MAYNARD M. STEPHENS COMPANY

REGISTERED PETROLEUM AND GEOLOGICAL ENGINEERS
1407A TILDEN
WICHITA FALLS, TEXAS 76309
PHONE 322-4582
ALTERNATE PHONE 322-2206

February 5, 1965

Office of Minerals Exploration
Department of the Interior
Washington 25, D.C.

Application for Financial Assistance in Mineral Exploration

Re: Kickapoo Mining Company Properties
Red River, New Mexico

Gentlemen:

I am well familiar with these properties since I have made numerous trips to the area in question and have explored the drifts that are currently accessible. Considering the various assays available from the area, which as far as we could determine are authentic and were properly sampled, it would certainly seem worthwhile opening up the various caved drifts so that additional checked sampling and core drilling can be done in the area. Many of the assays available show a rather substantial amount of silver.

The Red River, New Mexico, area has been covered by a number of geological bulletins which describe the rather complex geology. The area is highly mineralized as well as faulted. It is difficult to trace the records of the mining ore sales since much of the ore was carried over the mountains into the Elizabethtown area, a different district, and thus the ore sales have never been adequately and properly allocated to the Red River area. The rather extensive workings in the area indicate that rather a substantial amount of ore has been taken out of this area, particularly in the Pioneer Canyon area, since there are a number of miles of workings on the Young claims alone.

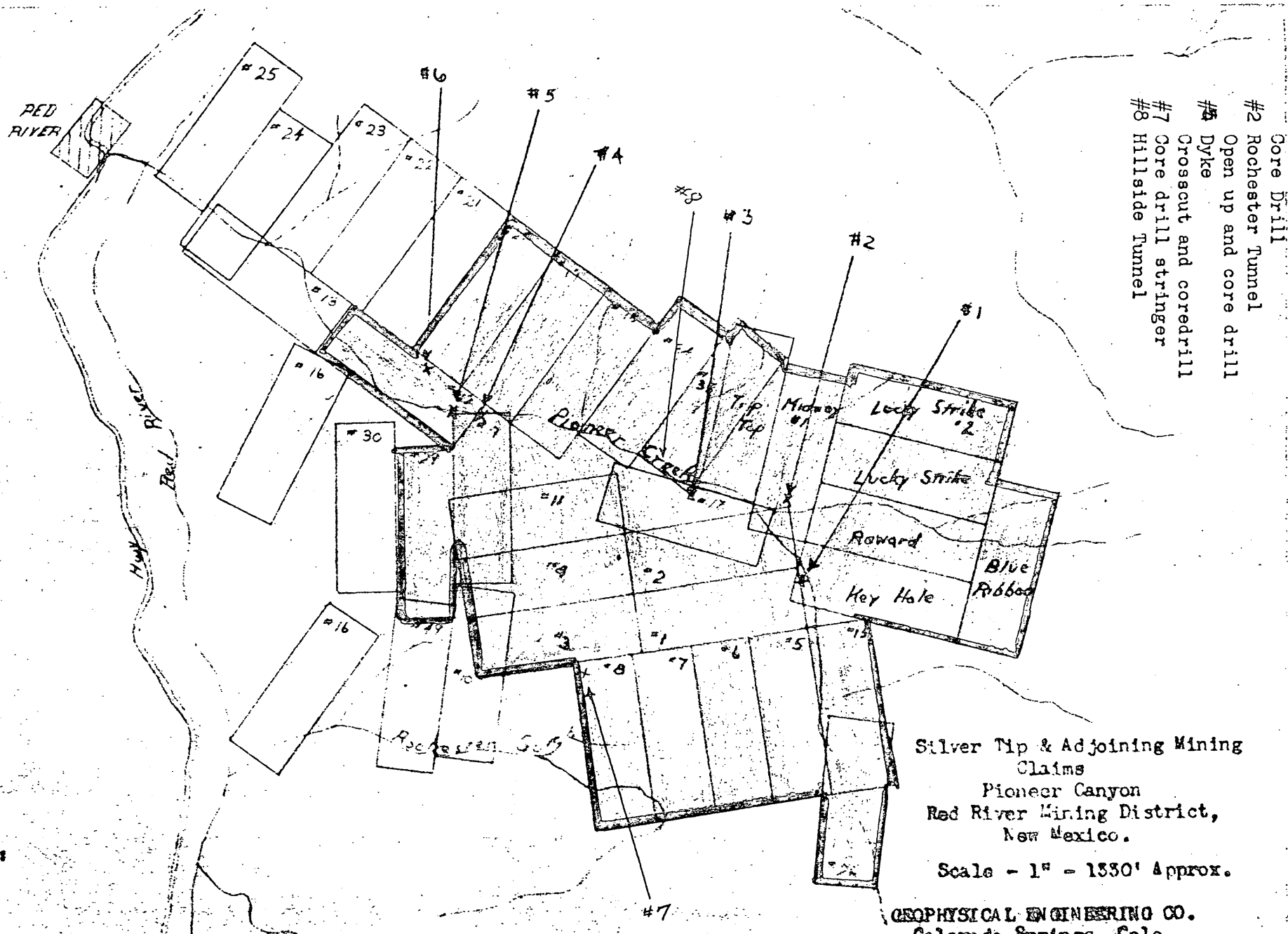
I have reviewed the data submitted to you, and it is accurate to the best of my knowledge.

Yours very truly,

Maynard M. Stephens

Maynard M. Stephens

MMS:mds



Silver Tip & Adjoining Mining Claims
Pioneer Canyon
Red River Mining District,
New Mexico.

Scale - 1" - 1330' Approx.

GEOPHYSICAL ENGINEERING CO.
Colorado Springs, Colo.
January 16th, 1956. GP-504

gend:

RED RIVER PROSPECT

by

Kickapoo Mining Co.

C O N T E N T S

I Financial Eligibility

II Applicants Rights in Land

III Physical Description

IV Accessibility of Property

V. Exploration Work

VI Experience

VII Estimate of Costs

I

Statement of Financial Eligibility

(a). Letters from two banks.

(b). None

(c). Thru supervision and engineering and paying cash for balance of work.

City National Bank

WICHITA FALLS, TEXAS

HARRY C. LANE
PRESIDENT

February 1, 1969

Kickapoo Mining Company
1407 Tilden
Wichita Falls, Texas

ATTENTION: Mr. M. M. Stephens

Re: Pioneer Canyon Prospect

Gentlemen:

You have requested a loan from this bank in the amount of $150,000 to be paid from ore production with interest at 6 per cent over a period of 5 years.

This is to advise that this bank does not engage in this type of financing and we must therefore decline your request.

Very truly yours,

Harry C. Lane

Harry C. Lane

HCL:ss

GRADY D. ATCHLEY
Vice President

THE FIRST-WICHITA NATIONAL BANK

WICHITA FALLS, TEXAS

February 1, 1965

Kickapoo Mining Company
1407 Tilden Street
Wichita Falls, Texas

Attn: Mr. Maynard M. Stephens

Dear Mr. Stephens:

This has reference to your application for a loan in the amount of $150,000 for a period of five years, payable monthly for the purpose of developing mining properties in Pioneer Canyon near Red River, New Mexico, owned by your company.

I regret to inform you that this loan does not meet the requirements of our loan policies and it is therefore necessary for us to decline the application.

Yours very truly,

G. D. Atchley
Senior Vice President

GDA/bn

II

Applicants Rights in Land

(a). We enclose a copy of our lease on these claims in this application. You will notice that this is a 99 year lease carrying a 3% Royalty to the lessors. There are no liens, mortgages, or other encumbrances.

(b). This property consists of one group of 34 claims, there is also another group of 5 claims, not adjoining the first group, futher up Pioneer Canyon that are included in this project, however no work is projected on them.

We enclose a plat of the Silver tip claims showing their location and existing workings on them. We also enclose the recording data and last years proof of labor.

You will notice that most of these claims were filed over 35 years ago and the assessment work has been performed and recorded every year since then.

MINERAL LEASE

THIS AGREEMENT made this 28th day of April, 1963, between R. T. Keeling

Mr. R. T. Keeling and wife Ruby Keeling

Bessie M. Young, widow

of Leona, Texas, herein called lessor (whether one or more), and R. L. Gohlke, Maynard Stephens, and Harry M. Feather, lessee:

1. Lessor in consideration of one Dollar ($1.00) in hand paid, receipt of which is hereby acknowledged, and of the royalties herein provided and of the agreements of the lease herein contained, hereby grants, leases and lets exclusively unto lessee for the purpose of investigating, exploring, prospecting, drilling, mining, minerals and surface, timber and water rights, storage facilities, buildings, pipe lines, power and telephone lines, and other things thereof to produce, save, take care of, treat, process, store, and transport said minerals and other products therefrom, and housing and otherwise caring for its employees, the following described land in Taos County, New Mexico, to-wit:

> Silver Tip group of claims Nos. 1 to 48, both inclusive, running approximately a mile and one half up Pioneer Canyon, and one and one half mile along Red River and adjoining the town of Red River New Mexico.

2. Notwithstanding and particular description, it is neverless the intention of the lessor to include within this lease, and he does hereby lease, not only the land so described but also any and all other land owned and claimed by lessor in this area.

3. Subject to the other provisions herein contained, this lease shall remain in force for a term of ninety nine (99) years from this date and as long there after as minerals and other products are produced from said land.

4. The lessor reserves a 3% royalty on all minerals or other products produced, delivered to custom mill or smelter, the mill or smelter schedule value per dry ton of each lot of ore, exclusive of any development or exploration allowances or payments, and reasonable trucking charges, the cost of railroad freight and treatment, assaying or special sampling charges incident to mill and smelter settlement.

5. All payments of royalty herein provided for, less credits, if any, shall be made by the lessee monthly by the 25th day of each month for all minerals shipped during the preceeding month and paid for prior to the first day of the current month.

6. Should it develop that the lessors are actually the owners of less than one hundred (100) per cent interest in the said mining claims as represented, or any part thereof, then and in that event the royalties to be paid to the lessors shall be reduced in the proportion that the interest owned by the lessors in said mining claims from which minerals are removed bears to the entire mineral interest.

7. The rights of either party hereunder may be assigned in whole or part and the provisions hereof shall extend to the heirs, executors, administrators, successors, and assigns, but no change or division in ownership of the land or royalties, however accomplished shall operate to enlarge the obligations or diminish the rights of the lessee.

8. Lessor hereby warrants and agrees to defend title to said land, and agrees that the lessee, at its option, may discharge any tax, mortgage, or other lien upon said land, and in the event lessee does so, it shall be subrogated to such lien with the right to enforce same and apply royalties accruing hereunder toward satisfying same.

9. Lessee, its successors and assigns, shall have the right at any time to surrender this lease, in whole or in part, to lessor or his heirs or assigns by notifying them sixty (60) days prior to the federal assessment work yearly deadline.

IN WITNESS WHEREOF, we sign the day and year first above written.

R T Kulsing
Ruby Kulsing
Bessie M. Young

THE STATE OF TEXAS

COUNTY OF

On this 8 day of May 1963, before me personally appeared R T Kulsing and Ruby Kulsing to me personally known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

Witness my hand and dfficial seal this the day and year last above written.

Commission Expires:

Notary Public

R. S. SHEPHERD
Notary Public

THE STATE OF TEXAS

COUNTY OF

On this 8 day of May 1963, before me personally appeared Bessie M. Young and _____ to me personally known to be the persons described in and who executed the foregoing instrument and acknowledged that they executed the same as their free act and deed.

