



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
416 W. Congress St., Suite 100  
Tucson, Arizona 85701  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the Grover Heinrichs Mining Collection

#### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

#### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

#### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

January 31, 1973

Mr. Bob Pickering  
Lemhi Mineral Development Co.  
P.O. Box 324  
Salmon, Idaho 83467

Dear Mr. Pickering:

This will acknowledge your letter of January 15, 1973. Our exploration plans do not presently include any detailed work in the Salmon, Idaho area this summer, however, I am giving your name and address to both Ken Jones, our Chief Geologist, and Mr. Bud Temple, our Senior Exploration Geologist, so they can look you up should they be in the Salmon area.

Very truly yours,

Paul I. Eimon  
Manager of Exploration

PIE:td

LEMHI MINERAL DEVELOPMENT CO.

ALL TYPES OF MINING PROPERTIES

P. O. BOX 324

SALMON, IDAHO 83467

208-756-2361

SXM

JAN 29 1973

RECEIVED

January 25, 1973.

Mr. Paul Eimon,  
Essex International, Inc.  
1704 West Grant Rd.  
Tucson, Arizona, 85705.

Dear Mr. Eimon,

Just a few lines to see if  
you are planning on putting a visit to  
Salmon on your summer schedule?..

Am sure there is enough  
Copper in this area to interest you,

Sincerely,  
Bob Pickering

LEMHI MINERAL DEVELOPMENT CO.

ALL TYPES OF MINING PROPERTIES

P. O. BOX 324

SALMON, IDAHO 83467

208-756-2361

SXM

SEP 26 1972

RECEIVED

Sept 23 1972

Essey International Inc.  
Tucson, arizona, 85705.

Dear Mr. Eimer;

am enclosing a copy of Reconnaissance  
Geology of my North Star Lode Claims, Had Mr  
Peters map and write a short Report.

Hope this will be helpful to you.

Very Truly yours  
Bob Pickering

RECONNAISSANCE GEOLOGY  
of the  
North Star Lode Claims  
Lemhi County, Idaho

for  
Robert L. Pickering  
Lemhi Mineral Development Company

by  
D.W. Peters  
Registered Professional Geologist

(maps in separate folder)

## INTRODUCTION

The following reconnaissance study was made on behalf of Robert L. Pickering, Lemhi Mineral Development Company. The only base map available for the study was a U.S. Forest Service sketch map; therefore, it should be borne in mind that locations of man-made features are approximate and, consequently, the geology portrayed is not geographically precise and is relocatable only with respect to these man-made features.

## GENERAL GEOLOGY

The majority of the area mapped is underlain by a highly fractured gabbro of unknown age. For mapping purposes, the gabbro weathers to a reddish to orange soil. Whether the gabbro is a plug, sill, or in fault contact with surrounding rock units was not determined, due to soil cover and the reconnaissance nature of this work.

Metaquartzites of the Precambrian Belt Series group form the northern boundary of the area mapped, and also outcrop on the southeastern corner. The only good exposures of the group are in bedrock terraces in the hydraulic placer in the northwest corner of the mapped area. The Belt Series group weathers to soils of gray to tan colors.

A small area of andesite of the Challis volcanics of Miocene age outcrops in the northwest corner of the area. It has been emplaced by fault movement, shown in this report as down to the north, based on all surrounding outcrops of Challis volcanics being several hundred feet higher topographically. The andesite weathers to a white soil.

The remaining rock type of the area is alluvium, both recent and pleistocene (?). The recent gravels, which were the only ones mapped, of the North Fork of the Salmon River form the eastern boundary of the mapped area. The older Pleistocene (?) river gravels are not shown on the map as they occur in patches throughout the area and would only serve to clutter the geologic map.

## ECONOMIC GEOLOGY

A copper-bearing shear zone strikes roughly east-west through the center of the North Star lode claims, conforming to the general structural grain of the Gibbonsville Mining District (Umpleby, 1913). From reconnaissance work, the shear zone appears to be essentially vertical. The shear zone is at least 150 feet wide (bulldozer trench at the east end of claim no. 6), and can be detected in the gabbro by slight to moderate serpentinization along shear planes. The known length of the shear zone is approximately 2300 feet. On the east it passes beneath recent alluvium and on the west it passes beneath Pleistocene (?) river terrace gravels. The only age assignment that can be inferred for the shear zone is that the most recent movement has been post-Miocene, as evidenced by the faulted Challis volcanics.

