UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
WASHINGTON 25, D. C.

AUG 19 1959

Mr. J. F. Sylvester, President
Tintic Copper Mining Company
1020 Keenan Building
Salt Lake City 1, Utah

Re: Docket No. OME-6035 (Copper)
Tintic Copper Mining Company
Government Canyon
Utah County, Utah

Dear Mr. Sylvester:

Your application for aid in an exploration project and other information available to us in Washington concerning the above-mentioned property have been reviewed.

Careful study of all the information available to us indicates that the probability of disclosing significant ore reserves on your property is not sufficiently promising to justify Government participation in the proposed exploration. We regret to advise you that, under these circumstances, your application for exploration assistance is denied.

Sincerely yours,

Frank E. Johnson

Acting Director

WPKlugeschaid/gla 8-17-59
cc to: Director's Reading File
Operating Committee
Mr. McMahon, USBM
Mr. Kirkemo, USGS
OME Field Team, Region III (2) w/2 cys each USBM memo 6/30/59, and USGS memo 7/16/59 and attachment.
Docket
Chron
500

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF MINERALS EXPLORATION
WASHINGTON 25, D. C.

JUL 27 1959

Memorandum

To: Executive Officer, OME Field Team, Region XII

From: Chairman, Operating Committee, OME

Subject: Docket No. OME-4035 (Copper)
Tintic Copper Mining Company
Government Canyon
Utah County, Utah

We refer to your memorandum, dated June 19, 1959, concerning the cited application, with enclosures and other material which has reached us subsequently. We note that J. W. Hasler, in his memorandum of July 14 to Harold Kirkemo, cites Memorandum No. 35, dated March 31, 1957, and feels that the cited project falls under the classification of pure prospecting.

Our present OME regulations are somewhat different than those which prevailed under HMA. Under the OME program, we must concentrate upon "new or unexplored mineral deposits where geologic conditions favor their occurrence." We are permitted to consider exploration using recognized and sound procedures, including standard geophysical and geochemical methods, and also to assist in other preliminary work which would appear indicated to establish a possible target.

In that the Field Team recommended denial without prejudice in this case, perhaps certain preliminary work is warranted in which we could properly participate. It may be that a first stage would be indicated in which some preliminary drilling could be done which would give proof that further work is warranted or that will show that no basis exists for further work. If the rather widespread copper assays which were obtained by the Applicant are for some reason believed to be erroneous, it would be well to take some check samples to see what the true picture actually is.

Therefore, if you should have in mind any proposals involving some preliminary work (as Stage I) that could be done which might shed light on the possibilities of this property, and

in which Government participation for a relatively small amount of money would be warranted, we would very much appreciate hearing what they might be. Any such program would, of course, require the participation and wholehearted acquiescence of the Applicant.

George C. Selfridge

APPROVED:

Frank D. Lamb

Director, Bureau of Mines

Harold Kirkemo

Director, Geological Survey

WPKlugescheid/gla 7-21-59

cc to: Director's Reading File
Operating Committee
Mr. Kirkemo, USGS
Mr. Robinson, USBM
Market
Chron

July 16, 1959
Re: CME 6035 (Copper)
Tintic Copper Mining Co.
Government Canyon
Utah County, Utah

Memorandum

To: W. R. Griswold, Office of Minerals Exploration

From: Harold Kirkham, U. S. Geological Survey

Subject: Review of Field Team Report on subject property

The applicant requests Government assistance in an exploration project consisting of 10,000 feet of core drilling at a total estimated cost of $180,000. It is proposed that vertical holes would be drilled from the surface to search for blind ore bodies at an unknown depth below an extensive area of alteration in volcanic rocks.

The field examiners conclude that a drilling target has not been defined and that the applicant needs to complete more geologic work to determine if a target exists before Government participation in exploration is warranted. The Field Team concur with the examiners in recommending denial of the application without prejudice.

Further justification for the recommendation of denial is stated in a memorandum dated July 14, 1959, to me from Mr. J. W. Hasler, geologist, U. S. Geological Survey.

Copies of this memorandum are attached. Hasler cites the views of Mr. Hal Morris, geologist, U. S. Geological Survey, regarding the proposed exploration, explains in further detail the nature of the rock alteration at Government Canyon, and cites the policy statement issued by DMEA (the most recent instruction on the problem) which helped guide the examiners in preparing their recommendation.

I discussed the applicant's proposed exploration with Mr. Morris by phone on July 14. He pointed out that no copper stains were observed in Government Canyon and suggested that if further investigation is undertaken, the ground should be resampled and assayed. He understood that Bear Creek Mining Company is considering a program of geologic mapping, geochemical and geophysical studies of their claims in Government Canyon. The program may require several years to complete.

It is a logical stage of investigation that should precede drilling.

In view of field evidence and the opinion of experts on the area that preliminary studies are needed prior to drilling, I concur with the Field Team and the examiners that the applicant's request for assistance in drilling be denied.

Harold Kirkemo

Attachment

cc: OME (3)
A. D. McMahon, 3623
Director's reading
Branch reading
Chron. file
Docket file
HKirkemo/mm
G-MD-7-15-59

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Office of Minerals Exploration
Denver Federal Center
Denver 25, Colorado

July 14, 1959

Memorandum

To: Harold Kirkemo

From: J. W. Hasler

Subject: OME Docket 6035 (Copper) Tintic Copper Mining Co., Utah County, Utah. Comments substantiating recommendations for denial as proposed in Report of Examination

This memorandum is in reply to a verbal request on July 9, 1959, from you to further justify the recommendations for denial, as stated in the report of examination on the subject property.

During the time of the field examination we were informed that Mr. Hal Morris, geologist, U. S. Geological Survey, who has studied and mapped in the East Tintic district for many years, was in the area. An attempt was made to contact Mr. Morris in Eureka, Utah, but he was in Denver during the days the field examination was being made and time was not available to await his arrival.

A telephone conversation was held with Mr. Morris on July 9, 1959, relative to the possibilities of discovering ore on the Government Canyon property. Mr. Morris stated that he, and most assuredly many other geologists interested in the area, would like to see a few holes drilled on the Government Canyon property for the purpose of obtaining basic geologic data alone, such as rock types at depth, degrees and types of alteration, kinds and degrees of mineralization, etc. However, his opinion regarding the geological probability of making a significant discovery concurs with those of the examining team, and his basis for such reasoning are as follows:

That there is no target since there are no sedimentary rocks for several miles around, and to drill for probable existence or extension, even at depths of 1,200 to 2,000 feet would be sheer folly. There is no geologic basis upon which to base any possibility of intersecting sediments at any minable depth. That the Government Canyon area is in an area that consists largely of latites, tuffs, and breccias, and that the alteration (argillic alteration) is of a low to intermediate type of alteration corresponding roughly to the mid-barren stage of alteration as discussed in Lovering's "Rock alteration as a guide to ore, East Tintic District, Utah." Monograph No. 1, Economic Geology, 1949.

much less carry an extensive exploration program to fruition. If a company such as Bear Creek is interested in taking such a long-shot gamble, which it may be considering, it is advisable they do so. Until definite target areas are established, costs of present aims would be prohibitive.

We further recommend denial without prejudice of the application, and may we refer you to Memorandum No. 35 from the Operating Committee on "Recommendations on Applications for Aid in Exploration Projects" dated March 21, 1957. By this memorandum the Government Canyon property, in our estimation, still is one of a purely prospecting nature.

J. William Hasler

J. William Hasler

Copy to: J. W. Townsend
M. H. Howes

"The mid-barren stage is characterized by the development of clay minerals (argillic alteration) which is most extensive in the volcanic rocks but is also common in the calcareous rocks. Argillization is concentrated around intrusive centers, but the alteration of the intrusives themselves ranges from intense to negligible. A series of alteration zones in the lava may surround partly argillized monzonite bodies; the zones are believed to reflect leaching of the warm intrusive and transfer ~~to~~ of material to the cooler country rock during the latter part of the mid-barren stage.

"Argillic alteration was accompanied by substantial leaching of nearly all the constituents of the rocks and by a corresponding increase in porosity. The solution of the rocks and enlargement of the openings constituted an important factor in preparing ground for ore."