Witness my hand and official seal this the day and year last above written.

Commission expires:

John R. Johnson
Notary Public

19422
9-4-64
11:00 AM

PROOF OF LABOR ON MINING CLAIM

STATE OF NEW MEXICO
County of Taos } ss.

R. L. Gohlke being first duly sworn deposes and says that the owners R. T. Keeling and Sons and Charles F. W. Young

of the unpatented mining claim in the Red River Mining District in said County and State, known and recorded by the name of Rochester Mining Group

caused to be done and performed the assessment work thereon required by law to be done upon such claim ..s. for the year 19..64 that thetime when such work was done in the month ..s.. of August and September 19..64 and the amount, character and the actual cost thereof were as follows:

Assaying, evaluation, and Labor

and that the names of the persons who performed such work are as follows:

R. L. Gohlke, and Maynard Stephens

This affidavit being made by the undersigned in conformity with Section 2315, Compiled Laws of 1897.

R. L. Gohlke

Subscribed in my presence and sworn to before me this 28 day of August A.D. 19..64.

Harry M. Fearer

Harry M. Fearer
Notary Public, Wichita County

4 11:00 AM

STATE OF NEW MEXICO
TAOS COUNTY CLERK AND RECORDER

№ 019422

Taos, New Mexico, ~~Aug~~ Sept 4th 19 64

Received of R. L. Gohlke $ 1.25

One dollar & 25/100 Dollars

For Recording Proof of Labor from R. L. Gohlke & etal to Rochester Mining Group (Red River)

Filing No. _____ Ursula L. Trujillo CLERK

Date Filed _____ By Leo Mt DEPUTY

2 Check No 1126 8-30-64 B

TAOS PRESS

#19424
9-4-64
11:12 AM

PROOF OF LABOR ON MINING CLAIM

STATE OF NEW MEXICO
County of Taos } ss.

R. L. Gohlke being first duly sworn deposes and says that the owners R. T. Keeling and Sons and Charles F. W. Young

of the unpatented mining claim in the Red River Mining District in said County and State, known and recorded by the name of Silver Tip Claims No. 1 thru 48 and mill Site caused to be done and performed the assessment work thereon required by law to be done upon such claim for the year 1964; that the time when such work was done in the month s of August and September 1964 and the amount, character and the actual cost thereof were as follows:

Assaying, evaluation, and labor

and that the names of the persons who performed such work are as follows:

R. L. Gohlke and Maynard Stephens

This affidavit being made by the undersigned in conformity with Section 2315, Compiled Laws of 1897.

R. L. Gohlke

Subscribed in my presence and sworn to before me this 28 day of August A.D. 1964

Harry M. Feather

Harry M. Feather
Notary Public, Wichita County

4 11:12 AM

No 019424

STATE OF NEW MEXICO
TAOS COUNTY CLERK AND RECORDER

Taos, New Mexico, Sept 4th 1964

Received of R. L. Gohlke $1.25

One dollar & 25/100 Dollars

For Recording Proof of Labor from R. L. Gohlke & etal to Silver Tip Claims No 1 Thru 48 & Mill Site in Red River

Filing No.

Ursula L. Trujillo CLERK

Date Filed

By Leopoldo Martinez DEPUTY

3 Check No 1126 8-30-64

#19430
9-4-64
1:18 PM

PROOF OF LABOR ON MINING CLAIM

STATE OF NEW MEXICO
County of Taos } ss.

R. L. Gohlke being first duly sworn deposes and says that the owners R. T. Keeling and Sons and Charles F. W. Young

of the unpatented mining claim in the Red River Mining District in said County and State, known and recorded by the name of Anderson Mining Group and the Crow Mining Group

caused to be done and performed the assessment work thereon required by law to be done upon such claim ..s. for the year 1964; that thetime when such work was done in the month ..s... of August and September 19..64 and the amount, character and the actual cost thereof were as follows:

Assaying, evaluation and labor

and that the names of the persons who performed such work are as follows:

R. L. Gohlke and Maynard Stephens

This affidavit being made by the undersigned in conformity with Section 2315, Compiled Laws of 1897.

R. L. Gohlke

Subscribed in my presence and sworn to before me this 28 day of August A.D. 1964

Harry M. Feather
Notary Public, Taos County

4 1:18 PM

No 019430

STATE OF NEW MEXICO
TAOS COUNTY CLERK AND RECORDER

Taos, New Mexico, Sept 4 1964

Received of R. L. Gohlke $1.25

One dollar & 25/100 Dollars

For Recording Proof of Labor from R. L. Gohlke to Anderson Mining Group & the Crow Mining Group in Red River

Filing No.

Ursula L. Trujillo CLERK

Date Filed

By Les Mt DEPUTY

4 Check No 1126 8-30-64

#19421
9-4-64
10:54 AM

PROOF OF LABOR ON MINING CLAIM

STATE OF NEW MEXICO }
County of Taos } ss.

R. L. Gohlke being first duly sworn deposes and says that the owners R. T. Keeling and Sons and Charles F. W. Young

of the unpatented mining claim in the Red River Mining District in said County and State, known and recorded by the name of Moberg Group

caused to be done and performed the assessment work thereon required by law to be done upon such claim ...s for the year 19.64; that thetime when such work was done in the month .s.... of August and September 19...64 and the amount, character and the actual cost thereof were as follows:

Assaying, evaluation, and labor

and that the names of the persons who performed such work are as follows:

R. L. Gohlke and Maynard Stephens

This affidavit being made by the undersigned in conformity with Section 2315, Compiled Laws of 1897.

R. L. Gohlke

Subscribed in my presence and sworn to before me this 28 day of August A.D. 19 64

Harry M. Feather
Notary Public Wichita County

10:54 AM.

No 019421

STATE OF NEW MEXICO
TAOS COUNTY CLERK AND RECORDER

Taos, New Mexico, Sept 4th 1964

Received of R. L. Gohlke $1.25

One dollar & 25/100 Dollars

For Recording Proof of Labor from R. L. Gohlke relative to Moberg Group in Red River

Filing No. Ursula L. Trujillo CLERK

Date Filed By Leo Mb DEPUTY

Check No 1126 8-30-64

(a). On the plat showing the claims you will notice that most of the workings are shown. There are innumerable holes, cuts, and adits on these claims. Nearly all were made back in the 1900s. Very little work has been done since then. There are no production facilities.

(b). We did not have any interest in the operations described above.

(c). As far as we have been able to find out there has been no production on this property.

(d). There has been no coredrilling on this property and the only information we have is confined to some old assay reports, which are included.

(e). We enclose part of a report published by the Bureau of Mines of New Mexico:

Circular 18
Geology and Ore Deposits of Red River and Twining Dist., Taos County, New Mexico
A Preliminary Report
By Charles E. Park, Jr., and Philip F. McKinley

We think that this report covers the subject very thoroughly.

(f). Minerals showing on these claims consist of Gold, Silver, Molybdenite, Galena, Sphalerite, Pyrite, Hemitite, Malachite, Azurite, and Huebnerite.
Acording to the old assays there were several good showings of Silver. We think that these justify checking.

(g). We enclose two copies of this report and request that they be returned after you have finished with them.

terrace along parts of the river is probably reworked outwash material from the glaciers. The present Red River is entrenched from 10 to 30 feet into these gravel deposits.

GEOLOGY

Only a short description of the rocks is included in this report as the microscopic examinations are not completed.

Metamorphic rocks

Pre-Cambrian rocks. -- Rocks of pre-Cambrian age crop out along the southern and eastern limits of the area. They consist of coarse hornblende gneiss, quartzite, amphibolite, and quartz mica schist. The trend of the foliation and compositional layering of these metamorphic rocks averages about N. 70° E., but ranges between N. 45° E. and N. 85° E. The dip of the foliation is usually steeper than 60 degrees, though in a few outcrops it is nearly horizontal.

A granite, probably of pre-Cambrian age, has intruded these older rocks and has been considerably metamorphosed and recrystallized. Locally it is gneissic and is spotted with salmon-colored orthoclase and white albite. A contact phase of granite with feldspar and quartz predominating fills cracks that cut the foliation, and locally replaces the schist or gneiss, making it difficult to distinguish the contact rock from the granite.

Hornblende gneiss trends about N. 30° E. across the southern part of the area from Frazer Mountain to a point near the Ditch Cabin. This gneiss is roughly foliated, and contains hornblende or biotite, as well as altered feldspar with muscovite or chlorite flakes commonly scattered throughout.

Much of the weathered gneiss shows small nodules, about 3 mm. in diameter, that are thought to be quartz or one of the metamorphic minerals.

Large outcrops of pre-Cambrian schist are found in the southern part of the area. The schist essentially contains the same minerals as the gneiss, namely hornblende with some feldspar, mica, and quartz.

Dark greenish amphibolite is abundant in the pre-Cambrian rock, occurring interbedded with the schist and gneiss. The rock is granular and consists of hornblende with some feldspar and quartz.

Quartzite crops out on Bitter Creek and on the headwaters of Bobcat Creek along with the gneiss. The quartzite occurs in massive layers, is colorless to dark pink, and contains flakes of muscovite.

In the vicinity of Gold Hill are sedimentary and igneous rocks of unknown age that have been highly folded and metamorphosed to chlorite schists, talc schists, quartz mica schists, and metamorphic gabbros. A few limestone lenses are associated with the schists and apparently grade into them. The foliation of these rocks is approximately parallel to that in the pre-Cambrian metamorphics.

Sedimentary rocks

Paleozoic rocks. -- Sedimentary rocks of Pennsylvanian age occur in the southeastern part of the region. They consist of bedded fossiliferous limestones, sandstones, and layers of grit or arkosic conglomerate. These rocks appear to be faulted against the pre-Cambrian rocks.

Rocks similar to the Paleozoic sediments appear near the mouth of Placer Creek, south of Bear Creek, in scattered outcrops on Goose Creek, and in small bodies in the granodiorite on Mallette and Bitter Creeks.

These strata contain a few questionable organic remains, and consist of thin-bedded limestone, dolomite, and quartz conglomerate. The beds are closely associated with the metamorphic rocks and in places may be folded in with the older rocks. Conglomerate on Bitter Creek contains pre-Cambrian fragments near its base and indicates an unconformity with the older rocks. Strikes of the beds range from N. 10° W. to N. 50° E., and dips are rather gentle, ranging from 10° to 40°.

Tertiary gravels. -- A high-level gravel forms the tops of many of the flat ridges at altitudes of 9,500 to 10,500 feet in the Red River and Twining districts. The gravel principally contains well-rounded boulders, cobbles, and pebbles of pre-Cambrian quartzites and schists, but pebbles and cobbles of Tertiary andesite are present. The gravel is thought to be of late Tertiary age.

The high-level gravels are described by Ellis, 7/ who studied them around the town of Red River and concluded that they represented till deposited by a glacier lobe which extended westward from a Moreno Valley glacier. Ray and Smith 8/ examined the Moreno Valley and decided that there was no evidence of a large glacier having occupied the valley.

Additional mapping shows that the gravels extend farther to the south and east than was previously realized, and could hardly have been deposited from a Moreno Valley glacier.

7/ Ellis, R. W., op. cit.

8/ Ray, L. L., and Smith, J. F., Jr., Geology of the Moreno Valley, N. Mex.: Geol. Soc. America Bull., vol. 52, no. 2, pp. 177-210, February 1941.

Valley alluvium. -- Recent alluvium is confined to the valley floors, but the mapping includes both talus slopes adjacent to the valleys and glacier debris in the upper parts of the streams.

