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UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
REGION III

*Sale Buente
Topeka
60.0097*

OFFICE OF
REGIONAL DIRECTOR

1012 FLOOD BUILDING
870 MARKET STREET
SAN FRANCISCO 2, CALIFORNIA

March 16, 1953

Mr. W. H. Crutchfield, Jr.
The Atchison, Topeka and
Santa Fe Railway Company
121 East Sixth Street
Los Angeles 14, California

Dear Mr. Crutchfield:

With reference to your letter of March 11, 1953, I imagine you are seeking information on the Standard Slag Company which operates magnesite and iron ore properties at Gabbs, Nevada, near Luning.

The local address of the company is Box 3, Gabbs, Nevada, and Mr. R. O. Jones is manager.

Sincerely yours,

H. C. Miller
Regional Director, Region III

BASIC REFRACTORIES

I N C O R P O R A T E D

(FORMERLY BASIC DOLOMITE, INCORPORATED)



845 HANNA BUILDING

CLEVELAND, OHIO

August 20, 1943

Mr. W. M. Balling, Consulting Mining Engineer
The Atchison, Topeka and Santa Fe Railway Co.
560 South Main Street
Los Angeles, California

Dear Mr. Balling:

Re: Oatman Brucite, your File 60.0097.

Thank you for your letter of the 4th with additional analyses. So far in our development work it would appear that the deposit as it relates to quality ore is so limited in amount as hardly to justify its development at this juncture. We are, however, negotiating with the owners with the thought that it may be well to purchase and hold this property for additional exploration or possible future development.

Very truly yours,

A large, stylized handwritten signature in dark ink, appearing to read "H. P. Eells, Jr." with a long, sweeping tail.

H. P. Eells, Jr.
President

HE:LS

BASIC REFRACTORIES

I N C O R P O R A T E D

(FORMERLY BASIC DOLOMITE, INCORPORATED)



845 HANNA BUILDING

CLEVELAND, OHIO

July 26, 1943

Mr. W. M. Balling, Consulting Mining Engineer
The Atchison, Topeka and Santa Fe Railway Co.
560 South Main Street
Los Angeles, California

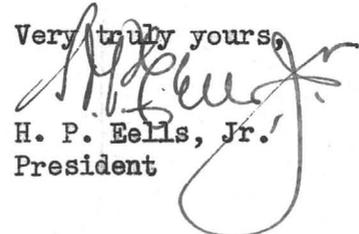
60.0097

Dear Mr. Balling:

Re: Oatman Brucite.

I have your letter of July 12th for which please accept my thanks. As you know, we are continuing with our preliminary drilling campaign on this property which I expect we will terminate in early August after which I hope to have a complete report on this deposit. At that time I shall be very happy to advise you of our findings.

Very truly yours,


H. P. Ellis, Jr.
President

HE:LS

copy J. W. Lowman

W.H.Crutchfield,Jr
Mining Engineer

March 11, 1953

File 60,0097

Mr. H. C. Miller
Chief, U.S. Bureau of Mines
Region 3
870 Market Street
San Francisco, Calif

Dear Mr. Miller:

If you have the information readily available, I would greatly appreciate receiving the mailing address of the Consolidated Slag Company. I understand that this company is active in the Luning, Nevada, area.

Thanking you in anticipation, I am

Very truly yours,

W.H. Crutchfield,Jr
Mining Engineer.

WHC-w

December 5, 1952

E-1688-A

Mr. P. S. Essick,
Pacific Sand & Gravel Co.,
785 Market Street - Room 403,
San Francisco 3, California.

Dear Sir:

Referring to our advice of November 28th informing you that Chairman Dana of the Transcontinental Freight Bureau was instructed to proceed with immediate publication in TCFB Tariff 2-R of rate \$12.43 per net ton of 2000 lbs. subject to Tariff of Increased Rates and Charges X-175-series, on Brucite, crude, not dehydrated, from Topock, Ariz., to Maple Grove, Ohio, also to Bettsville, Carey and Narlo, Ohio - the rate to expire one year from effective date - minimum carload weight to be 100,000 pounds:

Am pleased to advise that publication has been made and the rate will become effective February 1, 1953 in a supplement to TCFB Tariff 2-S.

I trust the publication we have made meets with your approval and that it will be the means of both of us doing considerable business under the rate.

If we can be of further service, please advise.

Yours truly,

Original Signed
ELMER B. JOHNSON
Per H. M. E.
Freight Traffic Manager.

bc-
Mr. R. S. Hirsch, K-46-2
Mr. T. O. Evans, 60-97
Mr. T. H. Murray
Mr. F. H. Smith

HME:EB

60-97

San Francisco, California
November 28, 1952

E-1688-A

Mr. P. S. Essick,
Pacific Sand & Gravel Co.,
785 Market Street - Room 403,
San Francisco 3, California.

Dear Sir:

Supplementing our letters to you of July 2nd and October 1st, regarding your request for publication of the same carload rate on brucite ore from Topock, Ariz., to Maple Grove, Ohio, as is in effect from Luning, Nevada:

I am pleased to advise that the Eastern Lines have concurred in this proposal, and Chairman Dana of the Trans-Continental Freight Bureau has been instructed to proceed with immediate publication in T.C.F.B. Tariff 2-R, with rate of \$12.43 per net ton of 2,000 lbs., subject to Tariff of Increased Rates and Charges No. X-175 series, on brucite, crude, not dehydrated, from Topock, Ariz., to Maple Grove, Ohio, also to Bettsville, Carey and Narlo, Ohio, the rate to expire one year from effective date, unless sooner cancelled, changed or extended.

We will advise you later when effective date of this publication is known.

Yours truly,

Original Signed
ELMER B. JOHNSON
Per H. M. E.
Freight Traffic Manager

Bld cc Messrs. R.S.Hirsch, K-46-2

T.O.Evans, 60-97 ← *Los Angeles*

T.H.Murray

F.H.Smith

HMR:L

Los Angeles, August 27th, 1952

File 60-97

Mr. G. W. Cox:

In keeping with your request of August 8th, file 128, in which you asked for information on a brucite deposit near Topock, Arizona, I am supplying you with two copies of my report covering this deposit. Attached to the report are analyses indicating the grade of the material.

The ownership shown in the report is correct as of this date, and a recent check indicates that it is neither under lease nor option to purchase.

We believe this deposit to have considerable merit and we would like to see it put into production.

T. O. Evans

Encl.

TOE-c

(C
O
P
Y)

- MEMORANDUM -

60-97

Chicago, August 8, 1952

File 128

Mr. T. O. Evans:

In your report of June 30 you mentioned a tungsten deposit near Yucca, Arizona, and a vermiculite deposit near Kingman, Arizona, and in your May 14 report a manganese deposit near Topock, Arizona, and wollastonite near Inca, California. There was also mentioned in your report of April 14 a brucite deposit near Topock.

I shall greatly appreciate your sending me in duplicate your detailed report on these deposits and if analyses are available will appreciate your sending them along.

We should also like very much to have any information regarding high-grade perlite deposits which are not being worked.

For your confidential information, the International Minerals & Chemical Corporation is extremely interested in the ores mentioned and we would like to give them any information we have on deposits that possibly can be developed economically.

G. W. Cox

60-97

July 2nd 1952

E-1688-A

Mr. P. S. Essick,
Pacific Sand & Gravel Co.,
785 Market St. - Room 403,
San Francisco 3, California.

Dear Sir:

Supplementing our letter April 15th relative to your request for publication of the same carload rate on Brucite Ore from Topock, Ariz., to Maple Grove, Ohio, as presently in effect from Luning, Nev.:

This will confirm telephone conversation had with you on June 30th, at which time you were informed that we are agreeable to establishment of the rate sought. We have requested Chairman Dana of the Transcontinental Freight Bureau, Chicago, to secure concurrence of the interested Eastern lines and, if successful, to proceed with publication of rate \$11.40 per ton of 2,000 lbs. -

On Brucite, crude, not dehydrated
Magnesite, crude, not calcined or dead burned
In straight or mixed carloads,
Minimum carload weight 100,000 lbs.

from Topock, Ariz., to Maple Grove, Ohio, Bettsville, Carey, and Warlo, Ohio. Rate to expire one year from effective date unless sooner cancelled, changed or postponed. This rate to be subject to increases authorized under Ex Parte 168 and 175 series.

This means that the \$11.40 rate will increase under Ex Parte 168 to \$12.43 per net ton, and this figure would be subject to the increase under Ex Parte 175-B of 15%, which is the same basis as applicable from Luning, Nev.

We will be pleased to keep you informed of further developments.

Yours truly,

Original Signed
ELMER B. JOHNSON
Per H. M. E.

Freight Traffic Manager.

bc-
Mr. R. S. Hirsch, K-46-2
Mr. T. O. Evans, 60-97
Mr. T. H. Murray
Mr. F. H. Smith

HME:EB

June 30, 1952

E-1688-A

AIRMAIL

Mr. W. H. Dana, Chairman
Transcontinental Freight Bureau
Chicago 6, Illinois

Dear Sir:

In disposition of NARA NoFC No. 1267, the Arizona lines wish to take affirmative action; therefore, please issue Rate Advice, secure concurrences of Eastern interested lines, and proceed with publication of the following:

Publish new item in Section 1, T.C.F.B. Tariff 2-R,

On - Brucite, crude, not dehydrated.
Magnesite, crude, not calcined or dead burned.
In straight or mixed carloads,
Minimum carload weight 100,000 lbs. (Subject to Item 43).

From - Topock, Arizona.

To - Bettsville, Ohio
Carey, "
Maple Grove, "
Harlo, "

Rate - # @ 1140 cents per ton of 2,000 lbs.

#Rate to expire one year from effective date, unless sooner cancelled, changed or postponed.

@Not subject to Tariffs of Increased Rates and Charges Nos. X-162 or 166 series, as described in Item X-162-6-3 or successive issues thereof.

Rate to apply via Western Gateway 1.

In submitting proposal to Eastern carriers for concurrence, you may advise them the proposed rate is the same as presently applicable from Luning, Nev. (Item 615-A, Tariff 2-R); and in divisions the Eastern carriers are to be allowed the same

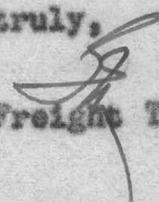
basis of divisions as they receive from Luning, Nev.

The competitive distances to Maple Grove, Ohio via Chicago are -

From Luning, Nev. - 2321 miles
Topock, Ariz. - 2053 "

Southern Pacific Co. concurs, Mr. H. W. Klein's file 1-TC-3054-1 of June 30th.

Yours truly,


Freight Traffic Manager.

cc-

Mr. H. W. Klein, FTM., SP Co., San Francisco, Cal.
Mr. L. H. Trimble, GFA, " Phoenix, Ariz.

Mr. F. H. Rockwell, OPTM., AT&SF Ry., Chicago, Ill.
Mr. R. S. Hirsch, FTM., " " Los Angeles, Cal. (K-46-2)
Mr. T. H. Murray, GF&PA., " " Phoenix, Ariz. (K-2668)
Mr. G. C. Lyman, GF&PA., " " Albuquerque, N.M.
Mr. T. O. Evans, Mining Engr., " " Los Angeles, Cal. (60-97)
Mr. F. H. Smith, DFA., " " San Francisco, Cal.

TRANS-CONTINENTAL FREIGHT BUREAU

UNION STATION

CHICAGO 6

W. H. DANA, Chairman

April 17, 1952

File 417
TCFB Tariff 2-R
NM&A NofC 1267

NEW MEXICO AND ARIZONA
NOTICE OF CONSIDERATION

NO. 1267

THE PROPOSAL SET FORTH BELOW HAS BEEN PRESENTED FOR CONSIDERATION.

ACTION ON THE PROPOSAL WILL NOT BE RESTRICTED TO ITS EXACT SCOPE BUT MAY INCLUDE OTHER POINTS OF ORIGIN AND DESTINATION OR OTHER COMMODITIES OR RECOMMENDATIONS VARYING FROM, BUT DIRECTLY OR INDIRECTLY RELATED TO, THE CHANGES PROPOSED.

ANY COMMUNICATION INTERESTED PARTIES DESIRE TO MAKE TO THE RAILROADS SHOULD BE ADDRESSED TO THE FREIGHT TRAFFIC MANAGER OF THE LINE OR LINES IN NEW MEXICO AND ARIZONA TO OR FROM WHICH THE PROPOSED CHANGE APPLIES, OR TO THE CHAIRMAN.

W. H. DANA, CHAIRMAN

BRUCITE ORE, CRUDE, FROM TOPOCK, ARIZONA, TO MAPLE GROVE, OHIO

SHIPPER'S PROPOSAL

Request for rate of \$12.43 per net ton (subject only to Tariff X-175-series), Min. wt. 100,000 lbs., on mine run Brucite Ore, from Topock, Arizona, to Maple Grove, Ohio, Tariff 2-R.

REASONS

Applicants have a substantial deposit of Brucite Ore near Topock, Arizona, and they have been offered a substantial contract for the furnishing of this commodity to Maple Grove, Ohio, provided a rate not exceeding the prevailing rate on the same article from Luning, Nevada, is established for application from Topock, Arizona. The rate from Luning, Nevada, is published in Item 615-A, Supplement 28 to T.C.F.B. Eastbound Tariff 2-R.

CAF/EO

(825-Green)

Los Angeles, California
April 23, 1952

A-46-2

Brucite Ore, Crude, From Topock, Arizona, to Maple Grove, Ohio.

Mr. T. O. Evans: Los Angeles

Further your letter dated April 8, file 60-97, concerning request of Mr. P. S. Essick, Pacific Sand and Gravel Company, San Francisco, for reduced rate on Crude Brucite Ore, from Topock, Arizona, to Maple Grove, Ohio.

Mr. Essick's request is now covered by New Mexico and Arizona Notice of Consideration No. 1267, dated April 17, copy attached for your information.

I will inform you of final disposition.

R. S. Hirsch



FHS:jhs
Attachment

cc: Mr. E. B. Johnson (E-1688-A)

San Francisco, California
April 15, 1952

E-1688-A

Mr. P. S. Essick,
Pacific Sand & Gravel Co.,
785 Market St. - Room 403,
San Francisco 3, California.

Dear Sir:

Your letter of April 5th to our Mr. Evans,
at Los Angeles, has been referred here for further handling.

We have today asked Chairman Dana of the
Trans-Continental Freight Bureau, Chicago, to issue a
New Mexico & Arizona Notice of Consideration on your request
to establish a rate not in excess of that currently published
on Brucite Ore from Luning, Nevada, to Maple Grove, Ohio.
This rate is \$12.43 per net ton, minimum weight 100,000 pounds,
subject to the increase authorized by Ex Parte 175 series.

We shall be pleased to keep you informed as
to progress made on this proposal.

Yours truly,

Original Signed
ELMER B. JOHNSON
Per H. M. E.
Freight Traffic Manager

Bld
cc Messrs. R.S.Hirsch, K-46-2
T.O.Evans, 60-97
T.H.Murray
F.H.Smith

HME:L

60-97

Los Angeles, April 11, 1952

K-46-2

Mr. E. B. Johnson:

There is enclosed in triplicate copy of letter April 5th from Mr. P. S. Essick, Pacific Sand & Gravel Co., San Francisco, addressed to Mining Engineer Evans, concerning movement of Brucite from Topock, Arizona to Maple Grove, Ohio.

We have discussed this matter with Mr. Evans, and we are informed that there are only two Brucite deposits in the United States--one located at Luning, Nevada on the Southern Pacific, and the other near Oatman, Arizona, rail head Topock, or Kingman, Arizona. Mr. Evans says the deposit near Oatman is substantial, and he feels that there are very good prospects of considerable movement if the rate is made the same as in effect from Luning, Nevada, which is \$12.43 per net ton, subject to X-175-A, minimum weight 100,000 lbs., Item 615-A, Supplement 28, TC 2-R. As we understand it, the rate of \$20.35 per net ton, including all increases, minimum weight 80,000 lbs., Item 5456, Supplement 18, TC 2-R on the description Brucite (Magnesium Ore) will apply on this material.

If you need any further information about the matter prior to issuance of NM&A Notice of Consideration, assume it can be obtained from the Pacific Sand & Gravel Company, San Francisco. Off hand, there does not appear to be any reasons why the rate from Topock should not be on the same basis as from Luning, Nevada. We understand that applicant claims the traffic will not move from Topock on any higher basis of rate.

Mr. Evans stated the applicant desirous of obtaining quick action in connection with this matter and trust you will handle accordingly.

R. S. HESSCH

cc -

Mr. T. O. Evans - (60-97)
Mr. T. H. Murray

Attached: 3

JGR/anb

C O P Y

C O P Y

C O P Y

PACIFIC SAND & GRAVEL CO.
Room 403
785 Market Street
San Francisco 3, California
Telephone YUkon 6-3962

April 5, 1952

T. O. Evans,
The Atchison, Topeka & Santa Fe,
121 East Sixth Street
Los Angeles 14, California

Dear Mr. Evans:

Several days ago I received a letter from Basic Refractories Co regarding the Heather-Martin Brucite Deposit near Oatman, Arizona.

They have offered a fifteen thousand (15,000) ton contract at \$8.00 per ton F.O.B. cars, Topock, Arizona; provided the Santa Fe R. R. Co. will meet the S.P. R.R. prevailing rate on mine run Brucite Ore from Luning Nevada to Maple Grove, Ohio. This rate is \$12.43 per ton plus 6%.

If you think it is advisable to accept this contract, would appreciate any help you may be able to give me in getting a new freight rate established.

Awaiting your early reply.

Sincerely yours,

/s/ P. S. Essick

Los Angeles, April 8, 1952
File 60-97

Mr. R. S. Hirsch:

Attached is copy of a letter received from P. S. Essick, concerning request for a rate on brucite from Topock, Arizona, to Maple Grove, Ohio.