Mr. Morris further points out that the tuffs and breccias, being very porous, allowed free flow of thin ore-bearing solutions and were not conducive to depositing ore deposits. Detailed alteration studies show that the pervasive character of the argillic alteration in the lavas and the lack of any intimate relation to ore bodies is brought out by the fact that this widespread blanket of altered rocks is so many times greater than the size of the ore bodies thus far discovered in the extensive exploration beneath, that its use as a guide to the discovery of the North Lily ore body was largely fortuitous.

Nowhere in the district has ore been found in argillized rocks that had not suffered additional alteration during the late barren and productive stages. The pervasive argillic alteration in lavas that do not carry ore is further evidence of lack of close genetic relationship between ore bodies and argillization. Below the lavas argillic alteration is restricted to relatively few channels and some of these channels have at some later date served as conduits for ore solutions.

Mr. Morris stated that Bear Creek Mining Company has taken up some 200 claims surrounding the subject property in Government Canyon and are presently attempting to purchase the applicant's claims, but thus far has not succeeded. Bear Creek geologists requested advice from Mr. Morris regarding his opinions on the Government Canyon area, to which he replied and pointed out that there were several other areas, which Bear Creek Mining Company holds in the Tintic district, which are far more favorable for ore than the Government Canyon area, and that the chances in Government Canyon are in the neighborhood of 500-1.

It is the opinion of the examining team that to begin drilling in the Government Canyon area, even for preliminary, basic geologic data would prove costly and may fall far short of discovering any ore bodies of significant size and grade. The operator is a small independent one, and it is doubtful that he could finance even a most preliminary program,

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
Branch of Mineral Deposits
4 Homewood Place
Menlo Park, California

July 14, 1959

Air Mail

Mr. Harold Kirkemo
Branch of Mineral Deposits
U. S. Geological Survey
Washington 25, D. C.

Dear Harold:

The possible implications of the telephone conversations I have had with you and Bill Hasler within the past few days concerning the Sylvester property in Government Canyon in the East Tintic Mountains, Utah, are of sufficient importance that perhaps I should prepare a written statement for you to consider in more detail.

For some years now I have felt that the altered areas in Government Canyon may warrant drilling and I believe that eventually some venturesome soul will drill them. However, at the present state of our knowledge the Sylvester prospect must be considered a rank wildcat. It cannot be compared directly with the Burgin (Chief Oxide) area, which is some 6½ miles north of it, at least until careful geologic mapping is done and the altered rocks of the two areas are closely compared.

The discoveries in the Burgin area are of lead-zinc-silver-manganese ore bodies localized by thrust and bedding plane faults in sedimentary rocks concealed by pyritized lava flows, which range from less than 500 to at least 1,800 feet thick. Before the first holes were drilled in the Burgin area a careful study was made of the geology of the surrounding areas with particular emphasis on the altered lavas, their thickness, type of alteration, the shape and structural localization of the masses of altered rocks, and the projection of known faults, ore fissures, and the presence of replaceable limestone beds below the lava.

Incidentally the Burgin shaft is within a mile of three important mines, one of which--the Tintic Standard--produced $49,000,000 worth of ore and paid $19,000,000 in dividends. As drilling progressed in the Burgin area we carried out geochemical studies of the core and sludge, and during periods when drilling was suspended, additional geochemical, geophysical, and geologic studies were made in the area surrounding the drill holes. These studies

guided future drilling, and, coupled with poor core recovery in the drill holes, led us to decide that underground exploration was the only possible way to adequately explore the Burgin area.

I should mention that deep hole drilling costs averaged somewhat more than $20.00 per foot for the sections of the holes that were cored. The Bear Creek Mining Company has trimmed these costs a little, but overall costs will probably be on the order of $15.00 per foot (minimum), and higher if large sections of the holes are cored as I feel they should be.

The Sylvester property, in contrast to the Burgin area, is in a part of the East Tintic Mountains that is not geologically well known. It is 3½ miles from the nearest productive mines, and these are on fissure veins of little consequence. The principal indications of ore on the property are: 1) the occurrence of a few monzonite dikes and plugs, 2) a "bleached zone" in the lavas, and 3) the reported occurrence of a geochemical anomaly. We have no indication of the depth of the lava but suspect that it may be very thick, as much as 2,000 feet or more. We have no idea of the character of the sedimentary rocks below the lava but exposures 2 miles west, 2½ miles southwest, and 3½ miles east indicate the presence of either the Tintic quartzite or the Big Cottonwood series of quartzites and argillites.

The altered areas in Government Canyon seem to be localized in tuffs, tuff-breccias, and only locally in latite flow rocks. This may suggest they are broad because of the porous nature of the enclosing rocks, not because of the intensity of alteration. I have inspected the altered patches only casually, but they appear to be zones of argillic alteration, not pyritic alteration of the type characteristic of the Burgin area. I was not impressed by any large amounts of sericitization, orthoclasation, or quartz flooding that is common near the porphyry copper deposits I have visited. However, I would strongly recommend careful petrographic and X-ray studies of these rocks before I would attempt to evaluate the significance (or lack of it) of these altered rocks as an indication of concealed ore.

I have walked over the area that reportedly contains trace concentrations of copper ranging from a few parts to 2,500 parts per million. However, I did not see any copper stain (malachite, azurite, tenorite, melaconite, or copper pitch) that I had expected to see in areas of such strong concentrations. The reported anomaly does occur,

however, in an area of strongly altered, brecciated lavas not unlike those adjacent to monzonite plugs in the East Tintic district and therefore may contain some introduced heavy metals. I would expect lead and zinc rather than copper, however.

If the area is to be explored, I would recommend that the program be carried out in the following sequence:

First, a detailed geologic map should be prepared on which the various types of altered rocks as well as the rock types are delineated. Special attention should be given to areas of sericitization, silicification, pyritization, and argillization--in that order.

Second, the altered and iron-stained rocks should be resampled and analyzed in the Denver GX lab for copper, lead, zinc, arsenic, and antimony. A minimum of 50 samples should do as a starter but maybe 10 times this number should eventually be analyzed.

Third, a team of geophysicists should conduct a surface magnetic survey to investigate the presence of concealed bodies of monzonite. Perhaps gravimetric surveys should also be undertaken to attempt to define areas of broken and altered rocks, and electrical surveys made to try to define areas that may contain conductive sulfides, which commonly are not oxidized below 100 feet of depth in lavas and tuffs.

Fourth, a minimum of three large diameter (NX - BX - AX) diamond drill holes should be located and drilled to a depth of 1,500 feet, based on the geological, geochemical, and geophysical results.

Fifth, pending favorable results from the drilling program, at least six additional holes should be located and a shaft site considered, but all participants must be prepared mentally and financially to lose everything invested to this point.

As I stated near the beginning of this letter I feel that the Sylvester property may eventually be drilled, but I would not recommend stage 4 drilling until the three preliminary stages are carefully carried through to completion.

As long as it is, this letter is just a brief summary of my ideas concerning the Sylvester property and the way I feel that it should be explored. However, I hope that it will be of some help to you.

Sincerely yours,

Hal

Hal T. Morris

CC: J. William Hasler

July 14, 1979
Phone call
to Hal Morris

200 claims
mostly to
west of
Gavit Canyon
area

Bear Creek
Bergin shaft. — Open File, Chief Oxide Area
4 miles
Pb-Zn-Ag
1,000' level — underground 1,200'

surface mapping geochemical exploration
looking for any commercial metal

No clue as to sedimentary rock depth.
Alteration - argillic type.
Wild cat
Exploration drilling for geologic info. only.
Faulting - Basin - Range.

Alteration patch - large associated with
monzonite, porphyry dike 30-40' wide
several 100 feet long
Cracked breccia - may overly monzonite -

No structural control in area.

1500' maximum depth
1200' to water table

.04 % Cu. -
No green, blue Cu oxides seen in area.
Sylvester work should be checked.
Geophysical - ground magnetic.

