MK-075-01

TERRITORY OF ALASKA

DEPARTMENT OF MINES

COLLEGE, ALASKA

February 21, 1949

Mr. B.D. Stewart, Commissioner of Mines
Territorial Department of Mines
P.O. Box 2811
Juneau, Alaska

K+ 15-20
15-48

Dear Mr. Stewart:

REPORT: TONZONA DISTRICT

Enclosed please find two copies of the Tonzona District report. Will you please forward three copies of the tracings enclosed with the original; these will be attached to the reports on file here.

A copy of this report will be sent to Mr. I.W. Purkeypile at Poorman. It has been Mr. Purkeypiles desire to have some mining company send an engineer into the Tonzona District to appraise his prospects; it is my opinion that his prospects are not ready for this particular phase of development. Much ground work remains to be done before the properties would be attractive to a mining company. The isolated locality contributes considerably toward a high cost prospecting venture for Purkeypile but this initial burden, in accordance with our present accepted processes, is borne but the struggling prospector. The profits, if any, from the sale, lease or transfer of mining property is the prospectors reward.

Mr. Purkeypile is to be commended for his constant endeavors in exploring the mineral resources. He is not a prospector in the true sense of the word but he does put considerable money in ventures; as far as I know he does not use other peoples financial assistance.

With kindest personal regards I remain

Yours very truly,

Bruce I. Thomas

TERRITORY OF ALASKA
DEPARTMENT OF MINES
COLLEGE, ALASKA

RECONNAISSANCE SURVEY

TONZONA DISTRICT, ALASKA

(Mt. McKinley Recording District)

1948

by

Bruce I. Thomas
Associate Mining Engineer

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TERRITORY OF ALASKA

DEPARTMENT OF MINES

COLLEGE, ALASKA

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SUMMARY

The Jiles-Knudson and the Mespelt Prospects, which were examined by the Territorial Department of Mines, constitute the only known prospects in a small section of the Tonzona District, Alaska. Considerable development work and prospecting is required to establish their potential value.

At the Jiles-Knudson Prospect pyrite, arsenopyrite, pyrrhotite, chalcopyrite, limonite and quartz occur with a ferriferous dolomite in a silicious schist. This deposit is approximately 10 feet wide and a sample taken across the entire width assayed 2 ounces of silver a ton and a trace of gold; qualitative tests did not reveal the presence of other valuable metals.

Galena float assaying 124.32 ounces of silver a ton and a trace of gold comprises the principal discovery at the Mespelt Prospect. This float is found as a talus at an elevation of approximately 4,500' near the contact between calcareous schist and granite. No mineral has been found in place.

Intense iron staining and the presence of numerous small quartz veins throughout this section of the Tonzona District indicate the presence of other mineralized zones, and further prospecting is justified in this isolated section of interior Alaska.

INTRODUCTION

The Territorial Department of Mines, as part of its program of investigating and examining mineral deposits as a special aid to prospectors in Alaska, examined two mineral prospects in the Tonzona District in 1948.

In conjunction with this work a general reconnaissance survey was made in a small area outside the western boundary of Mt. McKinley National Park located between Tonzona River and Boulder Creek, a southern tributary of the Chedotlothna River. A limited amount of prospecting and development work was done in this area during 1921 and 1923 but no commercial ore bodies were developed. A renewed interest in prospecting during 1947 and 1948 prompted an investigation of this area by Bruce I. Thomas, Associate Mining Engineer, Territorial Department of Mines. Seven days, August 17 to 23 inclusive, were spent in examining and investigating two mineralized areas and conducting the general reconnaissance survey over an area approximately five miles long and ½ mile wide.

The Territorial Department of Mines wishes to acknowledge the special assistance rendered by Mr. I.W. Purkeypile and Mr. Howard Towse, both of Poorman, Alaska; their efforts helped expedite and facilitate the accumulation of data in the relatively short period of time allotted to this task. Thanks are extended to Mr. Robert Vanderpool of Crooked Creek, Alaska for prompt and courteous services rendered.

LOCATION AND ACCESSIBILITY

The general reconnaissance survey was confined to asmall section of the Tonzona District in interior Alaska. The Jiles-Knudson Prospect and the Mespelt Prospect, located in this small section, were also examined. The investigation was conducted in an area approximately 7 miles long and 2 miles wide which is outside the southwestern boundary of the Mt. McKinley National Park. It lies between Cathedral Creek, an eastern tributary of the Tonzona River, on the south, and Boulder Creek a southern headwater tributary of the Chedotlothna River, on the north.

There are no roads or air fields in this isolated section of interio r Alaska. The nearest air port is at Lake Minchumina 75 miles due north. McGrath is the closest large community and is 108 miles due west and Medfra, at the head of river boat navigation on the Kuskokwim River, is 85 miles to the westward. (Fig. 1).

In recent years access to the district has been by small pontoon plane in the summer and by dog team and ski-equipped plane in the winter. During the early days U.S. Geological Survey parties passed through the district enroute from Tyonek on Cook Inlet to interior Alaska; this route is not used today.

A small two passenger pontoon equipped air plane has, at various times, landed on three small lakes that are within a few miles of the mineral prospects. One lake is located about one mile west of the mouth of Cathedral Creek on a high gravel moraine on the north side of the Tonzona River. Another lake between Boulder Creek and Chedotlothna River, about two miles north of the Jiles-Knudson Prospect has also been used by small pontoon planes. A large lake located about 10 miles due west of Cathedral Creek on the north side of the Tonzona River has been used by 4 passenger pontoon planes. These lakes are from 1,500 to 2,000 feet in elevation which restricts the capacity and size of plane landing on them. These same lakes can be used by ski-equipped planes in the winter time.

It is possible to construct a small landing field on one of several boulder free glacial morains which are within 2 or 3 miles of the known prospects. If mineral development should warrant the Mt. McKinley National Park Road could be extended along the north and west flank of the Alaska Range into the District.

