CONTACT INFORMATION
Mining Records Curator
Arizona Geological Survey
1520 West Adams St.
Phoenix, AZ 85007
602-771-1601
http://www.azgs.az.gov
inquiries@azgs.az.gov

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PRINTED: 09-19-2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: LITTLE CHIEF

ALTERNATE NAMES:
STOCKTON HILL
CHIEF ENGINEER

MOHAVE COUNTY MILS NUMBER: 90C

LOCATION: TOWNSHIP 22 N RANGE 17 W SECTION 9 QUARTER SW
LATITUDE: N 35DEG 18MIN 23SEC LONGITUDE: W 114DEG 05MIN 58SEC
TOPO MAP NAME: STOCKTON HILL - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
SILVER
LEAD SULFIDE
GOLD LODE
COPPER

BIBLIOGRAPHY:
ADMMR MOHAVE CARD FILE
SCHRADER, F.C. "MIN. DPSTS OF CRBT RNGE, BLCK MTNS, GRND WSH CLFS, AZ" USGS BULL 340, P 69
SCHRADER, F.C. "MIN. DPSTS OF CRBT RNGE, BLCK MTN, GRND WSH CLF,AZ" USGS BULL 397, P 112-3
AZ. MNG JNL, AUG. 1920, P. 13
ELSING, M.J. "AZ METAL PRODUCTION" AZBM BULL 140, P. 95; 1936
DINGS, M. "WALLAPAI MNG DIST, CRBT MTNS, AZ" USGS BULL 978-E, P. 147; 1951
EVAL. OF MIN. RES. OF HUALAPAI INDIANS, VOL I P 310-311; 1964

A

GEOLOGICAL REPORT

on the

LITTLE CHIEF

CHIEF ENGINEER PROPERTY

in the

Wallapai Mining District

Mohave County, Arizona

by

Wm. Vanderwall
Geologist
Scottsdale, Arizona

April 30, 1981

SUMMARY OF GEOLOGICAL REPORT

CHIEF ENGINEER PROPERTY
Wallapai Mining District
Mohave County, Arizona

The Chief Engineer Property consists of four conticuous, unpatented mining claims located in Section 9, Township 22N, Range 17W, G&SRM, Mohave County, Arizona.

The property is a part of the Stockton Hill Camp. A late 1800's silver bonanza where oxidized ores ran as high as 3000 ounces silver per ton. The Chief Engineer property was worked until the turn of the century but production statistics are unavailable.

The property is located in the central portion of the Cerbat Mountain Range, one of the many north south trending, fault-block ranges of the southwest desert. Rocks exposed at the surface, on the Chief Engineer property, include pre-Cambrian metamorphic rocks cut by Mesozoic (?) intrusives and by mineralized veins of unknown (Tertiary?) age.

The ore deposits on the property may be of two types: Oxidized, near surface vein deposits often greatly enriched in silver; and deeper, primary, base metal-silver vein deposits which may extend to considerable depth.

The most favorable loci for ore is at the junction of veins with other structures, although it can be found randomly spaced along the veins in lenses or shoots. The main vein on the Chief Engineer property trends northwest and projects to a shallow underground intersection with neighboring dykes.

Results of field reconnaissance indicate the following:

A) Mineralized structures traverse the property and ore is exposed in prospect pits, trenches, etc., indicating the oxide zone was not mined out by the first miners.

B) Dykes and veins project to a shallow underground intersection which would provide a sizable locus for ore deposition.

C) Past mining on the property has produced a considerable amount of dump material which may be amenable to cyanidation.

Wm. Vanderwall, Geologist
April 30, 1981

Geological Report
CHIEF ENGINEER PROPERTY
Wallapai Mining District
Mohave County, Arizona

LOCATION:

The Chief Engineer property consists of four contiguous, unpatented mining claims located approximately eight miles north of Kingman, Arizona, on the eastern slope of the Cerbat Mountains. The claims are situated in Section 9, Township 22N, Range 17W, G&SRM, and are accessible via county and private roads.

SCOPE OF REPORT:

Facts and opinions contained in the report are based on a cusory field examination of the property and on the author's specific knowledge of the area and general familiarity with the published literature concerning the Wallapai District.

HISTORY AND PRODUCTION:

The Chief Engineer property lies centrally in the famous silver bonanza ghost camp of Stockton Hill, where rich silver discoveries brought miners to the area as early as 1863. Oxidized silver ores (up to 3000 ozs. per ton) were mined at Stockton Hill with the bulk of production during the 1870-1880 period. The rapid decline in silver prices between 1885-1895, the recession of 1905 and the added cost of mining the deeper, leaner, sulfide ores caused the suspention of mining operations. The area, for the most part, has been idle ever since.

Schrader, 1909 (USGS Bulletin 397, pp. 112-113) briefly describes the Little Chief Mine (now the Chief Engineer) and estimates its production to be $25,000 in silver (125,000 ozs. @ 20¢/oz.). Schrader credits the Little Chief with approximately 1000 feet of underground work and gives cerargarite (AgCl), galena (PbS) and native gold as the principal ore minerals. He states ore tenure as 350 ounces of silver per ton, 14% to 30% lead, and up to one half ounce gold. Physical inspection of dump material tends to support Schrader's values.