Harker phone call July 9, 1959. regarding
Tintic Copper - OME 6035. 1:15 PM.
Home

The low to moderate type of rock alteration observed on the ground is not an indicator of sizable ore bodies in this district. The alteration is mainly in porous tuffs associated with the latite flows.

Detailed geologic surface mapping in the area does not provide any clue as to the estimated depth to the sedimentary rocks.

Bear Creek Mining has staked about 200 claims in the area surrounding the Lyndon claim and prepare a geochemical prospecting program that may guide underground exploration for a porphyry copper deposit.

The applicant's estimate of $10 per foot for drilling is considered too low in view of the probable deep drilling required.

June 30, 1959

Memorandum

To: V. E. Grimwald, Office of Minerals Exploration

From: Geologist Specialist, Branch of Base Metals

Subject: Review of Report of Examination, Docket No. [illegible] (Copper), Assembly Docket No. [illegible], Kimble Copper Mining Company, Government Gulch, Park County, Wash. [illegible]

The summary report of a thorough examination of the property, supported by the results of over one-hundred samples, indicates that the applicant's proposed exploration program of 30,000 feet of diamond drilling would be reasonably prospecting in search for promising target areas. Apparently geologic evidence of ore concentration possibilities could not be found and the spheres of 101 samples ranging between a trace and 0.25 percent copper averaged 0.06 percent.

Accordingly, the examiners recommend denial of the application without prejudice to the property. I concur with that recommendation.

A. P. Hibbins

Hibbins/mf

Copy to: Division of Minerals
Branch of Base Metals (2)
Bureau Mining, U.S.G.S.
F. B. Lamb
Files

6035

EXTRA COPY O. M. E. RECEIVED JUN 24 1959		
DATE	INITIALS	CODE

224 New Customhouse
Denver 2, Colorado

June 19, 1959

Memorandum

To: Chairman, Operating Committee, OME

From: OME Field Team, Region III

Subject: Docket OME 6035 (Copper), Formerly Docket DMM-5081, Mimic Copper Mining Company (Government Canyon) Utah County, Utah

Enclosed are the original and two copies of a Joint Engineering and Geologic Report dated June 1959, by J. William Beeler, Geologist, Geological Survey, and M. M. Romes, Mining Engineer, Bureau of Mines, which is rendered as a result of an on-site examination of the subject property. Also enclosed are two copies each of two letters from the applicant to banks requesting an exploration loan.

The field examiners conclude that target areas are too indefinite to warrant Government participation in the costs of the exploration work proposed by the applicant; and, therefore, recommend denial of the application without prejudice with the possibility of its revival for reconsideration if definite zones of mineralization are subsequently developed by the applicant at its own expense. We concur with the recommendation of the field examiners.

Original signed by
J. W. TOWNSEND

J. W. Townsend

Original signed by
E. N. HARSHMAN

E. N. Harshman

Enclosures
JWT:jy
cc: Harshman (2)
OMR/DFC
OME/HLC
Docket
Chron.
} w/copy of Examination Report

Reviewed by
OME OPERATING COMMITTEE

(date)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FRED A. SEATON, SECRETARY

OME
DEPARTMENT OF THE INTERIOR
JUN 16 1959
REGION III
DENVER, COLORADO

OFFICE OF MINERALS EXPLORATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION III

OME 5051

EXCELSIOR COPPER MINING COMPANY
Government Claims
Utah County, Utah

COPPER

Joint Engineering and Geologic Report

by

J. William Hamlet, geologist
Geological Survey

M. H. Hazen, mining engineer
Bureau of Mines

June 1959

EXTRA COPY
O. M. E.
RECEIVED JUN 24 1959

DATE	INITIALS	CC

Reviewed by
OME OPERATING COMMITTEE

_____
(date)

TINTIC COPPER MINING COMPANY
GOVERNMENT CANYON
UTAH COUNTY, UTAH

Engineering and Geologic Report

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INTRODUCTION

An application, dated April 9, 1959, for Government aid in an exploratory project, was submitted by Tintic Copper Mining Company. The proposed program consists of 10,000 feet of core drilling to search for deposits of copper ore in the Government Canyon area in Utah County, Utah, at a total estimated cost of $180,000.

The property was examined May 24, 1959, by J. William Adler, Geological Survey and M. H. Hayes, Bureau of Mines, to determine the merits of the proposed project and to appraise the engineering feasibility and estimated costs of the job. The field examinations were accompanied by James F. Sylvester, president of the company.

On May 20, 1958, under Docket No. RMMA 5031, a similar application for an exploratory loan on the property was made by B. K. Egan. However, the application was received too late to be processed by RMMA. Subsequently, the present application was submitted.

LOCATION AND PHYSICAL FEATURES

Government Canyon of Tintic Copper Mining Company is situated in a shallow valley on the lower east slope of the East Tintic Mountains, near the south end of Goshen Valley, Utah County, Utah. The property lies in Section 14, Township 11 South, Range 2 West, Salt Lake Base and Meridian, and may be reached by traveling from paved U. S. Highway 6 at Elberta approximately 9½ miles southeasterly on a fair, ungraded, dirt road and thence 2½ miles on a rough, desert road. By road, Eureka is approximately 22 miles northwesterly, and Salt Lake City is about 100 miles northerly from the mine. Altitudes range from 5400 to over 5700 feet.

HISTORY AND DEVELOPMENT

No ore has been produced from Government Canyon. Exploratory work consists of an old 60-foot shaft, east on the western edge of the patented section, several shallow shafts and trenches scattered in the mineralized area, and of extensive surface sampling.

OWNERSHIP AND MINERS

Tintic Copper Mining Company (formerly E. I. Egan), a Nevada corporation, whose address is 1000 Keenan Building, Salt Lake City, Utah, has the following corporate officers:

James F. Sylvester,	765 S. 42nd E., Salt Lake City, Utah	President
D. H. Egan,	448 Military St., Lexington, Kentucky	Vice president
Frank J. Sylvester,	765 E. 13th S., Salt Lake City, Utah	Director
Everett H. Egan,	Box 550, Lynch, Kentucky	Director

The following described mining property, situated in Utah County, Utah has been transferred by quitclaim deed from E. I. Egan, trustee, and D. H. Egan and Juliette G. Egan, his wife, of Lexington, Kentucky, grantors, to Tintic Copper Mining Company:

Mine	Book	Page	Date
Homestead	83	78	July 1, 1952
Homestead No. 1	83	79	"
" No. 2	83	80	"
" No. 3	83	81	"
" No. 4	83	82	"
" No. 5	83	83	"
" No. 6	83	84	"
" No. 7	83	85	"
" No. 8	83	86	"
" No. 9	83	87	"
" No. 10	83	88	"

Name	Recording data Book	Page	Date
Keemeland No. 11	513	548	July 3, 1952
" 12	"	549	"
" 13	"	550	"
" 14	"	551	"
" 15	"	552	"
" 16	"	553	"
" 17	"	554	"
" 18	"	555	"
Keene	656	113 & 114	July 7, 1954
Keene No. 1	"	115	"
" 2	"	116	"
" 3	"	117	"
" 4	"	118	"
" 5	"	119	"
" 6	"	120	"
" 7	"	122	"
" 8	"	121	"
Keene No. 1	727	?	?
" 2	"	?	?
" 3	"	?	?
" 4	"	?	?
" 5	"	?	?
" 6	"	?	?
" 7	"	?	?
" 8	"	?	?
Keene Extension No. 1	"	?	?
" 2	"	?	?
Kiene No. 1	787	?	?
" 2	"	?	?
" 3	"	?	?
Keene Extension	"	?	?

Also, all mines, minerals, oil and gas, deposits of limestone, slate or any other deposits of commercial value upon or under the following described tract: Lots 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, and the west half of the southwest quarter of Sec. 14, T. 11 S., R. 2 W., Salt Lake Base and Meridian, comprising 829.08 acres; Entry No. 18947, recorded in Deed Book 593, page 614-15, Utah County Recorder's office, Provo, Utah.

