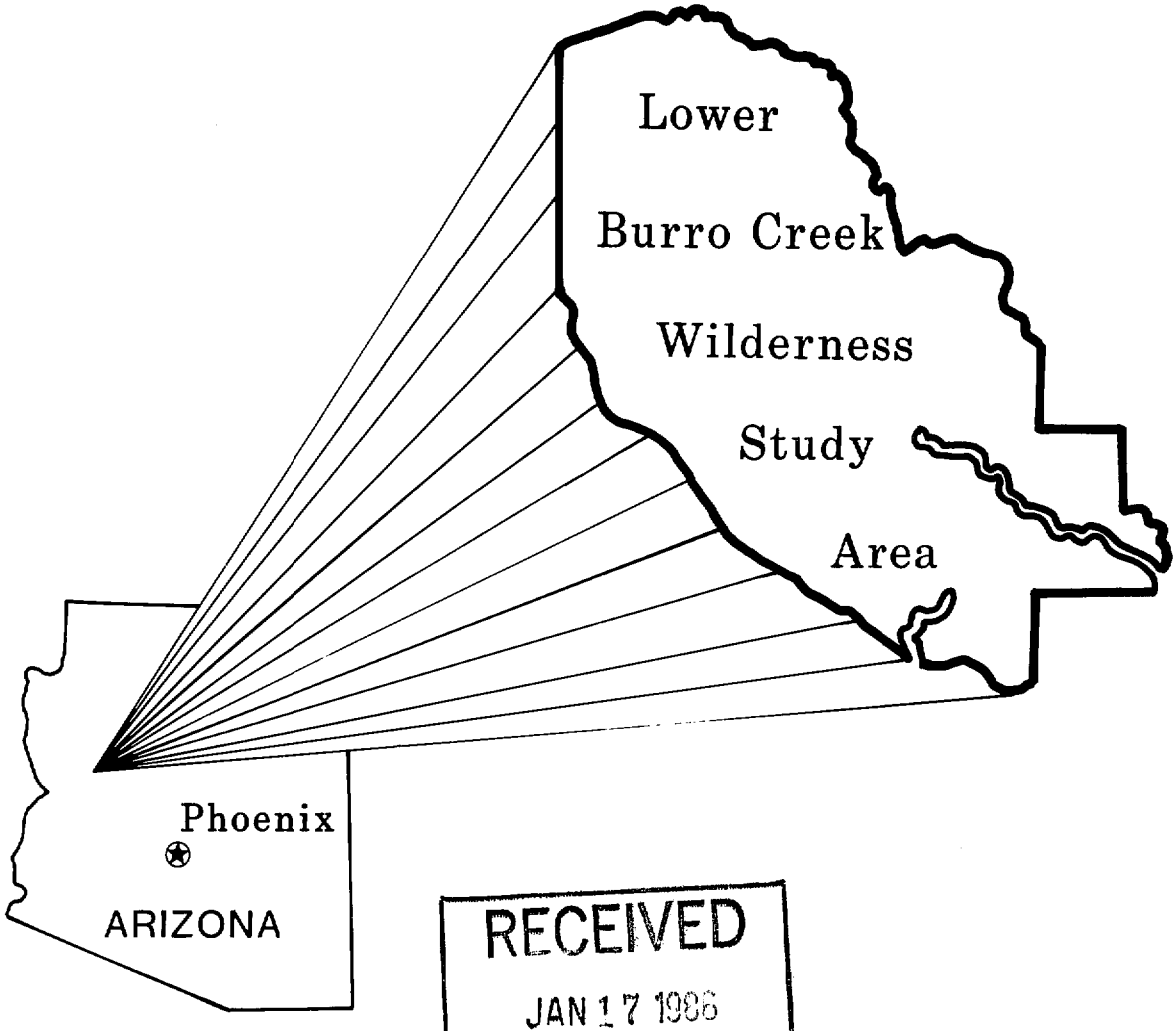
MLA 51-85

Mineral Land Assessment
Open File Report/1985

Mineral Resources of the Lower Burro Creek Wilderness Study Area (AZ-020-060), Mohave and Yavapai Counties, Arizona



United States Department of the Interior
Bureau of Mines

MINERAL RESOURCES OF THE LOWER BURRO CREEK WILDERNESS STUDY AREA (AZ-020-060), MOHAVE AND YAVAPAI COUNTIES, ARIZONA

by

Russell A. Schreiner

MLA 51-85
1985

Intermountain Field Operations Center, Denver, Colorado

UNITED STATES DEPARTMENT OF THE INTERIOR
Donald P. Hodel, Secretary

BUREAU OF MINES
Robert C. Horton, Director

PREFACE

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Bureau of Mines and the U.S. Geological Survey to conduct mineral surveys on certain areas to determine the mineral values, if any, that may be present. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Lower Burro Creek Wilderness Study Area (AZ-020-060), Mohave and Yavapai Counties, Arizona.

This open-file report summarizes the results of a Bureau of Mines wilderness study and will be incorporated in a joint report with the Geological Survey. The report is preliminary and has not been edited or reviewed for conformity with the Bureau of Mines editorial standards. Work on this study was conducted by personnel from the Branch of Mineral Land Assessment (MLA), Intermountain Field Operations Center, Building 20, Denver Federal Center, Denver, CO 80225.

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UNIT OF MEASURE ABBREVIATIONS USED IN THIS REPORT

°C	degrees Celsius
ft^3	cubic feet
ft	foot, feet
mi	mile(s)
tr oz	troy ounce(s)
ppm	part(s) per million
psi	pound(s) per square inch
%	percent
st	short tons

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Russell A. Schreiner, Bureau of Mines

SUMMARY

In January-April 1984, the Bureau of Mines conducted a mineral survey of the Lower Burro Creek Wilderness Study Area as required by Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976). The Lower Burro Creek Wilderness Study Area comprises 21,700 acres in southeastern Mohave and Yavapai Counties, Arizona.

Mines and prospects are located on deposits and (or) occurrences of gold, bentonite, magnesite, and agate in the eastern and southeastern part of the study area.

Gold occurs in faults in the Precambrian igneous and metamorphic basement rocks. Inferred resources were identified at the Golden Key Mine (350 st averaging 0.15 tr oz gold/st and 5,700 st averaging 0.06 tr oz gold/st), the Granite State Mine (6,000 st averaging 0.05 tr oz gold/st), and the Phoebe claims (5,500 st averaging 0.1 tr oz gold/st). These gold resources are currently subeconomic. The potential for their development is low.

High-magnesium bentonite occurs in the eastern part of the study area in lacustrine rocks. An inferred resource of approximately 577,000 st of a beige bentonite is amenable to open pit mining methods. Analyses indicate that this clay may be useful for making thickener or stabilizer products. The potential for development of the clay is high.

Cryptocrystalline magnesite occurs in the eastern part of the study area in lacustrine rocks. An estimated 2 million st of magnesite of various grades

is amenable to open pit mining methods. Analyses indicate that some of the magnesite is of a grade comparable to the deposit currently being mined at Gabbs, Nevada. Low demand for magnesium compounds makes the near term potential for development of the study area deposits low.

Purple agate is reported to occur in concretions in the lacustrine rocks in the eastern part of the study area. The agate is being collected for lapidary purposes.

INTRODUCTION

Between January-April 1984, the Bureau of Mines, in coordination with the U.S. Geological Survey (USGS), evaluated the resources of the Lower Burro Creek Wilderness Study Area (WSA). The Bureau surveys and studies mines, prospects, and mineralized areas to evaluate identified resources; the USGS assesses the potential for undiscovered resources based on the regional geology and reconaissance geochemical and geophysical surveys in and near the WSA. This report presents the results of the Bureau's study.

Geographic setting

The Lower Burro Creek WSA comprises 21,700 acres in southeastern Mohave and northwestern Yavapai Counties (fig. 1). The area is 10 mi southeast of Wikieup, Arizona, and 8 mi west of Bagdad, Arizona, in the mountainous transition zone between the Colorado Plateau and Basin and Range physiographic provinces (Ryder, 1983, p. C2). The topography is a combination of rolling hills and deeply incised mesas. Elevations range from 2,000 ft along Burro Creek to 3,800 ft on top of the mesas. Access to and in the WSA is by unpaved roads off of U.S. Highway 93.

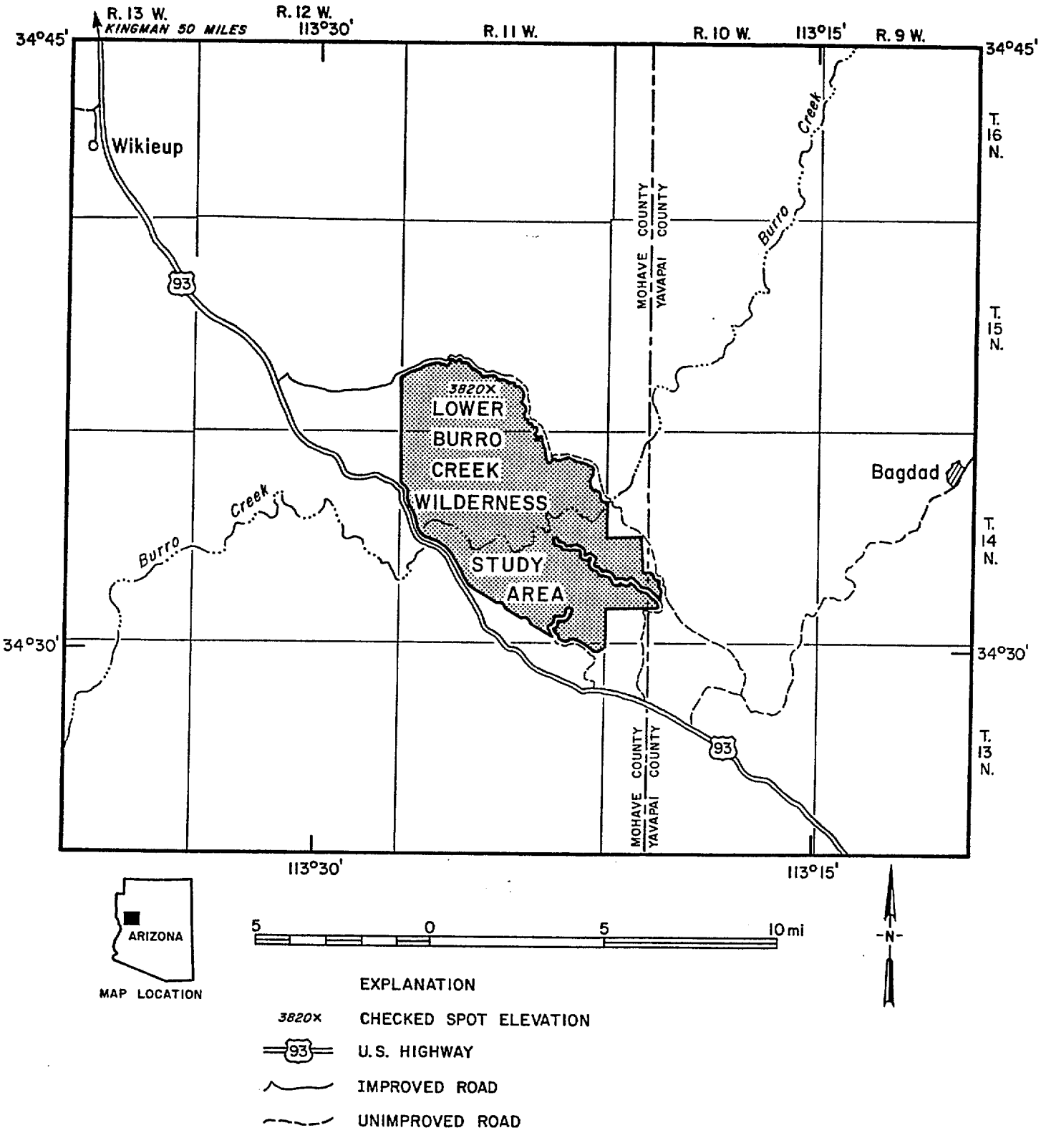

Figure 1.--Index map of the Lower Burro Creek Wilderness Study Area, Arizona.

Methods of investigation

Published and unpublished literature relating to the WSA was searched to obtain pertinent information concerning mineral occurrences and mining activity. Mining claim information and land status plats were acquired from the Bureau of Land Management (BLM) State Office, Phoenix, Arizona. Prospects and mineralized areas in and within 1 mi of the boundary were mapped by compass and tape method and sampled. Two hundred and fifty-three channel, chip, and grab samples were taken.

All samples were fire assayed for gold and silver. Inductively coupled plasma-atomic emission spectroscopy or atomic absorption spectrophotometry was used to analyze for copper, lead, molybdenum, and zinc. Inductively coupled plasma-atomic emission spectroscopy and wet chemical analyses were used to detect elements in the bentonite and magnesite samples. Bentonite and magnesite samples were analyzed by x-ray diffraction to aid identification and characterization of all minerals present. At least one sample from each prospect was analyzed for 40 elements by semiquantitative optical emission spectroscopy to determine the presence of unsuspected elements.

Standard physical property tests used in the oil, steel, and foundry industries were performed on bentonite samples by the Bureau of Mines Research Center, Tuscaloosa, Alabama. Tests included: viscosity and filtration, to indicate potential for use as drilling mud; plate water absorption, to indicate potential for pelletizing or agglomeration capacity of fine iron ores to be processed by blast furnaces; and compressive tests, to indicate potential for use as a binder for molding. Additional testing of physical properties on a sample of clay was performed by NL Chemicals Inc., Newberry Springs, CA, and R. T. Vanderbilt Company Inc., Norwalk, CT.

Tonnage and grade were calculated for deposits with adequate exposures and sample data. Sample values were averaged and weighted with respect to sample length. Projection of the mineralized zone beyond the sample sites was assumed to be one half the exposed length if no other data were available.

All analytical data are included in this report except for the semiquantitative optical emission spectroscopy results which are available for public inspection at the Bureau of Mines, Intermountain Field Operations Center, Denver Federal Center, Denver, Colorado 80225.

Previous investigations

The general geology of the Lower Burro Creek WSA was mapped in part by Moyer (1982). Goff and others (1979) and Goff (1979) discuss the presence of and potential for geothermal resources in the Aquarius Mountain region which includes the WSA.

Acknowledgments

Ted Eyde of GSA Resources, Cortaro, AZ, provided geologic, historical, and other pertinent data on the bentonite and magnesite deposits within the Lower Burro Creek WSA. C. S. Thompson, manager, R. T. Vanderbilt Company, Inc., Norwalk, CT; and M. R. McGath, manager, NL Chemicals, Inc., Newberry Springs, CA, provided analyses of a bentonite sample from the study area.

GEOLOGIC SETTING

The bedrock of the WSA consists of Precambrian granite and gneiss, Tertiary rhyolitic and basaltic lavas and tuffs, and Tertiary tuffaceous lacustrine rocks. Granite and gneiss, exposed predominantly in the southern half of the WSA, contain a few small pendants of amphibolite and schist and have been intruded by Precambrian diabase dikes. The amphibolite may be correlative with the Yavapai Series which host massive sulfide deposits in the

Bagdad area. (See Moyer, 1982.) Volcanic rocks occur predominantly over the northern half of the study area and include garnet- and topaz-bearing rhyolites (fluorine-enriched rocks), that have been associated with lithophile-type mineralization (Burt and others, 1981). Tuffaceous lacustrine rocks occur in a small area along Burro Creek in the eastern part of the WSA.

MINING HISTORY

The study area is located along the periphery of the Eureka mining district. Most of the activity in the district has centered around porphyry copper and massive sulfide deposits at Bagdad, about 8 mi to the east of the WSA. In the WSA, intermittent mining activity has occurred from the late 1800's to the present.

Lode and placer claims located for gold are in the southern part of the study area (pl. 1). No recent gold mining activity has taken place and no production records were found.

The Jangretta, HMC, and Bentonia claims cover bentonite and magnesite deposits in the eastern part of the WSA (pl. 1). GSA Resources is currently evaluating the bentonite deposit and in 1983-1984 parts of the deposit were drilled. Bentonite was mined (approximately 5,000 to 10,000 st) in the 1960's and 1970's and used for water impedance in the Patagonia Lake Dam, Santa Cruz County, Arizona, and as a binder for cattle feed. Magnesite was mined on a small scale and used as a brightening additive in swimming pool plaster (Ted Eyde, GSA Resources, Cortaro, AZ, oral commun., April 1985).

From the bentonite and magnesite deposits, concretions containing purple agate are collected for lapidary purposes (John Gutierrez, BLM, Kingman, AZ, oral commun., April 1984).

Five millsite claims, including the remains of a small mill, are at the junction of Burro Creek and Bonanza Wash (pl. 1). The mill was built in the 1940's to process tungsten ore from the Zannaropolis Mine, 4 mi east of the WSA.

The Zoid claim block, staked for uranium in 1980, is located 1/4 to 2 mi south of the WSA boundary (pl. 1). The claims cover a helium anomaly (a radioactive daughter product of uranium) in a basin containing Tertiary sedimentary and volcanic rocks. The basin lies adjacent to highly radioactive granitic rocks at Greenwood Peak, a few miles to the southwest. Uranium leached by weathering of the granitic rocks could have been concentrated in the Tertiary sediments within the basin. Two holes were drilled approximately 2,400 ft and 2,600 ft deep in Tertiary sediments and volcanic rocks (one hole penetrated granitic gneiss basement rock). No mineralized rock was encountered (Ernst Kendall, Union Carbide Corporation, Grand Junction, Colorado, oral commun., 1984).

Oil and gas leases cover the southern part of the WSA (fig. 2), but there had been no drilling as of August 1984 (John Gutierrez, BLM, Kingman, Arizona, oral commun., 1984).

APPRAISAL OF SITES EXAMINED

Mines and prospects in the WSA are located on occurrences and (or) deposits of gold, silver, and base metals in igneous and metamorphic rocks and bentonite, magnesite, and agate in lacustrine rocks.