In my reply to Mr. Essick I have indicated that you will arrange to supply him with this information.

T. C. Evans

Encl.

TOE-c

April 8th, 1952

Mr. P. S. Essick
Pacific Sand & Gravel Co
Room 403
785 Market Street
San Francisco 3, California

Dear Mr. Essick:

I have referred your letter of April 5th, concerning rates on brucite from Topock, Arizona, to Maple Grove, Ohio, to Mr. R. S. Hirsch, our Freight Traffic Manager, with request that he supply this information to you.

Yours very truly,

Mining Engineer

TOE-c

THE AMERICAN TOPOCK AND GRAVEL CO. MINING COMPANY
CORPORATE OFFICE
1000 MARKET STREET
SAN FRANCISCO 3, CALIFORNIA

FOR ADDRESS IN CORRESPONDENCE
USE THE ABOVE ADDRESS
MINING DEPARTMENT

TOE-c
APR 10 1952
SAN FRANCISCO

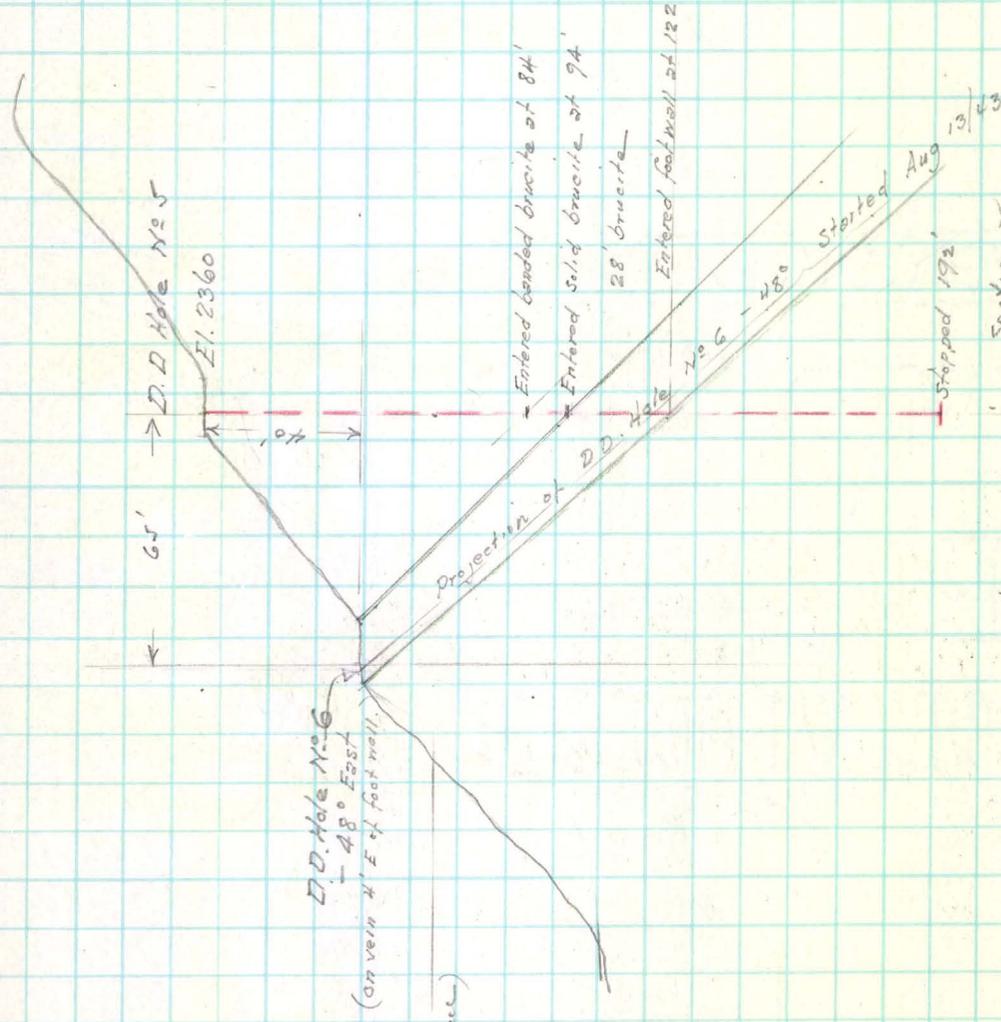
The American Topock and Gravel Co. Mining Company

Diamond Drill Data Topack Brucite

Correct. to July 22, 1943
" to Aug 13, 1943

Hole Number	Dip	Entered Ore	Left Ore	Footage of ore in hole	Total Length of hole	Remarks
1	Vertical	0	26	26	46	Hole started in ore 4' west of hanging wall.
2	"	69.6 ? 80.0 ?	112.6	43. ? 32.6 ?	150.3	Hole started 60' East of D.D. Hole No 1 (Schwab informed me that they entered ore at 80'. Heathers note gave it as 67')
3	-48° West	?	67.6	Driller did not remember. Get slope from Schwab.	104	Same set up as D.D. No 2 (No record of entering ore.)
4	-46° East	0	112	112	295.8 304.0	Drilling continuing 7/22/43. Hole drilled on dip of brucite 10' W of No 1
5	Vertical	94	122	28'	192.0	Hole located 150' N. and 65' E. of D.D. Hole No 1
6	-48° East	0				2' from Post wall This hole started on day of visit Aug 13 th 1943

Brucite
60.0097



Lower Vein Section
 - Section looking North - 5-V6
 D.D. Hole No. 6 located 150' North on strike
 of vein from D.D. Hole No. 1 (See Sheet No. 1)
 D.D. Hole No. 5 is 65' East of D.D. Hole No. 6 at
 right angles to strike of vein.

Brucite - Topock

Los Angeles, August 27th, 1943

File 60.0097 ✓

Memo

Mr. Balling:

The following analyses were made for Mr. Harry Heather by Ed. Eisenhauer, July 10th, 1943. Mr. Heather obtained these samples from the McCarty Moser and McKnight deposits near Catman, and furnished me with the results of the analyses.

	<u>Moser</u> <u>Property</u>	<u>McCarty</u> <u>Property</u>	<u>McKnight</u> <u>Property</u>
Insolubles	4.86 %	7.56 %	6.55 %
Calcium Oxide CaO	13.85	28.70	17.75
Alumina and Ferric Oxide R ₂ O ₃	2.86	6.98	2.72
Magnesium Oxide MgO By Diff	32.86	26.47	30.58
Loss on ignition	<u>45.57</u>	<u>30.29</u>	<u>42.40</u>
	100.00	100.00	100.00

See this file for Mr. Bohnstengel's analysis dated July 22, 1943, of sample taken from McCarty deposit by Mr. Heather which we had analyzed in Topeka.

T.O.E.

Brucite - Topock

Sept. 23, 1943

Analysis of samples taken on Heather and Martin brucite deposit near Oatman, Arizona, as analyzed by Topeka Laboratories of The A. T. & S. F. Railway Company:

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture	0.10 %	0.12 %	0.10 %	
Silica SiO ₂	0.65 %	3.78 %	34.96%	0.15 %
Alumina, Al ₂ O ₃	0.42 %	0.48 %	0.30 %	0.10 %
Iron Oxide, Fe ₂ O ₃ ...	0.11 %	1.05 %	1.40 %	0.05 %
Calcium Oxide CaO ..	0.80 %	1.20 %	1.48 %	Trace
Magnesium Oxide MgO.	<u>63.16 %</u>	<u>63.96 %</u>	<u>45.74 %</u>	<u>64.90 %</u>
Ignition Loss	<u>34.76 %</u>	<u>29.41 %</u>	<u>16.02 %</u>	<u>34.80 %</u>
	100.00	100.00	100.00	100.00

Notes:

Sample No. 1 obtained from Mag No. 1 claim 75 feet south of shaft.

Sample No. 2 was taken from bottom of shaft on Mag No. 1 claim.

Sample No. 3 was taken from wide zone about 300 feet southeast of the southwest corner of the Hummingbird claim. It represents the upper 4 inches of the surface at that point. The top half of this sample was obviously very siliceous.

Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

T. O. Evans
 Los Angeles, Cal.,
 September 23, 1943.

Brucite - Topock, Ariz.

Los Angeles, August 10, 1943

File 60.0097 ✓

Location:

The deposit is located 3-1/4 miles northwest of the town of Oatman, partly in Sections 7, 8, 17 and 18 in T. 19 N., R. 20 W., G. & S.R.M., Mohave County, Arizona. The deposit can be reached by automobile by driving north from Oatman towards Kingman on U. S. Highway 66, for approximately one mile to the Davis Dam Road. A large well painted wooden sign is located at the junction of this road which indicates the direction to the Davis Dam Site. This road is then followed westerly for 1-1/2 miles to the junction of a road leading southerly down a wash. There are several roads branching out of the road to the brucite deposit which indicate very little traffic. The road to follow is the one showing the most travel and incidently the best kept road. The road has recently been graded by Mohave County road crews. This road ends at Martins Cabin near the old Gilpin Mine in Times Gulch. The distance from the Davis Dam Road to Martins is 2 miles, making the total distance by road from Oatman to the deposit 4-1/2 miles.

Ownership:

There are a total of 11 unpatented lode claims designated as "Mag" claims 1 to 4 inclusive. The "White House" claims 1 to 5 inclusive; the "Gold Gulch", and "Humming Bird" claims. The claims were located by Harry F. Heather - 2036 S. Oak Knoll Ave., Pasadena, Calif., and R. A. Martin, P.O. Box 168, Oatman, Ariz. All of these claims with the exception of the "Gold Gulch" claim are owned jointly by Messrs. Heather and Martin. The "Gold Gulch" claim is owned individually by Mr. Martin. An agreement has been concluded between the above named parties and the Basic Refractories, Inc., 845 Hanna Bldg., Cleveland, Ohio, to prospect the deposits. Mr. Heather has informed me that the agreement permits the Basic Refractories Company to diamond drill, or otherwise prove the possibility of a workable, commercial deposit upon payment of the sum of \$250 each month to him and Mr. Martin. Each to receive 1/2 of that amount. Three months time from ~~about~~ the ~~10th~~^{22nd} of May is given, in which this work must be done. If the Basic Refractories Company conclude that the deposit is satisfactory they are then to make a cash payment of \$10,000 and proceed to mine the brucite. It is stipulated that a royalty of 50 cents shall be paid for each ton mined; with a minimum royalty payment of \$250 in each month. The \$10,000 payment is to apply as an advanced payment on the royalty, and will be deducted from royalty payments up to that amount.

Description of Deposit:

The rocks in the district wherein the claims are located consist of a series of tertiary volcanic flows resting on pre-Cambrian granite. Trachyte locally known as Alcyone trachyte flowed over the granite, followed by later flows of a green andesite which has been designated locally as Oatman chloritic andesite. This sequence is generally true, although there

See Sycamore 2-7501

is evidence at scattered points in the area where andesite, while molten, was forced through both the granite and trachyte by volcanic eruptions. During the period intervening between the volcanic flows a sedimentary deposition occurred resulting in the formation of the gray shales which weather to a buff color and vary in thickness from a few feet to 150 feet.

The brucite occurs between the shale and the andesite, with the shale underlying over all of the distance where it is exposed by outcrops on the westerly or lower deposit, with one exception on Mag No. 2 claim as noted below, and for the greater part of the easterly or upper deposit. There are, however, some instances along the southerly end of the upper vein where the brucite occurs between andesite without evidence of shale.

There are two large deposits and 3 smaller ones.

-- Lower Vein: The most westerly deposit or "lower vein" is located on Mag No. 1 claim. This deposit outcrops over a length of 1200 feet on an average strike of N. 30° E. The dip ranging between 43 and 46 degrees. The width varies from 3 feet at the most northerly end to a maximum width of 28 feet at a point approximately in the center of the claim and then tapers down to about 10 feet at the southerly end. The wide zone is roughly 200 feet long. The footwall is shale and the hanging wall is andesite. A small shaft measuring about 5 feet square and 10 feet deep has been sunk on the deposit at the wide zone next to the hanging wall. The outcrops are white and could be mistaken for magnesite. This is undoubtedly due to weathering as fresh mined samples obtained in the shaft are yellowish green that shade into darker greens and grays. The outcrop curves to the east at the southerly end. This is not due to a change of direction in the strike, but rather because of erosion which has exposed the vein at a lower horizon on the dip.

About 1300 feet south of the south end of the above mentioned outcrop and practically on the same strike there is a small outcrop 6 feet wide and 50 feet long on Mag No. 2 claim. The dip of the vein is 38° easterly. A small pit has been excavated at the southerly end of this outcrop. About 150 feet southeast of the above mentioned pit there is an outcrop 125 feet in length which varies in width from 6 inches to 3 feet. The strike of this outcrop is S. 5° E. and the dip vertical. This deposit occurs between trachyte with no shale.

-- Upper or Easterly Vein: The northerly end of this deposit outcrops on White House No. 1 claim, approximately 900 feet east of the westerly or lower vein located on Mag No. 1 claim. The total length of this outcrop is about 2000 feet. The width varies from 4 to 60 feet. The strike varies from almost due north at the northerly end to N. 30° E. at the southerly end. The dips are easterly and average 40°. The widest part of this vein is located on White House No. 1 claim at a point about 200 feet south of the northerly end of the outcrop. At this point the vein is 60 feet wide over a length of about 100 feet, and tapering in width to 10 feet on the strike in both directions. 3 shale partings measuring from 8 inches to 2 feet were noted as separating the brucite at this point on the outcrop. Both North and South of the wide zone the character of the brucite outcrop changes from the massive white variety found at the wide zone to a yellowish white with parallel

bands of gray. About 300 feet southwest of the southwest corner of the Humming Bird claim on White House No. 2 claim there is a junction of the main easterly or upper vein with a branching vein that strikes N. 27° W. This vein is 35 feet wide for 100 feet and then tapers down to 5 feet in the next 50 feet. The total length of the branch vein is 150 feet where exposed. The dip is 36° to the east. The footwall is trachyte and the hanging wall is andesite. The main vein which is 15 feet wide at the junction, also lies between trachyte and andesite. The dip of the main vein is 48° to the east at this point. The main vein continues southerly on a strike of S. 10° E. for about 500 feet from the junction above described.

Paralleling and about 200 feet east of the wide zone on White House claim No. 1 there is an exposure of brucite which averages 4 feet wide and 200 feet long. The strike of this outcrop is N. 30° E. and the dip is 43° to the southeast. A pit 6' x 6' x 7' deep has been sunk at the northerly end. This exposure consists of small bands of brucite measuring from 1/4 of an inch up to an inch in width that lie between bands of tuff of similar widths. Both walls of this exposure are andesite. Roughly 300 feet east of the above mentioned exposure and 60 feet east of the westerly line of White House No. 5 claim, and approximately on the center line of that claim, there is another outcrop 4 feet wide and 35 feet long. The strike is S. 25° E. and the dip 25° to the northeast. The character of this exposure is similar in all respects to the one previously described. A trench 4' wide by 15' in length has been excavated at the north end of this exposure. Cutting across the southwest corner of the Humming Bird claim from the westerly boundary and extending southerly into White House No. 4 claim there is an outcrop 12 feet wide and 550 feet long. This vein resembles the last above described in appearance, and it is doubtful if any brucite of commercial value can be recovered without beneficiation.

Probable Tonnage:

On the lower vein it is reasonable to compute the average width as 15 feet for 500 feet in length to a depth of 200 feet. This block would equal 100,000 tons of brucite. (14 cubic feet in one short ton. This figure is used by the Basic Refractories Inc.) On the wide zone on White House No. 1 claim the width can be taken as 50 feet over a length of 100 feet. Since no work has been done the tonnage is computed on tonnage recoverable per foot of depth which equals 350 tons. No estimate of tonnage on the balance of the vein, aside from the wide zone at the junction between it and the branch on White House No. 2 claim will be made as the surface materials appears to be below the required grade and beneficiation may be necessary. At the wide zone the tonnage per foot of depth can be expected to be about 250 tons. This is arrived at by taking the average width as 35 feet over a length of 100 feet.

Conclusions:

There are 3 zones which appear likely to produce a good grade of brucite: viz. the lower or westerly vein and the two wide zones on the upper or easterly vein. Diamond drilling has been done on the lower vein at one point on the

strike proving 112 feet of ore on the dip. Trenching should be done on the upper vein particularly at the wide zones, followed by diamond drilling if the results obtained by trenching prove satisfactory.

T. O. E.

60-97

PACIFIC SAND & GRAVEL Co.

ROOM 403 - - 785 MARKET STREET
SAN FRANCISCO 3, CALIFORNIA
TELEPHONE YUKON 6-3962

April 5, 1952.

T.O. Evans,
The Atchison Topeka & Santa Fe,
121 East 6th Street,
Los Angeles, 14, Calif.

Dear Mr. Evans:

Several days ago I received a letter from Basic Refractories Co regarding the Heather-Martin Brucite deposit near Oatman, Arizona.

They have offered a fifteen thousand (15,000) ton contract at \$8.00 per ton F.O.B. cars, Topock, Arizona; provided the Santa Fe R.R. Co. will meet the S.P. R.R. prevailing rate on mine run Brucite Ore from Luning Nevada to Maple Grove, Ohio. This rate is \$12.43 per ton plus 6%.

If you think it is advisable to accept this contract, would appreciate any help you may be able to give me in getting a new freight rate established.

Awaiting your early reply.

Sincerely Yours,



P.S. Essick

60-97

Newberry Calif
October 2 1950

Mr. T.O. Evans
121 E. 6th St.
Los Angeles 14 Calif.

Dear Tom:

Found your card and am sorry to have missed you. However have accepted ??? job with Marine repair shops out here and am busy on heavy stuff for over-seas.

Also received your letter regarding the export people in San Francisco on the brucite. Wrote them and have not heard from it as yet. Am sorry that I can not devote the time to that that I should....