PHYSICAL FEATURES AND CLIMATE

The prospects in this section of the Tonzona District are located in the steep, rugged mountains that face the broad expansive valleys of the North and South Fork Kuskokwim Rivers. These mountains average about 6,000 feet in elevation and are located between the very high steep rough mountains of the center Alaska Range to the east and south and the very low and well rounded hills to the west and north. Mt. McKinley, Mt. Foraker and Mt. Russell are visible on clear days and Lake Minchumina, 75 miles to the north, can be seen from an elevation of 5,000 on clear days.

Much talus and glacial debris covers the mineralized area which lies in the mountains that flank the main rock mass of the Alaska Range. The known prospects are in areas covered with such material and tracing of float by trenching, to prove the extent of mineral bodies, is handicapped by the necessity to handle large quantities of overburden. Large pieces of slide rock included in fine broken material makes such work very difficult and oft-times dangerous when working on the steep hill slopes.

The entire region has been intensely glaciated. Well formed cirques and hanging valleys are numerous. The western and northern lowlands, which extend toward the broad valleys of the North and South Fork Kuskokwim Rivers, are covered with considerable glacial till. Terminal, lateral and kettle morains, kames covered with large granite boulders, and kettle holes filled with water forming hundreds of small lakes, characterize the low lands. The massive granite boulders were plucked, by glacier ice, from the central mass of the Alaska Range. The irregular surface of the morainial material makes walking tiresome and somewhat difficult despite the relatively solid footing.

The major streams in this locality are fed by glaciers which flow in

typical "U" shaped valleys which terminate abruptly against towering mountains to the east. These streams have steep gradients and are heavily laden with silt. Near their source they flow over large boulders. It is impossible to ford them during high stages of water. In the summer these streams are at their lowest stage early in the morning because the heavy run-off produced by melting ice and snow from the heat of the previous day is dissipated. Sufficient water is available during all times of the year for any contemplated mining and milling operation. Hydro-electric power could be developed at Cathedral Creek in sufficient amount to meet the requirements of a small mine and mill.

Timber grows up to altitudes of 2,000 to 2,800 feet and reaches greatest altitudes along the valley of the Tonzona and Chedotlothna Rivers. Scrub spruce 8" to 12" in diameter and 35' to 40' in height grow near the margins of the large lakes and along the course of streams. This timber is suitable for fuel and also for the construction of small log buildings and mine timber. The prospects in the district are above timber line and it is necessary to haul wood for fuel and for building purposes several miles.

Alder and willow with occasional dwarf spruce and poplar grow above timber line along the course of small streams. Blueberry and cranberry grow in abundance on the moss covered morains and hill slopes.

Wild life consists principally of brown bear, wolverine, some sheep, caribou, moose, rabbit, ground squirrel, porcupine, grouse and ptarmigan. In the summer ducks, geese and cerlew are numerous.

The climate is subarctic, typified by long cold winters and comparatively warm summers. No precipitation records are available for this area but it appears as if there is more precipitation in this region than elsewhere in

interior Alaska. The high mountains of the Alaska Range have considerable influence on the rain and snow fall. In mid-summer storms accompanied by heavy rains and snow are frequent but usually of short duration.

LIVING CONDITIONS

The only living facilities are two log cabins both of which are in very poor condition. One cabin is located in a stand of spruce trees near Boulder Creek about 3 miles northwest of the Jiles-Knudson Prospect. The other cabin is located on the north side of Cathedral Creek at the point where the creek enters the Tonzona River valley.

HISTORY AND PRODUCTION

During the years 1921 to 1923 inclusive F.B. Jiles (deceased) and Ed Knudson, of Poorman, Alaska did considerable prospecting in the vicinity of Boulder Creek. These men concentrated on developing a mineral deposit located on the west side of the valley about one mile below Boulder Creek Glacier. About this same time Adolph Mespelt, now at McGrath, Alaska, and his brother Charles Mespelt found galena float in a talus slope about 2½ miles west of the Jiles-Knudson prospect and worked here for about two seasons. Both these prospecting programs were abandoned and, until the summers of 1947 and 1948, there was no active prospecting in the district.

Mr. I.W. Purkeypile, encouraged by Mr. Ed Knudson, began prospecting during the summer of 1947 and continued his work during the summer of 1948.

There has been no mineral production in this section of Interior Alaska.

PROPERTY AND OWNERSHIP

At the present time eight lode claims cover the two known lode prospects in the district. These claims were staked by Mr. I.W. Purkeypile and are filed in the recording office at McGrath. Two claims are located at Boulder Creek and are known as the Jiles claim and the Knudson claim. Approximately 2½ miles west of these claims, at the old Mespelt Prospect, are the Mespelt, Grandview, Basin, Little Mountain, Scenic and Wonder lode claims. So far as is known these are the only lode claims held in the district.

GENERAL GEOLOGY

The rocks in this section of the Tonzona District, between Cathedral Creek and Boulder Creek, include argillite, slate, calcarious argillite, thin-bedded limestone, and shale that is locally silicified, and silicious and calcarious schists. The bedding planes of these rocks strike in a northeasterly direction and stand almost vertically. These highly metamorphosed sedimentary rocks and metamorphic rocks are intruded by a large body of light colored granite. Silification of the intruded rock is quite pronounced along the contact with the granitic mass. (Fig. 2).

On the east side of upper Cathedral Creek considerable serpentine if found, occurring as dikes, in schist and argellite. Serpentine is an important constituent of some metamorphic rocks and is a secondary mineral resulting from the metamorphism of olivine, amphiboles, pyroxene and other ferro-magnesian minerals. The presence of an abundance of serpentine indicates the presence of ultra-basic intrusives. Locally these rocks are highly colored, bright red predominating. This coloration is probably due to the oxidation of ferro-magnesian minerals. The massive granite, which is a part

of the intrusive rock at Boulder Creek, intrudes the schist and argillite to the east of this locality.

Mineralization in this section of the Tonzona District occurs in silicious schist near the contact with granitic rock. The presence of considerable galena float near thin bedded limestones and calcareous shales near the contact with granitic rock indicates that the galena was originally derived from these sedimentary rocks.