Gold mines and prospects

Gold mines and prospects are located on faults in granite and gneiss in the southern part of the WSA. The faults contain gold and minor amounts of silver, copper, lead, molybdenum, and zinc (table 1). Inferred resources were

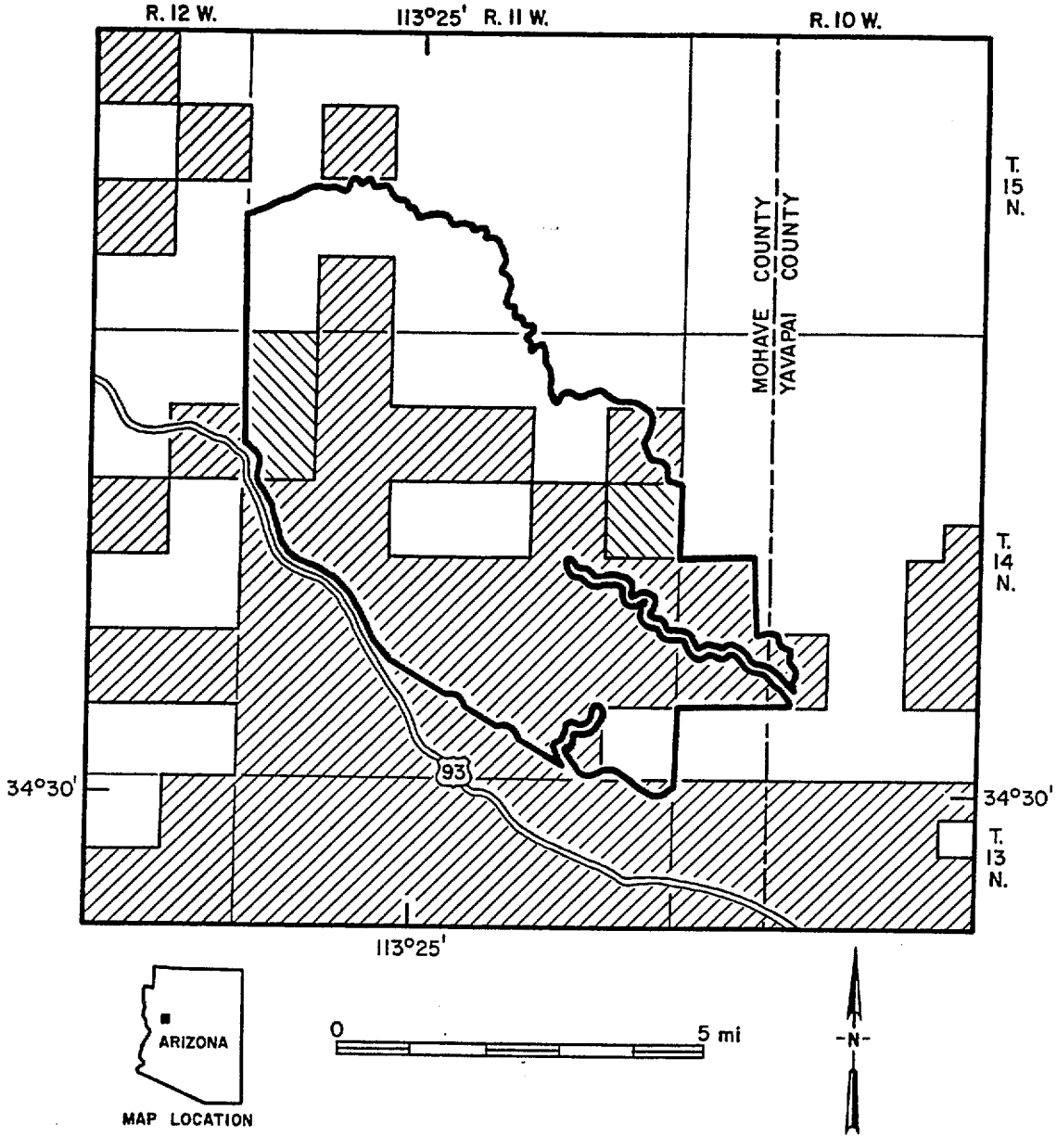

Figure 2.--Map showing oil and gas leases and lease applications in and near the Lower Burro Creek Wilderness Study Area, Arizona.

identified at the Golden Key Mine, Granite State Mine, and Phoebe claims. On the Golden Flow claims, sample results suggest that a resource may exist but grade and tonnage could not be calculated because of sufficient data due to inadequate exposure. Prospects and mineralized areas for which resources cannot be calculated are listed under "Miscellaneous Gold Occurrences" in table 2.

Golden Key Mine and vicinity

The Golden Key Mine is in the NE 1/4 sec. 27, T. 14 N., R. 11 W. within the Mexican Quest, Tops, and Rose claim blocks (pl. 1). The mine workings consists of three adits (upper, middle, and lower), five shafts, and several pits and trenches along a fault, striking N. 25° E. and dipping 60° NW. in gneiss and granite (figs. 3A, 3B, 3C, 3D, and 4). The fault is traceable for 2,000 ft and averages 2.5 ft thick. It consists of brecciated wallrock, clay gouge, sporadic quartz stringers and pods, and traces of magnetite and chrysocolla.

Sixty-eight samples (1-65 and 80-82) were taken from the workings. Twenty samples contained 0.01 to 1 tr oz gold/st (table 2) and averaged 0.12 tr oz gold/st. An 80-ft-long section in the middle adit contains an inferred resource of 350 st averaging 0.15 tr oz gold/st, using an assumed width of 20 ft, an average thickness of 2.6 ft, and a tonnage factor of 12 ft^3/st.

Five hundred feet north of these workings, a 180-ft-long adit, two shafts, and three pits are on a fault striking east and dipping 50° N., traceable for 400 ft in gneiss (fig. 4). The fault averages 3.7 ft thick and consists of brecciated wallrock, clay gouge, quartz pods, minor white and brown calcite, and hematite-limonite staining.

Eleven of the 13 chip samples (66-75 and 77-79) taken along the fault contained 0.01 to 0.28 tr oz gold/st (table 2). A select grab sample (76) contained 0.52 tr oz gold/st. An inferred resource of 5,700 st averaging 0.06 tr oz gold/st was calculated, using an assumed width of a 94 ft, a length of 198 ft, an average thickness of 3.7 ft, and a tonnage factor of 12 ft^3/st.

Granite State Mine and vicinity

The Granite State Mine is in the NE 1/4 of sec. 26, T. 14 N., R. 11 W. within the Buckhorn and Endlog claim groups (pl. 1). The Granite State Mine consists of three inclined shafts on a fault striking N. 30° W. and dipping 30° to 50° NE., traceable for 220 ft in granite (fig. 5). The fault zone averages 2.5 ft thick and consists of brecciated wallrock, clay gouge, and hematite-limonite staining. Brecciated quartz veinlets stained by minor amounts of malachite and chrysocolla were observed in two areas.

Eighteen of the 19 samples (98-116) taken along the fault contained 0.01 to 0.29 tr oz gold/st (table 1). An inferred resource of 6,000 st averaging 0.05 tr oz gold/st was calculated using a 240 ft length, a 120 ft width, an average thickness of 2.5 ft, and a tonnage factor of 12 ft^3/st.

Three additional small groups of workings are within a few hundred feet of the Granite State Mine (fig. 5). A shaft, pits, and trenches are located on faults striking approximately N. 20°-30° E. in gneiss. The fault zones consist of sheared wallrock, clay gouge, and quartz veinlets. Chrysocolla and minor amounts of malachite were observed in quartz at the shaft.

Five of the eight chip samples (118-125) taken on the faults contained gold values ranging from 0.01 to 0.3 tr oz gold/st. A select grab sample (117) from the shaft dump contained 0.12 tr oz gold/st. Resources were not

calculated because of lack of sufficient data due to inadequate exposures present at these prospects.

Phoebe claims

The Phoebe claims are located in the NE 1/4 of section 25, T. 14 N., R. 11 W. The prospect consists of an adit, a tunnel, two shafts, trenches, and pits (fig. 6). These workings are located on a fault striking N. 50° E. and dipping 50° NW. and traceable for 240 ft in granite. The fault zone averages 2.3 ft thick and consists of brecciated wallrock, clay gouge, and sporadic quartz veinlets. Chrysocolla and anglesite are present locally.

Seven of the 10 samples (161-170) taken along the fault contained from 0.01 to 0.38 tr oz gold/st (table 2) and averaged 0.1 tr oz gold/st. An inferred resource of 5,500 st averaging 0.1 tr oz gold/st was calculated using a 240 ft length, an assumed 120 ft width, a 2.3 ft average thickness, and a tonnage factor of 12 ft^3/st.

Golden Flow claims

The Golden Flow claims are located on the eastern boundary of the WSA in sec. 29, T. 14 N., R. 10 W. (pl. 1). Workings generally are located on sheared contacts between granite and diabase dikes. Some clay gouge and quartz veinlets are present along the contact. The workings are clustered into two groups, a northern and southern.

The northern group consists of two adits, an inclined shaft, pits and trenches (fig. 7) along the granite-diabase contact, which strikes N. 5° W., dips 30° E., and averages 1.6 ft thick for a distance of 1,000 ft.

Nine of the 14 samples (222-235) contained from 0.01 to 0.75 tr oz gold/st (table 2). Eleven samples taken along the contact averaged 0.20 tr oz

gold/st. Because of inadequate exposures, data were not sufficient for calculation of resources.

The southern group of workings consist of an inclined shaft, an adit, and a series of pits and trenches (fig. 8) along the granite-diabase contact, which strikes N. 30° W., dips 40° NE. and averages 1.2 ft thick over a distance of 1,450 ft.

Fourteen chip samples (205-207 and 209-219) taken along the contact contained 0.03 to 0.52 tr oz gold/st (table 2) and averaged 0.14 tr oz gold/st. Eight chip samples (199, 200-204, 220, and 221) were taken on other faults and fractures in diabase and granite; three contained 0.01, 0.03, and 0.09 tr oz gold/st. A select grab sample (208) contained 0.36 tr oz gold/st. Data were not sufficient for resource calculation.

Bentonite, magnesite, and agate prospects

Deposits of bentonite, magnesite, and occurrences of agate are present in a section of slightly folded Tertiary tuffaceous lacustrine rocks along Burro Creek in the eastern part of the WSA (pl. 1). Bentonite and magnesite were reported to have been mined on a small scale along the boundary of the study area in the eastern half of section 12, T. 14 N., R. 11 W. The deposits and occurrences are currently covered by the Jangretta and HMC claim groups. Additional clay and magnesite deposits are exposed along Burro Creek, outside of the WSA.

Bentonite

Bentonite is exposed in a section about 60 ft thick below a tuff in sec. 12, T. 14 N., R. 11 W. The section of clay, in descending order below the tuff, consists of brown, beige, brown, and green beds, dipping slightly to the southwest into the study area.

Bentonites in the WSA were identified by chemical and x-ray-diffraction analyses as high-magnesium trioctahedral smectites (saponite-type clays) (tables 3 and 4), containing various types and amounts of impurities. The beige clay is the purest and has the greatest economic potential. Seven sites (sample sites 241-243, 245-247, and 249) contained partial exposures of the beige clay bed (pl. 1). The bed appears to be continuous in the sampled area and occurs about 25 ft below the tuff. The beige clay bed is white on the weathered surface, and the top, where exposed, is dolomitic and siliceous resulting in the formation of a boxwork texture. The best exposure of this bed was at sample site 241, where it is at least 5 ft thick.

Standard physical property tests for bentonite used by oil, steel, and foundry industries, which consumed 70% of the domestic output of bentonite in 1984 (U.S. Bureau of Mines, p. 34), were performed on four samples of beige clay (241, 242, 245, and 246), one sample of brown clay (250), and one sample of green clay (244) (table 5). The results of these tests are compared with runs of commercially acceptable clays or standards, a western standard (sodium bentonite) and a southern standard (calcium bentonite).

By comparison, the physical properties of the clays from the WSA are far below those of the acceptable standards. The one exception is the green clay which has a dry strength (70.5 psi) comparable to the standards, indicating that it could possibly be used as a binder for molding, but it would have to be tested further by the individual foundry for acceptability. Beneficiation to make the clays acceptable would incur additional costs, limiting the potential to produce an economically competitive product.

Though the clays in the WSA may not be readily suitable for major uses, the crude clays could be used locally for water impedance in reservoirs,

ponds, and ditches. The beige clay, because of its high brightness, white color, and purity, has potential use in the higher-priced specialty-clay thickener or stabilizer products, for use in paints, greases, cosmetics, and pharmaceuticals. Strict quality standards call for beneficiation of clays used as raw material for these products. A sample of the beige clay (sample 241) was sent to by R. T. Vanderbilt Company, Inc., Norwalk, CT, and NL Chemicals, Inc., Newberry Springs, CA, for additional physical property tests (table 4). The companies reported that the sample consisted of a low-swelling magnesium smectite with minor dolomite having a low viscosity and lack of colloidal stability. R. T. Vanderbilt Company, Inc., reported that the clay has commercial potential as a raw material for making thickener or stabilizer products with relatively unsophisticated treatment. NL Chemicals reported that because of the low swelling property it would be unsuitable for use in their products.

GSA Resources, in a joint venture with an undisclosed major clay producer, is currently evaluating the beige clay. In 1983 and 1984, GSA Resources drilled 22 holes in the deposit in and near the WSA. Drilling results indicate that the beige clay is 3-20 ft thick and locally contains variable amounts of impurities. The clay in the NW 1/4 sec. 12, T. 14 N., R. 11 W. has the best color, colloidal properties, and lowest arsenic levels. The best clay is adjacent to masses of magnesite, chalcedony, and dolomite of varying concentrations that appear to be located along faults. Alteration of tuffaceous rocks to these high magnesium smectites was apparently the result of deposition in a lacustrine environment with introduction of hydrothermal solutions from hot springs (Ted Eyde, GSA Resources, oral commun., April 1984).

Though the beige clay appears to be present over a large area in the WSA, the least amount of overburden is in the NW 1/4 of sec. 12. Considering a 60

ft limit of overburden that could be stripped by open pit mining methods (Ted Eyde, oral commun., April 1985), the clay in this locality, having a minimum thickness of 5 ft, could be mined over an area 3,000 by 500 ft, estimated from outcrop locations and topography. Using a tonnage factor of 13 ft^3/st, an inferred resource of approximately 577,000 st of clay was identified.

Magnesite

White cryptocrystalline magnesite occurs within the clays as mound-like masses 10 to 40 ft thick in the center of sec. 12, T. 14 N., R. 11 W. (pl. 1). Samples 236, 238, and 239 were taken from outcrops of magnesite, which appears to be continuous over a distance of 2,000 ft (pl. 1). Samples contained up to 90% magnesite and had chalcedony, dolomite, calcite, and saponite-type clay as impurities (table 6). The amount of impurities present in samples appears to be highly variable. An estimated 2 million st of magnesite of various grades would be amenable to open pit mining methods. Calculations were made assuming that the magnesite is continuous over an area of 2,000 by 500 ft, averages 20 ft thick, and has a tonnage factor of 10 ft^3/st. Additional resources of magnesite are exposed along Burro Creek, outside of the WSA.

Currently, no market exists for the crude magnesite, except for possible local use as an additive to increase the brightness of materials, such as plaster. The material would have to be processed by heavy media separation to remove the impurities (cryptocrystalline magnesite does not respond well to flotation) and dead-burned or calcined to produce a commercially acceptable product. Basic, Inc., is mining ore at Gabbs, Nevada, at grades as low as 85% magnesite, which is comparable to some of the material in the WSA. Basic

Inc., had estimated 10 million st of magnesite in the Burro Creek area but the overall grade was considered too low to warrant development (Ty Jepsen, Basic, Inc., Gabbs, Nev., oral commun., June 1984). Currently, low demand for magnesium compounds would make near term development in the WSA unlikely.

Agate

Purple agate is reported to occur in concretions within lacustrine rocks in the WSA, though none was noted by Bureau personnel. The agate is used in making cabochons for jewelry. Three small pits, approximately 1 mi outside of the WSA, contained pockets of black, red, and white chalcedony in a siliceous dolomite. Some of the chalcedony contains inclusions forming crude dendritic patterns. One sample (251) was taken at the prospect (table 1).

GEOTHERMAL

No geothermal leases were present in or near the WSA as of March 1984, but a thermal spring (surface temperature of 37°C) is located at Warm Spring, approximately 2 mi outside of the WSA (pl. 1). A geothermal reservoir of moderate temperature (estimated at less than 115°C from chemical geothermometry) exists at Warm Spring and may have potential for small scale geothermal use. (See Goff, 1979, p.19-20.)

OIL AND GAS

Most of the WSA acreage has been leased for oil and gas but no drilling had occurred as of April 1984 (John Gutierrez, BLM, Kingman, AZ, oral commun., April 1984). The WSA, underlain by igneous, metamorphic, volcanic, and tuffaceous sedimentary rocks, has been given a zero rating for oil and gas potential by Ryder (1980).

COMMODITY HIGHLIGHTS

Mineral commodities identified as resources within the Lower Burro Creek WSA are gold, bentonite, and magnesite. Statistics regarding domestic production and consumption of these commodities are presented in table 7.

CONCLUSIONS

Gold occurs in faults in the Precambrian igneous and metamorphic rocks in the Lower Burro Creek WSA. Inferred resources were identified at the Golden Key Mine (350 st averaging 0.15 tr oz gold/st, and 5,700 st averaging 0.06 tr oz gold/st), the Granite State Mine (6,000 st averaging 0.05 tr oz gold/st), and the Phoebe claims (5,500 st averaging 0.1 tr oz gold/st). Sample results from similar deposits suggest additional resources may be present in the WSA, but lack of sufficient exposures prevented detailed mapping and sampling for calculating resources. Narrow, moderately- to steeply-dipping fault-controlled deposits such as these would be amenable only to underground mining methods. At an average 1984 gold price of $365.00 per tr oz, these deposits would be subeconomic. The potential for their development is low.