Also have heard from another outfit from up there and they are Pacific Import and Export, minerals and machinery. Of them I know nothing, they seem to be interested in clay and brucite.

Will call when I am in town.

Sincerely I am,



Harry F. Heather

September 15, 1950.

Mr. Harry Heather,
Box 21,
Newberry, California.

Dear Harry:

I have an inquiry from Mr. P. D. Dilley, 1994 Fell Street, San Francisco, in which he requests quotations on brucite delivered to shipside at Long Beach for export to Japan. Will you please furnish Mr. Dilley with this information?

Apparently the Chinese Communists have barred magnesite shipments from China to Japan, and I have suggested to Mr. Dilley that brucite could be advantageously substituted for magnesite.

Kindest regards,

Yours truly,

Mining Engineer.

TOE-c

BRUCITE
Topock,
Mohave County, Arizona.

Los Angeles, California.
September 15th, 1950.
File: 60-97.

Location:

Brucite (Magnesium Hydroxide $Mg(OH)_2$ or $MgO.H_2O$) occurs 3-1/4 miles northwest of Oatman, in portions of Sections 7, 8, 17, and 18, Township 19 North, Range 20 West, G. & S. R. M., Mohave County, Arizona.

Accessibility:

The deposit is by road 3-1/2 miles from U. S. Highway 66 and may be easily reached by automobile or truck. It is 30-1/2 miles (3-1/2 miles of County road and 27 miles down grade on U. S. Highway 66) from the deposit to The A. T. & S. F. Railway at Topock, Arizona, the nearest rail point.

Ownership:

Mr. Harry F. Heather, 254 South Oak Knoll Avenue, Pasadena, California, and Mr. R. A. Martin, Oatman, Arizona, are joint owners of the mining claims covering this discovery.

Description of Deposit:

Two parallel veins of brucite occur on the contact between andesite and shale. The shale is underlain by trachyte. The westerly or lower vein outcrops over a distance of 1200 feet, dips about 50° N W, and varies in width from 3 feet at the northerly end and 10 feet at the southerly end to a maximum of 28 feet through the central portion of its length. The easterly or upper vein outcrops over a length of 2000 feet and dips about 40° N W. The width of its surface exposure varies from a minimum

of 4 feet to a maximum of 60 feet. The topography of the area, the width and attitude of the veins and the strong andesite hanging wall afford good conditions for mining from this deposit.

Quality:

The outcrops expose massive white brucite which resembles magnesite, as well as yellow to greenish yellow brucite of semi-waxy lustre. Such samples and analytical results as we have, indicate some of the brucite to be of exceptionally high grade, although portions of the deposit undoubtedly carry some silica.

Ore Reserves:

Surface exposures and exploration to date indicate that at least 100,000 tons of brucite is recoverable to a depth of 200 feet on the lower vein. The upper vein is very persistent and there are two wide attractive areas on its strike. It has not, however, been sufficiently explored to justify any estimate of blocked tonnage. The conjectural tonnage from the two veins may total 400 to 500,000 tons. Additional prudent exploration is required to block such tonnage.

Uses:

The principal and perhaps only use of brucite has been for making refractories (heat resistant) brick or granules, particularly for use where basic slags are encountered in high temperature metallic furnaces, as in steel industries.

LICENSED REAL ESTATE AGENT FOR CALIFORNIA, OREGON AND OTHER STATES

60.0097

CHARLES S. ELMS
INDUSTRIAL ENGINEER
INDUSTRIAL PROPERTIES
TIMBER LANDS POTENTIAL AND OIL PRODUCING LANDS
AND MINERAL BEARING LANDS
3519 WEST FOURTH STREET

LOS ANGELES 5, CALIFORNIA, U.S.A. November 28th 1948.

Mr. Harry F. Heather,
236 Oak Knoll, Pasadena, California.

Copy: Mr. T. O. Evans,
Mining Engineer, Santa Fe Railroad,
Main & 6th Streets,
Los Angeles, California.

Dear Mr. Heather,

I am writing in confirmation of my telephonic conversation with you.

I understand that you are willing to sell all the brucite bearing acreage near to Oatman, Arizona for the sum of \$40,000 cash and to allow me a brokerage of 10% on the consideration.

Rather confidently I am in close contact with the executives of the Colorado River Commission, and they may become my prospective purchaser; and in addition thereto, I am trying to bring on an amalgamation between Colorado River Commission and the Pennsylvania Salt Company. I expect one of their Engineers here the coming week to visit with me.

I am very appreciative of your very kind co-operation, and I will do my best to serve you advantageously.

Thanking you,

I am,

Very truly yours,

Charles S. Elms

October 23, 1948

Mr. Philip S. Hoyt
Suite 1, 727 South Fifth Street
Las Vegas, Nevada

Dear Mr. Hoyt:

Please refer to your letter of September 25, asking for rates on brucite from Topock, Arizona, to San Pedro, California; and also information concerning bunker facilities at this point.

Attached are copies of letters from Mr. R. S. Hirsch, Freight Traffic Manager and Mr. C. E. Engstrom, Foreign Freight Agent, which will supply the information you requested.

I do not know about the occurrence of andalusite east of Kingman which you mentioned. There is a sillimanite deposit in Section 15 T 19 N R15 W G & S R B M. Gladding, McBean and Company did some prospecting on an occurrence of sillimanite in this section which occurs as veinlets or segregations in pegmatite. Our records indicate that this deposit is located on Santa Fe Pacific Land Company property.

Mr. Robert Goodrich, who investigated the property for the Gladding, McBean Company, advised that they sampled the deposit several times and were forced to the conclusion that the total amount of sillimanite in the occurrence did not warrant separation; particularly in view of its admixture with a black mineral of about the same specific gravity as sillimanite which defeated their attempts at separation.

A field trip to Arizona has prevented an earlier reply to your letter, please forgive the delay.

Yours truly,

Mining Engineer

TOE/rm

60.0097

Los Angeles 14, Oct. 7, 1948

M-516-9

Magnesite or Related Articles viz. Brucite, Crude -
CL, from Topock, Arizona to LA Harbor

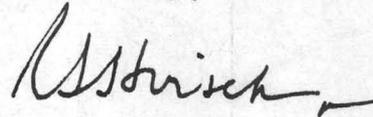
Mr. T. O. Evans
Mining Engineer
Los Angeles, Cal.

Dear Sir:

Referring to your letter of October 2nd,
file 60.0097:

Upon assurance of movement we will be will-
ing to publish rate of \$3.40 per net ton, minimum
carload weight 100,000 lbs. for the movement shown
in above subject. I suggest you advise Mr. Hoyt of
this offer and let me know when a tariff change is
advisable.

Yours truly,



Freight Traffic Manager

CPMcP/egv

cc: Files 516-5
516-18

60,0097

Los Angeles, Oct.8, 1948

C - 30

Mr. T. O. Evans,
Mining Engineer,
Los Angeles, California

Dear Sir:

Referring to your letter of Sept.28, file 60.0097 enclosing copy of letter from Hoyt & Miller, Las Vegas, Nev. requesting information in connection with movement of mine run brucite from Topock, Ariz., to San Pedro.

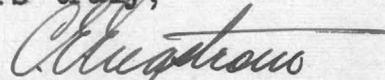
There is no shipside bunker storage available at Los Angeles Harbor or Long Beach. However, there are outdoor ground storage facilities available in the Harbor area, which would entail unloading from cars, stacking, reloading into cars, or trucks, for movement thence to shipside for loading by ship's tackle.

Mr. A. B. Herbold, Traffic Manager, Crescent Wharf & Warehouse Company, Terminal Island, Los Angeles Harbor, advises they are in a position to perform this work, also storing, and he will be glad to furnish charges, if Mr. Hoyt is interested.

I believe it would be more economical if shippers could arrange to store the ore at Topock and load cars direct to shipside for unloading.

If I can be of any assistance, please advise.

Yours truly,



Foreign Freight Agent

Hoyt & Millar

NON-METALLIC INDUSTRIAL MINERALS

SUITE 1, 727 SOUTH FIFTH STREET

Las Vegas, Nevada

September 5th, 1948.

Mr. T. O. Evans
AT&SFRR
121 East 6th Street
Los Angeles 14 California

Dear Mr. Evans:

Thanks for your letter of the 28th and will look for further word on the freight and bunker costs on crude lump brucite from Topock to San Pedro.

We also have contacted Mr. Colvocoresses, in regard to the iron oxide south of Seligman, altho we believe we may already have seen that deposit.

We have also requested samples and data from Mr. Logan, thru Mr. Thayer Harp, on the manganese possibility.

Do you have any data on the extent and location of the andalusite deposit east of Kingman, on the east side of the Walapi Mt. I did some work on this early in the war period but the milling problem was not completed. If you have examined this deposit we would like to get any information as to possible tonnage and if there is any data on beneficiation, this would be of interest.

I pioneered the kyanite in the US and this andalusite might be worked out if the tonnage is favorable and the beneficiation not too complex. We would like to consider it, in any event, and any data you have on it will be appreciated.

Is the whole deposit covered by the railroad land? What is the Section number etc. and what procedure might be necessary to make a lease on the property pending mill tests, checking ore reserves, and establishing markets?

Cordially yours,

Philip A. Hoyt

PSH:k

Los Angeles, California
October 2, 1948

File - 60.0097

Mr. R. S. Hirsch
Freight Traffic Manager
Building

Dear Sir:

This is in reply to your letter of September 30,
your file M-516-5.

Both brucite and magnesite are magnesium minerals.
The only difference being that one is hydrous oxide and the
other is anhydrous carbonate. Magnesite contains a much *smaller*
lesser percentage of magnesium than brucite does.

The principal and perhaps only use of brucite has
been for making refractories, (heat resistant) brick or
granules, particularly for use where basic slags are encount-
ered in high temperature metallic furnaces, as in the steel
industries.

Yours truly,

Mining Engineer

c.c. Mr. C. E. Engstrom

TOE/rm

60.0097

Los Angeles 14, Sept. 30, 1948

M-516-5

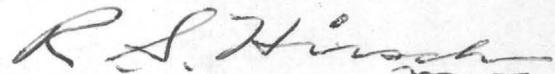
Mr. T. O. Evans
Mining Engineer
Los Angeles, Calif.

Dear Sir:

Please refer to your letter of Sept.
28th, file 60.0097:

We do not list the commodity brucite
in the classification ratings and I am wonder-
ing if this tonnage, which Mr. Hoyt refers to,
cannot be classified as magnesite. Will you
please advise?

Yours truly,



Freight Traffic Manager

CPMcP/egv

cc: Mr. C.E. Engstrom

September 28, 1948

Mr. Philip S. Hoyt
Hoyt & Miller
Suite 1, 727 South Fifth Street
Las Vegas, Nevada

Dear Mr. Hoyt:

I am referring your request of September 25, concerning costs of moving a mine run brucite from Topock to San Pedro as well as the question of availability of bunker storage to Mr. C. E. Engstrom, our Foreign Freight Agent. When I have Mr. Engstrom's reply, I will forward it to you.

I do not know of any gypsum deposits that are presently available along the Santa Fe. The deposits that are reasonably accessible to our railroad have either been sold or leased to other parties.

I do not know of an iron oxide occurrence adjacent to the Colorado River, but there is an excellent grade of this material located about eighteen miles southeast of Seligman, Arizona. An average analysis of this ore indicates it to contain 61% Fe_2O_3 , 5% CaO , 2% SiO_2 , 0.2% sulphur and a trace of phosphorous.

Mr. George Colvocoresses, 1102 Luhrs Tower, Phoenix, Arizona, represents the Barringer Estate of Philadelphia, who is the owner of the deposit. Our estimate of indicated tonnage was about 160,000 tons.

As to your request for information on manganese deposit, I doubt very much if a deposit can be located that will produce from 500 to 1,000 tons of manganese having a grade of 30% or better. As you know most of the desert manganese occurrences are rather shallow and it is questionable if any of them could produce the tonnage you require for any period of time.

Yours truly,

Mining Engineer

TOE/rm

Los Angeles, California
September 28, 1948

File - 60.0097

Mr. C. E. Engstrom
Foreign Freight Agent
Building

Dear Sir:

Attached is a copy of a letter received today from Hoyt & Miller of Las Vegas, Nevada, requesting information on rates of mine run brucite from Topock to San Pedro.

You will note that they are requesting us to supply them information as to bunker storage for 1,000 ton lots of this material.

Will you please furnish me with the data they request in order that I might forward it to them.

Yours truly,

Mining Engineer

TOE/rm

encl

Hoyt & Millar

NON-METALLIC INDUSTRIAL MINERALS

SUITE 1, 727 SOUTH FIFTH STREET

Las Vegas, Nevada

60.0097

September 24th, 1948.

Mr. T. O. Evans
Mining Engineer
A.T. & S.F.R.R.
121 East Sixth Street
Los Angeles 14 California.

Dear Mr. Evans:

I am interested in developing some costs on moving crude, mine run brucite from Topock to San Pedro or your shipside terminus, including bunker storage for 1000 tons lots of this material.

I presume there may be some rate presently effective from Topock to San Pedro, altho there has not been any movement that I know of in the past. Could you work up some figure for me on this so that we can get some economics worked out on moving this brucite from near Oatman to shipside, including bunker storage.

Also do you have data on deposits of gypsum along the Santa Fe that may offer commercial tonnages. We have investigated the Bouse deposit recently but doubt that this is large enough to support a mill. Any information on other possibilities will be of interest.

We are also interested in locating a deposit of red iron oxide in the region adjacent to the Colorado River from which we could move from 800 to 1000 tons monthly.

We would like also to get any data available on manganese deposits near your lines. We need this material for use here and would be interested in anything in S. California or Western Arizona. This ore must run 30% Mn or better and the tonnage on the order of 500 to 1000 tons monthly. We may be looking for something that just isn't available but anything you know about will be considered.

Thanking you, I am,

Cordially yours,

Philip A. Hoyt.

PSH:k

Analysis made by the Laboratory of The Atchison, Topeka and Santa Fe Railway Company of a brucite deposit near Oatman, Arizona.

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture	0.10%	0.12%	0.10%	
Silica SiO ₂	0.65%	3.78%	34.96%	0.15%
Alumina, Al ₂ O ₃	0.42%	0.48%	0.30%	0.10%
Iron Oxide, Fe ₂ O ₃	0.11%	1.05%	1.40%	0.05%
Calcium Oxide CaO	0.80%	1.20%	1.48%	Trace
Magnesium Oxide MgO	63.16%	63.96%	45.74%	64.90%
Ignition Loss	<u>34.76%</u>	<u>29.41%</u>	<u>16.02%</u>	<u>24.80%</u>
	100.00%	100.00%	100.00%	100.00%

Notes:

Sample No. 1 obtained from Mag No. 1 claim 75 feet south of shaft.

Sample No. 2 was taken from bottom of shaft on Mag No. 1 claim.

Sample No. 3 was taken from wide zone about 300 feet southeast of the southwest corner of the Hummingbird claim. It represents the upper 4 inches of the surface at that point. The top half of this sample was obviously very siliceous.

Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

Los Angeles, California
September 2, 1948

March 3, 1948

Mr. K. J. Kirk, Jr., Manager
W. C. Hendrie & Company, Inc.
Silica Sales Division
405 Towne Avenue
Los Angeles, 13, California

Dear Sir:

I am supplying you with the analyses of four samples obtained from the brucite deposit near Oatman, Arizona.

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture	0.10 %	0.12 %	0.10%	
Silica SiO ₂	0.65 %	3.78 %	34.96%	0.15 %
Alumina, Al ₂ O ₃	0.42 %	0.48 %	0.30%	0.10 %
Iron Oxide, Fe ₂ O ₃	0.11 %	1.05 %	1.40%	0.05 %
Calcium Oxide CaO	0.80 %	1.20 %	1.48%	Trace
Magnesium Oxide MgO	63.16 %	63.96 %	45.74%	64.90 %
Ignition Loss	34.76 %	29.41 %	16.02%	34.80 %
	<hr/>	<hr/>	<hr/>	<hr/>
	100.00 %	100.00 %	100.00%	100.00 %

Notes:

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Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

Yours truly,

Mining Engineer

February 16, 1948

Mr. F. E. Schundler, President
 F. E. Schundler and Company, Inc.
 504 Railroad Street
 Joliet, Illinois

Dear Sir:

Complying with the telephone request of Mr. Harry F. Heather, who is one of the owners of the brucite deposit near Oatman, Arizona, I am enclosing a copy of a report prepared by me concerning this deposit.

In addition to this I am supplying you with the analyses of four samples obtained on this property and analyzed by our Topeka Laboratory.

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture	0.10 %	0.12 %	0.10 %	
Silica SiO ₂	0.65 %	3.78 %	34.96 %	0.15 %
Alumina, Al ₂ O ₃	0.42 %	0.48 %	0.30 %	0.10 %
Iron Oxide, Fe ₂ O ₃	0.11 %	1.05 %	1.40 %	0.05 %
Calcium Oxide CaO	0.80 %	1.20 %	1.48 %	Trace
Magnesium Oxide MgO	63.16 %	63.96 %	45.74 %	64.90 %
Ignition Loss	<u>34.76 %</u>	<u>29.41 %</u>	<u>16.02 %</u>	<u>34.80 %</u>
	100.00 %	100.00 %	100.00 %	100.00 %

Notes:

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Sample No. 2 was taken from bottom of shaft on Mag No. 1 claim.

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Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

Yours truly,

Mining Engineer

encl

60.0097

T. O. Evans, M. E.
121 East Sixth St
Los Angeles - Calif.

San Francisco Calif.
12-24-47

Dear Mr. Evans - your concise and
comprehensive report on the Brewite
property near Oatman, Ariz. duly
received and now in the hands of
prospective purchasers. Thanks -

Yours truly

R. F. Covert
819 Mission St.

60.0097

December 17, 1947

Mr. R. F. Covert
819 Mission Street
San Francisco, California

Dear Sir:

In keeping with your request of December 3, I am enclosing a copy of a report prepared by me on the brucite deposit near Oatman, Arizona, owned by Mr. Harry F. Heather and Mr. R. A. Martin.