Igneous rocks

Pre-Cambrian granite. -- Pinkish granite, which consists essentially of pink and white feldspar and quartz with small amounts of biotite or hornblende, intrudes the pre-Cambrian metamorphic rocks. Much of the granite is gneissic with an elongation of the dark minerals. Alteration of the biotite to chlorite is common, but the feldspars are usually fairly fresh. A contact zone around the edges of the granite is a mile or more wide. Additional mapping to the west, south, and east is necessary before the extent of the granite mass is known exactly.

Pegmatite. -- Pegmatites that occur in the pre-Cambrian rocks may be related to the granite. These pegmatites contain pink orthoclase, a white feldspar, quartz, and muscovite. In general, they are small and irregular and probably have no commercial importance.

Green tuff. -- Rocks in this formation include a greenish to whitish tuff, an altered fine-grained diorite or andesite, and a gray andesite. These rock types can be mapped separately in some areas, but appear to grade into each other. The diorite and green tuff are chloritized and altered, but the gray andesite is relatively fresh and is probably the youngest. The gray andesite locally appears to grade into typical volcanic breccia.

The country rock of upper Bitter Creek is mainly green tuff, and older rocks were not recognized, though possibly some have been included.

Granodiorite. -- Granodiorite occurs around the town of Red River and extends for several miles west, north, and northeast of the town. Within this area only scattered outcrops of the invaded rocks, metamorphic rocks, Paleozoic sediments, and green tuff are recognized. The granodiorite contains pinkish orthoclase (?) and white plagioclase, possibly oligoclase, with small quartz crystals scattered throughout. The only dark mineral present is biotite which occurs as small well-developed phenocrysts, varying from about 2 to 5 percent. In places the rock is nearly all quartz and feldspar and is similar to the soda granite found at the Questa molybdenum mine.

Monzonite. -- A rock similar to the granodiorite, but as a rule containing more dark minerals, occurs throughout the district and has been mapped as monzonite. It occurs in small bodies as dikes, sills, or irregular plugs. A dike swarm south of Red River town trends about N. 30° E., but north and east of the town the trend swings to N. 20° W. In the field it was difficult to distinguish between the granodiorite and the monzonite, and actually the monzonite dikes may be a variation of the granodiorite intrusive. Intrusion of the two rocks probably occurred about the same period, although good examples of the granodiorite cut by monzonite dikes were seen. The monzonite cuts most of the rock formations in the districts.

Minerals occurring in the monzonite are orthoclase, plagioclase, biotite, and hornblende.

Monzonite porphyry. -- Long, narrow dikes of monzonite porphyry crop out in the northern part of the districts. These dikes cut the

metamorphic rocks and the granodiorite. One of the most impressive outcrops is about one mile up Placer Creek, and trends about N. 20° E. for more than 1½ miles to the slope just south of Red River town. North of the town is a badly altered dike that may be a continuation of the same porphyry, though this is uncertain. Several similar dikes occur in the region; a prominent one crosses the switchbacks on Red River Pass and extends across the lower part of Bobcat Creek. Rhyolite porphyry dikes that crop out in and near the granodiorite are possibly related to the monzonite porphyry as the phenocrysts are the same. The lighter color of the rhyolite porphyries is generally caused by alteration and leaching.

Minerals in the monzonite porphyry are orthoclase, quartz, and albite (?). Orthoclase occurs in crystals from 1 to 2 inches long, and small white crystals believed to be albite are characteristic. Quartz is in phenocrysts up to three-fourths of an inch in diameter. The quartz crystals are somewhat rounded, while the orthoclase and albite phenocrysts have sharp outlines. Small crystals of biotite and hornblende are seen in the fine-grained groundmass.

Rhyolite. -- A large body of rhyolite lies south and east of Relica Hill (Fig. 2). This rhyolite is probably an intrusive plug, although the contacts are in general obscure and there is no direct evidence other than its shape, a high rounded dome, to support such a conclusion. At Table Rock, to the west of the main mass, the contact between the rhyolite and the metamorphic rocks is a breccia. On a fresh surface the rhyolite has a white, sugary appearance and resembles quartzite. Small quartz and feldspar crystals are best seen on weathered surfaces.

In the northern part of the area the green tuff and granodiorite have been intruded by many dikes and bodies of rhyolite.

Volcanic breccia. -- Several different rock units are included in the volcanic breccia, but few of these units can be recognized throughout the district. A fine-grained purplish to reddish tuff containing numerous white inclusions is the lowest unit. Above this is a coarser-grained tuff which is usually greenish and contains small fragments of andesite. With these two basal tuffs are dense flows of purple hornblende andesite and gray andesite that grade upward into coarse purple breccia. This breccia is best seen on lower Goose Creek and in the nearby valley of the Red River. It is of pyroclastic origin and contains boulders and fragments as large as 3 feet in diameter. Nearly horizontal flows of dense glassy andesite top many of the ridges and are included in the breccia.

Only the tuff appears to be intruded by monzonite and monzonite porphyry dikes. The coarse breccia and andesite flows are not cut by the monzonite or the granodiorite; north of Goose Creek the breccia formation appears to rest on an older surface of monzonite.

Basalt dikes. -- Basalt dikes are found along the eastern border of the district, and occasionally elsewhere. They are dark and fine-grained with only a few phenocrysts large enough to be seen. They are common in areas of pre-Cambrian rocks. Those in the Tertiary volcanics are fresh and are probably the latest intrusive in the district.

Structure

The limited extent of the area examined during the field work makes it impractical to draw conclusions on the regional geology and

structure of the Sangre de Cristo Mountains. Publications numbers 1, 3, 4, 12, 13, 14, and 19 in the bibliography deal with the general geology and regional structure of the nearby Rocky Mountain area.

In this area compressional forces appear to be responsible for the major geologic structure. Several important fault zones were recognized, two of which are normal type, between younger rocks on the downthrown side and older rocks on the upthrown side. These normal fault zones contain numerous slivers, some of which are hundreds of feet wide and a mile or more long. They are possibly curved breaks around the borders of the downthrown Tertiary volcanic area.

Small faults and shear zones are abundant. They strike in almost any direction, though the majority trend between N. 30° E. and N. 50° E. Silicified veins, along which some movement has occurred, fall into two groups; one group trends between N. 10° W. and N. 10° E., and the other trends between N. 65° E. and S. 70° E.

The trend of the monzonite dikes is about N. 30° E. south of Red River town, but changes to N. 20° W. north and east of Red River. Their position and alignment suggest that the dike swarms are intruded along tension fractures developed on a large anticline.

Metamorphism has greatly obliterated original structures in the pre-Cambrian, though such structures appear in the metamorphic rocks near Gold Hill. The compositional layering, bedding where known, and schistosity in these metamorphic rocks trend in general N. 70° E. and are usually inclined about 60 degrees or more. In Long Canyon and the Gold Hill areas, the metamorphic rocks are compressed into tight isoclinal folds.

Folding in the younger rocks is difficult to interpret without further mapping. Paleozoic (?) sediments in the northern part of the area strike generally north, dip 25° E. along the eastern border and from 20° to 30° W. on the western boundary. This suggests that an open fold crosses the area with its axis striking approximately north.

Attitudes in the volcanic breccia are uncertain because of the massive nature of the deposit. The few dips within the volcanic breccia are of little value as they were probably formed on steep slopes or are due to slumping.

ORE DEPOSITS

General Statement

Mining in the Red River and Twining districts began around 1869 with prospecting for both placer and lode gold. From this period until the early 1900's the region was swarming with prospectors; most of the favorable areas were staked and worked extensively for gold and copper. Lead-silver prospects were described by early writers, but these deposits were of little consequence.

Several high-grade gold pockets were mined, but no large deposits were found. A combination of low-grade ore, ground-water flooding, and land disputes with the Sangre de Cristo Grant in the late 1800's forced many of the prospectors to abandon their workings. Since the turn of the century, little mining has been done, though efforts were made to operate the Independence, Caribel, Memphis, and Black Copper mines. As most of the workings are inaccessible, little first-hand underground

information was obtained. No mines are operating in the district at the present time, except the Questa molybdenum mine, which lies west of the area mapped.

Ore minerals are associated with quartz veins and shear zones in the metamorphic rocks, with silicified breccia zones in the Tertiary rocks, and with contact metamorphic deposits west of the mapped area.

Rock alteration

The area west of Pioneer and Bitter Creeks is underlain largely by intensively altered granodiorite and the border zones of this intrusive. The altered rocks continue westward beyond the mapped area and include the country rock of the Questa molybdenum mine and other prospects further to the west. The area is conspicuously marked by many large precipitous slides which are highly colored and are immediately noticed upon entering the region. During heavy rains these slides frequently wash across the roads and deposit muddy debris.

The colors of the altered rocks are predominantly light brown and creamy, though red, dark brown, and white rocks are present. The material consists essentially of sericite and fine-grained silica and, where unweathered, much of it is spotted with many tiny pyrite crystals. The alteration products have not been studied microscopically and it seems likely that clay minerals and other alteration products, such as alunite, may well be present. Numerous small stringers of quartz are widely scattered and many contain small amounts of pyrite, chalcopyrite, molybdenite, and fluorite.

The extensive alteration, which strongly resembles the alteration zones around many well known mining districts, is indicative of extensive hydrothermal activity. This evidence, coupled with the very widespread, though generally weak mineralization, furnishes the hopes for the districts in the future. It is always possible that orebodies of considerable size and value may be found in an area where hydrothermal activity is so extensive.

Deposits associated with metamorphic rocks

Deposits south of Gold Hill contain magnetite and specularite interbedded with quartzite, but the bodies are small and of little value.

Massive quartz veins and pegmatites believed to be related to the pre-Cambrian granite cut the metamorphics. They contain tourmaline, epidote, and pyrite, galena, chalcopyrite, and malachite in small quantities.

Quartz veins near Table Rock on the West Fork of the Red River are on the western contact of the rhyolite plug. A little galena, which carries about 18 ounces of silver per ton, 9/ occurs in the fractured quartz and a few copper stains are present.

Copper minerals are found in a large shear zone which trends N. 80° E. from the old Frazer camp at Twining across Bull of the Woods Mountain. Minerals recognized are bornite, chalcopyrite, chalcocite, malachite, and azurite.

9/ Assay by R. A. Matuszeski of the New Mexico Bureau of Mines and Mineral Resources.

Deposits in Tertiary rocks

In the northern part of the area the rocks are predominantly Tertiary volcanics and the ore deposits occur in quartz veins and fracture zones. Gold is the chief metal of the deposits, however, copper was sought in a few properties near Red River town. The ores are in pockets and are disseminated with pyrite throughout the fracture zones and country rock. Molybdenite and galena are found in small amounts in several prospects; at the Questa mine molybdenite is the ore mineral.

Contact metamorphic deposits

Contact metamorphic deposits occur west of the area mapped along the lower parts of the Rio Hondo, in the canyon east of the mouth of Columbine Creek, and north of Cabresto Creek. The deposits are in metamorphic rocks near granodiorite or granite. An interesting deposit of this type is the Hornet on Cabresto Creek. This deposit lies between quartzite and a granodiorite sill (?) where a zone of calcite, epidote, and garnet, with galena and sphalerite crops out. B. J. B. molybdenum, Horseshoe, and Nickel Plate are other promising prospects in the contact metamorphic zone.

Ore minerals

The following minerals were recognized during the field examination.