High-magnesium bentonite occurs in the eastern part of the WSA in lacustrine rocks. The beige clay (an inferred resource of approximately 577,000 st) has the greatest commercial potential and is amenable to open pit mining methods. With beneficiation, this clay has potential use as a raw material for making thickener or stabilizer products. The potential for development of the clay is high.

White cryptocrystalline magnesite is present in the eastern part of the WSA in lacustrine deposits. An estimated 2 million st of magnesite of various grades is amenable to open pit mining. Analyses indicate that some of the magnesite is of comparable grade to a deposit currently being mined in

Nevada. Low demand for magnesium compounds makes near term development unlikely.

Purple agate occurs in concretions in the lacustrine deposits in the eastern part of the WSA. The agate is collected for lapidary purposes.

A thermal spring is located approximately 2 mi outside of the western boundary of the study area at Warm Spring. A geothermal reservoir of moderate temperature exists which may have potential for limited development for local use.

No oil and gas resources are known to exist in the WSA. The WSA is underlain by igneous, metamorphic, volcanic, and tuffaceous sedimentary rocks and the presence of oil and gas resources is unlikely.

Recommendations for further study

Detailed sampling, mapping, and drilling especially of bentonite and magnesite deposits is needed to characterize and determine actual resources present. Tests should be made to determine amenability of the deposits to beneficiation.

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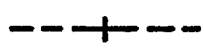
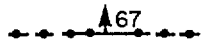
EXPLANATION OF SYMBOLS FOR FIGURES 3-17

SAMPLE LOCALITY--Showing sample number

FAULT--Showing strike and dip; dashed where approximate



VERTICAL FAULT--Dashed where approximate



QUARTZ VEIN--Showing strike and dip; dashed where approximate

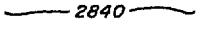
CONTACT--Dashed where approximate

STOCKPILE

DUMP

RUBBLE

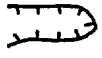
TIMBERING



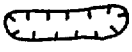
CONTOUR--Showing elevation in feet above sea level

SURFACE OPENINGS

PORTAL OF ADIT WITH OPENCUT--Underground workings shown dashed on figures that show both surface and subsurface workings.



OPENCUT



TRENCH

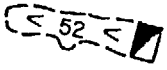
PIT

EXPLANATION OF SYMBOLS FOR FIGURES 3-17--Continued

SURFACE OPENINGS--Continued

VERTICAL SHAFT

INCLINED SHAFT--Showing direction and degree of inclination



INCLINED SHAFT--Showing degree of inclination of underground workings; chevrons pointing down

BOTTOM OF SHAFT, RAISE, OR WINZE

WINZE

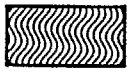
LITHOLOGY

GRANITE

GNEISS

DIABASE DIKE

AMPHIBOLITE



AMPHIBOLITE DIKE

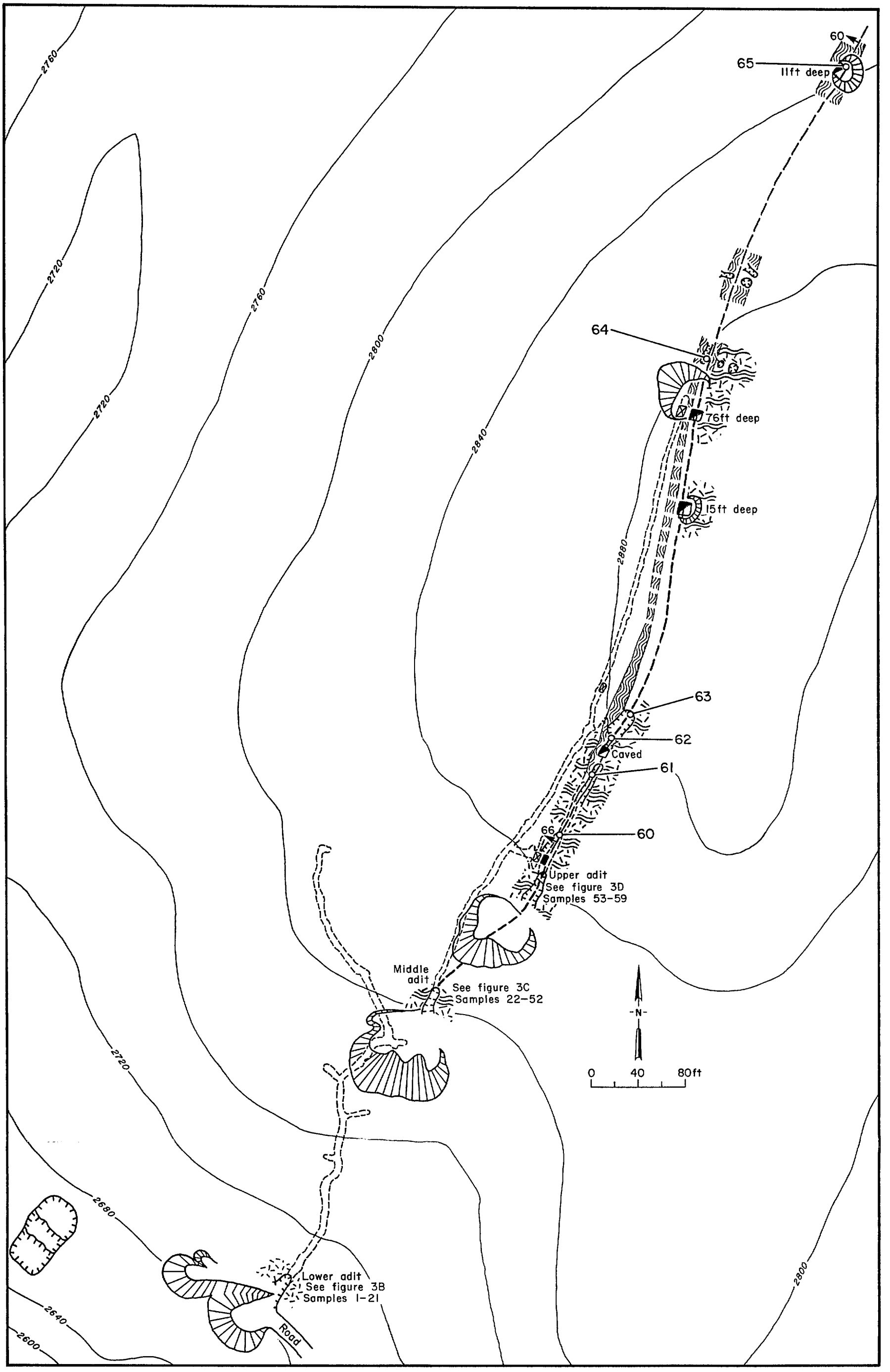


Figure 3A.--The Golden Key Mine area, showing sample localities 60-65.

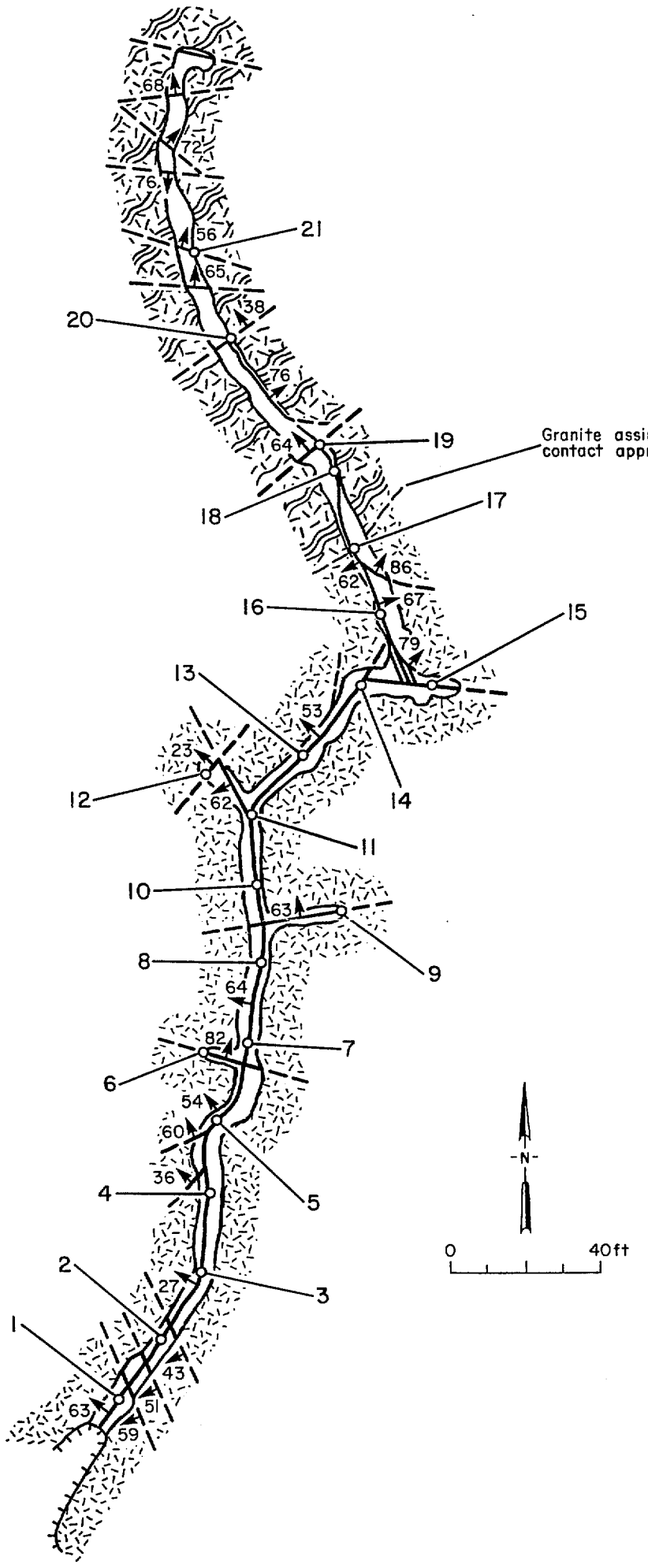


Figure 3B.--Lower adit of the Golden Key Mine, showing sample localities 1-21.

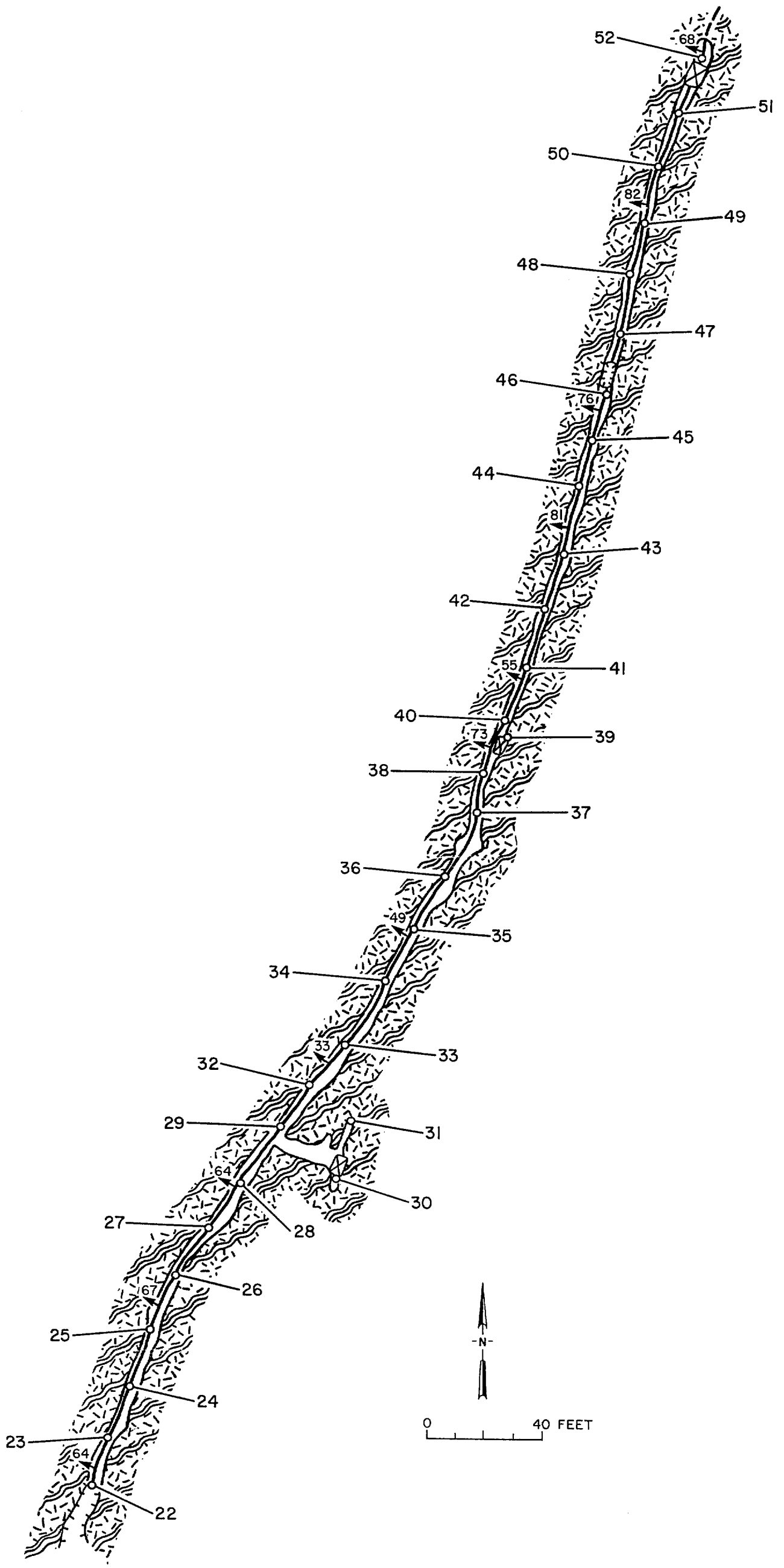


Figure 3C.--Middle adit of the Golden Key Mine, showing sample localities 22-52.

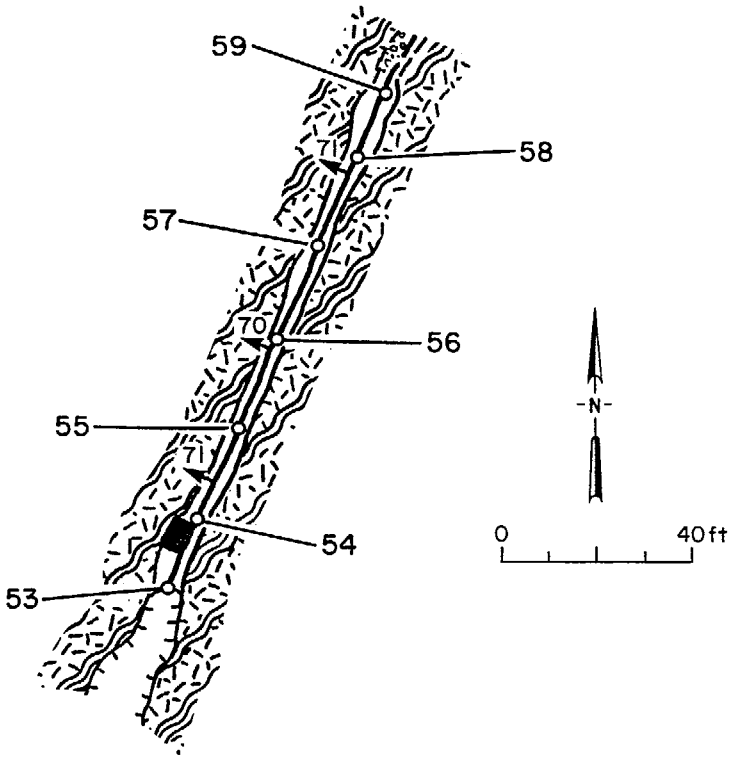


Figure 3D.--Upper adit of the Golden Key Mine, showing sample localities 53-59

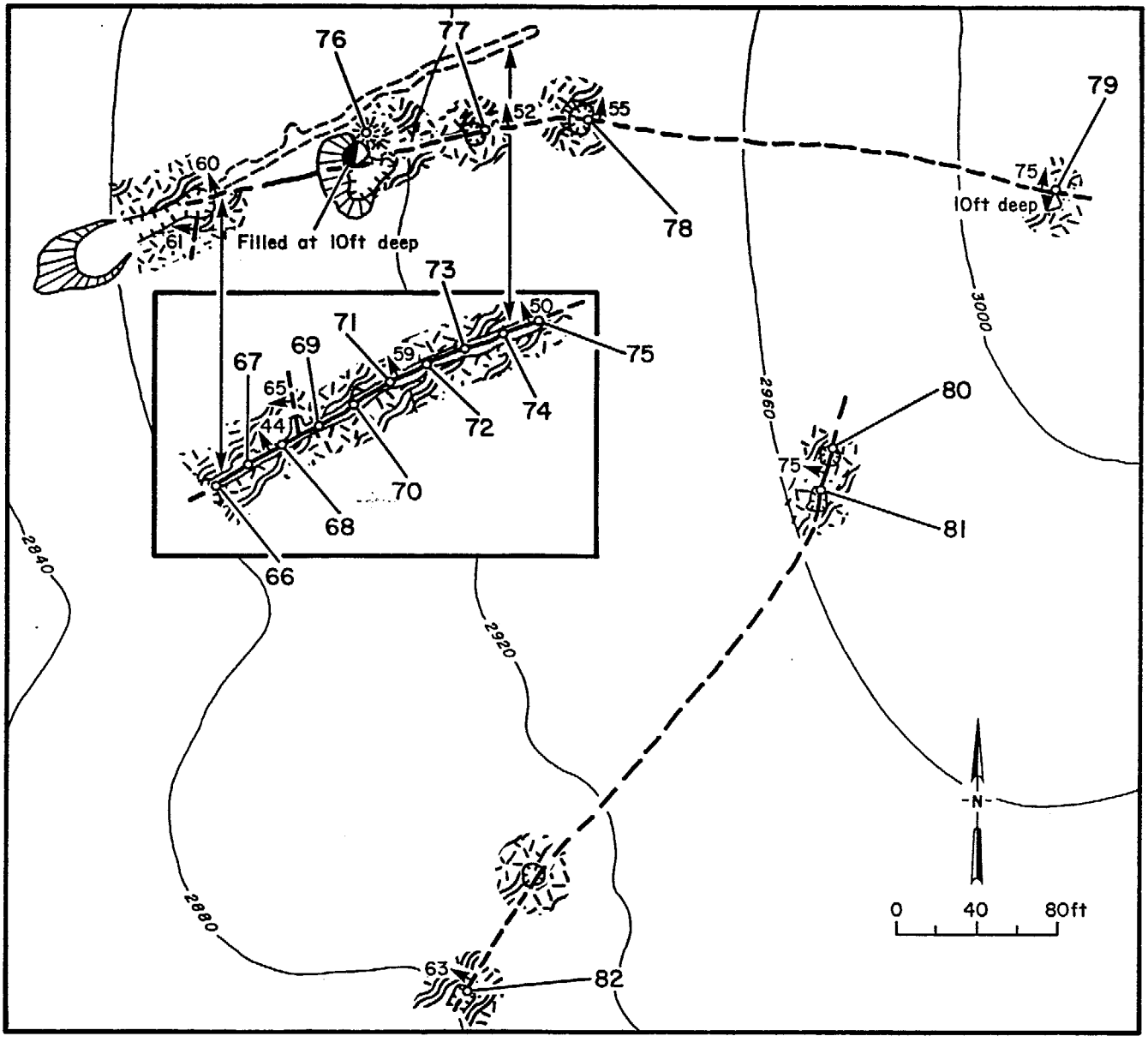


Figure 4.--The northern extension of workings of the Golden Key Mine, showing sample localities 66-82.