GEOLOGY

Areal Geology

The Tintic Mining district, of which Government Gulch is a part, is a complex structural syncline with the whole block thrust-faulted to the east. The displacement is of such magnitude that outcrops 7,000 feet apart in the stratigraphic column are adjacent along the thrust-fault zone.

In the East Tintic district lenticular beds of Tertiary gravel, talus, water-laid tuff, and subaerial ash and volcanic agglomerate, are intercalated in the lower part of a volcanic series of Oligocene (?) age, which overlies strongly folded, faulted, and deeply dissected Paleozoic sedimentary rocks.

Paleozoic rocks lying above a thick basement of Lower Cambrian Tintic quartzite have an aggregate thickness of more than 5,500 feet. Cambrian and Mississippian rocks make up the greater part of the sedimentary section, but Ordovician rocks are also present. The section is dominantly marine limestone and dolomite above the Tintic quartzite.

The igneous rocks of the East Tintic district comprise an early series of effusive rocks ranging from tuffs and agglomerates to quartz latite flows, and a later series of biotite-hornblende latite flows and tuffaceous breccias; both series are cut by intrusive biotite and hornblende monzonite dikes and stocks.

The Packard rhyolite, the main effusive formation in the district, is a series of tuffs, agglomerates, phenocrystic quartz latites, and vitrophyres, and in the East Tintic district it overlies the Paleozoic rocks.

The intrusives of the East Tintic district are numerous but none are large; they comprise many underground persistent dikes, a few stocks as much as 1,000 feet in diameter, and several small irregular bodies. The largest intrusive mass in the Tintic Range is only a few miles southeast, near Silver City, and is a monzonite stock with a surface area of about 7 square miles.

Dike-like bodies (pebble dikes) consisting chiefly of rounded, angular or subangular fragments of Tintic quartzite are especially common in a zone extending northwesterly through Big Hill and the North Lily mine into Eureka-Ville Canyon. The matrix of the dikes is predominantly fine-grained angular fragments of quartzite. Fragments of other types are present in most of the pebble dikes, but the Tintic quartzite nearly everywhere makes up more than 99 percent of the fragmental material and commonly less than 2 percent can be accounted to the rocks above it.

Like the more extensive monzonite dikes, nearly all persistent pebble dikes strike northeast, but a few follow north and northwest fissures.

It is believed that the pebble dikes were essentially contemporaneous with the monzonite dikes and represent a comparatively late stage in the pre-ore magmatic events. Pebble dikes are mineralized by late hydrous stage solutions in many places and locally contain ore. Their common association with monzonite and channels of mineralization makes most miners regard them as favorable indications of mineralized ground.

Structure

The general structure of the Tintic Mountains in the latitude of the East Tintic district is that of a great, asymmetric, north-trending syncline broken by many faults, most of which strike between northwest and northeast. The axis of the syncline, which coincides with the west boundary of the East Tintic district, lies about half a mile east of Eureka, Utah, and follows the eastern flank of Eureka Peak where the youngest Paleozoic formations in the district are exposed.

Ore Deposits

Most of the production of the East Tintic Mining district has come from confined limestone replacement deposits of lead-silver-zinc ore in the Tintic Standard and North Lily mines, but a substantial amount of pyritic copper-gold ore has been mined from veins in the underlying Tintic quartzite at these and other mines. Galena, ruby silver, sphalerite, and pyrite are the chief primary minerals of the lead-zinc replacement deposits and gold, enargite, tetrahedrite, and pyrite are the chief primary minerals of the auriferous copper veins. The Tintic Mining district has yielded almost $400,000,000 in metals over a 70-year history, and in the Eureka Standard Trough[1] gold valuable ores with a total value of about $6,150,000 were mined from northeasterly fissures in the footwall of the Eureka Standard fault.

The replacement deposits are commonly found in areas of shattered Jamestown limestone, usually at the intersection of low-angle faults and minor northeasterly cross-fissures. Quite commonly the northeasterly fissures carry barren pyrite or pyritic copper ore in the veins below or strike with the lead-zinc replacement deposits, where the walls of the vein are quartzite. Only rarely does the pyritic copper occur within the formations younger than the Tintic quartzite, and commonly the bodies of lead-zinc ore are just as unusual in veins with quartzite walls.

1/ Rock alteration as a guide to ore -- East Tintic district, Utah, by T. S. Lovering and others; Econ. Geol., Monograph 1, 1949, p. 15.

Geology of Government Canyon Area

Government Canyon, where the subject property is located is a flat, ovoid valley, bounded on the north and south by prominent ridges of Pennsylvania rhyolites overlain by quartz latites. A prominent southwest-trending ridge bisects the valley and there is some evidence of a steep northerly dipping fault zone. At the eastern edge of the ridge an extremely broken zone terminates the southern edge in an alluvial fan which constitutes the eastern slope of the area. This broken zone is characterized by northwesterly fault zones and an easterly trending, high-angle fault dipping to the north.

In the immediate vicinity of the mineralized zone, volcanic rocks constitute the exposed outcroppings. Rhyolites and latites are prevalent with some volcanic ash exposed. Tubular masses of iron-rich breccia are exposed along the main ridge of the mineralized zone, and the extreme alteration of this zone has masked the original rock which appears to have been intrusive porphyry.

No copper minerals have been noted, however, the presence of finely disseminated pseudomorphs, after pyrite can be seen. The highly altered material shows relicts of orthoclase and plagioclase. It appears that these masses were originally in an intrusive porphyry, and it seems reasonable to assume, sulphides were first formed and then were leached. Evidence of such leaching is widespread and indicates the possibility of a secondary enriched ore body at depth in-so-far as the operator is concerned.

PRESENT STATUS

Government Canyon is accessible by rough, dirt roads. One 60-foot shaft and several shallow shafts and trenches comprise the extent of mine workings. There are no buildings or any pieces of mining equipment on the property.

Mine labor and supplies are available locally and from Salt Lake City.

Several springs, in the vicinity of the property, are sufficient to supply water for the ordinary requirements of exploration and mining.

PROPOSED EXPLORATION

The applicant proposes a diamond-drilling program to test the area by completing 8 diamond-drill holes totaling 10,000 feet to test for copper mineralization at depth. An estimated average depth of 1,250 feet is thought, by the applicant, to be sufficient to prove the area. The main idea is that ore-bearing structures and sediments will be penetrated by the drilling at about this depth or that the altered porphyry may become exposed. Mr. James Sylvester, the applicant's geologist, stated that the 1,250-foot figure was purely an estimate as to the depth and location that the sedimentary formation may be intersected. In the Government Canyon area no sedimentary rocks are exposed. The sedimentary rocks may be penetrated before the 1,250-foot depth is reached, or they may be much deeper.

ESTIMATED COSTS OF PROPOSED EXPLORATION

(a)	Independent contractor Diamond drilling (8 holes at average depth of 1,250 ft.) 10,000 feet at $8.50 per foot	$85,000.00
	Assayer results (for 8 holes) 160 hrs. bulldozer at $20 per hour	3,200.00
	Total independent contractors	$87,800.00
(b)	Personnel services Resident geologist (will hook drill water) 30 months at $150.00 per month	$4,500.00
	Consulting geologist 20 days (2 days per month) at $50 per day	1,000.00
	Total personnel services	$5,500.00

(c) Operating materials and supplies Gasoline and oil for pick-up truck 20 months at $200 per month		$4,000.00
(d) Operating equipment 1 used pick-up truck		$1,500.00
(e) Initial rehabilitation and repairs None		
(f) New buildings, fixtures, installations Week shack		$500.00
(g) Miscellaneous Analytical work Assaying (determinations for Cu, Au, Ag) 1000 samples at $3 each	$3,000.00	
Core boxes (wood, to hold 30 feet of core) 200 at $5 each	$1,000.00	
Total analytical work		$4,000.00
Travel for consulting geologist 4,000 miles at $0.10 per mile		$400.00
Payroll tax 10% of Personnel Services $5,700		$570.00
Total miscellaneous		[illegible]
Total estimated cost of project		[illegible]
Government's share at 50 percent participation		$50,425.00

PROPOSED FINANCING

In accordance with the regulations on Government participation, as stated in section 103.9 of Title 30-Mineral Resources, Chapter III-Office of Minerals Exploration, Department of the Interior, the applicant's share of the total estimated cost of the project is $50,425.00. The applicant reports that his share of the cost will be financed by the sale of treasury stock.

