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MINERAL INVENTORY AND GEOCHEMICAL SURVEY  
GROOM MOUNTAIN RANGE  
LINCOLN COUNTY, NEVADA

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University of Nevada System  
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This information should be considered preliminary.  
It has not been edited.

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## INTRODUCTION

A mineral inventory and geochemical survey of the Groom Range area was undertaken in April and May, 1985. This work was done as part of the process of preparing an environmental impact statement concerning withdrawal of the Groom Range by the U.S. Air Force for military purposes. The minerals survey was conducted by the Nevada Bureau of Mines and Geology through Desert Research Institute, the prime contractor for preparation of the EIS for the Air Force. Mineral examinations were done by Jack Quade and J. V. Tingley, sediment sampling was done by Jack Quade assisted by Ron Hess. Geochemical analyses and computer manipulation of geochemical data were done by the Branch of Exploration Geochemistry, U.S. Geological Survey, through a cooperative agreement between that agency and the Nevada Bureau of Mines and Geology. This report was prepared by Jack Quade and J. V. Tingley, with a section on statistical evaluation by Keryl Fleming.

LOCATION:

The Groom Range area is located on the western border of southern Lincoln County, Nevada, about 70 miles west of the town of Caliente. Alamo, some 45 miles to the east, is the closest town to the area, and the small settlement of Rachel is about 6 miles north of the range. The Groom project area covers all or parts of Townships 55, 55 1/2, and 56 East, and Ranges 5, 6, and 7 South (see Figure 1).

The Groom Range itself is bounded on the south and west by Emmigrant Valley. On the southeast, the Groom road separates it from the Jumbled Hills and, on the northeast, Nevada Highway 375 through Coyote Pass separates it from the Tempiaute Range. Sand Springs Valley is on the northwest. Bald Mountain, a conical volcanic peak, 9,380 feet in elevation, is the highest point in the Groom Range.

GEOLOGIC SETTING:

The Groom Range is an east-tilted fault block that exposes great thicknesses of Precambrian, Cambrian, Ordovician, and Devonian rocks partly buried by Tertiary volcanic rocks. As mapped by Humphrey (1945), the oldest rock unit in the range, the Prospect Mountain Quartzite, is more than 7,800 feet thick and makes up most of the west half of the range. The total exposed Cambrian section described by Humphrey (1945) exceeds 20,000 feet in thickness. Barnes and Christiansen (1967) have reassigned ages and names of the formations in the Groom district and describe most of the Cambrian Prospect Mountain Quartzite of Humphrey as Precambrian Johnnie Formation, Sterling Quartzite and Wood Canyon Formation. The carbonate and shale units near the Groom Mine are described

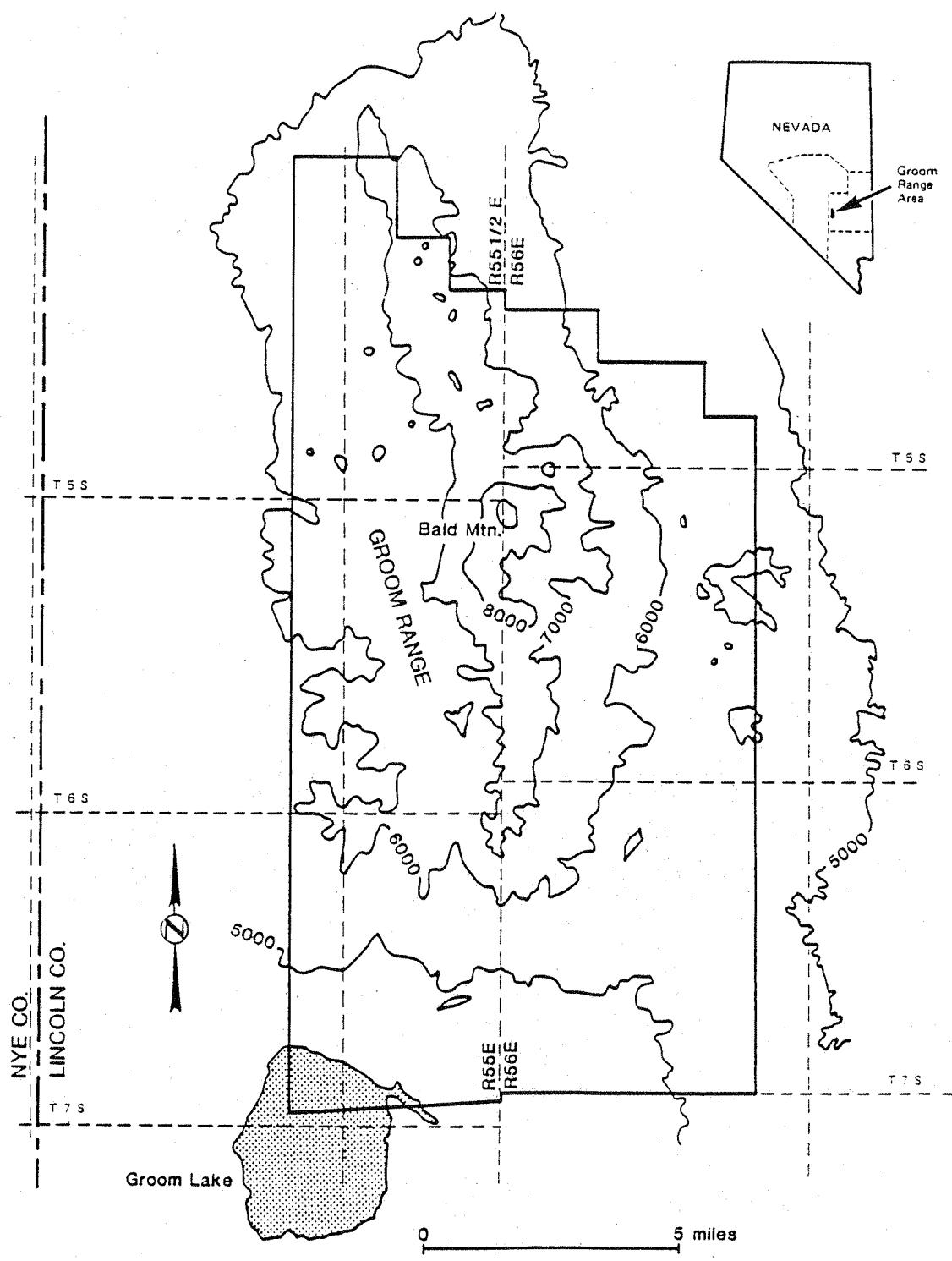
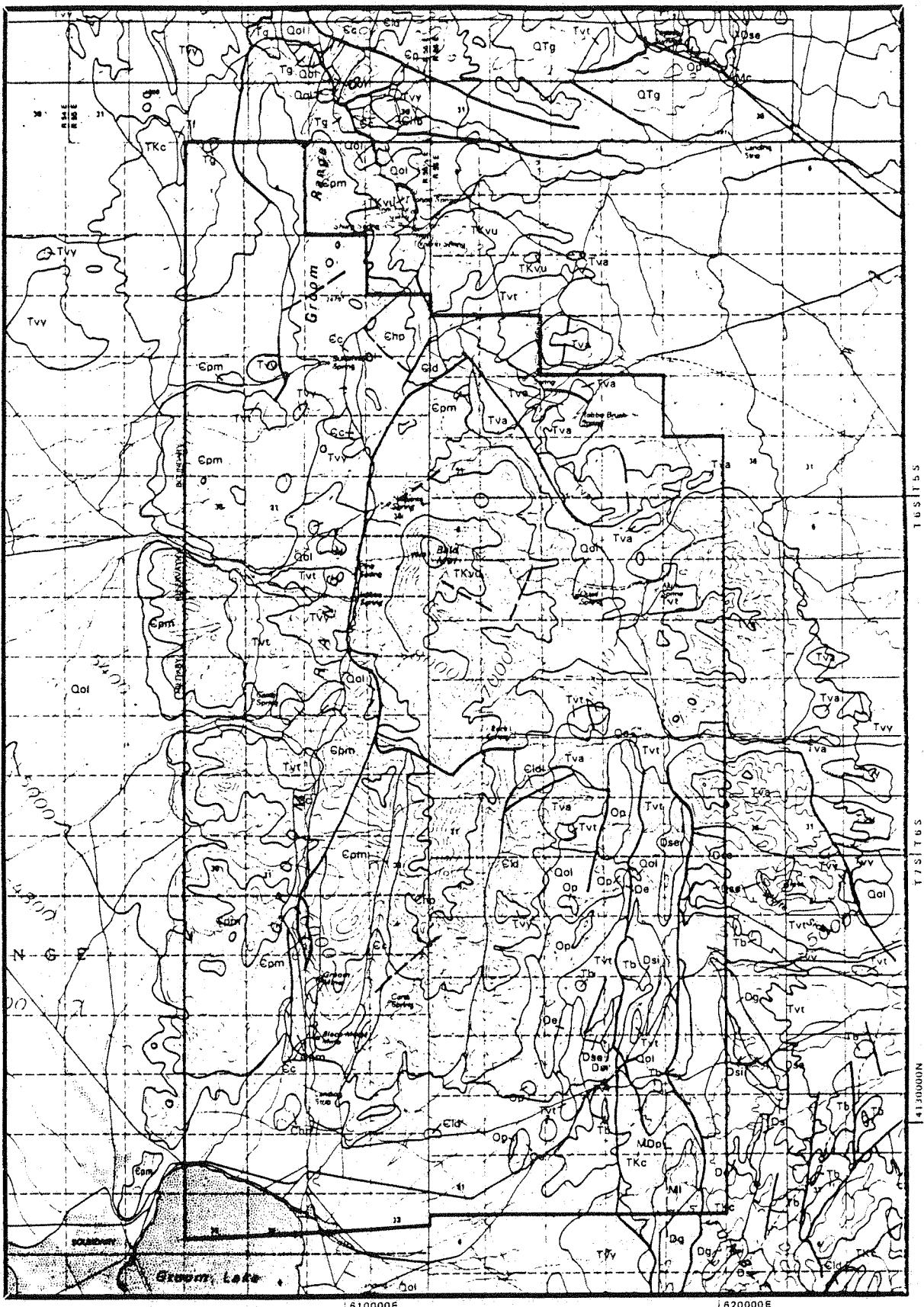


Figure 1. Location map, Groom Range Area.

EXPLANATION OF FIGURE 2, GEOLOGIC MAP

- Qp Recent playa deposits  
Qol Older alluvium  
QTg Older gravels  
Tvy Younger volcanic rocks, undivided, including intravolcanic  
rocks (Ts) and perlite (p)  
Tb Basalt  
Tva Andesite  
Tvt Tuffs and tuffaceous sediments  
Tg Granite stocks and dikes  
Tf Lacustrine limestone  
TKc Older clastic rocks  
TKvu Volcanic rocks, undifferentiated  
We Pennsylvanian limestone; lower most beds locally contains a very  
Late Mississippian fauna  
MDp Pilot Shale  
Msw Scotty Wash Quartzite  
Mc Chainman Shale  
M1 Includes Joana Mercury and Bristol Pass Limestone  
Dg Guilmette Formation  
Dsi Simonson Dolomite  
Dse Selvy Dolomite  
Oe Eureka Quartzite  
Eld Limestone and dolomite, and Dunderberg Shale, undifferentiated  
Ehp Highland Peak Formation  
Ec Chisholm Shale  
Ep Pioche Shale  
Epm Prospect Mountain Quartzite



**GENERALIZED GEOLOGIC MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA**

**CONTOUR INTERVAL - 200 FEET**

**MAP LOCATION**

by Barnes and Christiansen (1967) as Cambrian Carrara Formation, Bonanza King Formation, and Nopah Formation rather than the Pioche Shale, Chisholm Shale, and Highland Peak Formation of Humphrey (1945). According to Barnes and Christiansen (1967), the stratigraphic units exposed in the Groom Range can be recognized for more than 100 miles to the west and south, and the same formational names can be used throughout the region. The units can also be correlated with the Cambrian and Precambrian rocks of the Pioche district, but different stratigraphic nomenclature is preferred for the Pioche area (Humphrey's stratigraphic nomenclature was based on correlations with rocks in the Pioche district).

Since the only geologic mapping available which covers the entire Groom Range uses the older stratigraphic nomenclature (Tschanz and Pampeyan, 1970), we use that data in this report (see Figure 2).

The major volcanic feature of the Groom Range is the Bald Mountain caldron, centered on Bald Mountain. The caldron measures about 6 miles north to south and, before basin-and-range faulting, probably measured an approximately equal distance east to west (Ekren, et al. 1977). The caldron is filled with two or more rhyolite ash-flow tuff cooling units that are informally called the tuff of Bald Mountain. Numerous large landslide masses of various Paleozoic rocks are intercalated with the tuffs, and the caldron-filling rocks have been intruded by numerous dikes and sills of porphyritic quartz latite or rhyodacite. The tuffs contain abundant lithic fragments, mostly carbonate but also of quartzite, argillite, and older welded tuff. Most of the tuff exposed in the higher parts of the mountain (central caldron) is rich in pumice fragments (Ekren, et al. 1977). The tuff is mostly hydrothermally altered, and fresh

phenocrysts are sparse. The tuff of Bald Mountain has been tentatively correlated with an ash-flow cooling unit exposed along the south flank of the Quinn Canyon Range, the south end of the Pancake Range, and the Reveille Range (Ekren, et al. 1977). The tuff is not present east of the Groom Range and its absence there is probably caused by pre-Basin and Range, left-lateral strike-slip faulting that considerably distorted the original distribution pattern of the tuff (Ekren, et al. 1977).

Despite being a topographic high, the Bald Mountain caldron probably represents a simple collapse without resurgence. Had it resurged, the strata within the caldron should reflect a domical structure, and they do not (Ekren, et al. 1977).

A north-trending basin-range fault of large displacement cuts the Bald Mountain caldron on the west. Numerous bedded tuffs and tuffaceous sedimentary rocks are preserved on the downthrown block west of the fault. These rocks have been intruded by dikes and sills of intermediate rock, and are overlain by identical lavas. These occurrences may indicate that the caldron extends through the area of bedded tuff. The possibility exists, however, that the bedded strata and intermediate rocks predate the caldera and bear no direct relationship to the volcanic-tectonic structure. If this is the case, the dikes and sills probably indicate that the Bald Mountain area was an important center for lavas of intermediate composition prior to its becoming a center for ash-flow volcanism (Ekren, et al. 1977).

The structure of the Groom Range is comparatively simple except locally in the Groom mining district and near the north end of the Cambrian outcrop. The Groom mining district is in a complexly faulted

graben where minor thrust plates of Prospect Mountain Quartzite have overridden Pioche Shale, and west-dipping normal faults which formed the graben have offset the thrust faults. The displacement on the normal faults is as much as several thousand feet and antedates the basin-and-range faults. The youngest faults are east-dipping normal faults of smaller displacement (Humphrey, 1945).

The structure of the Cambrian rocks above the Pioche Shale in the northern end of the range is not well understood. In the high hills, rocks tentatively identified as the Highland Peak Formation may be thrust over the Upper Cambrian rocks on the north and east and on the Pioche Shale on the south.

#### MINERAL RESOURCES:

##### History and Production:

The first mineral discoveries recorded in the Groom Range were made in 1864 (Paher, 1970), and the Groom mining district was organized in 1869. Early accounts of the district place the mines on the western slopes of what is now known as Bald Mountain and some of this earliest activity may have been in the northwestern portion of the range as well as at the site of the present Groom Mine. An 1870 account states that silver chloride ores were being produced from mines on the west slope of Tempiaute Peak (Bald Mountain). The mines were worked for a 5-year period, ending in 1874, during which they yielded a small but unrecorded production. In 1872 patents were issued on claims covering the Groom deposit and in 1885 the Groom property was acquired by the Sheahan family who still own it. The Groom Mine produced steadily from 1915 through 1918,

sporadically from 1918 to 1942, and again steadily from 1942 to 1956.

Total production for this time is \$935,900 in lead, silver, minor copper, zinc, and gold (Tschanz and Pampeyan, 1970).

In 1919, mercury was discovered at the Andies property on the northeastern tip of the Groom Range and a new mining district, Don Dale, was organized in this area in 1945. The Don Dale district has produced small amounts of lead, silver, and mercury.

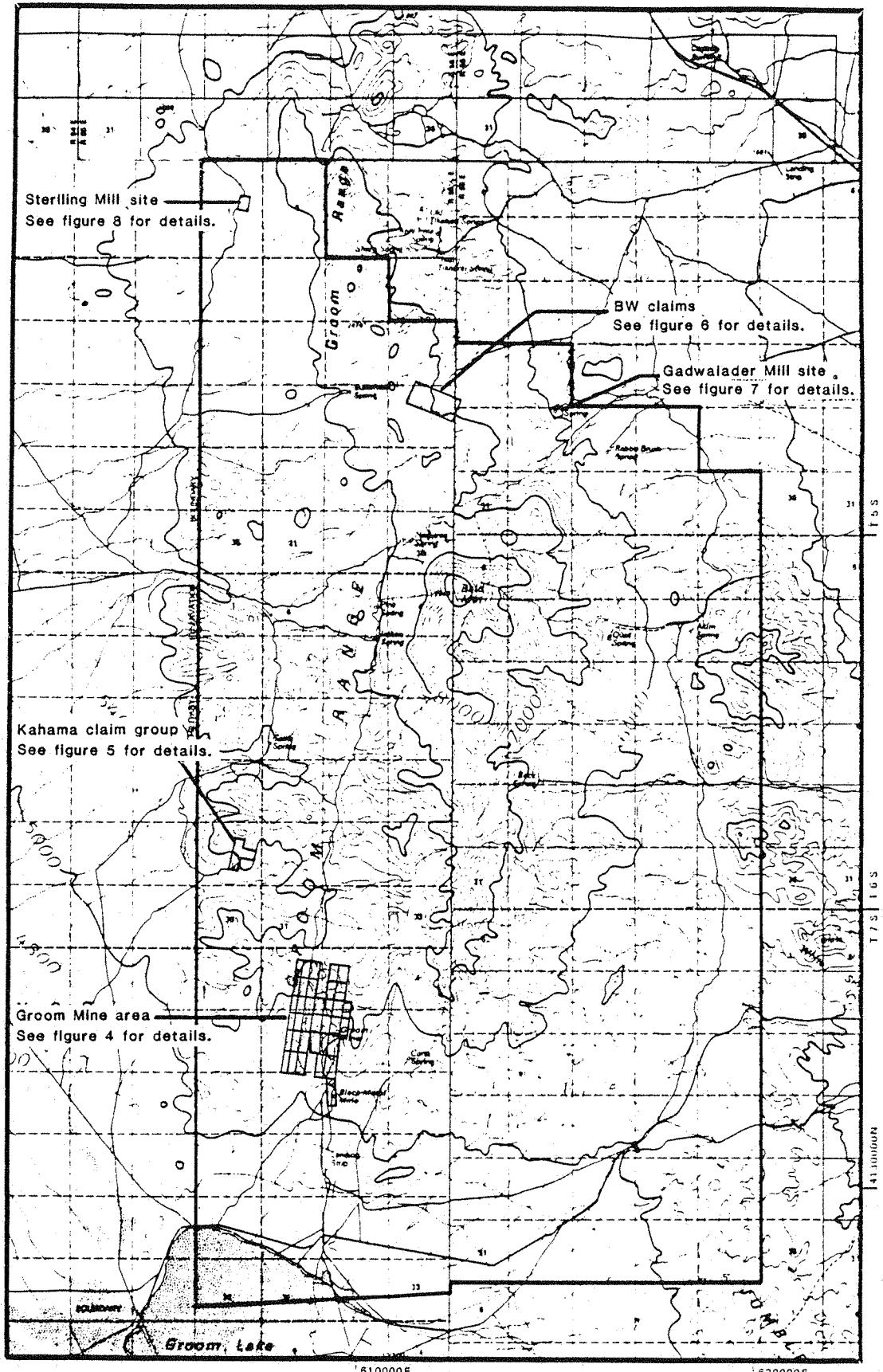
#### Mines, Prospects, Mineralized Areas:

Within the Groom Range project area, which includes all of the Groom district and a part of the Don Dale district, mining and prospecting activity has been concentrated at four general locations along the west flank of the range and at one location on the northeastern edge of the area. Current mining claims in these areas are shown in Figures 3 through 8 and are listed in Table 1.

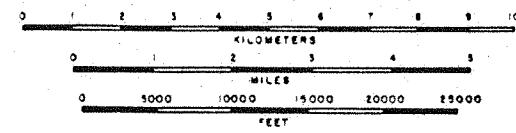
The largest and most productive properties in the Groom district are associated with the Groom Mines and the adjacent Black Metal Mine. At the Groom mines, fissures in a north-south trending graben have acted as conduits for ore solutions that formed replacement and bedded deposits in the Cambrian Lyndon Limestone and Pioche Shale. Mineralization can be traced by mine workings and outcrops on the surface for several miles along the eastern margin of the graben.

In samples collected during this study, galena, tetrahedrite, and argentite with lesser amounts of sphalerite were found to be the primary minerals of the lead-silver-copper-zinc ores of the Groom district.

However, mercury, arsenic, and antimony are also present in anomalous



MINING CLAIMS LOCATION MAP  
 GROOM RANGE PROJECT AREA  
 LINCOLN COUNTY, NEVADA



CONTOUR INTERVAL - 200 FEET

Figure 3



MAP LOCATION

# MAP OF GROOM MINE LODE, BOONDOCK & GREY EAGLE CLAIMS

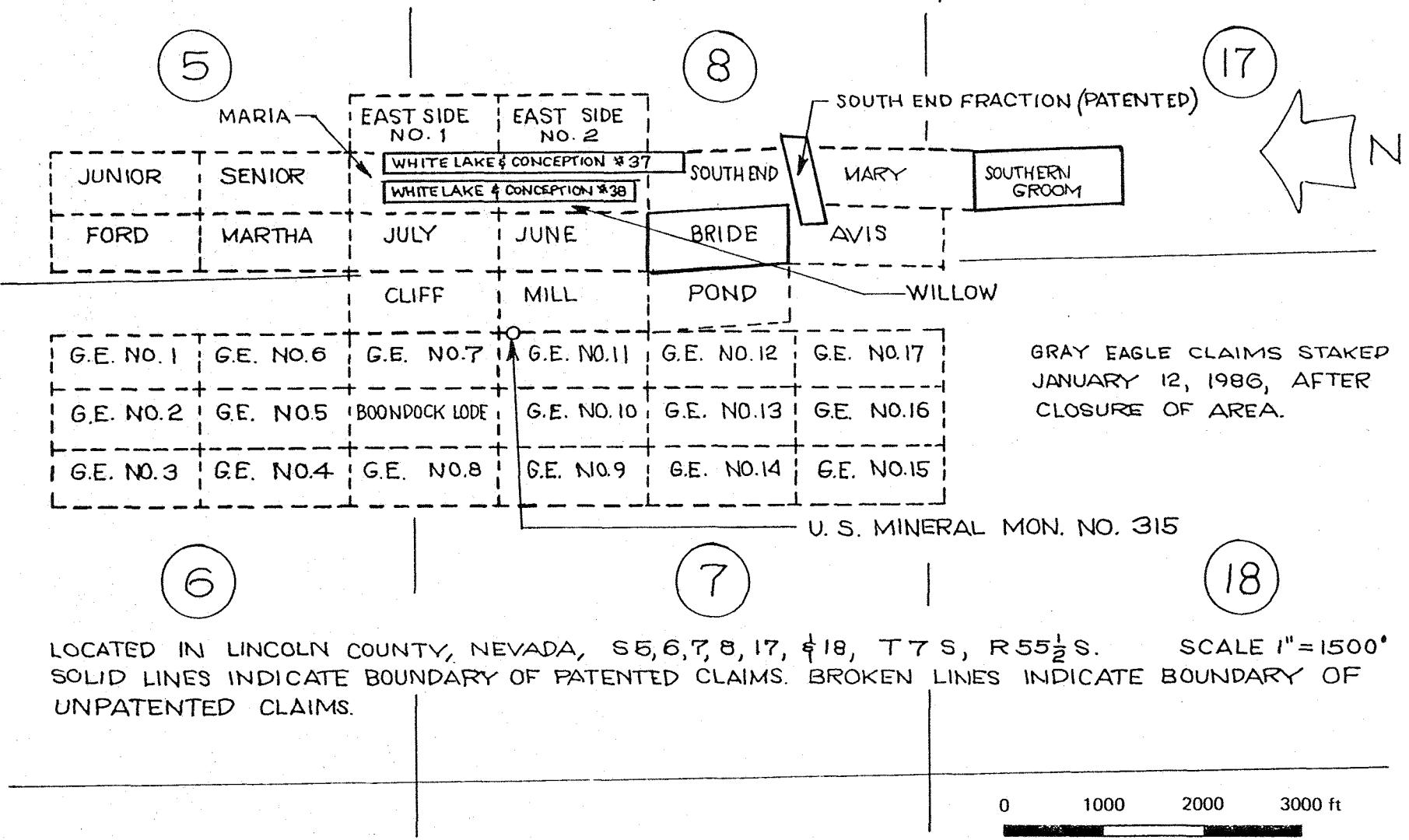
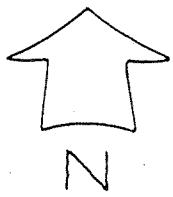
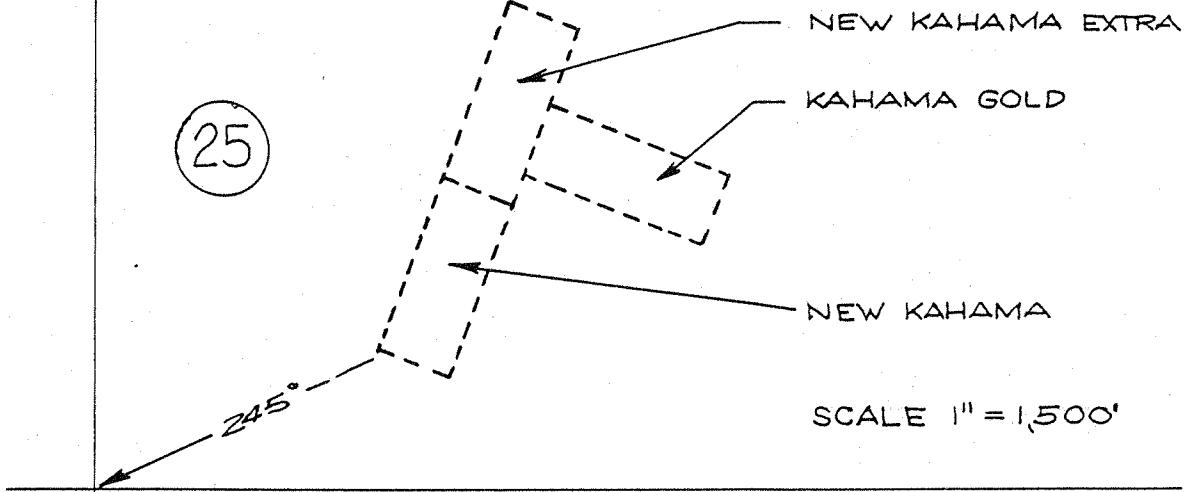


Figure 4

FAST



## KAHAMA CLAIM GROUP

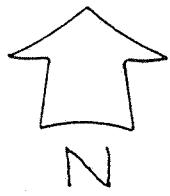


LOCATED IN LINCOLN COUNTY, NEVADA  
S 25, T 6 S, R 55 E

(36)

0 1000 2000 3000 ft

Figure 5



## B.W. GROUP OF 6 CLAIMS

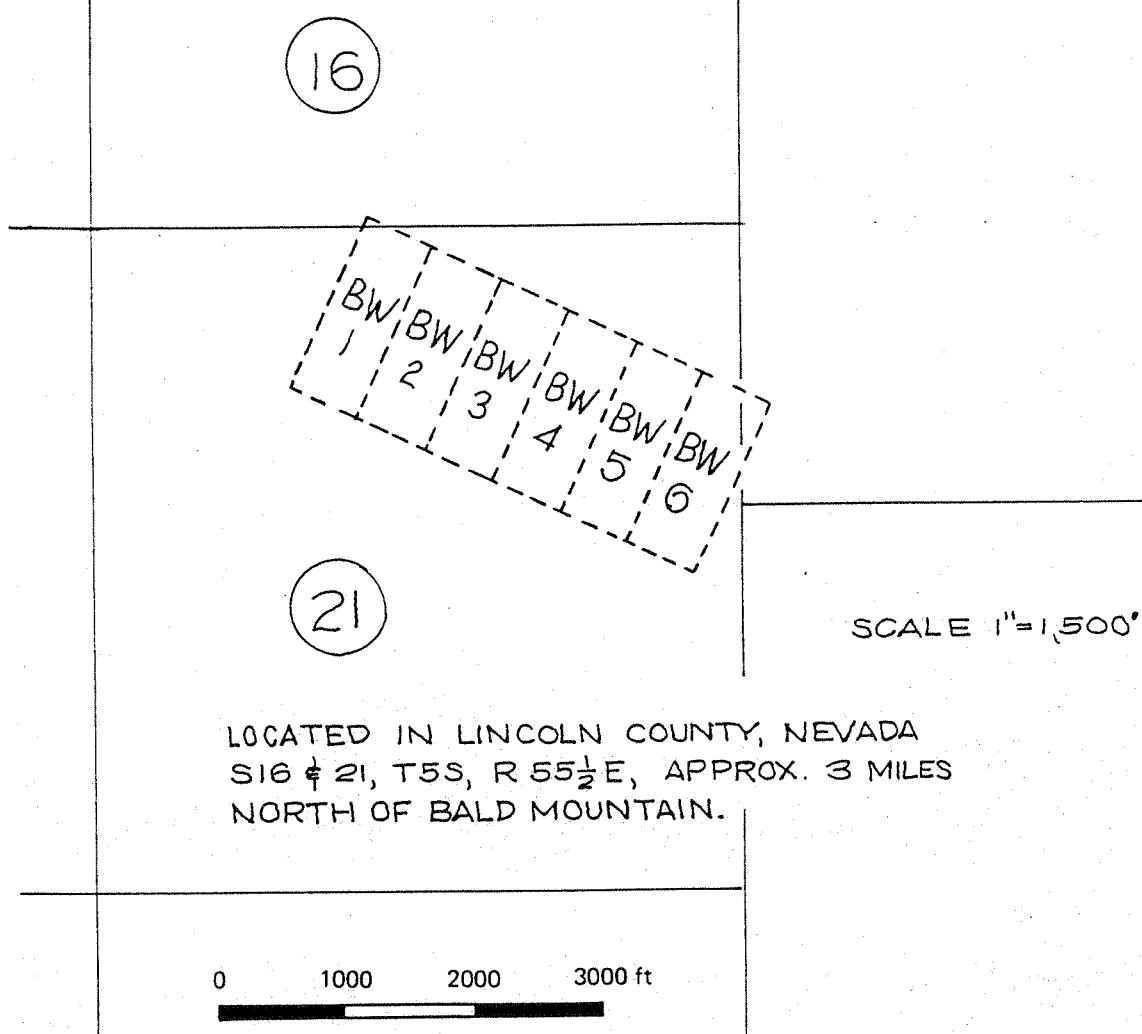
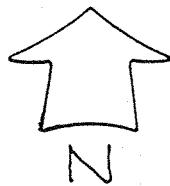


Figure 6

F.A.S.T.