The value of metals produced in the Wallapai District during the years 1904-1948 (U.S. Bureau of Mines 1948 Annual Report) was about 22.5 million dollars at 1948 prices (nearly a half a billion dollars at todays prices). Values were principally in lead and zinc, but with substantial amounts of copper, silver and gold.

Currently Penzoil-Duval Corporation, approximately 4 miles northwest of the Chief Engineer property, is reportedly producing 18,000 to 20,000 tons per day of open pit ore averaging 0.5% copper and 0.045% molybdenum, plus other metals.

GEOLOGY AND ORE DEPOSITS:

The Cerbat Mountains constitute one of the many north-south trending, fault block ranges of the southwest desert. They consist primarily of metamorphosed pre-Cambiran igneous and sedimentary rocks, cut by later intrusions of Mesozoic (?) granite and monzonite porphyries, known locally as the Ithaca Peak Granite, and by Tertiary volcanic dykes. Centering around the Ithaca Peak intrusive, mineralization is typically copper and molybdenum sulfides, now being mined by Duval. Surrounding the intrusive is a zone several miles wide of copper-lead-zinc-silver bearing veins which gradationally change to veins of intense silver-lead-mineralization. The Chief Engineer property contains veins of the silver-lead type.

The vein type ore deposits occur in clefts or cracks in the country rock in which the mineral material precipitated from agueous solution (hydrothermal fissure veins). It is probable that these fissures formed from forces accompanying the implacement of the Ithaca Peak intrusive. With the intrusive acting as a heat engine, a convecting hydrothermal system developed that set up a hypogene enrichment process which deposited ore and gangue minerals near the top of the convecting cell and extracted metals and sulfur from sources at depth. Conceivably, as the solution approached the fissure level, it boiled, thereby distilling the acid forming constituants CO_2 and H_2S. Cooling and a slight pH rise of the residual liquids, due to loss of acid forming constituants, may be regarded as the mechanism of sulfide precipitation. Exposure of the veins to normal weathering processes oxidized the ore and, to a point, enriched it by the downward migration of slightly acidic rainwater carrying metals in solution.

Many veins, occuring in nearly vertical fault fissures, strike northwest and outcrop for considerable distances. The faults fissures are largely occupied by breccia with abundant shearing and some gouge. Ore lenses, or shoots, though not continuous are numerous and tend to have greater vertical rather than horizontal extent. Concentrations of extremely hi-grade ore appear to favor vein junctures. These concentrations are attributable to chemical and physical changes which enhanced mineral deposition at the fissure level of the convecting cell.

The main vein on the Chief Engineer property is a prominent linear structure which extends from the Banner Mine southeastward. It cuts all lithologic units in the area, mostly pre-Cambrian granite, to intersect with no less than two dykes on the Chief Engineer property. The vein is composed of quartz and silicified granite breccia with some gouge. The vein trends N40°W and is nearly vertical. The vein is from 3 to 9 feet wide and heavily

stained in outcrop by iron and manganese. Evidence of mineralization in the vein is from pronounced gossan caps, in place mineralization underground and the number and extent of workings on the vein.

Dykes on the property include granite porphyry and diabase but are, presumably, less mineralized than the vein. No dyke-vein junction is apparent on the surface but attitude and trend of the dykes as well as mine dump material suggests an underground intersection.

The primary mineralization is one of proustite, galena, sphalerite, chalcopyrite, pyrite and arsenopyrite together with a variety of gange minerals. The oxidized protion of the veins ranges from 50-300 feet and may be very rich in lead sulfide, silver cloride, native silver and lesser concentrations of native gold.

ORE RESERVES:

The Chief Engineer property contains a known ore body composed of primary base metal-silver values as well as oxidized silver-gold values. Data from past developments, publications and reports are insufficient, or unavailable, to completely delineate the ore body for volumetric analysis. However, there is ore exposed in various underground workings and in many places on the surface; prospect pits, trenches, dumps, etc.

Numerous veins traverse the Chief Engineer property, some of which are known to contain ore shoots rich in silver and gold. The shoots are generally less than three feet wide and tend to have a greater vertical than horizontal extent. The Little Chief Mine, located on the main vein of the Chief Engineer property, is on one such ore shoot but the extent and exact tenure of this shoot cannot be ascertained since the mine is presently caved and inaccessible. However previous developments on the same vein and in the immediate vacinity of the Little Chief Mine have shown considerable ore at depth which indicates commercial quantities of ore may be encountered beneath the present workings.

Previous mining operations on the property have produced some sizable mine dumps. The possibility of precious metal extraction from these dumps should not be overlooked.

CONCLUSION:

On the basis of surface observations and in accessible old workings, plus facts provided in the published literature and by local people of reputation it is the author's conclusion the property contains well developed structures with strong to moderate silver-lead mineralization.

It is also the author's conclusion that the results of an adequate exploration program consisting of detailed geological mapping and diamond drilling would justify initiating a mining venture.

Respectfully submitted,

(Wm. Vanderwall)ss
Wm. Vanderwall, Geologist
April 30, 1981

A preliminary examination of the Chief Engineer 1 (Little Chief) and Chief Engineer 2 lode claims in the Wallapai Mining District located in section 9, Township 22 North, Range 17 West, on the east side of Stockton Hill has been completed.