CONCLUSIONS AND RECOMMENDATIONS

The property was carefully examined and the applicant's description of the mineralized, altered and brecciated areas within the confines of the property were considerably correct. The rhyolite and latite appear to quite fresh, but the mineralized zone, mineralized breccia and the iron-rich zones, as viewed by the applicant, are extremely altered, so much so that they can hardly be termed as having been mineralized, with exception of zones with heavy limonitic staining. No copper mineral were noted throughout the examination, nor were there any copper staining in any of the variously weathered zones. There has been apparently an almost complete deposition of copper mineralization in the zone, and even though these highly altered areas may be guides to ore, other factors are involved in this particular area to preclude a program of exploration at this time.

A rather complete sampling of the surface shows that copper values range from a trace, to as much as 0.55 percent copper, and 16% samples averaged 0.06 percent copper. Should there have been any extensive mineralization of the monzonite body certainly copper values should show considerably higher values, or at least, show an occasional "hot spot."

The property is presently in the prospect stage and although it is not the general policy of CMM to completely rule out a prospect, the facts in this case indicate that additional detailed geologic mapping needs to be completed as well as some definitive drilling to find a more mineralized target area, such as possible intersections of faults with porphyry, or underlying sedimentary formations, and other guides common to the finding of ore in the Rest Finish district. Only merely does the sparse copper occur within the formations younger than the Finish quartzite, and commonly the bottom of lead-zinc ore are just as unusual in value with quartzite veins. Bingham Canyon is the

where interpret by Fig 3

nearest and only occurrence of porphyry copper in the region. The applicant suggested the likelihood of such an occurrence in this case, however, the attaching team feels this is quite unlikely.

Other guides to ore in the district are:

1. The middle Ophir limestone where it is faulted against Ibex quartzite is a particularly favorable environment for lead-zinc replacement ore. This situation usually exists in the district in down-faulted trough structures such as the Ibex Standard, North Lily and Raven Standard troughs.

2. Fissure veins, because they represent conduits for mineralizing fluids, are important guides to ore, especially where they enter the structures described above.

3. Large normal or thrust faults may be mineralizing structures in themselves or may provide the necessary brecciation porosity and permeability for the transfer and precipitation of ore. An area of convergence of two or more faults structures presents a particularly favorable condition. Fold and struggle structures within the troughs may also provide the necessary rock preparation.

4. Pyritic, calcitic and jasperoid alteration in valanis cover are general indications of areas of late stage hydrothermal activity and possibly of ore bodies in underlying carbonate rocks. Banded dolomite and barite jasperoid in the carbonate rocks also represent late stage hydrothermal effects and serve to guide exploration.

5. Where limestone replacement ore bodies are found adjacent to intrusives they are characterized by high lead and zinc and low silver while those ones at intermediate distance contain a greater proportion of the more profitable silver.

6. Pioneer veins have produced important amounts of gold, silver, and copper in the district and appear to be more prolific than the areas are found near igneous contacts. Almost universally they have the Thistle quartzite as a host rock.

It is, therefore, considered that the highly mineral area may be worthy of exploration in that it is a general guide to ore, but present sampling shows much less than ore-grade material is present and that considerable additional geologic work needs to be completed to prove or disprove the area. Definite target areas must be established. This type of work should be done by the applicant. If definite areas of strongly mineralized material are found by preliminary drilling, then the applicant can reapply for OIL conference. It is, therefore, recommended that the Government Canyon property, Utah County, Utah, included in this application be denied without prejudice.

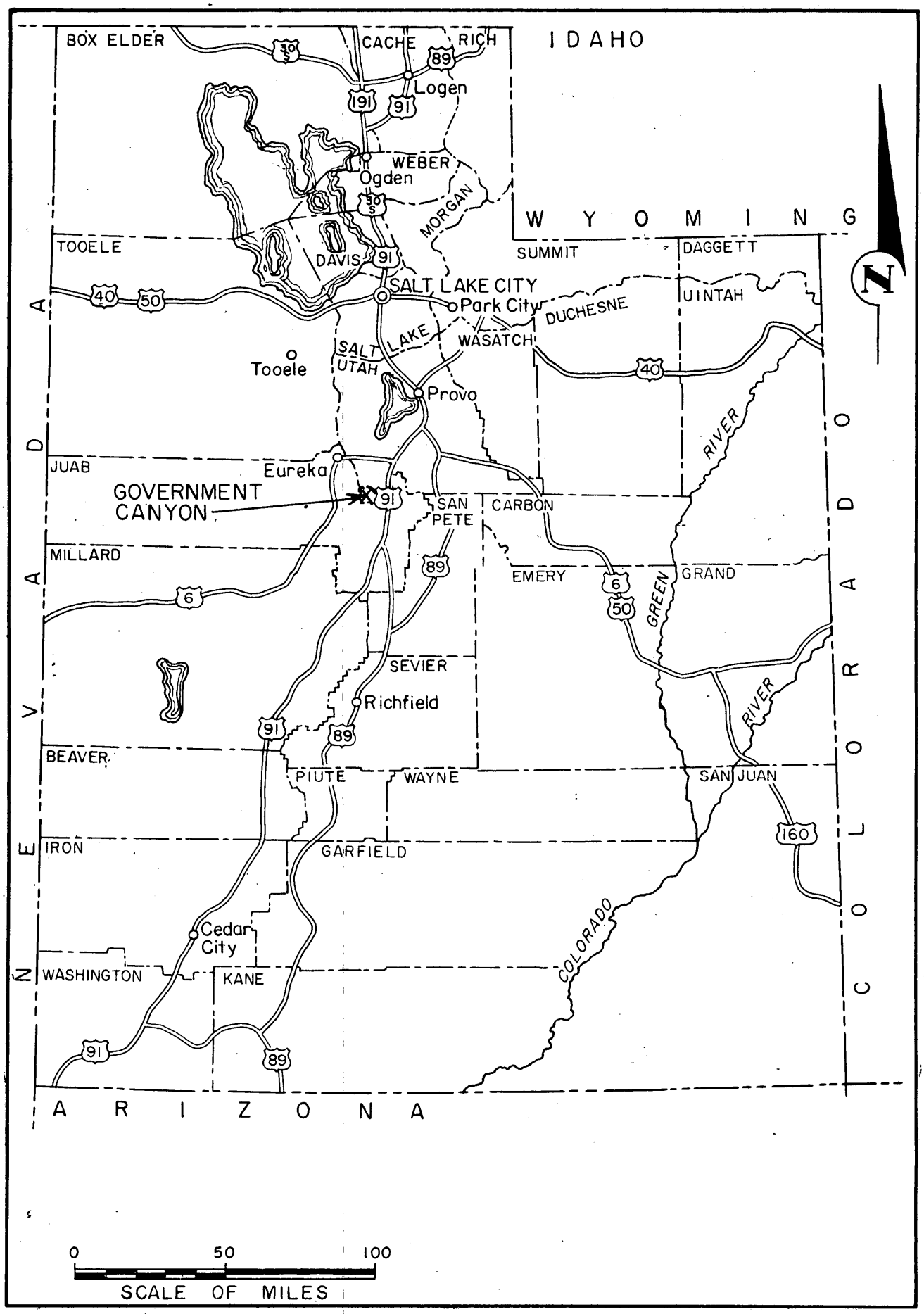


FIGURE 1.-LOCATION MAP, TINTIC COPPER MINING CO., GOVERNMENT CANYON, UTAH COUNTY, UTAH. OME DOCKET No. 6035

EXTRA COPY
O. M. E.
RECEIVED JUN 24 1959

DATE	INITIALS	CODE

U.S.G.S.

TINTIC COPPER MINING CO.