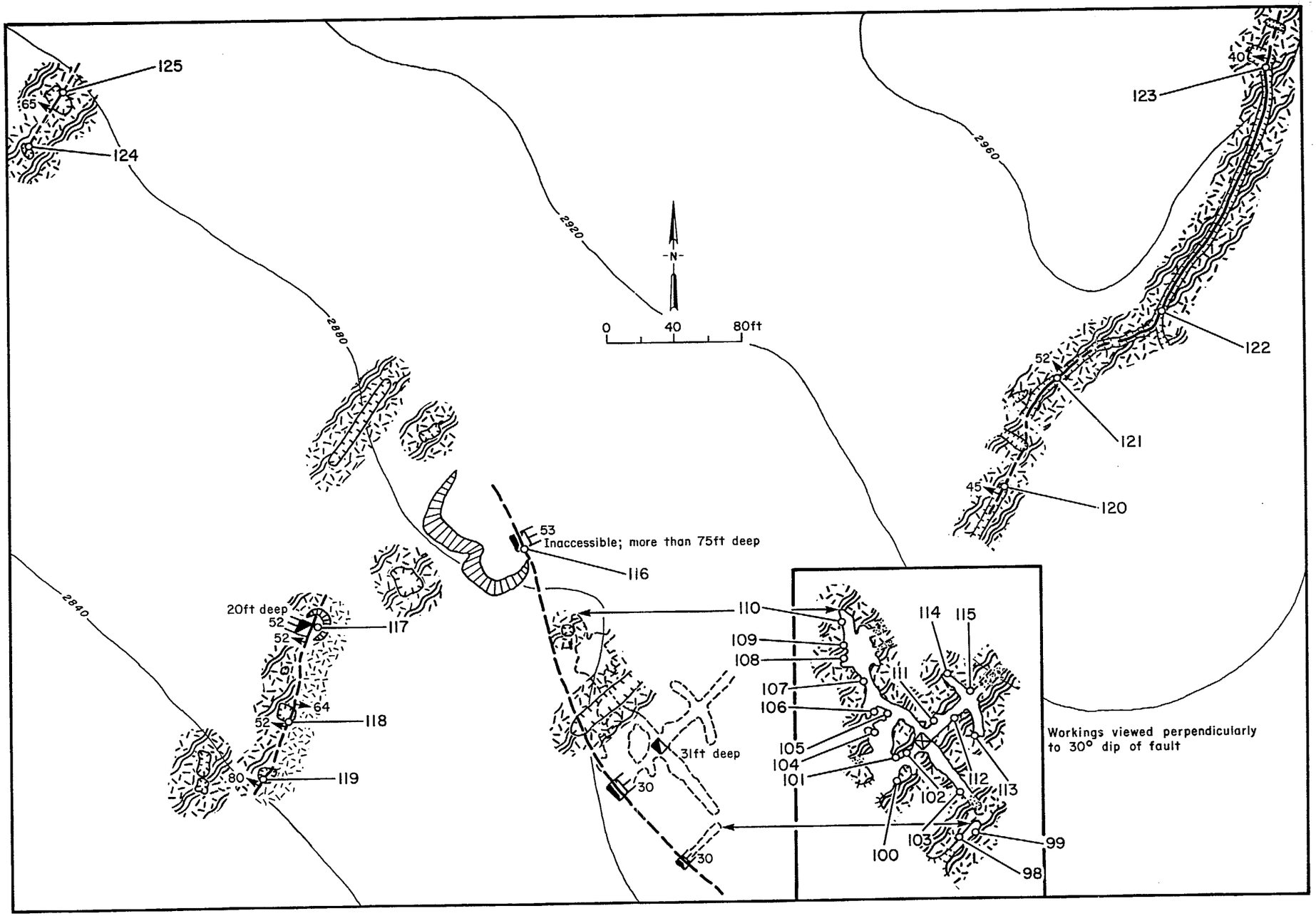


Figure 5.--The Granite State Mine and vicinity, showing sample localities 98-125.

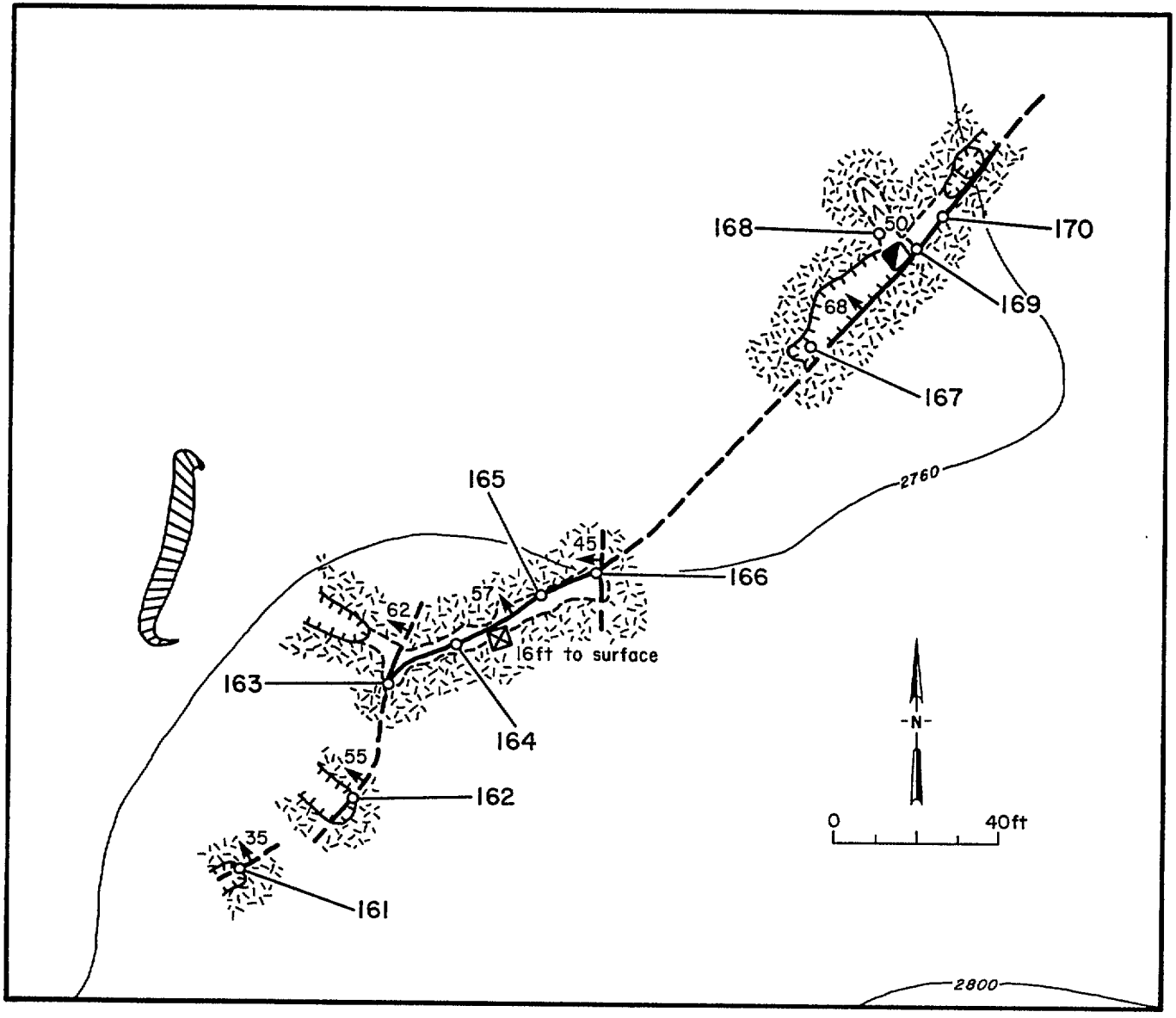


Figure 6.--Workings on the Phoebe claims, showing sample localities 161-170.

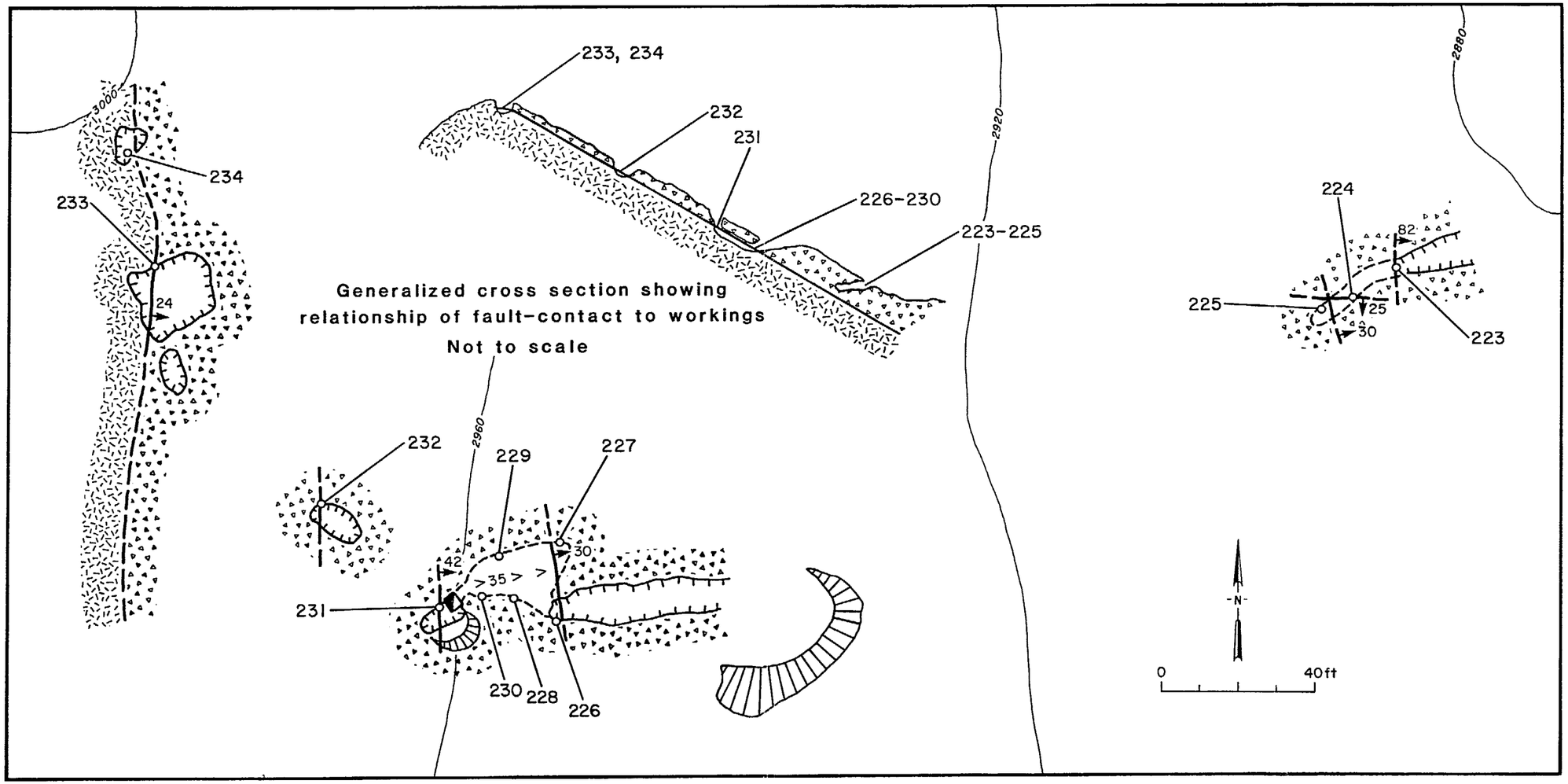


Figure 7.--Northern group of workings on the Golden Flow claims, showing sample localities 223-224.

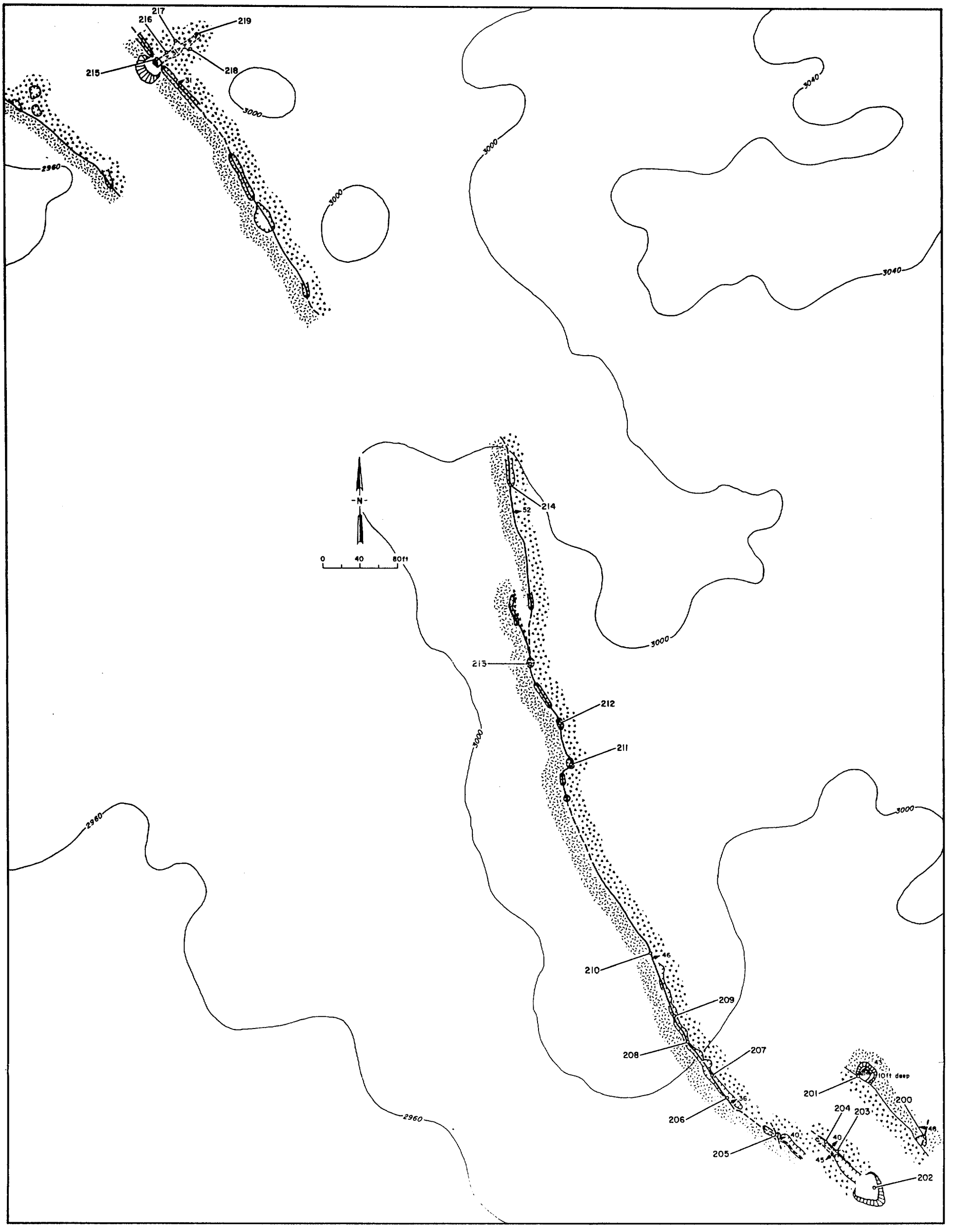


Figure 8.--Southern group of workings on the Golden Flow claims, showing sample localities 200-219.

