER

By

H. L. Hutchison

Deputy

Notice of Mining Location

LODE CLAIM

TO ALL WHOM IT MAY CONCERN:

This Mining Claim, the name of which is the WHALE FRACTION NO. 4 Mining Claim, situate on lands belonging to the United States of America, and in which there are valuable mineral deposits, was entered upon and located for the purpose of exploration and purchase

by G. T. Colvin

a citizen

(Locator must insert either "a citizen of the United States," or "who has declared his intention to become a citizen of the United States.")

the undersigned, on the 4 day of Aug, 1916.

The length of this claim is 1500 feet,

and I claim 400 feet,

in a northly direction and 1100

feet in a southerly direction from the center of the discovery shaft, at which this notice is posted, lengthwise of the claim, together with

200 feet in width of the surface grounds, on each side of the center of said claim. The general course of the lode deposit and premises is from the

northwest to the southeast

The claim is situated and located in the California Mining District, in

Coahise County in the State of Arizona, about 1 mile

in a southeast direction from Hill Top Mining Camp

The surface boundaries of the claim are marked upon the ground as follows: Beginning at

at a point in northly direction 400 feet from

the discovery shaft (at which this notice is posted), being in the center of the northly

end line of said claim; thence 200 feet to a monument

, being the northwest corner of said claim;

thence 1500 feet to a monument, being at the

southeast corner of said claim; thence 200 feet

to a monument at the center of the southeast end of said claim;

thence 200 feet to a monument, being at the

southeast corner of said claim; thence 1500 feet

to a monument at the northeast corner of said claim;

thence 200 feet to the place of beginning.

Dated and posted on the grounds this 4 day of Aug, 1916.

Witness: G.R. Hall.

G. T. Colvin.

Filed and recorded at request of John Blumberg, Nov. 2, 1916, at 11:30 A.M., in book 55, Record of Mines, page 471.

STATE OF ARIZONA,

ss.

County of

I,, County Recorder in and for the County and State aforesaid, do hereby certify that the within instrument was filed for record ato'clockM., on thisday of, 19....., and duly recorded in Book No. of Records of County, Arizona, at pages

WITNESS my hand and official seal the day and year first above written.

County Recorder.

Notice of Location LODE CLAIM

Dated, 19.....

Filed and Recorded at Request of

....., A. D. 19.....

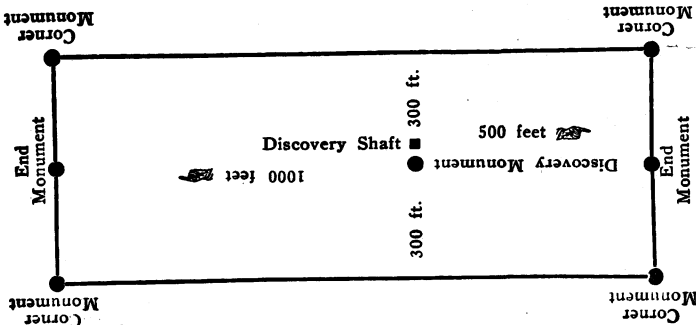
atM.,

Book

Pages

County Recorder.

By
Deputy Recorder.



This diagram is to give locator a general idea of plan of location under the new law. The Discovery Shaft can be in the center of claim or any distance from either end desired. In the diagram it is placed 500 feet from one end and 1000 feet from the other. Commence description of claim at a center end monument, giving its distance and direction from center of Discovery Shaft; thence bound the claim in either direction. In description be careful to state locality of claim with reference to some natural object, or permanent monument, as will identify the claim.

Excerpts from the Mining Laws of the State of Arizona.

Title XLVII of the Revised Statutes of 1901, and Amendments thereto.

Sec. 2. Such location shall be made by erecting at or contiguous to the point of discovery a conspicuous monument of stones not less than three feet in height, or an upright post, securely fixed, projecting at least four feet above the ground, in which monument of stones or on which post there shall be posted a location notice which shall be signed by the name or names of the locator or locators.

Sec. 4. From the time of the location of a mining claim, as above specified, the locator shall be allowed ninety days within which to do or cause to be done the following things:

2. To sink a discovery shaft in the claim to a depth of at least eight feet from the lowest part of the rim of the shaft at the surface, and deeper, if necessary, until there is disclosed in said shaft mineral in place.

Sec. 6. Such surface boundaries shall be marked by six substantial posts projecting at least four feet above the surface of the ground, or by substantial stone monuments at least three feet high, to-wit: One at each corner of said claim and one at the center of each end-line thereof.

Sec. 8. Location notices may be amended at any time and the monuments changed to correspond with the amended location; Provided, That no change shall be made that will interfere with the rights of others.

OFFICE OF THE COUNTY RECORDER
COCHISE COUNTY, ARIZONA

Certificate

7092

STATE OF ARIZONA,)
 (SS
County of Cochise)

I, RAY B. KREBS, County Recorder in and for the County of Cochise, State of Arizona, do hereby certify that the annexed and foregoing is a full, true and correct copy of the Whale Fraction No.4

Lode Mining Claim

as appears of record now in this office in Book **55 Record of Mines** at Pages **471**

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in Tombstone, this **19th** day of **November** A. D. 19**19**.

Ray B. Krebs,

COUNTY RECORDER

By

H. L. Hutchison

Deputy

REPORT ON PROPERTY
OF THE
HILL TOP EXTENSION MINING CO.
COCHISE COUNTY, ARIZONA

BY
LOUIS D. HUNTOON

C O P Y

Mr. G. T. Colvin,
Hilltop, Arizona.

Dear Sir:

In response to your inquiry concerning the Hilltop Ext. Mining Company, I wish to state that I believe it to be a property of uncommon merit. As you are aware, for the past five years I have been doing all of the engineering work for both the Hilltop Metals Mining Co., and the Hilltop Ext. Mining Co., as well, and am very well acquainted with the geological features of both.

The Hilltop Metals Mining Company has already developed one of the largest lead-silver mines in the United States, and they have every reason to expect that the Hilltop Mine will be one of the biggest ever found anywhere. There is no doubt in my mind but that they have over a million tons of high grade ore ready to be mined and this opinion is shared by several of the leading engineers in this country.

The Hilltop Extension property is contiguous to the Hilltop Mine, on each end, and have the same geological formations and conditions and are occurrences which are excellent evidences that the Hilltop Extension may reasonably hope to rival the Hilltop Mine, at no far distant time.

I hold the highest regard for the officers of the Hilltop Ext. Mining Company; they are all known personally to me to be the leading citizens of this city, men of unquestioned honesty and ability.

Very truly yours,
Signed: G. L. Schmutz.