N

# CADWALADER MILLSITE

SURVEY NO. 41-B

(19)

(20)

(30)

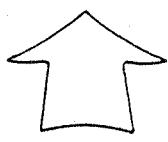
(29)

LOCATED IN LINCOLN COUNTY, NEVADA, S 20 & 29, T 5 S, R 56 E.  
SCALE 1" = 1500'

0 1000 2000 3000 ft

Figure 7

FAST



N

# STERLLING MILLSITE

SURVEY NO. 57-B

(1)

(6)

SCALE 1" = 1500'



LOCATED IN LINCOLN COUNTY, NEVADA, S 1, T 5S, R 55E

0 1000 2000 3000 ft

Figure 8

TABLE 1. MINING CLAIMS, GROOM MOUNTAIN RANGE  
WITHDRAWAL AREA

Groom Mining District

T6S, R55E:

<u>Unpatented Claims</u>	<u>Locator</u>
Kahama Gold	J.J. Lesicka & D.E. Lesicka
New Kahama	Box 102
New Kahama Extra	Caliente, NV 89008

T7S, R551/2E:

<u>Patented Claims</u>	<u>Minerals Survey No.</u>	<u>Present Owner</u>
White Lake and Conception Lode	M.S. 37	Daniel R. Sheahan, Mary F. Sheahan, Horace Patrick, Avis B. Sheahan, J.F. Sears, T.O. Sears, Birdie V. Cline, William Wheatley Estate c/o Dan Sheahan 2460 E. Flamingo Rd. Las Vegas, NV 89109
White Lake No. 2 and Conception No. 2 Lode	M.S. 38	(Same as 37)
South End and South End Fraction	M.S. 4658	Barbara Sheahan
Bride Lode	M.S. 4658	Horace Patrick and Avis B. Sheahan
South Groom Lode	M.S. 4659	Daniel R. Sheahan, Mary F. Sheahan
<u>Unpatented Claims</u>		<u>Locator</u>
Boondock Lode Claim		Richard A. Cowan 4854 Tiffany Way Fair Oaks, CA 95628
Gray Eagle Claims (These claims declared null and void by BLM, 6/25/85)		Richard A. Cowan 4854 Tiffany Way Fair Oaks, CA 95628

TABLE 1. (Continued)

<u>Unpatented Claims</u>	<u>Locator</u>
Groom Mine Lode Group: (Maria, Willow, East No. 1, East Side No. 2, June, Junior, Senior, Ford, Martha, July, Cliff, Mill, Pond, Mary, Avis)	Dan Sheahan, et al. 2460 E. Flamingo Rd. Las Vegas, NV 89109

Don Dale Mining District

T5S, R55E:

<u>Patented Claims</u>	<u>Mineral Survey No.</u>	<u>Present Owner</u>
Sterlling Millsite	M.S. 57B	Reland Johnson Box 652 Farmington, UT 84305

T5S, R551/2E:

<u>Patented Claims</u>	<u>Mineral Survey No.</u>	<u>Present Owner</u>
Cadwalader Millsite	M.S. 41B	D/4 Enterprises, Inc. c/o Steve Medlin Alamo, NV 89001

Unpatented Claims

<u>B.W. Claims</u>	<u>Locator</u>
	Joe B. Fallini Jr. and Susan L. Fallini Twin Springs via Tonopah, NV 89049

amounts along with quartz and calcite as gangue mineral and trace amounts of gold.

Oxidized lead minerals such as cerrusite and anglesite are common but are reported to be restricted to the upper levels of the mine workings (Humphrey, 1945). According to Bob Sheahan (oral communication), the best silver ores at the Groom Mine are associated with replacement ore bodies in limestone. In these ores, silver values reaching as high as 23 ounces per ton have been obtained while, in the fault gouge ores, silver values are commonly only 6 to 7 ounces per ton. Areas of quartz veining and brecciation crop-out through a cover of alluvium north of the main Groom Mine. These veins have been prospected by minor workings, apparently without success.

Most of the mine workings at the Groom Mine were sunk on visible mineralization which outcrops along the easternmost of the north-south structures associated with the graben, although many of the east-west structures also carried ore. Very little drifting or drilling has been done to develop new ore according to Bob Sheahan (oral communication). An adit is currently being driven to an ore body beneath the open-pit adjacent to the main Groom Mine. In addition, maintenance work is continuing on the main adit to the Groom Mine to limit flooding and caving.

The Boondock Lode and Grey Eagle claims are located immediately to the west of the Groom properties. A 4-6 inch brecciated quartz vein in the Cambrian Prospect Mountain Quartzite outcrops on the Boondock claim. The vein is in a prominent quartzite outcrop that occupies the bottom of the major canyon. The vein is several feet south of the discovery monument on the Boondock Lode Claim.

A little more than three miles northwest of the Groom Mine is the location of the Hanus prospect also known as the Kahama Mine or Kahama Claim Group. This property has a history of minor gold production but no supporting records of this production have been found. The mineralized outcroppings of the Kahama lode can be traced on the surface for about one half mile to the north of the main workings, terminating in the general vicinity of prospects known to have been active in the 1870's. It is felt that the Kahama area must have been prospected at this early date although the period of greatest activity dates from the late 1920's to the early 1930's. Most of the 1920's-1930's mining at the Kahama Mine was done by Charles P. Hanus who now occupies an unmarked grave located about 100 yards west of the old cabin near the mouth of the canyon.

In 1933, Mr. Hanus extended the northeast boundary of the present properties by locating the Chicago, Wisconsin, and Illinois claims which covered mineralization cropping out in the drainage to the north. The present Kahama Claim Group covers the two inclines, prospects, and open trenches in the southern drainage. The workings can be traced along a N-E trending quartz vein in the Prospect Mountain Quartzite for about 1/2 mile. Exposures of the vein rarely exceed 12" and probably averages less than 10 inches along its entire strike length. The southern incline was reported to be sixty feet deep (Humphrey, 1945). Humphrey also reported a gold assay of 1.08 oz/ton from a small ore dump.

The three adits and prospects in the drainage to the north covered by the Chicago, Illinois, and Wisconsin claims appear along a parallel vein system that is several hundred feet to the west of the main Kahama vein. The western vein is commonly associated with shears within a shale member of the Prospect Mountain Quartzite. The gold content of the vein is

similar to that of the main Kahama vein but the base metal content is much higher, the vein is thicker and is more brecciated.

A third area of mineralization located in the quartzite outcrop along the west side of the range is centered along a NE trending ridge with parallel quartz veins about one mile southwest of Cattle Spring. These workings and the workings to the northwest of Cattle Spring may very well be part of the mining activity reported by the State Mineralogist in 1870 (White, 1871). The area was also active in the 1920's and 1930's. It is possible that this mineralization is a northern extension of the Kahama vein system. About 200 feet below and east of the ridge is an incline that is flooded to within 25 feet of the surface. The incline was sunk on a 2-3 foot east-west bearing quartz vein that dips 75° to the north. The size of the dump suggests a possible 2-3 hundred feet of underground workings. Quartz vein material on the dumps contains visible tetrahedrite. Five prospects and a shallow adit explore quartz veins with visible silver mineralization along the crest of the NE ridge and into the canyon to the southwest.

About 200 feet below the NE ridge an adit was driven to the southeast for 270 feet in order to crosscut the veins that outcrop along the crest of the ridge. At the end of the adit is a 50-60 foot drift along a narrow vein with mineralization similar to that seen on the top of the ridge.

One of the workings on the ridge is a shallow adit from which a tram was operated to lower ore to the level of the adit where it could be moved by truck. The host, wire-drum and poles are still intact, but are scattered along the scree slope below the mine workings.

Stream drainages in the vicinity of the Hanus property and the main drainage west of Cattle Spring, as well as the major stream courses west of Naquinta or La Quinta spring were all worked for gold using dry washers. The best areas were apparently the narrow passages within the quartzite. No record of the production was found. There is also a strong likelihood that lode gold mining was being conducted upstream from the placers, west of Naquinta Spring. This locality is steep and heavily wooded and, while no mine workings in the area were located during the field activities, workings could easily have been overlooked.

The Gold Butte claims staked in 1933 cover a fourth area of mineralization located about 1-1/2 miles west of Cattle Spring. These workings, which do not appear on existing maps, consist of several prospects on quartz veins up to several feet thick. The main vein is in a shear that can be traced for several hundred feet along strike. Near the eastern end of the shear is a knob of partly cemented, silicified fault breccia containing massive magnetite and hematite.

The site of the old Jumbo quartz and Placer claims (staked in 1933) is about 1-1/2 miles northwest of Cattle Spring and about 1/2 mile west of Black Butte (the basalt plug west of the road by Cattle Spring). These workings consist of a 40-50 foot deep shaft sunk near a shale-quartzite contact on the west side of the highest ridge. There is no road to the prospect nor are the workings on any map. The workings are still open, having been sunk, in part, on a very hard, brecciated quartz vein. The matrix of the breccia is sulfide rich and contains minor gold-silver values.

Along the northwest margin of the withdrawal area, but still in the outcrop area of Prospect Mountain Quartzite, are a scattering of unidentified and unmapped shafts, adits and prospects that are probably related to the mineralization in the Don Dale district to the north. This northernmost portion of the exposed quartzite has been intruded by Tertiary granites. Six of the workings within the quartzite follow a NE trending quartz vein system and most of the veins follow shear zones of brecciated silica sometimes partly filled with steel grey, iron-rich base metals containing minor gold-silver mineralization and some molybdenite. Most of these workings are old and are without accessible roads. They are not shown on any of the existing maps of the area. There is a strong possibility that these isolated workings may have been related to the 1883 Sterlling millsite. The Sterlling lode claim itself is in the southern Tom Piute district many miles to the north.

The six BW claims, located in S21,T5S,R551/2E, are in the general area described on the mineral resources map for Lincoln County, Bull. 73 by Tschanz and Pampeyan (1970), as the location of a gold prospect. The present BW group covers an area of dominately limestone outcrops which contain minor jasperoid and gossan-like mineralization along bedding planes. The prospect noted by Tschanz and Pampeyan was not definitely identified in the field but it could be one of two very old prospects found in the southeastern corner of the BW claims.

#### GEOCHEMICAL SURVEY:

As part of the mineral investigation of the Groom Mountain withdrawal area, geochemical surveys were conducted of both stream sediments

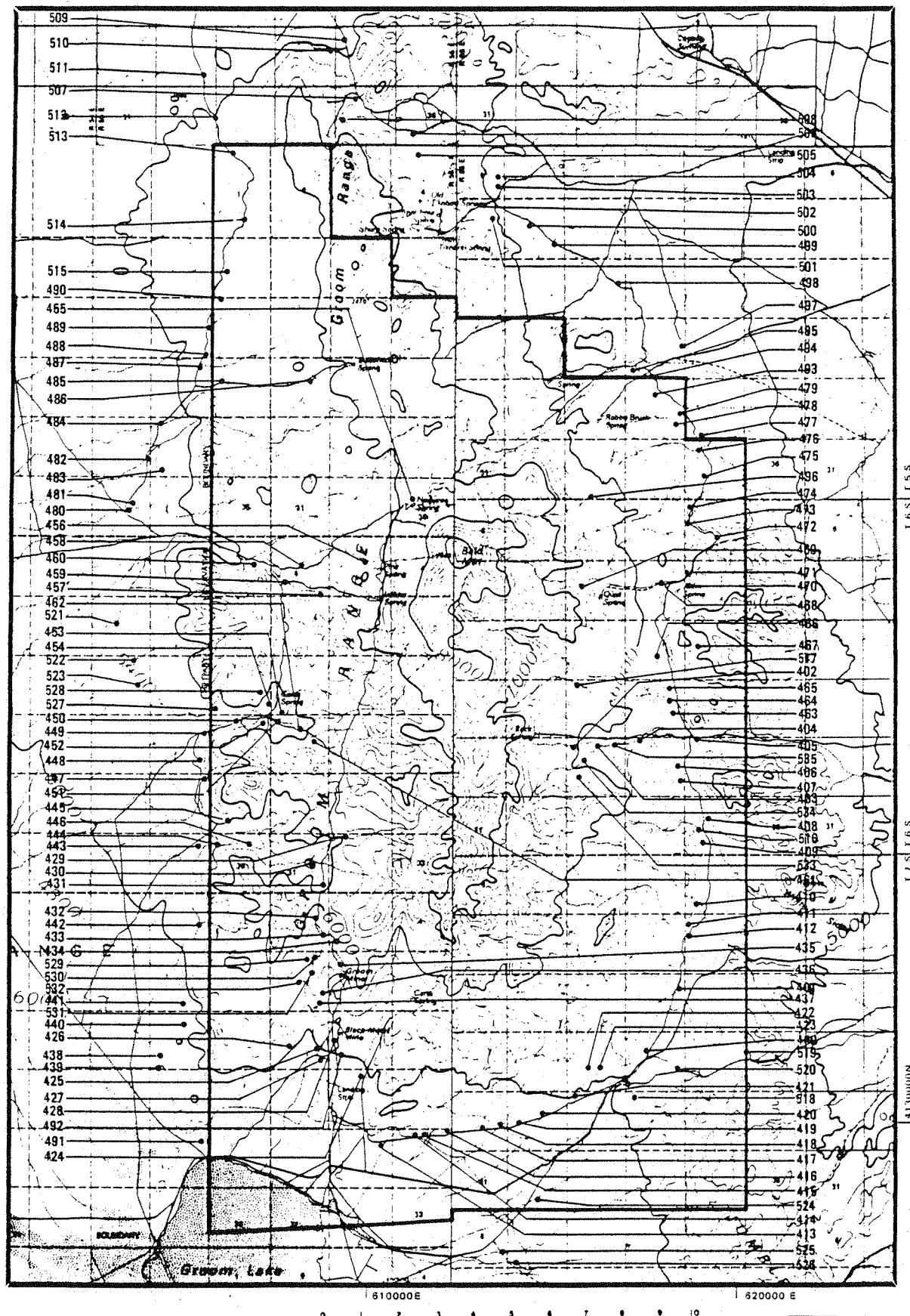
collected from active drainage systems originating within the area and of rock samples collected from mines and prospects within and along the margins of the land withdrawal.

Stream-sediment samples were collected from 4 or 5 different places along the active portion of the stream courses and, at each site, and sieved to minus-80-mesh. Approximately 100 grams of sample were retrieved from each of 135 separate sites. A second sample was collected at each site from the same stream course and consisted of 10-15 lbs of minus-16-mesh sediment. This second sample was concentrated, at the site, to approximately 5 lbs using a dry washer and then transported to a source of water where it was ultimately concentrated by panning to 100 grams.

Rock samples were channeled from veins in mines, selected from dumps and prospects, and chipped from outcrops. In general, rock samples represent the best mineralization found at each sample site. They were taken to investigate geochemical relationships, not to provide information on ore grade.

All of the samples were transported to Alamo, Nevada where they were analyzed in a portable laboratory by a team from the branch of Exploration Geochemistry of the United States Geological Survey. Analysis of 31 individual elements was accomplished using a semiquantitative spectrographic technique which was supplemented by atomic adsorption analysis when needed. The atomic adsorption technique provides better detection limits for some elements.

Sample site locations were plotted on separate maps for both sediments and rocks (Figures 9 and 10). These base maps were then used to



**SEDIMENT SAMPLE LOCATIONS  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA**

SESSION 1

**MAP LOCATION**

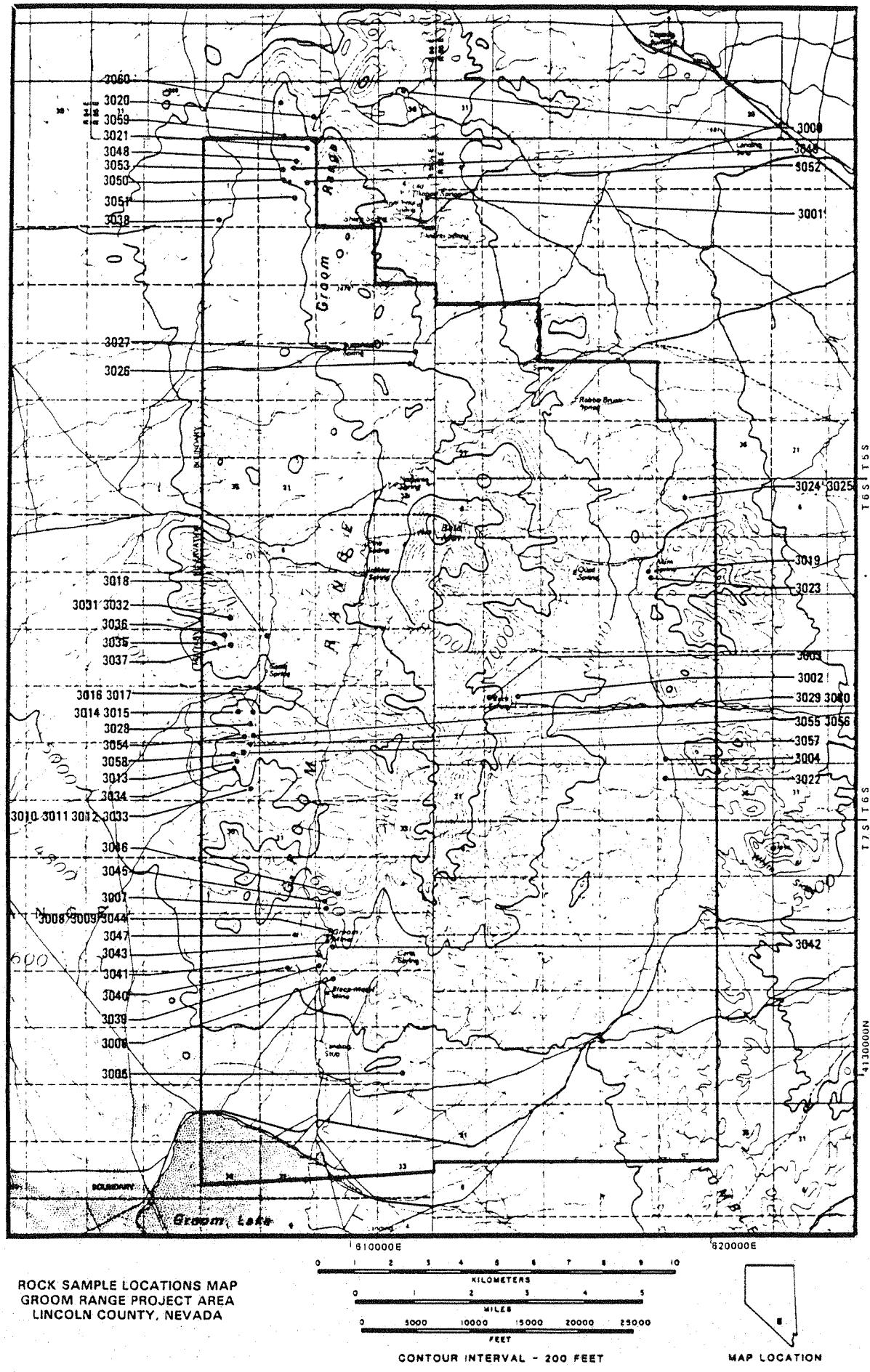


Figure 10

prepare a series of geochemical maps showing concentrations of individual elements (Figures 11 through 30).

Geochemical anomalies for the various elements were established using criteria that included significant concentrations of a given element that exceeded background and the detection limit of the analysis. However, geologic relationships, structures, lithologies, and geomorphology were taken into consideration. A statistical evaluation of the geochemical data is presented at the end of this section. For visual inspection and to observe spatial and geochemical relationships there are separate figures to show locations for each of 10 elements; gold, silver, lead, mercury, antimony, copper, zinc, arsenic, molybdenum, and barium.

The sampling detected very high levels of mercury throughout the Groom Range in both panned concentrates and rock samples. Mercury was detected in 92 of 135 panned concentrate samples and in 59 of 60 rock samples collected. Cinnabar (HgS) was visually identified during lab examinations in 27 of the panned concentrate samples. Mercury has been produced from one cinnabar occurrence in volcanic rocks on the northeast side of the Groom Range (Andies Mine, outside of the withdrawal area) but it has not been reported to be present within the Groom Range. Similar results with respect to mercury have been found during sampling by a mining company currently drilling just to the north of the withdrawal area in the Don Dale district.

In addition to mercury, barium was also found to be present in anomalous amounts in panned concentrates samples collected from drainages along the southwest, northwest, northeast and east sides of the area. Distribution of high barium values in general follows that of mercury and

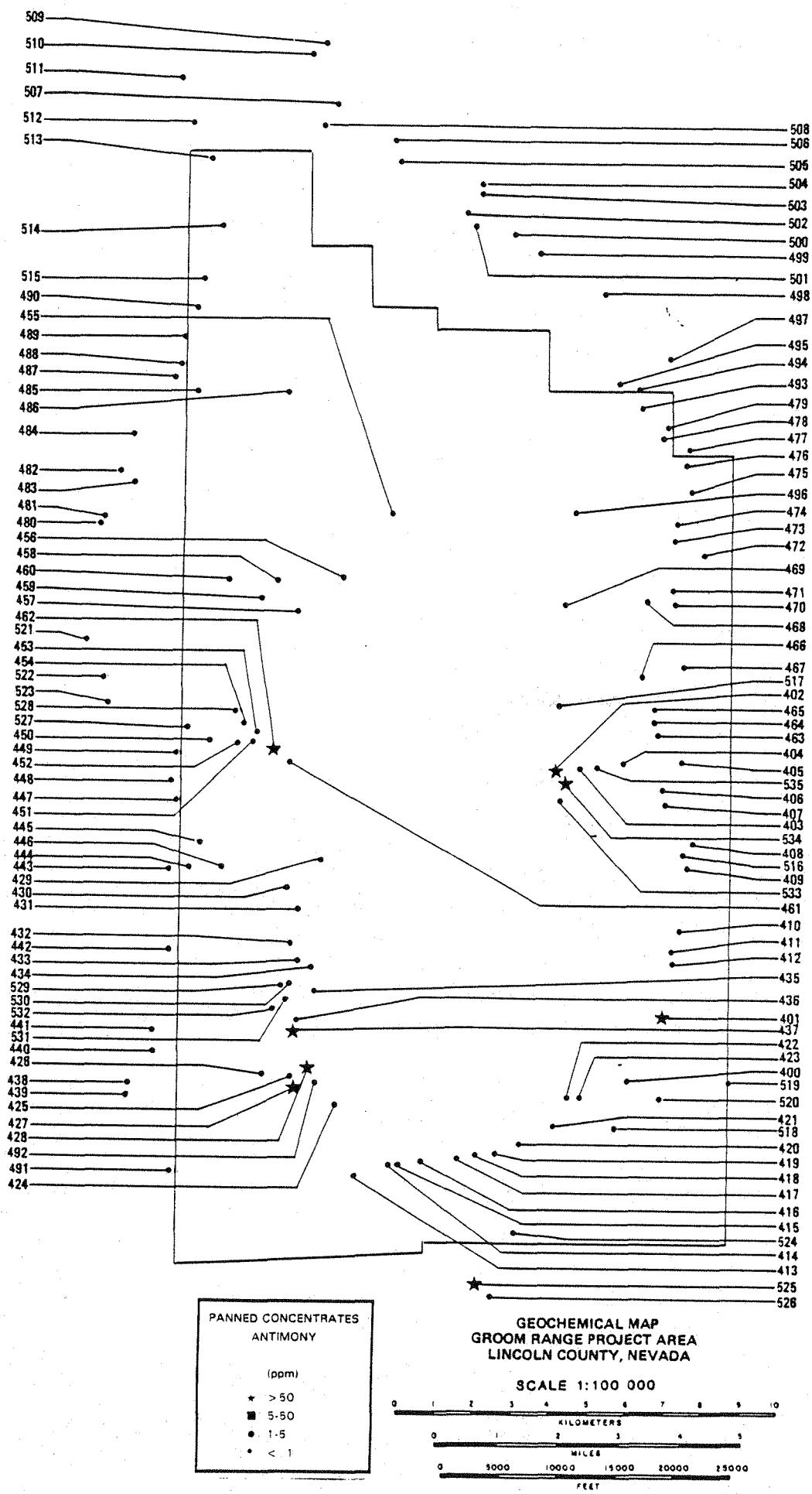


Figure 11

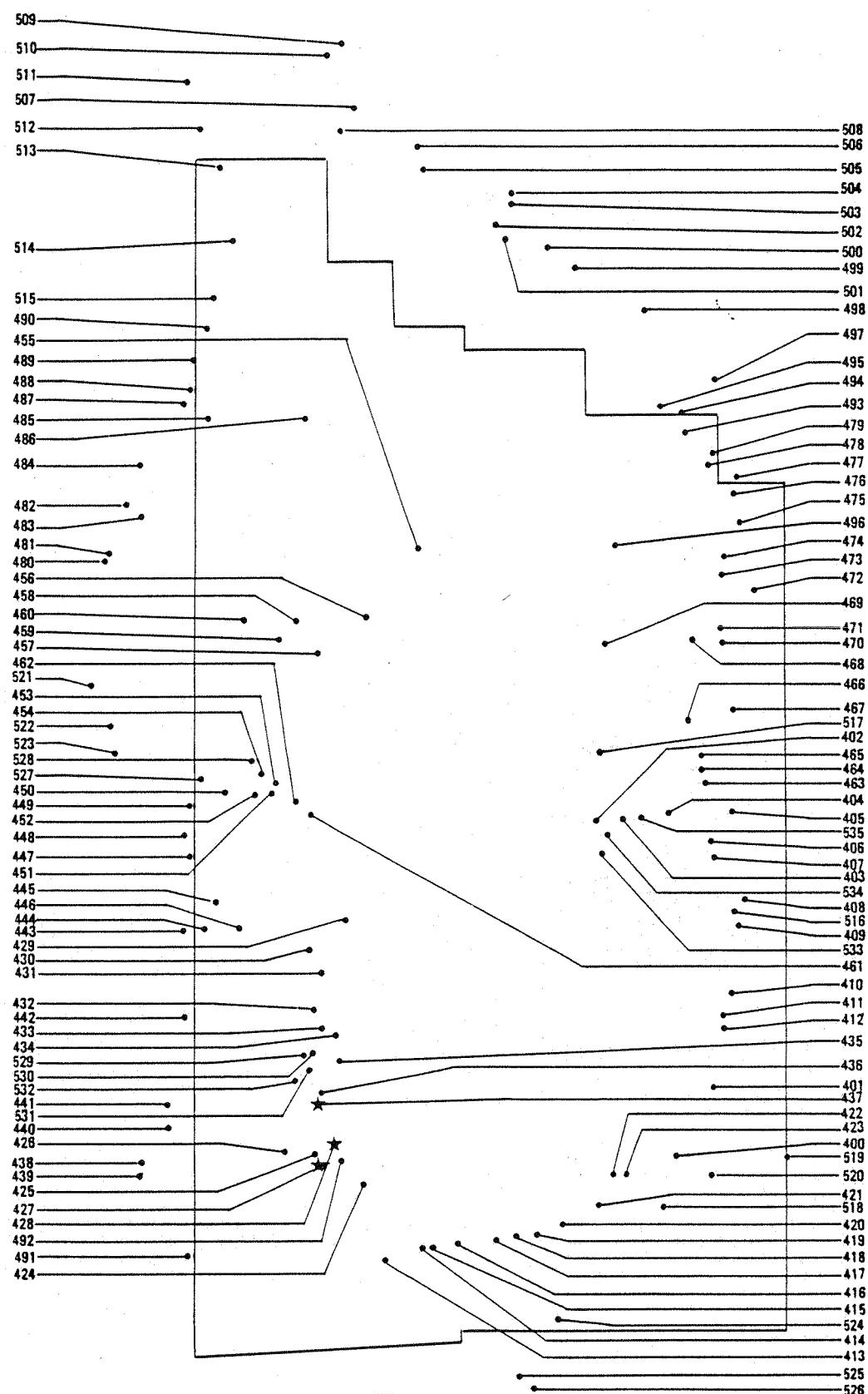


Figure 12

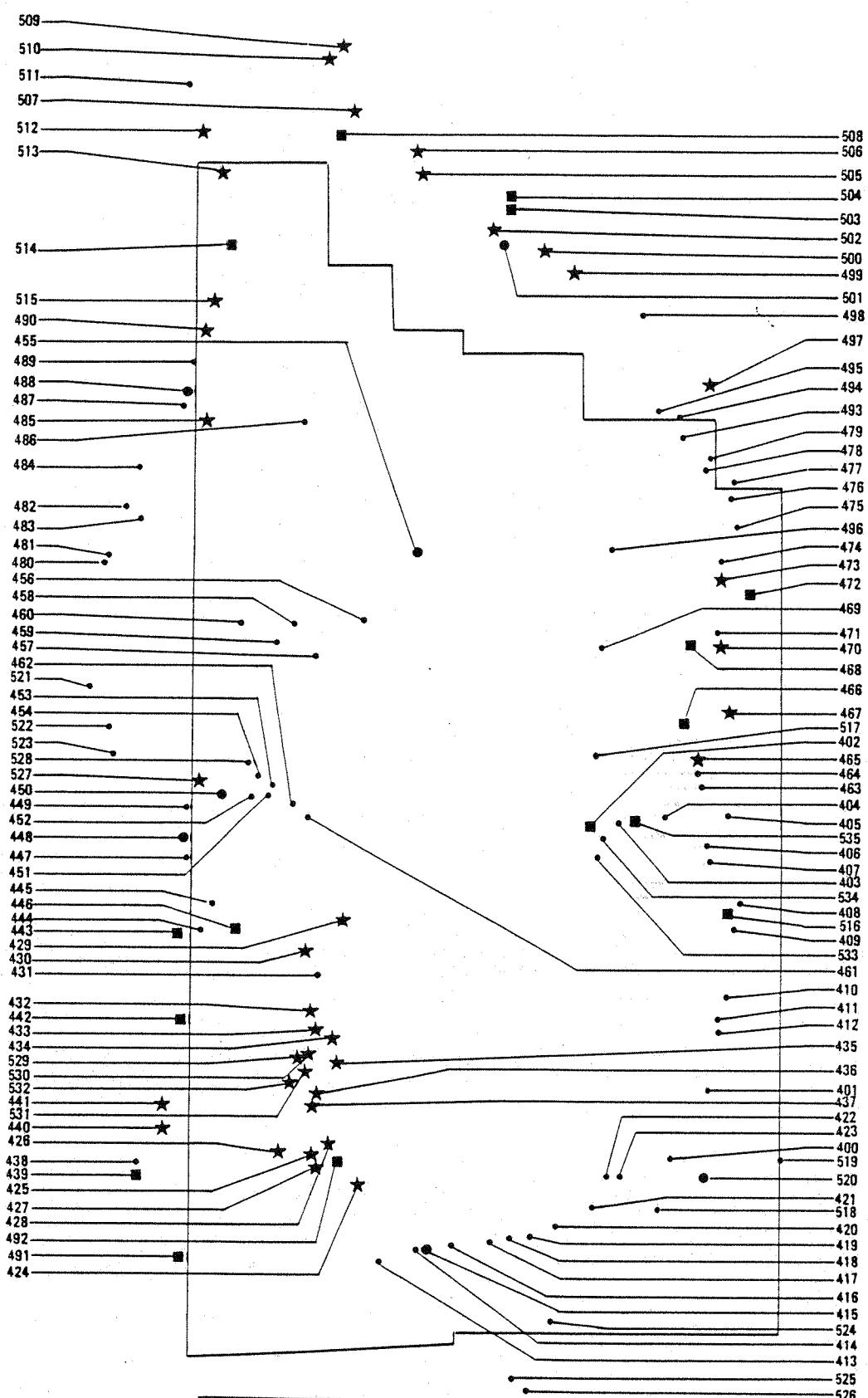
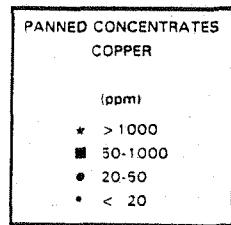
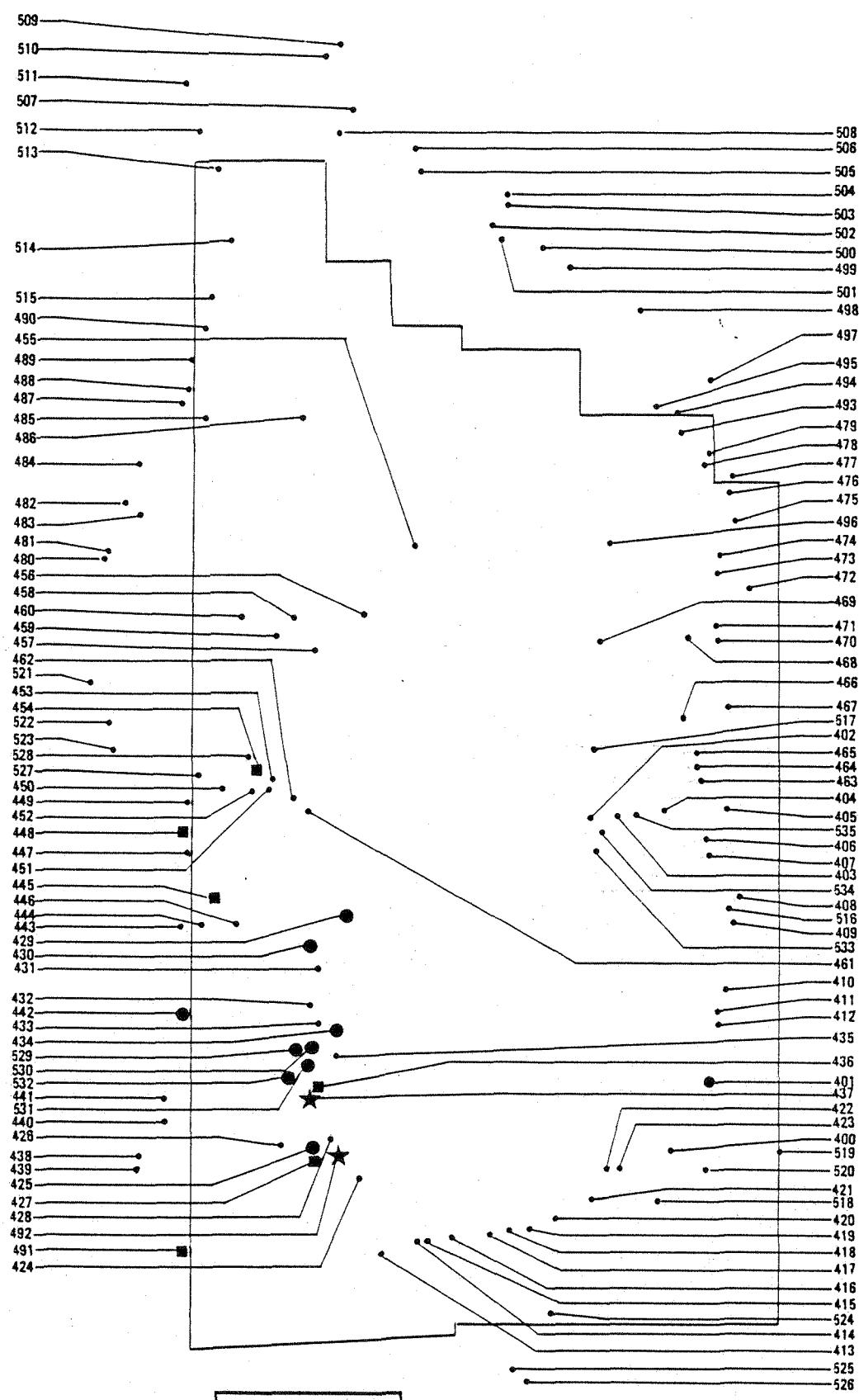


Figure 13



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

0 1 2 3 4 5 6 7 8 9 10  
KILOMETERS  
0 1 2 3 4 5  
MILES  
0 5000 10000 15000 20000 25000  
FEET

Figure 14.