The Chief Engineer 2 appears to be a large, mineralized fault zone which is in places over one hundred feet wide. The strongly mineralized areas coincide with thoroughly shattered rock where entry of hydrothermal solutions has been possible. The fault zone is transversed by numerous veins ranging from two feet to over five feet in width. These numerous veins are separated by fault gouge. Gouge, breccia and slickensided surfaces are evident in the tunnel which penetrates this fault zone. The veins are closely spaced and evidently the solutions found numerous areas of weakness in the fault zone. The Chief Engineer 2 claim can be described as a composite structure in which a number of closely spaced veins are separated by clay gouge and country rock that has been altered, sheared, crushed, mineralized, and in places silicified. From the portal of the tunnel on the Chief Engineer No. 2 claim can be observed the trend of several different faults which converge in this immediate area and cross faulting is also evident. The main fault zone is tilted, and these stress forces cause the zone to curve and change its strike. These different zones need to be carefully mapped, but these structural forces are responsible for the ore channels permeating this zone.

The ore as seen in the tunnel is highly oxidized and stained dark brown from limonite and black from manganese. The silver mineralization appears to be silver chloride and native silver. This tunnel extends several hundred

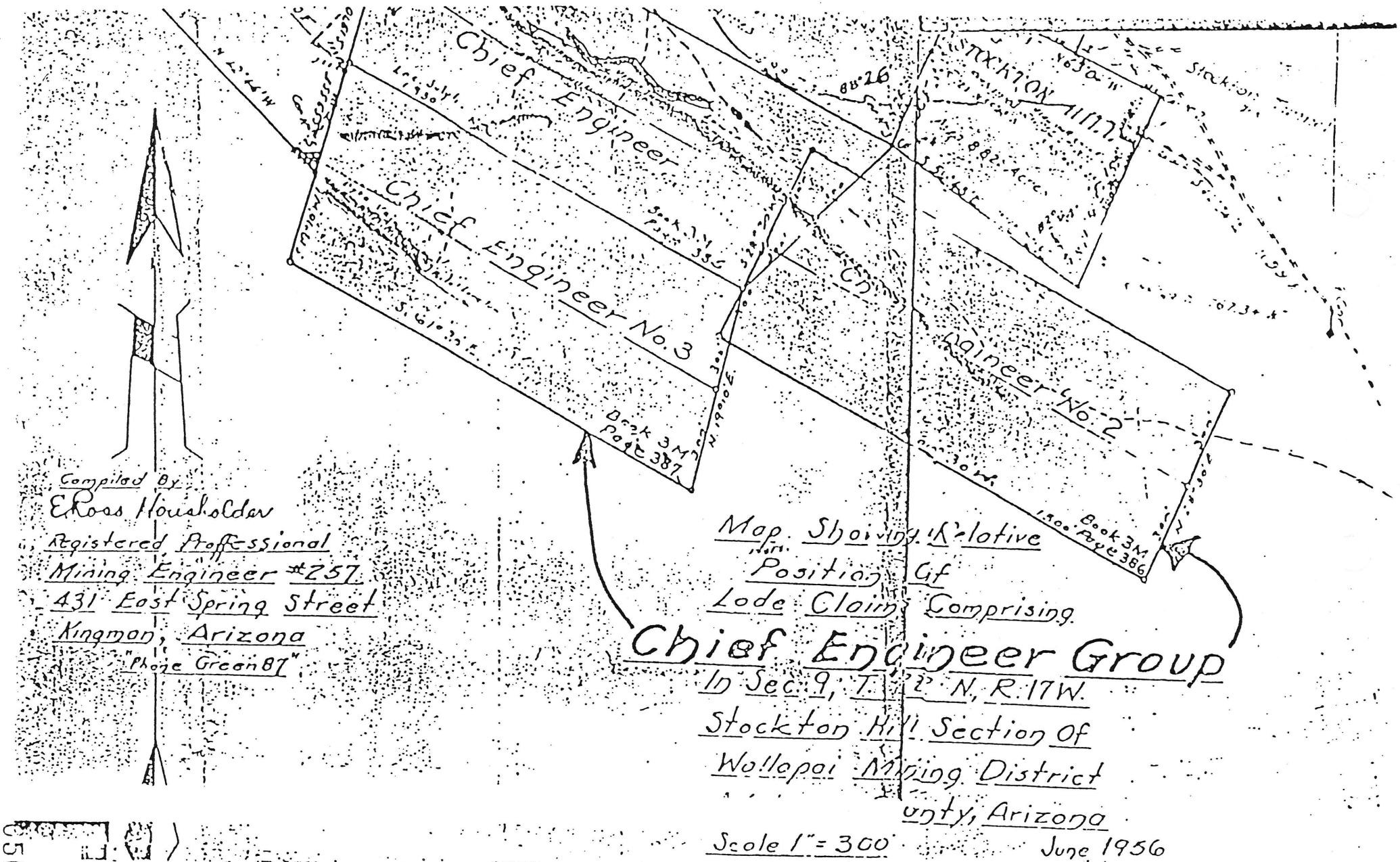
feet with numerous crosscuts under this fault zone and from the ores reserves tapped, and now exposed it would appear that this zone has very substantial ore reserves of silver and gold ore which could be extracted profitably.

The Chief Engineer I claim is the Little Chief Mine which is situated on the Banner vein. The northwest part of this claim endlines the Winchester patented claim of the United States Smelting and Refining Company. The Banner vein on the Little Chief Mine is six feet in width and strikes N 42° W. The Little Chief has several old shallow, shafts on it made by the original leasee miners. Rich shipments of silver ore were made from these workings as the production is estimated at $100,000.