GLS/LMD

4

REPORT
ON THE
HILLTOP EXTENSION MINING COMPANY PROPERTY
AT
HILLTOP, COCHISE COUNTY, ARIZONA,
by
C. O. SANFORD,
MINING ENGINEER.

AUGUST, 1922.

207 Laughlin Building,
Los Angeles, Calif.,
August 10, 1922.

Mr. W. E. Hawley,
Douglas, Arizona.

Dear Sir:-

In accordance with your request I examined the Hilltop Extension Company's property at Hilltop, Arizona, and I submit the following report.

PURPOSE OF THE REPORT.

This report is made for the purpose of appraising the property as an investment. No exhaustive Geological examination was made. The five days spent on the property (consisting of 53 claims) were fully occupied in estimating the probable size and value of the ore occurrences.

LOCATION OF PROPERTY.

The property is situated in Chiricahua Mountains, California Mining District, Cochise County, Arizona. The Claims lie on Hilltop Mountain, 22 miles from the station of Rodeo, N. M., from which they are reached by good wagon road.

The property consists of two groups of claims. The LEAD LILY GROUP of 36 claims, which lie to the North of the Hilltop Metals Mining Co. and the WHALE GROUP of 17 claims, which lie immediately to the South of the Hilltop Metals Co.

This report applies to the Lead Lily Group. The same geological conditions were noted on the Whale Group, but there was not sufficient time for an inspection.

GEOLOGY WITH REFERENCE TO ORE OCCURRENCES.

The formation is of limestone containing a narrow bed of Quartzite, the whole of which has been cut by several porphyry dykes. This formation continues through the Hilltop Metals Company property

and extends thru both group of claims of the Hilltop Extension. Numerous fissures were caused at the time of the intrusion of porphyries. Ascending solutions have deposited their mineral contents in these fissures which have since been faulted by a later vulcanism, followed by oxidizing and leaching of the surface ores. Oxidized iron and manganese occurring with the lead sulphides, a frequent occurrence 800' below the surface in the neighboring property, in one of the many indications of leaching. Lead is one of the least soluble of the common metals. Because of its low solubility, oxidized lead minerals near the surface have less silver associated with them than at greater depth where less leaching has taken place. Rich secondary silver ore may be deposited below. It is readily dissolved in ground waters. It is reasonable to expect an increase in silver values with depth. This would conform with experience in the neighboring property.

HISTORY.

This property was worked in 1884. The Indians had a stronghold in this district and interfered with operations. 1500 tons are said to have been shipped from the Lead Lily Whim Shaft. A few tons of ore mined in the early days remain on the dump. 16 carloads are said to have been shipped from the Lead Lily Tunnel and 5 from the Eureka Tunnel. A mill was erected in Hands Pass and an attempt made to concentrate the low grade ore there. The property has since been worked by leasers. There remains ample evidence of their work and some ore on the dumps.

HILLTOP METALS COMPANY.

The neighboring property has been developed by three tunnels, at 800, 1100 and 1500 ft below the surface. Two of the three have reached their objective, the Limestone-Quartzite contact, and drifts along the contact have demonstrated the ore shoots and their persistence in depth. However, no attempt has been made to develop the size of the shoots. The Manager states that his development work shows a probable 600,000 tons of 20% lead-5 ozs silver in the different shoots.

On the Extension Company's property they have the same Limestone-Quartzite contact which has been the objective of the Metals Company development.

DEVELOPMENT WORK AND DESCRIPTION OF ORE SHOOTS.

The Hilltop Extension Company's property has been developed by about 4500 ft of work, part of which was done in the early days. On the Eureka Claim the lower tunnel has been driven about 700 ft, the last 300 ft of which is along the Limestone-Quartzite contact. Along this contact there is an 84 ft shoot of disseminated Galena and a 28 ft shoot of almost solid Galena ore.

In addition to the 700 ft length there are several crosscuts from this tunnel. A 40 ft raise and crosscut from same develop the 28 ft shoot, and the raise connects with the winze which has been sunk from a 220 ft tunnel above, and is in turn connected to the surface 300 ft above the lower level. Demonstrating depth of shoot.

The South face of the Eureka Tunnel is within a few hundred feet of the North face of the Caspare Tunnel of the Hilltop Metals Co. This company has a shoot of ore very close to this face.

The Lead Lily Workings consist of:

A 250 ft Tunnel- with 60 ft Winze.

A 180 ft Shaft- called the Whim Shaft- now caved to 65 ft.

A 65 ft Incline Shaft.

An 85 ft Incline Shaft and numerous Open Cuts.

The mineralization in the Lead Lily workings is connected with Quartz-Porphry intrusions into the Limestone and it is in or near these intrusions the ore occurs.

In addition to these workings there is a 66 ft tunnel on what is known as the Lavery Break (a fault which contains ore). This fault fissure can be traced for many hundred feet and may contain a large quantity of ore.

There are numerous open cuts and other shallow workings, most of all of which expose lead and copper mineral deposits.

The development by the proposed tunnels has been started and Tunnel No. 1 is in 18 ft. from a 40 ft open cut. The face is in hard limestone.

Below follows a statement of the samples taken, together with the assay results. Lead is figured at the present market value of \$.0575 per lb and silver at \$1.00 per oz.

| <u>LOCATION.</u> | <u>DESCRIPTION</u> | <u>WIDTH FT.</u> | <u>Value Silver</u> | <u>Value Lead</u> | <u>Value Total</u> |
|---|---|----------------------|-------------------------|-----------------------|------------------------|
| 1-EUREKA TUNNEL. Crosscut from Raise 49' above tunnel level | Galena and Pyrite | 6.0 | 2.26 | 7.11 | 9.36 |
| 2-EUREKA TUNNEL 40' below sample No. 1 | Galena | (12x28) 8.0 | 12.90 | 29.21 | 42.11 |
| 3-EUREKA TUNNEL Bottom of 10' winze | Spotty Galena and Pyrite | 4.0 | 0.00 | 7.18 | 7.18 |
| 4-LEAD LILY TUNNEL Bottom of 60' winze at face of 15' drift to South | Iron oxide Galena and Carbonate | 6.0 | 3.85 | 25.75 | 29.60 |
| 5-LEAD LILY 55' below Collar of Incline Shaft. | Carbonate and sulphide on the Porphyry and Limestone contact | 2.5 | 13.35 | 45.31 | 58.66 |
| 6-LEAD LILY-WHIM SHAFT DUMP | Some sulphides | | 1.70 | 18.47 | 20.17 |

ORE.