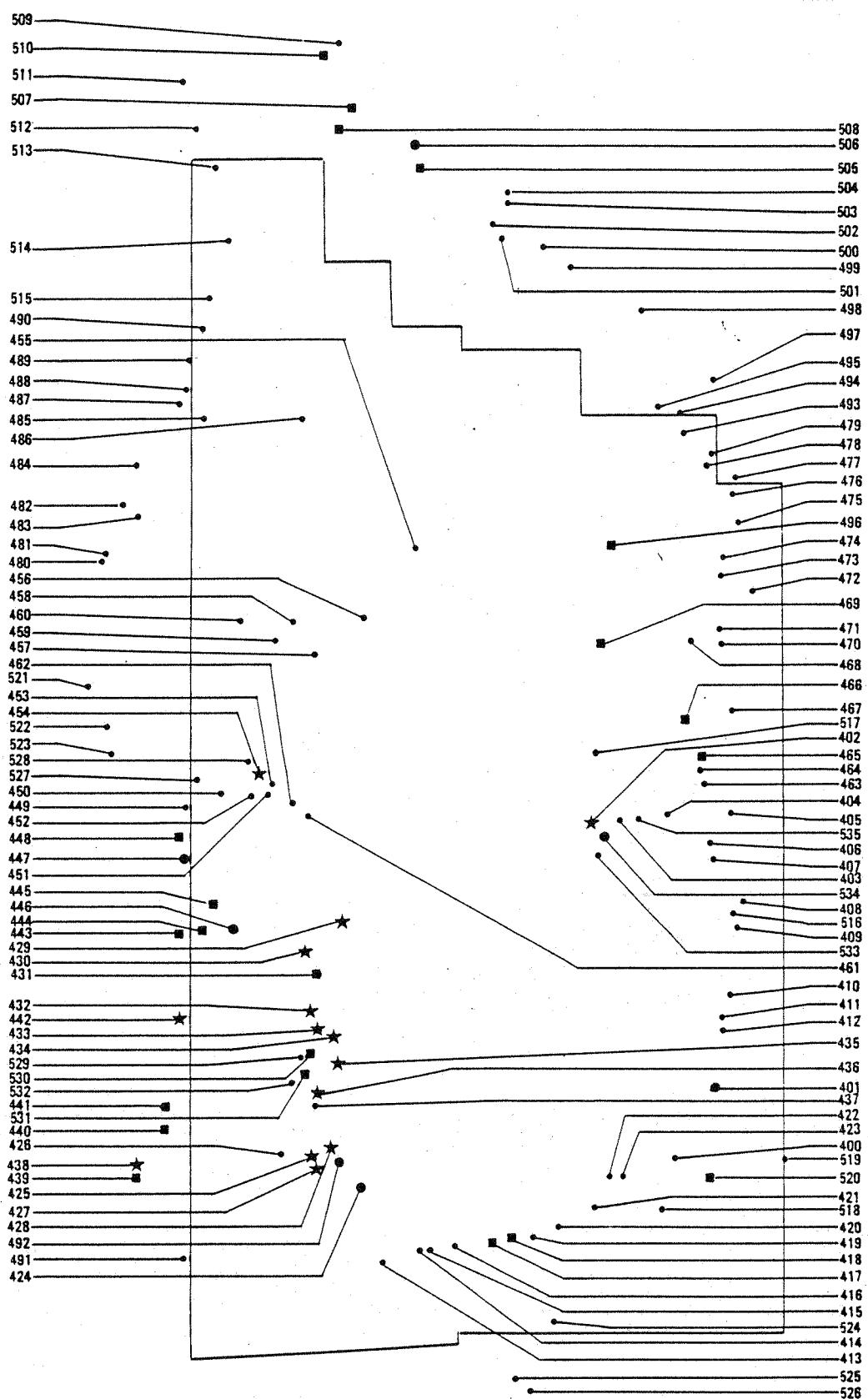
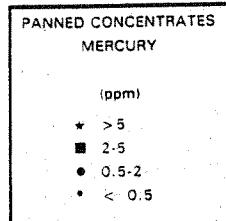
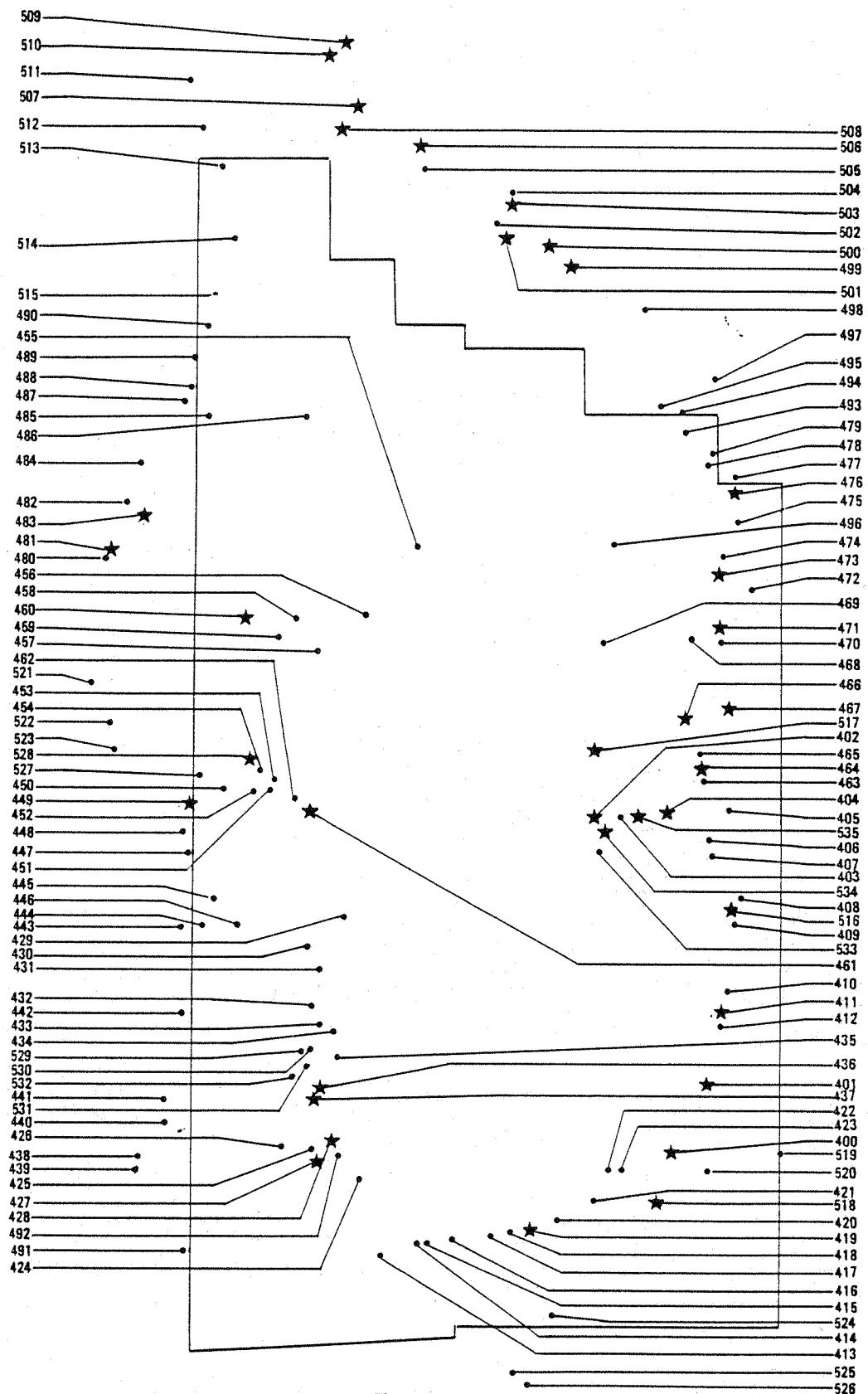


Figure 15



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

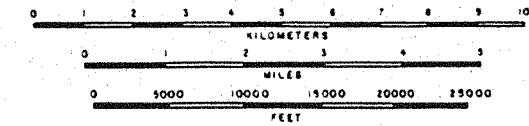


Figure 16

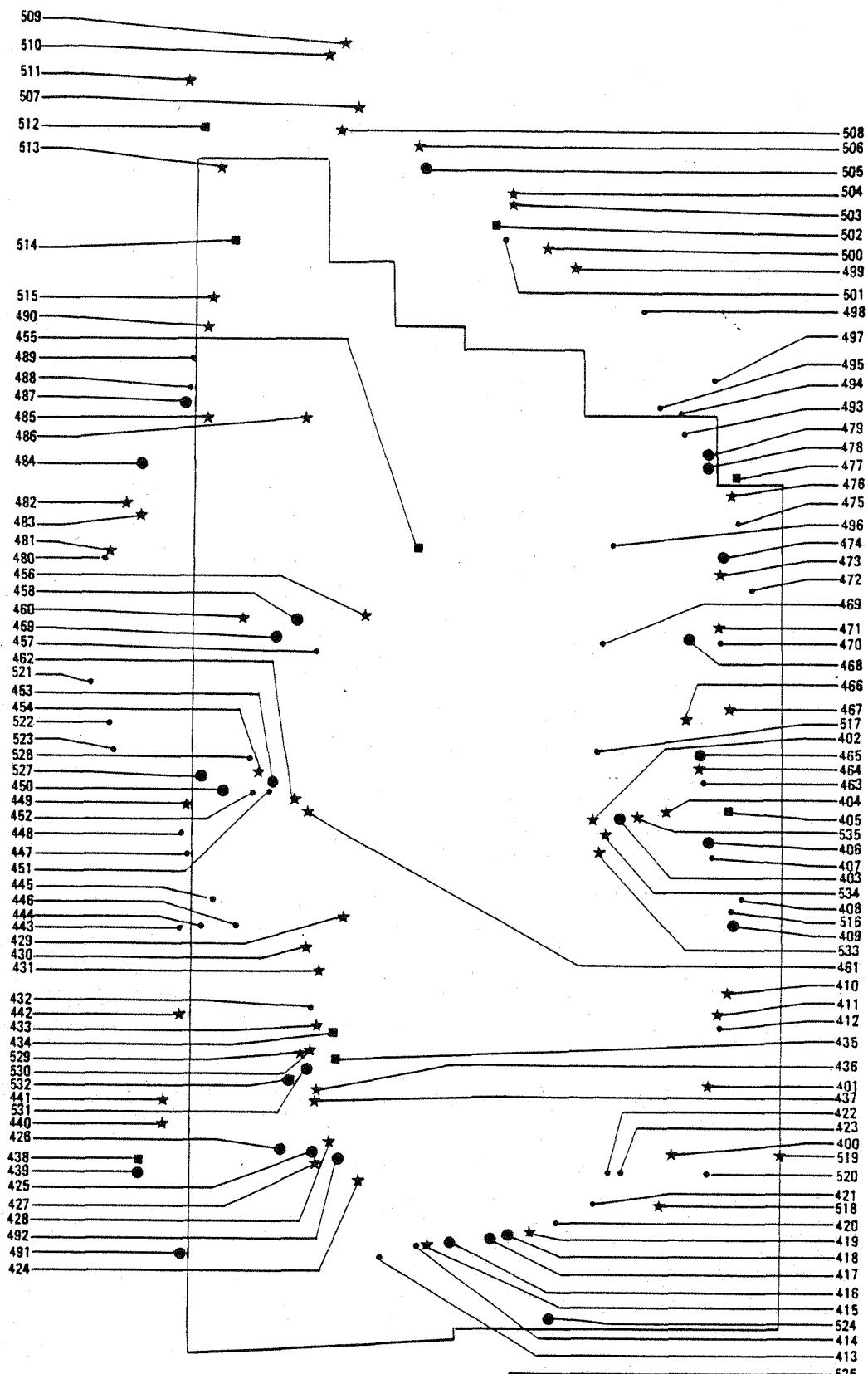
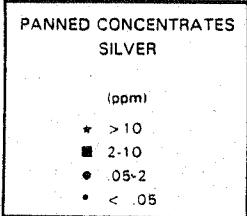
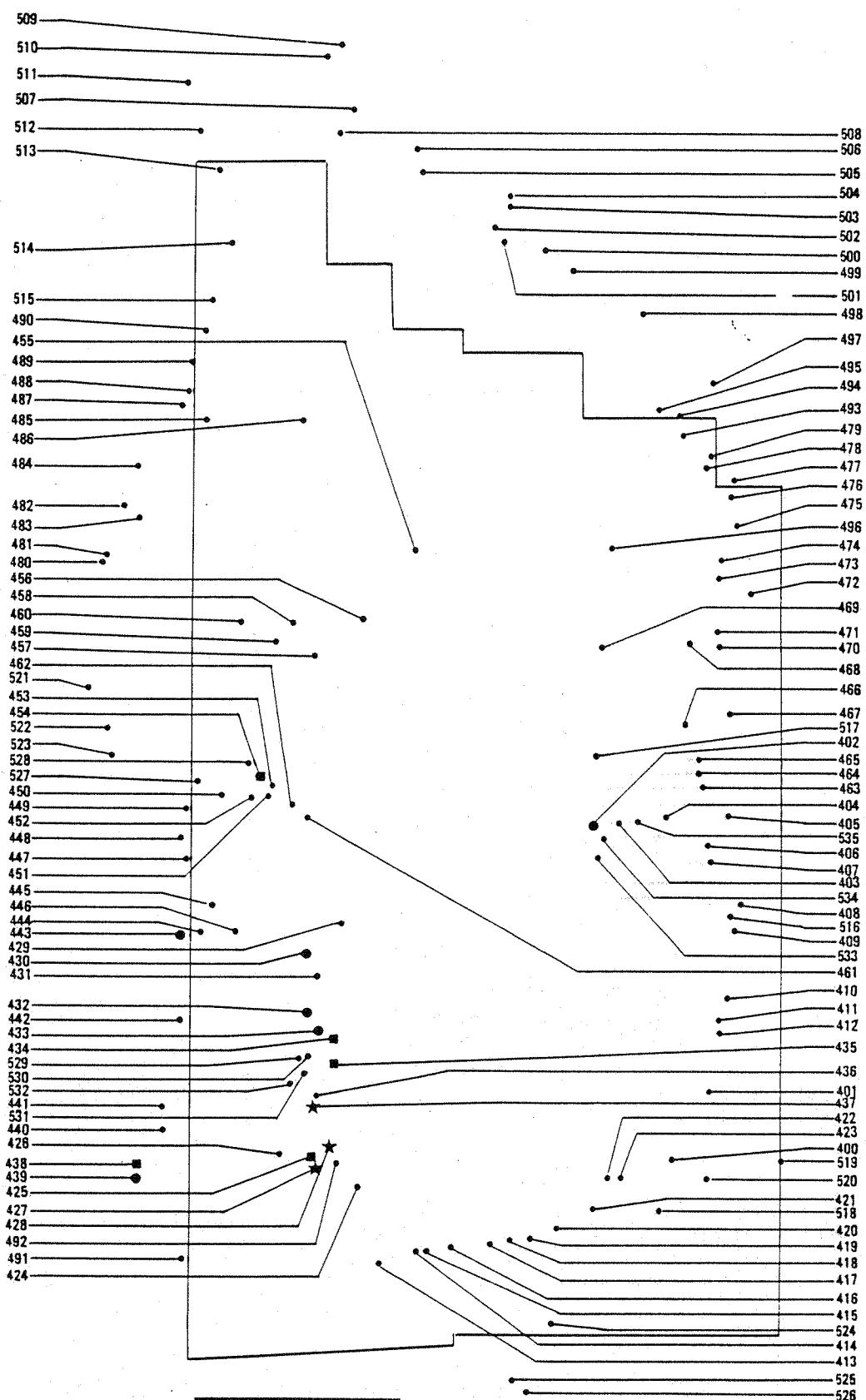


Figure 17



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

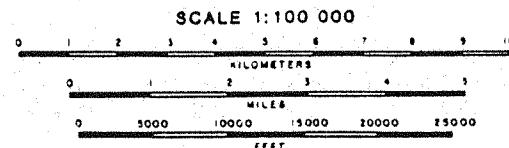
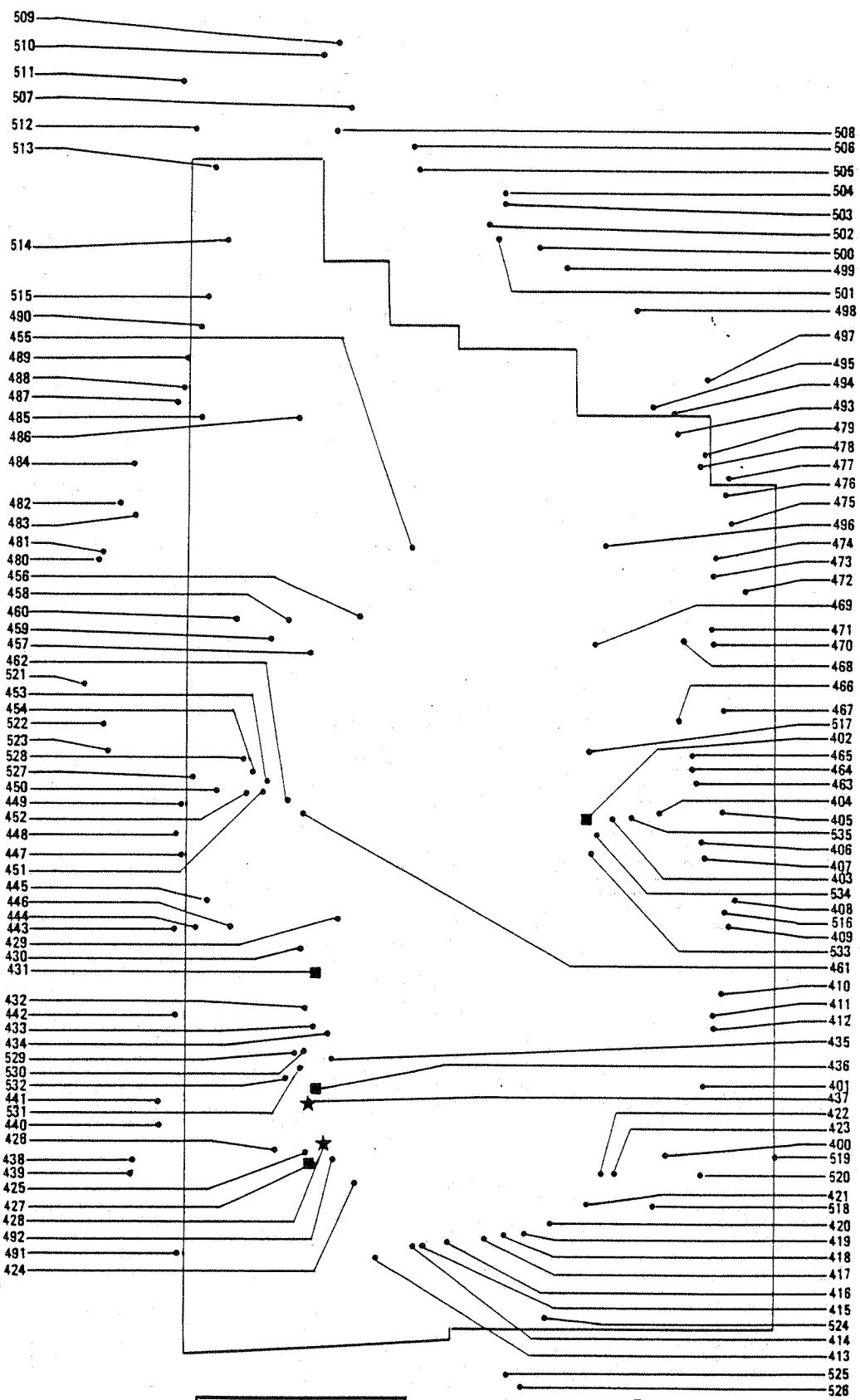


Figure 18



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

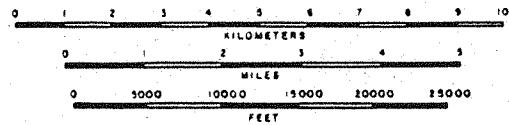


Figure 19

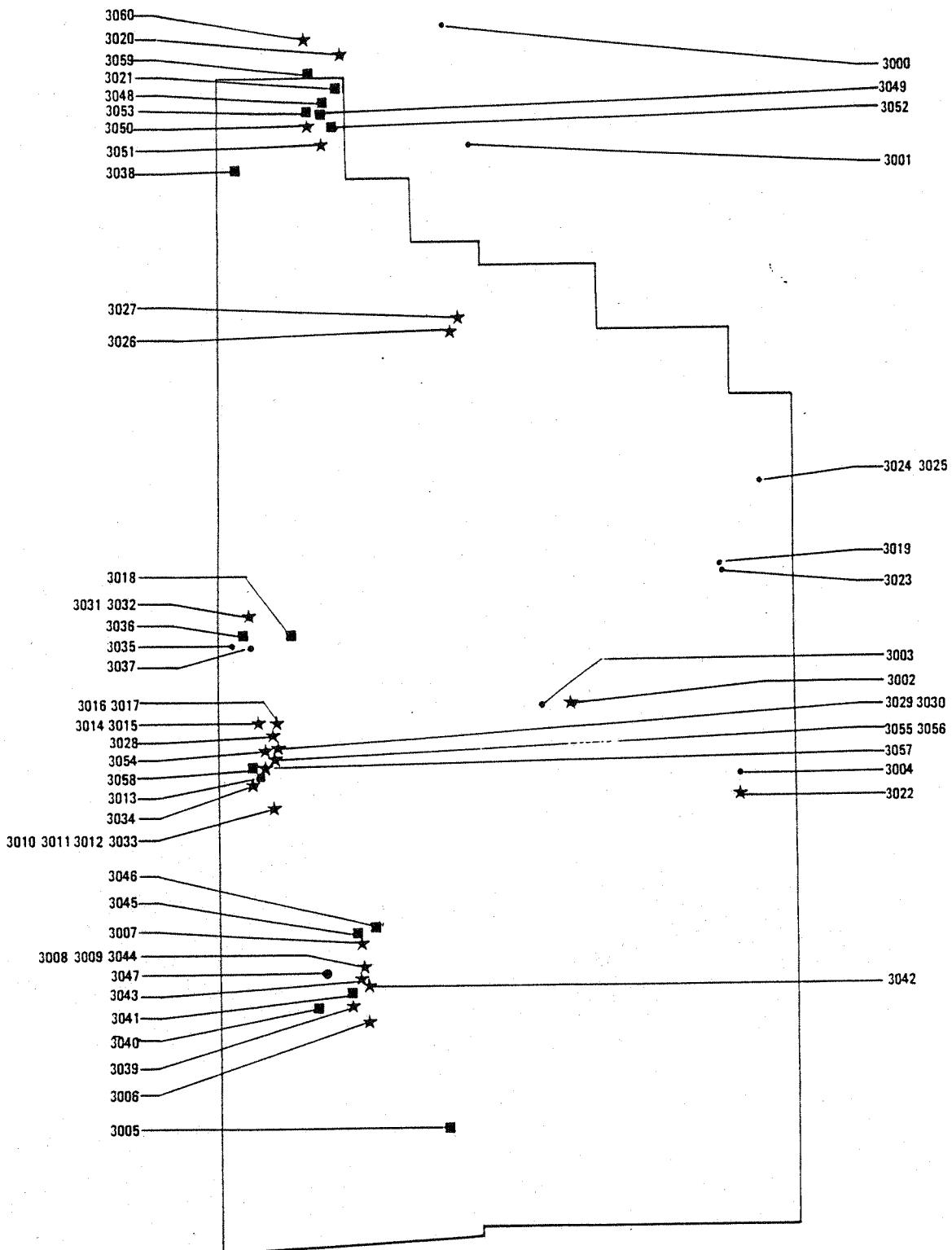
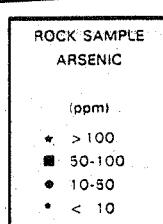
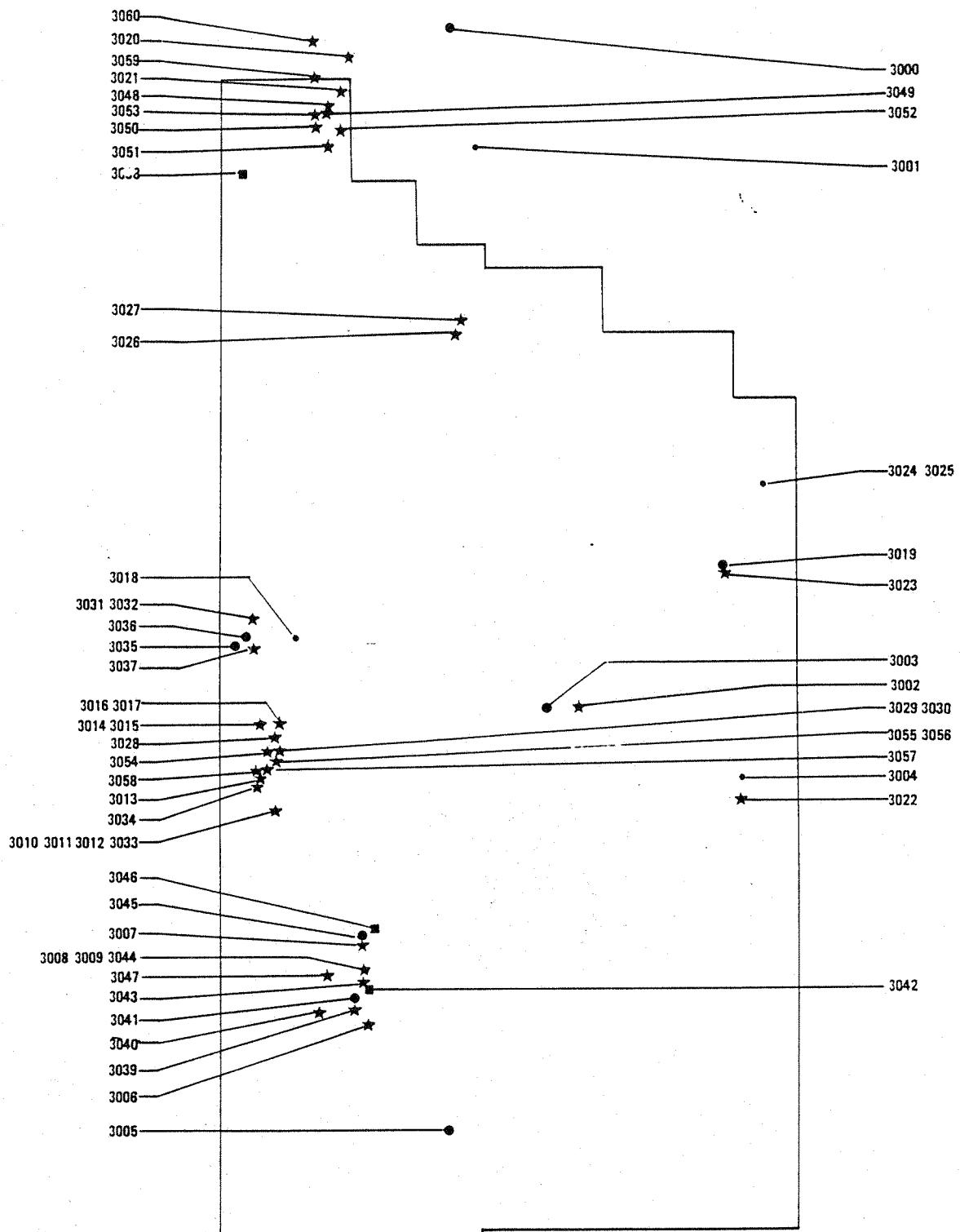