In addition to this I am supplying you with the analyses of four samples obtained on this property and analyzed by our Topeka Laboratory.

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture	0.10 %	0.12 %	0.10 %	
Silica SiO ₂	0.65 %	3.78 %	34.96 %	0.15 %
Alumina, Al ₂ O ₃	0.42 %	0.48 %	0.30 %	0.10 %
Iron Oxide, Fe ₂ O ₃	0.11 %	1.05 %	1.40 %	0.05 %
Calcium Oxide CaO	0.80 %	1.20 %	1.48 %	Trace%
Magnesium Oxide MgO	63.16 %	63.96 %	45.74 %	64.90 %
Ignition Loss	<u>34.76 %</u>	<u>29.41 %</u>	<u>16.02 %</u>	<u>34.80 %</u>
	100.00 %	100.00 %	100.00 %	100.00 %

Notes:

Sample No. 1 obtained from Mag No. 1 claim 75 feet south of shaft.

Sample No. 2 was taken from bottom of shaft on Mag No. 1 claim.

Sample No. 3 was taken from wide zone about 300 feet southeast of the southwest corner of the Hummingbird claim. It represents the upper 4 inches of the surface at that point. The top half of this sample was obviously very siliceous.

Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

Yours truly,

encl

Mining Engineer

60.0097

December 9, 1947

Mr. R. F. Covert
819 Mission Street
San Francisco, California

Dear Sir:

This is in reply to your letter of December 3, concerning a brucite occurrence near Oatman, Arizona, owned by Messrs Harry F. Heather and Robert A. Martin.

Before supplying you with the information, it will be necessary for me to obtain the permission of the owners. I am, therefore, sending a copy of your letter along with a copy of this one to Mr. Heather asking him to authorize me to furnish this information to you.

It is a rule of our department that information concerning mining property shall not be given unless we are delegated to do so by the owners.

I know that you will understand and appreciate this practice.

Yours truly,

Mining Engineer

Note: Harry Heather telephoned on Dec. 15/47 and said that he would like us to furnish Mr. Covert with the information we have.

*TJG.
12/15/47*

60.0097

T. O. Evans E. M.
A. T. & S. Fe Ry Co.
Los Angeles - Calif.

819 Mission St
San Francisco Calif.
12-3-47

Dear Mr Evans - I have people who are interested in bauxite, Messrs Martin & Heather advise me they have a large deposit near Oatman, ^{Ariz.} showed 62 to 68% M.F.O..

They also advised me you had made a report on this property for the A. T. & S. F. Ry Co. I called at the local Santa Fe office here, 114 Sansome St, and was advised to get in touch with you at the L. A. Office.

I wish you would send me any report or data you may have on the above property and oblige

Yours truly
R. F. Covert

R. F. Covert

XXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXX

60.0097

XX
121 East Sixth Street
Zone 14

May 2, 1947

Mr. Harry F. Heather
236 S. Oak Knoll Avenue
Pasadena, California

Dear Harry:

In compliance with your request, I am enclosing a copy of a letter written to Mr. Joseph T. West, Manhattan, Kansas, concerning your brucite deposit.

I am also enclosing two copies of our report on the same deposit. In the report I sent to Mr. West I did not include the two sections showing the diamond drilling.

Yours truly,

T. O. Evans
Mining Engineer

encl

XXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXX

60.0097

XX
121 East Sixth Street
Zone 14

April 24, 1947

Mr. Joseph T. West
P. O. Box 214
Manhattan, Kansas

Dear Mr. West:

In keeping with your request of April 17, I am enclosing a copy of a report prepared by me on the brucite deposit near Oatman, Arizona, owned by Mr. Harry F. Heather and Mr. R. A. Martin.

In addition to this I am supplying you with the analyses of four samples obtained on this property and analyzed by our Topeka Laboratory.

	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>
Moisture . . . . .	.0.10 %	0.12 %	0.10 %	
Silica SiO ₂ . . . . .	.0.65 %	3.78 %	34.96 %	0.15 %
Alumina, Al ₂ O ₃ . . . . .	.0.42 %	0.48 %	0.30 %	0.10 %
Iron Oxide, Fe ₂ O ₃ . . . . .	.0.11 %	1.05 %	1.40 %	0.05 %
Calcium Oxide CaO . . . . .	.0.80 %	1.20 %	1.48 %	Trace
Magnesium Oxide MgO	63.16 %	63.96 %	45.74 %	64.90 %
Ignition Loss	<u>34.76 %</u>	<u>29.41 %</u>	<u>16.02 %</u>	<u>34.80 %</u>
	100.00	100.00	100.00	100.00

Notes:

Sample No. 1 obtained from Mag No. 1 claim 75 feet south of shaft.

Sample No. 2 was taken from bottom of shaft on Mag No. 1 claim.

Sample No. 3 was taken from wide zone about 300 feet southeast of the southwest corner of the Hummingbird claim. It represents the upper 4 inches of the surface at that point. The top half of this sample was obviously very siliceous.

Sample No. 4 was taken from White House No. 1 claim at a point where the outcrop of brucite reaches a width of about 60 feet. It was taken about 20 feet from the foot wall and is not representative of the entire width.

Yours truly,

T. O. Evans
Mining Engineer

B R U C I T E

Mineral: Brucite
Deposit: Topock, Arizona
Examined: June & August 1943
Our File: 60,0097 Code "A"

Location:

Brucite (Magnesium Hydroxide $Mg(OH)_2$ or $MgO \cdot H_2O$) occurs 3-1/4 miles northwest of Oatman, in portions of Sections 7, 8, 17, and 18, T. 19 N., R. 20 W., G. & S.R.M., Mojave County, Arizona.

Accessibility:

The deposit is by road 3-1/2 miles from U.S. Highway 66 and may be easily reached by automobile or truck. It is 30-1/2 miles (3-1/2 miles of County road and 27 miles down grade on U.S. Highway 66) from the deposit to The A.T. & S.F. Railway at Topock, Arizona, the nearest rail point.

Description of Deposit:

Two parallel veins of brucite occur on the contact between andesite and shale. The shale is underlain by trachyte. The westerly or lower vein outcrops over a distance of 1200 feet, dips about 50° N W, and varies in width from 3 feet at the northerly end and 10 feet at the southerly end to a maximum of 28 feet through the central portion of its length. The easterly or upper vein outcrops over a length of 2000 feet and dips about 40° N W. The width of its surface exposure varies from a minimum of 4 feet to a maximum of 60 feet. The topography of the area, the width and attitude of the veins and the strong andesite hanging wall afford good conditions for mining from this deposit.

Quality:

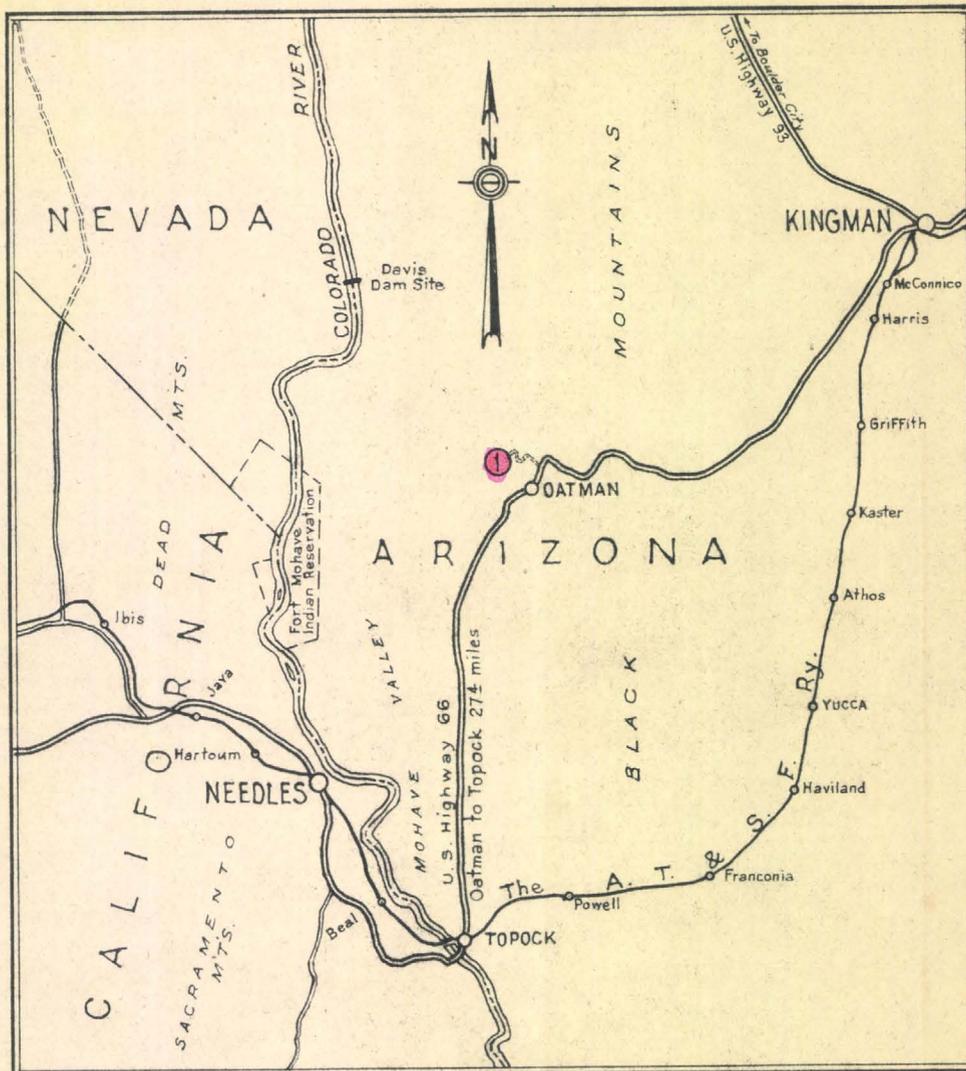
The outcrops expose massive white brucite which resembles magnesite, as well as yellow to greenish yellow brucite of semi-waxy lustre. Such samples and analytical results as we have, indicate some of the brucite to be of exceptionally high grade, although portions of the deposit undoubtedly carry some silica.

Ore Reserves:

Surface exposures and exploration to date indicate that at least 100,000 tons of brucite is recoverable to a depth of 200 feet on the lower vein. The upper vein is very persistent and there are two wide attractive areas on its strike. It has not, however, been sufficiently explored to justify any estimate of blocked tonnage. The conjectural tonnage from the two veins may total 400 to 500,000 tons. Additional prudent exploration is required to block such tonnage. Beneficiation technique may have to be developed to reduce the silica content on some of this tonnage if it is to be made most suitable for refractory purposes.

Ownership:

Mr. Harry F. Heather, Pasadena, California, and Mr. R. A. Martin, Oatman, Arizona are joint owners of the mining claims covering this discovery.



① = Heather and Martin deposit.

The A. T. & S. F. Ry., Co.
 Department of
 Mineral Resources
 LOCATION OF
BRUCITE DEPOSITS
 OATMAN DISTRICT
 Mohave County, Arizona
 Los Angeles, Calif. June 30, 1943

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XXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXX

60.0097

XX
121 East Sixth St.
Zone 14

April 22, 1947

Mr. Harry F. Heather
236 S. Oak Knoll Avenue
Pasadena, California

Dear Harry:

I am in receipt of a letter from Mr. Joseph T. West, P. O. Box 214, Manhattan, Kansas, in which he states that you have authorized him to obtain a copy of a report that I made on your brucite deposit near Oatman, Arizona.

Before complying with Mr. West's request will you either telephone or write me indicating that I have your permission to supply this information.

Yours truly,

T. O. Evans
Mining Engineer

TOE/rm

*Heather telephoned 4/22/47
and said OK to supply data.
TOE*

60.0097

Manhattan, Kansas. April 17, 1947.

Mr. T. O. Evans, M.E.,
Sante Fe R.R., Dept. of Mineral Resources,
121 E. 6th St., Los Angeles, 14, Calif.

Dear Mr. Evans:-

I am advised by Mr. Harry F. Heather that if I write you for a copy of the report on the Heather & Martin Brucite Deposit, Oatman, Arizona, you will send it to me; hence this letter.

I will very much appreciate your kindness in sending me the copy of the report in the enclosed self-addressed stamped envelop at your earliest convenience.

Yours very truly,

Joseph T. West
Joseph T. West.

P. O. Box 214
Manhattan, Kansas

Harry F. Heather
236 S. Oak Knoll Ave
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XXXXXXXXXXXXXXXXXXXX

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60.0097

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121 East Sixth Street
Zone 14

April 10, 1947

Raymond F. Woerth
Superintendent of Prospecting
(Missouri District)
Harbison-Walker Refractories Company
Fulton, Missouri

Dear Sir:

In the event that your company may purchase raw materials for refractories in California, I am wondering if you would be interested in leasing or acquiring a brucite deposit located near Oatman, Arizona. The rail distance from Topock, the shipping point, to Los Angeles is 319 miles.

Surface exposure and exploration of the deposit I have in mind indicates that at least 100,000 tons of brucite can be recovered to a depth not exceeding 200 feet.

The ore appears to be uncontaminated and of excellent quality. Samples of material taken from the outcrop submitted to our Topeka Laboratory, indicate it to contain 63.13% magnesium oxide, 0.80% calcium oxide, and 0.65% silica.

I shall be pleased to supply you with more complete data on this deposit if you are interested.

Yours truly,

T. O. Evans
Mining Engineer

TOE/rm

**CONDENSATION
ENGINEERING
CORPORATION**

TELEPHONE HARRISON 8388

PEOPLES GAS BUILDING

122 SOUTH MICHIGAN AVENUE, CHICAGO 3, ILLINOIS

Re: File No. 60.0097 ✓

March 21, 1946

Mr. W. M. Balling
121 East Sixth Street
Los Angeles 14, California

Dear Mr. Balling:

Many thanks for your letter of March 12th giving me the information on Brucite; also the letter on our fishing outfit.

It was very nice of you to do this, and I will let you know later as to the outcome of my conference with Mr. Orville Cost.

With best wishes,

Very truly yours,

E. O. Howle

E.O.Howle:HH

XXXXXXXXXXXX

60.0097

XX
Zone 14
121 East Sixth St.
March 12, 1946

Mr. Orville Cost, Vice-President,
Mexico Refractories Company,
140 S. Dearborn Street,
Chicago, Ill.

Dear Mr. Cost:

Agreeable to our discussion I am forwarding through Mr. Howle data regarding the Brucite occurrence in Arizona. Regardless of whether or not this material is of interest to you please be assured that we are always anxious to assist you in regard to your raw material problems or in any other way that we can properly do so.

As you know the contemplated route of the Santa Fe to St. Louis is through Mexico, Missouri. Knowing it to be the site of your plants and general offices I hope our entrance into Mexico, Missouri will be mutually beneficial.

It was a very real pleasure to meet and visit with Mrs. Cost and with you. Should you be in Southern California I hope you will call me and that we can have some time together.

Very truly yours,

Consulting Mining Engr.

Blind cc - Mr. R. G. Rydin

Mr. J. H. Keefe

XXXXXXXXXXXXXX

60,0097

IX

Zone 14

121 East Sixth Street

March 12th, 1946.

Mr. E. O. Howle, President,
Condensation Engineering Corporation,
122 South Michigan Avenue,
Chicago, 3, Illinois.

Dear Mr. Howle:

I promised to send you the following information regarding brucite, which I believe you wanted to convey to Mr. Orville Cost, Vice-President of Mexico Refractories Company of Mexico, Missouri, with whom we discussed the subject briefly during my recent visit in Chicago.

Brucite, when pure, is magnesium hydroxide conforming to the formula $Mg(OH)_2$ or $MgO.H_2O$ and contains 69% magnesium oxide (magnesia), or 41.6% magnesium. Lime, silica and iron, if present in appreciable quantities, are detrimental and must be removed.

The principal and perhaps only use to date, has been for making refractory (i.e. heat resistant) brick or granules particularly for use where basic slags are encountered in high temperature metallurgical furnaces, as in the steel industry. Magnesia, as you know, is highly resistant to temperature changes and its melting point is $5072^{\circ}F$. Commercial refractories are prepared from it that withstand temperatures above $3600^{\circ}F$. without softening, and are serviceable at temperatures above $4300^{\circ}F$.

Dolomite of which there are large high grade occurrences tributary to our line, is also a source of magnesia and is used either alone or with brucite for some types of refractory material.

I am enclosing copy of our brief report on the brucite occurrence near Catman, and which would load at our Topock station in Arizona.

I am also enclosing an index map showing the location of the deposit.

Very truly yours,


Consulting Mining Engineer.

Encl.

cc - Mr. R. G. Rydin
cc - Mr. J. H. Keefe

XXXXXXXXXXXX

60.0097

XX

Zone 14

121 East Sixth Street

March 12th, 1946

Mr. Arthur S. Nichols, Vice-President,
Illinois Clay Products Company,
Transportation Building,
Chicago, Illinois.

Dear Sir:

I was glad to have a few minutes to talk with you at the recent A.I.M.E. Convention in Chicago. I promised at that time to forward you information on a brucite deposit located near Catman, Arizona, and which would load at our Topock Station. I am therefore enclosing an index map showing the location of the deposit, and our brief report on this deposit.

As you know brucite, when pure, is magnesium hydroxide and conforms to the formula $Mg(OH)_2$ or $MgO \cdot H_2O$ and contains 69% magnesium oxide (magnesia), or 41.6% magnesium. Lime, silica and iron, if present in appreciable quantities, are detrimental and must be removed.