MINERAL OCCURRENCES

Jiles-Knudson Prospect: K+75-20

The Jiles-Knudson Prospect occurs in silicious schist about ¼ mile west of the granite contact and about one mile north of the Boulder Creek Glacier. Development work has been done on two separate mineral occurrences in this locality.

A large tabular shaped body of ferriferous dolomite, calcium-magnesium-iron-carbonate, about 10 feet wide, occurs in silicious schist parallel to the planes of schistosity. This deposit strikes N 86° E and stands vertically. It is exposed, approximately 30 feet along the strike and 15 feet along the dip, at the toe of a lateral moraine on the valley floor on the west side of Boulder Creek. (Fig. 3). A lenticular shaped mass of sulphide minerals, 10" wide, composed of pyrite, arsenopyrite, and some pyrrhotite and chalcopyrite, limonite and quartz, occurs along the contact with the dolomite and schist. No studies have been made to determine the genetic relationship between the ferriferous dolomite and the sulphides but the sulphides were probably deposited in planes of weakness along the contact of dolomitic limestone from mineralizing solutions emanating from the granite mass to the east and these solutions in turn altered the limestone to its present state.

A shallow prospect shaft 7' x 5' x 7' deep was sunk in the deposit. Several tons of material, principally ferriferous dolomite, have been stacked near the collar of the shaft indicating that much material has been removed from in place after the first discovery.

A chip sample 10' long, taken across the ferriferous dolomite and sulphide body, assayed 2 ounces of silver and a trace of gold giving a total value, at the present price of silver, of $1.80 a ton. Tests made on the ferriferous dolomite from in place and from the dump indicate that it does not contain any valuable metals.

Approximately 250 feet south of the ferriferous dolomite, pyrrohitite and chalcopyrite occur in narrow seams and as irregular lenticular shaped bodies in silicified schist, which strikes N 86° E and stands vertically. This deposit is located near the valley floor of Boulder Creek and is exposed for approximately 100 feet along the strike and about 30 feet down the dip. The mineralized zone is about 30 feet wide. The sulphide minerals constitute a very small portion of this mineralized zone. A chip sample taken across the entire zone assayed a trace of gold and no silver; qualitative tests did not reveal the present of other valuable metals. A short adit, approximately 10 feet long, driven normal to the strike ofthe zone did not reveal the presence of sulphides.

Mespelt Prospect: K+15-48

The Mespelt Prospect, approximately 2½ miles west of the Jiles-Knudson Prospect, is on the west flank of the rugged mountains facing the North and South Fork Kuskokwim Rivers. Considerable galena and quartz float is found in talus at an elevation of approximately 4,500 feet.

The rocks in this locality comprise iron stained silicious limestone, calcareous shale, and schist, which are intruded by granite. Galena and quartz float are found near the contact of the granite with the sedimentary and metamorphic rocks. The presence of carbonate material adhering to galena specimens indicates that the galena is probably associated in place with limestone.

Assays of samples of float taken from various locations near the contact are as follows: (Fig. 4).

Sample M 300: quartz from brecciated zone near contact between calcareous schist and granite; 0.04 ounces of gold a ton, no silver.

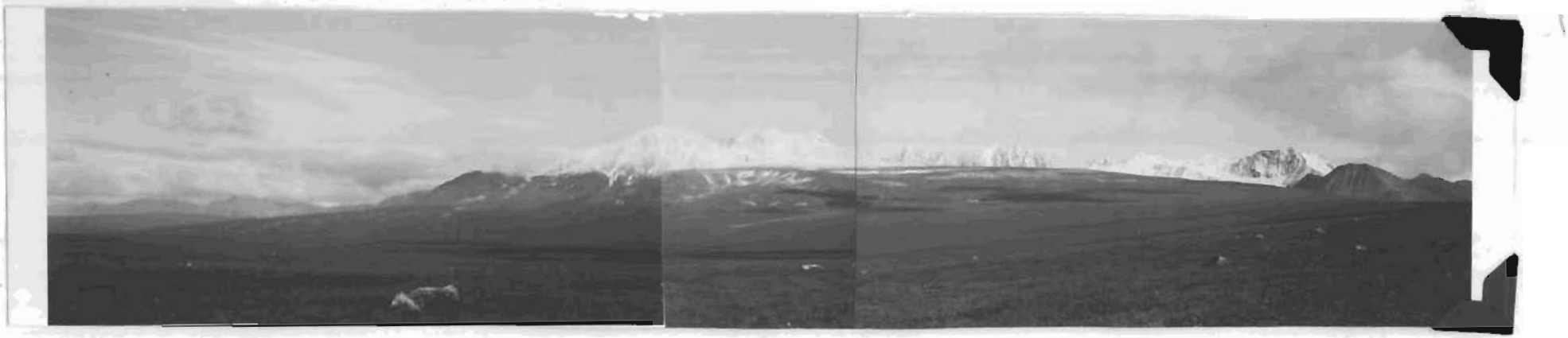
Sample M 302: quartz float near contact; 0.10 ounces of gold a ton, 8.30 ounces of silver a ton.

Sample M 303: float gossan near contact; trace of gold, 6.47 ounces of silver a ton, no other valuable metals present.

Samplt M 304: galena float; trace of gold, 124.32 ounces of silver a ton, approximately 80% lead.

ASSAYS AND IDENTIFICATIONS

Assays and identifications of mineral and rock samples were made by A.E. Glover, Assayer, Territorial Department of Mines, College, Alaska