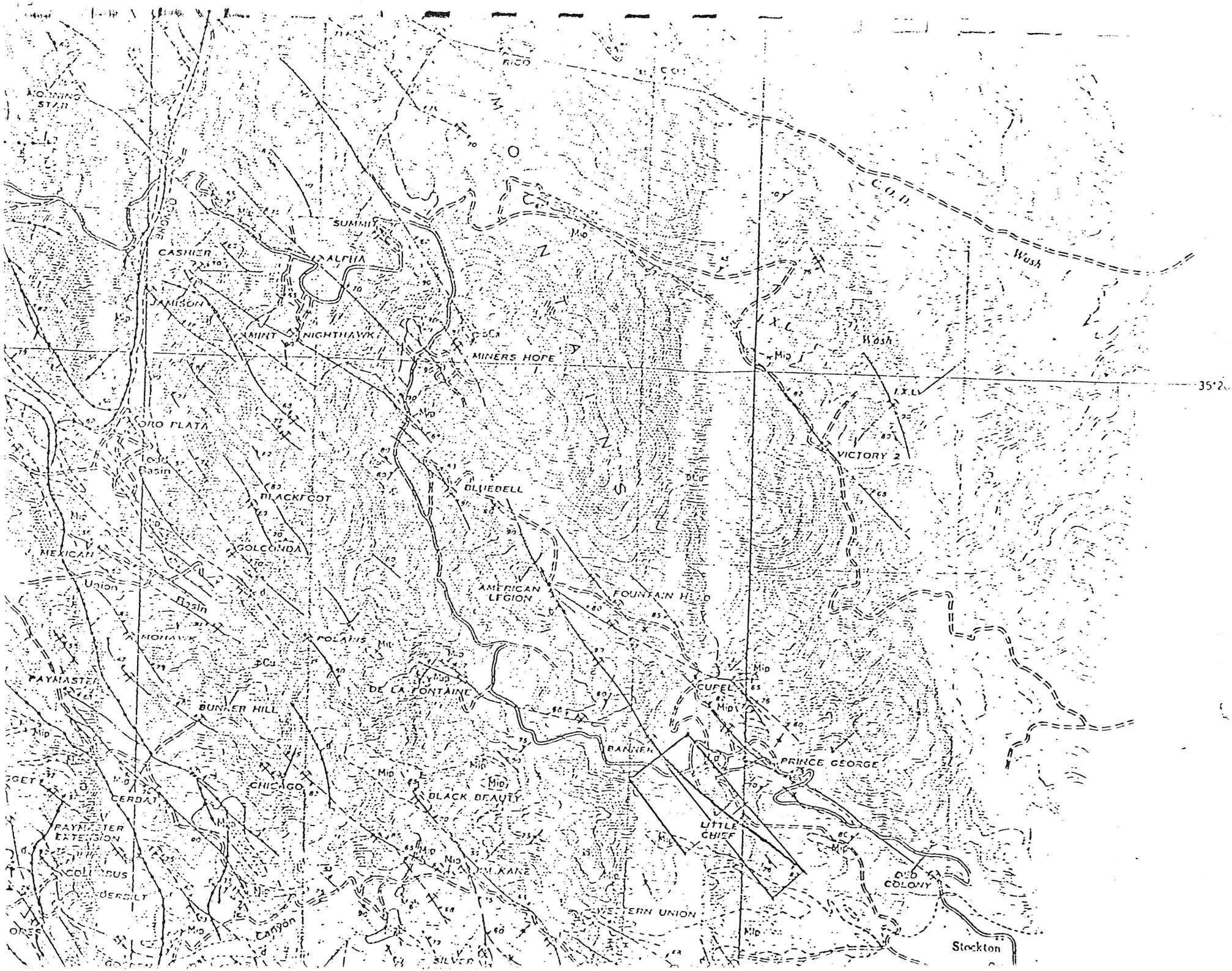
The Chief Engineer 3 claim sidelines the Chief Engineer (Little Claim) on the latter's southwesterly sideline. This claim is located on the extension of the Banner vein and also contains an old shaft two-hundred feet deep that is reported to have shipped rich silver, gold ore. This quartz vein could possibly be a throw from the main Banner vein, as the strike is definitely different than that of the Banner vein.

The important fact of this claim group is existence of at least two ore shoots on the Chief Engineer and Chief Engineer 2 claims with a possibility of a third shoot on the Chief Engineer 3.

John Rothermel


Chief Engineer
Chief Engineer No. 3
Chief Engineer No. 2
Stockton Hill
Book 3M Page 387
Book 3M Page 386
Compiled By
Ekoss Householder
Registered Professional
Mining Engineer #257
431 East Spring Street
Kingman, Arizona
"Phone Green 87"
Map Showing Relative
Position Of
Lode Claim Comprising
Chief Engineer Group
In Sec. 9, T. 22 N., R. 17W.
Stockton Hill Section Of
Wallapai Mining District
unty, Arizona
Scale 1" = 300'
June 1956

650


RICO
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VICTORY 2
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AMERICAN LEGION
FOUNTAIN HEAD
MOHAWK
POLARIS
PAYMASTER
DE LA FONTAINE
CUPEL
BUNKER HILL
BANNER
PRINCE GEORGE
CHICAGO
BLACK BEAUTY
CERDAC
PAYMASTER EXTENSION
LITTLE CHIEF
OLD COLONY
COLUMBUS
KANE
WESTERN UNION
Canyon
SILVER
Stockton