There is about 30 tons of ore on the Eureka Dump and 15 tons on the Lead Lily Dump, which has been left by leasers. There are numerous faces of ore in the workings, but no attempt has been made to develop ore reserves and it would be difficult to figure them from present development.

PROPOSED DEVELOPMENT WORK WITH POSSIBLE RESULTS.

It is proposed to continue driving Tunnel #1 1940 ft to a point directly under the Lead Lily Whim Shaft. This tunnel extended 1800 ft further will intersect the ore shoots in the Eureka workings. Tunnel No.1 driven 600 ft. should intersect the Lavery fissure where ore may be expected. Beyond this it will intersect porphyry dykes and the so-called Alma Quartz (a Quartz cropping 10 to 100 ft wide which extends several thousand feet in length and which may be mineralized in depth several surface showings on it).

In other words, in driving the tunnel these three changes in the formation will be encountered, along all of which there is a good chance of encountering ore, and this before the objective is reached.

CONCLUSION.

Supposing that the 28 x 12' shoot of ore encountered in the Eureka Tunnel continue in depth to the level of the projected tunnel, with no allowance for increase in size or increase in value, the present assay value of \$42.11 being assumed to continue, this shoot alone will have a gross value of approximately \$1,000,000.00. The shoots in the Lead Lily should be equally rich, as shown by assays.

To purchase and install the necessary machinery for driving the tunnel, drifting, raising and opening up the ore shoots and equipping the property with a mill, the Company should be assured of a fund of \$250,000.00. The expenditure of this sum should place the property on a producing basis.

With the development in depth of the known ore shoots of ore by this tunnel below the Lead Lily and Eureka workings, and the chance of new discoveries, as enumerated before, considered with the location, water and timber supply and cheap working costs, this property should prove to be a profitable one.

Respectfully submitted,

(signed)

C. O. SANFORD

C O P Y

Hilltop Extension Mining Co.,
Rodeo, N. M.

Dear Sirs:-

I beg to submit herewith my report on your property in the Chiricahua Mountains, California Mining District, Cochise County, Arizona. The original report will be delivered to Mr. Henning Pearsen of New York and carbon copy will be mailed to Mr. John Blumberg, Rodeo, N. M.

Permission was granted to me and all facilities offered by Mr. Raleigh Fife, Manager of the adjoining property, owned and developed by the Hilltop Metals Mining Co., to study their geology, development work, and ore deposits. As the prospective value of your property is based on conditions in the adjoining group of claims I also embody in this report a brief summary on the geology, development work and ore deposits of the H. T. M. M. Co.

Various rock specimens were selected by me from both properties for petrographic examination. These were submitted to Prof. Charles P. Berkey of Columbia University, and I attach hereto his petrographic report together with my notes. I am mailing copy of Prof. Berkey's report to Mr. Raleigh Fife.

It is with pleasure that I am submitting to you a favorable report with recommendations to continue your exploratory work.

Respectfully submitted,

(Signed) Louis D. Huntton.

Consulting Mining Engineer,
115 Broadway, New York.

June 20, 1919.

SUMMATION

In connection with an examination of the Hilltop Mines, the examining engineer should study the "geology and Ore Deposits of the Tintic District", Utah.; professional paper No. 107, U. S. Geological Survey. The geology and general characteristics of the deposits, so far as developed, appear to be quite similar.

The Hilltop Metals Mining Co. owns a large group of claims in the limestone formation of the Ghiricahua Mts., upon which chimney or shoots of oxideized lead-silver ores have been developed to a depth of 1100 feet by tunnels. A large number of chimneys have been developed on the 800 foot level; further exploration of these chimneys by raises may prove that they interlock, forming an almost continuous vein of lead-silver ore. The ores which have been developed are either in faulted and brecciated zones of a quartzite bedding plane in the limestone, or on a contact of the quartzite and lime. The Hilltop must be considered as a mine with a most promising future.

An examination of the attached claim map, Plate No.3, shows the northeast working of the Hilltop M. M. Co. to be within 600 to 800 ft of the southeast corner of your Eureka claim. The face of ~~this~~ this drift has recently developed heavy faulting, brecciation and what appears to be large chimneys of lead-silver ore associated with the quartzite bedding plane in the limestone; this area is most promising. The surface above this promising ground has a few shallow pits.

A further examination of the claim map shows your Eureka tunnel to be advancing along the contact of quartzite and lime directly towards the northwest promising ground of the Hilltop. The cross faulting and brecciation in your Eureka Tunnel to date has not been

of sufficient extent to produce large chimneys of lead-silver ore such as have been developed on the Hilltop. This may be due to your Eureka Tunnel not being of sufficient depth. This claim is most interesting and I recommend that either the Eureka tunnel be advanced to the southeast corner of the claim or, better still, that arrangements be made with the Hilltop M. M. Co. to advance their tunnel to the northwest thru your Eureka claim. I do not know the comparative elevations of your Eureka tunnel and the 800 foot tunnel of the Hilltop M. M. Co. due to lack of surveys.

Your Lead Lily claim is also most interesting. There are a large number of shallow shafts, pits, and one tunnel on this claim from which ore has been shipped. The location of the Lead Lily, the general strike of the faults, and a careful study of the ore deposits on the Tintic District, indicate to me that the Lead Lily claim may have a parallel deposit of lead-silver ore in the limestone quite distinct from the quartzite deposit of the Hilltop M. M. Co. There has not been sufficient work done on this claim to draw definite conclusions and I cannot advise where prospecting should be done without accurate surveys upon which all surface pits, faults and geology are plotted. The surface indications on the Lead Lily fully justify surveys followed by exploration. The Whale Group apparently covers very little of the mineralized quartzite extension. The formations comprise limestone and quartz with porphyritic intrusions. The group must be considered as a prospect which warrants the mapping of present pits, faults and the geology in general, followed by further exploration.

My recommendations are:

Connect your lower Eureka tunnel with the northwest workings of the Hilltop M. M. Co..

Employ a young trained engineer to survey and map not only

your holdings but all surface pits and underground workings and plot so far as he can the general geology.

Do futher prospecting on the Whale group of claims and map the workings, faults and geology.

With the developed ore bodies on the property of the Hilltop M. M. Co., your group of claims, covering the extension of the mineralized zone, must be considered as a favorable prospect fully warranting further exploration.

DETAILED REPORT

LOCATION:- The properties of the Hilltop Extension Mining Company and the Hilltop Metals Mining Co. are located in the California Mining District of the forrest reserve, at Hands Pass, in the Chiricahua Mts., eastern portion of Cochise County, Arizona. They may be reached from Douglas, Arizona, by auto or train to Rodeo, N. M., a distance of about 50 miles northeast, and from Rodeo by auto, a distance of about 20 miles northwest.