The principal and perhaps only use to date, has been for making refractory (i.e. heat resistant) brick or granules particularly for use where basic slags are encountered in high temperature metallurgical furnaces, as in the steel industry. Magnesia, as you know, is highly resistant to temperature changes and its melting point is $5072^{\circ} F$. Commercial refractories are prepared from it that withstand temperatures above $3600^{\circ} F$. without softening, and are servicable at temperatures above $4300^{\circ} F$.

Dolomite of which there are large high grade occurrences tributary to our line, is also a source of magnesia and is used either alone or with brucite for some types of refractory material.

Yours truly,



Consulting Mining Engineer.

Encl.

cc - Mr. E. C. Rydin
cc - Mr. J. H. Keefe

60.0097

January 25, 1945

Mr. Harry F. Heather,
236 South Oak Knoll Avenue,
Pasadena, California.

Dear Sir:

This will acknowledge your letter of January 24th,
advising as to Mr. Hoyt's actions to date.

We will endeavor at the first opportunity to
visit the bentonite and the deposit of white pumice
granules which you have recently located.

Very truly,

Consulting Mining Engineer.

Newberry Calif.
January 24 1945

Mr. W. M. Balling
R 752 Kerchoff Bldg.
Los Angeles Calif

Dear Mr. Balling:

This is to let you know we have received cancelation of the brucite lease from Philip S. Hoyt of Van Horn Texas.

Reason: Freight rates. He says that he will however keep trying to establish or get established a rate that will allow him to proceed.

At this time I have received my contract on this section of land, there is not much to see (Ben Tarrite) as yet but any time Tom sees fit to visit and look it over will be glad to show him around.

Also take note I have just discovered a deposit of GRANIULE white pumice and it looks good to me. It is about 5 miles from Hector and while he is here will show him that too.

I will be in Pasadena this coming Sunday and will be back here by Wednesday.

Sincerely I am,

Harry F. Heather

60.0097

November 16th, 1944

Mr. Philip S. Hoyt,
c/o Beale Hotel,
Kingman, Arizona.

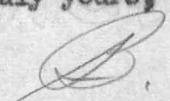
Dear Mr. Hoyt:

This will acknowledge your telegram from Lordsburg, New Mexico, received yesterday.

Pursuant to your request I am sending you herewith our report on the brucite deposit near Oatman, Arizona, and prints of our maps showing the location of this deposit, and idealized sections in the plane of certain exploration work which was done on the property. I hope the report, location map, and the two sections will be of assistance to you. In the event we can be of further assistance will you please advise me?

In the event you are coming into Los Angeles I would be pleased to have you call on us.

Very truly yours,



Consulting Mining Engineer.

Encl.

Approval obtained from Heather see note on file.

Brucite - Topock

Los Angeles, February 18, 1944
File 60.0097 ✓ ^{File}

Memo to File:

Mr. Harry Heather advised us on January 13th, that he had been notified by the Basic Refractories that they intended to terminate on January 22nd the lease which they held on a portion of the brucite deposit. Mr. Heather requested that we advise the Kaiser Company Inc. that the property is now open to lease and determine whether or not they would be interested in its acquisition. Dr. Dietrich, Director of Research of the Kaiser Company Inc. was, on February 15th, advised as to the availability of this brucite deposit. He stated that he was much interested in knowing about it but that it would in all probability take about thirty days for the Kaiser Company to reach a conclusion, and that he would then advise me.

W.M.B.

Feb. 19, 1944
Discussed with Geo. D. Ramsay at Fontana yesterday & he confirms that they will consider, & checked name & address of owners.
W.M.B.

PREFERRED WIRE

Los Angeles, Nov. 15th, 1944

T. O. EVANS

c/o AGENT - RICE

If convenient please call me tonight at

Atlantic 1-7720

X-19

BALLING *B*

4:25 PM

60 0897

DAY WIRE

Los Angeles, November 15th, 1944

VOSE - DAGGETT

Please advise if you know Harry Heather P.O. Address
Newberry and can have him phone me this evening at
Atlantic 1-7720 X-18

BALLING B.

11:45 AM

*Mr. Heather telephoned from Daggett 10:55 AM
Nov. 16, and approved giving all information available
to Mr. Hoyt.
H. M. B.*

CLASS OF SERVICE

This is a full-rate Telegram or Cablegram unless its deferred character is indicated by a suitable symbol above or preceding the address.

WESTERN UNION

1201

SYMBOLS

- DL = Day Letter
- NL = Night Letter
- LC = Deferred Cable
- NLT = Cable Night Letter
- Ship Radiogram

A. N. WILLIAMS
PRESIDENT

The filing time shown in the date line on telegrams and day letters is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

PSA653 NL PD=LORDSBURG NMEX 14

1944 NOV 14 PM 8 01

W M BALLING=

File 60.0097

9 DEPT MINERAL RESOURCES SANTA FE RR 560 SOUTH MAIN ST

LOSA=

AM MAKING EXAMINATIN MARTIN HEATHER BRUCITE DEPOSIT NEAR
OATMAN ARIZONA IF YOU HAVE ANY REPORTS MAPS OR OTHER DATA
THAT MIGHT BE HELPFUL WILL APPRECIATE GETTING THIS ADDRESSING
ME CARE BEALE HOTEL KINGMAN WHERE WILL BE FRIDAY
PHILIP S HOYT..

Listed A I M E Philip Spear Hoyt (M. 39) V. P. Min. Engr. & Geol., Southern Min. & Mill. Co. Box 509, Franklin, N. C.

60.0097

November 7th, 1944

Mr. Harry F. Heather,
Newberry,
California.

Dear Sir:

Thank you for your letter of November 2nd, advising that you have entered into a bond and lease with Mr. Philip S. Hoyt, Van Horn, Texas, on your brucite deposit near Oatman, Arizona.

I hope that this will prove advantageous and that shipments to the east can result.

Very truly yours,



Consulting Mining Engineer.

Newberry Calif.
Nov. 2 1944

Brucite Topock
60.0897

Mr. W.M. Balling
752 Kerchoff Bldg.
Los Angeles Calif.

Dear Mr. Balling:

For your Private information
we have just signed a lease-rather bond and
lease on the Ariz. Brucite, in favor of Philip
S. Hoyt- Van Horn Texas.

Whom I believe is considering eastern
shipments. And RATES of course.

This information is confidential.

Sincerely I am,

Harry F. Heather
Harry F. Heather.

60.0097

August 28, 1944

Mr. Harry F. Heather,
236 South Oak Knoll Avenue,
Pasadena, California.

Dear Mr. Heather:

Thank you very much for your letter of August 24th, advising me of the results obtained by Mr. Ian Campbell on brucite from your occurrence near Oatman.

I have not as yet been able to locate Paul Given who produced the micron sized iron which we discussed, but will advise you when I have any information on it.

Very truly yours,

Consulting Mining Engineer.

236 S.Oak Knoll Ave.
Pasadena Calif.
August 24 1944

Mr.W.M.Balling
560 S.Main St.
Los Angeles Calif.

60,0097
Brucite.-Topeka

Dear Mr.Balling:

Futher imformation regarding the
Brucite.Ariz.

Recently Dr.Ian Campbell who took
the material for the slides from this deposit for
the US.G.S had returns on over two hundred of
them and stated they definitely show the silica to
be Saperntine ($H_4 Mg_3 Si_2 O_8$) and this being the
case Magnesium by diffrence on those numerous
anaylisis form the cores would be off. This in turn
explains to me why your Topeka, the Government, s and
various other assays fro here did not JIBE with
lower reports from Lunning.

On the Fine Iron, have several reports but nothing
defnite that I can use as yet.

Have a letter from Dr.E.Payne Palmer, M.D. Phoenix
and he states : They are giving up their lease on
the Swansea Mine, and to see Mr.Souden 405 S.Hill St.
L.A. regarding same.

10.0064

Regards to your self and Mr.

Eveans.

Sincerly I am,

Harry F. Heather

Harry F.Heather

July 6th, 1944

File ~~12.0097~~
60.0097 ✓

Mr. Harry F. Heather,
2036 South Oak Knoll Avenue,
Pasadena, California.

Dear Mr. Heather:

Mr. Henry Guth, whose address is New Orleans Rooms, 647 Town Avenue, Los Angeles, (telephone MADison 3184), called upon us this afternoon and stated that he was considering production of certain types of refractory brick and various types of insulating material. We know nothing of his background nor of his ability. He states, however, that he is experienced in the production of the above type materials and has perfected processes for the manufacture of superior quality refractory and insulating mediums.

He stated that he was interested in obtaining sources of various crude resources including brucite, fire clay and bentonite.

He saw samples of the fire clay which you located near Topock, and was also shown the two analyses of the material before and after washing.

He stated that in the event the deposit is of sufficient size it might well prove to be of interest to him, and stated that he would like to discuss this deposit, as well as brucite and bentonite with you.

With the above address and telephone number I believe you will be able to get in touch with him.

Very truly yours,

Consulting Mining Engineer.

Brucite - Topock

Los Angeles, June 12th, 1944

File 60.0097

Memo to File:

Today Mr. Harry Heather requested a rate on brucite in carload lots from Topock, Arizona to Houston, Texas. This in order that he might respond to an inquiry from Mr. Lowman of Basic Refractories that he supply all cost figures, including freight, on ⁴²⁵5,000 tons of brucite annually for delivery at Houston, Texas.

After discussion with Mr. McPake I advised him that the present rate was \$11.10 per ton; that we were fully cognizant of the rate from Luning to Ohio points of \$9.00 per ton, and from Luning to Texas of \$10.00 per ton.

He was further advised that we hoped the rate of \$11.10 would prove satisfactory, but that in the event he found a lower rate is required in order to get the business that thorough consideration would be given any request he felt he must make, and upon which he could make proper showing.

W. M. B.

Albuquerque, May 24, 1944
File 14212

Mr. W. M. Balling,
Mining Engineer,
Kerckhoff Building,
Los Angeles, California.

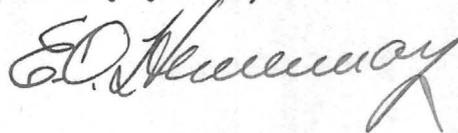
60.0097

Dear Sir:

Yours of May 22, file 60.0097, to me,
copy to Mr. Rydin, on the brucite deposit north-
west of Oatman, Arizona, in township 19 north,
range 20 west, Mohave County.

As a matter of information in connection
with this deposit, wish to advise that practically
all of the odd-numbered sections in this general
vicinity were classed as mineral and the Santa Fe
Pacific Railroad Company did not secure title under
the Grant, however, any deposit of mineral within
what is known as our trade area always presents
traffic possibilities and this office is glad to
receive reports on these prospects.

Very truly yours,



Hc
cc - Mr. R. G. Rydin

Brucite - Topock

Los Angeles, May 23rd, 1944

File 60.0097 ✓

Memo to File:

Mr. Heather telephoned from Pasadena to request a rate on 50 to 250 tons a month of brucite from Topock to Los Angeles. He was in conference with a possible buyer or consumer of brucite to be used as a filler. Although he did not state, it seems entirely probable that its use may be contemplated in the compounding of rubber products. He was advised that under the present rates it would be classified as Class C or 37¢ per hundred lbs. equal to \$7.40 per ton from Topock to Los Angeles, or 28¢ per hundred lbs. equal to \$5.60 per ton from Needles to Los Angeles. He indicated that in order to get the business it might be necessary to have a rate in the neighborhood of \$4.00 per ton, and he was advised that in the event movement was assured, proper consideration would be given any request he might care to make for a new rate.

W. M. B.

Los Angeles, May 22nd, 1944

File 60.0097

Mr. F. O. Hemenway,
Land Commissioner,
Albuquerque, N. M.

Dear Mr. Hemenway:

I am enclosing a copy of our report on a brucite deposit in T. 19 N., R. 20 W, G. & S.R.M., Mohave County, Arizona. I am also enclosing a copy of our preliminary report prepared June 21, 1943.

Our file does not indicate that this deposit is in close proximity to any Santa Fe Pacific lands, and for that reason we did not earlier send you copies.

You have received copy of Mr. Rydin's letter of May 18th, to me, and I believe in conformity with his suggestion that you should not only have these copies, but that probably the safest procedure is to arrange for you to receive copies of reports on any deposits which we may examine in Arizona or New Mexico. I am requesting that you be added to our list for all such reports, and you will receive them promptly in the future.

Yours very truly,

Consulting Mining Engineer.

Encl.

cc - Mr. R. G. Rydin

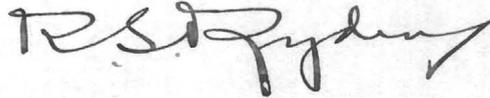
Chicago, May 18, 1944.

Mr. W. M. Balling,
Consulting Mining Engineer,
Los Angeles, California

Dear Sir:

I have noted with interest your joint letter of May 13th concerning a brucite occurrence near Oatman, Arizona. If you have not sent a copy thereof, and also of the preliminary report rendered last year, to Mr. Hemenway, I suggest that you do so. I do not know that any part of this brucite deposit is on Santa Fe Pacific land but that company does have holdings in that general territory and it is desirable that Mr. Hemenway be kept posted on matters of this kind.

Very truly yours,



344613

cc - Mr. Hemenway

Los Angeles, May 13th, 1944

File 60,0077

Messrs. E. J. Engel,
F. G. Gurley,
E. E. McCarty,

M. G. Blanchard,
G. L. Goin,
L. E. Sievert.

Gentlemen:

On June 22nd, 1943, I furnished you with a preliminary report on a newly discovered truscite occurrence near Catman, Arizona. Since then the Basic Refractories Company of Cleveland, Ohio, conducted a drilling campaign to further explore this deposit while simultaneously doing additional development work on its deposit at Gabbs Valley, Nevada. It has now permitted its option to expire and the Catman property has been returned to the locators.

I am enclosing herewith a new report based upon the additional information now available regarding the property. It is unlikely that the deposit will prove to be of sufficient size to be of interest for the production of magnesium metal but may prove a satisfactory source of truscite suitable for making high temperature heat resistant products. It seems probable that a beneficiation technique will have to be developed to treat the ore to make it most suitable for such purposes.

Very truly yours,

Consulting Mining Engineer.

Encl.

cc - Mr. J. P. Reinhold

B_R_U_C_I_T_E

Mineral: Brucite
Deposit: Topock, Arizona
Examined: June & August 1943
Our File: 60.0097 Code "A"

Location:

Brucite (Magnesium Hydroxide $Mg(OH)_2$ or $MgO \cdot H_2O$) occurs 3-1/4 miles northwest of Oatman, in portions of Sections 7, 8, 17, and 18, T. 19 N., R. 20 W., G. & S.R.M., Mojave County, Arizona.

Accessibility:

The deposit is by road 3-1/2 miles from U.S. Highway 66 and may be easily reached by automobile or truck. It is 30-1/2 miles (3-1/2 miles of County road and 27 miles down grade on U.S. Highway 66) from the deposit to The A.T. & S.F. Railway at Topock, Arizona, the nearest rail point.

Description of Deposit:

Two parallel veins of brucite occur on the contact between andesite and shale. The shale is underlain by trachyte. The westerly or lower vein outcrops over a distance of 1200 feet, dips about 50° N W, and varies in width from 3 feet at the northerly end and 10 feet at the southerly end to a maximum of 28 feet through the central portion of its length. The easterly or upper vein outcrops over a length of 2000 feet and dips about 40° N W. The width of its surface exposure varies from a minimum of 4 feet to a maximum of 60 feet. The topography of the area, the width and attitude of the veins and the strong andesite hanging wall afford good conditions for mining from this deposit.

Quality:

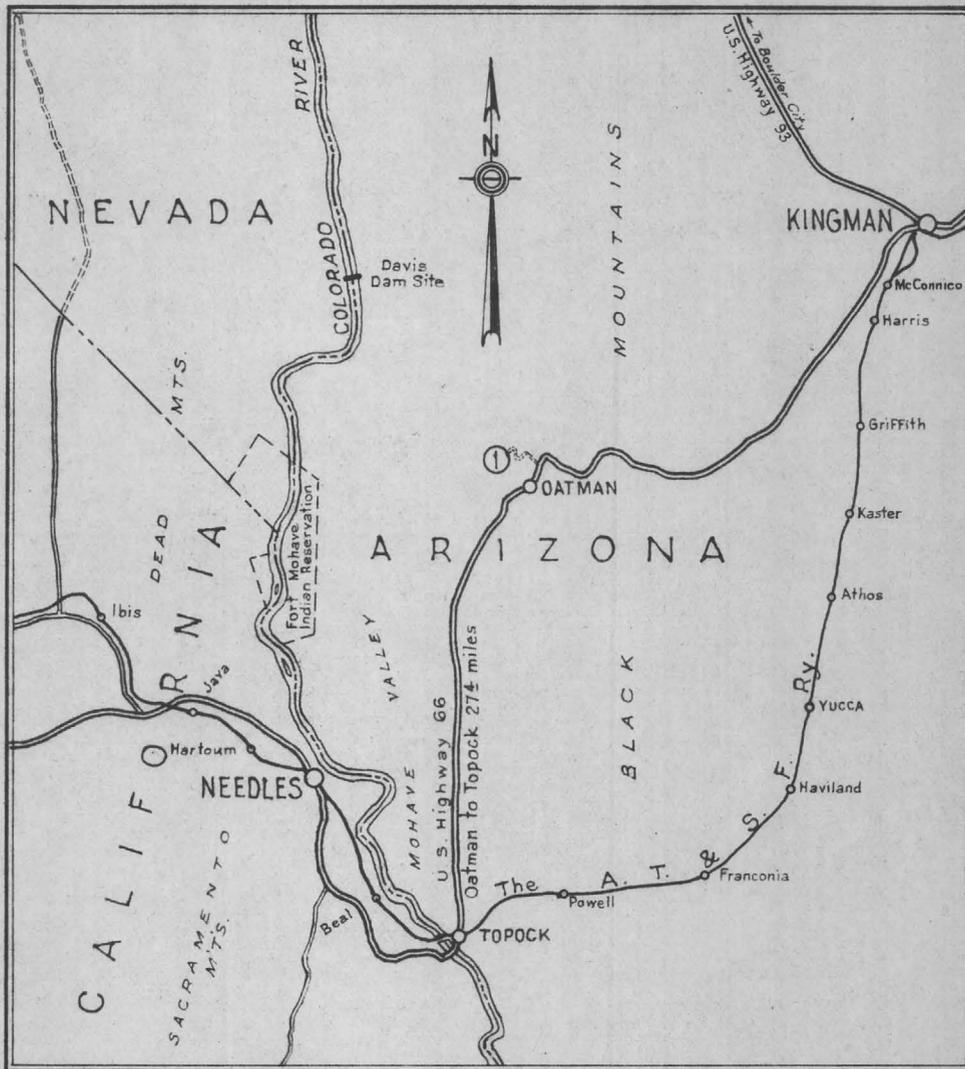
The outcrops expose massive white brucite which resembles magnesite, as well as yellow to greenish yellow brucite of semi-waxy lustre. Such samples and analytical results as we have, indicate some of the brucite to be of exceptionally high grade, although portions of the deposit undoubtedly carry some silica.