FIRST ALLEGHANY CORPORATION

1660 S. Alma School Rd., Suite 205 • Mesa, Arizona 85210 • (602) 831-9043 • Fax (602) 839-553

MEMORANDUM OF VALUES OF FRENCH CREEK CLAIMS

June 5, 1989

TO: J. D. White Company
John Harrell

Dear John:

The values in French Creek expressed in this book of are from various work and assays from numerous geologists, metallurgists, and assay houses. This research spans approximately 10 years experience. Without exception the metallurgists have expressed the opinion that the French Creek ore deposit is potentially the richest ore deposit they have experienced with the gold and platinum values averaging in excess of $2,000.00 per ton. However, for the purpose of this memorandum, we are purposefully using a very ultra-conservative figure of only $300.00 per ton.

The 36 claims (200 acres) outlined on page 36 shows the location of six core drill locations and the assays of these cores start on page 83. On these particular claims there is an estimated 54 million tons of ore drilled and blocked. If you will notice, the drill machine was not capable of drilling much below 200 feet and in all most all cases is still showing excellent values at this depth.

TONNAGE

On page 55 Mr. Colburn states there could be in excess of 20 million tons of ore valued at approximately $6,000,000,000.00 ($6 billion); this was before core drilling was done.

On page 128 Mr. Lane states that it is the most mineralized occurrence he has seen and could exceed 150 million tons.

VALUES

Five feet of each of the cores were split and assayed mostly by Roger Research Company of Salt Lake City in 1979 and 1980.

On page 129 Mr. Lane tells of witnessing special fluxing and furnacing process by Mr. Edmonds with exceptional values obtained - 8 ounces per ton.

Page 146 starts numerous reports from D.B.S. Mineral Research of Las Vegas, Nevada, using gasification tests -- with excellent results in both the gold and platinum groups all exceeding 1 ounce per ton.

Page 141 Bahamian Refining Services tested the ore for reaction to Bio Chem leaching with excellent results. As he reports, it holds the record of all ores he has tested to date.

On pages 149 and 160 are two different contracts of assignment of mineral rights; each for $3,000,000,000.00 ($3 billion) to different entities.

The major problem for processing this ore has been in finding equipment that would pulverize it fine enough to get liberation from the host rock on a volume basis. We have that problem solved now and can go into production on short notice upon receipt of money.

By studying the material contained in this book, we feel you will be able to see what we mean when we say we are being ultra conservative when we value the ore at $300.00 per ton for the purposes of obtaining a line of credit.

We are prepared to assign the enclosed claims to the Insurance Pool at $300.00 per ton of ore located and blocked estimated to contain 54 million tons.

$300 x 54,000,000 tons = $16,000,000,000.00 ($16 billion).

We are asking for a credit line of $3,000,000,000.00 ($3 billion)

I hope this will give you the material you requested.

Yours truly,

Leslie Peck
Vice President

LP:bg

INDEX

LAB NO 0192

ADVANCED MINING

900 E. KAREN • SUITE H-216
LAS VEGAS, NEVADA 89109
(702) 733-0610

For: LITTLE CHIEF PARTNERSHIP Date: 7-23-84

Three groups of samples taken Labeled as:
#1 Top of the mountian #2- Middle or 1/2 way down
#3= Bottom or near the Portal of Mine.

Received: Michael Peck

Submitted by: L. Peck / N. Sharp Completed by: M. Peck

REPORT OF LABORATORY TESTS

Sample Marked		Sample Weight	Bead Weight	Gold	Silver	Platinum—Other
Test #1	A	30gr.	2mg.	+	+ =	2 oz ton
	B	30gr.	.8mg.	+	+	.80 oz ton
	C	30gr.	Trace			
Test #2	A-	30gr.	Trace			
	B-	30gr.	1mg.	+	+	1-oz ton Prec. Mtl.
	C-	30gr.	.8mg.	+	+	.8 oz ton
Test #3	A-	30gr.	.8ml.	+	+	.8 Oz ton
	B-	30gr.	.8.1			
	C-	30gr.	Trace			

ALL SAMPLES WERE TAKEN FROM THE SERFACE AND WERE NOT IMPACTED OR CONCENTRATED...

Same samples as above only were impacted and "Gassified."

#1-	222gr.	16mg.	+	+	2.25 oz ton
#2-	222gr.	26.5mg.	+	+	3.5 Oz ton
#3-	Lost break in the line				

COLBURN ENGINEERING

December 8, 1979

T Minerals, Inc.
8000 East Girard Avenue
Denver, Colorado 80224

Gentlemen:

You have requested that I appraise the THOR ore body that has been discovered in Sections 11 and 12, T15N, R80W, Carbon County, Wyoming, and which has been produced on a very limited basis by THOR Minerals, Inc., 9530 East Grand Avenue, Englewood, Colorado 80111.

Approximately one year ago, Mr. Thomas Breen requested that I help him to evaluate--metallurgically--samples from the THOR ore body, and to help him to develop a metallurgical process for recovering the valuable metals from the THOR ore body. Since that time, I have conducted many laboratory tests on this ore--at no charge to Mr. Breen and with no obligations for either of us--and have become acquainted with Mr. Breen. To my knowledge, Mr. Breen has been very candid, consistent, and honest in his representations to me. I have very thoroughly and critically discussed the THOR ore body and the exploration work that THOR has done to date on this ore body with Mr. Breen.