Identical mineralization and serpentinization in the southwestern corner of claim no. 7 strongly suggest the presence of another shear zone; however, additional bulldozer work will be required to confirm its existence and structural orientation.

Copper sulphide mineralization in the shear zone is entirely confined to brecciated quartz veins. The largest quartz vein observed (in the west end of claim no. 6) is a minimum of 12 feet wide. The mineral suite in this vein indicates, as do other, smaller veins in the area, a transition between oxide enrichment and secondary sulphide enrichment.

Copper oxide mineralization, though apparently primarily confined to the brecciated vein quartz, also occurs within the shattered gabbro host rock, as in the bulldozer pit in claim no. 1.

The following incomplete sequence of development for the shear zone is suggested by the reconnaissance work:

1. Original emplacement of the shear, probably with concurrent quartz veining.  
age uncertain
2. Renewed movement along the shear zone, brecciation of the vein quartz and introduction of copper minerals.  
probably Laramide (Anderson, 1943; Ross, 1925)

3. Renewed movement, introduction of corrosive gases producing solution etching and secondary silica, possibly additional copper minerals, and finally calcite. probably Miocene, associated with the Challis disturbance
4. Final movement, bringing Challis andesite to its present position.  
Late Tertiary regional structural readjustment.

In summary, the general structural setting and the mode of copper mineralization appear quite similar to that of the Pope-Shannon Mine (Anderson, 1943) south of Salmon, Idaho.

*D.W. Peters*

D.W. Peters  
Registered Professional Geologist  
State of Idaho, Certificate No. 25  
8/31/72

#### REFERENCES CITED

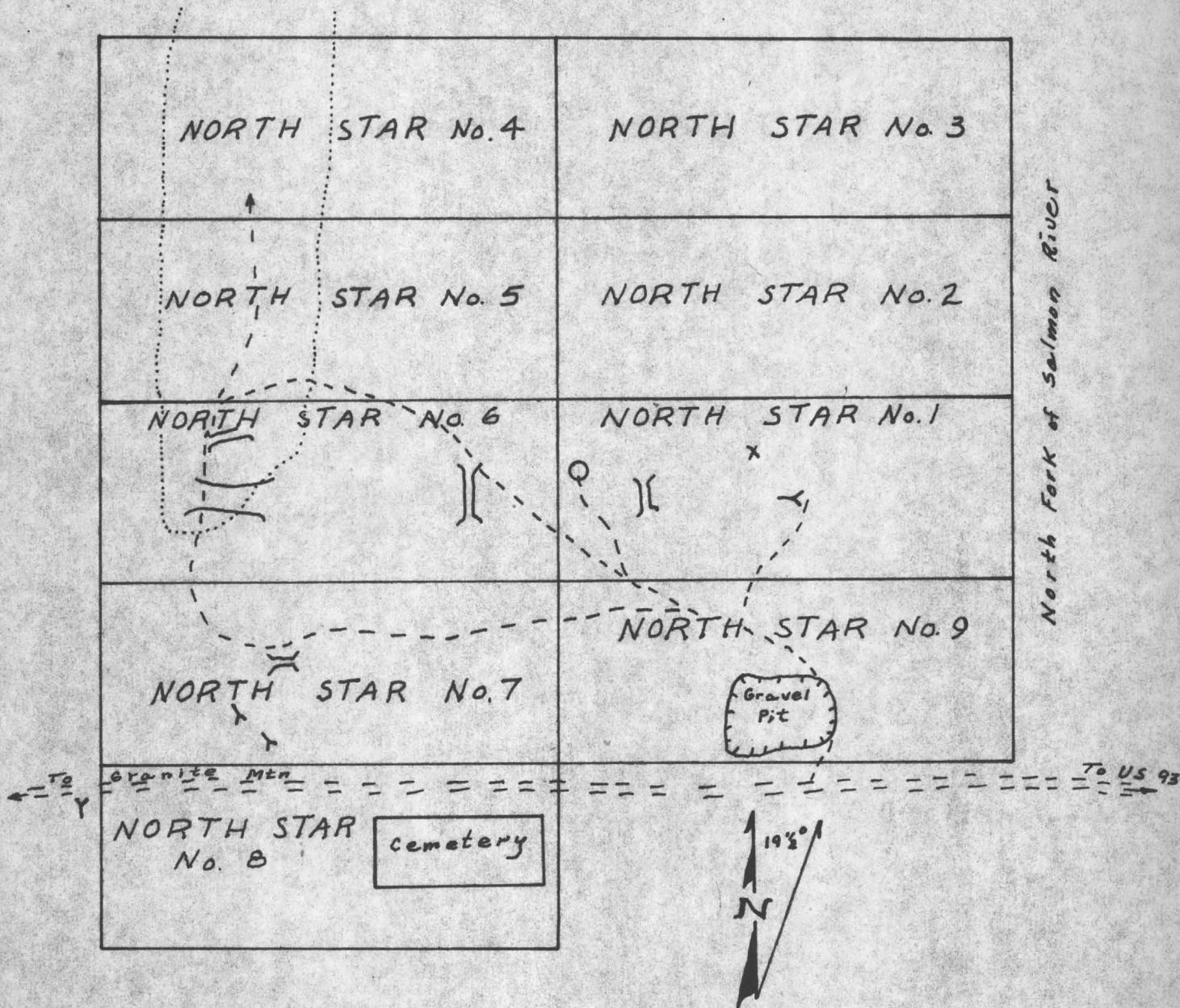
Anderson, A.L., 1943, Copper mineralization near Salmon, Lemhi County, Idaho: Idaho Bur. of Mines and Geol. pamph. 60.