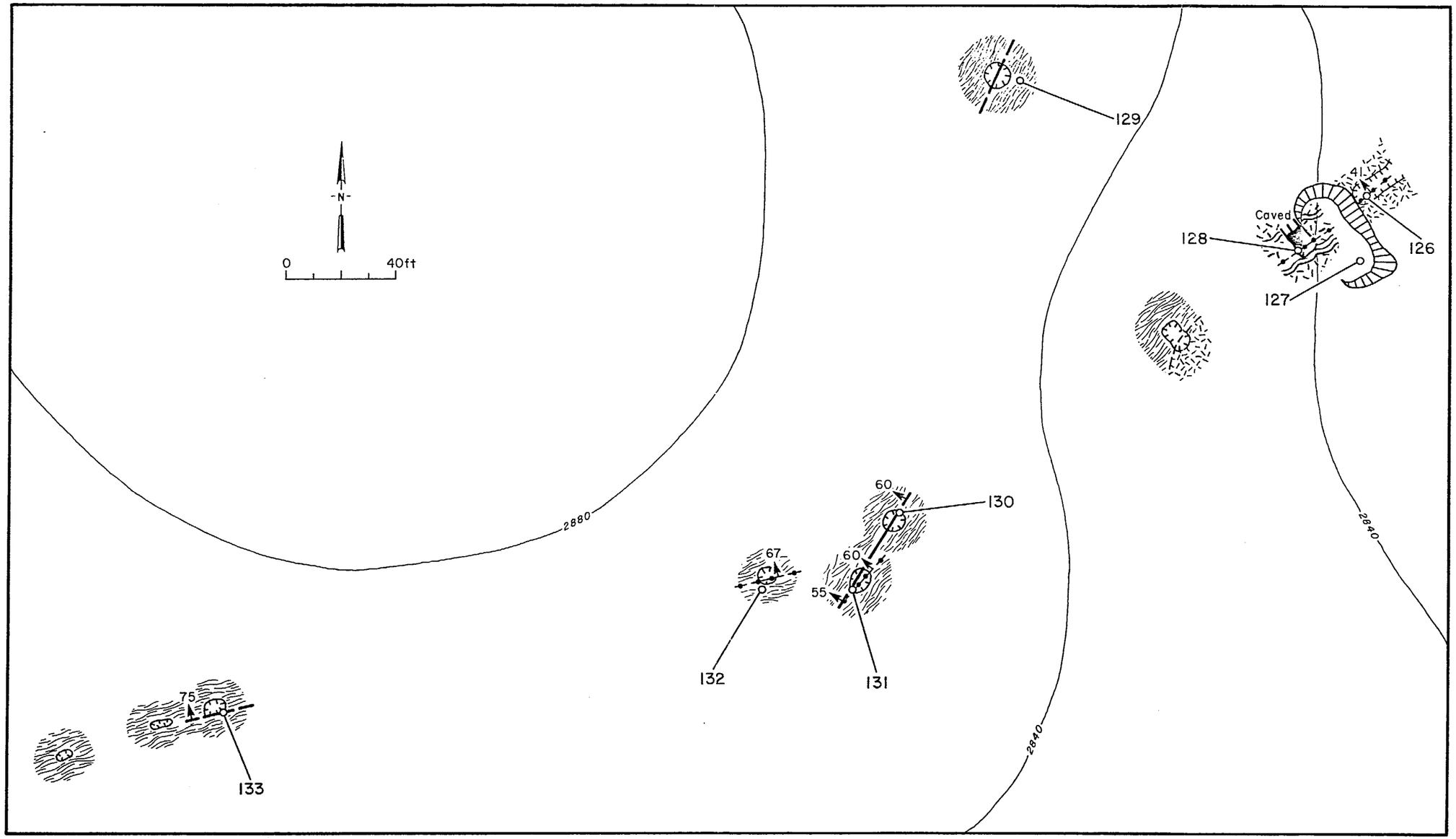


Figure 9.--Workings southeast of the Granite State Mine, showing sample localities 126-133.

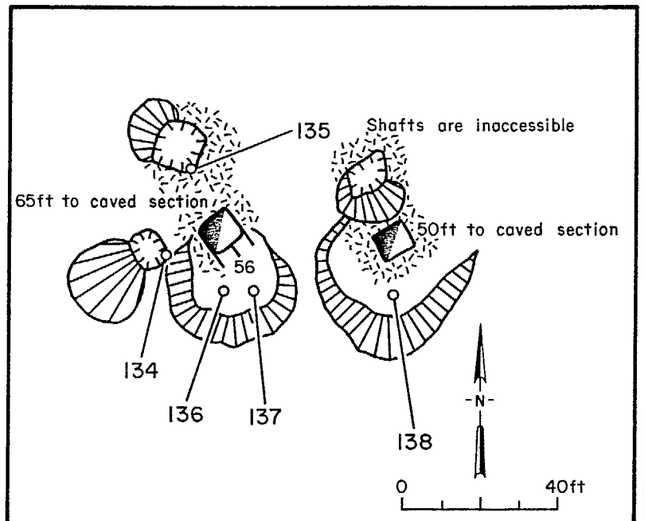


Figure 10.--Prospect on the Leverite claims, showing sample localities 134-138.

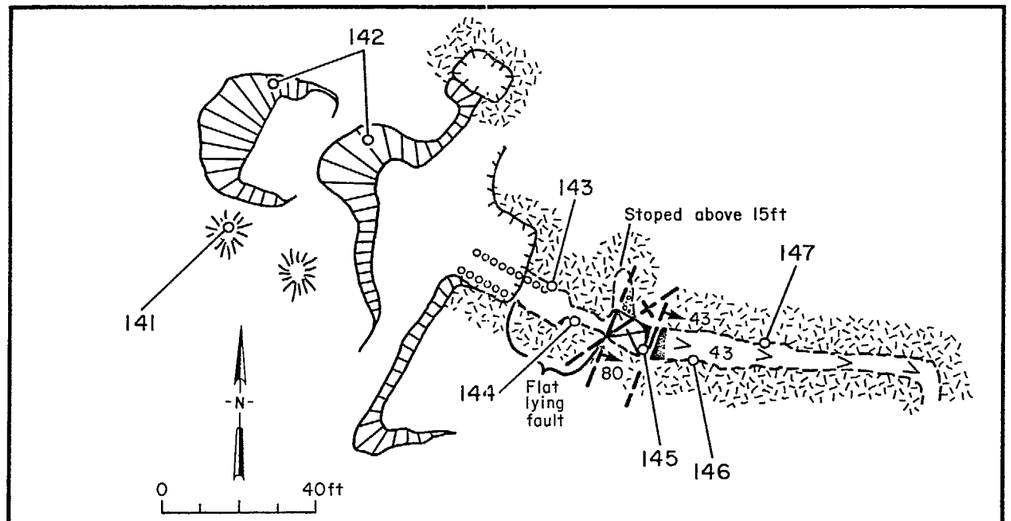


Figure 11.--The Key Mine, showing sample localities 141-147.

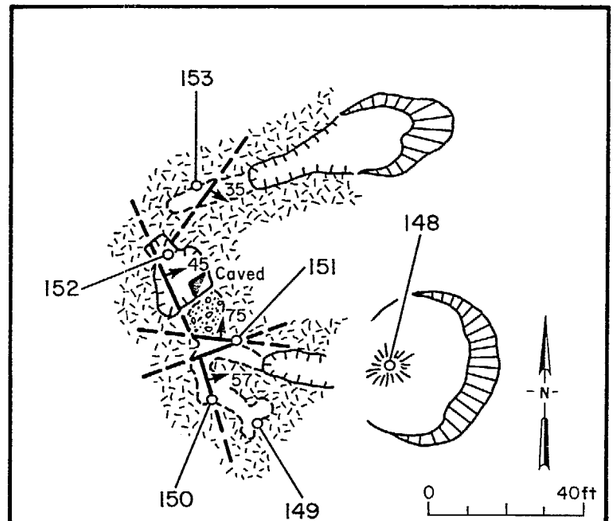


Figure 12.--Prospect on the Leverite claims, showing sample localities 148-153.

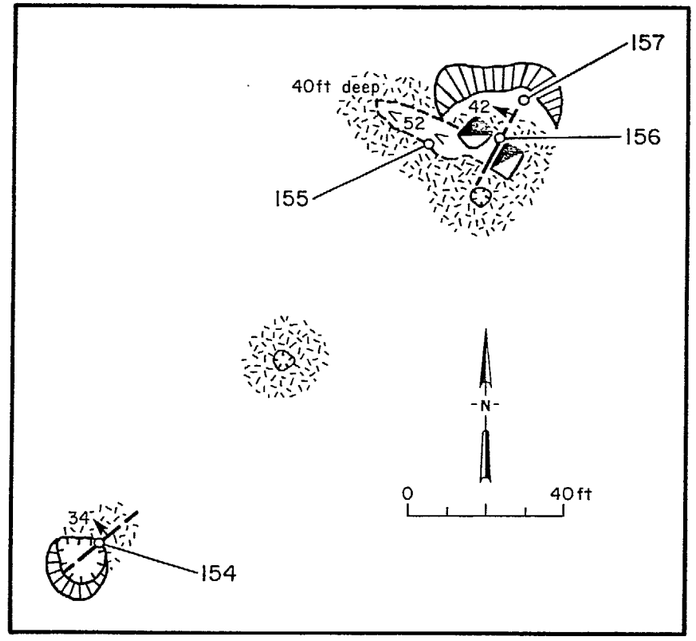


Figure 13.--Prospect on the Leverite claims, showing sample localities 154-157.

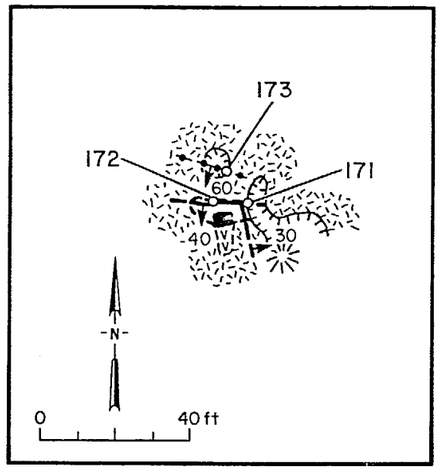


Figure 14.--Unnamed prospect showing sample localities 171-173.

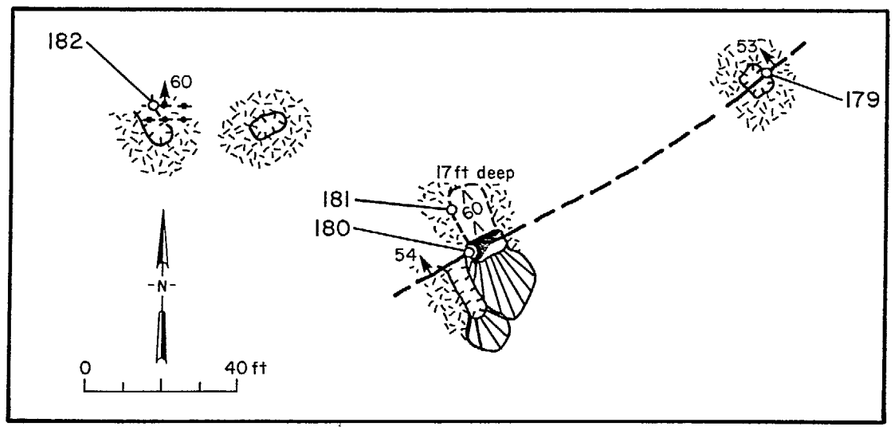


Figure 15.--Unnamed prospect, showing sample localities 179-182.

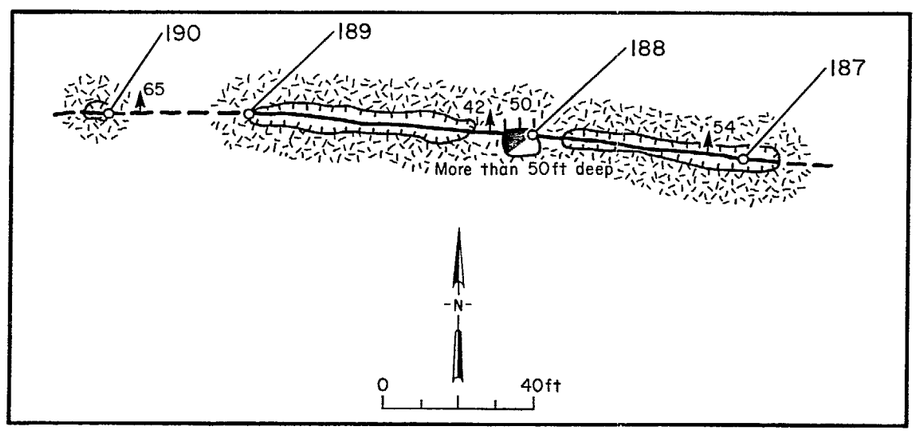


Figure 16.--Unnamed prospect, showing sample localities 197-190.

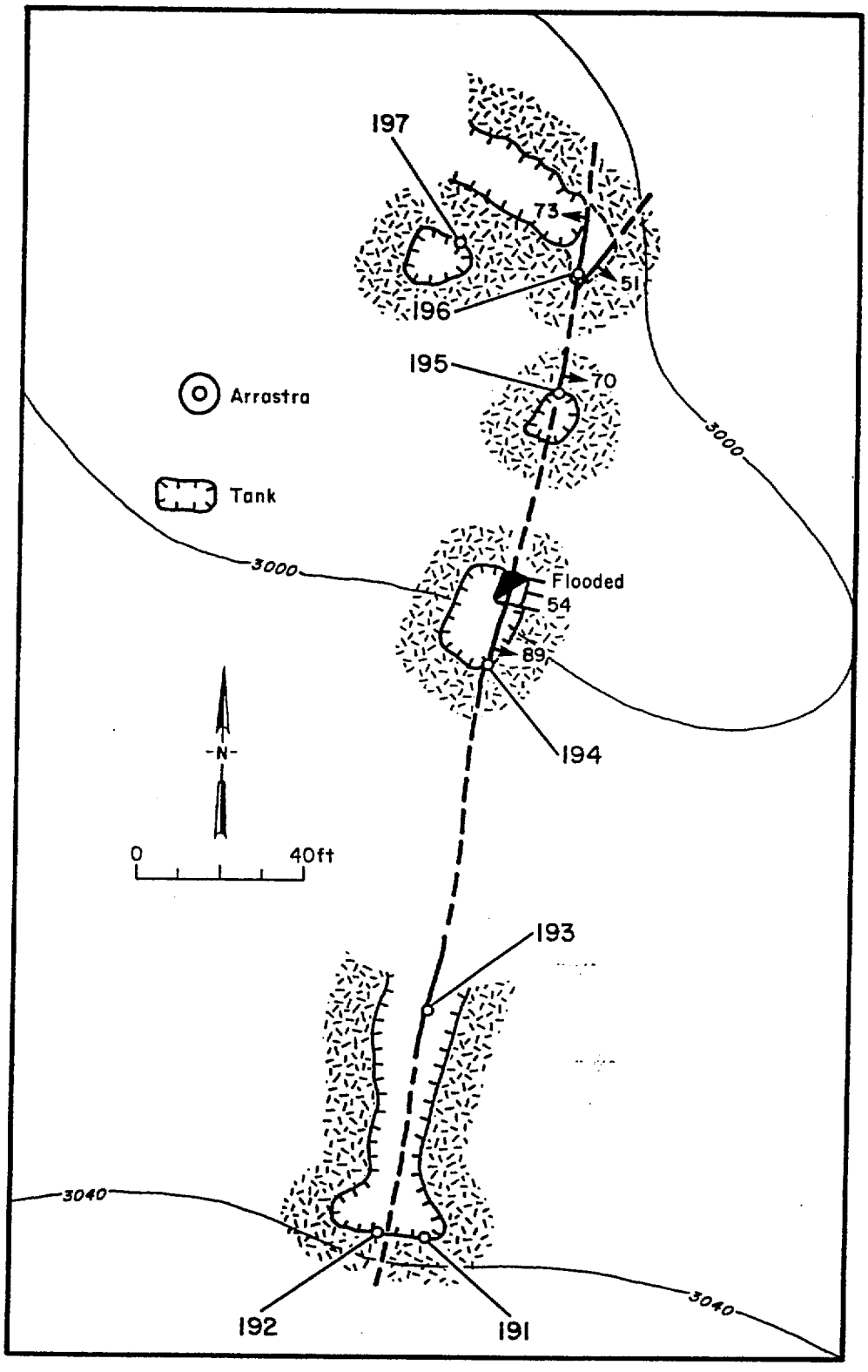


Figure 17.--Prospects at Pack Rat Well, showing sample localities 191-197.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area, Arizona.

[Tr, some material present but below detection limits; ND, not detected; NA, not analyzed; xxx, not applicable; Au and Ag determined by fire assay; Cu, Pb, Zn, and Mo determined by atomic absorption spectrophotometry or inductively coupled plasma-atomic emission spectroscopy.]