Panorama from Boulder Creek Valley on left to Cathedral Creek valley on right

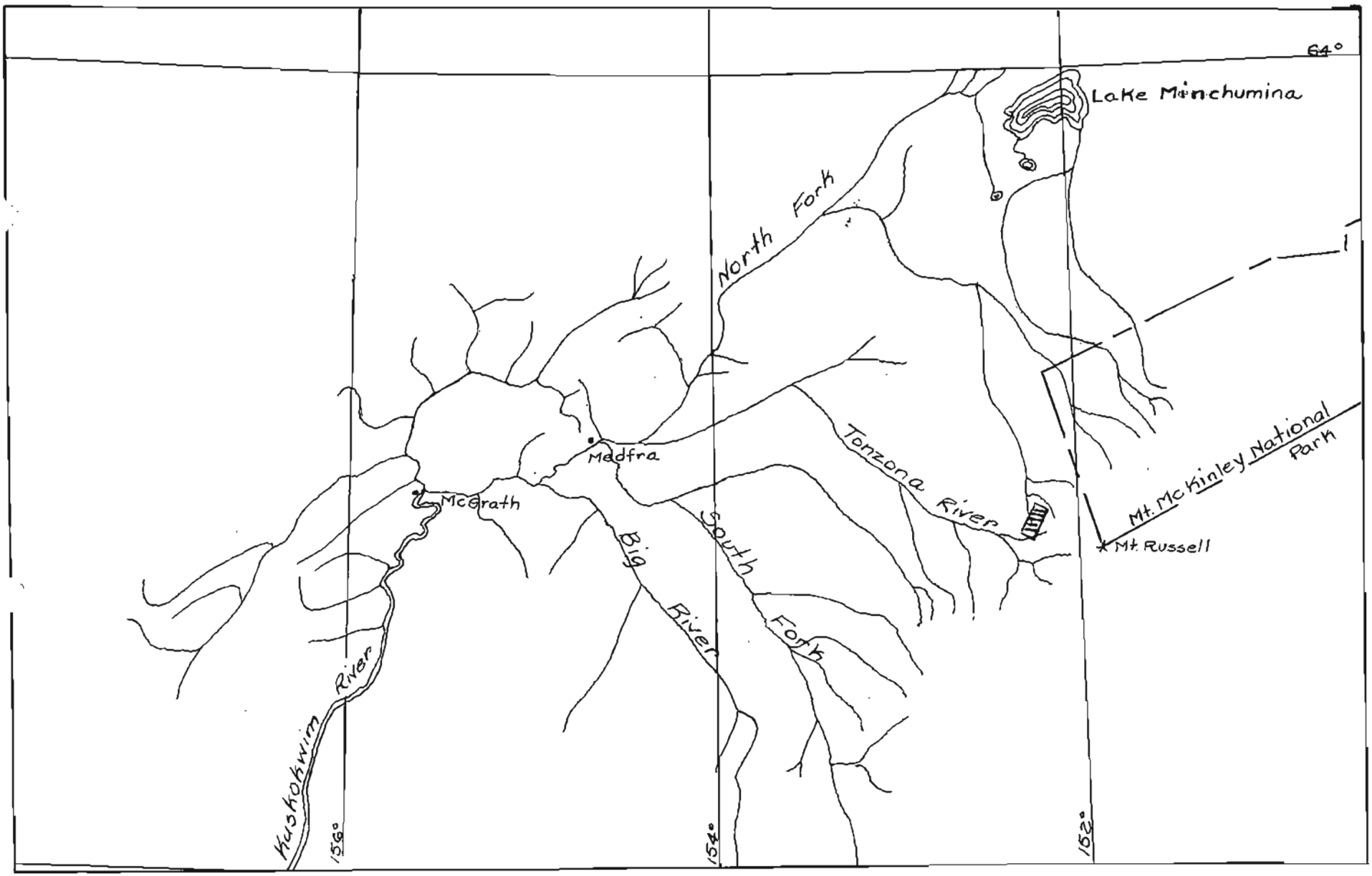
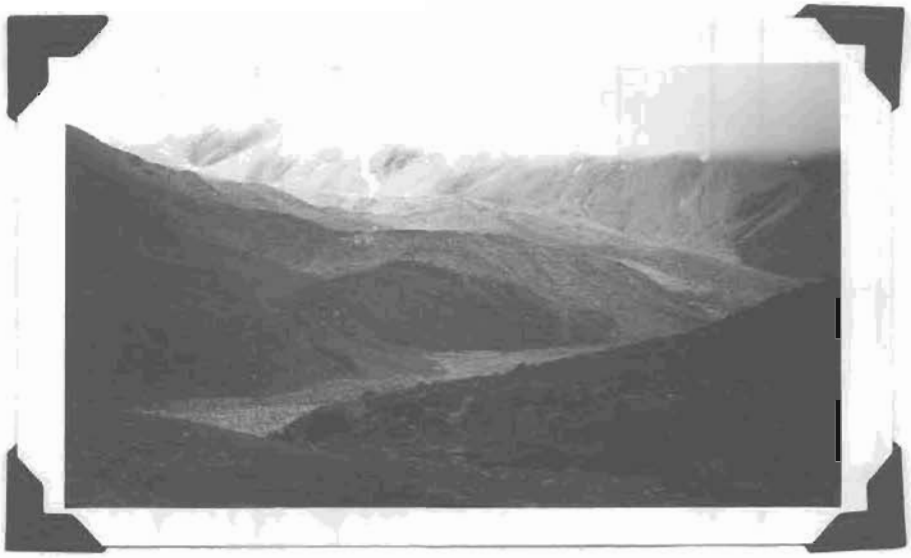


Fig 1 Reconnaissance Survey Section Tonzona District

Looking east up the valley of Cathedral Creek
High mountains in background are granite.

Hanging valley of Cathedral Creek looking west to the Tonzona River

Looking down Boulder Creek. Chedotlothna River in back ground. Prospect shaft in center foreground at toe of slope at left margin of gravel.