Ross, C.P., 1925, The copper deposits near Salmon, Idaho: U.S. Geol. Survey Bull. 774.

Umpleby, J.B., 1913, Geology and ore deposits of Lemhi County, Idaho: U.S. Geol. Survey Bull. 528.

# LOCATION MAP

- |  |   |
|--|---|
| <p>    Bulldozer Trench</p> <p>└─ Adit</p> <p>X Prospect Pit</p> | <p>○ Core Hole Site</p> <p>⋯ Hydraulic Placer</p> <p>--- Road</p> |
|--|---|

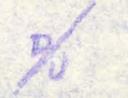


## SALMON NATIONAL FOREST

North Star Lode Claims - Robert L. Pickering - Owner  
 Secs. 35 & 36, T. 26 N., R. 20 E., Boise Mer., Gibbonsville Mining  
 District, Lemhi County, Idaho.  
 1" = 500'

(modified from U.S.F.S. map)

# LEGEND

- 
- ===== Bulldozer Trench
- > Adit
- X Prospect Pit
- O Core Hole Site
- ..... Hydraulic Placer
- Road
- 
- Quaternary alluvium 
- Tertiary-Miocene Challis Volcanics - Andesite 
- Gabbro - age unknown 
- Precambrian - Belt Series metagranites 
- 
- Vein quartz 
- Copper Oxides 
- Copper Sulphides 
- 
- Fault, dashed where inferred 
- Shear zone, delineated by serpentized gabbro 
- Geologic contact (approximate) 

Bulldozer Trench - Belt Series metagranites, fractured with limonite & pyrolusite stains on north side; Andesite on south side.

Bulldozer Trench - Andesite-vein quartz fault contact on north side: 12' wide quartz vein, intensely sheared and brecciated, with sericite, secondary silica, malachite, azurite, chrysocolla, bornite, & intense limonite staining; vein quartz-gabbro fault contact on south side: gabbro highly brecciated.

Bulldozer Trench - West end, sheared gabbro, partially serpentized; vein quartz, brecciated, with pyrite, chalcopryite, bornite, malachite, tenorite, goethite and limonite; solution etching with secondary quartz overgrowths and calcite fillings; East end - 4' quartz vein, highly brecciated, recemented, intense limonite staining; no copper minerals obs.

Adit Dump - Same as adit dump on No. 1 claim.

Adit Dump - Highly fractured & sheared gabbro, abundant schlickensides & associated serpentization; minor amounts of vein quartz with chalcopryite, bornite & malachite in brecciated sections.

Adit Dump - Highly fractured gabbro with disseminated pyrite

Hydraulic Placer - Terraces of Belt Series metagranite bedrock exposed throughout. Zones of shearing with limonite & pyrolusite staining - decreasing north of main shear