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
1	Chip	5.5	ND	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge.
2	do.	3	0.01	ND	ND	ND	ND	ND	Do.
3	do.	2.3	.01	ND	ND	ND	ND	ND	Do.
4	do.	2.3	Tr	ND	ND	ND	ND	ND	Fault in granite; brecciated quartz, brecciated wallrock, clay gouge.
5	do.	4	Tr	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge.
6	do.	1.5	.01	ND	ND	ND	ND	ND	Do.
7	do.	1.2	.04	ND	ND	ND	ND	ND	Fault in granite; quartz stringers, brecciated wallrock, clay gouge.
8	do.	3.5	Tr	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge.
9	do.	1.3	ND	ND	ND	ND	110	ND	Do.
10	do.	4	.01	ND	ND	ND	ND	ND	Do.
11	do.	5.6	Tr	ND	ND	ND	ND	ND	Do.
12	do.	5	ND	ND	ND	ND	ND	ND	Do.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample No.	Type	Length (ft)	Assay data Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
13	Chip	4	ND	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge.
14	do.	3.8	ND	0.2	ND	ND	ND	ND	Do.
15	do.	.6	ND	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge hematite.
16	do.	1.1	ND	ND	ND	ND	ND	ND	Do.
17	do.	1.8	ND	ND	ND	ND	ND	ND	Fault in granite with gneiss; brecciated wallrock, clay gouge.
18	do.	2	ND	ND	ND	ND	ND	ND	Do.
19	do.	2.7	ND	ND	ND	ND	59	ND	Fault in gneiss; brecciated wallrock; clay gouge.
20	do.	1.2	ND	ND	ND	ND	ND	ND	Do.
21	do.	.4	ND	.2	ND	ND	ND	ND	Do.
22	do.	3.7	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz veinlets, brecciated wallrock, clay gouge.
23	do.	2.8	ND	ND	ND	ND	ND	ND	Do.
24	do.	2	ND	ND	ND	ND	ND	ND	Do.
25	do.	3	ND	ND	ND	ND	ND	ND	Fault in gneiss; brecciated wallrock, clay gouge, hematite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
26	Chip	2.6	ND	ND	ND	ND	ND	ND	Fault in gneiss; 5-in.-wide quartz stringer, brecciated wallrock, clay gouge, hematite stain.
27	do.	1.8	ND	ND	ND	ND	ND	ND	Fault in gneiss; brecciated wallrock, clay gouge.
28	do.	1	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz veinlets, brecciated wallrock, clay gouge.
29	do.	1.9	ND	ND	ND	ND	ND	ND	Fault in gneiss; brecciated wallrock, clay gouge.
30	do.	4.3	0.09	ND	530	ND	ND	ND	Fault in gneiss; 3-in.-wide quartz stringer with hematite-limonite blebs brecciated wallrock, clay gouge.
31	do.	2	.06	ND	140	ND	ND	ND	Fault in gneiss; quartz veinlets, brecciated wallrock, clay gouge.
32	do.	3	.25	0.1	.12%	ND	ND	ND	Do.
33	do.	1.8	.24	ND	210	ND	ND	ND	Do.
34	do.	2.8	.10	ND	410	ND	ND	ND	Fault in gneiss; 4-in.-wide quartz stringer hematite-limonite blebs, brecciated wallrock, clay gouge.
35	do.	2.8	.03	.1	210	ND	ND	ND	Fault in gneiss; 4-in.-wide brown calcite and quartz stringer, brecciated wallrock, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr	oz/st	values in ppm unless otherwise indicated				
36	Chip	4.7	ND	ND	ND	ND	ND	ND	Fault in gneiss; brown calcite veinlets, brecciated wallrock, clay gouge.
37	do.	3	ND	0.1	ND	ND	ND	ND	Fault in gneiss; brecciated quartz, brecciated wallrock, clay gouge.
38	do.	1.3	ND	.1	ND	ND	ND	ND	Fault in gneiss; 4-in.-wide quartz-brown calcite stringer, hematite-limonite blebs, brecciated wallrock, clay gouge.
39	do.	.8	ND	ND	ND	ND	47	17	Fault in gneiss; brecciated wallrock, clay gouge.
40	do.	1.8	ND	ND	ND	ND	ND	ND	Fault in gneiss; 2-in.-wide quartz and brown calcite stringer, brecciated wallrock, clay gouge.
41	do.	2.2	ND	ND	ND	ND	ND	ND	Fault in gneiss; brecciated wallrock, clay gouge.
42	do.	1.7	ND	ND	ND	ND	ND	ND	Do.
43	do.	1.8	ND	.1	ND	ND	51	ND	Fault in gneiss; brown calcite and quartz veinlets, brecciated wallrock, clay gouge.
44	do.	1.8	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge.
45	do.	2.4	ND	ND	ND	ND	ND	ND	Do.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
46	Chip	1.8	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz pods, calcite veinlets, brecciated wallrock, clay gouge.
47	do.	3	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz veinlets, brecciated wallrock, clay gouge.
48	do.	2.2	ND	ND	230	ND	ND	ND	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge.
49	do.	2.2	ND	ND	ND	ND	ND	ND	Fault in gneiss; druzy calcite coatings, brecciated wallrock, clay gouge.
50	do.	2	0.06	ND	ND	ND	ND	ND	Fault in gneiss; brecciated quartz and brown calcite veinlet, magnetite, brecciated wallrock, clay gouge, minor hematite stain.
51	do.	1.8	.06	0.1	ND	ND	ND	ND	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge.
52	do.	2	.09	.1	ND	ND	ND	ND	Fault in gneiss; brecciated quartz stringer, brecciated wallrock, clay gouge, minor hematite stain.
53	do.	2.8	.03	ND	ND	ND	ND	ND	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge.
54	do.	2.5	.21	ND	ND	ND	ND	ND	Do.
55	do.	1.8	ND	ND	ND	ND	ND	ND	Fault in gneiss; quartz and brown calcite stringer, brecciated wallrock, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
56	Chip	1.8	ND	ND	130	ND	ND	ND	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge.
57	do.	2.8	ND	ND	ND	ND	ND	ND	Do.
58	do.	1.4	0.04	ND	310	ND	ND	ND	Fault in gneiss; quartz stringers, few hematite blebs, brecciated wallrock, clay gouge.
59	do.	1.8	.08	0.4	820	ND	ND	ND	Do.
60	do.	1.2	ND	ND	ND	ND	ND	ND	Fault in gneiss; brecciated quartz stringer, brecciated wallrock, clay gouge, hematite-limonite stain.
61	do.	1.6	ND	ND	250	ND	ND	NA	Fault in gneiss; brecciated quartz, brecciated wallrock, clay gouge.
62	do.	5	ND	.1	ND	ND	ND	NA	Fault in gneiss; quartz veinlet, brecciated wallrock, clay gouge, hematite-limonite stain.
63	do.	4	ND	ND	ND	ND	ND	NA	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge, hematite-limonite stain.
64	do.	3	Tr	ND	160	ND	47	NA	Fault in gneiss; quartz veinlet, brecciated wallrock.
65	do.	.8	ND	.1	ND	ND	ND	NA	Fault in gneiss; 7-in.-wide quartz vein, clay gouge, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
66	Chip	5.5	0.28	0.1	ND	ND	ND	NA	Fault in gneiss; brecciated quartz and brown calcite vein, brecciated wallrock, clay gouge, hematite-limonite stain.
67	do.	3.3	.01	ND	ND	ND	ND	NA	Fault in gneiss; brecciated wallrock, clay gouge, hematite-limonite stain.
68	do.	5.5	.05	.1	ND	ND	ND	NA	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge, hematite-limonite stain.
69	do.	4.8	.04	ND	ND	ND	ND	NA	Fault in gneiss; brown calcite, brecciated wallrock, clay gouge, hematite-limonite stain.
70	do.	3.3	.02	ND	ND	ND	ND	NA	Fault in gneiss; quartz pods, calcite, brecciated wallrock, clay gouge, hematite stain.
71	do.	3.6	.01	.1	ND	ND	ND	NA	Fault in gneiss; quartz pods, white calcite, brecciated wallrock, clay gouge, hematite-limonite stain.
72	do.	3	.01	ND	ND	ND	ND	NA	Fault in gneiss; brown calcite, white calcite coatings, brecciated wallrock, clay gouge, hematite-limonite stain.
73	do.	3	.01	ND	ND	ND	ND	NA	Fault in gneiss; quartz and brown calcite pods, brecciated wallrock, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
74	Chip	2.5	0.09	ND	ND	ND	ND	NA	Fault in gneiss; brecciated quartz and brown calcite, brecciated wallrock, clay gouge, hematite-limonite stain.
75	do.	2.5	Tr	ND	ND	ND	ND	NA	Fault in gneiss; quartz pods, brecciated wallrock, clay gouge, hematite stain.
76	Grab Select	xxx	.52	0.3	ND	ND	ND	NA	Dump material from caved shaft pieces of quartz and brown-calcite vein, hematite-limonite blebs.
77	Chip	4.5	.16	ND	ND	ND	ND	NA	Fault in gneiss; brecciated quartz stringer with hematite-limonite blebs brecciated wallrock, clay gouge.
78	do.	1.4	.10	ND	ND	ND	ND	NA	Fault in gneiss; quartz and brown calcite brecciated wallrock, clay gouge, hematite-limonite stain.
79	do.	2	.01	.1	ND	ND	ND	NA	Fault in gneiss; 4-in.-wide quartz vein, brecciated wallrock, clay gouge.
80	do.	4	Tr	ND	ND	ND	ND	NA	Fault in gneiss; 8- and 2-in.-wide quartz veins, brecciated wallrock, clay gouge, hematite-limonite stain.
81	do.	5	.03	ND	ND	ND	ND	NA	Fault in gneiss; quartz veinlets, hematite limonite blebs, brown calcite, brecciated wallrock, clay gouge, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample No.	Type	Length (ft)	Assay data Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
82	Chip	2	1.00	0.3	ND	ND	ND	NA	Fault in gneiss; quartz veinlet, brecciated wallrock, clay gouge, hematite-limonite stain.
83	do.	2	ND	ND	ND	ND	ND	ND	Pit, 12 ft by 9 ft; fault, striking N. 15 E. and dipping 60° SE., in gneiss; quartz veinlets, brecciated wallrock, clay gouge, hematite-limonite stain.
84	do.	3.3	.03	.1	ND	ND	ND	ND	Inclined shaft, 43° dip, 17-ft-deep; fault, striking N. 62° E. and dipping 52° N., in gneiss; 2-in.-wide quartz veinlet, hematite-limonite blebs.
85	do.	2	.01	ND	ND	ND	ND	NA	Inclined shaft, caved; fault, striking N. 59° E. and dipping 50° NW., in gneiss; quartz stringer, brecciated wallrock, clay gouge, hematite-limonite stain.
86	Grab Select	xxx	.70	.2	0.034%	0.018%	46	NA	Dump material from two small caved pits; pieces of vein quartz and hematite limonite blebs.
87	Chip	1.7	Tr	ND	70	ND	38	NA	Pit, 6 ft by 4 ft, fault striking N. 57° E. and dipping 42° NW. in gneiss; 4-in.-wide quartz vein, brown calcite, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample No.	Sample Type	Sample Length (ft)	Assay data Au (tr oz/st)	Ag (tr oz/st)	Cu (values in ppm unless otherwise indicated)	Pb (values in ppm unless otherwise indicated)	Zn (values in ppm unless otherwise indicated)	Mo (values in ppm unless otherwise indicated)	Remarks
88	Chip	2	0.05	0.1	160	ND	ND	NA	Trench, 100 ft by 6 ft; fault striking N. 67° E. and dipping 73° NW.; brecciated quartz, brecciated wallrock, clay gouge, hematite-limonite stain.
89	do.	2	.10	.1	ND	ND	ND	NA	Pit, 8 ft by 5 ft; fault trending N. 30° W. in gneiss; quartz pods, brecciated wallrock, clay gouge, hematite-limonite stain.
90	Grab Select	xxx	.14	.2	ND	ND	ND	NA	Dump material from pit in sample 89, pieces of quartz and brown calcite, hematite-limonite stain.
91	Chip	1	.02	.6	53	90	0.019%	NA	Adit, 22 ft long; fault striking N. 53° W. and dipping 15° NE. contact between gneiss and schist; brecciated wallrock, hematite-limonite stain.
92	Grab Select	xxx	.73	.5	.012%	.017%	.010%	NA	Stockpile on dump of adit in sample 91, pieces of schist and gneiss, hematite-limonite stain.
93	Chip	1.2	.04	.1	45	.027%	50	NA	Trench, 10 ft by 4 ft; fault striking N. 10° E. and dipping 85° E. in gneiss; quartz and brown calcite veinlets, brecciated wallrock, clay gouge, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
94	Chip	2.8	Tr	0.03	26.3	0.099%	94	NA	Pit, 6 ft by 6 ft; fault striking N. 51° E. and dipping 62° W. in granite; quartz with brown calcite veinlets, brecciated, clay gouge, hematite-limonite stain.
95	do.	6.5	0.17	.1	11	ND	26.3	NA	Pit, 7 ft by 4 ft; pegmatitic pod in granite; quartz and fractured granite.
96	do.	4	Tr	.1	13.9	ND	46	NA	Pit, 11 ft by 6 ft; pegmatitic pod in granite; quartz and feldspar.
97	do.	1.5	.04	.1	76	ND	82	NA	Trench, 36 ft by 6 ft; weathered gneiss.
98	do.	3.3	.08	ND	ND	ND	ND	NA	Fault in gneiss; brecciated wallrock, clay gouge.
99	do.	2.1	.29	ND	ND	ND	ND	NA	Do.
100	do.	2.3	.17	ND	ND	ND	ND	NA	Do.
101	do.	3	.04	ND	ND	ND	ND	NA	Do.
102	do.	2.5	.02	ND	ND	ND	ND	NA	Do.
103	do.	1.2	.01	.1	ND	ND	ND	NA	Do.
104	do.	3.2	.01	ND	ND	ND	ND	NA	Do.
105	do.	1	.06	ND	ND	ND	ND	NA	Do.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
106	Chip	2	0.09	ND	ND	ND	ND	NA	Fault in gneiss; brecciated quartz veinlets, brecciated wallrock, clay gouge.
107	do.	2.3	.01	ND	ND	ND	ND	NA	Fault in gneiss; brecciated wallrock, clay gouge.
108	do.	4	.01	ND	160	150	ND	NA	Fault in gneiss; quartz stringers, minor chrysocolla stain, brecciated wallrock, clay gouge, hematite-limonite stain.
109	do.	4.8	Tr	ND	ND	ND	ND	NA	Fault in gneiss; 2-in.-wide brecciated quartz veinlet, brecciated wallrock, clay gouge.
110	do.	4.3	.01	ND	ND	ND	ND	NA	Fault in gneiss; brecciated wallrock, clay gouge.
111	do.	2	.04	ND	ND	ND	420	NA	Do.
112	do.	2.2	.01	ND	ND	ND	ND	NA	Do.
113	do.	1	.01	ND	ND	ND	ND	NA	Do.
114	do.	1	.26	0.1	ND	ND	ND	NA	Do.
115	do.	.7	.02	.1	ND	ND	ND	NA	Do.
116	do.	4.6	.01	ND	ND	ND	ND	NA	Do.
117	Grab Select	xxx	.12	.5	.97%	1.6%	ND	NA	Dump material from shaft, pieces of quartz, abundant chrysocolla, sparse malachite, hematite-limonite blebs.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
118	Chip	1.9	Tr	ND	ND	260	ND	NA	Fault contact between granite and gneiss; 1-in.-wide quartz stringer, clay gouge.
119	do.	1.5	0.01	ND	320	430	ND	NA	Fault contact between granite and gneiss; brecciated quartz stringers, brecciated wallrock, clay gouge, hematite-limonite stain.
120	do.	1.5	Tr	0.1	ND	ND	ND	NA	Fault in gneiss; brecciated wallrock, clay gouge, hematite-limonite stain.
121	do.	2.7	.03	ND	ND	ND	ND	NA	Fault in gneiss; quartz veinlets, brown calcite, brecciated wallrock, clay gouge, hematite-limonite stain.
122	do.	2.7	.02	.1	ND	ND	ND	NA	Fault in gneiss; brecciated quartz pods, clay gouge.
123	do.	2.3	.02	ND	ND	ND	ND	NA	Fault in gneiss; 4-in.-wide quartz veinlet, brecciated wallrock, clay gouge, hematite-limonite stain.
124	do.	2.5	Tr	ND	ND	ND	ND	ND	Fault in gneiss; 3-in.-wide quartz veinlet, brecciated wallrock, clay gouge, hematite stain.
125	do.	3.5	.01	ND	ND	ND	ND	ND	Fault in gneiss; brecciated quartz veinlets, scattered magnetite, brecciated wallrock, clay gouge, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
126	Chip	1.7	0.01	ND	ND	160	ND	ND	Fault in granite; 10-in.-wide quartz vein, hematite-limonite blebs, brecciated wallrock, clay gouge.
127	Grab Select	xxx	.07	0.02	ND	550	ND	ND	Dump material from caved shaft; pieces of quartz with minor brown calcite, scattered pyrite crystals altering to limonite.
128	Chip	1.3	Tr	ND	ND	.11%	89	ND	Fault in gneiss; 3-in.-wide quartz stringer, sheared wallrock.
129	Grab Select	xxx	.24	2.2	5.3%	1.3%	72	450	Dump material from caved pit; pieces of quartz, chalcopyrite, chalcocite, chrysocolla, hematite-limonite stain.
130	Chip	1.5	ND	ND	ND	ND	ND	ND	Fault in amphibolite; 4-in.-wide quartz veinlets, brecciated wallrock, clay gouge, hematite-limonite stain.
131	do.	2	.05	ND	180	530	ND	ND	Fault in amphibolite; quartz and minor brown calcite veinlets; hematite-limonite blebs, sheared wallrock.
132	Grab Select	xxx	Tr	2.3	1.5%	2.5%	.13%	.11%	Dump material from pit; pieces of quartz, chrysocolla, hematite-limonite stain.
133	Chip	1	1.19	ND	570	.24%	450	74	Fault contact between amphibolite and granite; 3-in.-wide quartz veinlet sheared wallrock, hematite stain.
134	do.	3	ND	.1	ND	ND	ND	ND	Fractured granite.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample No.	Type	Length (ft)	Assay data Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
135	Chip	1.9	Tr	ND	ND	ND	ND	ND	Fractured granite.
136	Grab Random	5 ft grid	0.16	ND	ND	ND	ND	ND	Dump material from inclined shaft; pieces of granite, hematite stain.
137	Grab Select	xxx	.20	ND	ND	ND	ND	ND	Dump material, from inclined shaft; pieces of granite, magnetite, hematite stain, white druzy calcite crystals filling fractures.
138	Grab Random	5 ft grid	.08	ND	ND	ND	ND	ND	Do.
139	Chip	1.5	.05	ND	ND	ND	ND	ND	Trench, 16 ft by 7 ft; fractured granite with quartz stringers.
140	do.	2.1	.02	ND	ND	ND	ND	ND	Trench, 10 ft by 5 ft; fractured granite; hematite stain.
141	Grab Select	xxx	.16	ND	ND	ND	ND	ND	Stockpile pieces of granite, hematite stain, minor vuggy quartz.
142	Grab Random	5 ft grid	.12	ND	ND	ND	ND	ND	Dump material; pieces of granite; some with hematite stain.
143	Chip	.6	.02	ND	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge, hematite stain.
144	do.	1	.10	0.2	ND	ND	ND	ND	Fault in granite; quartz blebs, brecciated wallrock, clay gouge, hematite-limonite stain.
145	do.	.7	Tr	.2	ND	ND	ND	ND	Fault in granite; brecciated wallrock, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
146	Chip	1.4	0.08	ND	ND	ND	ND	ND	Fractured granite; hematite stain.
147	do.	2	.63	ND	ND	ND	ND	ND	Do.
148	Grab	xxx	.44	ND	8	0.012%	36	NA	Stockpile; pieces of hematite-limonite-stained granite.
149	Chip	1.3	.01	ND	13.9	ND	63	NA	Fault in granite; minor clay gouge.
150	do.	1.8	.24	ND	13.9	55	31	NA	Fault in granite; minor clay gouge, hematite-limonite stain.
151	do.	1.5	Tr	ND	16	43	49	NA	Fault in granite; brecciated wallrock, clay gouge, minor hematite-limonite stain.
152	do.	2.2	.03	ND	13.9	31	24	NA	Fault in granite; quartz stringers, sheared wallrock, hematite-limonite stain.
153	do.	1	Tr	ND	15	ND	31	NA	Fault in granite; brecciated wallrock, clay gouge.
154	do.	1.7	.11	0.2	.144%	.091%	51	NA	Do.
155	do.	3.8	.04	.1	90	.052%	.013%	NA	Fault in granite; quartz blebs, brecciated wallrock, clay gouge, hematite-limonite stain.
156	do.	2.8	.05	.1	.012%	.046%	.012%	NA	Fault in granite; 14-in.-quartz vein hematite-limonite blebs, brecciated wallrock, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
157	Grab Select	xxx	0.13	0.5	0.97%	4.3%	0.038%	NA	Dump material from inclined shaft; pieces of quartz, galena, angelsite, chalcopyrite, chalcocite, chrysocolla, hematite-limonite stain.
158	Chip	1.2	1.01	ND	31	.027%	.017%	NA	Adit, 7 ft long; fault striking N. 54° E., and dipping 70° NW.; quartz blebs, brecciated wallrock, clay gouge, hematite-limonite stain.
159	Grab Select	xxx	.05	.4	.023%	2.29%	.019%	NA	Dump from adit in sample 158; pieces of quartz vein, brown calcite, galena, angelsite, hematite-limonite stain.
160	Chip	2	Tr	ND	41	55	71	NA	Trench, 20 ft by 5 ft; fault, striking approximately N. 10° W. dip in granite, clay gouge.
161	do.	2.6	Tr	ND	46	.021%	.012%	NA	Fault in granite; quartz veinlet, brown calcite, brecciated wallrock, hematite-limonite stain.
162	do.	1.1	.10	.1	.014%	.208%	.066%	NA	Fault in granite; quartz veinlet, clay gouge, hematite-limonite stain.
163	do.	2.8	ND	ND	67	.058%	.042%	NA	Fault in granite; brecciated wallrock, clay gouge, hematite-limonite stain.
164	do.	1.6	.24	.3	.046%	2.79%	.100%	NA	Fault in granite; quartz veinlet, angelsite, hematite-limonite coated vugs, clay gouge.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
165	Chip	0.8	Tr	0.1	80	0.107%	0.033%	NA	Fault in granite; brecciated wallrock, clay gouge, hematite-limonite stain.
166	do.	1.8	0.01	ND	32	.011%	.013%	NA	Do.
167	do.	2.8	.38	.4	.075%	1.08%	.31%	NA	Fault in granite; sheared wallrock, clay gouge, minor quartz, black coatings, hematite-limonite stain.
168	do.	3	.12	.1	.099%	.47%	.077%	NA	Fault in granite; quartz stringers, chrysocolla and hematite-limonite stain, sheared wallrock, clay gouge.
169	do.	3.3	.10	.2	.070%	.32%	.081%	NA	Fault in granite; quartz stringers, hematite-limonite stain and black coated vugs, brecciated wallrock, clay gouge.
170	do.	3	.03	ND	.040%	.140%	.030%	NA	Fault in granite; brecciated and vuggy quartz stringers, hematite-limonite stain, brecciated wallrock, clay gouge.
171	do.	1.7	.04	.1	.021%	1.98%	.015%	NA	Fault in granite; vuggy quartz veinlet, brecciated wallrock, clay gouge, hematite-limonite stain.
172	do.	2.3	.04	ND	.023%	.49%	.013%	NA	Fault in granite; brecciated wallrock, clay gouge, hematite-limonite stain.
173	do.	1.2	.22	.1	.025%	.235%	.011%	NA	Quartz vein in granite; hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
174	Grab Select	xxx	0.11	0.2	28.3	0.023%	61	NA	Dump material from 13-ft-deep shaft; pieces of granite, hematite stain.
175	Chip	0.8	.02	ND	64	.063%	48	NA	Pit, 8 ft by 5 ft; 5-in.-wide quartz vein in granite.
176	Grab Select	xxx	.54	.3	.017%	.057%	48	NA	Stockpile on dump of pit; pieces of quartz vein, hematite-limonite stain.
177	Chip	.7	.47	.2	.161%	1.31%	89	NA	Pit, 10 ft by 7 ft; 4-in.-wide quartz vein in granite; brown calcite, hematite-limonite stain.
178	do.	2	ND	ND	95	.149%	.022%	NA	Pit, 8 ft by 5 ft; quartz veinlets in granite; brown calcite, galena, hematite-limonite stain.
179	do.	3.7	.01	.2	.022%	.87%	91	NA	Fault in granite; 4-in.-wide quartz stringer, siliceous gouge, brecciated wallrock, clay gouge, hematite stain.
180	do.	3.8	.19	.1	.024%	1.18%	71	NA	Fault in granite; quartz veinlets, brecciated wallrock, clay gouge.
181	do.	5.3	.10	.1	.060%	.59%	100	NA	Fault in granite; 10-in.-quartz vein hematite-limonite blebs, brecciated quartz pods, brecciated wallrock, clay gouge.
182	do.	.5	Tr	.2	75	.073%	.022%	NA	Quartz veinlet, 3 in. wide in granite; hematite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
183	Chip	1	0.03	Tr	36	0.088%	54	NA	Pit, 15 ft by 10 ft; shear striking N. 80° E. and dipping 40° NW. in granite; quartz stringers.
184	Grab Select		.09	ND	.034%	.018%	46	NA	Dump material from pit 12 ft by 7 ft; pieces of quartz, hematite-limonite blebs.
185	do.	0.3	.09	0.1	ND	ND	13.3	NA	Pit 15 ft by 7 ft; quartz veinlet striking due N. and dipping 8° W., 4 in. wide in granite; hematite-limonite blebs.
186	do.	1	.18	.2	33	.011%	34	NA	Pit, 13 ft by 10 ft; quartz veinlet striking N. 65° W. and dipping 80° NE. in granite; hematite-limonite blebs.
187	do.	1.4	.05	ND	.024%	.051%	64	NA	Quartz veinlets 1 to 3 in. wide in granite; minor malachite, hematite-limonite blebs.
188	do.	1	.22	.2	.018%	.52%	83	NA	Quartz vein, 10 in. wide in granite; hematite-limonite blebs, fractured wallrock.
189	do.	.3	Tr	.1	.023%	1.45%	.014%	NA	Quartz veinlet, 3 in. wide in granite; hematite-limonite stain.
190	do.	.7	.04	.4	.039%	.49%	.013%	NA	Quartz veinlets, 1 to 3 in. wide in granite; galena, malachite, hematite stain, fractured wallrock.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
191	Grab Select	2.7	0.01	ND	ND	ND	ND	ND	Fault in granite; very weathered; clay, hematite-limonite stain.
192	do.	5.5	.01	ND	ND	ND	96	ND	Do.
193	do.	2	Tr	ND	ND	ND	ND	ND	Fault in granite; sheared wallrock, clay gouge.
194	Chip	1.9	Tr	ND	ND	ND	170	18	Fault in granite; brecciated wallrock, clay gouge, hematite stain.
195	do.	4	.01	0.1	280	0.10%	150	ND	Do.
196	do.	2.8	Tr	ND	ND	400	95	11	Do.
197	do.	1.5	Tr	.1	170	650	300	ND	Weathered granite; hematite-limonite stain.
198	do.	1.8	.04	ND	ND	ND	ND	ND	Pit, 8 1/2 ft by 8 ft; fault striking N. 52° W. and dipping 51° N. in granite; quartz veinlets, few hematite-limonite blebs, clay gouge.
199	do.	2	.01	ND	ND	ND	ND	ND	Trench, 13 ft by 6 ft; fault striking N. 24° W. and dipping 63° S. in granite; brecciated wallrock, clay gouge.
200	do.	.9	Tr	.3	ND	ND	ND	ND	Fault in granite; sheared wallrock, minor limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
201	Chip	2.5	ND	0.2	ND	ND	ND	ND	Fault contact between diabase dike and granite; sheared wallrock.
202	Grab Random	5 ft grid	0.09	ND	330	ND	120	32	Dump material from adit; pieces of sheared diabase.
203	Chip	0.9	ND	.2	ND	ND	67	ND	Fault in diabase dike; sheared wallrock, clay gouge.
204	do.	2.8	.03	.2	82	ND	50	ND	Fault in diabase dike; sheared wallrock, clay gouge, minor hematite stain.
205	do.	.5	.21	.1	870	170	270	130	Fault contact between diabase dike and granite; quartz veinlets, hematite-limonite stain, sheared wallrock.
206	do.	.4	.17	.4	690	430	180	ND	Fault contact between diabase dike and granite; quartz veinlets, limonite stain, sheared wallrock.
207	do.	1.3	.11	.3	ND	390	760	73	Fault contact between diabase dike and granite; sheared wallrock, clay gouge.
208	Grab Select	xxx	.36	.2	.22%	.13%	.27%	460	Dump material from trench; pieces of quartz, malachite, azurite, hematite-limonite stain.
209	do.	.8	.03	ND	120	ND	ND	ND	Fault contact between diabase dike and granite; sheared wallrock.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample No.	Type	Length (ft)	Assay data Au (tr oz/st)	Ag	Cu	Pb	Zn	Mo (values in ppm unless otherwise indicated)	Remarks
210	Grab Select	1	0.08	ND	130	260	ND	29	Fault contact between diabase dike and granite; quartz veinlet, hematite-limonite blebs.
211	do.	1.1	.18	0.1	410	ND	ND	79	Fault contact between diabase dike and granite; quartz veinlet, hematite-limonite blebs, sheared wallrock.
212	do.	2	.16	ND	310	ND	ND	ND	Fault contact between diabase dike and granite; brecciated wallrock, clay gouge.
213	do.	.8	.03	ND	ND	ND	ND	54	Fault contact between diabase dike and granite; sheared wallrock.
214	do.	.9	.27	ND	ND	ND	46	81	Do.
215	Chip	1.2	.52	.2	680	ND	150	110	Fault contact between diabase dike and granite; quartz veinlet, specular hematite, sheared wallrock.
216	do.	1.4	.06	.1	660	400	630	ND	Fault contact between diabase dike and granite; quartz veinlet, clay gouge, hematite-limonite stain.
217	do.	2.5	.08	.1	130	ND	ND	ND	Fault contact between diabase dike and granite; quartz veinlet, brecciated wallrock, clay gouge.
218	do.	1.5	.10	ND	ND	ND	ND	34	Fault contact between diabase dike and granite; quartz pod, brecciated wallrock, clay gouge, hematite-limonite stain.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
219	Chip	2	0.09	ND	ND	ND	ND	38	Fault contact between diabase dike and granite; quartz veinlets, limonite stain, sheared wallrock.
220	do.	1	ND	0.3	ND	ND	ND	ND	Pit, 8 ft by 5 ft, fractures striking N. 75° W. and dipping 68° S. in granite.
221	do.	3.5	ND	.2	ND	ND	ND	ND	Do.
222	do.	.8	.09	.2	ND	ND	ND	63	Trench, 9 ft by 6 ft; fault contact between diabase dike and granite; quartz stringers, specular hematite, sheared wallrock.
223	do.	1.6	.09	.3	ND	ND	ND	ND	Shear in diabase dike.
224	do.	.5	.09	.2	ND	ND	ND	ND	Shear in diabase dike; calcite stringers.
225	do.	.5	Tr	.2	ND	ND	ND	ND	Do.
226	do.	.7	.07	.2	ND	ND	ND	150	Fault contact between diabase dike and granite; 6-in.-wide quartz vein, limonite blebs, sheared wallrock.
227	do.	2	.75	.3	110	ND	ND	240	Fault contact between diabase dike and granite; 4-in.-wide quartz veinlet brecciated wallrock, clay gouge.
228	do.	2.3	.37	.3	ND	180	ND	500	Do.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
229	Chip	2.5	0.16	0.2	ND	ND	ND	360	Fault contact between diabase dike and granite; 3-in.-wide quartz veinlets, clay gouge, hematite-limonite stain.
230	do.	3	.11	.3	ND	ND	74	140	Fault contact between diabase dike and granite; 4-in.-wide quartz veinlet, sheared wallrock, clay gouge.
231	do.	1.5	Tr	.2	ND	ND	37	ND	Fault contact between diabase dike and granite; 4-in.-wide quartz veinlet, sheared wallrock, clay gouge.
232	do.	1	.18	.3	ND	350	ND	200	Fault contact between diabase dike and granite; quartz stringers, specular hematite crystals, brecciated wallrock, clay gouge.
233	do.	1	Tr	.2	ND	ND	ND	ND	Fault contact between diabase dike and granite; calcite stringers, brecciated wallrock, hematite-limonite stain.
234	do.	1	.01	.2	ND	ND	ND	ND	Fault contact between diabase dike and granite; sheared wallrock, hematite-limonite stain.
235	do.	1.5	.06	.2	150	ND	ND	90	Trench, 22 ft by 6 ft; fault contact between diabase dike and granite; quartz stringers, specular hematite, calcite stringers, sheared wallrock.