Figure 20



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

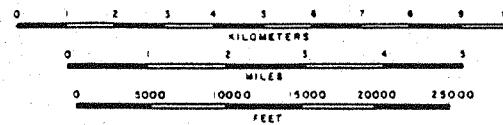


Figure 21

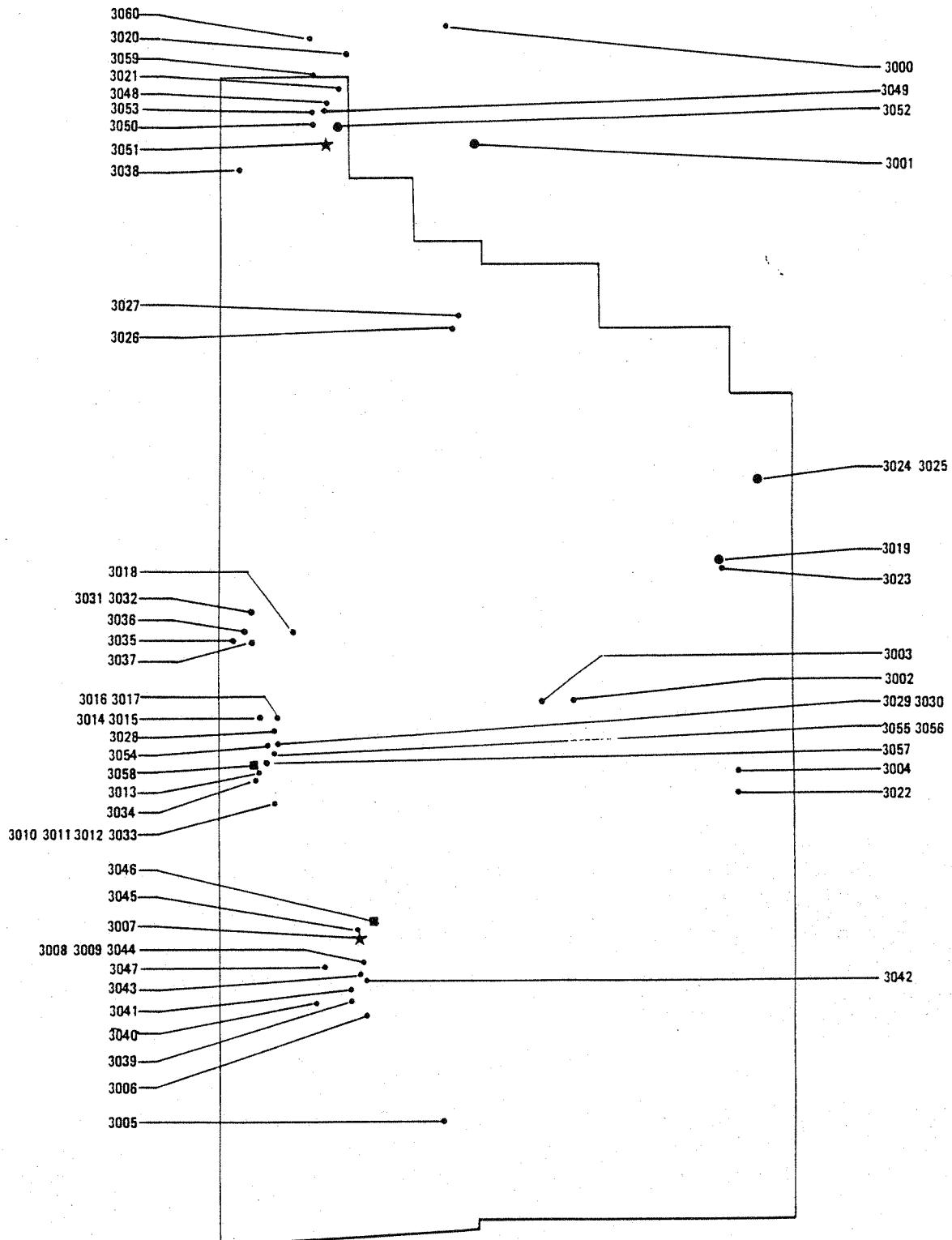


Figure 22

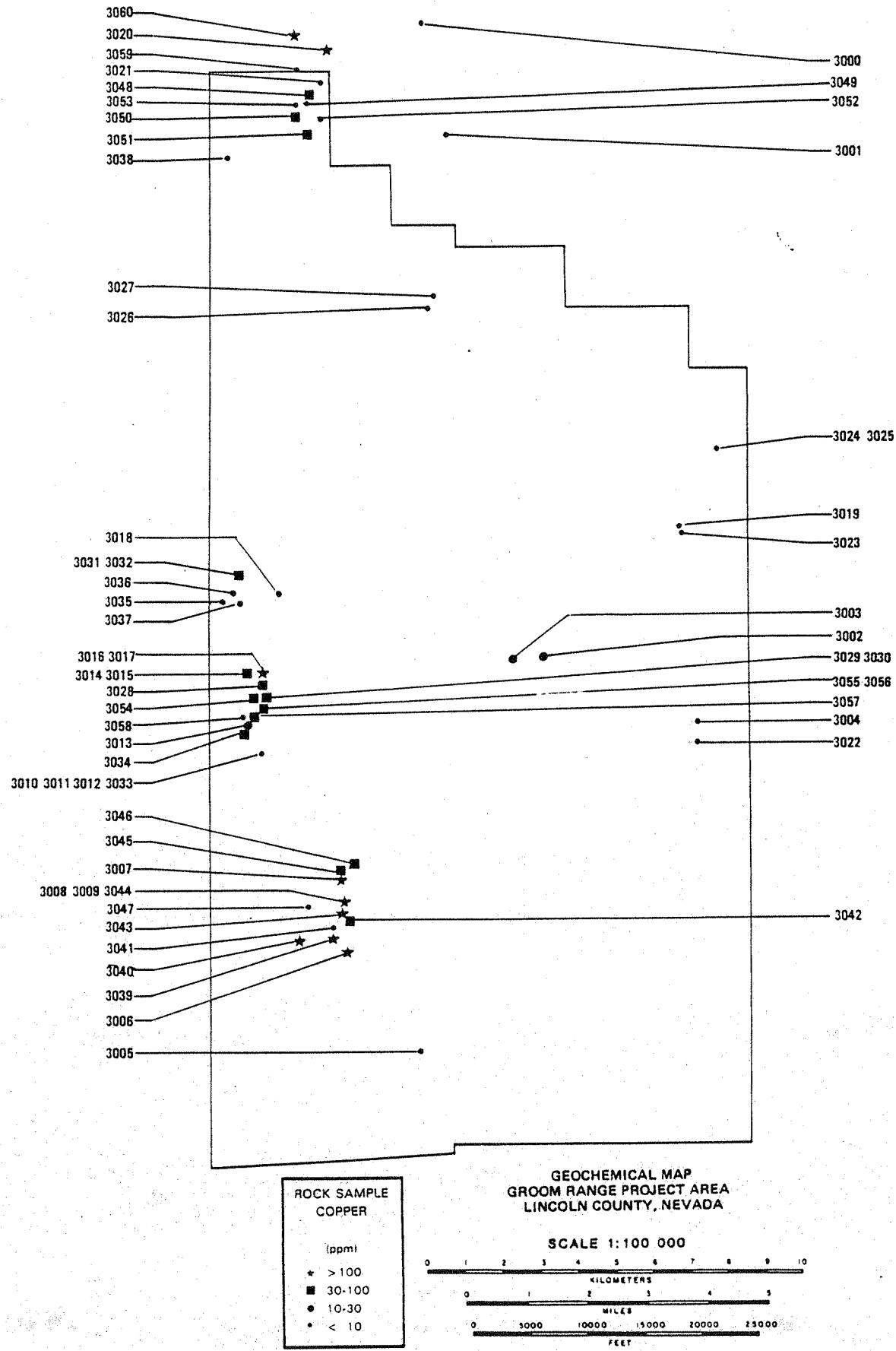
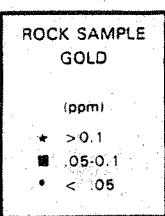
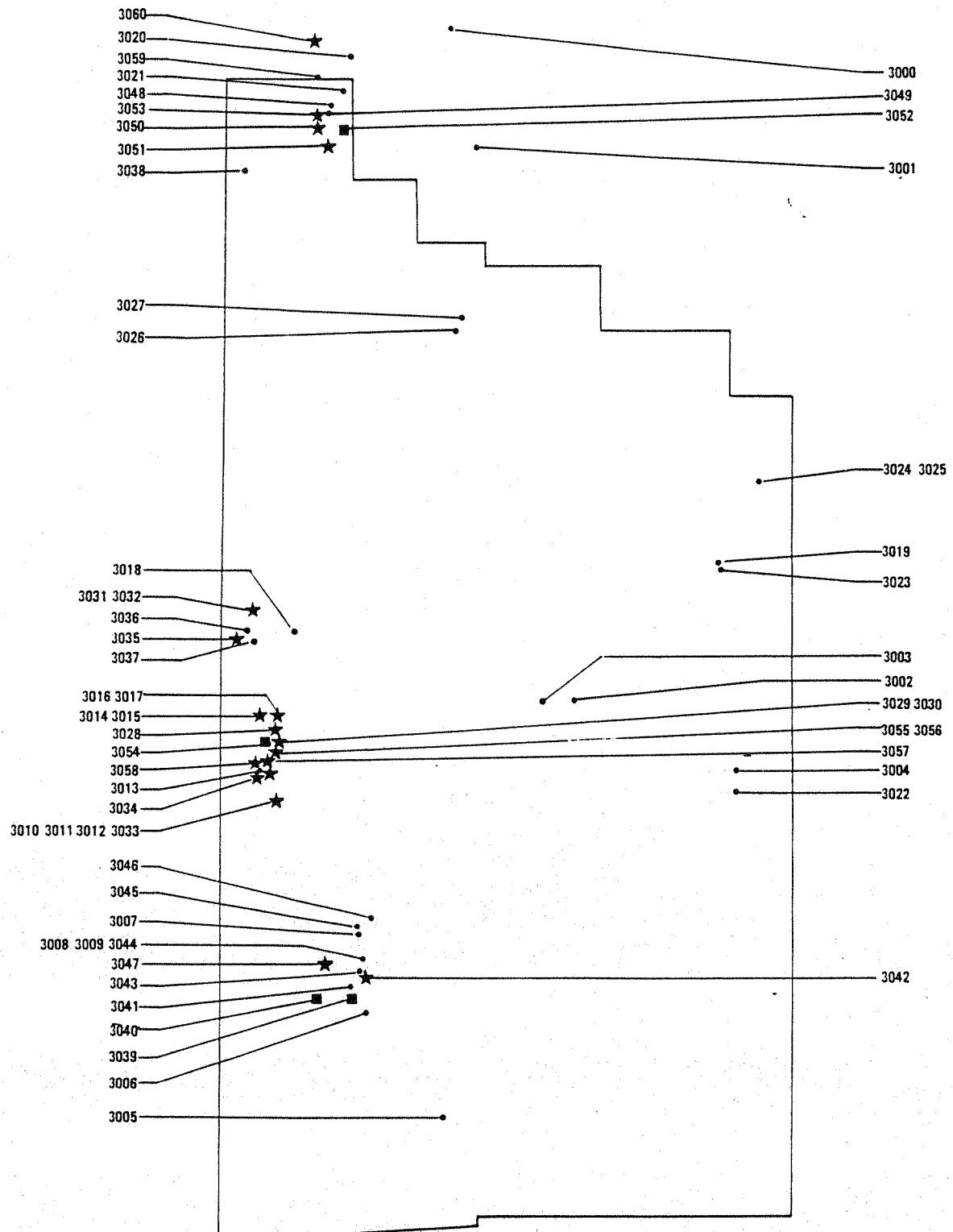


Figure 23



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

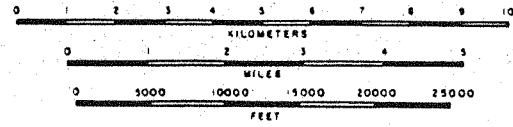


Figure 24  
-40-

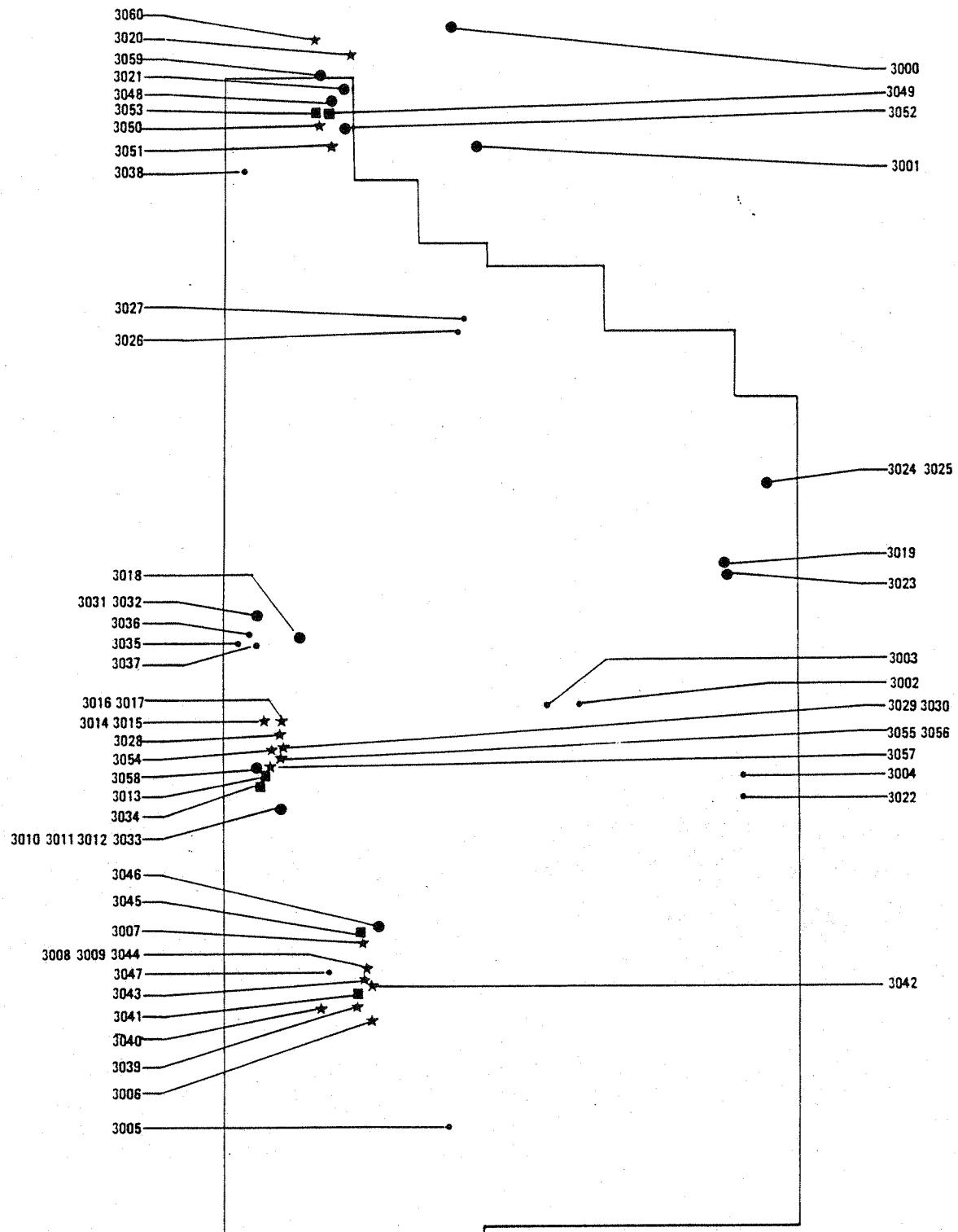
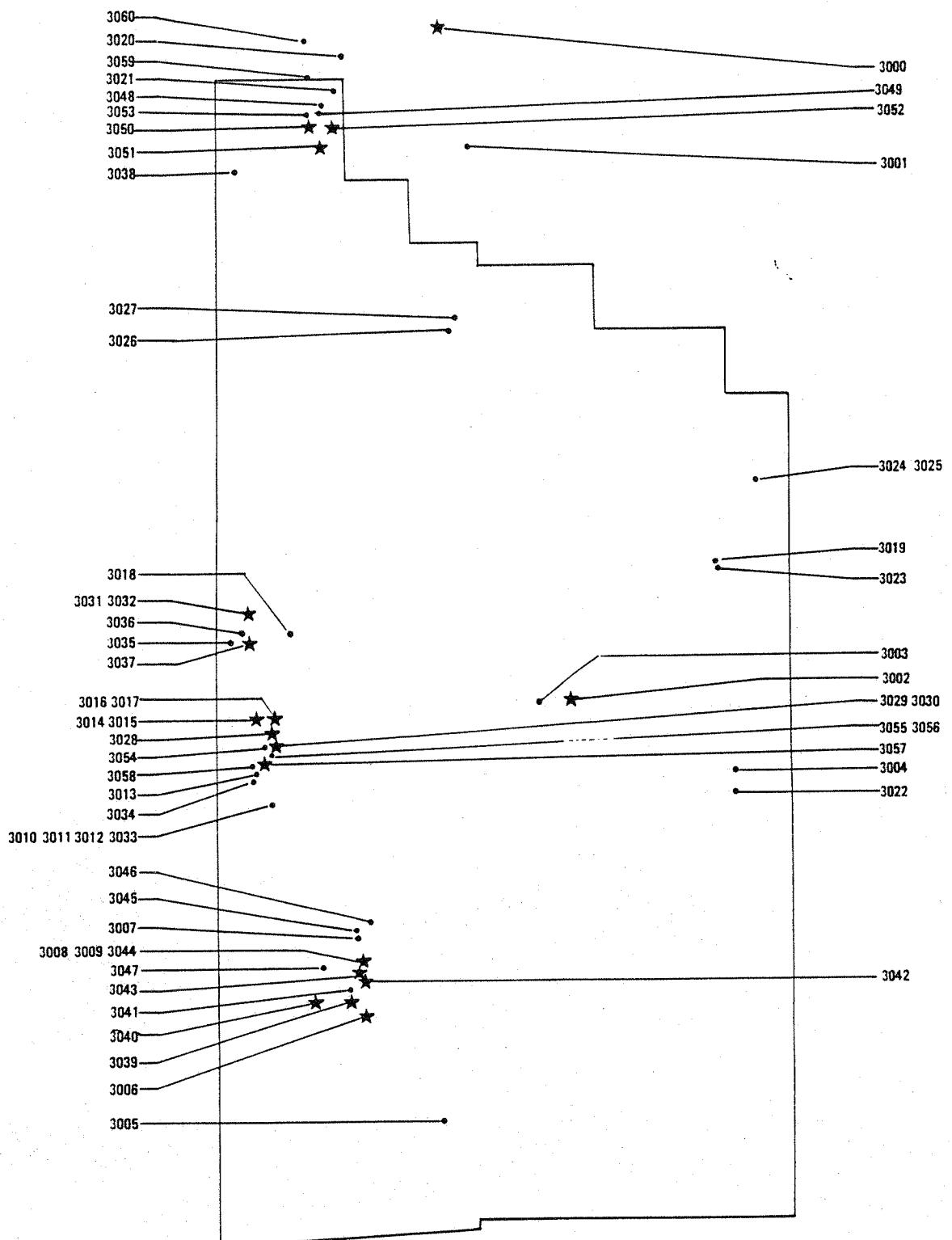


Figure 25



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

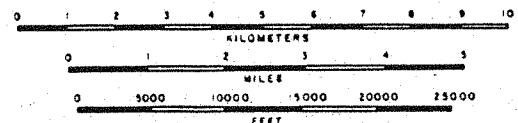
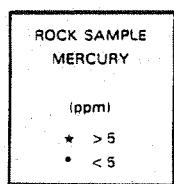


Figure 26

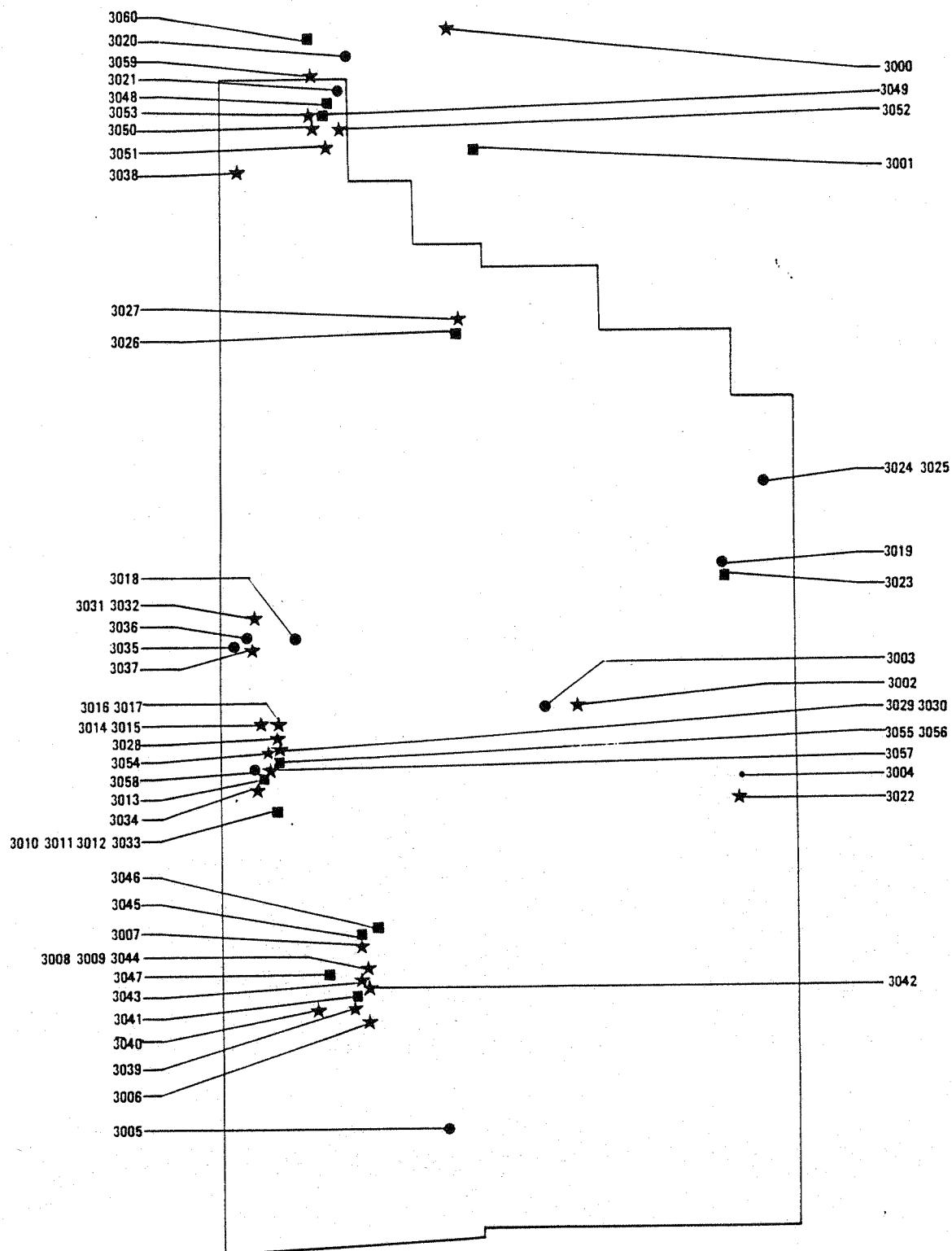
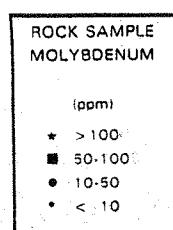
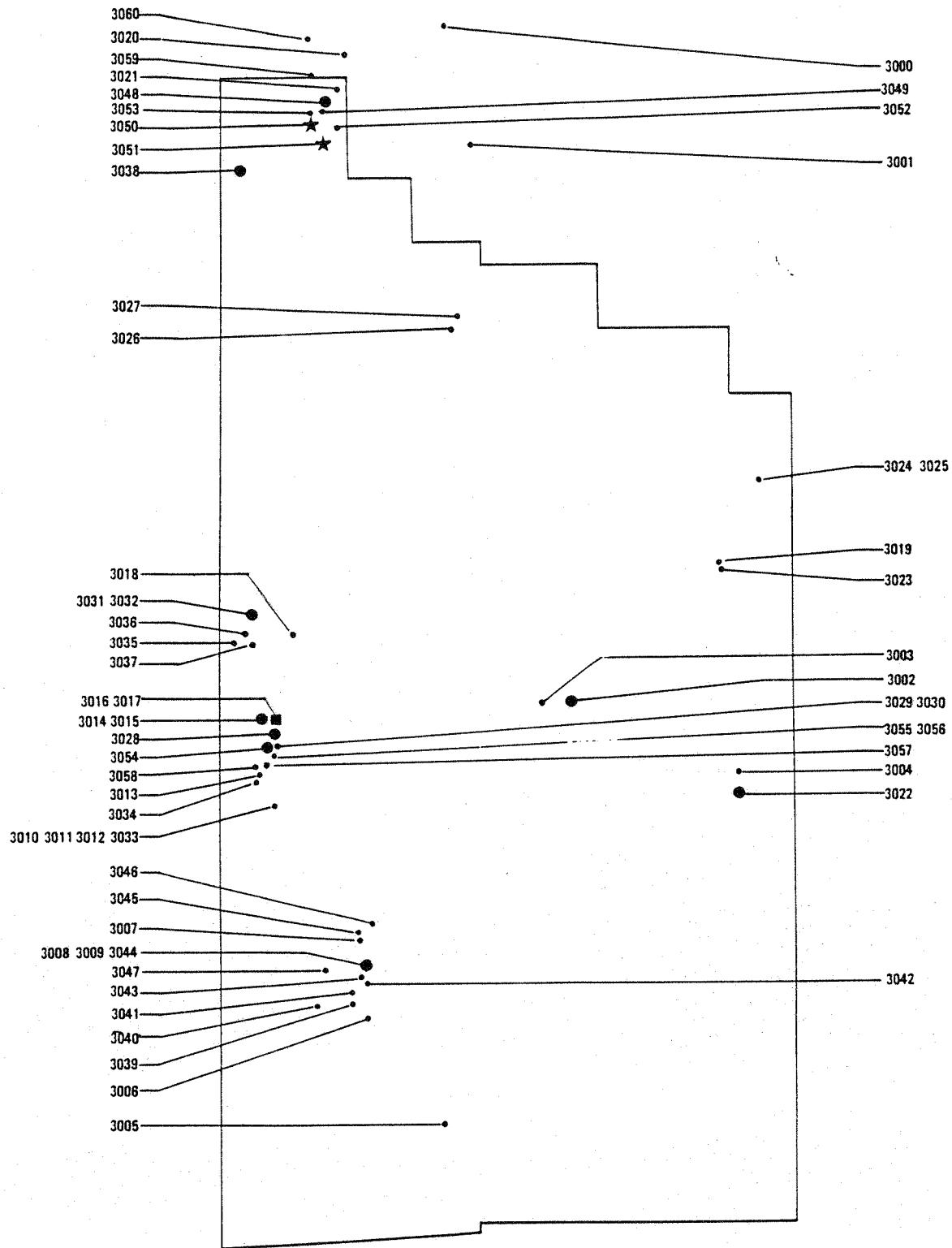


Figure 27



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

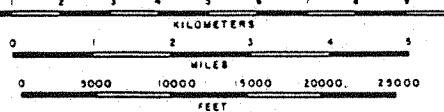
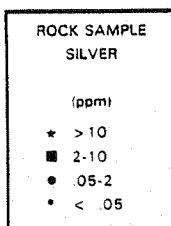
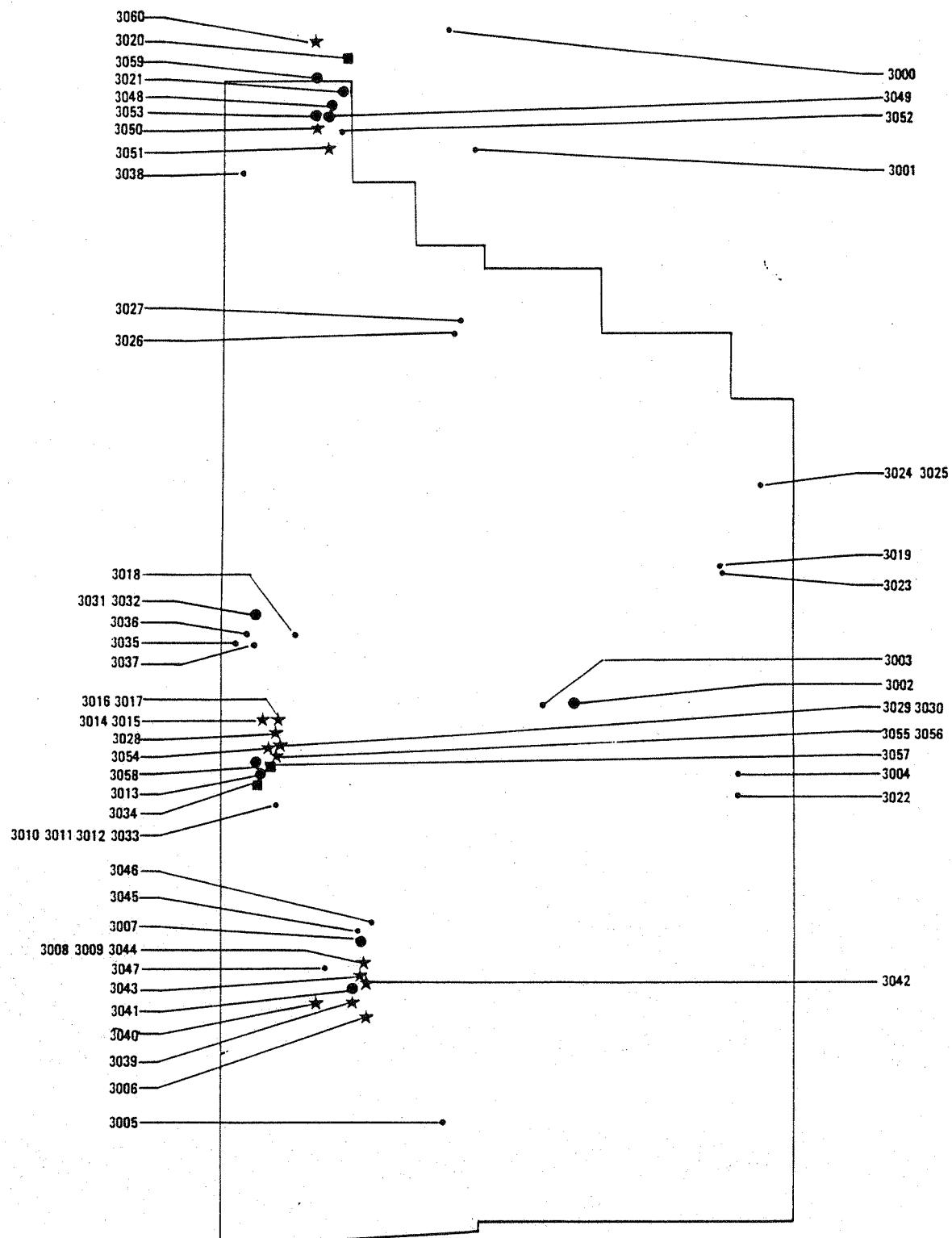


Figure 28



GEOCHEMICAL MAP  
GROOM RANGE PROJECT AREA  
LINCOLN COUNTY, NEVADA

SCALE 1:100 000

0	1	2	3	4	5	6	7	8	9	10
KILOMETERS										
0	1	2	3	4	5					
MILES										
0	5000	10000	15000	20000	25000					
FEET										

Figure 29

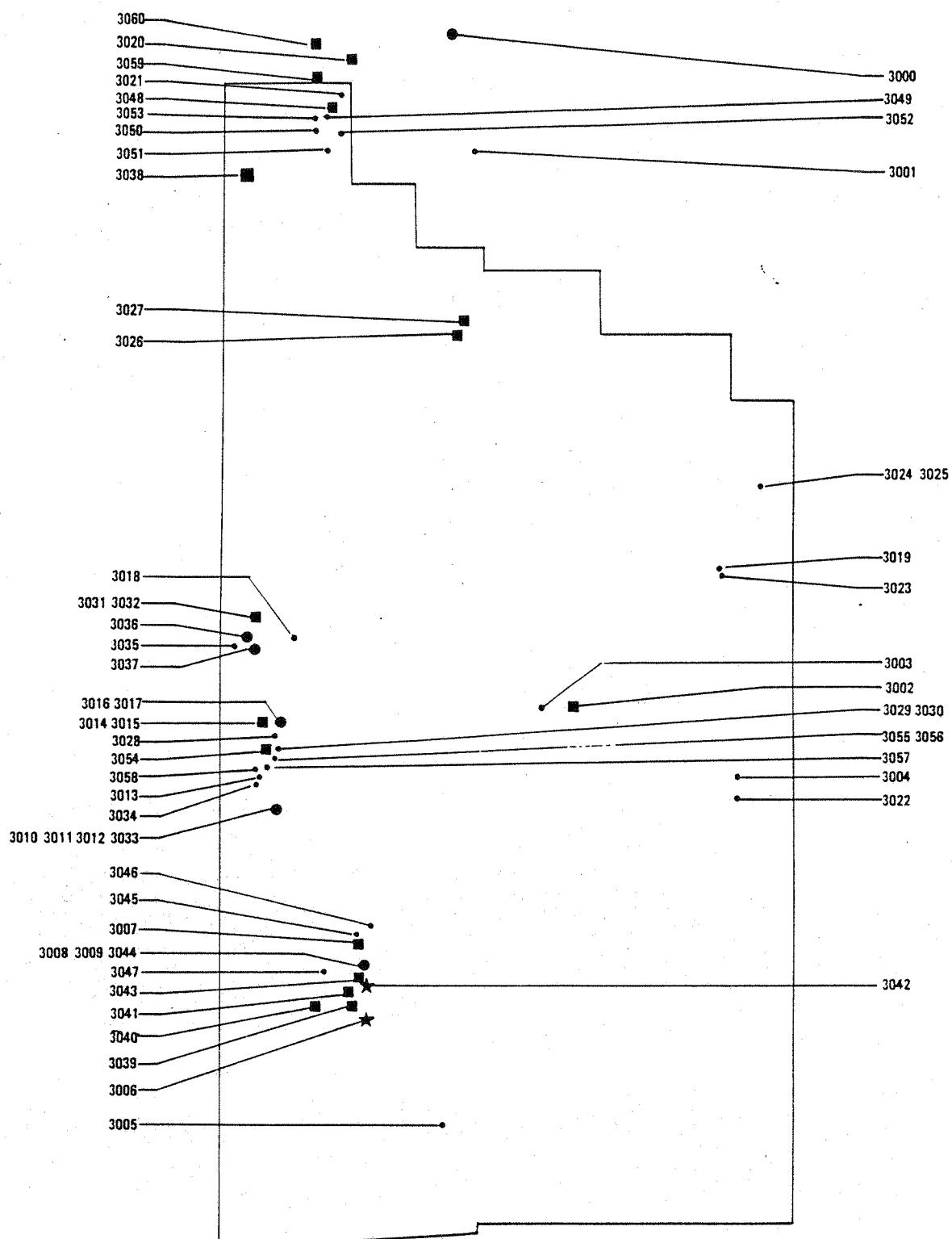


Figure 30

the two elements may be associated with the volcanic activity of the Bald Mountain Caldera.