Unfortunately, because of the winter conditions in Wyoming, I have not been able to inspect the ore body personally. Therefore, I must rely on Mr. Breen's information concerning the size and extent of the ore body and on my personal metallurgical tests on samples submitted by Mr. Breen.

During the summer of 1979, THOR drove a wedge into an exposed outcrop of the THOR ore body and removed approximately 1,200 tons of ore. This ore has been tested on a new pulverizing machine, with high-intensity magnetic separation, with gravity concentration, and by froth flotation. The ore is amenable to all of these metallurgical processes and, therefore, a very successful milling process can be developed. The results of the milling flow-sheet development will determine what the "cut-off" grade limit of the ore will be and will consequently influence the economic boundaries of the ore deposit.

All of the assaying of all of the metallurgical testing products was done under THOR's direction and at THOR's expense, and the results were reported to me. A list of typical results is shown in Table I. All of these analyses were made by Noble Metals Lab, Inc., by fire assay.

Extent of the Ore Body

The ore body is exposed along a road cut through the center of the southern half of Section 11, T15N, R80W, Carbon County, Wyoming. The trend of the ore body is roughly NE-SW. Outcrops of the northern part of the ore body have been traced for approximately one and one-half (1½) miles--essentially along the path of the South French Creek. The southern boundary is much less well defined because of the increased overburden from the mountains to the south. The southern boundary has been traced, however, for approximately 1,000 feet--beginning at the present workings and trending to the northeast. Beyond that point, the overburden is too thick for simple trenching, so the rest of the southern boundary must be developed by core drilling. Provided that the southern boundary is essentially parallel to the exposed outcrops to the north, the ore body is about 1,000 feet wide. However, until development work is done, it cannot be known if the mineralization is consistent over the entire 1,000 feet.

At the existing workings, the ore body extends 8 feet above the road level. Core drilling shows that it extends downward for at least another 8 feet (the length of the core-drill bit). At one outcrop, the ore body extends 70 feet above the road level. Geologically, it seems logical that the ore body could be much thicker. One of the first development projects will be to drill deep core holes in the general vicinity of the present workings in order to establish the lower limit of the ore body.

Provided that:

1) the southern boundary is parallel to the northern outcrops,

2) the mineralization is consistent across the entire 1,000 feet,

3) the northern outcrops are the northern boundary of the mineralization, and

4) the thickness of the ore body is only the 16 feet known to exist at the workings,

then the ore body could contain approximately 20 million tons.

Value of the Ore Body

As shown in Table I, the mineralization of the ore body at the present workings is very high. Of the many assays of the ore made by THOR, the highest was 60 ounces of gold per ton; the lowest was 5 ounces of gold per ton; and the average is about 20 ounces of gold per ton. However, only

after the development work is completed, will the average grade of the ore be known. Therefore, a value of only one ounce of gold per ton (compared to the lowest value measured of 5 ounces of gold per ton) will be used.

As mentioned before, the size of the ore body could exceed 20,000,000 tons. Assuming only one ounce of gold per ton and only $300 per ounce of gold, the gross value of the ore deposit would be of the order of magnitude of:

20 million tons x 300 dollars/ton = $6 billion

Such a large number as $6 billion suggests that even more conservative estimates could be used.

Assuming (1) a width of only 75 feet (the width of the active operations), (2) a height of 16 feet (the height at the known operations), (3) one ounce of gold per ton (20 ounces per ton is the assay average), and (4) $300 per ounce of gold, the value of the ore deposit would be approximately $400 million. Although the ore also contains silver and copper, only the value of the gold is included in this evaluation.

It must be emphasized that this evaluation is based on the reliability of the data submitted. Until development work is done, it is not possible to submit a more precise evaluation.

Conclusion

The ore from the THOR ore body is very highly mineralized and is amenable to several standard milling processes. Consequently, the ore can be treated effectively and economically.

Assays show that the ore could range in value from 5 ounces of gold per ton to 60 ounces of gold per ton ($2,000 to $24,000 per ton). Because of the limited work that has been done, a value of only $300 per ton was used in this evaluation.

Using known outcrops and projecting the ore body and mineralization into the area to be developed, it can be estimated that the ore body could contain upward to 20 million tons. At $300 per ton, this would place the value of the ore body at $6 billion.

Using only the width of the ore body at the present workings, the size of the ore body would be 1,350,000 tons. At $300 per ton, this would place the value of the ore body at $400 million.

Until development work is done, the true value of the ore body cannot be determined. However, this ore body certainly warrants development.

If you wish to discuss any of this material in more detail, please call me.