Ore Reserves:

Surface exposures and exploration to date indicate that at least 100,000 tons of brucite is recoverable to a depth of 200 feet on the lower vein. The upper vein is very persistent and there are two wide attractive areas on its strike. It has not, however, been sufficiently explored to justify any estimate of blocked tonnage. The conjectural tonnage from the two veins may total 400 to 500,000 tons. Additional prudent exploration is required to block such tonnage. Beneficiation technique may have to be developed to reduce the silica content on some of this tonnage if it is to be made most suitable for refractory purposes.

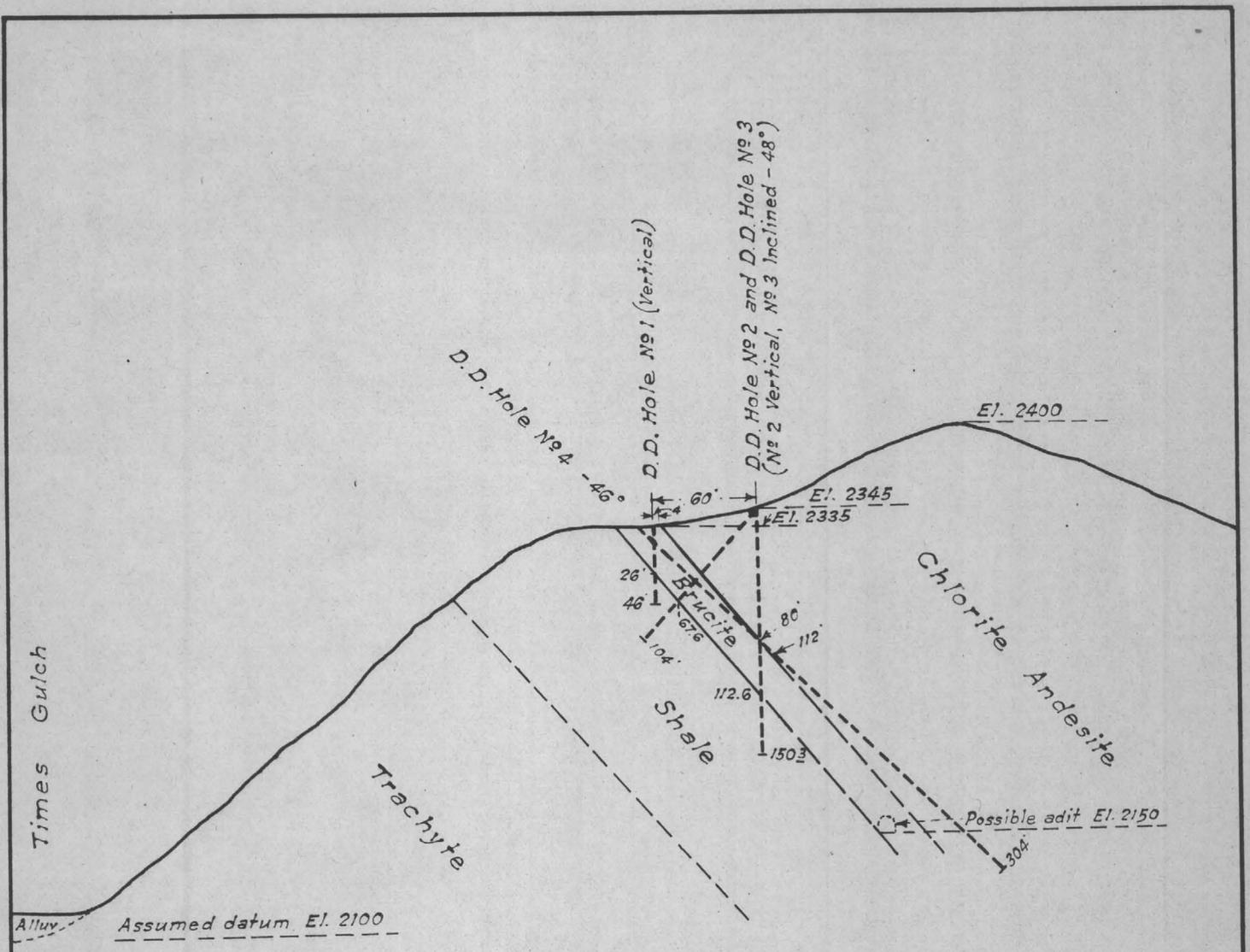
Ownership:

Mr. Harry F. Heather, Pasadena, California, and Mr. R. A. Martin, Oatman, Arizona are joint owners of the mining claims covering this discovery.



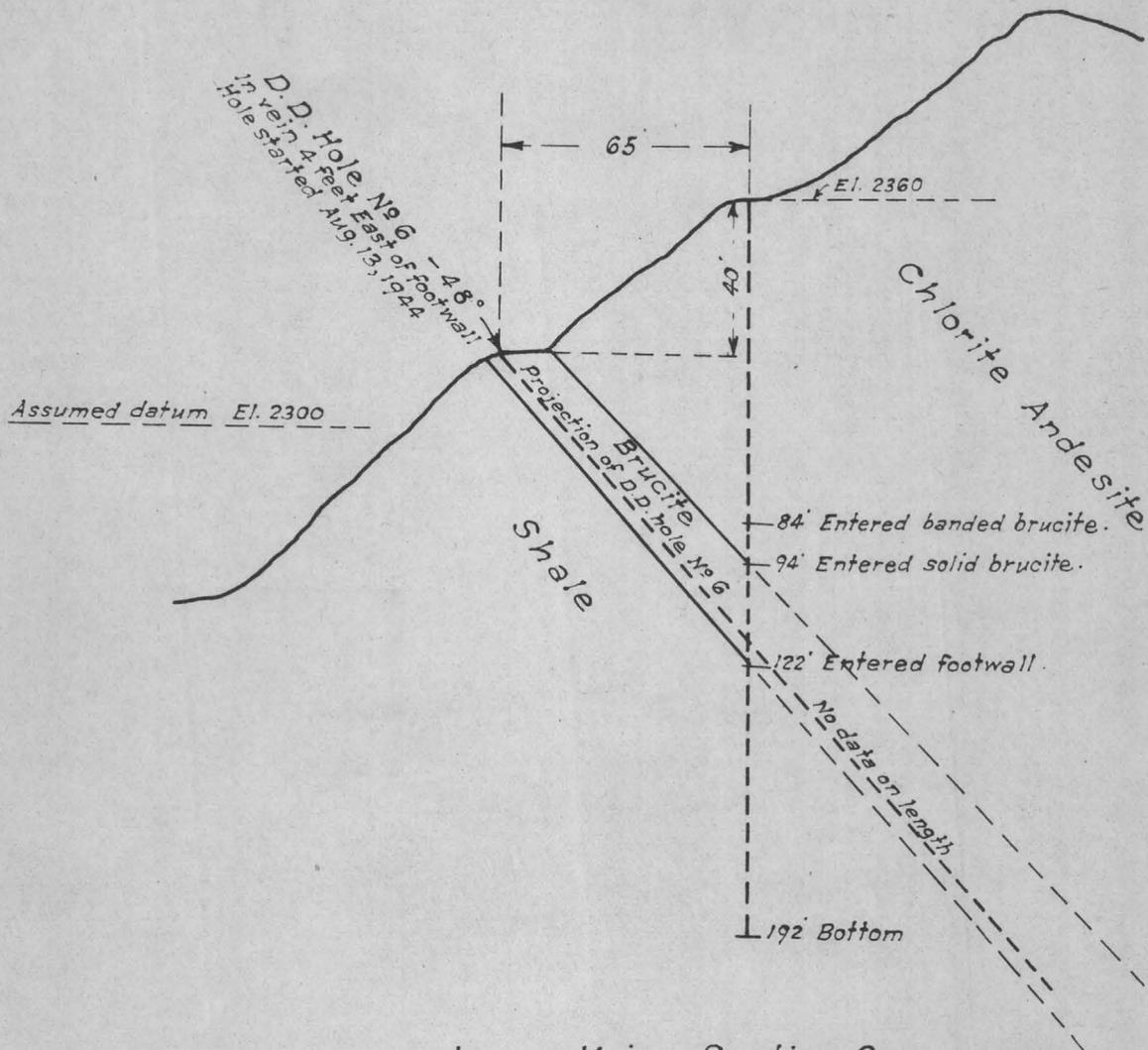
① = Heather and Martin deposit.

The A. T. & S. F. Ry., Co.
 Department of
 Mineral Resources
 LOCATION OF
BRUCITE DEPOSITS
 OATMAN DISTRICT
 Mohave County, Arizona
 Los Angeles, Calif. June 30, 1943



Lower Vein - Section I
 In plane of Diamond Drill Holes 1, 2, 3 & 4
 (Looking North)

The A. T. & S. F. Ry., Co.
 Department of
 Mineral Resources
 Heather and Martin
BRUCITE DEPOSIT
 Oatman District
 Mohave County, Arizona
 Los Angeles Calif. May 1944
 Scale 1"=100'



Lower Vein - Section 2
 In plane of Diamond Drill Holes 5 & 6
 (Looking North)

The A. T. & S. F. Ry., Co.
 Department of
 Mineral Resources.
 Heather and Martin
BRUCITE DEPOSIT
 Oatman District
 Mohave County, Arizona
 Los Angeles Calif. May 1944
 Scale 1"=50'

August 9, 1943

File 60.0097 ✓

Brucite - Heather-Martin Deposit
Topock, Arizona

Personal

Mr. J. W. Lowman,
518 Chapman Building,
Los Angeles, California.

*P.O. Box 8615
Tampa, Florida.*

*air Mail
Personal Cover.*

Dear Mr. Lowman:

I am enclosing a copy of my letter to Mr. Eells which gives the results of analysis of a sample of brucite from the Heather and Martin deposit. I know that you have not recently had an opportunity to visit the deposit and it occurs to me that the information Mr. Evans obtained at the time of his last visit, July 22nd, 1943, may be of interest to you. Drill Hole 4 had explored the ore on its dip to a depth of 112 feet and had confirmed the persistency of the ore as indicated by Holes 1, 2 and 3, situated at the same location on the strike of the lower vein. It was reported that this hole had entered the andesite hanging wall at a depth of 112 feet but was still drilling ahead in the andesite at a depth of 295.8 feet.

You have, I believe, received copy of Mr. Eell's letter to me stating that the preliminary drilling program on the Heather and Martin deposit will soon terminate. We assume that before that time Hole 4 will have been stopped and a new hole so directed as to prove the ore at greater depth at this or some other attractive location on the strike. Because of Mr. Eell's reference to the present work as a preliminary exploration program and because the drilling to date has been confined to but one location on the strike of the lower vein, we infer that more comprehensive exploration is contemplated to test the persistency and grade of the ore at other points where attractive outcrops occur. We hope that the preliminary exploration program will be followed by trenching and sampling the various exposures, particularly in the wider zones such as the one from which the sample previously referred to, was taken. Trenching of the south end of the west or lower vein would expose ore at a horizon below that reached by the first four drill holes.

It is my understanding that the American Cyanamid Company has found Heavy Media Separation to be applicable for the sorting of ores of magnesite and perhaps of brucite. In the event beneficiation tests are contemplated, suitable samples could no doubt be obtained from trenching of the deposit. In our opinion a portion of the exploration could be suitably performed in shafts and adits in which case the exploration would not only supply satisfactory samples for any tests that might be desired but might well supply sufficient material of shipping grade to pay a part of the cost of such exploration.

Because of my inability to discuss these matters with you on account of your unavoidable absences from the territory, I am taking the liberty of writing this letter to you. I have not bothered Mr. Bells with such detailed comments, but felt you would not think me presumptuous in writing you as I have.

With kindest personal regards, I remain,

Very truly yours,

Consulting Mining Engineer.

Encl.

Topeka, July 23, 1943

Mr. W. M. Balling,
Consulting Mining Engineer,
Los Angeles, California.

60.0097

Dear Sir: ANALYSIS OF ROCK SAMPLES

Please refer to your letter of July 2, 1943,
file 60.0097 - 24.0098 - 24.0099 in regard to five samples
of rocks or minerals from deposits in Arizona and California?

Analyses of these samples gave the results shown
below:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
			Heather and Martin Deposit 60' Wide Zone, North end Upper Vein, Oatman	Hinkley Deposit Central Pit Hinkley, Calif.	Hinkley Deposit Hill Top Hinkley Calif.
		30,000 Ball Barite			
	McCarty Deposit Oatman, Ariz.	Heather Deposit Homer, Calif.			
Silica, SiO ₂ %	14.10	4.83	0.15	3.03	1.68
Alumina, Al ₂ O ₃ %	0.77	0.10	0.10	0.25	0.55
Ferric Oxide, Fe ₂ O ₃ %	0.25	0.02	0.05	Trace	0.05
Barium " BaO%	-	56.80	-	-	-
Calcium " CaO%	37.05	4.48	Trace	28.93	30.10
Magnesium or MgO (by diff)%	15.27	0.14	64.90	20.93	20.87
Sulphur Trioxide SO ₃ %	Negl	29.65	Negl.	Negl.	Negl.
Ignition Loss %	32.56	3.98	34.80	46.86	46.75
	100.00	100.00	100.00	100.00	100.00

The analyses indicate samples B and C to consist essentially of barite and of brucite respectively. Samples D and E, and perhaps A would be classed as dolomites.

Very truly yours,

Walter Bohmstengel
Engineer Tests

cc - Mr. E. E. Chapman

August 4th, 1943

File 60,007

Brucite - Heather-Martin Deposit

Mr. H. P. Kells, Jr., President,
Basic Refractories, Inc.,
645 Hanna Building,
Cleveland, Ohio.

Dear Sir:

The following analysis of a sample obtained from the Heather and Martin deposit, has just been received from our Topeka laboratories. The sample was taken from the wide zone at the north end of the upper vein which is southeasterly of the vein you are now exploring by diamond drilling. The sample was taken from the White House No. 1 claim, at a point where the outcrop of brucite, including shale partings, reaches a width of about 60 feet. It was taken about 20 feet from the footwall and is not representative of the entire width. Because of the exceptional quality of the material, I believe the results will be of interest to you.

Silica (SiO_2)	0.15%
Alumina (Al_2O_3)	0.10%
Ferric Oxide (Fe_2O_3)	0.05%
Calcium Oxide (CaO)	Trace
Magnesium Oxide (MgO) (by diff)..	64.90%
Sulphur Trioxide	Negl.
Ignition loss	34.80%
	100.00%

I am, of course, much interested in the progress of your exploration and appreciate your letter of July 26th stating that you will advise me of your findings.

Yours truly,

Consulting Mining Engineer.

cc - Mr. J. W. Lowman,
518 Chapman Bldg.,
Los Angeles, Calif.

Blind cc - Mr. E. J. Engel
Mr. F. G. Gurley
Mr. G. W. Harris

Mr. G. L. Goin
Mr. H. C. Blanchard
Mr. L. E. Sievert

July 12th, 1943

File 60.0097 ✓

Brucite - Catman

Mr. Howard P. Eells Jr., President,
Basic Refractories, Inc.,
Hanna Building,
Cleveland, Ohio.

Dear Mr. Eells:

On June 18th I sent you copy of an analysis on Sample #1 taken from the outcrop of the lower vein on the Heather-Martin Brucite deposit, near Catman.

Our Topeka laboratory has now reported on two additional samples as follows:

	Sample No. 2, Shaft Lower Vein	Sample No. 3, Outcrop Upper Vein
Moisture, percent	0.12	0.10
Silica, SiO ₂ , percent	3.78	34.96
Alumina, Al ₂ O ₃	0.48	0.30
Iron Oxide, Fe ₂ O ₃	1.05	1.40
Calcium Oxide, CaO	1.20	1.48
Magnesium Oxide, by difference	69.96	45.74
Ignition loss	29.41	16.02

Sample #2 was obtained at a depth of 10 feet from the shaft located about 200 feet north of drill hole #1 on the lower vein.

Sample #3 was taken from a wide zone about 300 feet southwest of the southwest corner of the Hummingbird Claim. It represents the upper 4 inches of the surface outcrop at that point. The top half of this sample was obviously very siliceous. Analysis was desired, however, for its possible indicative value and as a possible criterion upon which to base judgment on new outcrops.

Yours truly,

Consulting Mining Engineer.

cc - Mr. J. W. Lowman

Brucite - Topock (Oatman)

Los Angeles, July 8th, 1943

File 60.0097 ✓

Moser Property.

The following analysis was made by the Ed Eisenhauer Laboratories at the request of Mr. Heather, who obtained the sample from the George D. Moser property near Oatman. Mr. George Moser is a County Supervisor who lives at Oatman and is known to our Tax Department.