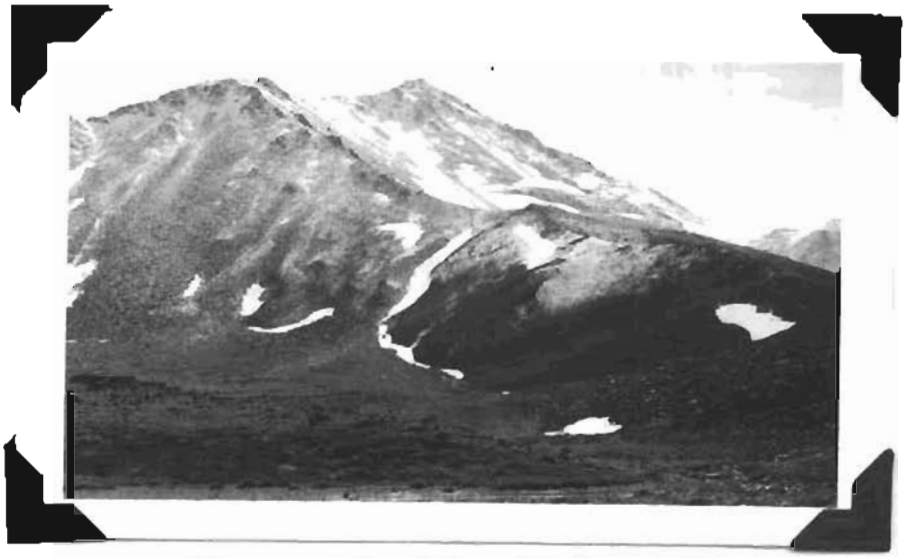
Looking up Boulder Creek

J.-K. Prospect Shaft, Boulder Creek. Shaft is at toe of lateral moraine on west bank of creek.

J.-K. Prospect shaft. Sulphide mineralization on right

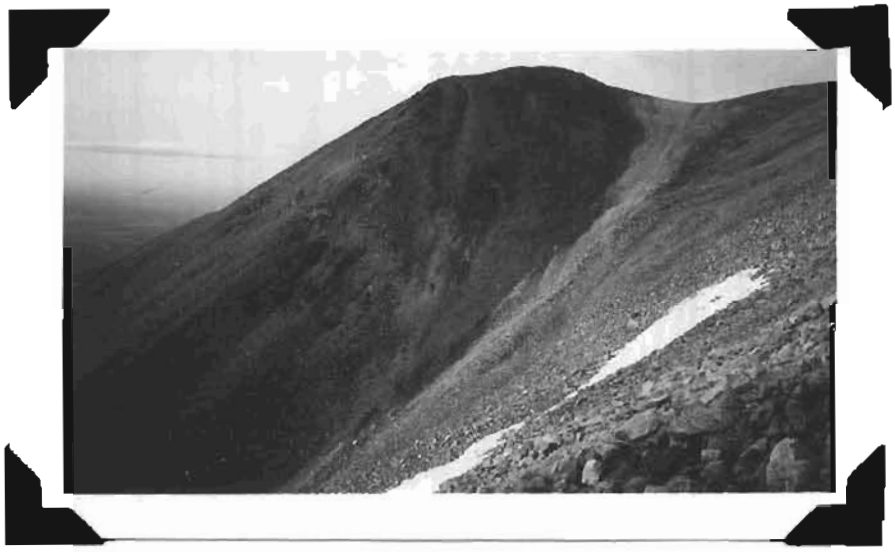
J.-K. Prospect. Iron stained silicified schist 50' wide. west bank of Boulder Creek

J.-K. Prospect. Short adit 10' long cross-cutting bedding of silicified schist



Cirque north of Mespelt Prospect
High mountains in back are granite

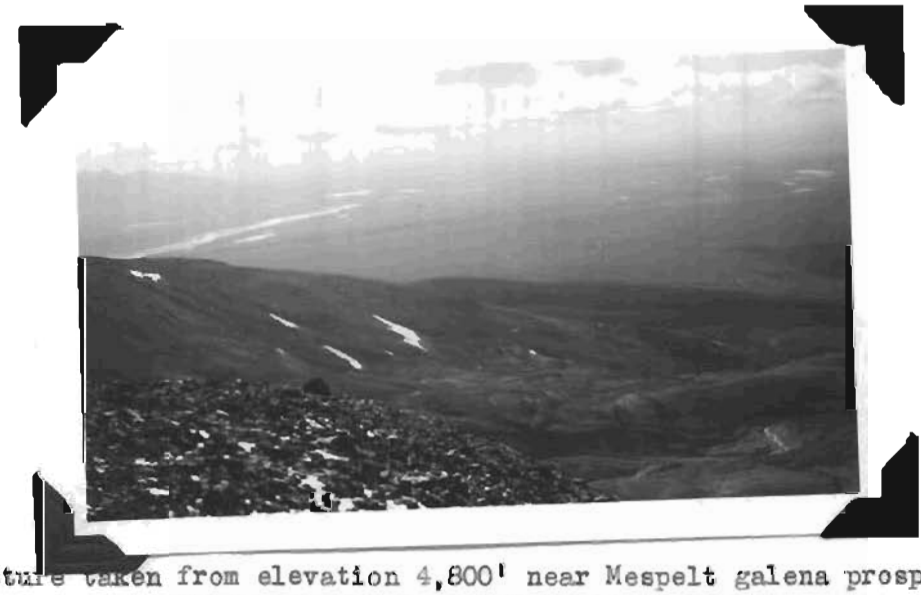
Old Mespelt cabin in small cirque below prospect



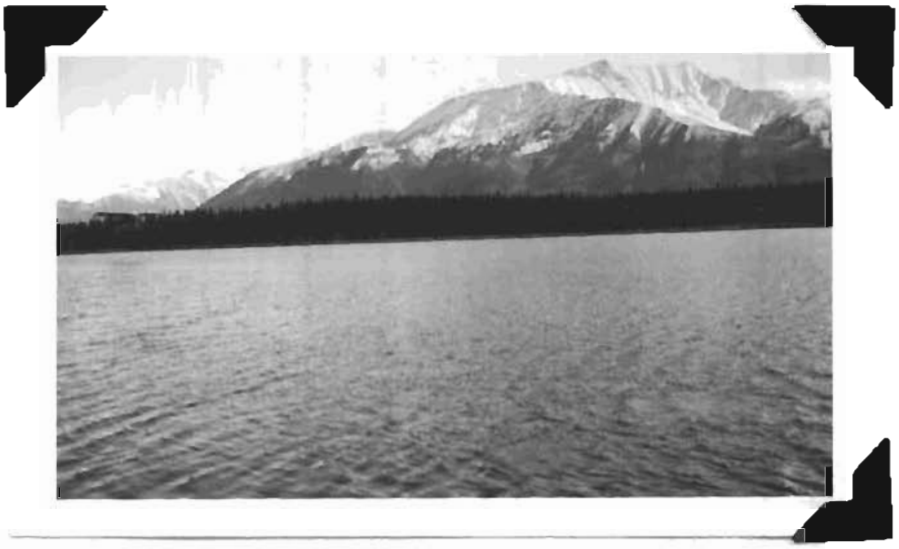
High grade galena float found in talus in foreground