Mineral	Composition
Graphite	C
Gold	Au
Silver	Ag
Molybdenite	MoS_2

Mineral	Composition
Galena	PbS, often contains disseminated silver
Chalcocite	Cu_2S
Sphalerite	ZnS
Bornite	Cu_5FeS_4
Chalcopyrite	$CuFeS_2$
Pyrite	FeS_2, may contain gold
Hematite	Fe_2O_3
Fluorite	CaF_2
Magnetite	$FeO \cdot Fe_2O_3$
Malachite	$CuCO_3 \cdot Cu(OH)_2$
Azurite	$2CuCO_3 \cdot Cu(OH)_2$
Huebnerite	$MnWO_4$

Gangue minerals

Mineral	Composition
Calcite	$CaCO_3$
Chlorite	$H_8(Mg,Fe)_5Al_2Si_3O_{18}$
Epidote	$HCa_2(Al,Fe)_3Si_3O_{13}$
Garnet, almandite (?) grossularite (?)	$Fe_3Al_2(SiO_4)_3$ $Ca_3Al_2(SiO_4)_3$
Limonite	$2Fe_2O_3 \cdot 3H_2O$
Quartz	SiO_2
Sericite	$H_2KAl_3(SiO_4)_3$
Tourmaline	$H_9Al_3(B \cdot OH)_2Si_4O_{19}$ Also H may be replaced by alkalies or Mg, Fe, Ca

PRODUCTION

Most of the prospecting in the Red River and Twining areas was done during the heyday of the mining around Elizabethtown, and any gold recovered was probably absorbed in the much larger production of the Elizabethtown district. A small amount of gold was obtained from the placer diggings on Placer Creek, and possibly a little from other workings. Some copper was also recovered from the old Frazer copper mine at Twining, though the amount is not known. In any case, the production has been very small.

ECONOMIC POSSIBILITIES

The fact that the Red River and Twining areas have been extensively prospected and have had several unsuccessful mining enterprises is a deterrent to development in the districts. The extensive hydrothermal alteration and the widespread mineralization are, however, encouraging signs. Most of the early-day prospecting was for gold in deposits related to the Tertiary rocks, especially to the monzonite. These deposits are lenticular or in small pockets and the chances of finding a large body of gold are unlikely.

Future prospecting in the districts possibly should be directed toward the discovery of fluorite, huebnerite, molybdenite, galena, and other minerals likely to have been passed over by the early gold seekers. The most favorable area for possible development of base metal deposits appears to be the contact zones around the granodiorite. No detailed examination has yet been made of this contact, although several favorable surface outcrops were seen along it.

PROSPECTS AND MINES

Mines and prospects in the southern part of area

Frazer copper prospect. -- The Frazer copper prospect is on a steep slope east of the old town of Twining, New Mexico. A description of the property is given by Lindgren, 10/ who visited the mine in 1904 (?). Considerable development work has been done, but the mine was not profitable and was closed about 1904. During 1942-1943 parts of the old workings were cleaned out by T. B. Everhart, but little additional work was done. All of the rather extensive tunnels and shafts are now caved, and it was impossible to examine the deposit underground, though surface exposures were good.

The country rock is pre-Cambrian amphibole and talc schist that is badly crumpled in a shear zone 200 feet wide. Foliation in the country rock is N. 80° E. approximately parallel to the trend of the shear zone. Copper minerals -- chalcopyrite, bornite, chalcocite, malachite, and azurite -- coat the shear planes and joints. Most of the copper minerals are concentrated in two 6-foot wide zones within the main shear belt. These mineralized zones are separated by 80 feet of very low-grade or barren schist. The mineral on the surface is low-grade and unless the deposit is more extensive or better in depth than on the surface, it could hardly be worked at a profit.

Highline copper prospect. -- The Highline copper prospect is immediately south of the crest of Bull of the Woods Mountain on the ridge between

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10/ Lindgren, Waldemar, Graton, L. C., and Gordon, C. H., The ore deposits of New Mexico: U. S. Geol. Survey Prof. Paper 68, pp. 83-84, 1910.

Rio Hondo and the Middle Fork of Red River, and is on the eastward continuation of the Frazer copper shear zone. Owners are Joe Cannard of Red River and Elmer Burch of Taos, New Mexico. An old shaft on the ridge is about 25 feet deep and follows a mineralized zone 4 to 6 feet wide. The ore minerals are the same as those found at the Frazer copper prospect, however, copper carbonates are more abundant. On the east side of the ridge the mineralized zone is opened by a 30-foot adit and several small cuts.

No assays were made, but the ore appears to be too low-grade to be of commercial value unless a very large body is uncovered. The inaccessibility of the deposit is also a handicap.

MnO_2, Commonwealth, Iron Dyke, and Commodore Lode claims. -- All these claims, except the MnO_2 claim, are on the ridge between Gold Hill and Bull of the Woods Mountain, and are owned by Joe Cannard and Elmer Burch. The MnO_2 claim lies east of the West Fork. No recent work has been done, and all of the workings are caved and slumped. On the Commonwealth claim chalcopyrite, malachite, azurite, and specularite were found in small quartz nodules. On the MnO_2 claim a poorly mineralized zone of magnetite and quartzite, 20 feet wide, trends S. 60° W. at 57° N. A trace of manganese and considerable magnetite occur in a sample of the quartzitic rock from this claim. Specularite occurs on the Iron Dyke claim, and a few stains of copper oxides and flecks of sulfides are found on the dump of the Commodore Lode. All of these deposits are in the metamorphic rocks near Gold Hill. There has been no recorded production from these claims.

Silver Star claim. -- The Silver Star claim is about 300 feet south of Table Rock on the West Fork of the Red River. Several prospect holes expose narrow irregular quartz veins, though no development work has been done for many years. The upper of two old adits is now caved but the lower, on the Elizabethtown ditch, goes into the hill several hundred feet. It is said that $500 in silver were recovered from about 6 tons of ore shipped to Colorado from the upper adit. Three quartz veins, each less than one foot wide, are exposed in a 15-foot zone at the portal of the upper adit. The general trend of the veins is N. 85° W. and the dip is 20° N. Fine-grained galena, one assay of which indicated about 18 ounces of silver per ton, is associated with the quartz. Green copper carbonate and limonite are found in fractures in the quartz. The country rock consists of the metamorphic rocks found near Gold Hill.

Black Copper mine. -- The Black Copper mine is on the north side of Black Copper Canyon about 1,000 feet vertically below the Elizabethtown ditch. The mine is about 7 miles by road from the town of Red River. A five-stamp mill in poor condition is still standing. The workings consist of a shaft, a short upper adit which is open, and a lower adit trending S. 70° E. that is caved 177 feet from the portal. Another adit below and west of the above workings is flooded. The country rock is monzonite and altered basic dike rock in the lower adit, and gneissic pre-Cambrian granite in the upper adit. A shear zone, 1 to 3 feet wide, in the upper adit strikes S. 70° E. and stands nearly vertical. Quartz and pyrite are the principal minerals, and a little chalcocite is scattered throughout the quartz. The finding of a rich pocket of gold ore was reported by several people

who worked on the property, but no records have been found to substantiate this.

Mines and prospects on Bitter Creek

Memphis mine. -- The Memphis mine owned by the Kerschner Brothers of Red River is on the east side of Bitter Creek Canyon, 5 miles from the town of Red River. A primitive road extends from Red River up Bitter Creek to within a mile of the mine. Development work was started in the early 1900's and continued sporadically through 1943. A good detailed report on the mine was made by J. B. Tenney in 1940. Since then, additional work based on Tenney's recommendations has been completed. The average value of samples taken by Tenney are as follows:

Level number	Average value Gold and silver per ton
1	$19.78
2	5.00
3	5.00
4	7.96
Raise	16.56

Tenney estimated in 1940 that 5,300 tons of ore could be mined at a net profit of $5.50 per ton. A strong east-west vein which dips 60° S. has been opened by 4 adits at different levels. All of these adits are caved at the portals, but most of the work is concentrated on the lowest level. This level is said to be over 400 feet long with two stopes above it and one raise 30 feet high. The country rock is a rhyolite dike. Considerable druzy quartz that appears to replace a breccia was found on the dumps.

Independence mine. -- The Independence mine is in the Bitter Creek Canyon, 5½ miles up the creek from Red River and about half a mile above the Memphis mine. When the mine was working, the ore was hauled over a wagon road to Moreno Valley. Four miles of this old road nearest the mine are washed out and impassible. A report on the Independence mine, made by Graton [11/] in 1910, states that in 1905 ore was shipped that carried from $400 to $500 in gold per ton. The principal adit just east of Bitter Creek was accessible though badly caved at the portal. This adit is 420 feet long to cave, and a side drift near the portal is 100 feet long to face. (See Fig. 3.) A winze 250 feet from the portal is full of water. The main adit is on a sheared and silicified zone that trends N. 80° E. and dips about 85° S. Quartz lenses and stringers in this sheared zone range from 1 inch to 1 foot in width. Light gray gouge throughout the sheared zone is composed mainly of finely ground quartz. The monzonite country rock is sericitized and silicified along this shear zone.

Pyrite is found throughout the altered monzonite and occasionally in the quartz stringers. An assay of quartz taken from the shear zone shows a trace of gold and 0.22 ounces of silver per ton. [12/] Petzite, a gold telluride, was thought by Graton to have been one of the minerals in the high-grade ore, however, it was not found by the authors in their field work.

11/ Lindgren, Waldemar, Graton, L. C., and Gordon, C. H., op. cit.

12/ Assay by R. A. Matuszeski of the New Mexico Bureau of Mines and Mineral Resources.

Enderman prospect. — This prospect is on the west side of Bitter Creek at the end of the dirt road, 4 miles from Red River. The prospect adit is open and a map was made of the accessible workings. (See Fig. 4.) Pre-Cambrian gneiss is cut by several strong shears that contain considerable gouge. Samples analyzed by R. A. Matuszeski show a trace of silver and molybdenum but no ore in quantity.

Pete Deldosso prospect. -- This prospect owned by Pete Deldosso of Red River is about half a mile up Bitter Creek from the Independence mine. The workings consist of a 200-foot adit with several short crosscuts. These crosscuts follow along weak shear zones that trend between 30° N. and 60° E., and dip steeply to the southeast. A fine-grained sericitized and silicified monzonite is the country rock. A little quartz occurs along the shear zones, but no ore minerals are present. (See Fig. 5.)

Big Five, Edison, Anchor, and Cashier mines. -- All of these mines are from 2 to 4 miles north of the Independence mine near the head of Bitter Creek. For years there has been no underground work on any of the properties except the Edison, and all of them are caved. The country rock is altered greenish tuff and altered monzonite. The workings are on veins in shear and silicified zones. Jack Brandenburg, who worked in the Edison mine, reported that a rich gold streak, generally less than one foot wide, was worked for a short time but that a heavy flow of ground water forced the mine to close.

Midnight mine. -- This mine, operated during the late 1890's, is at the head of Bitter Creek. The inclined shaft is now caved. Material on the dump appears to be badly altered green tuff along with some mineralized

quartz. Very little information was available concerning the old workings. The lode was relocated on July 29, 1947, by M. A. Pratt.

Prospects on Placer Creek

Many prospects in the Placer Creek drainage have been abandoned for years. Most of the openings are caved and overgrown, and very little information is available. In general the workings follow broken and silicified zones in the monzonite, or are along the contacts of monzonite dikes and intruded rocks. Very little work has been done in the volcanic breccia, though at least two adits were driven in this formation.