1020 KEARNS BUILDING

SALT LAKE CITY 1, UTAH

EXTRA COPY O. M. E. RECEIVED MAY 4 1959		
DATE	INITIALS	CODE

May 1, 1959

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

Re: Docket No. ~~DMEA-5031~~ OME-6035 Copper
~~B. N. Egan, et al.~~ Tintic Copper Mining Company.
Government Canyon
Utah County, Utah

Attention: Mr. Frank E. Johnson
Acting Director

Gentlemen:

Reference is made to your recent letter requesting information concerning the claims of this corporation.

The Keeneland group are probably not valid claims at this time inasmuch as the annual assessment was not properly performed on the claims.

The claims identified as Keene and Keene No. 1 and 2 are superseded by Diane No. 1, 2, and 3.

The claims which probably are invalid and which have been superseded were, nevertheless, named and included in the quitclaim deed so that the corporation would receive whatever interest the grantor had therein.

Included are four copies of a map showing the location of the holdings of the corporation in Government Canyon.

Very truly yours,

J. F. Sylvester

J. F. Sylvester, President

Encl.

April 27, 1959

Memorandum

To: W. R. Griswold, Office of Minerals Exploration

From: W. P. Williams, U. S. Geological Survey

Subject: OME application 6035 (formerly DMEA 5031), Copper, Tintic Copper Mining Company, Government Canyon, Utah County, Utah

OME application 6035 covers the same property as DMEA application 5031. DMEA application 5031 was reviewed on May 28, 1958, by N. E. Nelson, Geological Survey.

From correspondence in the docket, arrangements have already been made with the Field Team to examine the property the next time they are in the vicinity.

W. P. Williams

cc: OME (3)
A.D. McMahon, 3623
Director's reading
Branch reading
Chron. file
Docket file
WPWilliams/mm
G-MD-4-27-59

April 20, 1979

Memorandum

To: W. R. Grimald, Office of Minerals Exploration

From: Geologist Specialist, Branch of Base Metals

Subject: Review of application, Docket No. [illegible] (copper), Tintic Copper Mining Company, Government Canyon, Utah County, Utah

The subject application is intended to replace that submitted by R. E. Egan and assigned Docket No. [illegible] (copper). Evidently, there has been no new work done by the applicant since the previous application was submitted.

It is suggested that both applications be submitted to the Field Team for appropriate action.

A. D. McMahon

A. D. McMahon

Attachment

ADMcMahon/vr

Copy to: Division of Minerals
Branch of Base Metals (2)
Base Milligan, U.S.G.S.
F. D. Lamb
Files

JUN 4 1958

Mr. J. W. Townsend
Alternate Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

Re: Docket No. DMEA-5031 (Copper)
S. H. Egan, et. al.
Government Canyon
Utah County, Utah

Dear Mr. Townsend:

The cited application for exploration assistance is being referred to your office for consideration, a field examination of the property if warranted, and recommendations.

On the property map (Plate 2) it is not possible to trace the location of Lots 1-18 and the east half of the southwest quarter of section 14, Township 11 South, Range 2 West.

Copies of memoranda dated May 28, 1958, by A. D. McMahon, Bureau of Mines, and N. E. Nelson, Geological Survey, relating to the project, are enclosed for your information. We are also enclosing two copies of the application for the use of the Field Team.

Sincerely yours,

W. S. Martin

ACTING Chairman, Operating Committee

Enclosures
APPROVED:

Frank D. Lamb
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

WPKlugescheid/er 6/3/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Chron.

JUN 4 1958

Mr. Byron M. Egan
406 Holliday Road
Lexington, Kentucky

Re: Docket No. DMEA-5031 (Copper)
B. M. Egan, et. al.,
Government Canyon
Utah County, Utah

Dear Mr. Egan:

Your application for Government assistance to explore the cited property has been reviewed by the Division of Base Metals of the Defense Minerals Exploration Administration and has been referred to:

Mr. J. W. Townsend
Alternate Acting Executive Officer
DMEA Field Team, Region III
224 New Customhouse Building
Denver 2, Colorado

If the Field Team requires additional information concerning your application, they will contact Mr. J. F. Sylvester at an early date.

Sincerely yours,

C. O. Mittendorf

Administrator

WPKlingenschmid/er 6/3/58
Copy to: Docket
Admr R File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Region III (2)
Chron.

May 28, 1958

Memorandum

To: W. R. Grimald, Defense Minerals Exploration Administration

From: Commodity Specialist, Branch of Base Metals

Subject: Review of Application, Docket No. DMEA 5031 (copper)
B. E. Egan, Government Canyon, Utah County, Utah
$120,000.

The applicant seeks Government assistance for 10,000 feet of exploratory diamond drilling in an alleged mineralized area. The justification for the project as presented is based on assumptions of geologic possibilities. In the list of approximately 100 assays of the surface samples taken by the applicant there are only two amounting to 0.2 percent copper and most of the others are below one-tenth of one percent copper. The indications that an ore body could be discovered are not very convincing.

Referral of the application to the Field Team for appropriate action is recommended.

A. D. McMahon

Attachment
ADMcMahon/mm
Copy to: Division of Minerals
Branch of Base Metals (2)
Files
Ebar Hillegaard, U.S.G.S.
F. D. Lamb

May 28, 1958
Re: DMEA 5031
B. N. Egan
Government Canyon property
Utah County, Utah
$120,000 - Copper

Memorandum

To: W. R. Griswold, Defense Minerals Exploration Administration

From: N. E. Nelson, U. S. Geological Survey

Subject: Review of application

The applicant requests assistance in prospecting, by deep drilling, a large area underlain by an intensely altered rock, believed by the applicant to be altered porphyry.

Sampling has shown the altered rock to be slightly mineralized by copper. The copper probably as 'oxide' is taken to be the residual product of copper sulfides.

Apparently no serious attempt has been made to determine the origin of the altered rock, which as mapped is exposed over a vertical range of over 300 feet. The 101 samples taken and assayed show a range in copper content from Trace to 0.21%. Twenty of the samples assayed more than 0.10% copper.

Remnants of rhyolite appear to cap the altered porphyry (?). In one area the porphyry is brecciated.

As noted by the Denver office, the proposed work smacks of prospecting, but an examination may be justified.

Referral of the application to the Field Team for appropriate action is recommended.

N. E. Nelson

cc: DMEA (3)
A.D.McMahon, 3623
Director's reading
Branch reading
Chron. file
Docket file
NENelson/mm
G-MD-5-28-58

APR 15 1959

Memorandum

To: Executive Officer, OME Field Team, Region III

From: ACTING Chairman, Operating Committee, OME

Subject: Docket No. OME-6035 (Copper) (formerly DMEA-5031)
Tintic Copper Mining Company
Government Canyon
Utah County, Utah

We refer to our teletype dated April 13, 1959. We received your teletype, dated April 7, too late to process on the tenth. In all probability our message reached you too late.

If the property has not been examined then an examination should be made.

If the property is favorably considered by the Field Team, you should request a detailed statement of the assets, liabilities, and net worth of each of the officers and directors of the company as well as from the five largest stockholders, to be submitted to the Washington Office.

At the same time we would like to know if the transactions with the banks were carried on orally and if any collateral was offered other than the property itself?

In the new application, just received, the Applicant refers to some claims known as Keeneland and Keeneland 1 - 18, and Liana 1 - 3. We have no maps showing where these claims are located and would like to have one (3 copies).

W. S. Martin

APPROVED:

(sgd.) G. W. Josephson
Member, Bureau of Mines

Thor H. Kiilsgaard
Member, Geological Survey

WPKlugescheid/er 4/15/59
Copy to: Docket
Dir Read File
Op. Committee
Mr. McMahon, USBM
Mr. Kiilsgaard, USGS
Chron.