Picture taken from elevation 4,800'
looking toward Tonzona River

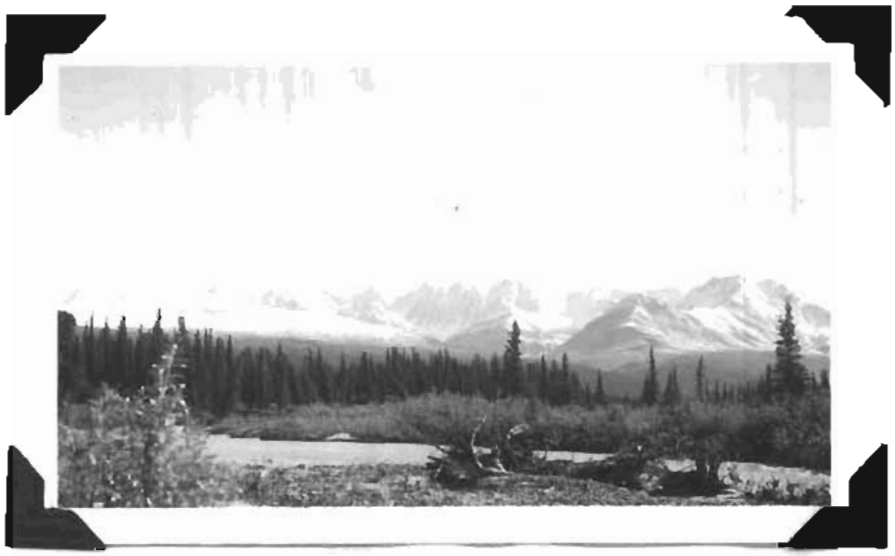
Picture taken from elevation 4,600' looking north.
Boulder Creek in center and Chedotlothna River in center background



Picture taken from elevation 4,800' near Mespelt galena prospect.
Looking southwest toward Tonzona River.



Small lake in glacial moraine north of Tonzona River down stream from mouth of Cathedral Creek.



Looking East from the valley of the Tonzona River toward Mt. Russell and the valley of Cathedral Creek

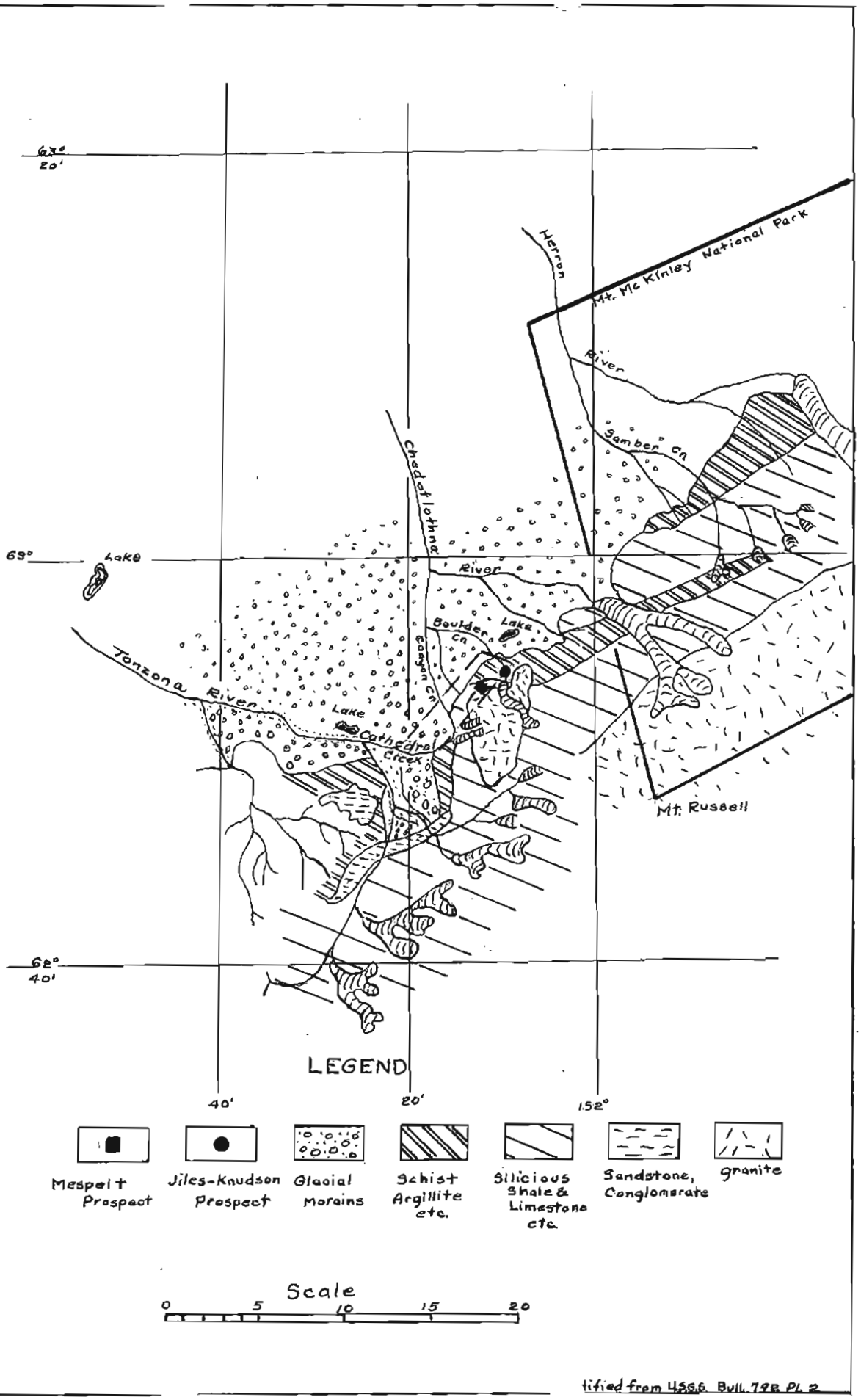


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Fig.2 Tonzona District, Alaska