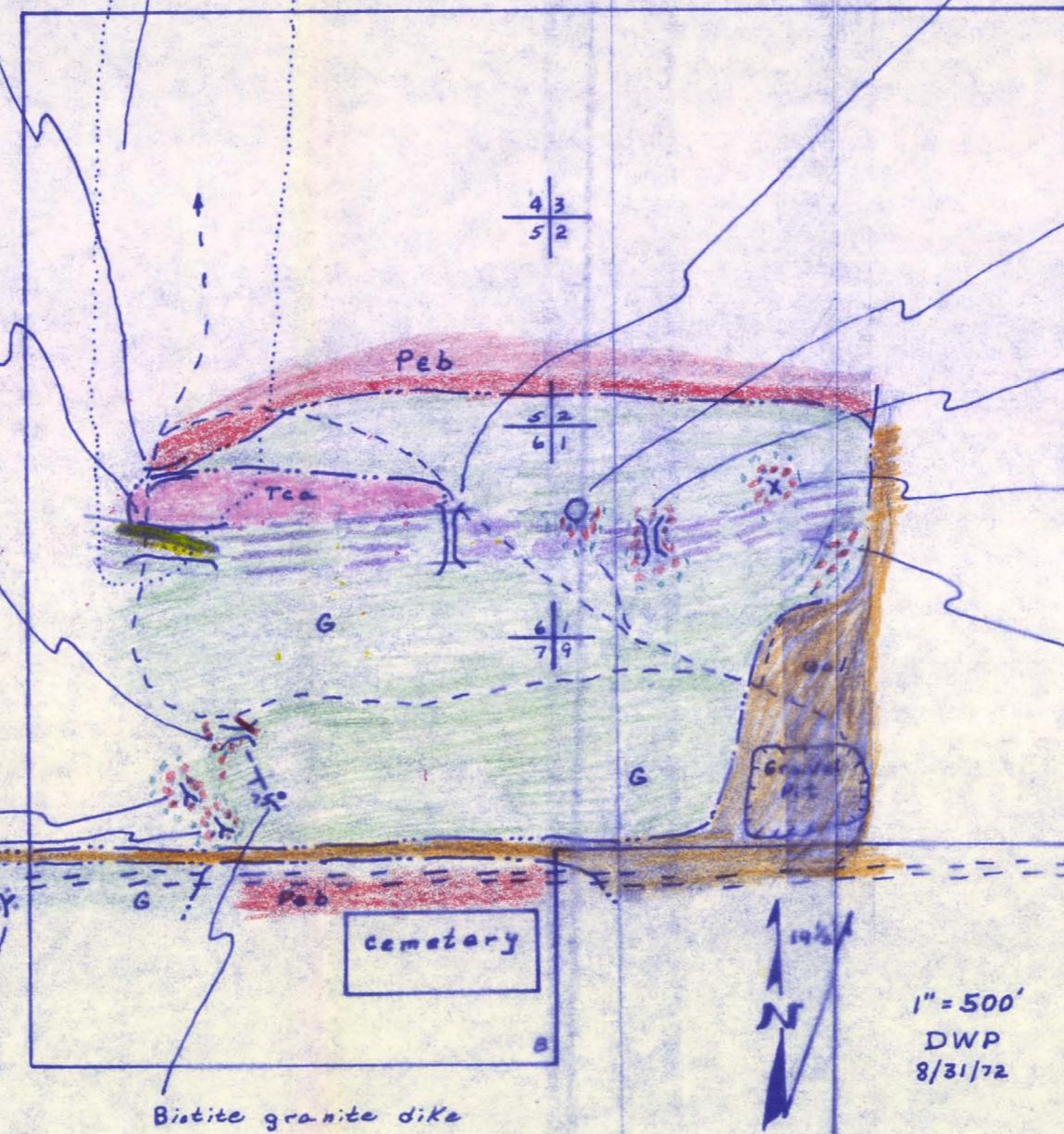
Bulldozer Trench - Andesite-gabbro fault contact, 6' brecciated gabbro, limonite on joints in andesite bordering fault; Remainder of trench highly fractured and sheared gabbro with serpentization on schlickensides; zone of very intense shearing and limonite staining in south end of trench; no Copper minerals observed.

Core Hole Site - Sheared gabbro, schlickensides, slightly serpentized; Sparse quartz veinlets with malachite, tenorite and calcite in brecciated sections.

Bulldozer Trench - same as adit dump (below) with malachite and tenorite on fracture planes in the gabbro.

Prospect Pit (loc. approx.) - Sheared gabbro, slightly serpentized; vein quartz, 1"-6", no brecciation, malachite, solution etching with secondary quartz overgrowths & calcite.

Adit Dump - Sheared gabbro, partially serpentized, abundant schlickensides, disseminated pyrite with minor calcite; vein quartz, brecciated with pyrite, chalcopryite, bornite, malachite, tenorite, goethite & limonite; solution etching with secondary quartz overgrowths & calcite fillings.



## RECONNAISSANCE GEOLOGIC MAP

NORT STAR LODE CLAIMS  
LEME COUNTY, IDAHO

1" = 500'  
DWP  
8/31/72