Buffalo No. 1. -- The main Buffalo workings are 2 miles from the mouth of Placer Creek and are reached by a steep, badly washed wagon road from State Highway 38. The portal of the main adit is caved, but the size of the dump indicates a thousand or more feet of workings underground. Dump material is predominantly volcanic breccia with some altered monzonite and a small amount of silicified and pyritized breccia. From local reports, and judging from material on the dump, very little of the material was ore.

Buffalo No. 2. -- Buffalo No. 2 prospect is near the head of the north branch of Placer Creek. An adit on the property is open and extends S. 85° W. for 360 feet into the hill. (See Fig. 6.) The country rock in the mine is tuff belonging to the volcanic breccia formation. The adit was driven along a broken and silicified zone in the tuff; 50 feet from the portal, a small fault crosses the adit trending N. 40° E. Several minor shears trending north-south also cross the silicified zone. East of the portal a monzonite dike trending N. 30° E. crosses the canyon. Pyrite is scattered throughout the volcanic breccia and silicified zone, but ore minerals are lacking.

Buffalo No. 3. -- Buffalo No. 3 is on the divide between the heads of the two branches of Placer Creek. The portal to the adit is caved. Green tuff, volcanic breccia, and monzonite are on the dump, but very little mineralization was seen.

Prospects on Pioneer Creek

Along lower Pioneer Canyon are many old prospects, several of which have been recently reopened and timbered. These adits are in the granodiorite along sheared and silicified zones. Pyrite is common in the silicified zones, but other sulfides are scarce. Molybdenite is reported [13/] but was not seen.

Silver Tip group. -- This group of prospects is in Pioneer Canyon approximately 2 miles south of Three Canyon Camp in Red River town. The owners are Mrs. L. M. Smith of Red River, C. Young of Leaque, Texas, and R. T. Keeling of Leona, Texas. The workings are extensive, though many of the adits are caved at the portals. The country rocks are limestone, grit, and conglomerate of Paleozoic (?) age that are intruded by many monzonite dikes. Along the contacts of the dikes slight metamorphism of the sediments was noticed. Limestone especially has been silicified and a little epidote was formed.

The main Silver Tip tunnel is caved, but the extensive dump contains monzonitic dike rock, metamorphosed limestone, and conglomerate. With the exception of pyrite, no ore minerals were observed on the dump. South of the portal sedimentary rocks strike north and dip 35° W. They are cut by a monzonite dike which strikes N. 20° E.

13/ Eng. and Min. Jour., News Item, p. 101, December 1947.

An open prospect in the Silver Tip group lies near the property line just north of the Midway claims. The workings consist of an adit striking S. 80° E. for 200 feet, and a drift 120 feet from the portal that extends 100 feet to the south. The country rock is Paleozoic (?) limestones and shales cut by granodiorite dikes. A coarse conglomerate is found in the face of the east-west adit. Considerable movement has taken place on the contacts between the sediments and granodiorite. About 100 feet from the portal of the adit, a silicified zone 3 feet wide strikes N. 10° W. and dips 60° E. (See Fig. 7.)

Midway prospects. -- The Midway claims owned by Harry Moberg and brother of Red River, lie south of the Silver Tip claims on Pioneer Creek. The property is prospected by an adit said to include over 2,000 feet of workings. The adit is inaccessible, but rocks on the dump are metamorphic rocks and monzonite. The sedimentary rock is commonly silicified but ore minerals are scarce, though a few copper stains were seen. A short prospect adit on the southern part of the property starts in metamorphic rock and ends in a monzonite dike. A slip contact between the two rocks trends N. 10° W. and dips 50° E.

Inferno (?) prospect. -- The caved adit of this prospect lies south of the Midway claims on the west side of Pioneer Creek. The predominant rock on the large dump is monzonite with small amounts of sandstone and limestone. A little pyrite was seen.

Caribel mine. -- The Caribel mine is on the west side of Pioneer Creek, 4½ miles from Red River. The caved mine workings lie on the steep canyon slope and are connected by a switchback wagon road. Both fresh

CERTIFICATE OF ASSAY.

J. E. Woodland,
Analytical Chemist and Assayer.
55 Plymouth Ave. South.

Alfred B. Smith

Rochester, N. Y., Mar. 25 1918.

No.	Description of Sample	Ounces per Ton: Gold	Ounces per Ton: Silver	Value of Gold @ $20.67 per Ounce: Dollars	Cents	Value of Silver @ 50 Cents per Ounce: Dollars	Cents	Per Cent of Lead	Per Cent of Copper	Value of Lead @ $ per Ton: Dollars	Cents	Value of Copper @ $ per Ton: Dollars	Cents	Total Value per Ton: Dollars	Cents
	Gold-Silver Ore	1 98/100	102 3/10	40	92	85	27							$126	19

I Certify that the above is a correct estimate of the value of the ore submitted for assay.

Charges $3.00

J. E. Woodland ASSAYER.

H. O. BROOKS
406 W. COPPER AVE.

CERTIFICATE OF ASSAY

Albuquerque, N. M., MARCH 16, 1912

I Hereby Certify, that the sample of .....

From ..... Marked .....

Assayed for A. B. Smith ..... gave the following results per ton of 2000 pounds.

Gold	2 68/100 oz. equal to	$53.60 per ton @	$20.67 per oz.	
Silver	67.00 oz. "	33.50 " @	.60 per oz.	
Copper	per ct. "	" @	per lb.	
Lead	per ct. "	" @	per lb.	
Zinc	per ct. "	" @	per lb.	
Iron	per ct. "	" @	per lb.	
	Total $87.35			

Charges $1.00

H. O. Brooks

PHONE
GALLUP 2760

A. Mills Beam & Son

PATENTEE NEW METALLURGY
(BEAM PROCESS)

Laboratory 3338 W. 34th Ave. Denver, Colo., April 16th 1926

I hereby certify that the Samples assay for Charles F.W. Young *gave the following:*

GOLD PER OZ. $ 20.00 SILVER PER OZ. $ 65 cts PLATINUM PER OZ. $..... LEAD PER LB..... COPPER PER LB ..... ZINC PER LB.....

REMARKS	AU.	AG.	PT.	PB.	CU.	ZN.	TOTAL
N9 1 Silver tip 29-30 ft	.50	25.00					$26.25
Check	.50	25.00					
" 2	.30	1.00					6.65
Check	.30	1.00					
" 3 74 to 78 ft	.75	13.00					$23.45
Check	.75	13.00					
" 4 107 to 111 ft	.42	1.00					9.05
Check	.42	1.00					
" 5 133 to 137 ft	.25	.50					5.32
Check	.25	.50					

Book..... Page..... Charges $.....

REMARKS:

Chemist in Charge A. Mills Beam

PHONE
GALLUP 2760

A. Mills Beam & Son

PATENTEE NEW METALLURGY
(BEAM PROCESS)
Laboratory 3338 W. 34th Ave.

Denver, Colo., April 14th 1926

I hereby certify that the Samples assay for Charles E.W.Young Continued *gave the following:*

GOLD PER OZ. $..... SILVER PER OZ. $..... PLATINUM PER OZ. $..... LEAD PER LB..... COPPER PER LB..... ZINC PER LB.....

REMARKS	AU.	AG.	PT.	PB.	CU.	ZN.	TOTAL
No 6 208 to 218 ft	.20	2.50					
Check	.20	2.50					55.62
" 7 35 to 30 ft	.45	1					
Check	.45	1					7.00
" 8 Near fault	4.00	10.00					
Check	4.00	10.00					56.30
" 9 in gulch	.15	2.00					
Check	.15	2.00					4.30
" Willard claim	.20	1.00					
Check	.20	1.00					4.65
	.36	1.00					
	.36	1.00					7.85

Book..... Page.....
Augustan Dyke
REMARKS: Check

Charges $.....

Charges $16.50

Chemist in Charge A. Mills Beam

New York tunnel

ROCK AND MINERAL ANALYTICAL ASSAY REPORT

By George Gibbons Hayes, 4452 Raleigh Street, Denver 12, Colorado.

NOTE: All tests are Chemical Acid Assays, and are approximate. For Gold, alone, a Fire Assay is recommended. All Samples checked with a Mineralight for fluorescent colors. All Rocks checked with a Geiger counter. Samples pulverized to 60 mesh fineness. Samples checked with microscope, magnified some 50 times original size of pulverized sample. Oxidizing flame of blowpipe will melt all minerals and rock matter under 1400-C melting point. Number following subject, such as "Mica (150), refers to page number in my hard rock book, On The Prospect Trail (Price $4.00, post paid)—giving detail information regarding mica, etc. It is suggested when rock is classified as "Igneous"—refer to pages 144-168-294; Sedimentary—158-306; Metamorphic—155-178; Limestone—176-177. In this way you will have a better hard rock knowledge of this report, and you will then "Savvy Your Rocks"—see page 132—and "Know Your Minerals"—page 185 . . . . so eventually your are going to hit pay dirt! "THE OLD ROCK HOUND OF THE ROCKIES".

SAMPLE NO. - 6 - DATE July--12--1951.. FOR Chas.F.W.Young,Red River,N.M. "Pugh Tunnel,Tenderfoot Gulch..Silver Tip Group Mining Claims

Name of Rock Drusy Feldspathic Quartz..
Color of Rock Brownish--lead gray...grayish..
Streak Plate Color Lead gray from galena--brown from iron oxides..
Type of Rock Igneous;with a good vein of galena and argentite.Weathered and oxidized in spots.
Luster Metallic from galena--dull from "rusty iron"...
Hardness and Cleavage Hard to medium hard--with a good cleavage..
Texture Crystalline--drusy,lamellar structure.Medium-grained rock..
Mineralight Reaction X
Geiger Counter 44 "clicks" per minute (Count of 70-80 indicates traces to 0.5% Uranium)
Microscope Shows galena--some tarnished from argentite.Zinc in resinous flakes..
Blowpipe Greenish(with cobalt nitrate) from Zinc.Lead easily melted to a button.
HARD ROCK COMMENTS: Of the seven rocks sent,this looks the most encouraging--and tho the vein of lead-silver sulfides is narrow--more of a stringer than a true vein--it could widen out to a good sized vein.Not likely to pinch out thru any present faulting..and follow this lead streak--it might form a junction with other stringers to form the real and important "contact vein"--should perk up as you gain depth.

APPROXIMATE NON-METALLIC VALUES PER TON

Mica (150)		Form	
Talc (250)	2.5%	Form	Magnesium silicate..
Carbon (246-283)		Form	
Barite (246)		Form	
Quartz (157)	61%	Form	Silicon dioxide..
Sulphur (256)	5.1%	Form	Sulfides(iron pyrite)--lead-zinc-silver sul.
Calcium (244)		Form	
Feldspar (147)	19%	Form	Orthoclase--some plagioclase..
Fluorspar (245)		Form	
Volcanic Ash (250)		Form	
Ferromagnesian (149)		Form	
		Form	
		Form	

APPROXIMATE METALLIC VALUES PER TON

Tin (208)			Form	
Iron (242-256)	6%		Form	Pyrite,0.8%;Oxide,5.2%...
Gold (224-292)			Form	
Lead (235)	3.5%	$11.90	Form	Sulfide(argentiferous galena)
Zinc (238)	1.7%	6.89	Form	Sulfide(argentite and resinous zinc)
Silver (230)	1.4%	1.27	Form	Sulfide(argentite)
Copper (217)			Form	
Nickel (200)			Form	
Arsenic (187)			Form	
Uranium (214)			Form	
Mercury (196)			Form	
Tungsten (212)			Form	
Vanadium (215)			Form	
Platinum (202)			Form	
Chromium (189)			Form	
Antimony (186)			Form	
Titanium (211)			Form	
Manganese (192)			Form	
Beryllium (243)			Form	
Molybdenum (198)			Form	

PHONE
GALLUP 2760

A. Mills Beam & Son

PATENTEE NEW METALLURGY
(BEAM PROCESS)
Laboratory 3338 W. 34th Ave.