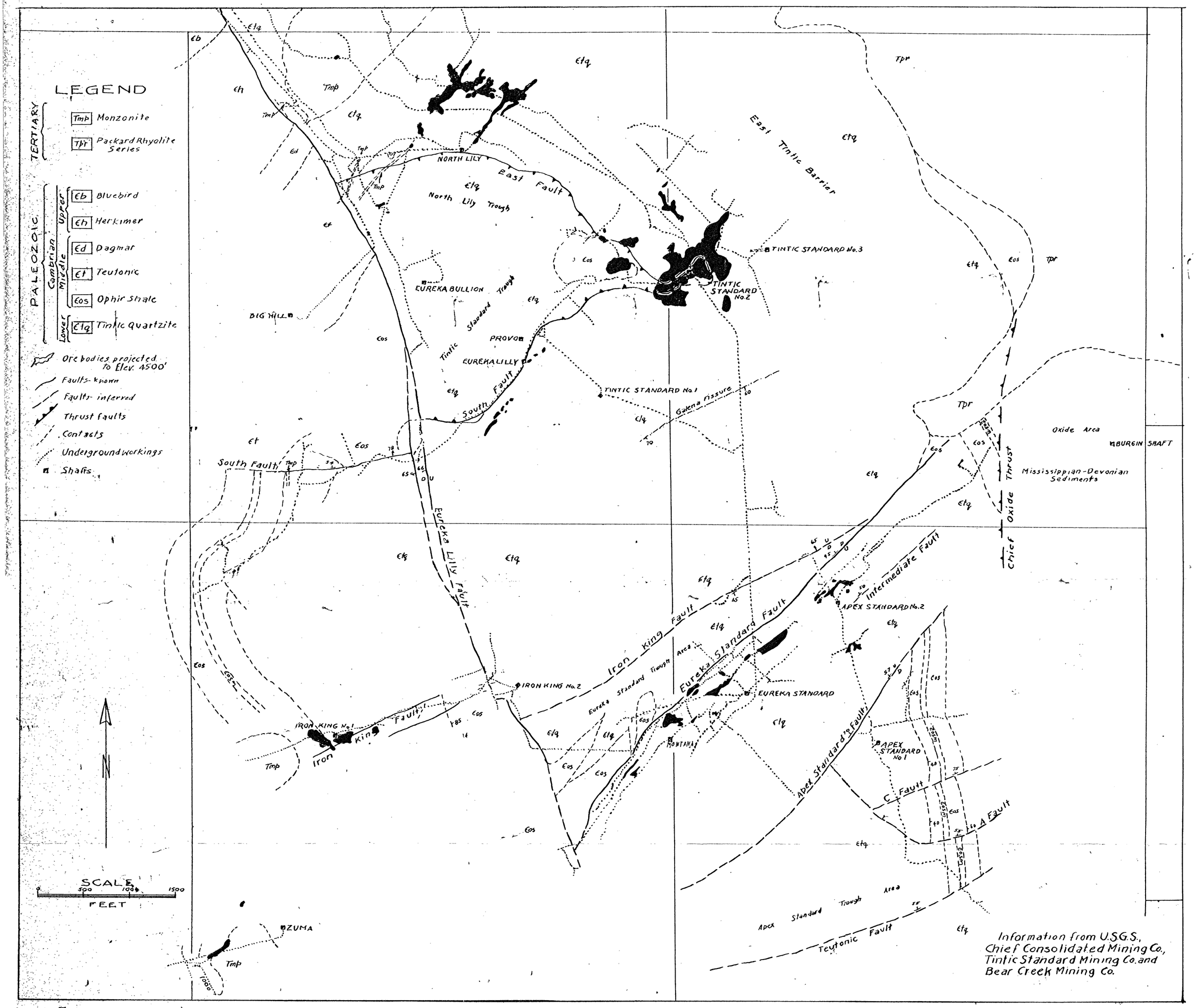
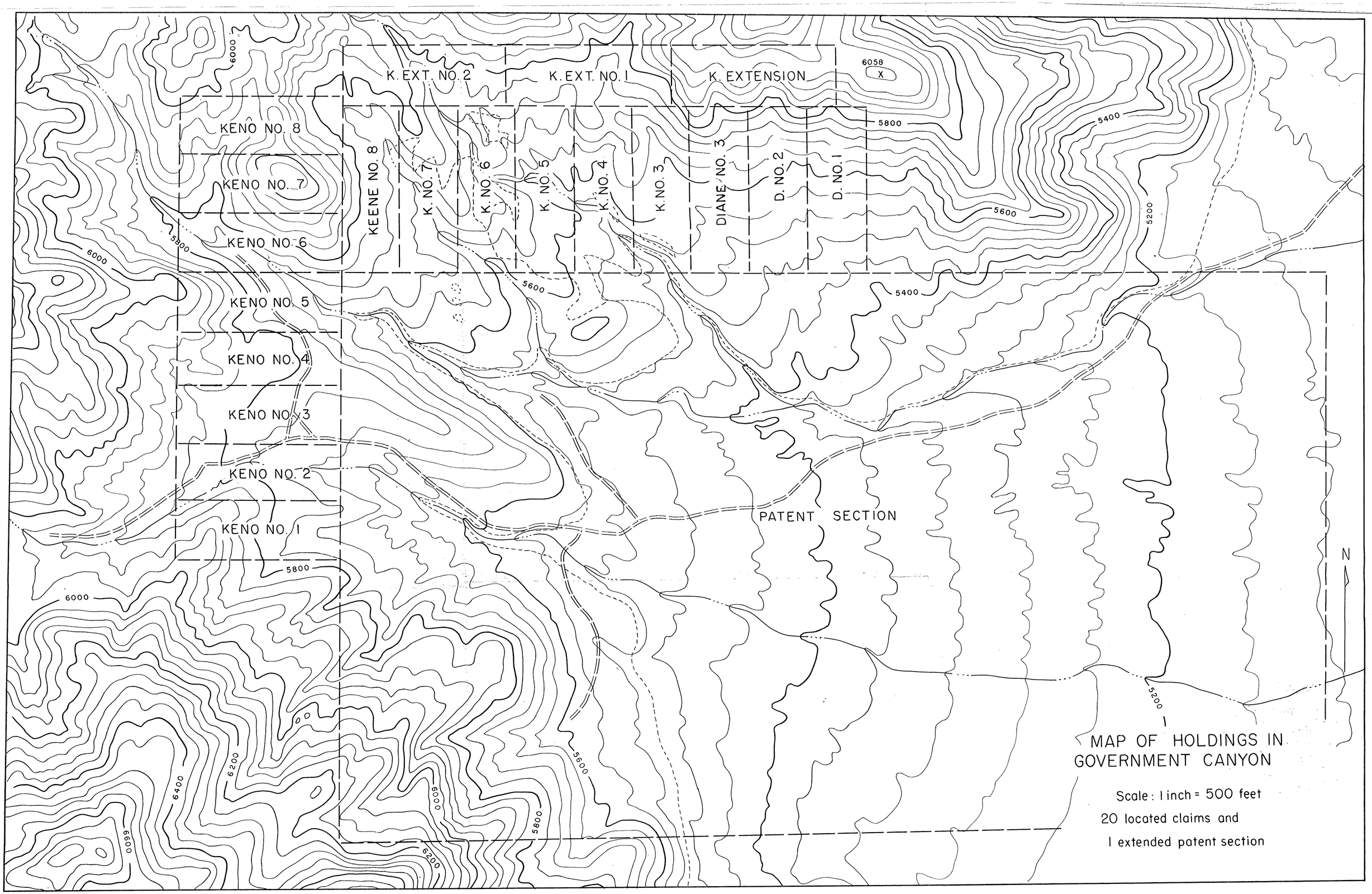


Figure 2

GEOLOGIC MAP OF THE EAST TINTIC DISTRICT, UTAH,
AT 4500 FEET ELEVATION


K. EXT. NO. 2
K. EXT. NO. 1
K. EXTENSION
6058
X
KENO NO. 8
KENO NO. 7
KENO NO. 6
KENO NO. 5
KENO NO. 4
KENO NO. 3
KENO NO. 2
KENO NO. 1
KEENE NO. 8
K. NO. 7
K. NO. 6
K. NO. 5
K. NO. 4
K. NO. 3
DIANE NO. 3
D. NO. 2
D. NO. 1
PATENT SECTION
6000
5800
5600
5400
5200
6200
6400
6600
N
MAP OF HOLDINGS IN
GOVERNMENT CANYON
Scale: 1 inch = 500 feet
20 located claims and
1 extended patent section