Table 1.--Assay results and sample descriptions for samples 1-235, and 251-253, from the Lower Burro Creek Wilderness Study Area--Continued

Sample			Assay data						
No.	Type	Length (ft)	Au	Ag	Cu	Pb	Zn	Mo	Remarks
			tr oz/st		values in ppm unless otherwise indicated				
251	Chip	4	ND	ND	NA	NA	NA	NA	Pit, 10 ft by 6 ft; chalcedony; black red and white, limonite matrix within siliceous dolomite.
252	do.	.8	0.01	ND	ND	ND	ND	ND	Outcrop; fault contact striking S. 60° E. and dipping 45° SW. between diabase dike and granite; clay gouge.
253	do.	1.5	.02	ND	ND	ND	ND	ND	Outcrop; fault contact striking approximately SE. and dipping 70° SW. between diabase dike and granite; clay gouge.

Table 2.--Miscellaneous gold occurrences in and near the Lower Burro Creek Wilderness Study Area, Arizona.

Sample Nos.	Property name	Summary	Sample data
83-90	Mexican Quest, Tops, and Rose claims	Seven prospects consisting of a 17-ft-deep shaft, a caved shaft, four pits and a trench are on faults in gneiss.	Eight samples were taken. Four chip samples contained 0.01 to 0.1 tr oz gold/st. Two chip samples contained 0.1 tr oz silver/st. Base metal values were less than 0.02%. Two select grab samples contained 0.14 and 0.7 tr oz gold/st, 0.2 oz silver/st and base metal values less than 0.05%.
91-97	Buckhorn and Endlog claims	Six prospects consisting of a 22 ft adit, two trenches, and three pits are on faults, fractures and pegmatite pods in gneiss and granite.	Seven samples were taken. Four chip samples contained 0.04 to 0.17 tr oz gold/st. Six chip samples contained 0.1 to 0.6 tr oz silver/st and base metal values less than 0.01%. A select grab sample contained 0.73 tr oz gold/st, 0.5 tr oz silver/st, and base metal values less than 0.1%.
126-133	Buckhorn and Endlog claims	Caved shaft and seven pits are on faults having quartz veinlets in veinlets in gneiss and amphibolite (fig. 9). Chalcopyrite, chalcocite, chrysocolla and hematite-limonite staining occurs in quartz at some sample sites.	Eight samples were taken. Two chip samples contained 0.01 and 1.19 tr oz gold/st, and base metal values less than 0.3%. Three select grab samples contained up to 0.24 tr oz gold/st, 2.3 tr oz silver/st, 5.3% copper, 2.5% lead, and 0.11% molybdenum.
134-138	Leverite claims	Inclined caved shaft at least 65 ft deep, vertical caved shaft at least 50 ft deep, and three pits are in granite (fig. 10). No mineralized rock in place but pieces of hematite stained granite and vuggy quartz is found on dumps.	Five samples were taken. The dump samples contained 0.08 and 0.16 tr oz gold/st in random grabs and 0.20 oz gold/st in a select grab. A chip sample contained 0.1 tr oz silver/st.

Table 2.--Miscellaneous gold occurrences in and near the Lower Burro Creek Wilderness Study Area, Arizona--Continued

Sample Nos.	Property name	Summary	Sample data
139-140, 158-159	Leverite claims	A 7-ft-long adit on a fault and two trenches are on fractures in granite.	Four samples were taken. Three chip samples contained 0.02, 0.16 and 1.01 tr oz gold/st and base metal values less than 0.027%. A select grab contained 0.05 tr oz gold/st, 0.4 tr oz silver/st, 0.023% copper, 2.29% lead, and 0.019% zinc.
141-147	Leverite claims, Key Mine	The Key Mine consists of a 35-ft-long adit, 15-ft-deep shaft and a 75-ft-deep inclined winze. The bottom of the winze was not accessible to Bureau personnel (fig. 11). The workings follow thin faults and fractures in granite. Sporadic hematite stained pods and vuggy quartz a few ft in diameter are present along the fractures. Four of these pods are located over a distance of 50 ft in the winze.	Seven samples were taken. Four chip samples contained 0.02 to 0.63 tr oz gold/st. Two contained 0.02 tr oz silver/st. Two dump samples contained 0.16 and 0.12 tr oz gold/st.
148-153	Leverite claims	A 40-ft-long adit, and a 20-ft-long adit that connects to a caved shaft, are along fractures with sporadic limonite stained pods in granite (fig. 12).	Six samples were taken. Three chip samples contained 0.01 to 0.24 tr oz gold/st. A select grab sample contained 0.44 tr oz gold/st and base metal values less than 0.012%.
154-157	Leverite claims	A 40-ft-deep inclined shaft and a pit are on a fault and quartz veining in granite (fig. 13), galena and chalcopyrite in select grab sample of quartz pieces from dump.	Four samples were taken. Three chip samples contained 0.04 to 0.13 tr oz gold/st, 0.1 to 0.2 tr oz silver/st and base metal values less than 0.144%. A select grab sample contained 0.13 tr oz gold/st, 0.5 tr oz silver/st and base metal values up to 4.3%.