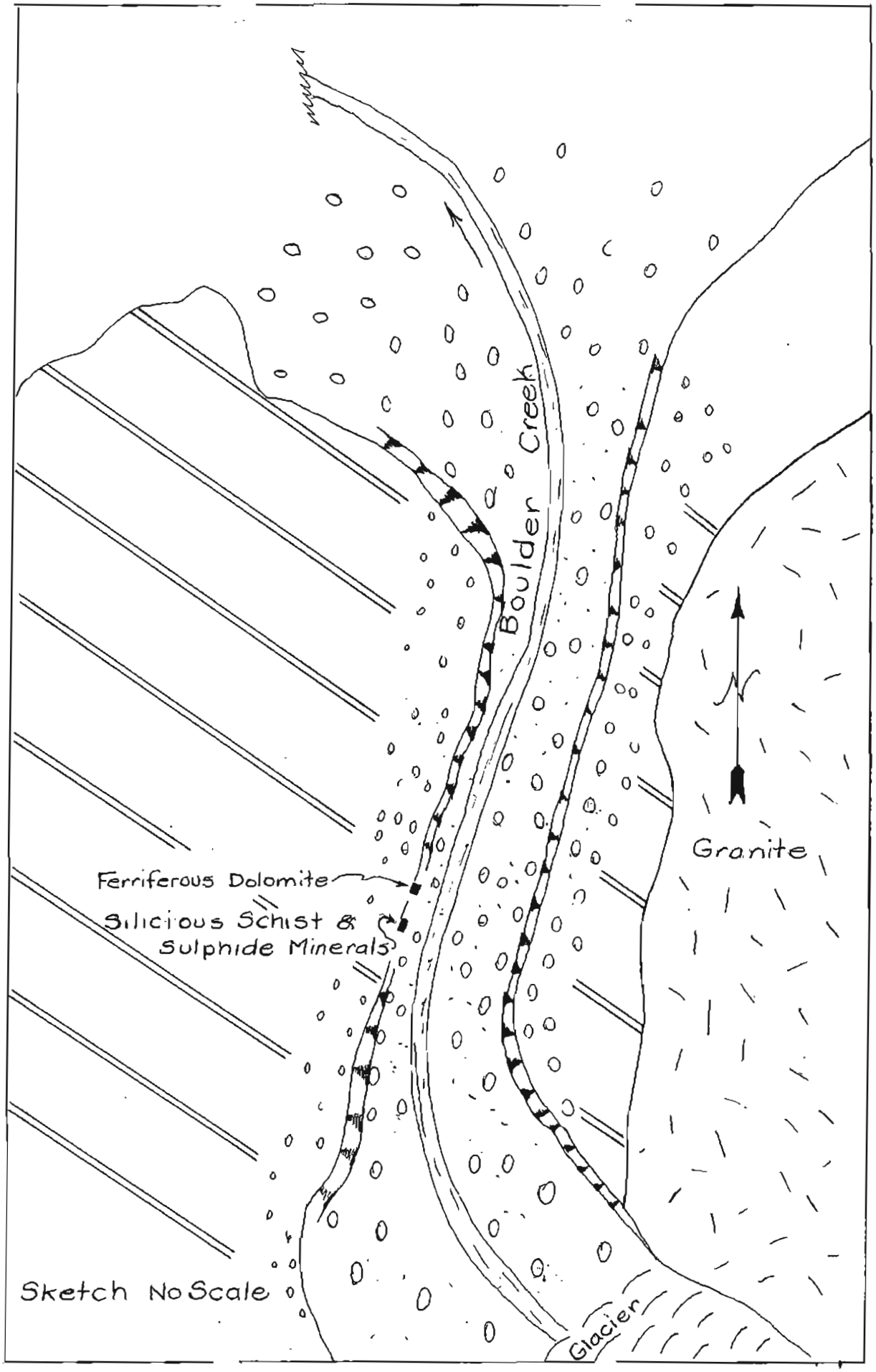

Fig.3 Location Jiles-Knudson Prospect

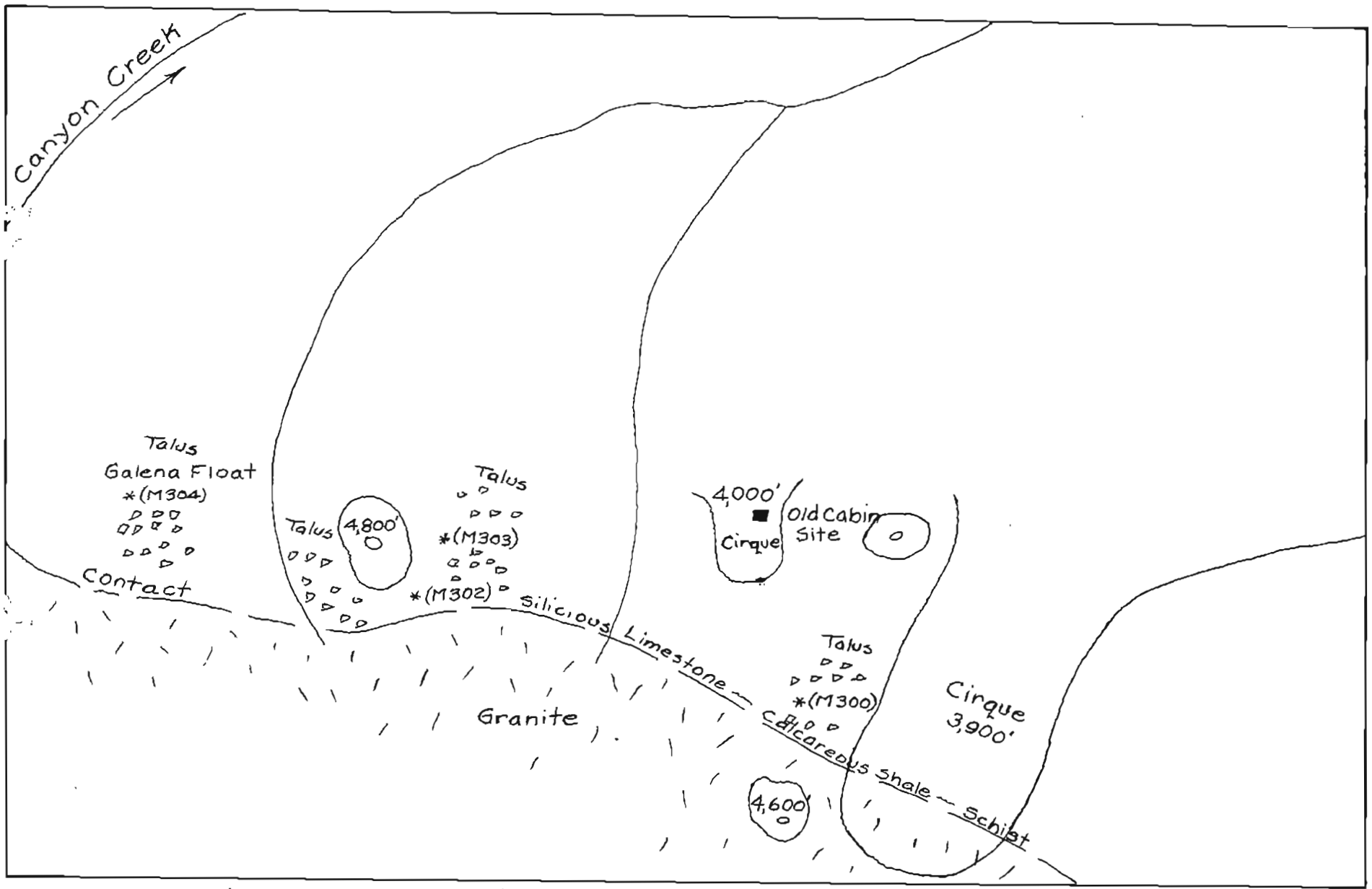