Sincerely,

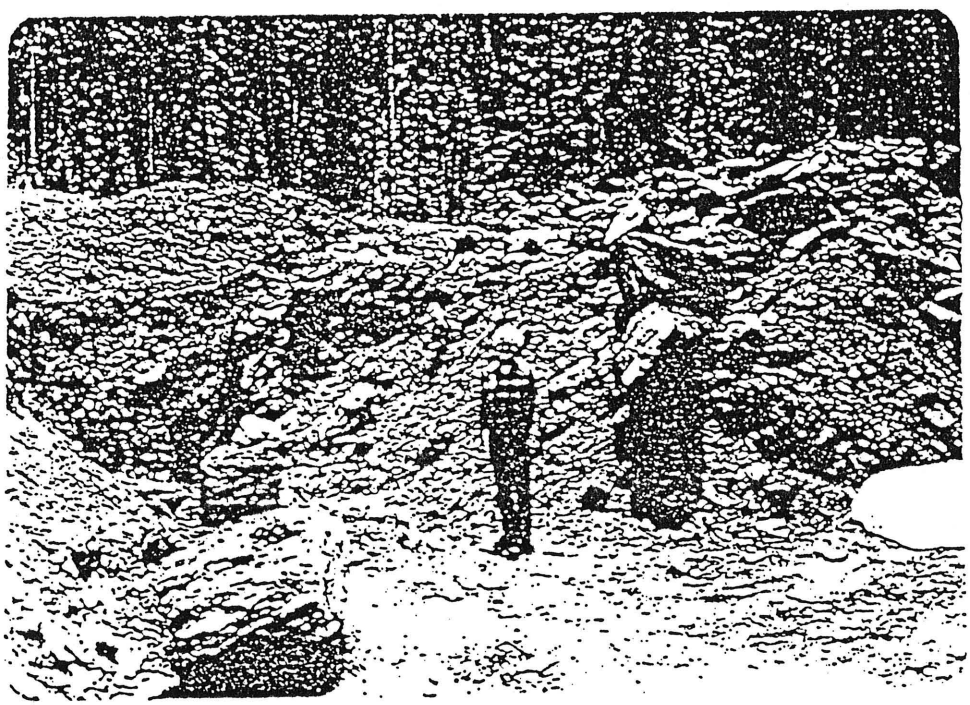
William A. Colburn

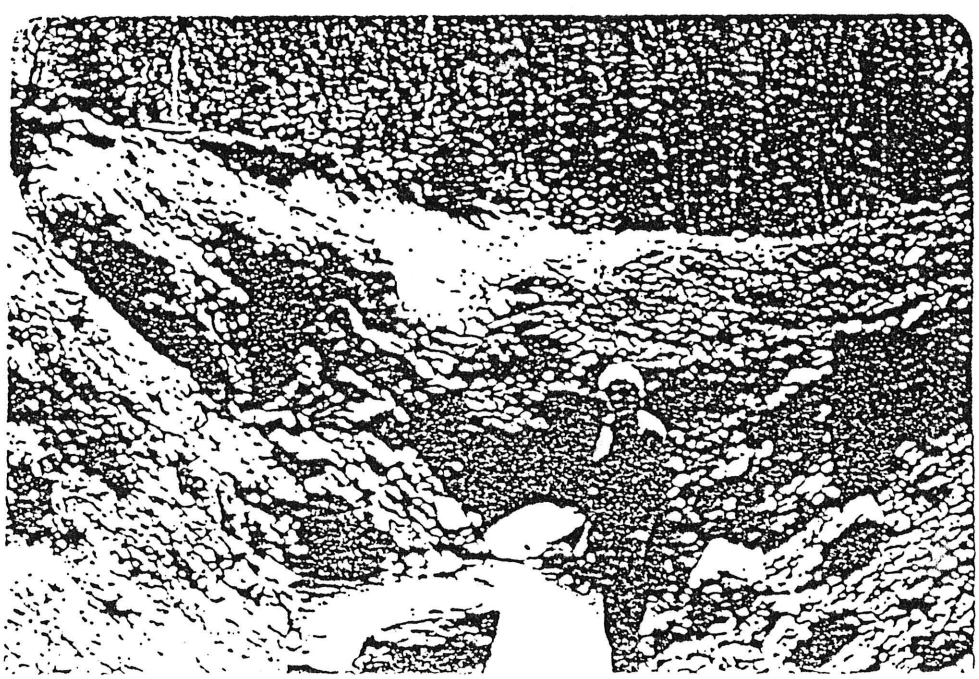
Dr. William A. Colburn, P.E.

WAC:cjc
Encls. (2)

THIS SHOWS THE STRUCTURE OF FORMATION

HIGHLY CARBONACE





A GOOD PORTION THE METALLERGIE WORK WAS TAKEN FROM THE ORE FRO THIS PIT

Results from Initial Study and Evaluation of Work on the French Creek Claims with Accompanying Recommendation for Future Work

January 28, 1981

R. H. Godbe

Richard Boelter

Harald Hoegberg

Introduction

The Medicine Bow Mountains in southern Wyoming contain an eight mile thick sequence of metasedimentary rocks that are some of the least deformed rocks of their age in the western United States. These rocks represent deposits that accumulated during early Proterozoic times on the edge of a continental craton located in Wyoming and subsequently metamorphosed during an ancient plate collision. This report gives a brief discussion of the geologic setting, stratigraphy and exploration conducted in an area known as the French Creek Claim Group, close to the southern extension of these metasedimentary rocks.

Location and Accessibility

The French Creek property is centrally located in the Medicine Bow Mountains of southern Wyoming, which extends into northern Colorado as a continuation of the Front Range of Colorado.

In Wyoming, the Medicine Bow Mountain area is bordered on the east by the northerly trending Laramie Basin and on the west by the northwesterly trending Saratoga Valley. The city of Laramie is located 30 miles to the east of the property and Saratoga is located 20 miles to the northwest.