Denver, Colo., July 10th 1926

I hereby certify that the Samples assay for Chas. F. W. Young 410 Oil Exchange Bldg, Oklahoma City. *gave the following:*

GOLD PER OZ. $20.00 SILVER PER OZ. $ 0.60 PLATINUM PER OZ. $..... LEAD PER LB..... COPPER PER LB ..... ZINC PER LB.....

REMARKS	AU.	AG.	PT.	PB	CU.	ZN.	TOTAL
Ore sample	1.50	1.50					$ 30.90

Book 0 Page 93 Charges $ 1.50

REMARKS:

Chemist in Charge L. F. Beam

Rochester Tunnel
146 ft to 152 ft

Chemist in Charge A. Mills Brown

New York Tunnel

ASSAY CERTIFICATE

Red River

Assay Office

Sample Ed Westoby, June 26, 1911.

YIELD THE FOLLOWING AMOUNT:

DENVER LITHOGRAPHING CO., DENVER, COLO.

NUMBER	GOLD			SILVER			LEAD			COPPER			TOTAL PER TON	
	OUNCES PER TON	$	cts.	OUNCES PER TON	$	cts.	PER CENT	$	cts.	PER CENT	$	cts.	$	cts.
1	2.40	49	61	19.20	4	60							54	21
2														
3														
4														
5														
6														

Gold $20.67 per Ounce

Silver 65c per Ounce

Lead ..... per Hundred Lbs.

Copper ..... per Lb.

H. T. Hanson
Assayer

2040 BROADWAY

ESTABLISHED 1866

TELEPHONE TAbor 3615

WALTER E. BURLINGAME

CHEMIST --- ASSAYER --- ENGINEER

DENVER, COLORADO

FOLIO 644

H.W. Moberg

DATE Sept. 13 1935

We Hereby Certify, that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	SILICA PER CENT			VALUE PER TON
#1	Trace	None								
#2	1.00	19.80								50.25

GOLD AT $35 PER OUNCE

SILVER AT $.77 PER OUNCE

LEAD AT _____ PER UNIT

COPPER AT _____ PER UNIT

ZINC AT _____ PER UNIT

Charges $ 2.00 Paid

WALTER E. BURLINGAME

IV

Accessibility of Property

(a). To aid the OME representative who may examine the property please write or call

R. L. Gohlke
Box 147
Wichita Falls, Texas
Phone 723-5847

(b). The claims are located within a mile of the town of Red River and about 13 miles from Questa. It is about 49 miles to Taos and about 100 miles to Santa Fe. The nearest railroad is about 60 miles to Alamosa, Colo.

Exploration Work

(a). At location designated on plat:

1. Silver Tip #1 - Open the entrance to the New York Tunnel, possibly clean out 50 feet of cavings. Sample locations shown on the enclosed assey copies to contain Silver and anyother good prospects. We intend to core drill a 2" hole for a depth of about 40' for a total of 250' of hole.

2. Silver Tip #17- Open the entrance to the Rochester Tunnel, possibly clean out 40 feet of cavings. Sample locations shown on the enclosed assey copies to contain Silver and any other good prospects. We intend to core drill a 2" hole for a depth of about 40' for a total of 250' of hole.

3. Silver Tip #17- There is a Zinc Dyke crossing this claim and we propose to core drill a 2" hole at several different locations across this dyke to test for Silver. Total amount of drilling to be 4000 feet with no hole over 500 feet deep.

5. Silver Tip #12- Quartzite Dyke- This dyke is mineralized and about 50 feet wide where it crosses the claim. We propose to crosscut this dyke with a drift 4' by 6' to test the contacts on both sides. Estimated a 125 feet of addit. We also intend to core drill a 2" hole best mineralized zones to test for Silver. About 500' of hole with none over 40' in length.

We also propose to core drill down on this dyke to test the mineralization at depth. We will cut 2" holes across the dyke for a total of 4000' with none of the holes over 500 feet deep.

7. Silver Tip #8 - According to the assay on this addit it shows a 100 oz. of Silver. We intend to build a road 1000 feet long so we can get a core drill up to the location. We propose to core drill 4000 feet with no hole over 500 feet deep.

8. Silver Tip #35- We propose to open the entrance to the Hillside Tunnel. Clear out possibly 50 feet of cavings and sample any mineralized locations. Any good prospects we intend to coredrill a 2" hole for a total of 250 feet with no hole over 40' deep.

(b). Only one road will have to be built and that to the location on Silvertip #8 . This can be done with a bulldozer. Estimated length not over 1000 feet.

(c). If an OME contract is executed work could begin within 60 days. The core drilling could begin about the first of May. We estimate that it will take about 7 months to complete this project. The outside coredrilling could be completed within 2 months but the inside coredrilling would depend on the sampling and the opening the entrances of the addits.

Resume of the Experience of Mr. R. L. Gohlke

Mr. R. L. Gohlke is a graduate of the Colorado School of Mines. His first employment was with the Golden River Mining Company of California. After some time of service with that group, he became interested in the Green River, Utah, uranium, working with a group who worked as individuals rather than under a mining company name.

His work as an engineer included sampling, core drill supervision, along with supervision of mine exploration. In recent years he has served as a petroleum engineer and oil operator in the Wichita Falls area, but he has kept his mining interests active during all of this time.

Brief Resume of the Experience of Maynard M. Stephens

Mr. Stephens graduated from the University of Minnesota, Department of Geology, with a B.A. in 1930, an M.A. in 1931, and a Ph.D. in 1934, his major being economic geology and his minor being ore dressing. All of the mining engineering courses were taken during his interim of teaching and as a graduate student. He worked with the Minnesota Geological Survey with special emphasis on the iron ores of northern Minnesota. During this time, he also worked with the Minnesota Bureau of Mines, assisting in the development of the low grade iron ore process, much of which is being used currently. He was an instructor in Mineralogy, Mineralography (polished surface studies) while at Minnesota. While there, he worked also as personal assistant to Dr. W. H. Emmons doing consulting work for the Tennessee Copper Company and with Dr. G. M. Schwartz doing consulting work with the Leadville Lead and Zinc Company and others.

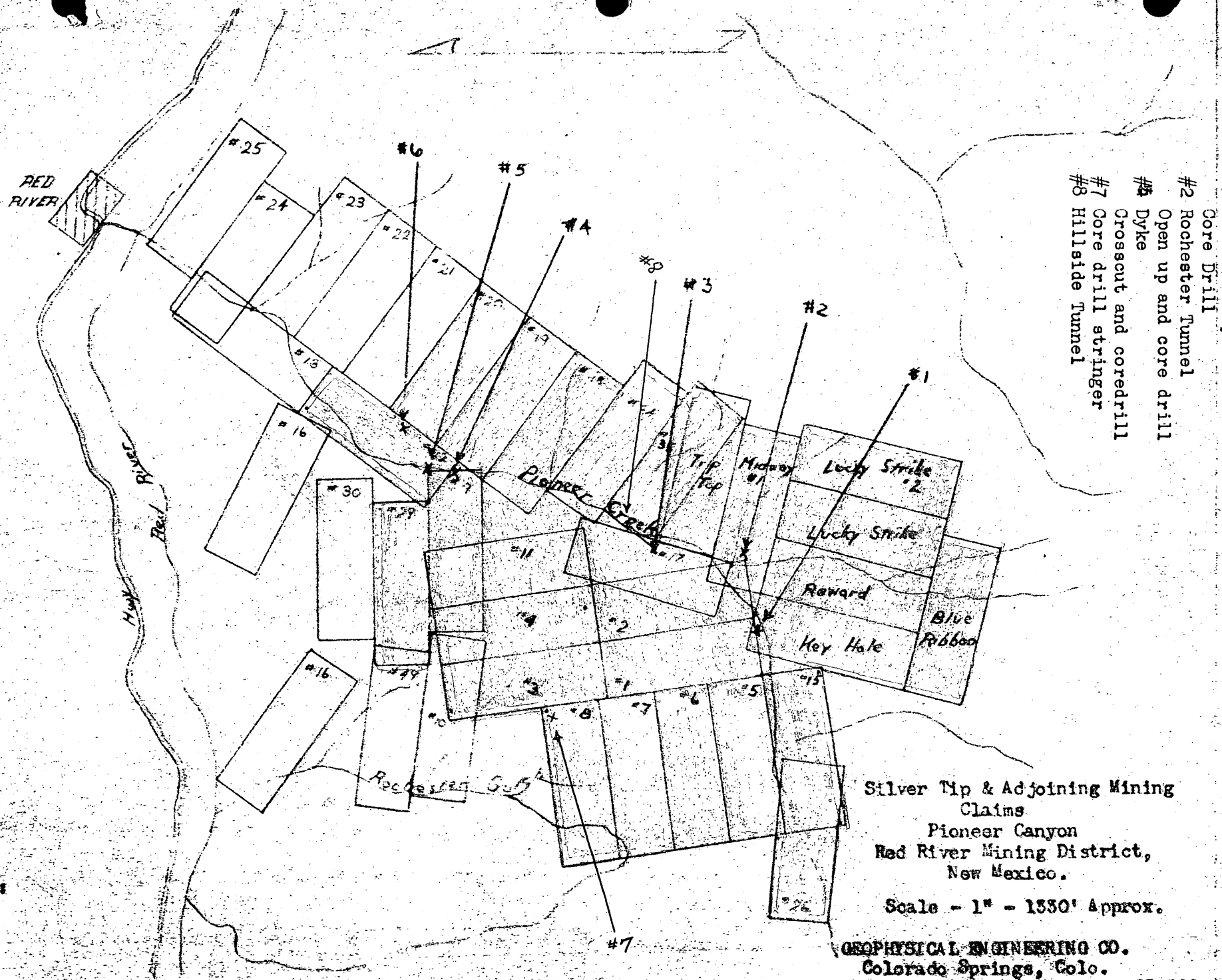
After serving with the Extension Services at Pennsylvania State College for five years, he joined a consulting engineering staff in petroleum in Pennsylvania. This later brought him to Texas in his present capacity as a consulting engineer and geologist. During this time, Mr. Stephens has kept active in the mining business, serving as a consultant on various projects. He is a registered professional engineer in six states and carries professional registration in both petroleum engineering and in mining engineering in the state of New Mexico. Mr. Stephens' background is listed in several of the Who's Who publications.