CaO	13.85 %
MgO	32.86 %
R ₂ O ₃	2.86 %
Loss on Ignition . .	45.57 %
Insol.	4.86 %

W.M.B.

Topeka, July 7, 1943

Mr. W. M. Balling,
Consulting Mining Engineer,
Los Angeles, California.

60.0097

Dear Sir: ANALYSIS BRUCITE SPECIMENS.

In further reference to the analysis of brucite from near Oatman, Arizona, your file 60.0097:

The samples No. 2 and No. 3, sent with your letter of May 26, 1943, have now been analyzed, giving the following data:

copy

	Sample No. 2, Shaft East Lower Vein.	Sample No. 3, Outcrop West Upper Vein.
Moisture, percent	0.12	0.10
Silica, SiO ₂ , percent	3.78	34.96
Alumina, Al ₂ O ₃	0.48	0.30
Iron Oxide, Fe ₂ O ₃	1.05	1.40
Calcium Oxide, CaO	1.20	1.48
Magnesium oxide, by difference	63.96	45.74
Ignition loss	29.41	16.02

You will note that the No. 3 sample contains a considerable proportion of siliceous minerals.

Receipt of the reports concerning this deposit is acknowledged with thanks.

cc-Mr. E. E. Chapman.

Very truly yours,

Walter Bohmstengel
Engineer Tests.

60.0097

May 11th, 1944

Mr. Harry F. Heather,
2036 So. Oak Knoll Avenue,
Pasadena, California.

Dear Mr. Heather:

I am returning herewith the analysis you so kindly loaned to me, entitled "OATMAN PROPERTY, HOLE #6;" please accept my thanks for use of the same.

With kindest personal regards,

Very truly yours,

Mining Engineer.

Encl.

May 8th, 1944

Mr. George D. Ramsay,
Director Raw Materials,
Kaiser Company Inc.,
Fontana, California.

Dear Sir:

I am enclosing information regarding the brucite occurrence near Catman, Arizona, the shipping point for which would be at Topock, Arizona.

Mr. Harry F. Heather of Pasadena, California, who, with Mr. R. A. Martin of Catman, Arizona, jointly owns the claims on which this deposit occurs, will undoubtedly write you within the next day or two, to learn of your possible interest in the property.

You will note on Section 2 attached, that diamond drill hole No. 6 was drilled on the dip of the vein but that its total length is not shown. We are today advised that the hole reached a depth of 284 feet and was in brucite. This has not as yet been confirmed, however, and we are, therefore, not including this data on the attached section.

Mr. Heather states that there are no outstanding options on the property and he would welcome your interest in the matter.

Yours truly,

Consulting Mining Engineer.

Encl.

January 25, 1944

Mr. Harry F. Heather,
2036 S. Oak Knoll Avenue,
Pasadena, California.

Dear Sir:

We are returning under separate cover the maps you loaned us, which show the location of the claims and a topographic map of the area wherein your brucite deposit is located near Oatman, Arizona.

We have made copies for our files and we wish to thank you for your kindness in allowing us to do so.

Yours truly,

Mining Engineer.

Brucite - Topock

Los Angeles, April 18th, 1945
File 60.0097 ✓

Memo:

Harry Heather states that he would like this department to locate someone who might be interested in his brucite deposit near Topock. He will supply the material or make any other arrangement that an interested party might desire.

He says that there is a chemical house in San Francisco that specialize in epsom salts that purchases some brucite from Nevada. He doesn't know the name of the concern, although he would like to know it in order to contact them. He asks that we help him.

T. O. E.

Mar. 11, 1946.

*Heather confirms above & OK's report to anyone.
∴ will write Nichols & Nowle*

• Oatman, Ariz. Oct. 26th
60.0097

Mr. J. O. Evans,

Los Angeles, Calif.

Dear Mr. Evans:-

I recd. the pamphlet

you sent and was very glad
to get it. I thank you for it.

I expect the Basic Co. will
start shipping Brunsite from
here soon as they are short
of Ore at their Nevada Mine.

When you come this way stop
to see me.

With kind regards I am yours truly

Bob Martin

Tampa Florida
August 17th 1943

Mr W.M. Balling
A.T and S.F. RR
Los Angeles Cal

File 60-0097

Dear Mr Balling:

Thank you for your letter of August 9th
I have just received the detailed analysis of several of the more recent cores from Oatman and must admit that they seem rather higher in silica than we had hoped.

Apparently for a considerable distance from both the hanging and the foot wall there has been quite an impregnation of silica and this is in a form that I imagine would require rather fine grinding even for flotation to eliminate.

The Cyanamid people have done quite a bit of work for us at Luning and I believe your suggestion of heavy media separation is a good one and I shall certainly suggest that they be given some of this material. As a matter of fact we are now installing a pilot plant at Luning and can run some thru ourselves. It seems obvious at present writing that some method of using the siliceous ore will have to be devised in order to bring costs down to a competitive point either with magnesite or Luning Brucite. I want to add that our estimates of probable reserves correspond closely with those of Mr. Evans but of these reserves only a third or less could be considered useable, and even that fraction would require some treatment for the higher grade uses.

I am hoping that Mrs Lowmans health will improve to permit me to come out this September at which time I look forward to seeing you and discussing this matter.

I note with interest the analysis your laboratory sent forward under date 4th August from the Whitehouse claim.

I understand a hole drilled 150 ft North of the first group of holes found a good thickness of ore but that it was contaminated in about the same degree.

Very Truly Yours

Jack Lowman

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

California Institute of Technology,
Pasadena, 4, California,
August 10, 1943.

Mr. W. M. Balling,
Department of Mining Engineering,
Santa Fe Railway Company,
560 So. Main Street,
Los Angeles, California.

60.0097

Dear Mr. Balling:

For some reason or other I have been unable to get thru to your switchboard today, so I am sending this note to let you know that I am planning to go over to Kingman a week from tonight (August 17) where I am to pick up a car from the Reclamation Service to use in the field.

After that is done, I expect to go immediately to Oatman, where I am hoping to meet Mr. Charles E. Schwab, of Basic Refractories, and then I plan to spend a few days going over the brucite deposit there.

If you should find it possible to be there during any of the time that I will be on the ground, I should be very happy to discuss the deposit with you, and I know that Mr. Schwab would also be glad to meet you there.

If this finds you in town, perhaps you could give me a ring here at the Institute (our Los Angeles line is Ryan 1-6751), or if not I shall hope to hear from you at your early convenience, as to the possibility of a meeting in the field.



Responded by phone 8/11/43.

Very truly yours,

Ian Campbell
D.V. Ian Campbell. Ph.D.

BASIC REFRACTORIES

I N C O R P O R A T E D

(F O R M E R L Y B A S I C D O L O M I T E , I N C O R P O R A T E D)



845 HANNA BUILDING

CLEVELAND, OHIO

July 7, 1943

Mr. W. M. Balling,
Consulting Mining Engineer,
A. T. & S. F. Railway Company,
560 South Main Street,
Los Angeles, California.

Dear Mr. Balling: Subject: Oatman Brucite

Your file 60.0097 *File*

Thank you for your letter of July 1 as well as for the considerable assistance that you and your organization have rendered our people in connection with the investigation of the subject deposit.

This is certainly an interesting occurrence and you may be sure that we are going to give it the carefulest kind of consideration. The analyses that we have on the core of the first hole are not encouraging, but this may be due to surface conditions.

I am going west next week to confer with Mr. Schwab on a good many subjects, amongst them the advisability of developing this deposit as a source of supply of raw material for our operation.

You will be of further assistance to us if you will keep us advised of any further information you have on this subject.

Very truly yours,

H. P. Eells, Jr.
H. P. Eells, Jr.
President

HPE/rb

LOS ANGELES TIMES

July 5, 1943

File 60.0097

WHITE HOUSE MINE
GROUP MAY YIELD



Los Angeles, July 2nd, 1943

File 60.0097
~~24.0098~~
~~24.0099~~

Mr. Walter Bohmstengel,
Engineer of Tests,
Topeka, Kansas.

Dear Sir:

We are sending you by railroad mail five samples marked A, B, C, D, and E. Each bag is marked on the outside and has a tag enclosed, with the sample, marked with the following designations:

- Sample A - McCarty Deposit, Catman, Arizona.
- Sample B - Heather Deposit near Homer, California.
- Sample C - Wide Zone. North end upper vein. Heather and Martin Deposit, Catman, Arizona.
- Sample D - Central Pit, Hinkley Deposit.
- Sample E - Hill Top, Hinkley Deposit.

Will you please make an analysis on each of these samples and report to me the percentage of MgO , CaO , SiO_2 and ignition loss for each.

These samples are from deposits near Catman, Homer or Hinkley stations, as indicated above. In the event you desire additional data or a copy of our report the same can be made available to you upon completion of our work on these deposits.

In your letter of June 5th, file 83-6 you returned analytical results on one of three samples and advised that there might be some delay on the other two. Can you now advise me as to when the results on the remaining two samples will be available to me?

Very truly yours,

Consulting Mining Engineer.

July 1st, 1943

File 60,0097

Brucite - Topock

Mr. H. F. Ellis, Jr., President,
Basic Refractories Inc.,
645 Hanna Building,
Cleveland, Ohio.

Dear Mr. Ellis:

Thank you for your letter of June 22nd and please be assured I will forward you the remaining analyses of ore from the Catman brucite deposit when the analytical work is completed.

I am enclosing a sketch of a vertical section through the highest outcrop of the lower vein. This section is in the plane of your first two diamond drill holes. Erosion has exposed this vein to the south on its strike at an elevation nearly 200 feet lower than the collar of drill hole #1. It would appear that an adit started from the gulch to the south (about 300 feet south of the drill holes) and drifting on the strike of the vein would be in ore throughout most of its length. Such a possible adit would at the line of the drill holes, as indicated in the attached section, give access to 250 feet of overlying vein filling as measured in the plane of the vein.

Our Mr. Evans has just returned from Catman. From the surface exposures and information disclosed by diamond drill holes 1 and 2 we estimate that a minimum of 100,000 tons of brucite can be cheaply mined from this deposit. Further exploration will probably prove additional reserves.

Three new discoveries in the vicinity of Catman will undoubtedly prove worthy of exploration and may supply additional ore. Mr. Lowman left last evening for Catman and will look at these discoveries. As we accumulate further information on the district we will pass it along to you.

We believe you will find that the area justifies preferred consideration as a potential source of brucite. We are cooperating with Mr. Lowman in every possible way and if this office can be of any assistance to you do not hesitate to communicate with us.

Very truly yours,

W. M. Balling
Consulting Mining Engineer.

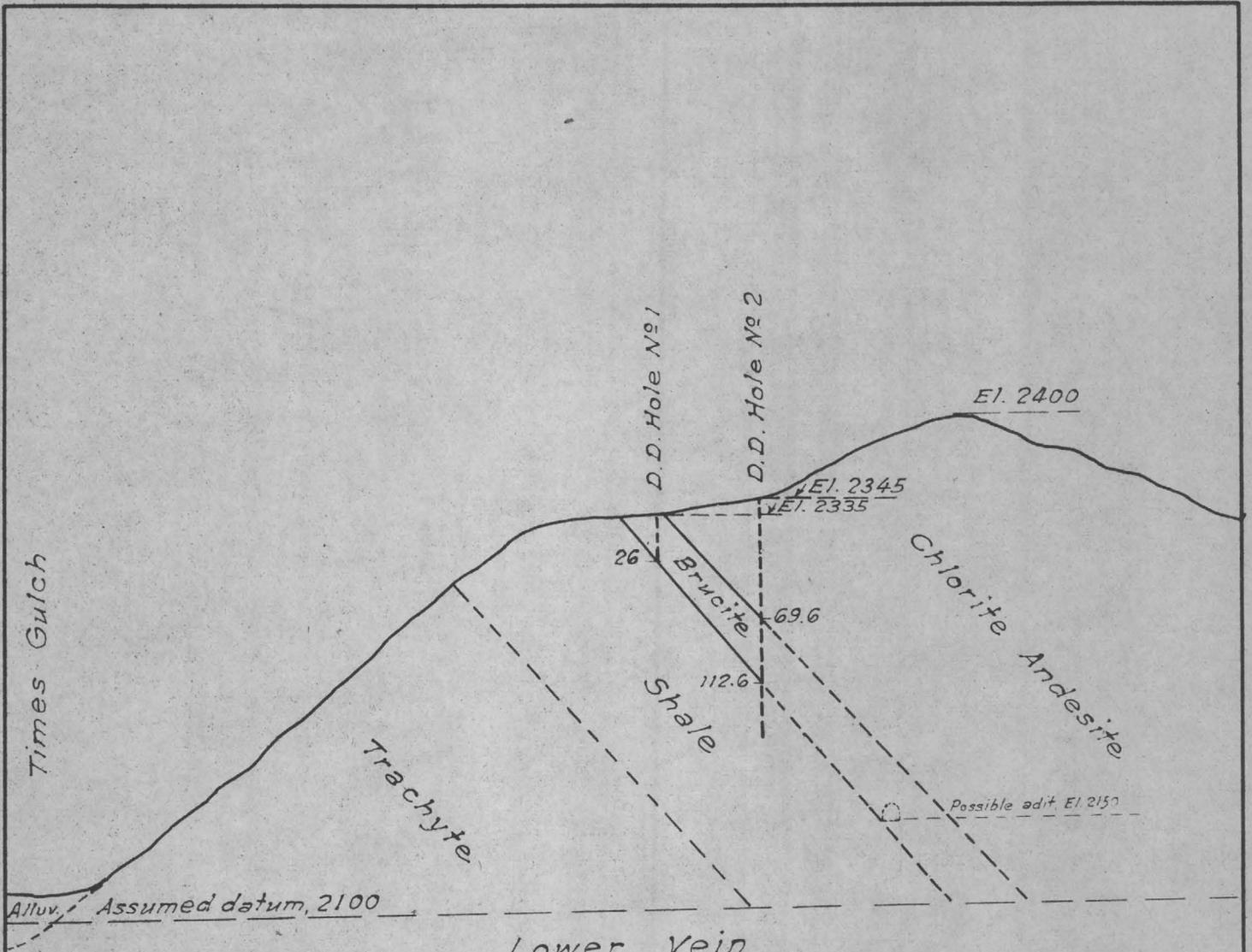
Encl

cc - Mr. J. H. Lowman

Blind cc - Messrs. E. J. Engel
F. G. Gurley

E. E. McCarty
H. C. Blanchard

C. L. Cain
L. E. Sievert



Section in plane of Diamond Drill Holes
(Looking North)

The A. T. & S. F. Ry., Co.
 Department of
 Mineral Resources.
 Heather and Martin
BRUCITE DEPOSIT
 Oatman District
 Mohave County, Arizona
 Los Angeles, Calif. June 30, 1943
 Scale 1"=100'

July 1st, 1943

File 60.0097

Brucite - Topock

Mr. Harry F. Heather,
P. O. Box 168,
Oatman, Arizona.

Dear Mr. Heather:

The analysis of the brucite you requested is as follows:

Moisture	0.10
Silica, SiO ₂	0.65
Alumina, Al ₂ O ₃	0.42
Iron Oxide, Fe ₂ O ₃	0.11
Calcium Oxide, CaO	0.80
Magnesium Oxide by difference	63.16
Ignition Loss	34.76
Sulphates	Negl.
Chlorides	<u>Trace</u> Only
Total	100.00

I also want to take this opportunity to express our appreciation of the courtesies you and Mr. Martin extended to Mr. Evans on the occasion of his recent visit to your property.

Kindest personal regards.

Yours truly,

Consulting Mining Engineer.

BASIC REFRACTORIES

I N C O R P O R A T E D

(F O R M E R L Y B A S I C D O L O M I T E , I N C O R P O R A T E D)



845 HANNA BUILDING

CLEVELAND, OHIO

June 22, 1943

Mr. W. M. Balling, Consulting Mining Engineer
The Atchison, Topeka and Santa Fe Railway Company
560 South Main Street
Los Angeles, California

Dear Sir:

File 60.0097 *File*

20.0000

Thank you for your letter of June 18th together with the results of your analysis of a sample of the Oatman brucite.

Thank you also for your assistance to Mr. Lowman in the consideration of the development of our business in areas adjacent to your lines. I am sure your help is very considerable in connection with this matter.

When you have further analyses of the subject deposit I will be pleased to receive them from you.

Very truly yours,

H. P. Eells, Jr.
H. P. Eells, Jr.
President

HE:LS

copy J. W. Lowman

*See on the strike
at elev. 2150*

Brucite - Topock, Arizona

Los Angeles, June 22nd, 1943

File 60,0097 ✓

Messrs. E. J. Engel,
F. G. Gurley,
E. E. McCarty,

M. C. Blanchard,
G. L. Cain,
L. E. Sievert.

Gentlemen:

I am enclosing herewith preliminary report on a newly discovered brucite occurrence near Catman, Arizona.

Pure brucite contains 69% magnesia, the oxide of magnesium. As you know magnesia (MgO) - also obtainable, although in lesser percentage, from sea water, brine, dolomite, or magnesite - is treated at various plants to produce light weight magnesium metal. Magnesia, a white powder, is highly resistant to temperature changes and is also a preferred material for making refractory (i.e., heat resistant) brick or granules particularly for use wherever basic slags are encountered in high temperature metallurgical furnaces as in the steel industry. The melting point of pure magnesia is $5072^{\circ} F.$ or higher than that of any other common refractory material. Commercial refractories are prepared from it that withstand temperatures above $3600^{\circ} F.$ without softening, are serviceable at temperatures above $4300^{\circ} F.$ and that have melting points as high as $5072^{\circ} F.$

The only known commercial source of the mineral brucite has been at Galita Valley, Nevada, about 30 miles north of the Southern Pacific station at Luning, Nevada. Basic Refractories, Inc., is reported to control the principal brucite reserves at Luning. It mines and ships the brucite to Gais for use in making refractories. Magnesite also occurs at Luning and is at present the principal magnesia bearing raw material for the Basic Magnesium, Inc., plant at Royson, Nevada.