Values obtained from panned concentrates taken from the Rock Springs drainage on the eastside of the Groom Range had anomalous antimony, mercury and lead with minor values of silver and zinc. Streams in this part of the Range are draining the southern portion of the Bald Mountain caldera but the precise location of the mineralization was not located and no mine workings are known in this area.

High concentrations of lead, mercury, copper, and barium along with lesser amounts of zinc, silver, and antimony were detected in stream sediments south of the Groom Mine workings. Bob Sheahan (oral communications) reported large pieces of lead float, up to several inches in diameter, in stream courses as far south as Groom Lake. Similar pieces were found during the investigations almost a mile south of the Black Metal Mine (Lane Shaft). This same area is a logical exploration target for a possible southern extension of the Groom Mine graben structure and associated mineralization that might be present but is now buried beneath the pediment surface.

Quartz vein systems in quartzite and shale members of the Prospect Mountain Quartzite extend from the Kahama Mine all the way north to the Don Dale district. These veins generally trend to the NE and dip steeply cutting the quartzite directly or along bedding planes. Veins within the shale are commonly along shear zones, many of which show movement since deposition. Sometimes the veins are hydrothermally altered, brecciated, flooded with silica and contain steel-gray, iron-rich base metals with minor gold and silver. On other occasions, the veins consist of white bull

quartz stained with black manganese and contain varying concentrations of base metals, silver, and minor gold.

Samples taken from the main vein at the Kahama Mine showed a fairly even distribution of gold at low concentrations in a white quartz with practically no base metals. The vein is narrow and sometimes brecciated but shows very little iron staining. None of the gold assays on samples collected from the main vein were as high as the 1.08 oz/ton gold reported by Humphrey (1945). A second parallel vein further to the west was traced to the northeast where it crosses the ridge and passes through the old Chicago, Illinois and Wisconsin claim group. This vein is brecciated, silica-rich and contains gray fine-grained sulfides of iron, copper, lead, and antimony with minor gold and silver.

A sample from the small vein on the Boondock Lode claim, west of Groom, reported .02 ppm gold with low arsenic and minor antimony values. Panned concentrates from four drainages associated with these claims were anomalous in mercury and barium with minor copper and lead values.

Mineralization north of the main Groom Mine is limited to barren quartz veins that crop out along the main north-south structure. These veins sometimes show strong brecciation. One prospect, at sample site 3007, had minor copper mineralization consisting of both oxide and sulfide minerals. Exploration in this area has been restricted to minor prospects and has been apparently unsuccessful.

The area southwest and northwest of Cattle Spring has been heavily prospected by adits, shafts and trenches which explore north-trending quartz veins that dip steeply and are hosted in quartzite. Nearly all the veins are narrow, only two were found which exceed a foot or more in thickness. The veins commonly have manganese coatings along fractures and

contain visible tetrahedrite and other sulfides. The samples taken from these veins were anomalous in copper, lead, mercury, silver, and antimony with lesser amounts of gold.

Samples from the old workings east of the Sterling millsite were from iron-rich quartz veins that were commonly brecciated and sometimes flooded with silica. Besides being extremely hard, the veins were occasionally massive, displayed irregular dips and strikes, and are hosted in a highly altered, iron-stained quartzite. The sample values from these veins were not uniform but many were anomalous in lead, antimony, barium with minor copper, arsenic, and zinc. Several samples were high in molybdenum and silver and most had detectable gold.

Sampling of the gossans and jasperoids in the limestones in the area covered by the six BW Claim Group showed no apparent gold or silver to be present but samples were anomalous in mercury, arsenic and zinc. Gold was reported to have been prospected in the area but the mode of its occurrence was not described.

A microprobe examination of samples 3040 and 3042 from the Groom Mine, sample 3006 from the Black Metal Mine (Lane shaft), and sample 3015 from the mine workings southwest of Cattle Spring, was undertaken to better understand the mineralogy of ore deposits within the district.

Sample 3040 is a fist size piece of replacement ore that came from a stockpile near the main adit above the Groom millsite. It is dominately massive, steel gray, fine-grained galena with no other visible minerals. Geochemical analysis of the sample reported over 20,000 ppm lead, 5,000 ppm antimony, 3,000 ppm copper, 1,500 ppm zinc, 500 ppm silver, 300 ppm arsenic, and 79 ppm mercury with .05 ppm gold. The microprobe showed this sample to be about 25 percent galena (PbS) with tetrahedrite (Cu<sub>11</sub>Sb<sub>4</sub>S) 10 percent, pyrrhotite (Fe<sub>1-x</sub>FeS<sub>x</sub>) 10 percent, chalcopyrite (Cu<sub>1-x</sub>Fe<sub>x</sub>S) 10 percent, sphalerite (ZnS) 10 percent, and pyrite (FeS<sub>2</sub>) 10 percent.

commonly contained within the matrix of the galena. Approximately 20 grains of galena and tetrahedrite were scanned within the sample and none were found to contain silver. Silver, when observed, was always present in the form of argentite ( $\text{AgS}$ ) and commonly occurred in a matrix of quartz or calcite (see Figures 31, 32). Sample 3042 was a chunk of replacement ore collected from the dump at the Tripod shaft. It contained visible galena, sphalerite and cerrusite ( $\text{PbCO}_3$ ). The sample assayed about 4 percent lead and 31 percent zinc with 1,050 ppm mercury, 700 ppm copper, 500 ppm cadmium, 300 ppm antimony, 100 ppm silver, and .15 ppm gold. The real surprise in this sample was the mercury—it somehow completely avoided detection on the microprobe. The probe scanning revealed sphalerite ( $\text{ZnS}$ ) and galena ( $\text{PbS}$ ) with minor argentite ( $\text{AgS}$ ) and Tetrahedrite ( $\text{CuSbS}$ ), but with no trace of mercury or mercury minerals(?).

Sample 3006, a piece of brecciated replacement ore with veinlets of white calcite in a dull gray matrix, contained metallic streaks of galena, sphalerite and clots of chalcopyrite ( $\text{CuFeS}_2$ ). Similar pieces of the same sample material had slickensides and all of the samples had dull dusty coatings of argillitized fault gouge. The sample came from the ore-bin at the Black Metal Mine above the Lane Shaft. The sample assayed about 39 percent zinc, 4 percent lead and had 744 ppm mercury, 5,000 ppm antimony, 2,000 ppm copper, above 500 ppm cadmium, 300 ppm silver. Gold was not detected at the lower detection limit of .05 ppm. The probe scans revealed a high percentage of sphalerite, galena and calcite with lesser amounts of argentite, tetrahedrite, pyrite and chalcopyrite (see Figures 33, 34).

Sample 3015, collected from one of the quartz veins near the shaft southwest of Cattle Springs, consisted of a manganese-stained white quartz

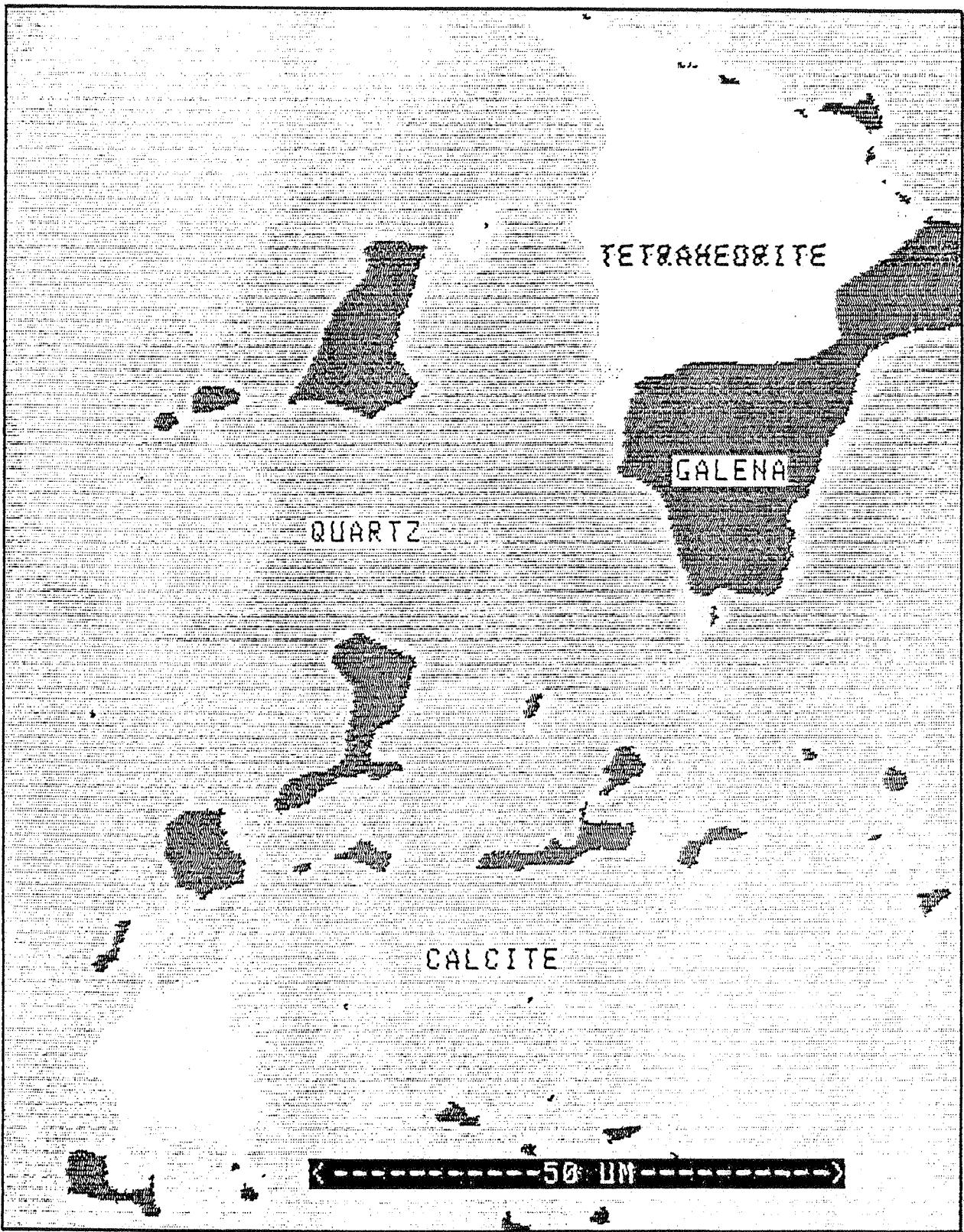


Figure 31

Sample 3040

TETRAHEDRITE

SPECTRUM LABEL

SPECTRUM FILE NAME

Q1

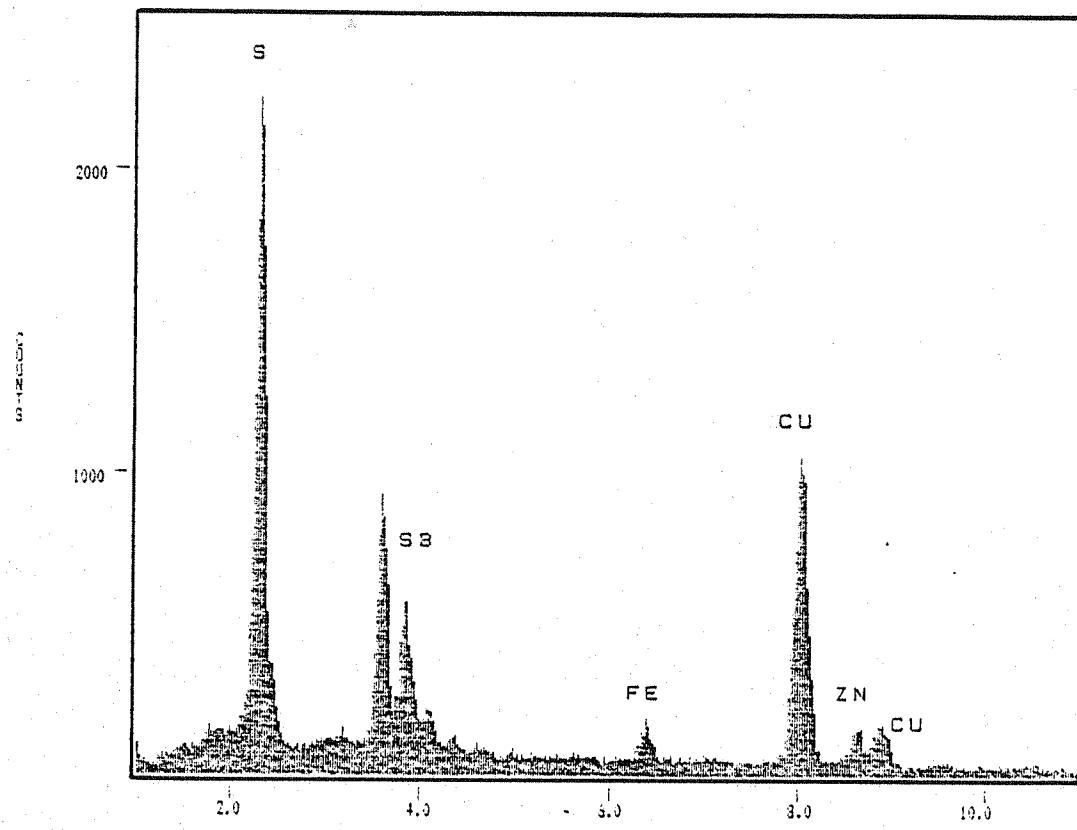


Figure 32 Sample 3040

ENERGY (KEV)

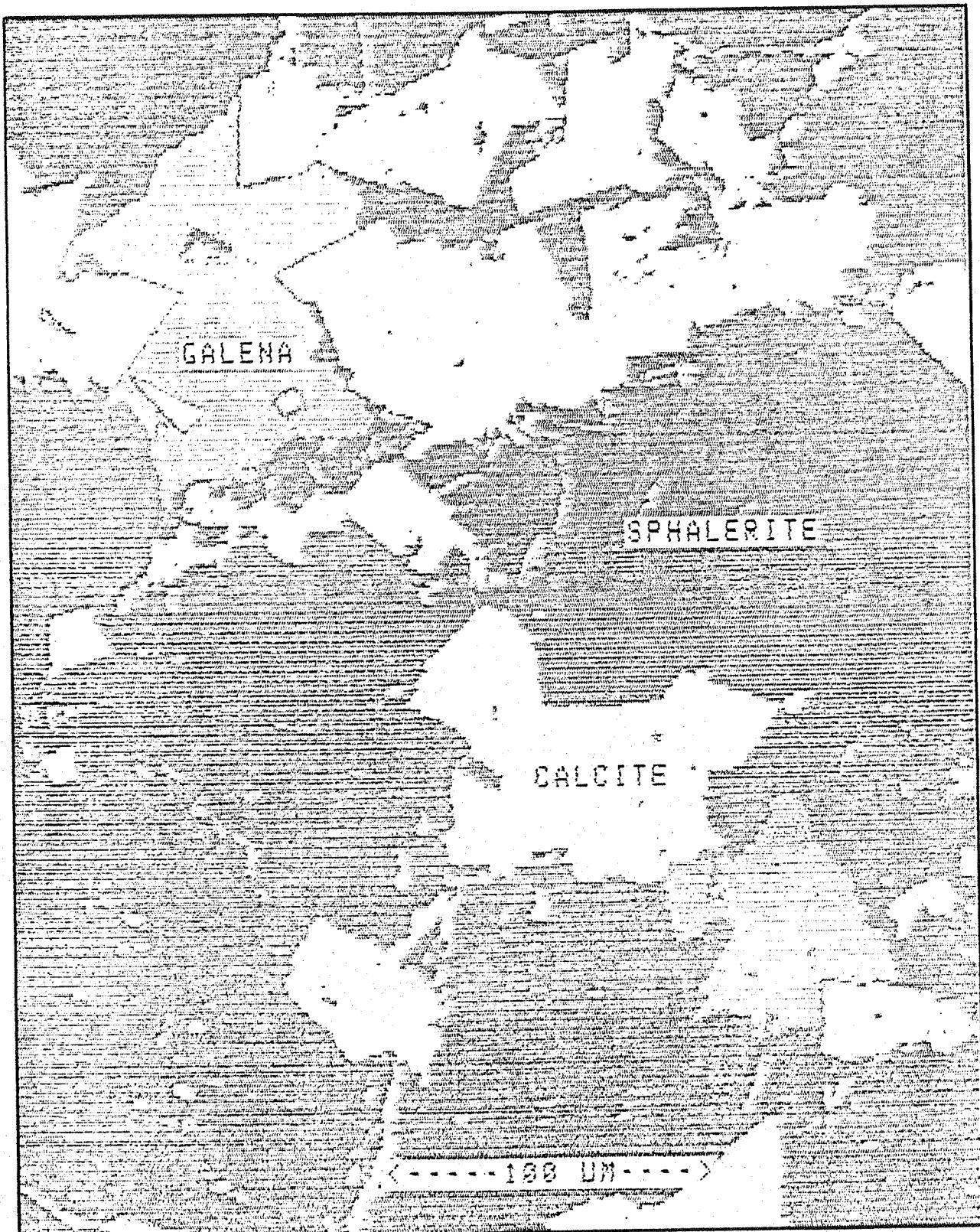


Figure 33

Sample 3006

SPHALERITE

SPECTRUM LABEL

SPECTRUM FILE NAME

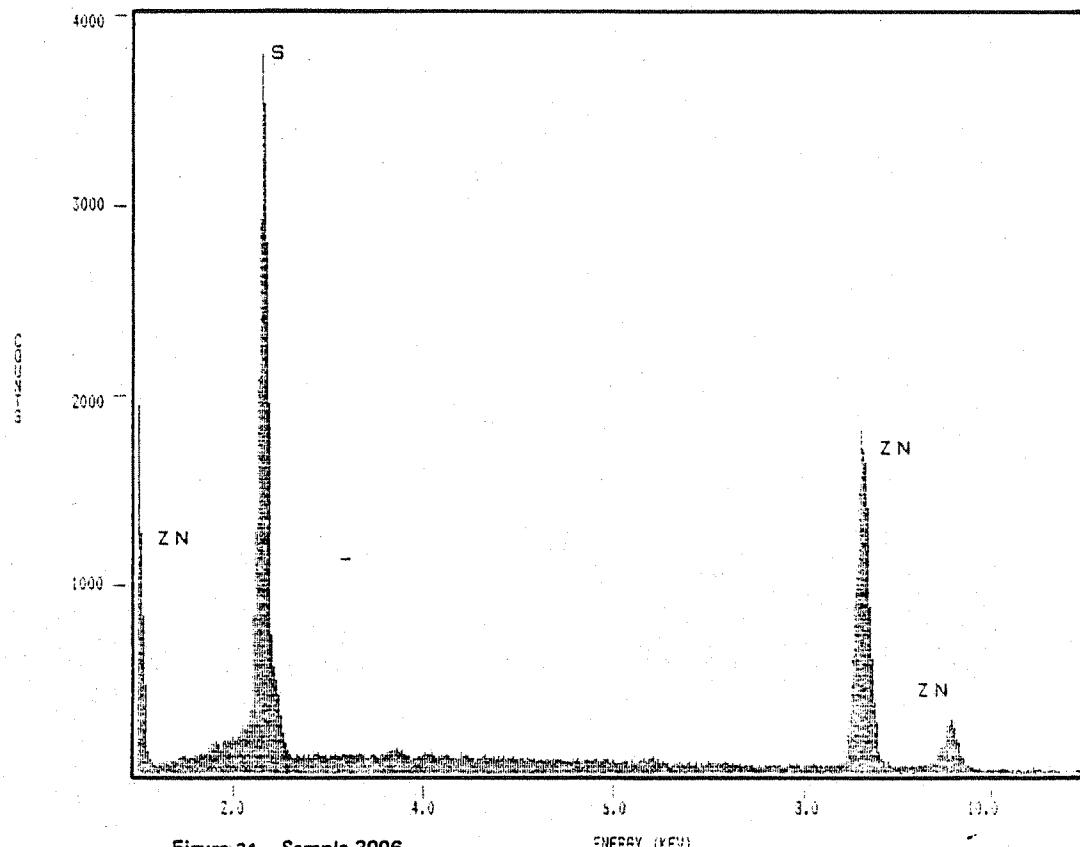


Figure 34 Sample 3006

ENERGY (KEV)

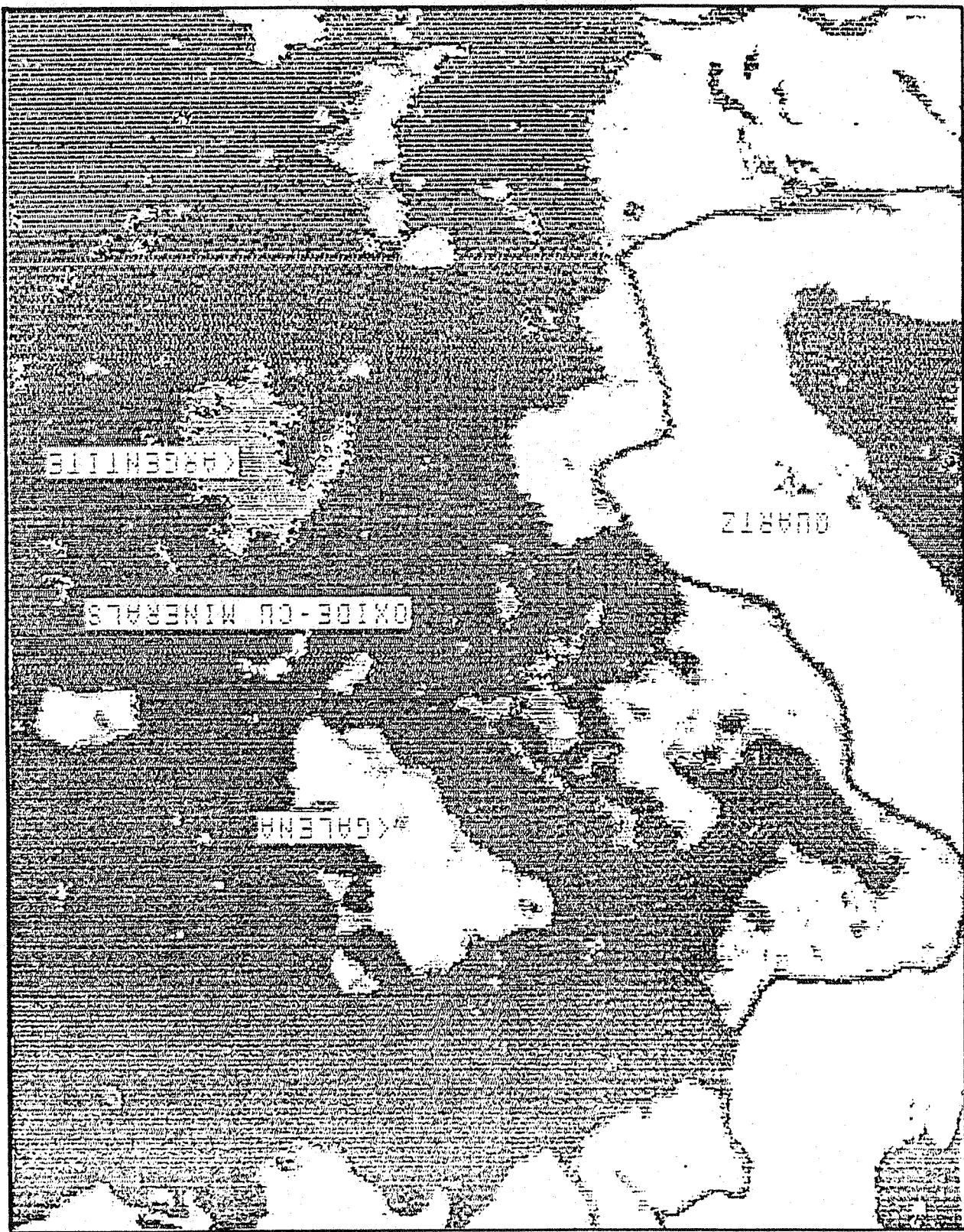
with visible tetrahedrite, other, unidentified, sulfides and minor oxides of copper. The sample assayed 20,000 ppm lead, 2,000 ppm antimony, 700 ppm silver, 500 ppm copper, 300 ppm arsenic, 92 ppm mercury, and .15 ppm gold. Probe work on this sample showed a scattering of argentite and galena to be present in a matrix of copper oxides. Quartz dominated the mineral assemblage (see Figures 35, 36).

The inability to find and identify the mineral or minerals associated with mercury in the vein systems was a major disappointment of the microprobe studies.

Rock sample geochemistry indicates that mineralization in the district varies from the Groom Mine north to the prospects in the Don Dale district. The metal association in the area of the Groom Mine is lead, antimony, arsenic, copper, zinc, silver with anomalous mercury. Zinc concentrations are lower than expected from all the samples taken but are clearly higher in the southern portion of the range. Molybdenum was found to be present in only one sample collected from the Groom Mine. Molybdenum values, however, increase to the north and the greatest concentrations occur in the vicinity of the granitic intrusives on the north end of the range. Barium was detected in anomalous amounts in only three of the rock samples collected from the project area, reinforcing the concept that barium, along with mercury, may be late-stage mineralization related to the Bald Mountain caldera and not related to the lead-silver-antimony ores in the Groom district.

Sample 3015

Figure 35



**ARGENTITE**

SPECTRUM LABEL

3015

SPECTRUM FILE NAME

3015 02

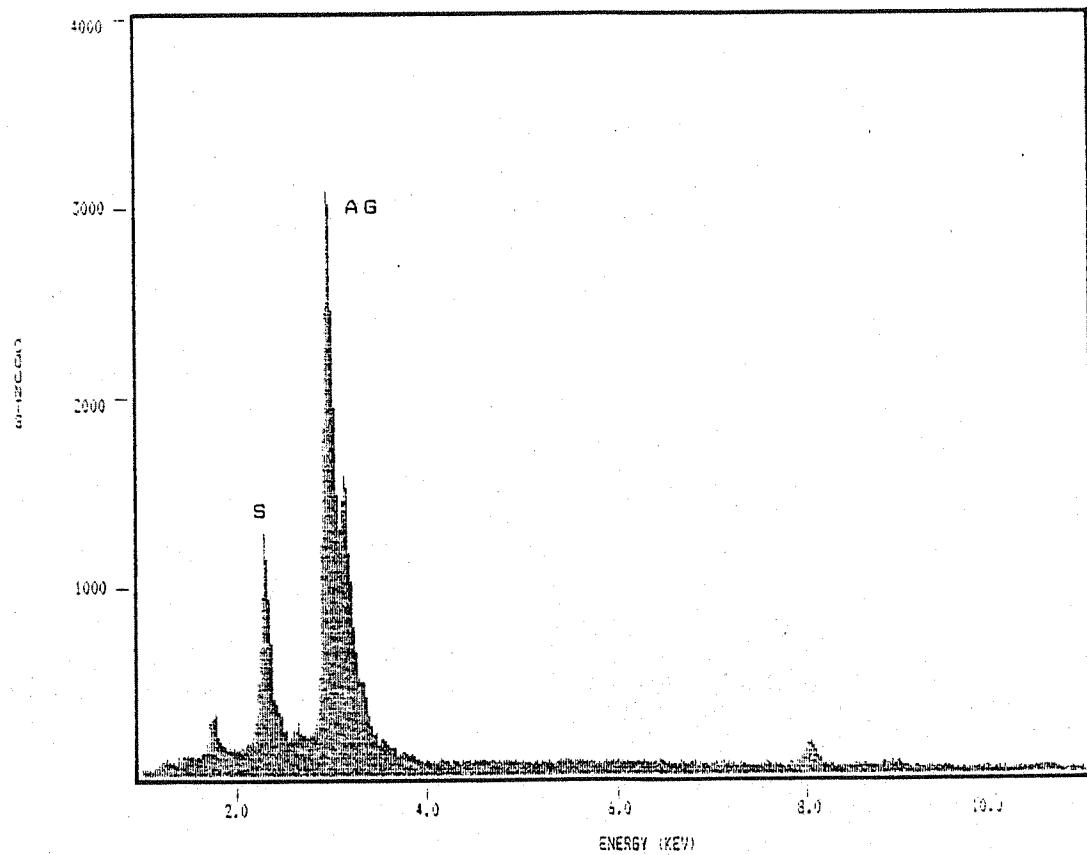


Figure 36 Sample 3015

## STATISTICAL EVALUATION OF GEOCHEMICAL RESULTS

(by Keryl Fleming)

Pearson's product-moment correlation coefficient was calculated for those observations where data for both elements was within detection limits. The correlation coefficient varies from +1, through 0, to -1 in value. These values signify the magnitude of the relationship between the elements and the sign indicates the direction of the relationship. The t-test is used to determine the statistical significance of each coefficient. As the number of data pairs increases, the correlation coefficient will be significant at progressively lower values.

Examination of the coefficients between elements from the stream sediment sample analyses revealed several groups of correlated elements. The correlation matrix in Figure 37 provide a summary of the results for potential indicator elements. Coefficients significant at the 95% and 99% confidence levels are designated in each matrix. Mercury, arsenic, antimony, copper, and lead are moderately to highly correlated. Zinc exhibits a moderate correlation with arsenic, antimony, and lead; nickel is moderately correlated with copper.

The frequency distribution for each element is expected to follow a lognormal curve. Through the use of various statistical methods this distribution can be tested. Computed values for relative skewness and kurtosis indicate that the frequency distributions for each of these elements except zinc and nickel has a strong positive skew and the curves are leptokurtic (peaked), however, they are not lognormal. This may indicate the presence of anomalous values. Examination of the histograms of the distributions revealed that the highest +5% of the values for each

	Hg	As(AA)	Sb(AA)	Cu	Pb	Zn(AA)	Ni
Hg		0.72 ■	0.87 ■	0.56 ■	0.61 ■	0.38 ■	0.27 ■
As	54		0.79 ■	0.63 ■	0.80 ■	0.60 ■	0.16
Sb	38	34		0.74 ■	0.86 ■	0.58 ■	0.31 ■
Cu	112	64	46		0.65 ■	0.37 ■	0.65 ■
Pb	112	64	46	136		0.46 ■	0.27 ■
Zn	112	64	46	136	136		0.31 ■
Ni	112	64	46	136	136	136	

correlation coefficients, stream sediments  
number of pairs

0.79 ■ Correlation coefficient significant at the 99% confidence level  
0.31 ■ Correlation coefficient significant at the 95% confidence level but not at the 99% confidence level  
0.16 Correlation coefficient not significant at the 95% confidence level

Figure 37

element could be considered anomalous. The 95th percentile for each element is: Pb-52 ppm, Cu-18 ppm, Hg-.12 ppm, As-13 ppm, Sb-4 ppm. The frequency distribution for zinc shows only a slight positive skew and is similar in other respects to these elements. The 95th percentile for zinc is 190 ppm. Nickel values are lognormally distributed. The presence of these anomalous values does not imply a spatial relationship.

The percentage values for magnesium and calcium are also significantly correlated. The distribution of each element is bimodal about the mean (the curve of the frequency distribution peaks above and below the mean value). This may reflect the two major rock types in the area. The frequency distributions for these values in the rock samples support this conclusion.