EXTENT OF PROPERTY:- Your company, the Hilltop Extension Mining Co., owns two separate group of claims which cover the extension of a developed mineralized zone owned by the Hilltop M. M. Co. Upon the attached claim map, showing your holdings, the outcrop of the mineralized zone has been plotted from maps obtained in the district. This outcrop I checked in several places and have every reason to believe it is approximately correct. The important mine workings of the Hilltop M. M. Co. were copied from their large map. The location of the Eureka tunnel portal is approximate as there was no map to work from.

There is not a complete claim map of your holdings and it is very important that you should have such a map showing all surface workings and their elevations.

To the northeast of the Hilltop M. M. Co. the extension of the mineralized quartzite is covered by your Lead Lily group comprising the following 8 claims: Maud, Ida, Eureka, Prince, Prince No 2, Lead Lily, Alma and Glanse. I understand that you also own the Morrow group of claims and claims adjoining the Maud and Ida on the northwest.

To the southeast and south, I understand you own 17 claims known as the Whale Group. Your claim Whale No. 2 in this group, is

supposed to cover the croppings of the mineralized quartzite. Comparatively little work has been done on the Whale Group and very little time was devoted to an examination of these claims. The man most familiar with this group of claims was sick and unable to visit the claims with me.

HISTORY:- The Chiricahua Mts. in Cochise Co., Arizona, have from time to time attracted considerable attention. A large amount of ~~####~~ ~~#####~~ exploratory work has been done on prospects in the igneous rocks which so far as I know have not produced mines; the sedimentaries were also prospected and more or less lead-silver ore shipped from surface pits and comparatively shallow shafts. On the showings of these surface pits in the sedimentaries a group of 34 claims was acquired a few years ago by the Hilltop M. M. Co. The company has expended considerable money in the development of a lead-silver mine which is most promising.

The Hilltop Extension Mining Co. was organized in 1916 by Mr. John Blumberg and associates, after acquiring an option on 5 claims owned by Mr. Chris. Grower, located adjacent to and northwest of the Hilltop group, and 7 claims of the Whale Group, owned by G. T. Colvin, and located adjacent to and southeast of the Hilltop group. At later dates more claims were acquired by the Hilltop Extension M. Co. covering the extension of the Hilltop mineralized quartzite both to the northeast and southwest.

The driving of the lower Eureka tunnel, by hand, was started about November, 1916. The tunnel has advanced to the southeast about 1,000 ft, and the further driving by hand was being carried on at the time of my visit.

DEVELOPMENT:- The exploration and development work consists of many surface pits, shallow shafts, tunnels, winzes and raises, from which more or less lead-silver ore has been shipped in years past. There are no

official records covering past shipments.

On the Eureka Claim an inclined shaft, marked Shaft No. 1, was sunk years ago, following a chimney of ore, to a reported depth of 70 feet. The findings here must have been favorable as this work was followed by the driving of the "Upper Eureka Tunnel" from which the inclined shaft (marked winze B on map) was sunk to a further reported depth of 146 feet, following the same chimney of ore. This winze or shaft has been connected with your lower tunnel by a vertical raise (marked raise B on map). The upper Eureka tunnel was accessible; the shaft was not. The upper Eureka tunnel crosses the lime formation for a distance of 36 feet; at this point, quartzite, similiar to that in which the ore bodies on the Hilltop M. M. Co.'s property occur, is crossed to a distance of 25 to 20 feet. The shaft is sunk either in the quartzite or on the contact of the quartzite and lime; the quartzite is faulted and mineralized. Beyond the quartzite the tunnel is in limestone. A drift, following a mineralized fault plane along the contact of the quartzite and the lime was driven southeast; at a ~~short~~ distance of 100 feet a chimney of ore was developed. An inclined winze (marked winze D on map) was sunk on this chimney and ore mined. The winze was inaccessible but had the appearance of having been sunk between 100 and 200 feet. The same chimney of ore was raised on. Beyond the winze, to the southeast, the drift was caved and inaccessible. The pitch or direction of this second chimney of ore is the same as the one on which the inclined shaft was sunk and connection made with the lower tunnel. If possible these chimneys should be surveyed and longitudinal cross sections mapped including the lower tunnel.

The lower Eureka tunnel is reported to be 320 feet below the upper tunnel. This tunnel was started by your company about November 1916. It has been driven southeast approximately 1000 feet and

appears to be headed directly for the bodies being developed in the north west end of the property owned by the Hilltop M. M. Co. I consider it advisable to continue this tunnel and connect with the workings of the Hilltop M. M. Co. The first 320 feet of the tunnel follows faults in the limestone which have a general direction ~~following~~ paralleling the quartzite. At 320 feet, Survey station No. 6, the quartzite is developed; beyond this point the tunnel follows the contact of the lime and quartzite. Between Stations 7 and 9 the formation is more or less mineralized with lead ores both sulphides and oxidized. At this point a raise was driven about 10 feet following a mineralized zone and crossfaulting. The formation is rather tight and not favorable for a large deposit of ore. At Station No. 10 a vertical raise was driven to connect with the inclined shaft from the upper tunnel. The southeast face of the tunnel, Survey Station No. 16, was in very interesting ground; there was considerable faulting and the ground was highly mineralized.

In summing up the workings on the Eureka claim I wish to call attention to the following: The quartzite or siltified lime developed in both the upper and lower tunnels is a bedding plane in the limestone having a general strike of south 30° to 35° east. This strike coincides with the extension of the Hilltop quartzite upon which chimneys of ore have been developed in their northwest face. The two chimneys of ore developed in the upper tunnel were followed to the surface and for a considerable distance below the upper tunnel. The most westerly chimney, marked winze B on the map, pitches north 63° west; the easterly chimney, marked winze D on the map, pitches at an angle of 56° north, 70° west. The two chimneys appear to be approximately parallel and both have a northwest pitch. The question as to where these chimneys should be developed in the lower tunnel is most difficult to determine without maps of the workings. A longitudinal section of the workings between winze B,

upper level and raise B, lower level, indicates that the western chimney of ore should have been developed near or northwest of Raise A, lower tunnel. A longitudinal section of the workings between winze D, upper tunnel, and the lower tunnel, indicate that this chimney of ore should have been developed at a point near raise B of the lower tunnel. The crossfaulting and mineralization at the face of the lower tunnel appears to be a third chimney of ore. The surface, about 300 feet southeast of Shaft No.1, should be prospected for the cropping of this third chimney of ore.

The Maud and Ida claims, northwest of the Eureka, are covered with a rhyolite flow. Very little work has been done on these claims.