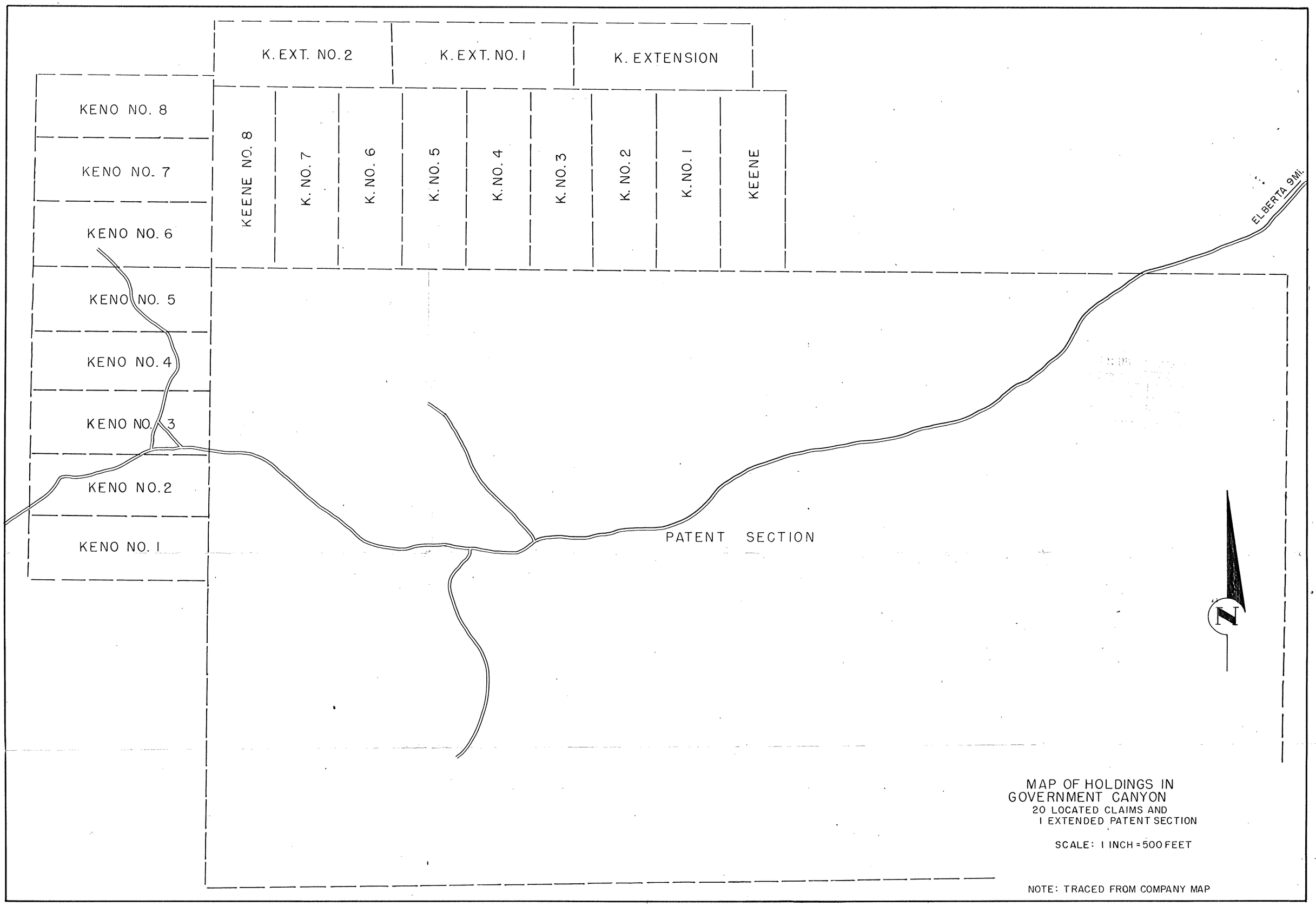


FIGURE 4.-PROPERTY MAP, TINTIC COPPER MINING CO., GOVERNMENT CANYON, UTAH COUNTY, UTAH. OME DOCKET NO. 6035

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OFFICE OF MINERALS EXPLORATION
MAY 1959 DOCKET 6035

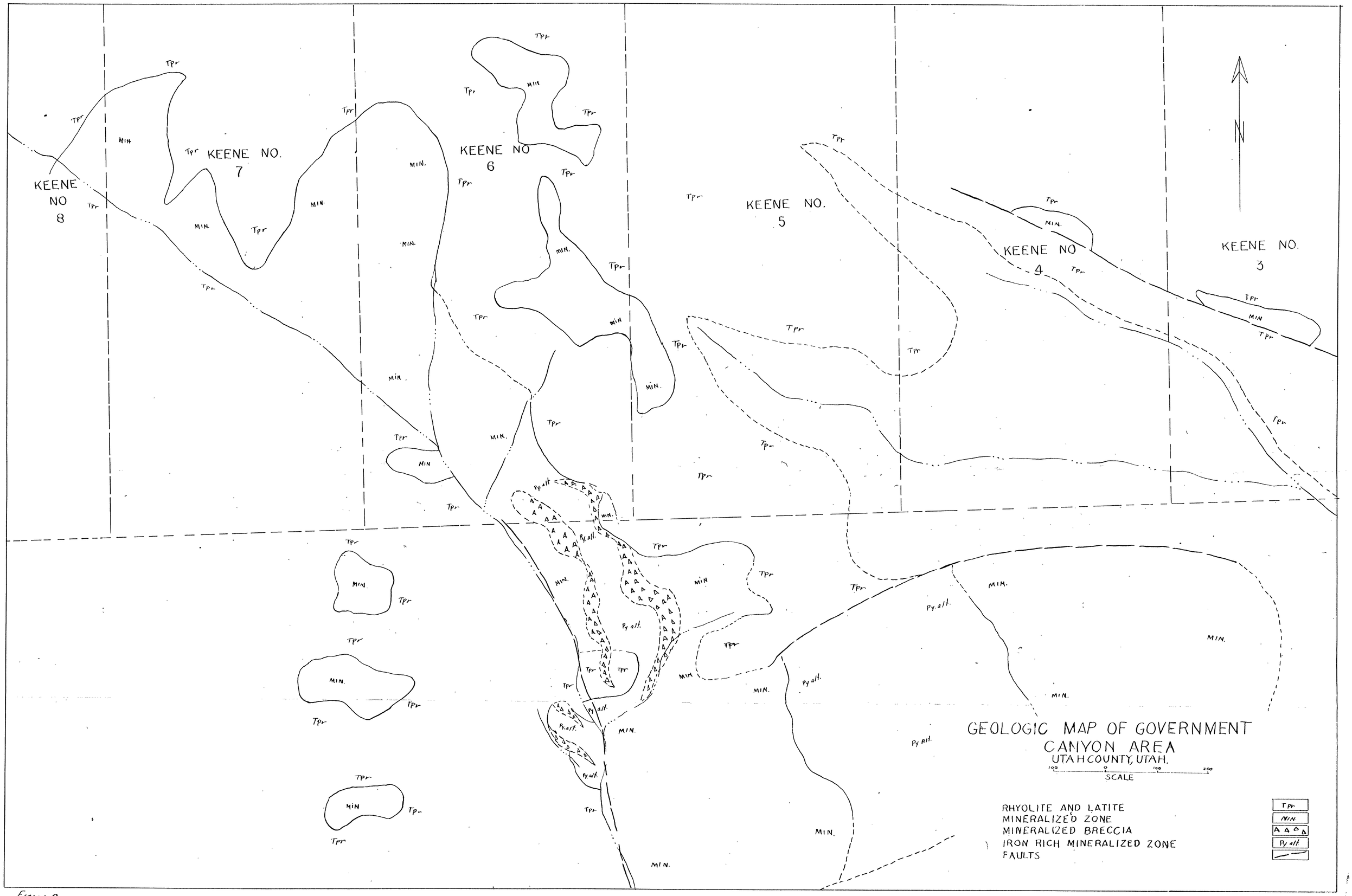


Figure 3.