In the panned concentrates, percent values for iron, nickel, lead, and copper are moderately correlated (Figure 38). The antimony, arsenic, and zinc values are predominately below detection limits. The frequency distribution for each of these elements shows a strong positive skew and leptokurtic curve shape, however, they are not lognormal. Examination of the histograms of the distributions suggest the highest 5% of the values for Fe% and nickel and the top 10% of copper and lead values could be considered anomalous.

95th percentile: Fe%-1.5%

Ni -18 ppm

90th percentile: Pb -160 ppm

Cu -29 ppm

The frequency distribution for mercury in the panned concentrate samples suggests a possible bimodal distribution about the mean. A slight positive skew in the distribution may be indicative of background values.

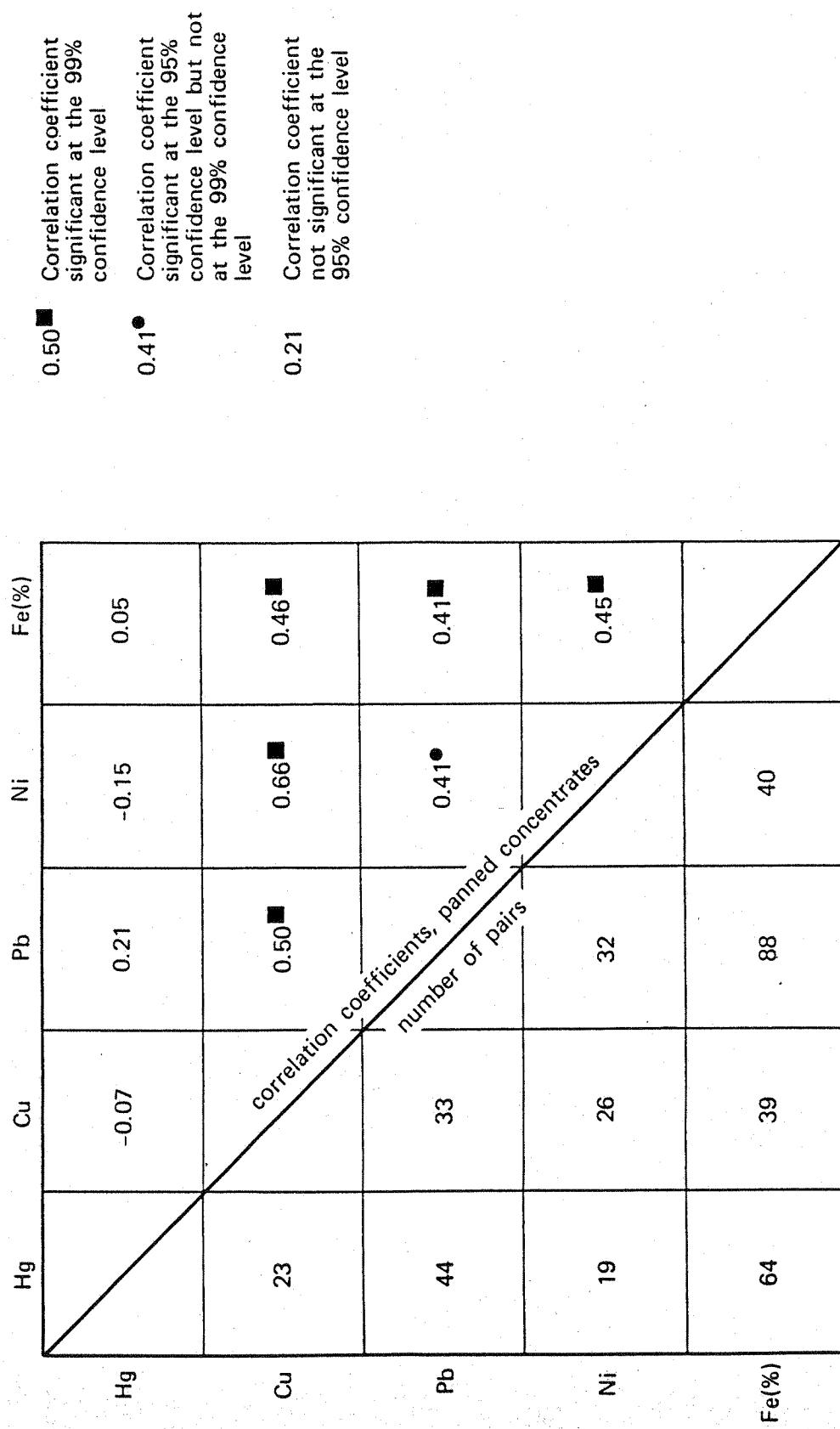


Figure 38

Frequency of values above the mean peak slightly and fall off gradually, with 26% of the samples above the detection limit. This could imply an enrichment of mercury throughout the area.

Barium values in stream sediment samples are lognormally distributed, however, in panned concentrates the frequency distribution exhibits a bimodal pattern about the mean with a slight positive skew. This pattern is similar to the mercury distribution yet the two elements are not significantly correlated. The histogram exhibits a grouping of background data below the mean. The distribution of high values above the mean may signify barite enrichment of the area.

#### MINERAL DEPOSIT TYPES, MINERAL POTENTIAL

Historically, three types of mineral occurrences have been prospected and mined in the Groom Range area. Narrow gold and silver bearing quartz veins were worked in several locations along the west side of the range, the Groom Mine lead-silver-zinc deposits provided the bulk of mineral production from the district, and minor amounts of gold may have been recovered from small placer deposits in canyons north of the Groom Mine. In addition to these deposits, exploration is now underway north of the range, outside of the proposed withdrawal, for bulk-minable gold deposits, perhaps similar to those now being mined at either Round Mountain in Nye County or at Carlin in Eureka County. Of these four past and one potential future deposit types, only two are felt to hold any production possibilities within the Groom Range study area.

The Groom Mine itself may have potential for producing lead, silver, and possibly zinc. Favorable geologic conditions, similar to those known

in the main Groom deposit, exist both north and south of the old mine. It is possible that exploration efforts in these areas could result in the discovery of one or more orebodies of similar size and grade to those mined in the past at Groom. Mining of these orebodies would be by high-cost underground methods and their success would be dependent on stable and fairly high lead, silver, and zinc prices (see appendix A).

Potential also exists for very small-scale exploitation of the silver-gold veins found from the Kahama Mine north on the west side of the range. These deposits are narrow and contain spotty mineralization. Work done at the Kahama has shown that a small tonnage of ore running about 0.2 oz/ton gold may still be present there. Other pockets of ore of equivalent tonnage and grade could possibly be developed in veins to the north. Mining of these deposits would be costly, underground methods and success of the operations would be dependent on stable, fairly high gold and silver prices (see appendix A). The grade of these deposits would be expected to be low, about 0.15 to 0.3 oz/ton gold and only a few ounces of silver per ton, but the sulfide content of the ore is low and it may be possible to successfully heap-leach the material for low recovery costs.

The potential for the remaining two deposit types, gold placers and bulk-minable gold, is felt to be low to non-existent. The area covered by the placer ground is small and thus there is no potential for the development of placer gold reserves. While there may be some undefined potential for bulk-minable gold deposits north of the area in the Don Dale district, the potential for discovery of this type of occurrence within the Groom area is remote. Some gold prospecting has been done in the BW claim area on the east side of the range. Field examination of this area, coupled with poor

geochemical values from samples taken there, gives reason to rate this area very low for discovery potential for bulk-minable gold.

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## **APPENDICES**

**APPENDIX A**

**METAL ECONOMICS**

## APPENDIX A—METAL ECONOMICS

Silver: The major uses of silver are in photographic film, sterlingware, and increasingly in electrical contacts and conductors. It is also widely used for storage of wealth in the form of jewelry, "coins" or bullion. Like gold it is commonly measured in troy ounces, which weigh 31.1 grand grams, twelve of which make one troy pound. The United States produces about one-tenth of world production, while it uses more than one-third of world production. About two-thirds of all silver is produced as a by-product in the mining of other metals, so the supply cannot readily adjust to demand. It is a strategic metal. Demand is expected to increase in the next decades because of growing industrial use. The average price of silver was \$6.10 per ounce for July 1985.

Lead: The largest use for lead is in electrical storage batteries, the second being a gasoline antiknock additive. It has many other uses, however, including radiation shielding, solders, numerous chemical applications, and in construction. About four million metric tons of lead are produced in the world annually. The United States produces about half a million tons per year, and recovers about the same amount from scrap — much of it through the recycling of old batteries. It imports about one-quarter of a million tons. Lead is classified as a strategic mineral. Demand is projected to increase somewhat in the next couple of decades, but environmental concerns will limit the increase. The United States has large ore reserves that are expected to last well beyond the end of this

century at current production rates even without major new discoveries.

The July 1985 price was about 19 cents per pound.

Zinc: The major uses of zinc are in galvanizing, brass and bronze products, castings, rolled zinc and in pigments or other chemicals. About six million metric tons are produced annually, with the United States producing somewhat less than a quarter of a million tons. Domestic production has decreased dramatically over the past years, largely as the result of closing down of most zinc smelters because of environmental problems. Imports into the United States are about one million tons per year, and zinc is listed as a strategic and critical metal. Both world-wide and domestic consumption are expected to increase at a moderate rate over the next twenty years. The July 1985 price of zinc was about 41 cents per pound.

Gold: The major use of gold is for storing wealth. It is no longer used for coinage because of monetary problems, but many gold "coins" are struck each year for sale simply as known quantities of gold that the buyer can keep or dispose of relatively easily. The greatest other use of gold is in jewelry, another form of stored wealth. In recent years industrial applications have become increasingly important, especially as a conductor in electronic instrumentation. In the United States and some other countries gold is measured in troy ounces that weigh 31.3 grams - twelve of which make one troy pound. Annual world production is about 40 million ounces per year, of which the United States produces somewhat more than one million ounces, less than one-fourth of its consumption, while the Republic of South Africa is by far the largest producer at more than 20

million ounces per year. World production is expected to increase through the 1980's. For many years the price was fixed by the United States at \$35 per ounce, but after deregulation the price rose to a high of more than \$800 per ounce and then dropped to the neighborhood of \$400 per ounce. The July 1985 price was \$335.00 per ounce.

**APPENDIX B**

**ROCK SAMPLE DESCRIPTIONS**

**Sample Description**

Sample Number	Location	Description
3000	Quad: Tempiute Mtn. 15' Sec: 36 T: 4S R: 55 1/2E UTM: 4157650 N 0610800 E Andies Mine the MDS Claims Don Dale Mining district	Highly altered iron stained volcanic breccia, possible mercury mineralization.
3001	Quad: Tempiute Mtn. 15' Sec: 4 T: 5S R: 55 1/2 E UTM: 4154630 N 0611720 E Near April Fool Spring in Don Dale Mining District	Highly altered volcanic tuff limonite staining..sample from outcrop near well in drainage.
3002	Quad: Emigrant Valley 30' Sec: 20 T: 6S R: 56E UTM: 4140750 N 0614100 E NW of Rock Spring in Groom Mining District	Gossan-like mineralization in outcrop.. with strong limonite hemeatite alteration hosted in limestone.. possible sulfide mineralization.
3003	Quad: Emigrant Valley 30' Sec: 20 T: 6S R: 56E UTM: 4140700 N 0613350 E NE of Rock Spring in the Groom Mining District	From outcrop of silicified quartz rich micro brecciated sandstone strongly iron-stained.
3004	Quad: Emigrant Valley 30' Sec: 26 T: 6S R: 56E UTM: 4130910 N 0618000 E  Groom Mining District	Quartzite breccia in outcrop can be traced for over a one-mile distance along the strike.
3005	Quad: Emigrant Valley 30' Sec: 21 T: 7S R: 55 1/2E UTM: 4130270 N 0610450 E  Groom Mining District	Exposed shale-sandstone member in limestone approximately 30 ft. thick and strongly altered and iron-stained.
3006	Quad: Emigrant Valley 30' Sec: 17 T: 7S R: 55 1/2 E UTM: 4132800 N 0608760 E Black Metal Mine  Groom Mining District	From dumps and ore-bin argentiferous galena in shaley-limestone hosted material..with fault gouge...galena is fine grained and steel gray.
3007	Quad: Emigrant Valley 30' Sec: 5 T: 7S R: 55 1/2 E UTM: 414600 N 0608910 E Copper prospect on northend  Groom Mine District	Selected from dump and outcrop quartz vein in shale.. azurite malachite, chalcopyrite, bornite and other sulfides.
3008	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55 1/2E UTM: 4133610 N 0608830 E Near old 1864 shaft  Groom Mining District	Small open pit north of the old shaft.. Oxides of copper and lead with sulfides of argentiferous galena.

**Sample Description**

Sample Number	Location	Description
3009	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55 1/2E UTM: 4133740 N 0608920 E Old Groom Mine area Groom District	Vein in replaced limestone in outcrop with strong limonite.. lead-silver.. about 20 yards north of the 1864 shaft.
3010	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138200 N 0606190 E Hanus Property.. main workings Groom Mine District	Two foot partly brecciated white quartz vein in quartzite..vuggy cockade structures minor Fe-oxide except at the margin of vein. Possible gold.
3011	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138200 N 0606190 E Hanus Property Main workings Groom Mining District	Channel cut on vein from southern incline..vein is 12-14 inches highly oxidized and iron-stained.
3012	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138200 N 0606190 E Hanus Property main workings Groom Mining District	Chipped from white quartz vein a cross-cut to main vein.. highly oxidized and iron stained in quartzite.
3013	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138920 N 0606350 E Part of older Hanus Property Groom Mining District	Chipped from vein in open trench about 1/4 mile north of main camp but on strike with main vein..manganese, Fe-oxides possible Au.
3014	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140270 N 0606430 E 3/4 mile SW of Cattle Spr. Groom Mining District	270 foot adit..sample from dump and 65 foot cross-cut..has pyrite manganese, tetrahedrite in a partly brecciated quartz vein..vein hosted in shaley portion quartzite.
3015	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140270 N 0606430 E Maybe the Highgrade Claims(?) Groom Mining District	Chipped from exposed vein in a prospect.. vein is iron-stained with pyrite, tetrahedrite, and possible gold. Vein is cross-cut by adit below ridge.
3016	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140290 N 0606680 E Highgrade Claims(?) Groom Mining District	Selected from dump near incline that follows a 2 foot quartz vein in quartzite..visable galena, tetrahedrite, minor copper, strong manganese..some brecciation.
3017	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140290 N 0606680 E Highgrade Claims(?) Groom Mining District	Manganese rich quartz vein...stock piled near former living site..similar to ore on dump with visble galena, tetrahedrite...

**Sample Description**

Sample Number	Location	Description
3018	Quad: Emigrant Valley 30' Sec: 18 T: 6S R: 55 1/2E UTM: 4142060 N 0606995 E  Groom Mining District	Chipped from exposed vein along a ridge south of the basalt plug NW of Cattle Spring....quartz vein near mine monument is iron stained and vuggy.
3019	Quad: Penoyer Valley 30' Sec: 10 T: 6S R: 56E UTM: 4144220 N 0617400 E Near Alum Spring  Groom Mining District	Chipped from outcrop in area of very strong hydrothermal alteration.. completely altered volcanic possible mercury mineralization.
3020	Quad: Emigrant Valley 30' Sec: 34 T: 4S R: 55 1/2E UTM: 4156450 N 0608550 E Blue Bird Claims #2  Don Dale Mining District	Selected from dump near SW trend-adit.. iron-stained vein material copper, lead-silver, manganese.
3021	Quad: Penoyer Valley 30' Sec: 6 T: 5S R: 55 1/2E UTM: 4155850 N 0608550 E North of radar station  Don Dale District	Outcrop of vein partly brecciated strongly iron-stained along fault in quartzite.
3022	Quad: Emigrant Valley 30' Sec: 35 T: 6S R: 56E UTM: 4138450 N 0618010 E Fault zone  Groom Mining District	Chipped and float material of, in quartzite, jaspery silicified iron and manganese staining.
3023	Quad: Emigrant Valley 30' Sec: 10 T: 6S R: 56E UTM: 4144050 N 0617600 E Near Alum Spring  Groom Mining District	Chip---from various outcrops in zone of strong hydrothermal alteration. Possible mercury-gold.
3024	Quad: Emigrant Valley 30' Sec: 2 T: 6S R: 56E UTM: 4146300 N 0618900 E Prominent outcrop  Groom Mining District	Outcrop of kaolinized, argillized rhyolite, possibly tuff, breccia Fe-oxides along fractures, some silica forms bold prominent outcrop.
3025	Quad: Emigrant Valley 30' Sec: 2 T: 6S R: 56E UTM: 4146300 N 0618900 E  Groom Mining District	Same outcrop as 3024 but in a different area..in a zone of intense brecciation.
3026	Quad: Emigrant Valley 30' Sec: 21 T: 5S R: 55 1/2E UTM: 4150400 N 0611400 E South of BW Claims 1 & 2  Groom Mining District	Outcrop of Jaspery-gossan, silicified, lense along bedding in limestone, sample is mostly a massive hematite.

**Sample Description**

Sample Number	Location	Description
3027	Quad: Emigrant Valley 30' Sec: 21 T: 5S R: 55 1/2E UTM: 4150250 N 0611600 E BW Claim #3 N of Bald Mtn. Groom Mining District	Small prospect-pit on a jaspery limonite stained gossan like outcrop in limestone..some breccia composed of jaspery limestone.
3028	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140300 N 0606800 E Unworked vein in outcrop Groom Mining District	Chipped from 6-12" unworked quartz outcrop above Cattle Spring..to SW. Vein is manganese rich, vuggy with galena..tetrahedrite and copper.
3029	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140200 N 0606700 E Small adit near the ridge Groom Mining District	Quartz vein material in a prospect in a shear zone along a ridge.. pyrite, MnO, galena, tetrahedrite.
3030	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4140100 N 0606600 E Remnants of a tram Groom Mining District	Chipped from vein and gouge zone in prospect-pit at the head of a areal tram. Some brecciation strong hematite staining with unidentified sulfides.
3031	Quad: Emigrant Valley 30' Sec: 12 T: 6S R: 55E UTM: 4143000 N 0606000 E Jumbo Claims..unmarked shaft Groom Mining District	Small unmarked shaft in shear zone within the quartzite..pyrite rich, partly brecciated quartz vein. Probable silver-gold association. Flint hard vein system.
3032	Quad: Emigrant Valley 30' Sec: 12 T: 6S R: 55E UTM: 4143000 N 0600600 E Jumbo Claims unmarked workings Groom Mining District	From dump and adjacent prospect pit to SW Magnetite, pyrite, in flint hard highly silicified breccia.
3033	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138200 N 0606190 E Hanus main workings Groom Mining District	Selected from dumps at the main Hanus workings vuggy and brecciated quartz veins in quartzite..FeOx, some cockade structures.
3034	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138800 N 0606350 E Small prospect Groom Mining District	Vein in small prospect south of upper trenches on Hanus property. Vuggy, iron-stained quartz with minor brecciation and unidentified sulfides.
3035	Quad: Emigrant Valley 30' Sec: 13 T: 6S R: 55E UTM: 4142200 N 0605700 E Gold Butte Claims Groom Mining District	Chipped from vein in location-pit 12-18' vein in pit with hematite in a shale host.

**Sample Description**

Sample Number	Location	Description
3036	Quad: Emigrant Valley 30' Sec: 13 T: 6S R: 55E UTM: 4142400 N 0606100 E Part of the Gold Butte Claims Groom Mining District	Outcrop on a knob NE of the main workings. Mostly a quartz breccia filling a fault with magnetite.
3037	Quad: Emigrant Valley 30' Sec: 13 T: 6S R: 55E UTM: 4142010 N 0606350 E Gold Butte Claims Groom Mining District	Massive magnetite outcrop and prospect pit. Botroydal hematite, in a fault breccia cutting quartz-quartzite. Fe and Mn oxides.
3038	Quad: Emigrant Valley 30' 1 T: 4S R: 55E UTM: 4153900 N 0606050 E Outcropping vein Groom Mining District	Outcrop of vein 2-3 feet thick several hundred feet long. Strong Fe-oxides, silication and brecciation.
3039	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55½E UTM: 4133150 N 0609100 E Main Mining Camp (OLD) Groom Mining District	Selected from dump in main camp of Groom Mine. Galena, sphalerite, pyrite.
3040	Quad: Emigrant Valley 30' Sec: 7 T: 7S R: 55½E UTM: 4133350 N 0609000 E Stock-pile above mill-site Groom Mining District	Stockpiled ore near main adit above the mile-site. Argentiferous galena, mostly as replacement ore in limestone with lesser ore hosted in shale.
3041	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55½E UTM: 4133450 N 0609000 E Outcrop WNW of Tripod shaft Groom Mining District	Chipped from outcrop.. orange..brown limonite, jarosite fraction coatings with calcite..hosted in a limonite.
3042	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55½E UTM: 4133350 N 0609200 E Tripod Shaft Groom Mining District	Selected from dump..oxidized replacement ore in limestone. Galena, cerussite, and other sulfides.
3043	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55½E UTM: 4133600 N 0609250 E Vein in prospect Groom Mining District	Chipped from vein in outcrop that was prospected just south of old 1864 shaft up to 2 ft. thick with visible lead-silver mineralization.
3044	Quad: Emigrant Valley 30' Sec: 8 T: 7S R: 55½E UTM: 4133800 N 0609250 E The 1864 Shaft Groom Mining District	Highgrade sample from dump of vein material from the 1864 shaft including portions of the upper-pit. Lead-silver, copper oxides and sulfides.

**Sample Description**

Sample Number	Location	Description
3045	Quad: Emigrant Valley 30' Sec: 5 T: 7S R: 55½E UTM: 4134250 N 0609175 E Outcrop.. Groom Mining District	Chipped from outcrop of brecciated quartzite north of the old mine.
3046	Quad: Emigrant Valley 30' Sec: 5 T: 7S R: 55½E UTM: 4134800 N 0609175 E Groom Mining District	Chipped from outcrop north of old mine..quartz vein 10 ft. wide iron manganese staining.. Some brecciation. Limonite.
3047	Quad: Emigrant Valley 30' Sec: 7 T: 7S R: 55½E UTM: 4133800 N 0608200 E Boondock Mine Monument location Groom Mining District	Chipped from outcrop of what is described as the Boondock mine location monument. Small narrow vein of white quartz with minor brecciation and some sulfides.
3048	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4155150 N 0608000 E Weird object above shaft Don Dale Mining District	Chipped from vein and selected from dump. Vein consist of quartz, breccia and may be 5-6 feet thick, minor sulfides visable.
3049	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4155100 N 0608950 E Minor prospect near blue object Don Dale Mining District	Vuggy, iron-stain quartz vein intersection in prospect with pyrite, and silver sulfides(?)
3050	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4154700 N 0607650 E Two small prospect-pits Don Dale Mining District	Manganese and iron-stained quartz vein in small prospect-pit; pyrite and unidentified sulfide.
3051	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4154550 N 0607650 E Small shaft and drift Don Dale Mining District	Shallow incline on large gosson-like outcrop, partly brecciated flooded with quartz very hard gray-pyrite and sulfides.
3052	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4154600 N 0607750 E Don Dale Mining District	Chipped from outcrop near monument east of shaft. Limonite stained quartz breccia in vein.
3053	Quad: Emigrant Valley 30' Sec: 6 T: 5S R: 55½E UTM: 4155000 N 0607750 E Don Dale Mining District	Chipped from vein that extends parallel to the axis of the ridge for several hundred feet with Fe-oxides and sulfides.

**Sample Description**

Sample Number	Location	Description
3054	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4139575 N 0606750 E  Groom Mining District	Small prospect on 2-3 ft. hanging wall vein. Fe-oxides, galena, manganese and other sulfides. Country rock is shale interbedded with quartzite.
3055	Quad: Emigrant Valley 30' Sec: 24 T: 6S R: 55E UTM: 4139250 N 0606500 E  Chicago--Illinois Claims Groom Mining District	Manganese stained white quartz vein material selected from dump and vein is in reverse fault..galena in matrix. Somewhat vuggy and brecciated near fault..drag.
3056	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4139100 N 0606500 E  Chicago--Illinois Claims Groom Mining District	Wheel barrow adit another drag folded reverse fault zone with quartz vein. Fe Mn oxides with Galena.
3057	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4139000 N 0606475 E  Chicago--Illinois Claims Groom Mining District	Three ft.wide galena pyrite, quartz vein in prospect on northside of ridge mined in 1933.
3058	Quad: Emigrant Valley 30' Sec: 25 T: 6S R: 55E UTM: 4138300 N 0606400 E  Old Incline Groom Mining District	Selected from dump near incline on north facing hill..some pyrite, galena, country rock is quartzite.
3059	Quad: Penoyer Valley 30' Sec: 34 T: 4S R: 55E UTM: 4156100 N 0607850 E  Don Dale Mining District	From outcrops along exposed vein near crest of ridge..shear zone 20 feet wide with manganese stained outcrops... partly brecciated.
3060	Quad: Penoyer Valley 30' Sec: 34 T: 4S R: 55E UTM: 4157550 N 0607855 E  Three old shafts and prospects Don Dale Mining District	Selected from three dumps associated with old shafts..galena, copper, tetrahedrite..vein is explored for several hundred feet possible mercury and arsenides.
	Quad: Sec: _____ T: _____ R: _____ UTM: _____ N _____ E	
	Quad: Sec: _____ T: _____ R: _____ UTM: _____ N _____ E	

**APPENDIX C**

**ROCK SAMPLE GEOCHEMICAL ANALYSES**

**ROCK SAMPLE ASSAYS**

# Semi-Quantitative Spectrographic Analysis

Sample Number

ement

	3000	3001	3002	3003	3004	3005	3006	3007	3008
Fe % (.05)	5	.7	15	.7	.3	.5	2	3	3
Mg % (.02)	L	.05	.1	.02	L	1.5	1	.07	.3
Ca % (.05)	.1	.1	.3	.3	.05	G(20)	5	1	1.5
Ti % (.002)	.03	.1	.07	.05	.005	.01	.015	.15	.05
Mn (10)	50	50	70	200	15	200	200	500	500
Ag (.5)	N	N	1.5	N	N	N	300	2	200
As (200)	N	N	1500	N	N	N	300	1000	700
Au (10)	N	N	N	N	N	N	N	N	N
B (10)	10	50	70	15	N	N	15	100	150
Ba (20)	700	1500	70	100	20	L	700	G(5000)	1000
Be (1)	1.5	1	N	N	N	N	L	1	L
Bi (10)	N	N	N	N	N	N	N	N	N
Cd (20)	N	N	N	N	N	N	G(500)	N	N
Co (5)	N	N	N	N	L	N	L	5	100
Cu (10)	N	N	15	L	N	N	N	15	N
Cu (5)	7	5	10	10	L	5	2000	15000	G(20000)
La (20)	30	50	N	30	20	N	20	30	20
Mo (5)	5	N	20	N	N	N	N	N	30
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	N	N	15	5	5	7	L	10	200
Pb (10)	20	20	L	L	N	L	G(20000)	500	G(20000)
Sb (100)	N	N	100	N	N	N	5000	100	2000
Sc (5)	L	5	L	N	N	N	N	7	5
Sn (10)	N	N	N	N	N	N	N	N	N
Sr (100)	100	100	N	N	N	150	N	2000	700
V (10)	L	L	15	15	20	10	L	20	L
W (50)	N	N	N	N	N	N	N	N	N
Y (10)	15	15	L	20	N	10	N	20	15
Zn (200)	N	N	200	N	N	N	G(10000)	500	L
Al (10)	50	100	50	70	15	15	N	150	50
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado

Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

# Semi-Quantitative Spectrographic Analysis

## Sample Number

ement

	3009	3010	3011	3012	3013	3014	3015	3016	3017
% (.05)	5	.3	2	1	2	.7	1	.3	2
Mg % (.02)	1	L	.05	.05	.15	.03	.05	L	L
Ca % (.05)	10	L	.07	L	L	L	.05	N	L
Ti % (.002)	.05	.015	.07	.05	.2	.05	.02	.01	.02
Mn (10)	5000	15	15	10	15	5000	15	20	30
Ag (.5)	50	N	N	N	1.5	20	700	70	150
As (200)	200	N	N	N	L	200	300	500	700
Au (10)	N	N	N	N	N	N	N	N	N
B (10)	50	20	30	30	70	50	50	L	10
Ba (20)	100	100	300	500	300	150	500	200	300
Be (1)	N	N	L	L	1	2	L	N	L
Bi (10)	N	N	N	N	N	L	N	15	30
Cd (20)	N	N	N	N	N	N	30	L	20
Co (5)	50	N	N	N	5	7	N	N	N
Cu (10)	N	N	10	L	30	10	15	N	N
La (5)	1000	7	7	N	30	300	500	3000	700
La (20)	L	L	30	30	30	30	20	20	30
Mo (5)	10	N	N	N	L	10	10	10	50
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	50	N	5	L	10	L	N	N	7
Pb (10)	G(20000)	70	15	15	100	10000	20000	15000	G(20000)
Sb (100)	100	L	100	N	L	300	2000	1500	3000
Sc (5)	5	N	L	L	5	N	N	N	N
Sn (10)	N	N	N	N	N	N	N	N	N
Sr (100)	200	N	L	100	150	N	N	N	N
V (10)	L	L	30	20	50	50	70	L	L
W (50)	N	N	N	N	N	N	N	N	N
Y (10)	20	N	10	L	30	L	N	N	N
Zn (200)	N	N	N	N	N	N	L	N	N
(10)	20	50	150	100	200	70	100	20	70
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

# Semi-Quantitative Spectrographic Analysis

Sample Number

Element

	3018	3019	3020	3021	3022	3023	3024	3025	3026
Al % (.05)	.2	3	5	1	3	3	3	5	10
Mg % (.02)	.02	.03	.03	.02	.05	.03	.1	.07	.03
Ca % (.05)	L	.1	N	L	1.5	.1	.2	.2	1
Ti % (.002)	.015	.5	.05	.05	.05	.5	.5	.5	.02
Mn (10)	20	70	10	50	300	100	70	50	5000
Ag (.5)	N	N	7	1	N	N	N	N	L
As (200)	N	N	N	N	700	N	N	N	L
Au (10)	N	N	N	N	N	N	N	N	N
B (10)	N	15	15	L	15	15	30	50	30
Ba (20)	50	1500	300	100	200	1000	1500	1500	70
Be (1)	N	L	L	L	1	L	1	1	3
Bi (10)	N	N	N	N	N	N	N	N	N
Cd (20)	N	N	N	N	N	N	N	N	N
Co (5)	N	7	N	N	L	5	L	L	10
Cu (10)	L	20	10	L	10	30	20	20	L
Cu (5)	L	20	2000	15	7	15	15	20	7
La (20)	30	30	20	20	20	50	50	50	L
Mo (5)	N	L	N	L	15	L	N	N	7
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	N	7	N	L	L	5	L	L	10
Pb (10)	50	50	3000	20	10	30	30	30	10
Sb (100)	N	N	150	N	L	N	N	N	L
Sc (5)	N	7	N	N	5	5	10	10	5
Sn (10)	N	N	N	N	N	N	N	N	N
Sr (100)	N	1000	N	N	150	1000	500	500	N
V (10)	L	100	10	10	70	70	70	70	100
W (50)	N	N	N	N	N	N	N	N	N
Y (10)	N	10	L	N	10	L	10	10	15
Zn (200)	N	N	300	N	N	N	N	N	700
(10)	30	150	150	50	70	100	100	100	20
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