VII

Estimate of Costs

(a). We have no bids on contracts, however we do have estimates from the Joy Mfg. Co. on the core drilling and also estimates on the cleanout work and drifting. Below are the cost estimates on each item in Section V:

1.	Clean out tunnel and timber entrance	$ 2,500.00
	Assaying 40 Samples @ 12.50	500.00
	Core drilling 250' @ 6.75	1,687.50
2.	Clean out tunnel and timber entrance	1,500.00
	Assaying 40 Samples @ 12.50	500.00
	Core Drilling 250' @ 6.75	1,687.50
3.	Core Drilling 4000' @ 6.75	27,000.00
	Assaying 60 Samples @ 12.50	750.00
6.	Drifting 125' @ 25.00	3,175.00
	Core Drilling 500' @ 6.75	3,375.00
	Coredrilling 4000' @ 6.75	27,000.00
	Assaying 80 Samples @ 12.50	1,000.00
7.	Road 1000'	5,000.00
	Core Drilling 4000' @ 6.75	27,000.00
	Assaying 60 Samples @ 12.50	750.00
8.	Clean out Tunnel and timber entrance	1,500.00
	Assaying 40 Samples @ 12.50	500.00
	Core Drilling 250' @ 6.75	1,687.50
(b).	Supervision - R. L. Gohlke, available	
	Includes expenses 9 mo. @ 1500.00	13,500.00
	Engineering- Maynard Stephens, available	
	Includes expenses 9 Mo. @ 2750.00	24,750.00
(c).	None	
(d).	None	
(e).	None	
(f).	None	
(g).	Mineralogical Report at end of work	1,500.00
	Total -	$ 146,862.50


#1 New York Tunnel
Open up and Core drill
#3 Zinc outcrop
Core Drill
#2 Rochester Tunnel
Open up and core drill
#4 Dyke
Crosscut and coredrill
#7 Core drill stringer
#8 Hillside Tunnel
RED RIVER
Red River
Pioneer Creek
Rochester Soft
Lucky Strike #2
Lucky Strike
Reward
Key Hole
Blue Ribbon
Silver Tip & Adjoining Mining Claims
Pioneer Canyon
Red River Mining District,
New Mexico.
Scale - 1" - 1330' Approx.
GEOPHYSICAL ENGINEERING CO.
Colorado Springs, Colo.
January 16th, 1956.
GP-504

Legend:

Key Hole, Harry Hobert, May 28, 1916, filed July 10, 1928, Book F-14, Page 273-274 Taos County, New Mexico

Silver Tip No. 1, Charles F. W. Young, August 8, 1924, filed October 17, 1924, Book F-12, Page 432 Mining Records, Taos County, New Mexico.

Silver Tip No. 2, Charles F. W. Young, August 8, filed October 17, 1924, Book F-12, page 433, Taos County New Mexico.

Silver Tip No. 3, Charles F. W. Young, August 8, 1924, filed October 17, 1924, Book F-12, page 434, Mining Records, Taos County, New Mexico

Silver Tip No. 4, Charles F. W. Young, August 8, 1924, filed October 17, 1924 F-12, page 435 Mining Records, Taos Count, New Mexico

Silver Tip No. 5, L. M. Smith & Chas. F. W. Young, August 15, 1924, filed September 27, 1924, Book F-12, page 427, Mining Records, Taos County, New Mexico.

Silver Tip No. 6, L. M. Smith & Chas. F. W. Young, August 15, 1924, filed September 27, 1924, Book F-12, page 428, Mining Records, Taos County, New Mexico.

Silver Tip No. 7, L. M. Smith & Chas. F. W. Young, August 15, 1924, filed September 27, 1924, Book F-12, page 429, Mining Records, Taos County, New Mexico.

Silver Tip No. 8, Charles F. W. Young, August 15, 1924, filed October 17, 1924, Book F-12, page 436, Mining Records, Taos County, New Mexico.

Silver Tip No. 9, L. M. Smith & Chas. F. W. Young, August 15, 1924, filed September 27, 1924, Book F-12, page 430, Mining Records, Taos County, New Mexico.

Silver Tip No. 10, L.M. Smith and Chas. F. W. Young, August 15, 1924, filed September 27, 1924, Book F-12, page 431, Mining Records, Taos County, New Mexico.

Silver Tip No. 11, Charles F. W. Young, L.M. Smith, & J. P. Haley, June 7, 1926, filed October 27, 1926, Book F-12, Page 465 Mining records, Taos County, New Mexico

Silver Tip No. 12, Charles F. W. Young, L.M. Smith, & J. P. Haley, June 9, 1926, filed October 27, 1926, Book F-12, Page 466, Mining records, Taos County, New Mexico

Silver Tip No. 13, Charles F. W. Young, L.M. Smith & J. P. Haley, June 10, 1926, filed October 27, 1926, Book F-12, Page 467, Mining records, Taos County, New Mexico

Silver Tip No. 14, Charles F. W. Young, L.M. Smith & J. P. Haley, June 11, 1926, filed October 27, 1926, Book F-12, Page 468, Mining records, Taos County, New Mexico

Silver Tip No. 15, Charles F. W. Young, L.M. Smith & J. P. Haley, July 6, 1926, filed October 27, 1926, Book F-12, Page 469, Mining Records, Taos County, New Mexico

Silver Tip No. 16, Charles F. W. Young, L.M. Smith & J. P. Haley, July 17, 1926, filed October 27, 1926, Book F-12, Page 478, Mining Records, Taos County, New Mexico

Silver Tip No. 17, Chas. F. W. Young, L.M. Smith & J. P. Haley, April 12, 1927, filed February 21, 1928, F-12, Page 537 Mining records, Taos County, New Mexico.

Silver Tip No. 18, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 537, Min ing Records, Taos County, New Mexico

Silver Tip No. 19, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 486, Mining records, Taos County, New Mexico.

Silver Tip No. 20, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 487, Mining records, Taos County, New Mexico.

Silver Tip No. 21, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 488, Mining records, Taos County, New Mexico.

Silver Tip No. 22, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 489, Mining records, Taos County, New Mexico.

Silver Tip No. 23, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 520, Mining records, Taos County, New Mexico.

Silver Tip No. 24, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 521, Mining records, Taos County, New Mexico.

Silver Tip No. 25, Charles F. W. Young, L.M. Smith & J. P. Haley, August 2, 1927, filed November 8, 1927, Book F-12, Page 522, Mining records, Taos County, New Mexico.

Silver Tip No. 26, Chas. F. W. Young., L. M. Smith & J. P. Haley, September 17, 1927, filed February 21, 1928, Book F-12, Page 538, Mining Records, Taos County, New Mexico

Silver Tip No. 27, Chas. F. W. Young, L. M. Smith & J. P. Haley, September 17, 1927, filed February 21, 1928, Book F-14, Page 539, Mining records, Taos County, New Mexico

Silver Tip No. 28, Chas. F. W. Young, L. M. Smith & J. P. Haley, September 17, 1927, filed February 21, 1928, Book F-12, Page 540, Mining records, Taos, County, New Mexico.

Silver Tip No. 29, Chas. F. W. Young., L. M. Smith & J. P. Haley, October 20, 1927, filed February 21, 1928, Book F-12, Page 541, Mining records, Taos County, New Mexico.

Silver Tip No. 30, Chas. F. W. Young, L. M. Smith & J. P. Haley, October 20, 1927, filed February 21, 1928, Book F-12, Page 542 Mining records, Taos County, New Mexico.

Silver Tip No. 33, Chas. F. W. Young, L. M. Smith & J. P. Haley, May 28, 1928, filed August 3, 1928, Book F-12, Page 549, Mining records, Taos County, New Mexico.

Silver Tip No. 34, Chas. F. W. Young, L. M. Smith & J. P. Haley, July 1, 1928, filed August 3, 1928, Book F-12, Page 548, Mining records, Taos County, New Mexico.

Silver Tip No. 35, Chas. F. W. Young, L. M. Smith & J. P. Haley, July 1, 1928, filed August 3, 1928, Book F-12, Page 547, Mining records, Taos County, New Mexico.

Silver Tip No. 36, Chas. F. W. Young., L. M. Smith & J. P. Haley, July 8, 1929, filed October 8, 1929, Book F-12, Page 599, Mining records, Taos County, New Mexico.

Silver Tip No. 37, Chas. F. W. Young., L. M. Smith & J. P. Haley, July 8, 1929, filed October 8, 1929, Book F-12, Page 600, Mining records, Taos County, New Mexico.

Silver Tip No. 31, Chas. F. W. Young, L. M. Smith & J. P. Haley, July 11, 1929, filed October 8, 1929, Book F-12, Page 596, Mining records, Taos County, New Mexico.

Silver Tip No. 38, Chas. F. W. Young., L. M. Smith & J. P. Haley, July 11, 1929, Filed October 8, 1929, Book F-12, Page 601 Mining Records, Taos County, New Mexico.

Silver Tip No. 39, Chas. F. W. Young, L. M. Smith & J. P. Haley, July 11, 1929, Filed October 8, 1929, Book F-12, Page 602, Mining Records, Taos County, New Mexico.

SilverTip No. 40, Chas. F. W. Young, L. M. Smith & J. P. Haley, July 11, 1929, Filed October 8, 1929, Book F-12, Page 603, Mining Records, Taos County, New Mexico.

Silver Tip No. 41, Chas. F. W. Young, Mrs. L. M. Smith & J. P. Haley, October 2, 1929, Filed December 2, 1929, Book F-12, Page 611, Taos County, New Mexico.

Silver Tip No, 42, Chas. F. W. Young, Mrs. L. M. Smith, & J. P. Haley, October 2, 1929, Filed December 2, 1929, Book F-12, Page 612, Taos county, New Mexico.

Silver Tip No. 43, Chas. F. W. Young, Mrs. L.M. Smith, & J. P. Haley, October 2, 1929, Filed December 2, 1929, Book F-12, Page 613, Taos County New Mexico.

Silver Tip No. 44, Chas. F. W. Young, Mrs. L.M. Smith & J. P. Haley, October 2, 1929, Filed December 2, 1929, Book F-12, Page 614, Taos County, New Mexico

Silver Tip No. 45, Chas. F. W. Young, Mrs. L.M. Smith, & J. P. Haley, October 2, 1929, Filed December 2, 1929, Book F-12, Page 615, Taos County, New Mexico.

Silver Tip No. 47, Chas. F.W. Young, L.M. Smith & J. P. Haley, July 3, 1931, Filed September 25, 1931, Book F-14, Page 420 Mining Records, Taos County, New Mexico.

Silver Tip No. 48, Chas. F. W. Young, L.M. Smith & J.P. Haley, July 3, 1931, Filed September 25, 1931, Book F-28, Page 25 Mining records, Taos County, New Mexico,

Silver Tip No. 46, Chas. F. W. Young, L.M. Smith & J.P. Haley, July 7, 1931, Filed September 25, 1931, Book F-28, Page 24, Mining records, Taos county, New Mexico.

Midway, Harry W. Moberg & Oscar C. Moberg, July 15, 1937, Filed October 6, 1937, Book F-28, Page 144, Taos County, New Mexico

Tip Top, Harry W. Moberg & Oscar C. Moberg, July 15, 1937, Filed October 6, 1937, Book F-28, Page 143, Taos County, New Mexico

Koy Nolo, Harry W. Moberg & Oscar C. Moberg, July 15, 1937, Filed October 6, 1937, Book F-28, Page 145, Taos County, New Mexico

Anderson No. 1, R. T. Kuling (Keeling), July 1, 1947, Filed July 1, 1947, Book F-15, Page 586-587, Taos County, New Mexico

Anderson No. 2, R. T. Keeling, July 1, 1947, Filed July 1, 1947, Book F-15, Page 587, Mining records, Taos County, New Mexico

Crow No. 1, J. P. Holder, July 1, 1947, Filed July 1, 1947, Book F-15, Page 585-586, Mining claim records, Taos County, New Mexico

Crow No. 2, J. P. Holder, July 1, 1947, Filed July 1, 1947, Book F-15, Page 586, Mining claim records, Taos County, New Mexico

Crow No. 3, J. P. Holder, June 15, 1948, Filed June 28, 1948, Book F-15, Page 627, Taos County, New Mexico

Doldosia No. 1, R. Wesley Nichols, July 2, 1949, Filed September 10, 1949, Book F-29, Page 65-66, Taos County, New Mexico.