Fig. 4 Sketch Showing Location of Mespelt Prospect

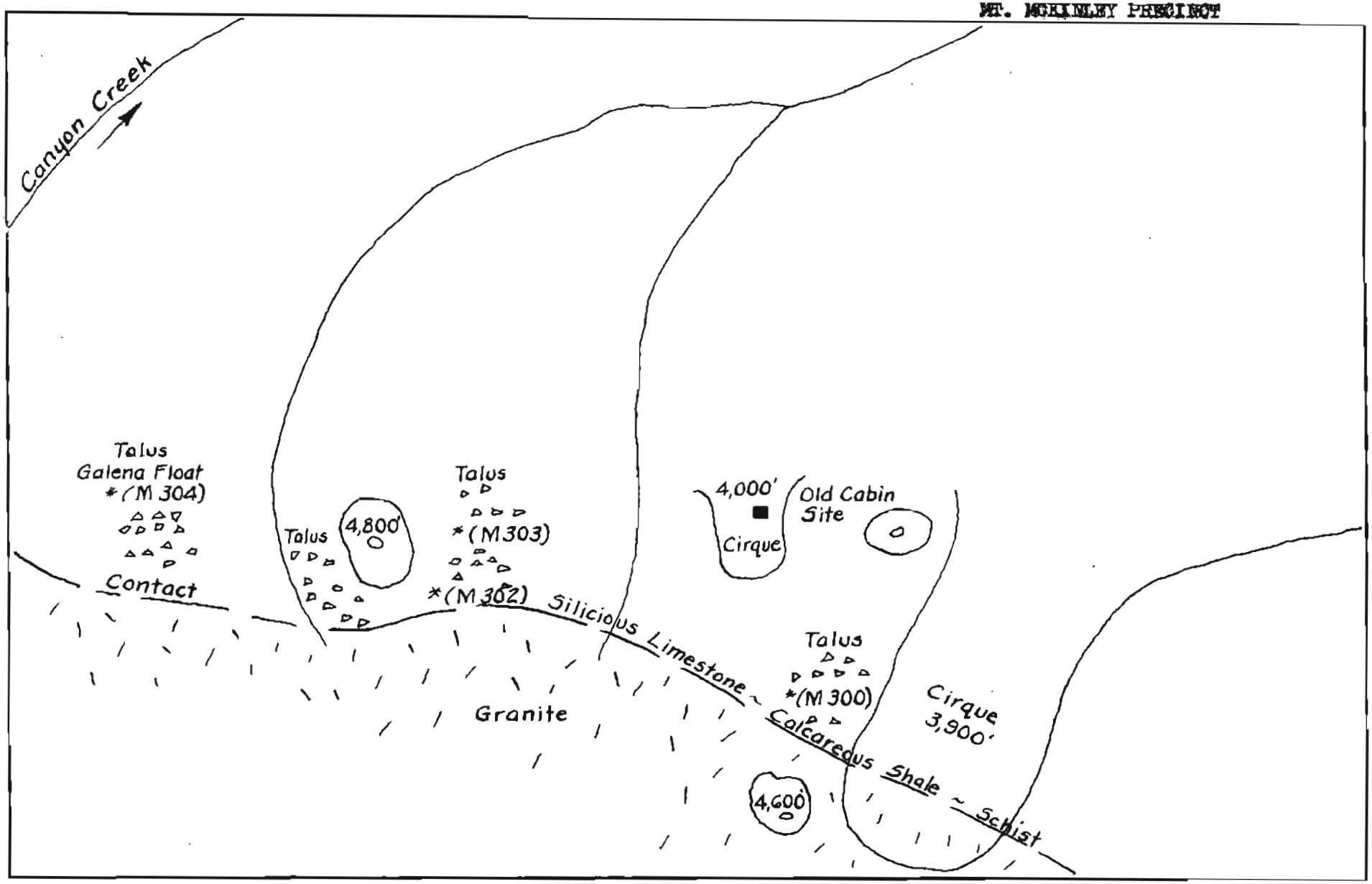

Fig. 4 Sketch Showing Location of Mespelt Prospect