# Semi-Quantitative Spectrographic Analysis

Sample Number

ment

	3027	3028	3029	3030	3031	3032	3033	3034	3035
Al % (.05)	15	.5	.5	1.5	3	5	.5	.7	.3
Mg % (.02)	.03	.02	.02	.03	.03	.03	.03	.05	.02
Ca % (.05)	1	L	L	N	N	L	N	N	N
Ti % (.002)	.015	.05	.03	.05	.07	.07	.05	.07	.03
Mn (10)	200	500	500	700	2000	300	L	15	10
Ag (.5)	N	100	70	70	.5	2	N	7	N
As (200)	300	L	N	200	L	500	N	200	N
Au (10)	N	N	N	L	N	N	N	N	N
B (10)	30	20	15	20	70	50	30	50	L
Ba (20)	150	100	200	100	200	200	150	200	70
Be (1)	1	N	L	1	1	L	N	L	N
Bi (10)	N	N	N	N	N	N	N	10	N
Cd (20)	N	N	N	N	N	N	N	N	N
Co (5)	L	5	N	L	7	L	N	N	N
Cu (10)	20	L	L	L	10	10	N	L	N
Cu (5)	20	100	200	500	10	100	5	150	N
La (20)	20	30	30	20	30	30	50	50	30
Mo (5)	N	10	L	7	10	15	N	N	N
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	7	N	L	5	20	7	L	L	N
Pb (10)	10	2000	3000	1000	50	500	20	300	L
Sb (100)	100	1000	500	700	L	300	100	700	N
Sc (5)	N	N	N	L	L	L	N	L	N
Sn (10)	N	N	N	N	N	N	N	N	N
Sr (100)	300	N	N	N	N	L	N	N	N
V (10)	70	10	30	20	10	10	20	20	10
W (50)	N	N	N	N	N	N	N	N	N
Y (10)	L	N	L	L	15	L	10	15	N
Zn (200)	L	N	N	N	200	N	N	N	N
(10)	15	70	100	50	200	50	70	300	50
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

# Semi-Quantitative Spectrographic Analysis

Sample Number

Element

	3036	3037	3038	3039	3040	3041	3042	3043	3044
% (.05)	7	G(20)	10	10	1	5	2	15	3
Mg % (.02)	.02	.03	.02	5	1.5	2	1	1	.1
Ca % (.05)	.05	.05	.15	7	3	G(20)	2	2	1
Ti % (.002)	.02	.05	.1	.015	.015	.015	.05	.02	.03
Mn (10)	100	70	5000	1000	700	2000	300	300	700
Ag (.5)	N	N	N	50	500	.7	100	100	200
As (200)	N	N	N	500	300	N	N	2000	700
Au (10)	N	N	N	N	N	N	N	N	N
B (10)	10	20	15	N	10	N	70	30	100
Ba (20)	50	200	200	30	20	200	300	70	200
Be (1)	5	2	1	N	N	N	1	N	L
Bi (10)	N	N	N	N	N	N	N	N	N
Cd (20)	N	N	N	N	L	N	500	N	N
Co (5)	N	5	L	100	7	5	L	20	150
Cu (10)	N	30	L	L	N	L	10	10	N
Cu (5)	N	20	L	2000	3000	15	700	1000	G(20000)
La (20)	30	30	30	N	20	L	30	N	L
Mo (5)	N	N	30	N	N	N	N	5	50
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	5	20	L	50	10	15	20	30	150
Pb (10)	L	L	10	20000	G(20000)	200	G(20000)	G(20000)	G(20000)
Sb (100)	N	N	N	2000	5000	N	300	1000	2000
Sc (5)	N	L	5	L	L	N	5	L	5
Sn (10)	N	N	N	N	N	N	N	N	N
Sr (100)	100	N	L	L	100	200	150	200	200
V (10)	10	50	30	L	N	N	10	L	N
W (50)	N	N	L	N	N	N	N	N	N
Y (10)	L	15	15	15	10	15	L	L	20
Zn (200)	N	L	L	700	1500	L	G(10000)	2000	L
(10)	70	200	100	10	30	L	15	L	70
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

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# Semi-Quantitative Spectrographic Analysis

Sample Number

Element

	3045	3046	3047	3048	3049	3050	3051	3052	3053
% (.05)	3	1.5	1	5	1	3	1	1.5	.7
Mg % (.02)	.05	.02	L	.03	.05	L	N	L	.02
Ca % (.05)	.3	.15	.05	.05	N	L	N	L	N
Ti % (.002)	.2	.07	.02	.07	.07	.5	.07	.02	.05
Mn (10)	500	500	30	300	300	20	10	20	150
Ag (.5)	L	N	N	1.5	2	150	100	1.5	1.5
As (200)	N	N	L	200	L	300	500	500	L
Au (10)	N	N	N	N	N	N	L	N	N
B (10)	70	30	15	20	15	10	L	L	15
Ba (20)	500	3000	1000	100	70	300	5000	1500	150
Be (1)	1	1	L	1.5	L	L	N	L	1
Bi (10)	N	N	N	N	N	15	10	N	N
Cd (20)	N	N	N	N	N	N	N	N	N
Co (5)	7	L	7	5	7	N	N	N	N
Cu (10)	20	L	10	15	20	20	L	L	N
Cu (5)	200	50	7	200	20	500	200	5	10
La (20)	50	20	L	L	L	50	20	L	L
Mo (5)	N	N	N	10	N	150	200	N	N
Nb (20)	N	N	N	N	N	N	N	N	N
Ni (5)	10	10	7	20	7	5	L	L	5
Pb (10)	200	30	15	200	150	2000	15000	20	70
Sb (100)	N	N	N	N	N	2000	300	N	N
Sc (5)	10	5	N	L	L	5	N	N	N
Sn (10)	N	N	N	N	N	20	L	N	N
Sr (100)	100	L	150	N	N	300	200	L	N
V (10)	30	10	L	L	10	L	N	10	L
W (50)	N	N	N	N	N	N	N	N	N
Y (10)	50	L	L	L	L	15	L	N	L
Zn (200)	N	N	N	500	N	N	N	N	N
(10)	200	50	70	100	150	1000	150	50	70
Th (100)	N	N	N	N	N	N	N	N	N

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

# Semi-Quantitative Spectrographic Analysis

## Sample Number

lement

	3054	3055	3056	3057	3058	3059	3060		
% (.05)	.3	.3	2	.5	.7	2	1.5		
Mg % (.02)	L	.02	L	L	L	.02	.02		
Ca % (.05)	L	L	L	L	N	.05	.05		
Ti % (.002)	.02	.05	.02	.07	.02	.05	.03		
Mn (10)	200	300	30	10	20	3000	1000		
Ag (.5)	20	10	15	3	1	1	200		
As (200)	200	N	200	L	N	L	.200		
Au (10)	N	N	N	N	N	N	N		
B (10)	15	20	15	70	20	15	L		
Ba (20)	100	200	300	150	2000	700	50		
Be (1)	L	L	2	1	L	1.5	L		
Bi (10)	N	20	50	N	N	N	15		
Cd (20)	N	N	N	N	N	N	L		
Co (5)	5	5	N	N	L	5	7		
Cu (10)	10	10	L	15	L	10	L		
Cu (5)	300	200	300	700	20	10	3000		
La (20)	20	L	20	20	20	L	L		
Mo (5)	10	N	5	N	N	5	5		
Nb (20)	N	N	N	N	N	N	N		
Ni (5)	15	5	10	7	5	15	5		
Pb (10)	700	7000	3000	1500	70	50	1000		
Sb (100)	300	L	500	300	N	N	700		
Sc (5)	N	N	L	L	N	5	N		
Sn (10)	N	N	N	N	N	N	30		
Sr (100)	N	N	N	500	200	N	N		
V (10)	L	10	10	10	10	L	L		
W (50)	N	N	N	N	N	N	N		
Y (10)	N	L	10	10	L	10	L		
Zn (200)	200	N	N	N	N	200	5000		
(10)	70	70	70	150	50	70	70		
Th (100)	N	N	N	N	N	N	N		

Analysis by Branch Exploration Research, U.S. Geol. Survey, Denver, Colorado  
Fe, Mg, Ti reported in %, all other elements reported in ppm.

Lower limits of determination are in parentheses.

G = greater than value shown, N = not detected at limit of detection, < detected, but below value shown.

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada

[N, not detected; &lt;, detected but below the limit of determination shown; &gt;, determined to be greater than the value shown.]

Sample	X coor- dinate	Y coor- dinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
400C	61,682	413,200	.70	.70	3.0	2.00	700	N	V	N	<20	700
401C	61,752	413,372	1.50	2.00	5.0	2.00	700	N	V	N	30	500
402C	61,478	414,020	3.00	.50	5.0	2.00	700	2.0	V	N	50	2,000
403C	61,564	414,025	1.00	.30	2.0	>2.00	500	N	V	N	20	150
404C	61,673	414,042	.70	3.00	10.0	.50	200	N	N	N	N	500
405C	61,815	414,045	.70	3.00	10.0	.50	200	N	V	N	<20	500
406C	61,775	413,988	.70	.50	3.0	2.00	500	N	V	N	20	500
407C	61,780	413,925	.70	.70	3.0	.20	150	N	V	N	<20	700
408C	61,840	413,825	.70	.50	5.0	.15	150	N	N	H	N	1,000
409C	61,830	413,784	1.50	3.00	10.0	.50	300	N	N	N	<20	500
410C	61,810	413,600	.70	2.00	5.0	.20	200	N	V	N	70	1,000
411C	61,805	413,540	1.00	2.00	7.0	1.50	500	N	V	N	<20	500
412C	61,805	413,505	1.00	1.50	3.0	.15	200	N	V	N	N	1,000
413C	60,988	412,955	1.50	1.50	3.0	>2.00	700	N	V	N	20	300
414C	61,094	412,990	5.00	1.50	5.0	>2.00	700	N	N	N	<20	500
415C	61,105	412,983	2.00	1.00	3.0	>2.00	700	N	V	N	20	1,500
416C	61,145	412,980	1.50	1.00	3.0	>2.00	500	N	V	N	20	200
417C	61,235	413,000	.50	1.00	3.0	2.00	500	N	V	N	20	700
418C	61,277	413,009	.70	.70	3.0	>2.00	700	N	V	N	<20	500
419C	61,350	413,033	.30	.70	2.0	2.00	500	N	V	H	20	300
420C	61,405	413,042	.50	1.00	3.0	>2.00	500	N	V	N	<20	1,000
421C	61,492	413,092	1.00	.50	2.0	>2.00	700	N	N	N	30	500
422C	61,538	413,140	.50	.70	1.5	1.50	500	N	V	H	200	200
423C	61,551	413,150	.70	.50	2.0	>2.00	700	N	V	H	30	300
424C	60,926	413,151	1.00	.70	5.0	1.50	700	N	V	H	20	5,000
425C	60,796	413,199	.50	.20	2.0	>2.00	300	3.0	V	N	50	10,000
426C	60,760	413,205	.50	.10	1.5	>2.00	300	<1.0	V	N	70	10,000
427C	60,808	413,181	.70	.30	3.0	1.50	500	100.0	1,000	N	50	10,000
428C	60,882	413,240	10.00	.30	1.5	1.50	200	30.0	1,500	H	70	>10,000
429C	60,860	413,759	.70	1.00	2.0	>2.00	300	1.0	V	H	5,000	5,000
430C	60,780	413,697	1.00	.20	10.0	>2.00	500	1.0	V	N	50	3,000
431C	60,835	413,667	1.00	.30	15.0	1.00	500	N	V	N	20	700
432C	60,821	413,551	.70	.15	5.0	2.00	300	1.5	V	N	30	7,000
433C	60,832	413,513	1.50	.30	10.0	>2.00	500	2.0	V	N	<20	7,000
434C	60,863	413,495	.70	.15	10.0	2.00	200	3.0	V	H	50	>10,000
435C	60,888	413,424	1.00	.15	5.0	>2.00	300	3.0	V	N	50	>10,000
436C	60,852	413,342	.70	.15	7.0	>2.00	300	10.0	V	N	150	>10,000
437C	60,833	413,440	2.00	.70	3.0	1.00	500	200.0	500	N	70	7,000
438C	60,435	413,184	.30	.20	.7	>2.00	200	2.0	V	N	100	7,000
439C	60,435	413,160	.30	.15	.5	>2.00	150	1.0	V	H	50	2,000
440C	60,455	413,265	.30	.20	.5	>2.00	200	N	N	N	150	7,000
441C	60,477	413,325	.30	.10	.5	>2.00	150	N	V	N	20	5,000
442C	60,496	413,520	.50	.15	1.0	>2.00	150	N	V	N	50	2,000
443C	60,506	413,742	.50	.20	1.0	>2.00	500	2.0	V	H	70	3,000
444C	60,553	413,745	.30	.50	2.0	>2.00	200	<1.0	V	H	30	1,000

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	
400C	N	N	N	N	70	N	500	N	N	10	70	N	
401C	N	N	N	N	70	N	300	N	<50	10	150	1,500	
402C	N	N	N	N	70	50	300	N	<50	15	1,000	7,000	
403C	N	N	N	N	<10	70	15	500	N	150	10	N	
404C	N	N	N	N	N	<20	N	70	N	N	<20	N	
405C	N	N	N	V	<20	N	70	N	N	<10	20	N	
406C	N	N	N	N	<10	70	10	500	N	N	70	N	
407C	<2	N	N	N	V	<20	N	100	N	N	<20	N	
408C	2	N	N	N	N	20	N	70	N	N	30	N	
409C	N	N	N	N	N	20	N	70	N	N	20	N	
410C	N	N	N	N	N	<20	N	100	N	N	<20	N	
411C	N	N	N	V	50	N	200	N	N	<10	<20	N	
412C	<2	N	N	V	<20	N	700	N	N	N	20	N	
413C	N	N	N	V	50	N	200	N	<50	<10	70	N	
414C	N	N	N	10	70	N	150	N	N	10	20	V	
415C	N	N	N	V	50	N	150	N	N	<10	<20	N	
416C	N	N	N	V	50	N	150	N	N	<10	<20	N	
417C	N	N	N	N	50	N	150	N	N	N	300	N	
418C	N	N	N	N	50	N	200	N	N	<10	100	N	
419C	N	N	N	V	50	N	300	N	<50	N	20	N	
420C	N	N	N	V	50	N	200	N	N	<10	<20	N	
421C	N	N	N	V	50	N	300	N	N	<10	<20	N	
422C	<2	N	N	N	N	30	N	200	N	N	20	N	
423C	N	N	N	N	N	50	N	500	N	N	<20	N	
424C	2	N	N	N	N	50	N	150	N	N	<10	70	
425C	N	N	N	V	100	30	100	N	N	<10	700	N	
426C	N	N	N	N	100	10	150	N	N	<10	50	N	
427C	N	N	N	<50	50	20	500	100	10	N	20	>50,000	
428C	N	N	100	70	20	1,000	50	N	N	200	30,000	1,500	
429C	2	N	N	N	V	70	30	70	N	N	15	1,500	N
430C	N	N	N	10	100	50	200	N	<50	10	500	N	
431C	2	N	N	V	20	15	300	N	N	10	150	N	
432C	<2	N	N	N	30	10	200	N	N	<10	700	N	
433C	<2	N	N	N	50	15	200	N	N	10	2,000	N	
434C	N	N	N	<10	70	30	200	N	N	15	1,500	N	
435C	N	N	N	<10	100	20	300	N	<50	10	1,000	N	
436C	N	N	N	10	70	70	200	N	<50	15	15,000	N	
437C	N	N	50	20	<20	1,000	100	N	N	30	>50,000	700	
438C	<2	N	N	V	50	10	150	N	N	10	700	N	
439C	<2	N	N	N	70	<10	150	N	N	<10	200	N	
440C	<2	N	N	N	N	70	<10	150	N	N	10	100	N
441C	N	N	N	V	70	10	100	N	N	10	100	N	
442C	N	N	N	N	100	20	200	N	N	10	1,500	N	
443C	N	N	N	V	100	N	200	N	N	15	200	N	
444C	<2	N	N	V	50	10	150	N	N	<10	100	N	

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada

Sample	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst
400C	70	50	N	70	N	700	N	>2,000	N	>5.00
401C	50	20	N	50	N	500	N	>2,000	N	>5.00
402C	70	N	N	100	N	700	500	>2,000	N	>5.00
403C	100	N	N	70	N	500	N	>2,000	N	.28
404C	15	N	500	<20	N	50	N	>2,000	N	>5.00
405C	<10	N	500	20	N	50	N	>2,000	N	.60
406C	100	N	N	70	N	700	N	>2,000	N	.32
407C	<10	V	500	<20	N	150	N	>2,000	N	<.20
408C	N	N	1,000	<20	N	30	N	>2,000	N	<.20
409C	10	N	300	50	N	150	N	>2,000	N	.20
410C	N	N	500	30	N	100	N	>2,000	N	1.93
411C	50	N	<200	70	N	300	N	>2,000	N	>5.00
412C	10	N	500	20	N	50	N	2,000	N	<.20
413C	70	N	N	70	N	700	N	>2,000	N	<.20
414C	100	N	N	150	N	700	N	>2,000	N	<.20
415C	50	N	N	70	N	500	N	>2,000	N	1.60
416C	70	N	N	100	N	500	N	>2,000	N	.40
417C	70	20	N	30	N	500	N	>2,000	N	.20
418C	70	30	N	50	N	700	N	>2,000	N	.20
419C	50	<20	N	30	N	500	N	>2,000	N	>5.00
420C	100	<20	N	50	N	700	N	>2,000	N	N
421C	70	20	N	70	N	500	N	>2,000	N	N
422C	50	<20	N	30	N	500	N	>2,000	N	N
423C	100	30	N	70	N	700	N	>2,000	N	N
424C	70	N	N	50	N	500	N	>2,000	N	1.00
425C	150	N	1,500	50	N	1,000	N	>2,000	N	.30
426C	150	N	1,000	70	N	2,000	N	>2,000	N	.40
427C	20	V	700	30	N	200	3,000	>2,000	N	>5.00
428C	20	100	700	20	N	300	>20,000	>2,000	N	>5.00
429C	100	N	N	50	N	1,500	<500	>2,000	N	1.90
430C	70	N	1,500	70	N	1,000	<500	>2,000	N	1.80
431C	15	V	1,000	30	N	500	1,000	>2,000	N	1.50
432C	70	<20	1,000	50	N	500	N	>2,000	N	<.20
433C	50	N	700	70	N	1,000	<500	>2,000	N	2.20
434C	50	N	1,000	70	N	500	N	>2,000	N	.80
435C	100	N	1,500	70	N	1,000	N	>2,000	N	.80
436C	30	N	1,000	70	N	500	500	>2,000	N	>5.00
437C	20	N	500	20	N	150	15,000	>2,000	N	>5.00
438C	70	N	300	50	N	500	N	>2,000	N	.80
439C	150	V	N	50	N	700	N	>2,000	N	.40
440C	150	N	N	70	N	1,000	N	>2,000	N	1.00
441C	150	N	N	50	N	1,000	N	>2,000	N	1.70
442C	150	N	N	70	N	1,000	N	>2,000	N	2.80
443C	200	20	N	70	N	1,500	N	>2,000	N	<.20
444C	100	N	N	50	N	700	N	>2,000	N	N

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	
445C	N	N	N	V	100	70	300	N	<50	<10	150	N	
446C	N	N	N	N	50	N	150	N	<50	N	70	N	
447C	N	N	N	N	50	<10	150	N	<50	<10	70	N	
448C	N	N	N	N	70	100	200	N	<50	N	100	V	
449C	N	N	V	N	70	N	200	N	<50	10	50	V	
450C	N	N	N	N	50	N	150	N	N	N	<20	N	
451C	N	N	N	V	30	N	150	N	N	<10	<20	V	
452C	N	N	N	N	100	<10	100	N	N	10	50	V	
453C	N	N	N	V	30	N	700	N	N	<10	30	V	
454C	N	N	N	V	30	50	200	N	N	<10	7,000	200	
455C	<2	N	N	N	20	15	150	<10	<50	N	70	N	
456C	N	N	N	V	50	N	300	N	N	<10	50	N	
457C	N	N	N	V	50	N	200	N	N	<10	20	V	
458C	N	N	N	V	50	N	150	N	N	<10	<20	V	
459C	N	N	N	N	50	N	500	N	N	N	<20	N	
460C	N	N	N	N	50	N	100	N	N	<10	20	V	
461C	N	N	N	N	20	N	100	N	N	N	<20	V	
462C	N	N	N	V	50	<10	300	N	N	10	<20	V	
463C	<2	N	N	N	N	<20	N	100	N	N	<20	N	
464C	N	N	N	N	20	N	200	N	50	<10	30	N	
465C	N	N	N	N	70	10	150	N	<50	10	150	V	
466C	N	N	N	V	50	<10	100	N	N	<10	50	V	
467C	N	N	N	N	70	N	100	N	N	<10	50	N	
468C	N	N	N	N	50	N	300	N	N	N	100	N	
469C	N	N	N	N	30	N	200	N	<50	<10	100	N	
470C	N	20	N	V	100	N	150	N	<50	<10	<20	V	
471C	<2	N	N	N	<20	N	70	N	N	<10	<20	N	
472C	<2	N	N	N	20	N	150	N	N	<10	20	N	
473C	N	N	N	V	50	N	200	N	N	<10	<20	N	
474C	N	N	N	N	20	N	150	N	N	<10	20	V	
475C	<2	N	N	N	V	<20	N	100	N	N	<20	V	
476C	2	N	N	N	N	N	100	N	N	<10	<20	N	
477C	<2	N	N	N	N	20	N	150	N	N	<20	N	
478C	<2	N	N	N	N	50	N	150	N	N	<20	N	
479C	<2	N	N	N	V	<20	N	100	N	N	<20	V	
480C	<2	N	N	N	N	50	N	150	N	N	<10	20	N
481C	<2	N	N	N	N	50	N	150	N	N	10	<20	V
482C	N	N	N	N	70	<10	70	N	N	<10	<20	N	
483C	<2	NN	NN	V	50	10	70	N	N	10	<20	V	
484C	<2	N	N	N	V	50	N	100	N	N	<10	20	N
485C	N	N	N	N	N	50	N	70	N	N	20	V	
486C	N	N	N	N	N	50	15	150	N	<10	<20	V	
487C	N	N	N	V	50	<10	200	N	<50	<10	<20	V	
488C	N	N	N	NN	N	50	N	150	N	N	<20	N	
489C	N	N	N	N	N	70	N	100	N	N	<10	20	

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	X coord- inate	Y coord- inate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-pom s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s
445C	60,585	413,819	.30	.15	.7	>2.00	200	N	N	N	50	1,000
446C	60,610	413,747	.30	.50	1.5	>2.00	150	N	N	N	20	2,000
447C	60,519	413,920	.30	.20	.7	>2.00	150	N	V	N	100	700
448C	60,505	413,972	.30	.20	1.0	>2.00	200	N	N	N	30	1,500
449C	60,527	414,099	.30	.30	2.0	>2.00	200	N	N	N	20	500
450C	60,601	413,819	.30	2.00	7.0	2.00	200	N	N	N	20	1,500
451C	60,713	413,747	.50	5.00	10.0	1.00	150	N	V	N	20	500
452C	60,668	413,920	.15	.10	.5	>2.00	150	N	V	N	20	500
453C	60,710	413,972	.20	.15	15.0	1.50	500	N	V	N	<20	700
454C	60,699	414,099	.50	.15	5.0	2.00	300	5.0	N	N	20	1,000
455C	61,030	414,095	.15	.10	3.0	2.00	300	N	N	N	<20	1,500
456C	60,896	414,085	.30	.10	1.5	>2.00	300	N	V	N	20	500
457C	60,842	414,075	.20	.15	1.5	2.00	200	N	V	N	<20	500
458C	60,744	414,109	.30	.10	2.0	>2.00	200	N	N	N	30	700
459C	60,726	414,116	.20	.20	7.0	2.00	500	N	N	N	20	300
460C	60,646	414,522	.30	.07	1.0	>2.00	200	N	N	N	20	500
461C	60,824	414,048	.30	5.00	10.0	.70	150	N	V	N	<20	300
462C	60,806	414,069	.50	.15	10.0	2.00	300	N	N	N	30	700
463C	61,754	414,114	.50	1.00	5.0	.50	150	N	N	N	20	1,000
464C	61,749	414,138	.20	.10	5.0	>2.00	300	N	N	N	<20	200
465C	61,744	414,173	.70	.30	3.0	>2.00	300	N	V	V	30	>10,000
466C	61,756	414,258	.30	.10	.7	2.00	300	N	V	N	20	3,000
467C	61,799	414,269	.30	.10	1.0	2.00	200	N	N	N	20	10,000
468C	61,707	414,436	.30	.10	5.0	>2.00	500	N	N	N	1,500	2,000
469C	61,522	414,449	.50	.15	5.0	2.00	500	N	N	N	<20	700
470C	61,799	414,458	.50	.15	2.0	>2.00	300	N	V	V	<20	>10,000
471C	61,799	414,499	.50	.15	2.0	.50	150	N	V	N	20	700
472C	61,876	414,575	.30	.15	1.5	1.50	200	N	V	N	<20	3,000
473C	61,790	414,614	.30	.20	3.0	>2.00	300	N	V	N	30	5,000
474C	61,793	414,656	.50	.20	3.0	2.00	200	N	N	V	20	700
475C	61,845	414,737	.50	.15	2.0	.70	100	N	V	V	<20	700
476C	61,830	414,800	.50	.10	2.0	.20	100	N	N	N	<20	700
477C	61,824	414,851	.50	.20	1.0	1.50	200	N	N	N	20	700
478C	61,775	414,901	.30	.15	1.5	>2.00	300	N	N	N	20	500
479C	61,734	414,930	.30	.15	1.5	1.00	200	N	N	N	<20	700
480C	60,301	414,643	.50	.15	1.0	>2.00	200	N	V	N	20	500
481C	60,314	414,661	.30	.10	.7	>2.00	200	N	N	N	<20	700
482C	60,369	414,794	.30	.10	1.0	>2.00	150	N	V	N	30	500
483C	60,392	414,770	.50	.07	.5	>2.00	150	N	N	N	20	500
484C	60,400	414,875	.20	.10	.5	>2.00	150	N	V	V	30	200
485C	60,530	414,995	.20	.10	.5	2.00	300	N	N	N	20	>10,000
486C	60,799	414,973	.50	.20	3.0	2.00	200	N	N	N	30	1,000
487C	60,515	415,023	.50	.30	2.0	>2.00	300	N	N	N	30	1,000
488C	60,525	415,044	.30	.20	1.5	1.50	200	N	N	N	<20	2,000
489C	60,539	415,136	.30	.15	1.0	>2.00	150	N	V	N	30	500

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst
445C	150	N	N	70	N	700	N	>2,000	N	<.20
446C	100	N	N	70	N	1,000	N	>2,000	N	.4
447C	100	N	N	50	N	700	N	>2,000	N	N
448C	150	100	N	70	N	1,000	N	>2,000	N	<.20
449C	70	N	N	50	N	700	N	>2,000	N	>5.00
450C	50	N	200	50	N	500	N	>2,000	N	.20
451C	15	N	<200	20	N	200	N	>2,000	N	<.20
452C	150	N	N	50	N	1,000	N	>2,000	N	N
453C	30	N	500	30	N	500	N	>2,000	N	.20
454C	30	200	500	30	N	300	<500	>2,000	N	2.80
455C	50	N	N	20	N	300	N	>2,000	N	.70
456C	100	N	N	50	N	1,000	N	>2,000	N	.60
457C	70	N	N	20	N	700	N	>2,000	N	<.20
458C	100	N	N	50	N	1,000	N	>2,000	N	.20
459C	50	N	N	20	N	500	N	>2,000	N	.30
460C	100	N	N	50	N	1,500	N	>2,000	N	>5.00
461C	<10	N	200	<20	N	100	N	>2,000	N	>5.00
462C	50	N	1,000	50	N	300	N	>2,000	N	2.70
463C	<10	N	1,300	<20	N	50	N	>2,000	N	N
464C	70	N	<200	50	N	200	N	>2,000	N	>5.00
465C	100	N	2,000	150	N	500	N	>2,000	N	.40
466C	10	N	300	70	N	150	N	>2,000	N	>5.00
467C	100	N	700	100	N	500	N	>2,000	N	>5.00
468C	100	N	300	70	N	500	N	>2,000	N	.40
469C	50	N	500	50	N	200	N	>2,000	N	<.20
470C	100	N	700	150	N	300	N	>2,000	N	N
471C	10	N	1,000	20	N	100	N	>2,000	N	>5.00
472C	100	N	300	50	N	700	N	>2,000	N	N
473C	100	N	500	100	N	500	N	>2,000	N	>5.00
474C	30	N	1,000	30	N	300	N	>2,000	N	.40
475C	<10	N	500	20	N	50	N	>2,000	N	<.20
476C	N	N	1,000	<20	N	100	N	>2,000	N	>5.00
477C	30	N	300	30	N	200	N	>2,000	N	.90
478C	70	N	<200	50	N	500	N	>2,000	N	.30
479C	10	N	500	20	N	150	N	>2,000	N	.20
480C	100	N	N	50	N	2,000	N	>2,000	N	<.20
481C	150	N	N	50	N	3,000	N	>2,000	N	>5.00
482C	150	N	N	70	N	3,000	N	>2,000	N	3.00
483C	150	N	N	70	N	3,000	N	>2,000	N	>5.00
484C	100	N	N	70	N	2,000	N	>2,000	N	.40
485C	70	N	<200	50	N	1,000	N	>2,000	N	4.80
486C	70	N	300	50	N	700	N	>2,000	N	1.40
487C	70	N	200	50	N	500	N	>2,000	N	.20
488C	30	N	200	20	N	300	N	>2,000	N	<.20
489C	100	N	N	70	N	1,500	N	>2,000	N	<.20



# UNIVERSITY OF NEVADA RENO

6 Jun 85

Nevada Bureau of Mines and Geology  
University of Nevada Reno  
Reno, Nevada 89557-0088  
(702) 784-6691

## M E M O R A N D U M

TO; Joseph Tingley  
FROM: Paul Lechler/NMAL  
SUBJECT: Analytical Report

<u>Sample #</u>	<u>ppm Mercury</u>
2444	256
2445	10
2449	6.2
2451	(Not Received)
2453	7.0
2457	6.2

<u>Sample #</u>	<u>ppm Mercury</u>	<u>% Lead</u>	<u>% Zinc</u>
3000	27	--	--
3002	15	--	--
3006	744	3.90	38.9
3008	39	35.4	0.04
3009	--	24.0	0.01
3014	8.8	--	--
3015	92	--	--
3016	39	--	--
3017	(Not Received)		
3028	38	--	--
3029	21	--	--
3330	47	--	--
3032	6.6	--	--
3037	2.2	--	--
3039	17	--	--
3040	79	22.4	0.15
3042	1050	10.2	30.9
3043	38	30.5	0.71
3044	37	33.7	0.02
3050	33	--	--
3051	16	--	--
3052	1.8	--	--

P. Lechler  
Paul J. Lechler  
Chief Chemist/Geochemist

PJL:smw

**APPENDIX D**

**SEDIMENT SAMPLE GEOCHEMICAL ANALYSES**

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada  
 [N, not detected; <, detected but below the limit of determination shown; >, determined to be greater than the value shown.]