Doldosia No. 2, R. Wesley Nichols, July 2, 1949, Filed September 10, 1949, Book F029, Page 65-55, Taos County, New Mexico.

Doldosia No. 3, R. Wesley Nichols, July 2, 1949, Filed , September 19, 1949, Book P-29, Page 65-66, Taos County, New Mexico.

Silver Tip No. 32, Bessie Mae Young, R. T. Keeling, February 6, 1957, Filed February 6, 1957, Book S-33, Page 51 Mining claim records, Taos County, New Mexico.

2040 BROADWAY ESTABLISHED 1866 TELEPHONE TAbor 3618

WALTER E. BURLINGAME

CHEMIST --- ASSAYER --- ENGINEER

DENVER, COLORADO

Assay # 1
" " 2

FOLIO 644

DATE Sept. 13 1935

H.W. Moberg

We Hereby Certify, that the samples assayed for you gave the following results:

DESCRIPTION	GOLD OUNCES PER TON	SILVER OUNCES PER TON	COPPER PER CENT (WET)	LEAD PER CENT (WET)	ZINC PER CENT	IRON PER CENT	SILICA PER CENT			VALUE PER TON
#1	Trace	None								$
#2	1.00	19.80								50.25

GOLD AT $35 PER OUNCE COPPER AT _____ PER UNIT

SILVER AT $.77 PER OUNCE ZINC AT _____ PER UNIT

LEAD AT _____ PER UNIT

Charges $ 2.00 Paid

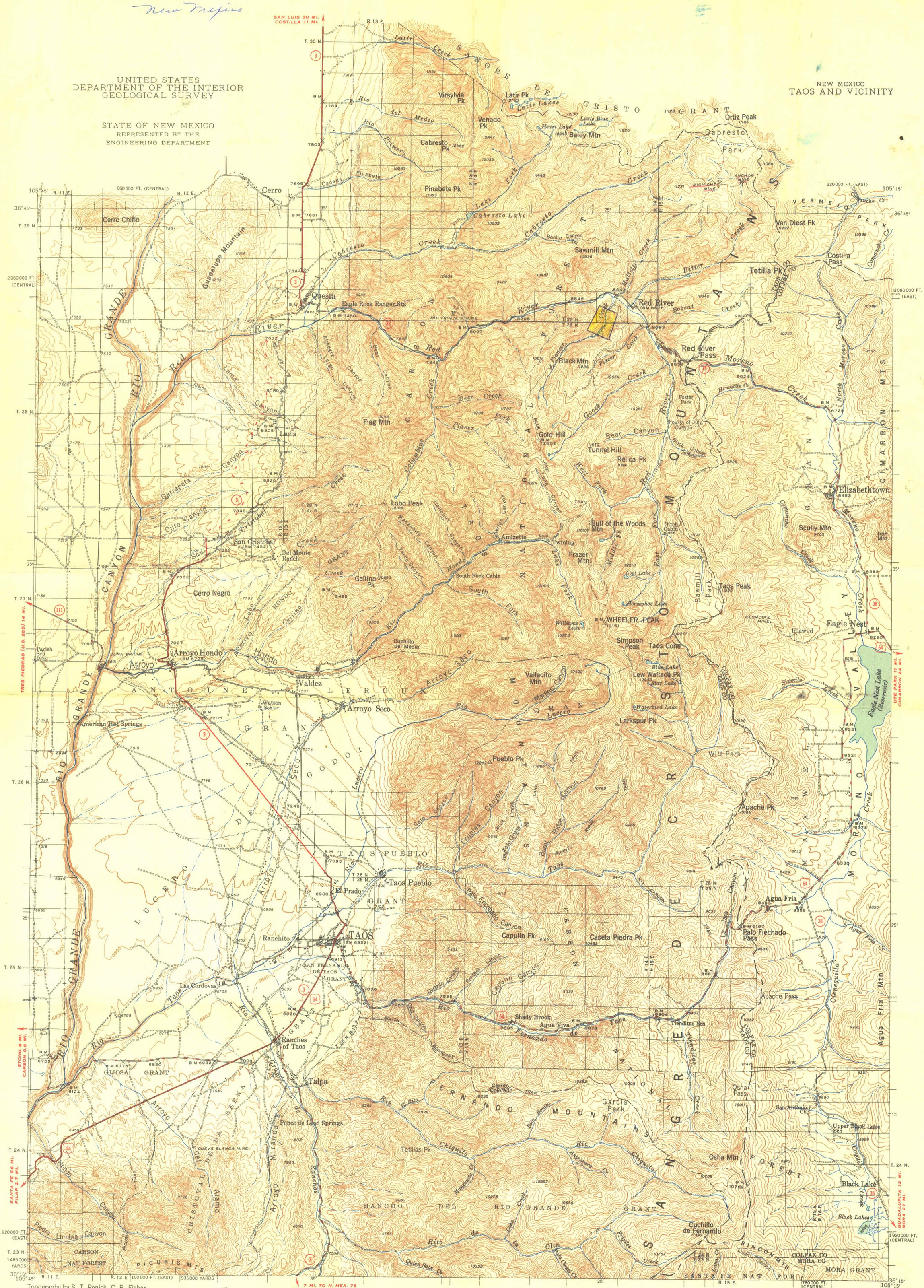
WALTER E. BURLINGAME

Taos County
New Mexico

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

STATE OF NEW MEXICO
REPRESENTED BY THE
ENGINEERING DEPARTMENT

NEW MEXICO
TAOS AND VICINITY



Topography by S. T. Penick, C. R. Fisher,
T. T. Ranney, and C. D. Mitchell
Surveyed in 1928, 1931–1933, and 1936

ROAD CLASSIFICATION

HARD-SURFACE ALL WEATHER ROADS		DRY WEATHER ROADS
Heavy-duty	4 LANE / 6 LANE	Improved dirt
Medium-duty	4 LANE / 6 LANE	Unimproved dirt
Loose-surface, graded, or narrow hard-surface		

U. S. Route — State Route

TRUE NORTH — MAGNETIC NORTH 13½°
APPROXIMATE MEAN DECLINATION, 1940

Scale $\frac{1}{125000}$

1 ½ 0 1 2 3 4 5 6 7 8 9 Miles

3000 1500 0 3000 6000 9000 12000 Yards

5000 0 5000 10000 15000 20000 25000 Feet

1 0 1 2 3 4 5 6 Kilometers

Contour interval 100 feet
Datum is mean sea level

All Grant and National Forest boundaries are subject to adjustment

DIAGRAM OF TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Polyconic projection. 1927 North American datum
5000 yard grid based on U. S. zone system, E
20000 foot grids based on New Mexico (East)
and New Mexico (Central) rectangular coordinate systems

TAOS AND VICINITY, N. MEX.
Edition of 1945
Reprinted 1950
N3615—W10515/30

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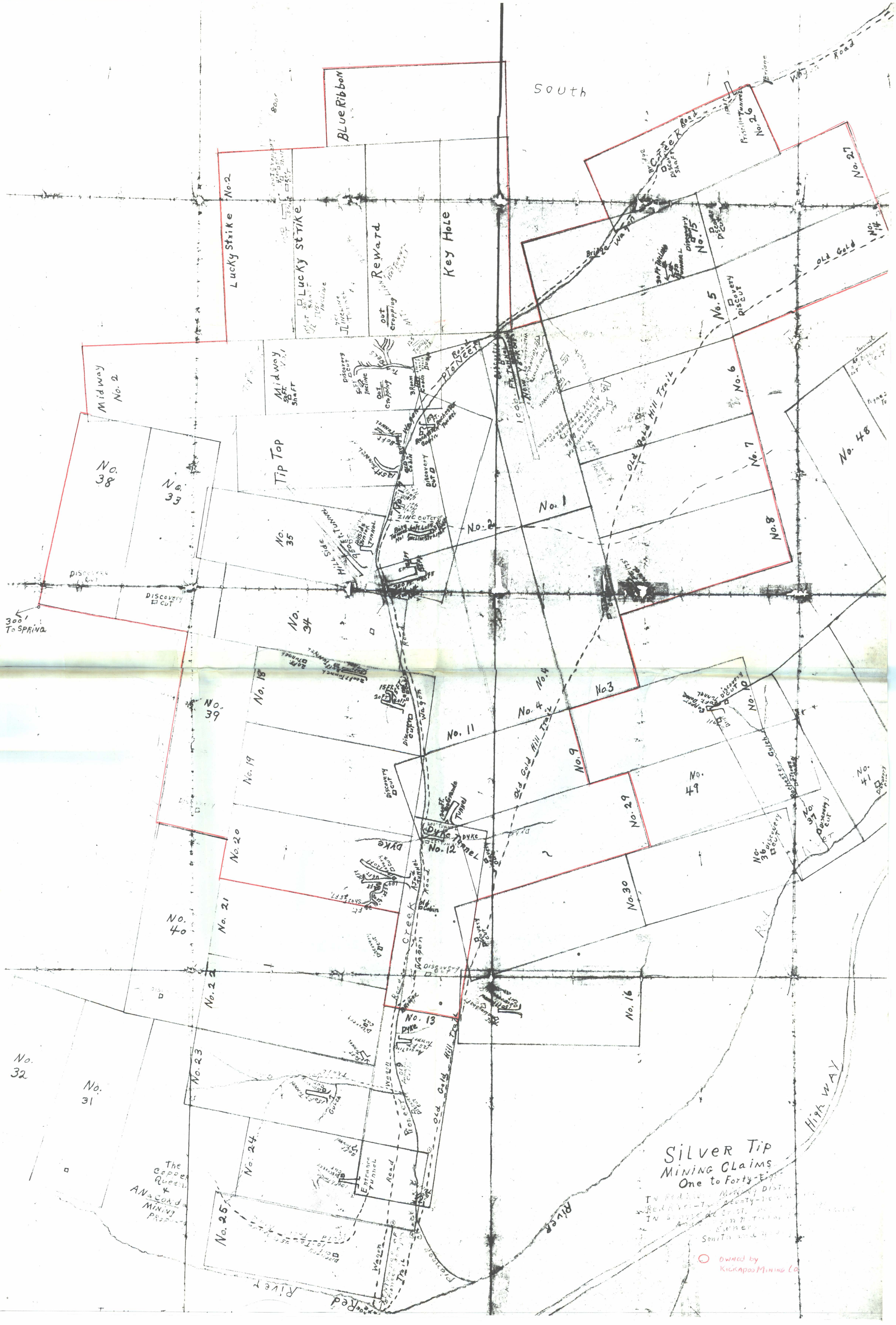
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST


South
Blue Ribbon
Lucky Strike No. 2
Lucky Strike
Reward
Key Hole
Midway No. 2
Midway
Tip Top
No. 38
No. 33
No. 35
No. 34
No. 39
No. 40
No. 32
No. 31
No. 18
No. 19
No. 20
No. 21
No. 22
No. 23
No. 24
No. 25
No. 26
No. 27
No. 48
No. 1
No. 2
No. 3
No. 4
No. 5
No. 6
No. 7
No. 8
No. 9
No. 11
No. 12
No. 13
No. 16
No. 29
No. 30
No. 36
No. 37
No. 41
No. 49
Pioneer
Old Gold Hill Trail
Old Gold
Road
Bridge
Wagon
Creek
Dyke
Tunnel
Discovery Cut
300' To Spring
The Copper Queen & Anaconda Mining Property
River
Red River
High Way
Silver Tip
Mining Claims
One to Forty-Eight
Owned by
Kickapoo Mining Co.