An index map (Figure 1) of the Medicine Bow Mountains is provided with the French Creek property circled.

The Medicine Bow Mountains are accessible by automobile during the summer and fall months. Most highways and other general access roads are usually closed during the balance of the year as a result of heavy snows.

The French Creek property is located at elevations varying between 8,500 and 10,500 feet and access roads are not maintained during the winter or spring months.

Topography

Elevations in the Medicine Bow mountains vary from 7,000 feet at the base of the foothills to 12,000 feet at the crest of the mountains. Abrupt changes occur at the mountain front where a change in elevation of 2,000 feet in a distance of less than two miles is typical. A high-level plateau erosional surface (Libby Flats) extends over most of the central part of the mountain range.

South French Creek, the main tributary of French Creek, transects the main property. The main access road parallels this creek. Topographic relief over the property is generally rugged with slope grades ranging from 5% to 60%. The area is heavily forested and several large clear cut areas exist.

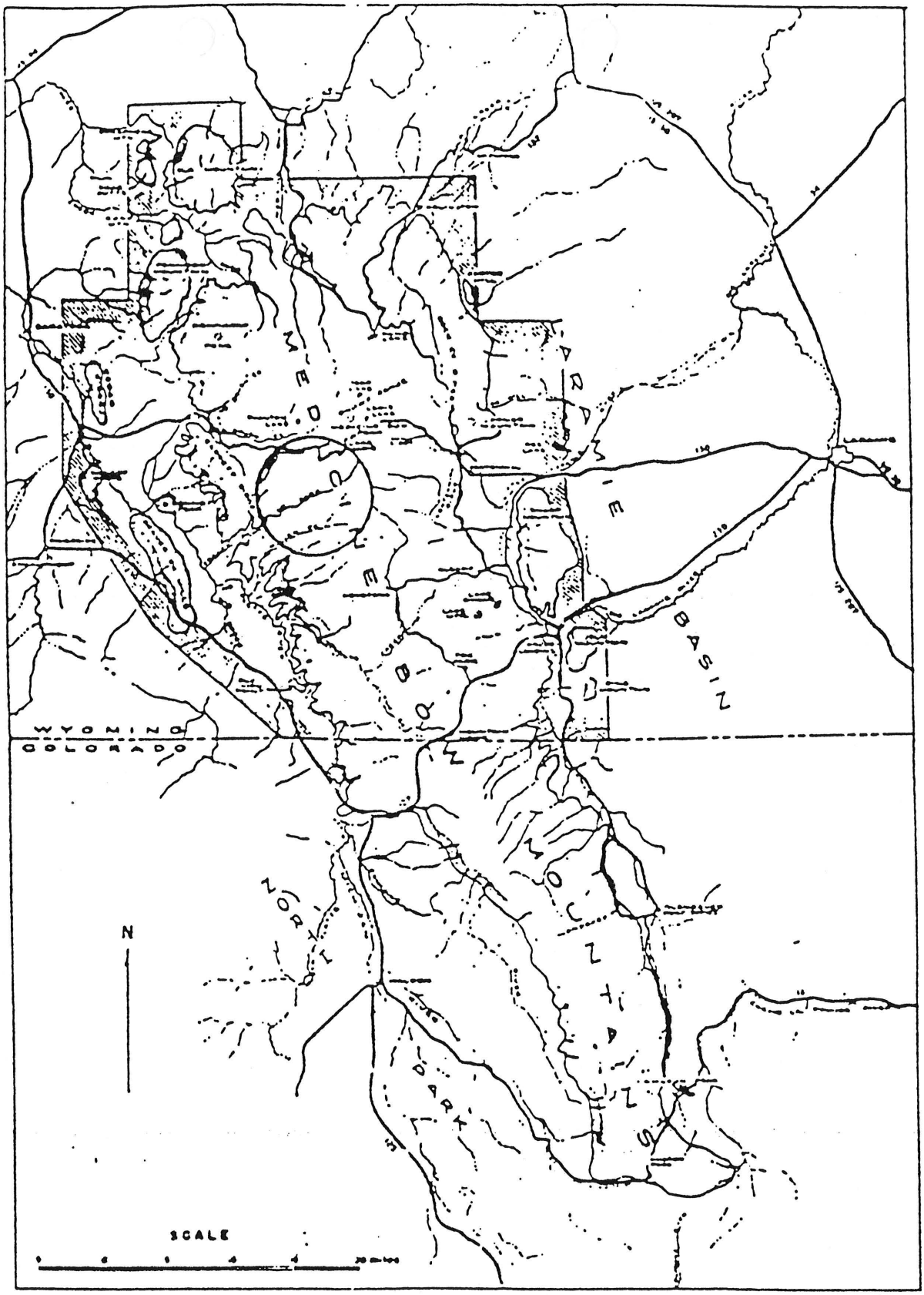


Figure 1. Index map of The Medicine Bow Mountains

Climate

The annual precipitation in the lower elevation grassland areas averages about 11 inches per year. The Medicine Bow Mountains receive approximately 20 inches of precipitation annually, primarily from snow during the period from November through April.

The weather conditions in the mountains. particularly at the higher elevations, are judged severe during the winter months with high winds and frigid temperatures common.

Moderate climatic conditions occur during the remainder of the year.