Northwest of and adjacent to the Eureka claim are the Prince and Prince No. 2 claims. On the Prince claim is a prominent blowout of what appears to be a brecciated vein quartz in the limestone having an east-west strike. The assessment work on the Alma ~~quartz~~ claim is in quartz and practically due east of the Prince quartz. The quartzites (?) where developed in the lower Eureka tunnel, at Survey Station No.6, is along an east-west fault. The locations and general directions of the ~~##~~ two quartz croppings and quartzite where first developed in the lower Eureka tunnel indicate a relationship which should be investigated. A proper survey and map may result in valuable information.

One of your most interesting claims is your Lead Lily, located adjacent to and northeast of claims owned by the Hilltop M. M. Co. There are a number of surface pits, shallow shafts and one tunnel on this claim. The location of the pits are such that one might assume that there are several mineralized crossfractures or faults (northeast and southwest) connecting the Prince quartz with the Hilltop quartzite. I examined several of these pits and found no such indication of cross fracturing or faulting. I am of the opinion that further prospecting will prove that these pockets or chimneys of ore occur along fractures

paralleling the strike of the Hilltop quartzite. They may develop into parallel ore bodies quite independent of the Hilltop quartzite or they may be offshoots from the Hilltop quartzite. Most of the mineralized fractures and faults on this claim have a general strike to the northwest paralleling the quartzite. The surface pits were sunk years ago. An inclined shaft, located near the center of the north side line was sunk to a depth of 60 feet, following a narrow vein. This vein appears to be along a contact of lime and quartz; the strike is south 5° east. The shaft dump contains gossan and oxidized lead-silver ore. Southeast of the shaft, 125 feet, a tunnel was driven southwest a distance of 200 ft. The tunnel is in limestone. About 50 to 60 feet from the portal the tunnel cuts a faulted and brecciated mineralized zone. Drifts, following the faulted zone were driven 35 feet northwest and 42 feet southwest. At the face of the southwest drift a winze was sunk 58 feet and a drift driven from the bottom of the winze, south 15° east, about 20 feet; the drift followed a narrow mineralized fracture in the limestone. I am of the opinion that this vein or fracture is the same one developed by the inclined shaft to the northwest of the tunnel. It is reported that the winze produced 3 or 4 carloads of lead-silver ore. In the main tunnel, southwest of the portal 108 feet, a second fault and brecciated zone in the limestone is developed. A drift following this fault has been driven north 15° west, 20 feet. At a distance of 140 feet from the portal a short drift has been driven northwest following a brecciated zone in the limestone. The developments in this tunnel indicate parallel faults having a general trend to the northwest and conform to the strike of the mineralized quartzite. East of the tunnel is located the Whim shaft. The statement was made that the shaft was sunk over 15 years ago and produced considerable ore. The shaft appears to have been sunk to a depth of over 80 feet.

There are many other pits on the Lead Lily claim. So far as
(10)

E. Summary of Local Geological History

from the

Reports on Property of the

Hill Top Extension Mining Company

Charles P. Berkey

Although it would be possible to write a comparatively extensive discussion of the geological history represented by this complex district, the essential facts about it can be stated rather simply and briefly as follows:

1st: The whole series of sedimentary formations involved in the block and associated with the mineralization range from Cambrian to Carboniferous in age. They represent a practically continuous series of clastic and organic deposits. They are strongly bedded and fossil bearing and undoubtedly represent a series very similar in its fundamental features to that of the Bisbee quadrangle.

2nd: At sometime, perhaps long subsequent to the completion of the deposition of the strata, the region was broken into a series of blocks which were crowded one against the other and into new position. This was aided much by igneous intrusion from below and the welling up of great masses of molten igneous material which probably made it possible for the different members to be floated and depressed quite differently one from the other. Thus such a block as the Hilltop block was tilted to the southwest and also jammed over from the east side by the pressure of a block crowding on at that side, which has since been entirely removed by erosion. The base of it probably rests on some of the igneous members just referred to. Projections or intrusions of a similar sort extend out from the principal masses

of igneous rock penetrating portions of the blocks themselves, developing dikes and sills and more irregular forms. As time went on, the outer portions of these large masses which had become solidified were cut through by still other igneous material welling up from below and adding further to the complexity under additional disturbances or deformation.

Perhaps there was a time when block faulting was the chief form of development and a time following when igneous activity was dominant in the district, but the two effects were more or less tied up together, one being somewhat related to and dependent on the other. The time when these geological changes were developed cannot be determined very accurately but it was at least Post-Permian.

3rd: The chief mineralization accompanied and followed the igneous invasion. The earlier part of it was essentially non-metallic developed as a product of the cooling of the igneous material.

The chief metallic mineralization seems to have formed the closing stage of this epoch and this probably concluded the whole igneous history. It is, therefore, to be attached to the same historical period as the igneous activity itself and represents only a stage of the closing phase of that activity. It came after the chief block faulting and also after some of the cross faulting and deformation, but preceded still other abundant faulting and dislocation that characterizes certain parts of the ground.

4th: Subsequent to these developments erosion developed a surface not now easily reproduced because, on top of it after a long interval of time, a great thickness lavas and

tuffs were accumulated from a revival of igneous activity in some Tertiary period. There is no means at hand of determining this period accurately, but it is the most recent of the large developments in the district. It is represented by the rhyolites and andesites and tuffs of very large areal extent to the north and west of this ground.

5th: Subsequent to the pouring out of these lavas began again to cut down the rocks and develop a new topography. Lavas and tuffs may have covered up some of this ground. But in large areas it is now stripped off and cleared of this covering. The topography is, therefore, not the topography of the time previous to the Tertiary volcanic outbreak. In places it may have a good deal of the same habit, where the stripping has exposed some of the higher ground, but, taking the district as a whole, the present topography is a complex of new and modified older forms.

6th: Secondary modifications represented by leaching and alteration and enrichment of the ores are affects that have been produced in comparatively recent time as erosion proceeded. These changes are going on now, but the process is slow and no changes of consequence are likely to be noticed in moderate length of time.

New York City,
May 21, 1920

Geologist.

without accurate surveys upon which all surface pits, faults, and geology are plotted. The surface indications on the Lead Lilly fully justify surveys followed by exploration. The Whale group apparently covers very little of the mineralized quartzite extension. The formations comprise limestone and quartz with porphyritic intrusions. The group must be considered as a prospect which warrants the mapping of present pits, faults, and the geology in general, followed by further exploration.

My recommendations are:-

Connect your lower Eureka tunnel with the northwest workings of the Hill Top Metals Mining Co.