Table 2.--Miscellaneous gold occurrences in and near the Lower Burro Creek Wilderness Study Area, Arizona--Continued

Sample Nos.	Property name	Summary	Sample data
160, 174-178, 183-186	Unnamed	Eight prospects consisting of a 13-ft-deep shaft, eight pits and a trench are on faults and fractures in granite.	Ten samples were taken. Four chip samples contained 0.02 to 0.47 tr oz gold/st. Three contained 0.1 to 0.2 tr oz silver/st. Base metal values up to 1.31% were present. Three select grab samples contained 0.09 to 0.54 tr oz gold/st. Two contained 0.2 and 0.3 tr oz silver/st. Base metal values less than 0.034% were present.
171-173	Unnamed	A 14-ft-long adit with a 7-ft-deep winze are on a fault containing quartz veinlets and a pit is on a thin quartz vein, in granite (fig. 14).	Three chip samples contained 0.4 to 0.22 tr oz gold/st and base metal values up to 1.18%. Two contained 0.1 tr oz silver/st.
179-182	Unnamed	A 17-ft-deep inclined shaft, three pits and a trench are located over a distance of 100 ft along a fault containing quartz veinlets in granite (fig. 15).	Four samples were taken. Three contained 0.01 to 0.19 tr oz gold/st. Four contained 0.1 to 0.2 tr oz silver/st and base metal values up to 1.18%.
187-190	Unnamed	A shaft over 50 ft deep which was not accessible to Bureau Personnel, and a series of pits and trenches are located over a distance of 180 ft on a fault containing quartz veinlets (fig. 16). Galena and malachite are present locally.	Four samples were taken. Three contained 0.04 to 0.22 tr oz gold/st, 0.1 to 0.4 tr oz silver/st. Base metal values up to 1.45% were present.

Table 2.--Miscellaneous gold occurrences in and near the Lower Burro Creek Wilderness Study Area, Arizona--Continued

Sample Nos.	Property name	Summary	Sample data
191-198	Unnamed	A flooded shaft, 7-ft-long adit, three pits and a trench are on a fault over a distance of 245 ft in granite (fig. 17). Fault zone consists of brecciated wallrock and clay gouge. Sample 198 taken from a pit approximately 200 ft away on a fault containing quartz veinlets in granite.	Eight samples were taken. Three of seven samples taken at the main prospect contained 0.01 tr oz gold/st. Two contained 0.1 tr oz gold/st. Two contained 0.1 tr oz silver/st. Base metal values were less than 0.1%. Sample 198 contained 0.04 tr oz gold/st.
199, 220-221	Golden Flow claims	A trench is on fractures and a pit is on a fault, in granite.	Three samples were taken. One contained 0.01 tr oz gold/st. Two contained 0.2 and 0.3 tr oz gold/st.
252-253	none	Granite and a diabase dike are in fault contact.	Two samples contained 0.01 and 0.02 tr oz gold/st.

Table 3.--Assay and x-ray diffraction results for samples 237 and 240-250, from the Lower Burro Creek Wilderness Study Area, Arizona.

[Tr, less than detection limit but some material present; ND, not detected, NA, not analyzed; Au and Ag determined by fire assay; SiO_2, Al_2O_3, Fe_2O_3, TiO_2, CaO, MgO, K_2O, Na_2O, Li_2O determined by inductively coupled plasma-atomic emission spectrometry; F determined by wet chemical analysis; H_2O and LOI determined by gravimetric methods.]

Sample			Assay data														
No.	Type	Length (ft)	Au	Ag	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	K_2O	Na_2O	Li_2O	F	H_2O	LOI	Description and x-ray diffraction results
			tr oz/st		%, except those noted by asterisk (*) in ppm												
237	Channel	2	ND	ND	41.7	8.2	1.7	0.28	5.0	16.3	3.6	0.48	240*	NA	5.68	17.34	Brown clay; major saponite-type clay, major dolomite, minor feldspar, trace quartz.
240	do.	1.5	ND	ND	50.2	9.4	1.8	.25	.6	15.8	2.8	1.00	210*	NA	7.03	12.21	Brown clay; major saponite-type clay, minor quartz, minor phillipsite, trace feldspar.
241	do.	2	ND	0.1	47.3	4.7	0.46	800*	4.4	26.4	.54	ND	0.154	0.42	10.91	19.45	Beige clay; major saponite-type clay, 1% dolomite.
242	do.	2	ND	ND	52.2	3.6	.63	850*	1.4	27.5	1.4	.70	.156	.46	8.84	16.70	Beige clay; major saponite-type clay, 7% quartz, minor amorphus constituent.
243	do.	1	Tr	ND	49.2	8.9	.93	.17	2.4	14.5	2.1	.53	810*	.22	12.94	20.60	Beige clay; major saponite-type clay, 10% plagioclase, 7% kaolinite, 0.5% quartz.
244	do.	1.5	ND	.1	36.95	6.4	1.95	.24	3.8	23.1	4.1	2.83	.185	.22	7.42	22.24	Green clay; major saponite-type clay, 10% magnesite, 8% dolomite, 7% potassium feldspar, 7% gypsum, 2% muscovite, less than 1% quartz.
245	do.	.5	ND	ND	49.6	6.3	.57	880*	1.1	28.0	2.0	.87	.114	.28	12.62	20.18	Beige clay; major saponite-type clay, 16% plagioclase, 3% kaolinite, 0.4% quartz.
246	do.	2	ND	ND	50.1	2.7	.39	450*	1.2	28.0	.76	630*	.168	.56	9.21	17.53	Beige clay; major saponite-type clay, 1% dolomite, 0.7% quartz, minor amorphus constituent.
247	do.	1	ND	ND	25.7	.23	60*	67*	23.1	27.4	ND	550*	.129	.43	4.42	32.99	Beige clay and white dolomite; major saponite-type clay, 50% dolomite, 3% muscovite, 0.3% quartz, minor amorphus constituent.
248	do.	1.5	ND	.1	41.9	54*	31*	ND	22.4	16.7	.26	.43	310*	.16	1.12	26.64	White dolomite; 50% dolomite, 30% quartz, trace saponite-type clay.
249	do.	1	ND	.1	35.3	.86	.23	280*	22.9	19.6	.32	.59	890*	.27	2.72	29.27	White dolomite and beige clay; 60% dolomite, 0.8% quartz, minor saponite-type clay.
250	do.	1.5	ND	ND	49.6	12.2	5.6	.64	1.9	6.4	3.5	1.7	600*	.14	6.93	15.04	Brown clay and tuff fragments; major amorphus, minor saponite-type clay; 7% dolomite, 5% quartz, 5% kaolinite.

Table 4.--Results of analysis of beige clay, sample 241, from the Lower Burro Creek Wilderness Study Area, Arizona.

x-ray diffraction:
Sample identified as magnesium smectite containing minor amounts of dolomite.

Color
Excellent, providing white dispersion in water, 81 on brightness scale.

Moisture content
9.1%

PH
8.6

Specific resistance
4500 ohms at 1%

Active clay
66%

Yield
45 barrels per ton

Viscosity
118 centipoise - good viscosity with ethylene glycol treatment (an 8% solids dispersion, blender hydration for 3 minutes at high speed and measured with Brookfield LV[1/] at 60 revolutions per minute.)

Colloidal stability
Poor - 8% solids dispersion showed clear supernatant within 24 hours. PH of 8.6 and specific resistance of 4500 ohms at 1% suggest that the lack of colloidal stability is due to predominance of calcium exchange ions.

Tests courtesy of R. T. Vanderbilt Company, Inc., Norwalk, CT and N. L. Chemicals, Inc., Newberry Springs, CA.

1/ Reference to specific products does not imply endorsement by the Bureau of Mines.

Table 5.--Results of standard tests on the physical properties of clay, samples 241-242, 244-246, performed by U.S. Bureau of Mines, Tuscaloosa Research Center, Tuscaloosa, Alabama.

[Viscosity measured by Fann[1/] viscosimeter at 600 rpm; filtration measured in filter press with bottled nitrogen at 60 psi; NA, not analyzed.]

Sample No.	Viscosity	Plate Water Absorption (%)	Filtration test H_2O (cm^3)	Cake (in.)	Compressive Test (psi) Green	Dry
241	4	204.8	175	9/32	2.2	19.0
242	5	174.3	110	16/32	5.2	9.3
244	5	204.8	65	5/32	3.4	70.5
245	4	204.3	97	6/32	8.5	16.3
246	5	179.8	119	7/32	5.6	13.8
250	4	136.8	147	8/32	2.2	27.3
Western Standard	33	898.8	11	5/32	6.3	66.0
Southern Standard	NA	NA	NA	NA	5.1	39.5

[1/] Reference to specific products does not imply endorsement by the Bureau of Mines.

Table 6.--Assay and x-ray diffraction results for samples 236, 238, and 239, from the Lower Burro Creek Wilderness Study Area, Arizona.

[Tr, less than detection limit but some material present; ND, not detected; Au and Ag determined by fire assay; SiO_2, Al_2O_3, Fe_2O_3, TiO_2, CaO, MgO, K_2O, Na_2O, Li_2O determined by inductively coupled plasma-atomic emission spectrometry; F determined by wet chemical analysis; H_2O and LOI determined by gravimetric methods.]

Sample			Assay data														
No.	Type	Length (ft)	Au	Ag	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	K_2O	Na_2O	Li_2O	F	H_2O	LOI	x-ray diffraction results
			tr oz/st		%, except those noted by asterisk (*) in ppm												
236	Channel	2	Tr	ND	4.4	ND	610*	9.9*	2.90	48.7	830*	270*	11*	ND	0.38	48.65	White cryptocrystalline magnesite; 90% magnesite, 4% dolomite, 9% quartz, 7% calcite, trace saponite.
238	do.	2	Tr	ND	19.0	ND	480*	ND	1.20	42.4	0.11	530*	13*	ND	1.06	39.66	White cryptocrystalline magnesite; major magnesite and quartz, minor saponite and dolomite, trace calcite.
239	do.	1.5	ND	ND	10.8	0.20	770*	77*	.59	49.0	.21	940*	72*	ND	1.13	43.95	White cryptocrystalline magnesite; major magnesite, minor saponite, trace calcite.

Table 7.--Commodity highlights.

[Principle commodities in the Lower Burro Creek Wilderness Study Area are gold, bentonite, and magnesite. Commodity statistics are from Bureau of Mines Mineral Commodity Summaries (1985), e/, estimate.]

Commodity	Domestic Mine production (1984)	apparent consumption (1984)	Units	Major import sources (1980-1983)	net import reliance 1984 (%)	Average 1984 domestic price ($)	Price unit	Expected U.S. demand through 1990	Major uses
Gold	2,300,000e/	4,800,000e/	tr oz	Canada Switzerland Uruguay	16	$365	tr oz	From a 1981 data base, demand for gold is expected to increase at an average annual rate of about 2.0% through 1990.	Jewelry and arts, industrial, dental, investments.
Bentonite	3,500,000e/	not forecast	st	Minor	net exporter	$2 to $300 dependent on type and quality	st	Demand expected to increase from 3.5 million to 4 million tons by 1990.	Drilling mud, foundary sand bond, iron ore pelletizing.
Magnesite	675,000e/	715,000e/	short tons	Ireland Greece Canada Japan	6	$228e/	short tons	From a 1978 base, demand for magnesium compounds is expected to increase at an average annual rate of about 1.8% through 1990.	Production of basic refractories used in high temperature metallurgical furnaces for making products such as iron or steel; in preparation of caustic-calcined and specified magnesias and other magnesium compounds.

APPENDIX--Detection limits for fire assay, atomic absorption, inductively coupled plasma-atomic emission spectrometry, wet chemical, and semiquantitative optical emission spectrographic analysis, U.S. Bureau of Mines, Reno Research Center.

Fire Assay

Element	Detection limit tr oz/st
Au	0.005
Ag	.1

Atomic Absorption and inductively coupled plasma-atomic emission spectrometry.

Element	Detection limit ppm
Cu	5
Pb	70
Zn	5
Mo	5
Li	10

Whole rock analysis determined by inductively coupled plasma-atomic emission spectrometry.

Oxide	Detection limit ppm
Al_2O_3	100
CaO	400
Fe_2O_3	40
K_2O	600
MgO	300
MNO	5
Na_2O	600
P_2O_5	300
SiO_2	100
TiO_2	40

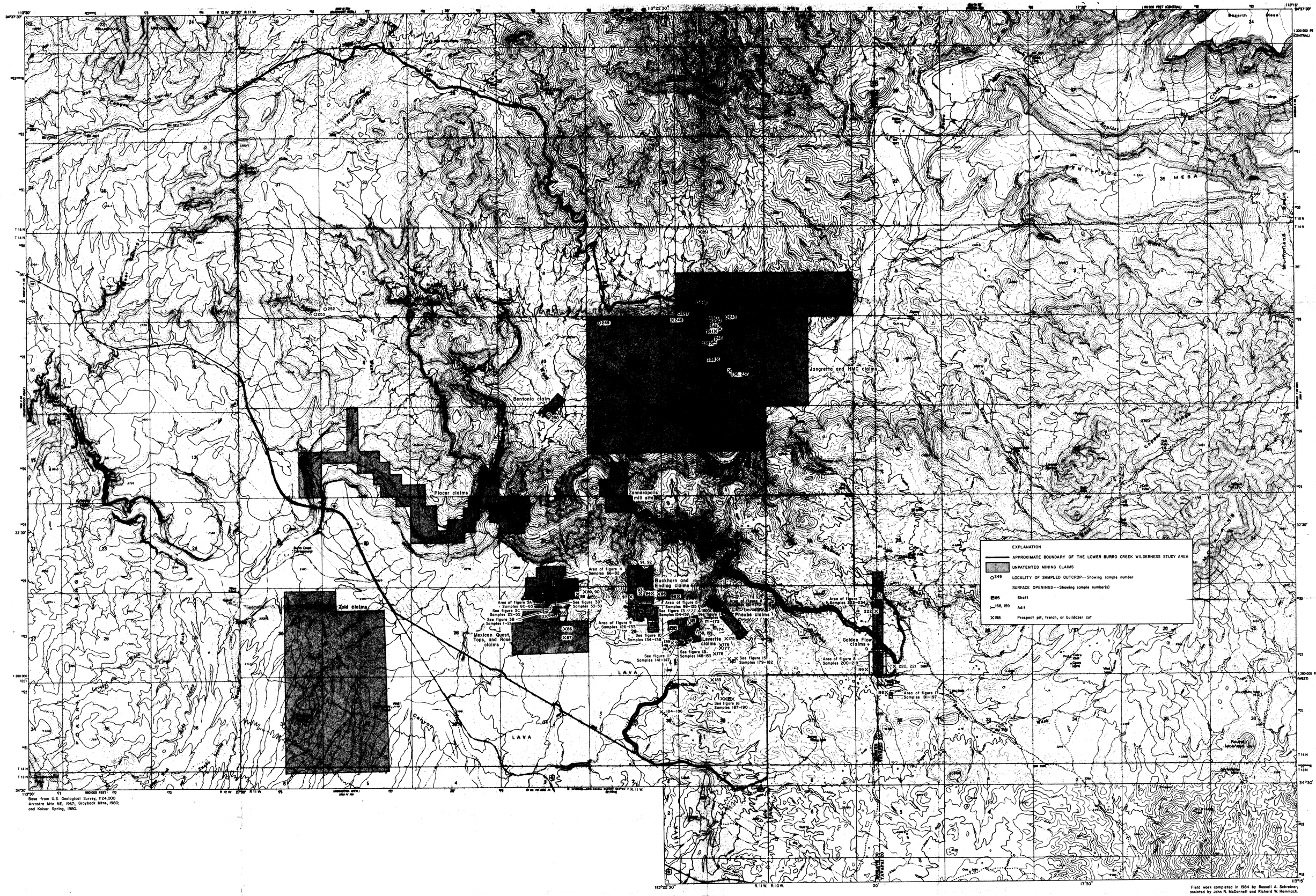
Wet chemical

Element	Detection limit ppm
F	10

Semiquantitative optical emission spectrographic analysis.

Element	Detection limit (%)	Element	Detection limit (%)
Ag	0.002	Mo	0.0001
Al	.001	Na	.3
As	.01	Nb	.007
Au	.002	Ni	.0005
B	.003	P	.7
Ba	.002	Pb	.001
Be	.0001	Pt	.0001
Bi	.01	Re	.0006
Ca	.05	Sb	.06
Cd	.0005	Sc	.0004
Co	.001	Si	.0006
Cr	.0003	Sn	.001
Cu	.0006	Sr	.0001
Fe	.0006	Ta	.02
Ga	.0002	Te	.04
K	2.0	Ti	.03
La	.01	V	.005
Li	.002	Zn	.0001
Mg	.0001	Zr	.003
Mn	.001	Y	.0009

These detection limits represent an ideal situation. In actual analyses, the detection limits vary with the composition of the material analyzed. These numbers are to be used only as a guide.



Base from U.S. Geological Survey, 1:24,000, Arrastra Mtn. NE., 1967; Grayback Mtns., 1980; and Kaiser Spring, 1980.

Field work completed in 1984 by Russell A. Schreiner, assisted by John R. McDonnell and Richard W. Hammack.

MINE AND PROSPECT MAP OF THE LOWER BURRO CREEK WILDERNESS STUDY AREA, MOHAVE AND YAVAPAI COUNTIES, ARIZONA

BY

RUSSELL A. SCHREINER, U.S. BUREAU OF MINES

1985