The brucite deposit, reported upon herewith, is about 30 miles from our Topock station distant 353 rail miles (387 of which are U.P.) from Royson, Nevada. The trucking distance from the deposit to Royson is about 125 miles, most of which is on paved highway. We have not discussed this discovery with representatives of Anaconda Copper Co. (Basic Magnesium, Inc., Royson), but have done so with representatives of Basic Refractories, Inc., which has taken an option on the property and is starting exploration of the deposit. It will soon move some of the ore to Gais.

We are in close touch with the interested parties and enjoy their full cooperation. As further development progresses I will keep you informed and in due time will make a more comprehensive report.

Yours truly,

Consulting Mining Engineer.

Encl.

Brucite - Topock, Arizona
Preliminary Report

Los Angeles, June 21st, 1943
File 60.0097

Location:

A deposit of brucite (Magnesium Hydroxide - $Mg(OH)_2$ or $MgO.H_2O$) occurs about 4 miles northwest of Oatman, Arizona. It is located about 30 miles by road from the A. T. & S. F. Railway at Topock, Arizona, the nearest rail point.

Surface Exposures:

There are two parallel veins on the contact between andesite and shale. The outcrop of the most ~~easterly~~ ^{westerly} vein is 1200 feet in length and shows an average width of 10 feet over the ~~southerly~~ ^{northerly} 700 feet, and an average width of 25 feet over the remaining 500 feet. It is about 30 feet wide at the most ~~northerly~~ ^{southerly} exposure.

The outcrop of the ~~westerly~~ ^{upper} vein is about 3000 feet in length and has an average width of 10 feet. This vein reaches a width of 60 feet for about 100 feet on its strike. This ~~westerly~~ ^{lower} vein is 1100 feet ~~west~~ ^{east} and about 300 feet higher in elevation than the ~~easterly~~ ^{lower} vein.

Ore Reserves:

Surface exposures indicate the deposit could be productive of at least 50,000 tons of brucite. Exploration in depth will undoubtedly prove a very much larger tonnage.

Quality:

The ore appears to be uncontaminated and of excellent quality. Three samples have been sent to Mr. Bohmstengel for analyses in our Topeka testing laboratories. The first of these samples, which was taken from the outcrop of the ~~east~~ ^{lower} vein contained 63.13% magnesium oxide, 0.80% calcium oxide, and but 0.65% silica. The analyses of the remaining samples are not yet available.

Ownership:

Mr. Harry F. Heather, Pasadena, California, and R. A. Martin, Oatman, Arizona, are joint owners of the mining claims covering this discovery.

Conclusions:

Brucite of the indicated quality would be exceedingly desirable as a raw material for the production of magnesium metal or for the production of refractories. Shipment for use in refractories would probably be to Ohio. The ore can be readily mined and transported by truck to the railroad at Topock. The first 3-1/2 miles from the deposit is unpaved and the grade is adverse to the load, but the remaining 26-1/2 miles to Topock is downhill and on paved U. S. Highway 66.

W. M. Balling
Consulting Mining Engineer.

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The outcrop of the ~~westerly~~^{easterly} vein is about 3000 feet in length and has an average width of 10 feet. This vein reaches a width of 60 feet for about 100 feet on its strike. This ~~westerly~~^{easterly} vein is 1100 feet west and about 300 feet higher in elevation than the ~~easterly~~^{westerly} vein.

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W. M. Balling
Consulting Mining Engineer.

Brucite - Topock, Ariz.

Los Angeles, June 2, 1943 File
File 60.0097

Location:

The deposit is located about 4 miles northwest of the town of Oatman in the foot hills on the westerly flank of the Black Mountains. I was unable to determine the section in which it lies, but it is in either Section 6 or 7 in T. 19 N., R. 20 W., G. & S.R.B. & M., Mohave County, Arizona. To reach the deposit by automobile, drive easterly from Oatman on U.S. Highway No. 66 for about 1 mile to the Davis Dam Road. Thence northerly on the Davis Dam Road for about 1/2 mile to a road located in a wash. Thence down the wash in a southwesterly direction for 2-1/2 miles to the old Gilpin Mine where the road ends. The deposit is about 500 feet west of the Martin cabin at the end of the road. The total distance from Oatman is 4-1/2 miles and the roads are in good condition. The nearest rail point is Topock, distant 30.1 miles from the deposit.

Ownership:

There are 11 lode claims, The MAG claims numbered 1 to 4 inc., and the White House claims numbered from 1 to 7 inclusive. These claims are owned jointly by Harry F. Heather, 2036 S. Oakknoll Ave., Pasadena, California, (telephone, Sycamore 27501) and R. A. Martin, P. O. Box 168, Oatman, Ariz. An agreement between the above mentioned parties and the Basic Refractories, inc., Hanna Building, Cleveland, Ohio, has been entered into. The agreement stipulates that the Basic Refractories Inc., are to be given 3 months time in which to explore the deposits by diamond drilling. During that period they are to pay the lessors \$250 per month. If the deposit proves satisfactory they are to pay \$10,000 in cash. The total payment for the property is said to be \$400,000.

Description of Deposit:

There are two parallel veins. The first or most ^{westerly} ~~easterly~~ vein is 1200 feet in length, striking N. 30° E. and dipping 43 degrees to the ^{west} ~~east~~. At the ^{north} ~~south~~ end of this vein the width would average 10 feet for 700 feet, and 25 feet for 500 feet. At the ^{south} ~~north~~ end the width increases to 30 feet. A pit measuring 5 feet square has been sunk on the hanging wall to a depth of 15 feet at a point about 400 feet from the ^{south} ~~north~~ end. The hanging wall is a green andesite locally known as "Oatman Chloritic Andesite." The foot wall is shale.

The westerly vein lies about 1100 feet ^{east} ~~west~~ of the above described vein. This vein is 3000 feet long and averages 10 feet in width. At one point about 1000 ft. ^{north} ~~south~~ of the ^{south} ~~north~~ end the width is 60 feet over a length of about 100 feet. The strike of this vein is also almost north and south and the dip varies between 30 and 43 degrees to the ^{east} ~~west~~. The ^{easterly} ~~westerly~~ vein outcrops approximately 300 feet higher in elevation than the ^{westerly} ~~easterly~~ vein. The hanging wall and foot-wall are the same as on the easterly vein.

Tonnage Estimate:

In this estimate no tonnage is included beyond that which can be determined by exposures shown on surface.

~~West~~
~~East~~ Vein

700 feet long by 10 feet wide and average depth of 25 feet (as viewed in wash) equals 13,000 tons. The northerly end of the vein averages 20 feet wide by 500 feet long and 35 feet deep, and contains about 39,000 tons or a total of 52,000 tons which can be considered proven tonnage.

~~East~~
~~West~~ Vein

The length is 3000 feet by an average width of 10 feet or 2200 tons per foot of depth. There is no way to estimate the depth since no work has been done on this vein. (The specific gravity of brucite is 2.39 or 13.42 cubic feet per ton.)

Conclusions:

Both veins are favorably located and there are no problems involved in mining them. The haul from the deposit to U. S. Highway 66 is uphill for 3-1/2 miles, over fair roads. The balance of the distance to Topock is down grade on U. S. Highway 66 for the entire distance. The total haul from the deposit to Topock is 30.1 miles.

T. O. E.

June 18th, 1943

File 60,0097

~~20,0000~~

Mr. H. P. Ellis, Jr.,
Basic Refractories, Inc.,
Hanna Building,
Cleveland, Ohio.

Dear Sir:

Mr. Jack Lowman, with whom I am discussing raw materials for your requirements, suggested that I write you regarding reports as to the possibility that you may decide to manufacture magnesia fluxes and refractories in the west. Mr. Lowman and I plan to discuss various mineral occurrences tributary to our lines and to Barstow, in the next few days. Barstow is, of course, well situated with regard to rail transportation into the Los Angeles, Torrance, Fontana area, is directly connected by rail with points in Utah, and access can be had to San Francisco Bay points without passing through the Los Angeles Basin.

We will be glad to furnish your organization the information we have developed on mineral occurrences tributary to our lines, and to be of any possible assistance in finding a suitable location, should you decide to manufacture in the West.

The following analysis made by our Testing Laboratory at Topeka is of a sample from the outcrop of the east vein at the brucite discovery near Catman. This surface material had the appearance of impure magnesite rather than that of brucite, and Mr. Lowman remarked that you would probably be interested in the analysis:

Moisture	0.10
Silica, SiO ₂	0.65
Alumina, Al ₂ O ₃	0.42
Iron Oxide, Fe ₂ O ₃	0.11
Calcium Oxide, CaO	0.80
Magnesium Oxide by difference	63.16
Ignition Loss	34.76
Sulphates	Negl.
Chlorides	<u>Trace Only</u>
Total	100.00

Two additional samples have not as yet been reported upon, by our laboratory, but I will be glad to supply you with the results of the analyses when they are completed.

Yours truly,

Consulting Mining Engineer.

cc - Mr. J. W. Lowman,
518 Chapman Building,
Los Angeles, California.

Brucite - Topock, Ariz.

Los Angeles, June 17, 1943

File 60,0097

Mr. Walter Bohnstengel,
Engineer of Tests,
Topeka, Kansas.

Dear Sir:

This will acknowledge receipt of the analysis reported by you June 5th, 1943, your file 83-6:

We obtained the samples from a newly discovered occurrence north of Topock in Arizona. I am preparing and will send you in a few days a copy of our preliminary report resulting from a rapid reconnaissance of the occurrence.

The only commercial source of brucite has been at Luning, Nevada and this discovery is a matter of some importance. I will appreciate the results of analyses on the other two brucite samples as soon as the work can be completed.

Yours truly,

Consulting Mining Engineer.

cc - Mr. E. E. Chapman
24-21

Topeka, June 5, 1943

Mr. W. M. Balling,
Consulting Mining Engineer,
Los Angeles, California.

File 60.0097 ✓

Dear Sir:

ANALYSIS - BRUCITE

In reference to your letter of May 26, 1943, file 60.0097.

Analysis of the Sample No. 1 of Brucite has been made, the results being as follows:

<u>Brucite Sample No. 1,</u> <u>Outcrop East Vein Lower</u>	
Moisture	0.10
Silica, SiO ₂	0.65
Alumina, Al ₂ O ₃	0.42
Iron Oxide, Fe ₂ O ₃	0.11
Calcium Oxide, CaO	0.80
Magnesium Oxide by difference	63.16
Ignition Loss	54.76
Sulphates	Negl.
Chlorides	Trace Only
Total	<u>100.00</u>

These results are being sent to you now as there may be some delay in connection with the analysis of the other samples.

In order to supplement the information in our files will you please advise further concerning the origin of these samples.

Very truly yours,

Walter Bohustutz
Engineer Tests

cc-Mr. E. E. Chapman
24-21

File Buente-Japock ✓

WMA

Buente, Crude, not documented

3-P

5142 Luning to Bitterwell
 Curves } other
 more than }
 made }
 9.00 - 50 tons

5143-A Luning to Fromme Twp 10.00 50 tons
 Aug 47

subject to export 148

Luning to Chicago 6P-UP-60W 2092 miles
 Japock " " AT 60W 1882 "

Clu
 5/14/43

Los Angeles, May 26th, 1943

File 60.0097

Mr. Walter Bohnstengel,
Engineer of Tests,
Topeka, Kansas.

Dear Sir:

We are sending you by railroad mail a package containing three separate bags and samples marked as follows:

Sample #1 - Outerop East vein
Sample #2 - Shaft East vein
Sample #3 - Outerop West vein

Will you please make analyses on these samples? It is desired that the analyses show Magnesia (MgO), Silica (SiO_2), Lime (CaO), Alumina (Al_2O_3), Ferric Oxide (Fe_2O_3), and ignition loss. The amounts of magnesia, silica and lime are of principal importance.

It is believed that this deposit may furnish a commercial source of "Brucite" none of which material has been previously found tributary to our lines.

I would appreciate receiving the analyses as promptly as you can conveniently arrange to have the work completed.

Yours truly,

Consulting Mining Engineer.

File Brucite - Topock

2/26/43

Vern Dunton of Vinell Co. investigating Topock (Oatman) Brucite, to produce.

Brucite reported to run 62% + MgO + 1% or slightly above in silica. In vein 15-20' wide + dipping 43°

3/4/43 Finished Dunton data on Brucite.

Apr. 1943 Dunton has given up efforts acquire Brucite

5/11/43

Discussed Brucite occurrence near Topock with Jack Lowman of Basic refractories they will investigate.

5/12/43 Discussed possible frt. traffic east bound with C. K. Adams on Brucite from Topock Present rates attached



N
 SCALE 1"=500'

LEGEND:
 D.S. - Discovery Shaft

Note:
 This print furnished to A. T. & S. F. Ry Co.
 by Harry Heather Jan. 15, 1944

BASIC REFRACTORIES, INC.
 MINE BOUNDARY SURVEY
 OATMAN DIST. MOHAVE CO. ARIZONA.

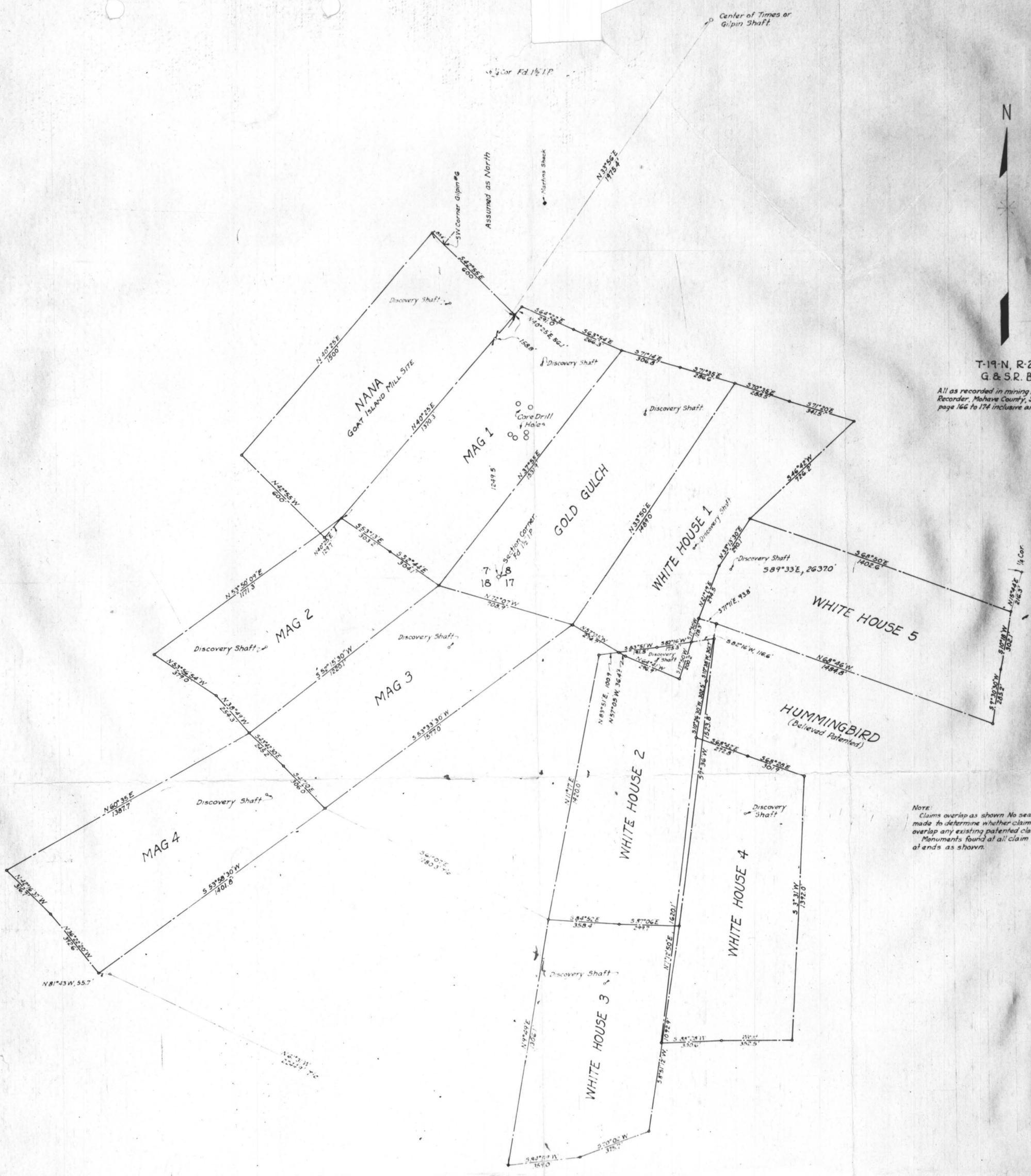
JOSEPH E. BONADIMAN
 CIVIL ENGINEER

Enlarged from U.S.G.S. Quad "Oatman District"



T-19-N, R-20-W
G & S.R. B & M.

All as recorded in mining records, Office of County Recorder, Mohave County, State of Arizona, Book 3-Y page 166 to 174 inclusive and Book 3-N page 106



Note:
Claims overlap as shown. No search has been made to determine whether claims shown overlap any existing patented claims. Monuments found at all claim corners and at ends as shown.

BASIC REFRACTORIES, INC.	DRAWN	H.G.W.	8.21
MINE BOUNDARY SURVEY	TRACED	H.G.W.	8.21
OATMAN DIST. MOHAVE CO. ARIZONA	CHECK		
JOSEPH E. BONADIMAN	SUPERV	J.E.B.	8.21
CIVIL ENGINEER	APPROV	SCALE	1"=200'
HALLIBURTON	JOB NUMBER		29-743
LOS ANGELES	DRAWING NUMBER		C-1-A