Employ a young trained engineer to survey and map not only your holdings but all surface pits and underground workings and plot so far as he can the general geology.

Do further prospecting on the Whale group of claims and map the workings, faults, and geology.

With the developed ore bodies on the property of the H.T.M.M. Co. your group of claims, covering the extension of the mineralized zone, must be considered as a favorable prospect fully warranting further exploration.

miles wide which has not only been tilted but has had the edges of its beds overturned and much crowded from one side until they now stand in the form of an unsymmetrical trough. (See accompanying sketch of the major structure represented)

The crowding of the block resulted in a great deal of small thrust faulting and overriding of competent or hard beds over other weaker ones, to such extent that in some places the succession of strata is very much disturbed. In exceptional places some slipping or small faulting is encountered every few feet and it becomes particularly difficult to follow any but the most massive or most competent beds. The igneous intrusions doubtless added to this disturbance and confusion but the regional crowding seems to have been more disturbing than the igneous invasions in this particular ground represented by the Hilltop block. Toward the end of the series of disturbances small cross-faulting developed along the whole ridge, and the breaks of this stage seem to be of particular importance in connection with the ore deposits and in mining operations.

The ore deposits lie in these sedimentary rocks, the principal ones, as far as yet discovered, lie in or are associated closely with the Hilltop quartzite, the bed which forms the highest portion of the ridge throughout most of the extent of this property. These ore deposits are undoubtedly intimately connected genetically with both the igneous and the dynamic history. The chief items of this history are as follows:

1. All of the primary ore has been introduced into and through fractures and bedding planes and other weaknesses during and especially at the close of the contact metamorphism produced by the igneous intrusive masses.

2. All of the valuable deposits as far as yet known were made at the very close of this igneous contact history after most of the silicification of the limestones had been completed and most of the rock formations had been so thoroughly transformed that it was not easy anymore for the mineralizing solutions to penetrate the average rock. But wherever fractures were developed, especially the cross fractures with small fault movement, or wherever the rock had escaped earlier metamorphism and was inclined to be brittle and form connecting fractures rather than mash into new position, there it was still easy for the mineral bearing solutions to penetrate and deposit this mineral load.

3. Thus it happened that most of the ore bodies, as far as yet developed, are irregular branching and buncy deposits of chimney-like form cutting up through the nearly vertical or steeply tilted Hilltop Quartzite. This quartzite was the most brittle and least affected original member of the series at the time this mineralization began and consequently it formed a good final outlet for the mineral bearing solutions. Many of these cross fractures made especially good outlets and in their vicinity deposits are usually found. But at other places also there are similar results, and at some of these

intermediate points, that is between the cross fractures, the form of deposit is even more chimney-like than at the cross fractures. But from the nature of the case, with such an origin, the deposit ought to be very irregular and obscurely connected or perhaps in some cases not connected laterally at all. Vertically, however, or downward there must be much better and more continuous connection, and without doubt the mineral deposits can be followed much more successfully either by winzes or raises than by drifts. There is no way of determining where the next mineral chimney is, in exploring laterally, but in the other direction doubtless they branch and connect in a perfectly consistent manner, which in the actual working of the mine will not be found very confusing.

4. All of this primary mineralization came from below from igneous sources. The mineral bodies are only the conduits or courses of the escaping solutions.

5. The types of mineralization represented in the primary ore and the related effects include,

- a - Silication of the limestones
- b- Introduction of pyrite and sometimes other sulphides during silication
- c - Replacement of limestone and quartzite by other mineral material
- d - Vein and cavity and space filling by ore minerals
- e - Some silicification or development of quartz-filling and replacement.

6. The chief development of valuable deposits belongs to c and d above, i.e., space filling and replacement. The principal primary minerals being sulphides of the common metals. In the workings thus far the principal ones are the sulphides of lead, iron, zinc, copper, molybdenum, and arsenic (galena, pyrite, sphalerite, chalcoppyrite, molybdenite and arsenopyrite). Doubtless there are others but they do not appear prominently.

7. The Hilltop quartzite, however, was either not very completely cemented by the mineralization process or it suffered still further disturbance with reopening of fractures, because in much later time, after considerable erosion, surface rain waters began to percolate down into and through this samemineralized ground. This began to alter and dissolve and move and reorganize the original ore deposit minerals. Some material has been dissolved and carried away leaving a cavernous habit at some places. In other places, where the structure is still tight and the surface waters did not succeed very well in penetrating, the primary minerals may still be found quite fresh and undisturbed in their original relation to each other and the country rock. In still other places some of the ores have been oxidized, and carbonated and otherwise recombined with portions of freed mineral elements forming a whole series of secondary products. Among these are the sulphate and carbonate of lead (anglesite and cerussite), the molybdate to lead (wulfenite), hydrous iron oxide (limonite). Many others are to be found but no others are of equal prominence.

8. As deep as exploratory work has gone, these secondary effects are to be seen; but it is not to be expected that such pronounced oxidation will extend to very much greater depth.

9. The primary minerals, however, may be expected to continue and since they carry the valuable metals in even more recoverable form than do the secondary products, such a change of conditions may be looked forward to with more than usual satisfaction.

10. It is probably that in addition to this change to primary character of the ore, there will also be some change in the mineral mixture or proportions of the chief constituents. Zinc may be expected to increase and also iron and copper and probably silver. But lead may be expected to decrease in proportion with great depth.

11. No very sudden changes of any kind are likely to be encountered but at considerably greater depth than has yet been reached, the mineral bearing solutions must have crossed the underlying limestone beds in order to reach the quartzite and there it may well be that disseminated ore will be found replacing the limestone.

IN ACCOUNT WITH

The Bank of Douglas, Douglas, Arizona

NAME Hilltop Extension Mg. Co.,

ADDRESS % Mr. W. E. Hawley,

Douglas, Arizona.

STATEMENT OF YOUR ACCOUNT TO CLOSE OF BUSINESS

WESTERN - WICHITA

CHECKS IN DETAIL

DEPOSITS

NEW BALANCE

BALANCE
BROUGHT FORWARD

MAR 31 '28

1.01

JAN 29 '29

2.00-

JAN 29 '29

9.90

THE LAST AMOUNT IN THIS
COLUMN IS YOUR BALANCE

PLEASE EXAMINE THIS STATEMENT UPON RECEIPT AND REPORT AT ONCE ON FORM ENCLOSED HERewith. IF NO ERROR IS REPORTED WITHIN TEN DAYS THE ACCOUNT WILL BE CONSIDERED CORRECT. ALL ITEMS ARE CREDITED SUBJECT TO FINAL PAYMENT. PLEASE NOTIFY US IF ADDRESS SHOWN ABOVE IS NOT CORRECT.



LOUIS D. HUNTOON
CONSULTING MINING ENGINEER
115 BROADWAY
NEW YORK

May 28, 1920.

Hill Top Extension Mining Co.,
Rodeo, New Mexico.

Dear Sirs:-

This report on your property is supplemental to the accompanying Geological and Petrographic Reports by Dr. Charles P. Berkey. Its purpose is to discuss in greater detail your development work and offer recommendations in regard to future development.

Dr. Berkey has discussed in detail the location of the property and the extent of his geological studies. Suffice me to say, the property is in the Chiricahua Mountains, southeast corner of Cochise County, Arizona. It is reached from Rodeo, New Mexico, a drive of twenty-two miles by auto.

The report is subdivided into a general summation and a detailed report upon which the summation is based.

Very truly,

Louis D. Huntton

HILL TOP EXTENSION

SUMMATION.

The ore deposits on your property consist of chimneys occurring along faults and fractures in the limestone and quartzite and along contacts of the limestone and a fine grained white porphyry. It is my opinion that the function of the porphyry has been to open the formations and make conditions favorable for the circulation of mineral bearing solutions and the precipitation of their mineral contents. The chimneys of ore usually occur where there has been cross-faulting and a brecciation; extending laterally from the chimneys and following minor faults and fractures are smaller leads and pockets of ore. There are no indications, at present depth, of replacement ores other than a slight replacement immediately adjacent to fractures and in the brecciated zones.

Chimneys on your Eureka claim have been developed 325 feet below surface croppings. The property of the H.T.M.M.Co. has been explored along the strike for a distance of approximately 3000 feet on the 800 foot level, and 700 feet on the 1100 foot level. There have been no raises driven between these levels to determine the lateral extent or behavior of individual chimneys; the driving of these raises has been recommended.

My recommendation regarding your property is to do the

necessary annual assessment work and await the further exploration of the property of the H.T.M.M.Co. before entering upon a costly campaign of exploration at depth.

There have been three suggestions made regarding the exploration of your property:- 1st: To explore from the Gray or Rehm tunnel H.T.M.M.CO. 2nd: To sink a shaft on the Lead Lilly. 3rd: To drive a cross-cut tunnel from the Livery group of claims. Of these three suggestions I consider the driving of the tunnel from the Livery ground to be the most feasible. Such a tunnel will be located on and driven thru your own ground; the portal of the tunnel will offer sites for the erection of buildings, mill, and general equipment, without the necessity of building an expensive mountain road if a shaft should be considered; and the third advantage is that it will be near a supply of water.

The ores consist of a mixture of sulphides, sulphates and carbonates of lead with more or less iron. This will be a difficult ore to concentrate; a problem which will have to be solved if large bodies of ore are developed.

DETAILED REPORT.

In the general study of the district Dr. Berkey and I paid special attention in trying to find where conditions would be favorable for the production of a large replacement ore body in the limestone.

CHARACTER OF DEPOSITS:- Your Lead Lilly claim, covering the foot wall lime, with its many and irregular intrusions of quartz porphyry, and its many shafts, tunnels, and shallower pits, was examined and re-examined many times for indications of a replacement ore body. This claim shows no indications of such an ore body and I have been unable to find in the entire district examined, any indications pointing to such a body of ore. Further development in depth may disclose such an ore body.

The ore bodies as exposed at present are in the form of chimneys and local enrichments along fault and brecciated planes. The lead minerals occur as sulphates, carbonates, and sulphides. The mineral exposures on your property are invariably associated with a quartz porphyry. The quartz porphyry was intruded prior to mineralization, and its function appears to have been to open the formation and produce channels and conditions favorable for the circulation of mineral-bearing solutions and deposition of their mineral contents. The quartz porphyry itself does not appear to be mineralized or to have been the source of the mineral.

EUREKA WORKINGS:-

The Eureka workings comprise an open cut on the surface, an upper tunnel, and a lower tunnel. The surface workings are not shown on your map, but are probably 75 to 100 feet above the upper tunnel. The upper tunnel is located, according to your map, 232 feet above the lower tunnel. The surface workings have been connected with the lower Eureka tunnel by a raise. This ground therefore has been explored vertically for a depth of 300 to 325 feet.

The open cut follows a crush zone in the quartzite, N.45 deg.W., a distance of 50 to 75 feet. The mineralization occurs as narrow streaks and cementing material in the breccia. Two local enrichments or chimneys of ore were developed in the crush zone upon which winzes were sunk. Later the upper Eureka tunnel was driven to develop these chimneys at greater depth. The chimneys on the surface and also in the upper Eureka tunnel are connected by a crush zone along the contact; this crush zone is more or less mineralized but does not contain sufficient ore to be mined at a profit. Winzes were also sunk from the upper Eureka tunnel and work finally abandoned. Following this work, your company drove the lower Eureka tunnel and a raise to connect with the westerly winze. The lower Eureka tunnel exposes conditions quite similar to conditions above. Intermediate levels driven from the raise expose a faulted brecciated zone containing ore. This ore development is probably the northwest chimney. Near the foot of the raise, Eureka tunnel, a drift is now being driven

northeast to prospect this ore on the lower tunnel level. The ore from this drift is a disseminated galena in limestone. I am of the opinion that this replacement of the limestone, as elsewhere in the district, occurs only in close proximity to faulted and brecciated zones and does not extend in these upper workings to any considerable distance from these faults, fractures and zones of brecciation. Whether a disseminated ore body of commercial size occurs in depth or not is problematical, and I refer you to the geological report of Dr. Berkey for such forecasts. At present there is no other indication of such an ore body in the Eureka development. I cannot recommend advancing the Eureka tunnel for the present, as the surface indications are not sufficient to warrant it.

The advisability of sinking a winze from the lower Eureka tunnel was discussed. We must face the actual facts as they exist in deciding this question. The present vertical development on the Eureka claim is about 325 feet. There have been two chimneys of ore developed, one of which has been located in the lower tunnel. The lateral extent of the chimney in the lower tunnel does not appear to be much greater, if any, than in the upper levels. A winze sunk by hand from the lower tunnel to a depth of 50 to 75 feet will not be sufficient to prove the property. Before further exploration of the chimneys exposed in the Eureka workings, I consider it advisable to await the vertical development of an ore body from the Gray tunnel level of the Hill Top M.M.Co., this tunnel is 1100 feet below the surface croppings. The ore body is of such a character that diamond drilling does not appear to be applicable.

LEAD LILLY:--

The next claim to attract attention is the Lead Lilly, upon which a large amount of work has been done. All of the ore showings on this claim are associated with a fine grained white quartz porphyry. The ore occurs as chimneys and pockets along fault planes and brecciated zones in the limestone or along contacts of porphyry and lime. There are no indications, so far as I could see, of their being a replacement ore body of any considerable size in the limestone.

The Lead Lilly Whim Shaft is reported to have produced "considerable" ore in the early days, but there are no records of production. From the extent of the workings and the size of the present dump I am of the opinion that not more than 1000 to 2000 tons of material have been shipped from the workings to the concentrating mill; I have been unable to locate any records of shipments of concentrates from the mill. Altho the shaft has been abandoned it is still accessible by rope, and was examined by me to a depth of about 50 feet. The shaft follows a chimney of ore or mineralized rock occurring along a fault plane. A raise has been driven from a depth of about 50 feet to a height of about 25 feet along the main fault; this raise follows a pocket of ore, an offshoot from the main chimney. There is no continuation of ore along the strike of the fault plane other than an oxidized vein or contact. The extent of the chimney laterally is very limited and I could find no indications of a replacement ore body at this depth. The fault has a strike of N. 60 deg. W. to N. 70 deg. W.; the dip is 60 deg. West.

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The Lead Lilly Tunnel has been driven southwest about 200 feet; drifts following faults and contacts have been driven to the northwest and southeast; and a winze was sunk from the face of the first southeast drift. The winze follows a chimney of ore. The portal and the face of the tunnel are in limestone. A quartz porphyry intrusion is encountered about 60 feet southwest of the portal; drifts to the northwest and southeast have been driven along the porphyry-limestone contact; the only ore developed by these drifts is the chimney upon which the winze was sunk. This chimney of ore appears to occur along a cross break or fault and does not appear to have any lateral extent on either fault or contact. Along the contact of the porphyry and limestone there are no indications of a replacement ore body.

North of the tunnel workings and at a higher elevation an inclined shaft was sunk to a depth of about 80 feet at an angle of 45 deg. This incline follows a crush faulted zone which is more or less mineralized; in places in the incline there are very fair showings of gossan and some lead ore. In conjunction with the crush zone we have the fine grained white porphyry. The indications here are similar to all others:- A porphyry intrusion producing conditions favorable for the deposition of mineral in the form of chimneys or pockets of ore. There are no indications of a large replacement ore body at this point.

Northwest of portal to Lead Lilly Tunnel is an inclined shaft sunk along a fracture zone or fault. The strike of this fault is such as to cross the Lead Lilly Tunnel.

Nothing of interest was developed by this incline. There are several other scattered pits and shallow workings exposing more or less mineral.

The ore exposed by the several shafts, tunnels, and other workings on the Lead Lilly claim may be summarized as follows:- The formation is the footwall limestone of the Hill Top Quartzite; intruded into this limestone is a fine grained white quartz porphyry. The quartz porphyry is not mineral bearing but produced conditions favorable for the circulation of mineral bearing solutions and the precipitation of the mineral contents. The ore deposits occur as chimneys and pockets and slight replacements along the contacts of the quartz porphyry and limestone. The present development shows no indications of lateral replacement of the limestone to any considerable extent. At greater depth where the solution would be under much greater pressure and temperature there is a possibility of a replacement ore body. The Hill Top Metals Mining Co. have explored their deposit at a depth of 800 feet without locating any large replacement ore body and are now exploring at a depth of 1100 feet. The results from their work in the Gray or 1100 foot tunnel should throw considerable light on what to expect with depth on your Lead Lilly claim. I also refer you to Professor Berkey's geological report on what to expect with depth.

ALMA QUARTZ: The Alma Quartz is a large blowout of quartz on the Alma claim. This quartz, altho honeycombed, shows no mineralization on the surface. As to its possibilities with depth I refer you to Dr. Berkey's geological

MORROWS GROUP:-

On the Morrows group of claims there are no indications of ore in commercial quantity. The geological formations are included in the report of Dr. Berkey.

LAVERY GROUP:-

I understand that the Lavery group of claims is held under option; these claims are located adjacent to and northeast of the Alma and Chance claims. The formation is the footwall limestone. More or less prospecting and exploratory work for copper has been done in the form of pits along the strike and one tunnel. The mineralization is along a crush zone having a general strike of N. 40 deg. W. and dips 60 deg. to the West. The crush zone is manganiferous with scattered pockets or chimneys of copper ore. The tunnel exposes a pocket or chimney of copper ore near the portal; the balance of the tunnel follows a fault plane or fracture along the bedding and exposes a vein from 6" to 8" wide of a manganiferous breccia but no copper. Higher on the hill, following the strike to the northwest, is another small showing of copper.

The advisability of locating a tunnel on the Lavery group and driving southwest to westerly for the purpose of prospecting the copper showings, Alma quartz, and Lead Lilly claim was thoroughly discussed with your manager.

WHALE GROUP:-

Most of the claims on the Whale Group are located southwest of the Hill Top Quartzite and cover the hanging wall formations; the Whale and Whale No. 2 claims cover the extension of the Hill Top

Quartzite to the southeast for 1500 to 2000 feet.

On the claims covering the hanging-wall formations, including the Margaret and adjacent claims, are a number of scattered exposures of ore. Most, if not all, of these exposures are along faults and brecciated zones associated with quartz porphyry. The porphyry is not mineralized and the ore occurs as scattered pockets along the strike. The prospects on the Lead Lilly are much more promising and I recommend that no further work be done on the Margaret and adjacent claims covering the hanging wall formation until the more promising prospects have been proven to be of value.

The Whale claim has been prospected by an incline, shaft, surface pits, and a crosscut tunnel started. The formations are quartzite, limestone, and porphyry intrusions. The incline was examined during the summer but when visited again in December it was filled with water and the fall work could not be examined. Specimens on the dump, from the new work, indicated that a fracture in the limestone had been developed and that the limestone had been partially replaced with lead. These same replacement conditions were found on the Lead Lilly and Eureka claims; a slight replacement of the limestone adjacent to fractures and in breccia, but not extending for any considerable distance laterally. The incline follows a chimney of ore along a fault plane having a general strike of N.50 W. To the southeast, along this fault, several exploratory pits have been sunk. Two of these

pits expose ore scattered irregularly thru a brecciated zone, similar to the open cut on the Eureka claim. A cross-cut tunnel was started about 150 feet below these pits and driven a considerable distance but not quite sufficient to reach the brecciated fault zone. The continuation of the crosscut tunnel to the quartzite contact and drifting along this contact will probably develop chimneys of ore similar to the ore developed by the inclined shaft.

Ron. O'Huntton,