Sample	X coor-dinate	Y coor-dinate	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	Q-pct.	Ba-ppm	Be-ppm
	s	s	s	s	s	s	s	s	s	s	s	s	s
400SS	61,682	413,200	2.0	2.0	5.0	.30	500	N	N	N	30	500	<1.0
401SS	61,752	413,372	2.0	2.0	5.0	.30	300	N	N	N	50	500	1.0
402SS	61,478	414,020	1.5	2.0	5.0	.20	300	N	N	N	70	300	1.0
403SS	61,564	414,025	1.5	.5	1.5	.30	500	N	N	N	30	500	1.0
404SS	61,673	414,042	2.0	2.0	5.0	.50	500	N	N	N	50	500	<1.0
405SS	61,815	414,045	2.0	2.0	5.0	.50	500	N	N	N	30	500	<1.0
406SS	61,775	413,988	1.5	.7	1.5	.30	300	N	N	N	30	500	<1.0
407SS	61,780	413,925	5.0	.7	2.0	.70	500	N	N	N	20	300	<1.0
408SS	61,840	413,825	5.0	1.0	2.0	.70	700	N	N	N	20	500	<1.0
409SS	61,830	413,784	2.0	1.5	5.0	.30	500	N	N	N	30	500	<1.0
410SS	61,810	413,600	5.0	1.0	3.0	.70	1,000	N	N	N	70	700	<1.0
411SS	61,805	413,540	3.0	2.0	5.0	.30	500	N	N	N	30	700	<1.0
412SS	61,805	413,5C5	5.0	.7	2.0	.70	700	N	N	N	20	500	<1.0
413SS	60,988	412,955	2.0	5.0	7.0	.20	300	N	N	N	30	500	1.0
414SS	61,094	412,990	2.0	7.0	10.0	.20	200	N	N	N	50	300	<1.0
415SS	61,105	412,983	1.5	3.0	7.0	.20	300	N	N	N	50	300	1.0
416SS	61,145	412,980	2.0	5.0	10.0	.30	300	N	N	N	30	300	<1.0
417SS	61,235	413,000	1.5	3.0	7.0	.20	300	N	N	N	30	500	1.0
418SS	61,277	413,009	1.0	2.0	7.0	.20	300	N	N	N	30	300	1.0
419SS	61,350	413,033	2.0	2.0	5.0	.30	300	N	N	N	50	500	1.0
420SS	61,405	413,042	2.0	3.0	5.0	.30	300	N	N	N	50	500	<1.0
421SS	61,492	413,090	1.5	1.5	5.0	.20	300	N	N	N	30	300	<1.0
422SS	61,538	413,140	1.5	2.0	7.0	.20	300	N	N	N	30	500	1.0
423SS	61,551	413,150	1.5	1.5	5.0	.15	300	N	N	N	20	300	1.0
424SS	60,926	413,151	2.0	2.0	10.0	.20	300	N	N	N	50	500	<1.0
425SS	60,796	413,199	3.0	.5	1.0	.70	500	N	N	N	70	500	1.0
426SS	60,760	413,205	3.0	.7	1.5	.70	500	N	N	N	70	700	1.0
427SS	60,808	413,181	2.0	.7	5.0	.50	500	3.0	N	N	70	500	1.0
428SS	60,882	413,240	3.0	1.0	3.0	.50	500	<.5	N	N	70	700	1.0
429SS	60,860	413,759	2.0	5.0	10.0	.30	300	N	N	N	50	300	<1.0
430SS	60,780	413,697	2.0	.5	2.0	.50	300	N	N	N	50	500	1.0
431SS	60,835	413,667	2.0	.5	5.0	.30	500	N	N	N	50	500	1.0
432SS	60,821	413,551	2.0	.5	3.0	.30	500	N	N	N	50	500	1.0
433SS	60,832	413,513	2.0	.5	5.0	.30	500	N	N	N	70	300	1.0
434SS	60,863	413,495	2.0	.7	5.0	.30	500	N	N	N	70	500	1.0
435SS	60,888	413,424	2.0	.7	5.0	.30	500	N	N	N	100	500	<1.0
436SS	60,852	413,342	3.0	1.0	5.0	.30	500	N	N	N	100	1,000	1.0
437SS	60,833	413,440	3.0	1.5	7.0	.50	700	10.0	N	N	100	700	1.0
438SS	60,435	413,184	1.5	1.0	1.0	.30	300	N	N	N	50	500	1.0
439SS	60,435	413,160	2.0	.7	1.0	.50	500	N	N	N	70	500	1.0
440SS	60,455	413,265	2.0	.5	.7	.30	500	N	N	N	100	500	1.0
441SS	60,477	413,325	2.0	.5	1.0	.50	500	N	N	N	70	700	1.0
442SS	60,496	413,520	1.5	.5	.5	.30	300	N	N	N	100	500	<1.0
443SS	60,506	413,742	1.5	.7	.7	.20	300	N	N	N	50	1,000	1.0
444SS	60,553	413,745	3.0	3.0	7.0	.30	500	N	N	N	50	500	<1.0

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
400SS	N	N	<5	30	10	50	N	N	10	30	N	5	4
401SS	N	N	<5	20	10	30	N	N	10	20	N	5	N
402SS	N	N	<5	30	10	30	N	N	15	30	N	5	N
403SS	N	N	N	30	7	50	N	N	10	20	N	5	N
404SS	N	N	5	30	10	100	N	N	15	20	N	7	N
405SS	N	N	5	30	10	50	N	N	15	20	N	7	N
406SS	N	N	<5	20	7	50	N	N	7	15	N	5	V
407SS	N	N	5	100	10	70	N	N	10	50	N	7	V
408SS	N	N	10	150	15	70	N	N	20	15	N	10	N
409SS	N	N	<5	30	10	30	N	N	10	15	N	5	N
410SS	N	N	5	100	7	100	N	N	10	30	N	7	N
411SS	N	N	5	100	7	30	N	N	15	20	N	7	V
412SS	N	N	5	20	5	100	N	N	5	20	N	7	V
413SS	N	N	<5	20	10	30	N	N	7	20	N	5	N
414SS	N	N	<5	20	7	20	N	N	7	15	N	<5	N
415SS	N	N	<5	20	7	100	N	N	7	20	N	5	N
416SS	N	N	<5	20	10	30	N	N	7	15	N	5	V
417SS	N	N	<5	30	10	30	N	N	7	20	N	5	N
418SS	N	N	<5	15	10	30	N	N	7	15	N	5	N
419SS	N	N	5	30	10	30	N	N	10	20	N	5	N
420SS	N	N	<5	20	10	50	N	N	10	20	N	5	V
421SS	N	N	N	20	7	50	N	N	5	20	N	5	V
422SS	N	N	20	7	30	N	N	5	15	N	5	N	
423SS	N	N	<5	15	7	50	N	N	5	20	N	5	N
424SS	N	N	5	50	10	30	N	N	10	10	N	7	N
425SS	N	N	5	30	15	30	N	N	10	10	N	7	V
426SS	N	N	5	50	15	30	N	N	15	10	N	7	V
427SS	N	N	10	20	50	50	S	N	15	7,000	<100	7	N
428SS	N	N	5	30	15	70	N	N	15	700	N	7	N
429SS	N	N	5	50	10	20	N	N	15	15	N	5	N
430SS	N	N	5	30	10	50	N	N	15	20	N	7	N
431SS	N	N	7	30	10	30	N	N	15	20	N	7	V
432SS	N	N	5	50	15	50	N	N	15	20	N	7	N
433SS	N	N	5	30	10	50	N	N	15	30	N	7	N
434SS	N	N	7	50	15	50	N	N	20	50	N	7	V
435SS	N	N	10	70	15	50	N	N	20	70	N	7	N
436SS	N	N	15	150	20	30	N	N	30	100	N	10	V
437SS	N	N	15	100	100	50	N	N	20	15,000	100	10	N
438SS	N	N	<5	20	10	50	N	N	10	30	N	5	V
439SS	N	N	<5	50	10	70	N	N	7	20	N	5	V
440SS	N	N	<5	20	10	50	N	N	7	20	N	5	N
441SS	N	N	<5	30	15	50	N	N	10	20	N	7	N
442SS	N	N	<5	20	10	50	N	N	7	20	N	5	N
443SS	N	N	<5	30	10	30	N	N	7	30	N	5	N
444SS	N	N	5	50	15	30	N	N	15	20	N	7	N

Table 1 -- Data of Stream-sediment Samples From The Groom Range, Nevada

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst	As-ppm aa	Zn-ppm aa	Sb-ppm aa
400SS	200	50	N	15	N	200	N	.02	10	50	<2
401SS	200	50	N	15	N	200	N	.08	10	50	<2
402SS	100	30	N	15	N	100	N	.24	20	40	8
403SS	150	30	N	15	N	150	N	.02	<10	35	<2
404SS	300	50	N	20	N	200	N	.06	10	40	4
405SS	200	50	N	15	N	150	N	.06	10	40	4
406SS	200	30	N	15	N	100	N	.02	<10	30	2
407SS	200	100	N	20	<200	500	N	<.02	<10	190	2
408SS	300	150	N	20	<200	300	N	.12	N	55	<2
409SS	200	50	N	15	N	300	N	.02	10	40	<2
410SS	200	100	N	30	<200	500	N	N	<10	100	<2
411SS	300	50	N	15	N	200	N	N	<10	25	<2
412SS	300	100	N	50	<200	300	N	N	N	190	<2
413SS	200	20	N	15	N	200	N	N	<10	30	2
414SS	150	20	N	10	N	100	N	N	<10	20	<2
415SS	200	20	N	15	N	100	N	.04	10	30	2
416SS	200	20	N	15	N	100	N	.04	10	30	<2
417SS	200	20	N	15	N	300	N	.02	10	30	2
418SS	200	20	N	15	N	100	N	.04	10	35	2
419SS	200	50	N	15	N	100	N	.02	<10	30	2
420SS	200	30	N	15	N	150	N	.04	<10	35	<2
421SS	200	20	N	15	N	70	N	.07	<10	35	<2
422SS	200	20	N	15	N	200	N	<.02	<10	35	2
423SS	200	20	N	15	N	150	N	.32	<10	33	<2
424SS	150	20	N	15	N	50	N	<.02	N	35	<2
425SS	100	50	N	20	N	300	N	.02	10	40	2
426SS	150	50	N	20	N	300	N	.02	10	40	2
427SS	150	30	N	20	200	300	N	.88	70	200	50
428SS	150	50	N	20	<200	300	N	.32	50	210	10
429SS	100	30	N	15	N	200	N	.02	10	25	2
430SS	150	50	N	20	N	300	N	.02	10	45	2
431SS	150	30	N	20	N	100	N	.02	10	70	<2
432SS	150	30	N	20	N	150	N	.02	N	50	2
433SS	150	30	N	20	N	70	N	.02	10	70	<2
434SS	150	30	N	20	N	200	N	.02	<10	75	2
435SS	150	30	N	20	N	200	N	<.02	10	55	2
436SS	200	30	N	20	N	150	N	.04	20	50	2
437SS	200	50	N	20	300	200	N	3.00	40	220	80
438SS	200	30	N	15	N	150	N	.02	10	35	2
439SS	150	30	N	15	N	150	N	.08	10	35	2
440SS	150	50	N	20	N	300	N	.06	20	65	2
441SS	150	50	N	20	N	300	N	.02	10	30	2
442SS	100	30	N	15	N	50	N	.02	10	30	2
443SS	200	20	N	10	N	50	N	.02	10	30	<2
444SS	150	50	N	20	N	300	N	<.02	10	35	<2

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	X coor- dinate	Y coor- dinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	B-ppm s	Ba-ppm s	Be-ppm s
445SS	60,585	413,819	1.5	.5	.7	.30	500	N	N	N	70	500	1.0
446SS	60,610	413,747	2.0	2.0	5.0	.50	500	N	N	N	50	500	1.0
447SS	60,519	413,920	2.0	1.0	1.0	.30	500	N	N	N	50	700	1.0
448SS	60,505	413,972	2.0	.7	2.0	.30	500	N	N	N	30	700	1.0
449SS	60,527	414,099	3.0	1.0	1.5	.50	500	N	N	N	30	700	1.0
450SS	60,601	414,095	1.0	1.0	1.5	.30	300	N	N	N	30	500	1.0
451SS	60,713	414,085	2.0	2.0	2.0	.50	300	N	N	N	30	500	<1.0
452SS	60,668	414,075	1.5	.5	.5	.30	500	N	N	N	70	500	1.0
453SS	60,710	414,109	1.5	.7	1.0	.30	500	N	N	N	30	500	1.0
454SS	60,699	414,116	1.0	.5	.7	.30	500	N	N	N	50	300	1.0
455SS	61,030	414,565	2.0	.5	.7	.50	500	N	N	N	30	500	1.0
456SS	60,896	414,471	1.0	.5	.7	.30	500	N	N	N	30	500	1.0
457SS	60,842	414,430	1.5	.5	1.0	.30	500	N	N	N	20	700	1.0
458SS	60,744	414,501	2.0	.7	1.0	.30	500	N	N	N	50	1,000	1.0
459SS	60,726	414,435	2.0	.7	1.5	.50	500	N	N	N	30	1,000	1.0
460SS	60,666	414,522	3.0	.5	1.0	.50	500	N	N	N	30	700	1.0
461SS	60,824	414,048	3.0	2.0	3.0	.50	700	N	N	N	30	300	<1.0
462SS	60,806	414,069	3.0	1.0	1.5	.50	500	N	N	N	30	500	<1.0
463SS	61,754	414,114	3.0	1.0	2.0	.50	700	N	N	N	30	500	1.0
464SS	61,749	414,138	1.5	.5	1.5	.30	500	N	N	N	30	700	1.0
465SS	61,744	414,170	2.0	.7	1.0	.50	300	N	N	N	70	1,000	1.0
466SS	61,756	414,258	2.0	.7	1.0	.50	500	N	N	N	50	1,000	1.0
467SS	61,799	414,269	2.0	.7	1.0	.50	300	N	N	N	50	700	1.0
468SS	61,707	414,436	2.0	.5	1.0	.30	500	N	N	N	30	700	1.0
469SS	61,522	414,449	2.0	.7	1.0	.50	500	N	N	N	20	700	1.0
470SS	61,799	414,458	1.0	.5	.7	.30	300	N	N	N	30	500	1.0
471SS	61,799	414,499	3.0	1.0	1.5	.50	500	N	N	N	30	700	1.0
472SS	61,876	414,575	2.0	.7	1.5	.50	300	N	N	N	30	1,000	1.0
473SS	61,790	414,641	2.0	.7	1.5	.50	500	N	N	N	30	1,000	1.0
474SS	61,793	414,656	3.0	1.0	1.5	.50	500	N	N	N	30	1,000	1.0
475SS	61,845	414,737	2.0	1.0	1.5	.50	500	N	N	N	30	700	1.0
476SS	61,830	414,800	10.0	1.5	2.0	.70	1,000	N	N	N	<10	500	N
477SS	61,824	414,851	3.0	1.0	1.5	.50	500	N	N	N	30	500	1.0
478SS	61,775	414,901	2.0	1.0	1.5	.30	500	N	N	N	50	700	1.0
479SS	61,734	414,930	3.0	.7	1.5	.30	500	N	N	N	30	700	1.0
480SS	60,301	414,643	2.0	.7	1.0	.50	500	N	N	N	50	500	1.0
481SS	60,314	414,661	1.5	.5	1.0	.30	300	N	N	N	30	500	<1.0
482SS	60,369	414,794	2.0	.7	1.5	.50	500	N	N	N	50	500	1.0
483SS	60,392	414,770	1.5	.5	.7	.50	500	N	N	N	50	500	1.0
484SS	60,400	414,875	2.0	.5	.7	.30	300	N	N	N	30	500	1.0
485SS	60,530	414,995	2.0	.7	1.0	.30	500	N	N	N	30	700	1.0
486SS	60,799	414,973	2.0	1.0	1.5	.50	500	N	N	N	50	500	3.0
487SS	60,515	415,023	2.0	1.0	1.5	.30	500	N	N	N	30	700	1.0
488SS	60,525	415,044	2.0	.7	1.5	.30	500	N	N	N	30	700	1.0
489SS	60,539	415,136	2.0	.7	1.0	.30	500	N	N	N	50	700	1.0

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s	Sc-ppm s	Sn-ppm s
445SS	N	N	<5	30	10	50	N	N	10	30	N	5	N
446SS	N	N	5	50	15	50	N	N	15	30	N	7	V
447SS	N	N	10	50	15	50	N	N	15	30	N	7	N
448SS	N	N	7	30	15	70	N	N	15	30	N	7	V
449SS	N	N	7	50	15	50	N	N	15	30	N	7	V
450SS	N	N	N	20	7	50	N	N	7	20	N	5	N
451SS	N	N	5	50	7	30	N	N	10	20	N	7	N
452SS	N	N	<5	20	15	50	N	N	7	15	N	5	N
453SS	N	N	N	20	5	70	N	N	7	15	N	5	V
454SS	N	N	N	20	10	100	N	N	5	15	N	5	V
455SS	N	N	5	30	10	50	N	N	10	30	N	7	N
456SS	N	N	<5	20	7	70	N	N	5	20	N	5	V
457SS	N	N	<5	20	5	70	N	N	7	15	N	5	N
458SS	N	N	5	50	15	50	N	N	15	20	N	7	V
459SS	N	N	7	30	10	70	N	N	10	20	N	7	N
460SS	N	N	5	50	10	50	N	N	10	20	N	10	N
461SS	N	N	7	100	10	30	N	N	15	15	N	10	V
462SS	N	N	5	100	10	50	N	N	15	15	N	10	N
463SS	N	N	5	100	10	50	N	N	10	20	N	7	V
464SS	N	N	<5	30	7	70	N	N	7	30	N	5	V
465SS	N	N	7	30	15	70	N	N	10	20	N	7	N
466SS	N	N	5	30	15	70	N	N	10	30	N	7	N
467SS	N	N	10	50	15	50	N	N	10	20	N	7	N
468SS	N	N	5	20	10	50	N	N	10	50	N	5	V
469SS	N	N	5	30	15	50	N	N	15	100	N	7	N
470SS	N	N	5	15	10	50	N	N	7	15	N	5	N
471SS	N	N	10	70	15	50	N	N	20	15	N	10	V
472SS	N	N	7	30	15	50	N	N	20	20	N	7	N
473SS	N	N	7	30	10	50	N	N	15	20	N	7	V
474SS	N	N	7	50	15	70	N	N	15	30	N	7	V
475SS	N	N	7	30	15	50	N	N	15	30	N	7	N
476SS	N	N	30	200	20	30	N	N	20	15	N	10	N
477SS	N	N	7	50	15	50	N	N	15	30	N	7	N
478SS	N	N	10	50	15	50	N	N	15	30	N	7	N
479SS	N	N	7	30	10	50	N	N	10	30	N	7	N
480SS	N	N	5	30	10	100	N	N	10	20	N	7	N
481SS	N	N	<5	20	10	70	N	N	10	15	N	5	V
482SS	N	N	5	30	15	30	N	N	10	20	N	5	N
483SS	N	N	<5	20	10	50	N	N	7	20	N	5	V
484SS	N	N	5	30	10	30	N	N	15	20	N	7	N
485SS	N	N	7	30	10	70	N	N	10	30	N	7	N
486SS	N	N	7	30	15	30	N	N	20	50	N	7	N
487SS	N	N	7	30	10	50	N	N	15	30	N	7	N
488SS	N	N	7	30	10	50	N	N	10	30	N	7	N
489SS	N	N	7	30	15	50	N	N	15	20	N	7	N

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst	As-ppm aa	Zn-ppm aa	Sb-ppm aa
445SS	200	30	N	15	N	200	N	.04	10	45	2
446SS	150	50	N	20	N	200	N	N	10	35	<2
447SS	150	30	N	15	N	200	N	.02	10	40	2
448SS	200	30	N	15	N	200	N	.04	<10	40	<2
449SS	300	50	N	20	N	200	N	.02	10	40	<2
450SS	200	20	N	15	N	200	N	.04	<10	35	N
451SS	200	50	N	20	N	150	N	.04	10	50	<2
452SS	100	30	N	15	N	200	N	.04	N	40	<2
453SS	200	30	N	15	N	300	N	.02	N	50	<2
454SS	100	30	N	20	N	200	N	.02	N	75	<2
455SS	150	50	N	20	N	200	N	.02	<10	40	<2
456SS	150	30	N	20	N	150	N	.02	N	40	<2
457SS	200	30	V	15	N	300	N	.02	N	45	<2
458SS	150	30	N	20	N	300	N	.04	N	35	2
459SS	200	50	N	20	N	500	N	.02	N	60	<2
460SS	200	50	N	50	N	300	N	.08	<10	35	2
461SS	150	100	N	15	<200	200	N	.04	10	170	2
462SS	200	70	N	20	N	150	N	.02	<10	90	2
463SS	200	70	N	20	N	200	N	.10	<10	75	2
464SS	200	20	N	15	N	100	N	.04	<10	40	2
465SS	300	50	N	20	N	100	N	.20	10	40	V
466SS	200	30	V	15	N	200	N	.06	10	45	V
467SS	300	50	N	15	N	150	N	.08	10	45	V
468SS	200	30	N	15	N	150	N	.04	10	65	<2
469SS	200	50	N	20	N	200	N	.04	10	100	2
470SS	200	30	N	10	N	200	N	.06	20	45	2
471SS	500	50	N	20	N	100	N	.10	10	45	<2
472SS	300	50	N	15	N	300	N	.06	<10	35	N
473SS	300	50	N	20	N	200	N	.12	10	40	V
474SS	300	50	N	20	N	200	N	.04	N	45	V
475SS	200	50	N	20	N	200	N	.04	<10	50	V
476SS	200	150	N	15	200	150	N	.10	N	190	N
477SS	200	70	N	20	N	200	N	.04	<10	55	V
478SS	200	50	N	20	N	200	N	.02	N	35	V
479SS	200	50	N	15	N	150	N	.02	N	45	N
480SS	200	30	N	30	N	300	N	.02	N	35	V
481SS	200	30	N	20	N	100	N	.04	10	45	N
482SS	100	50	N	20	N	200	N	.04	10	35	2
483SS	150	30	N	15	N	300	N	.14	10	40	2
484SS	150	20	N	20	N	300	N	.04	N	40	V
485SS	200	30	N	20	N	200	N	.04	10	65	<2
486SS	200	30	N	20	N	150	N	.04	N	60	N
487SS	200	30	N	20	N	100	N	.02	10	60	<2
488SS	200	30	N	15	N	70	N	.02	<10	40	N
489SS	150	20	N	20	N	150	N	.04	<10	35	V

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	X coor- dinate	Y coor- dinate	Fe-pct. s	Mg-pct. s	Ca-pct. s	Ti-pct. s	Mn-ppm s	Ag-ppm s	As-ppm s	Au-ppm s	R-ppm s	Ba-ppm s	Be-ppm s
490SS	60,559	415,218	3.0	.5	1.0	.50	500	N	N	N	30	500	1.5
491SS	60,528	413,005	3.0	1.5	2.0	.50	500	N	N	N	50	700	1.5
492SS	60,910	413,250	3.0	1.0	1.5	.30	500	N	N	N	50	700	1.0
493SS	61,710	414,960	3.0	.7	1.0	.50	700	N	N	N	30	500	1.0
494SS	61,721	414,998	2.0	.7	1.5	.50	500	N	N	N	10	1,000	<1.0
495SS	61,653	415,012	7.0	.7	1.5	1.00	700	N	N	N	15	700	<1.0
496SS	61,355	414,316	2.0	.7	1.5	.30	500	N	N	N	15	700	1.0
497SS	61,774	415,070	2.0	1.0	2.0	.30	700	N	N	N	20	1,500	1.0
498SS	61,605	415,270	2.0	1.0	3.0	.20	500	N	N	N	30	500	1.0
499SS	61,453	415,365	2.0	.7	1.0	.50	300	N	N	N	50	1,000	1.0
500SS	61,371	415,428	1.5	.5	.7	.30	300	N	N	N	30	500	1.0
501SS	61,313	415,457	1.5	.3	.5	.30	300	N	N	N	50	500	1.0
502SS	61,292	415,475	2.0	.5	2.0	.30	300	N	N	N	30	700	<1.0
503SS	61,309	415,535	3.0	.5	1.5	.50	500	N	N	N	50	700	1.0
504SS	61,320	415,549	1.5	.7	1.5	.30	300	N	N	N	20	700	1.0
505SS	61,094	415,614	2.0	.5	3.0	.50	500	N	N	N	50	500	1.5
506SS	61,055	415,668	2.0	1.5	2.0	.30	500	N	N	N	30	500	1.0
507SS	60,921	415,751	2.0	.7	5.0	.30	500	N	N	N	30	700	1.0
508SS	60,875	415,700	2.0	.5	.5	.50	500	N	N	N	50	500	1.0
509SS	60,900	415,900	2.0	.7	5.0	.30	500	N	N	N	30	500	1.0
510SS	60,865	415,875	3.0	.5	.5	.50	500	N	N	N	50	700	1.0
511SS	60,521	415,815	2.0	.3	1.0	.50	500	N	N	N	15	500	1.0
512SS	60,558	415,703	2.0	.5	1.5	.30	500	N	N	N	30	700	1.0
513SS	60,577	415,593	2.0	.5	2.0	.30	300	N	N	N	20	700	1.5
514SS	60,627	415,437	2.0	.5	1.0	.30	500	N	N	N	30	500	1.0
515SS	60,577	415,304	7.0	.7	1.0	1.00	700	N	N	N	30	1,000	<1.0
516SS	61,830	414,380	1.0	2.0	5.0	.20	300	N	N	N	15	300	<1.0
517SS	61,485	414,185	1.0	2.0	5.0	.10	300	N	N	N	30	300	1.0
518SS	61,625	413,085	3.0	.7	1.5	.50	700	N	N	N	20	500	1.0
519SS	61,925	413,185	2.0	1.0	2.0	.20	500	N	N	N	30	500	1.0
520SS	61,750	413,135	3.0	1.0	3.0	.20	500	N	N	N	30	500	<1.0
521SS	60,200	414,200	3.0	.7	.7	.50	500	N	N	N	30	500	1.0
522SS	60,225	414,120	1.0	.5	.5	.30	500	N	N	N	50	300	1.0
523SS	60,240	414,070	1.0	.7	1.0	.30	300	N	N	N	50	500	1.0
524SS	61,380	412,815	5.0	1.5	3.0	.50	2,000	N	N	N	50	500	1.0
525SS	61,290	412,665	1.0	1.5	5.0	.15	300	N	N	N	50	300	1.0
526SS	61,315	412,635	3.0	1.5	5.0	.50	700	N	N	N	30	500	1.0
527SS	60,525	414,100	1.5	.7	.5	.30	300	N	N	N	50	500	1.0
528SS	60,700	414,135	.7	.5	.3	.30	300	N	N	N	50	500	1.0
529SS	60,830	413,385	2.0	.5	.2	.50	500	N	N	N	70	500	<1.0
530SS	60,825	412,380	1.5	.5	2.0	.30	300	N	N	N	70	300	1.0
531SS	60,830	413,275	1.5	.5	1.0	.50	300	N	N	N	70	500	1.0
532SS	60,825	413,250	1.5	.3	.3	.50	500	N	N	N	100	500	1.0
533SS	61,480	413,955	2.0	2.0	5.0	.50	300	N	N	N	30	300	<1.0
534SS	61,475	413,978	1.5	1.5	5.0	.30	300	N	N	N	50	500	1.0
535SS	61,586	414,020	2.0	1.5	5.0	.30	300	N	N	N	30	500	1.0

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Th-ppm s	Sc-ppm s	Sn-ppm s
490SS	N	N	7	30	10	50	N	N	15	20	N	7	V
491SS	N	N	10	50	15	50	N	N	20	50	N	7	N
492SS	N	N	10	70	10	70	N	N	20	30	N	10	N
493SS	N	N	7	50	10	50	N	N	15	20	N	7	V
494SS	N	N	7	30	10	50	N	N	10	15	N	7	N
495SS	N	N	15	100	15	50	N	N	20	15	N	10	V
496SS	N	N	7	30	10	70	N	N	10	20	N	5	N
497SS	N	N	5	15	7	100	N	N	5	30	N	5	N
498SS	N	N	<5	20	7	50	N	N	7	20	N	<5	V
499SS	N	N	5	30	10	50	N	N	10	20	N	5	N
500SS	N	N	<5	20	10	50	N	N	10	20	N	5	V
501SS	N	N	<5	20	10	30	N	N	10	30	N	5	N
502SS	N	N	5	50	10	70	N	N	10	20	N	7	V
503SS	N	N	5	30	10	50	N	N	15	30	N	7	N
504SS	N	N	<5	20	7	50	N	N	7	20	N	7	V
505SS	N	N	7	30	15	50	N	N	15	50	N	7	V
506SS	N	N	<5	20	10	50	N	N	10	30	N	5	N
507SS	N	N	7	30	10	70	N	N	10	30	N	7	V
508SS	N	N	10	50	20	50	N	N	20	50	N	7	N
509SS	N	N	7	30	10	50	N	N	15	20	N	5	V
510SS	N	N	5	50	15	50	N	N	15	50	N	7	V
511SS	N	N	5	30	7	150	N	N	7	30	N	5	N
512SS	N	N	5	30	10	50	N	N	10	20	N	5	N
513SS	N	N	5	30	10	50	N	N	15	30	N	7	N
514SS	N	N	5	20	10	50	N	N	10	20	N	5	V
515SS	N	N	20	150	20	100	N	N	30	20	N	20	V
516SS	N	N	N	20	5	20	N	N	5	15	N	5	N
517SS	N	N	N	20	7	30	N	N	5	20	N	5	N
518SS	N	N	5	20	5	50	N	N	5	15	N	7	N
519SS	N	N	<5	20	7	70	N	N	7	20	N	7	V
520SS	N	N	<5	30	7	70	N	N	5	20	N	5	V
521SS	N	N	5	30	10	50	N	N	10	15	N	5	N
522SS	N	N	<5	20	10	50	N	N	7	15	N	5	V
523SS	N	N	<5	20	10	50	N	N	5	20	N	5	N
524SS	N	N	7	30	10	30	N	N	10	20	N	5	N
525SS	N	N	N	20	5	50	N	N	5	15	N	<5	V
526SS	N	N	5	30	10	150	N	N	5	15	N	7	N
527SS	N	N	<5	30	7	30	N	N	7	15	N	5	N
528SS	N	N	5	30	7	70	N	N	10	15	N	7	N
529SS	N	N	10	50	15	30	N	N	15	20	N	10	V
530SS	N	N	5	30	10	50	N	N	15	15	N	7	N
531SS	N	N	5	30	15	50	N	N	15	20	N	7	N
532SS	N	N	7	50	15	30	N	N	20	20	N	10	N
533SS	N	N	7	70	10	30	N	N	15	20	N	7	N
534SS	N	N	5	100	10	30	N	N	20	20	N	7	V
535SS	N	N	7	50	10	30	N	N	20	15	N	7	N

Table 1 -- Data Of Stream-sediment Samples From The Groom Range, Nevada--continued

Sample	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst	As-ppm aa	Zn-ppm aa	Sb-ppm aa
490SS	150	50	N	20	N	500	N	.04	10	45	2
491SS	200	30	N	20	N	500	N	.02	10	40	<2
492SS	150	30	N	30	N	150	N	.02	10	50	N
493SS	200	70	N	20	N	200	N	<.02	10	70	N
494SS	300	50	N	15	N	150	N	.02	10	30	V
495SS	300	200	N	15	200	200	N	N	10	180	V
496SS	200	30	N	15	N	100	N	.02	<10	40	N
497SS	500	30	N	20	N	200	N	<.02	10	30	V
498SS	200	20	N	15	N	50	N	<.02	<10	30	<2
499SS	200	30	N	20	N	200	N	.08	10	40	4
500SS	200	30	N	20	N	200	N	.04	N	40	V
501SS	200	30	N	15	N	200	N	.04	N	45	N
502SS	200	50	N	20	N	300	N	.02	N	35	N
503SS	200	50	N	20	N	300	N	.06	N	45	N
504SS	300	30	N	15	N	200	N	.04	N	40	N
505SS	200	50	N	30	N	200	N	.02	<10	55	V
506SS	150	50	N	20	N	300	N	.06	N	50	N
507SS	200	50	N	20	N	200	N	.04	10	60	N
508SS	150	50	N	20	N	200	N	.04	N	50	N
509SS	200	30	N	20	N	150	N	.02	N	45	N
510SS	150	50	N	30	N	300	N	.02	10	70	<2
511SS	200	50	N	30	N	200	N	.04	N	50	N
512SS	150	30	N	20	N	200	N	.04	<10	35	N
513SS	150	50	N	20	N	300	N	.06	10	30	N
514SS	150	50	N	20	N	200	N	.04	N	40	V
515SS	200	150	N	50	<200	500	N	.12	N	110	<2
516SS	200	20	N	10	N	70	N	.02	<10	20	N
517SS	150	15	N	10	N	70	N	.08	10	30	2
518SS	200	50	N	20	<200	300	N	.02	N	95	V
519SS	300	20	N	20	N	100	N	<.02	N	30	V
520SS	200	30	N	15	N	70	N	.02	N	90	N
521SS	150	50	N	20	N	200	N	.02	N	45	N
522SS	100	20	N	15	N	150	N	.04	N	30	V
523SS	150	30	N	15	N	100	N	.02	N	35	N
524SS	200	100	N	15	200	100	N	.02	N	210	V
525SS	150	20	N	10	N	30	N	.02	<10	40	N
526SS	200	50	N	20	N	150	N	.02	<10	65	N
527SS	150	20	N	20	N	150	N	.04	10	20	N
528SS	150	30	N	20	N	200	N	--	N	40	<2
529SS	<100	50	N	20	N	200	N	--	N	40	<2
530SS	150	30	N	30	N	200	N	--	<10	40	<2
531SS	100	50	N	20	N	300	N	--	<10	40	<2
532SS	100	50	N	50	N	300	N	--	10	40	2
533SS	300	70	N	15	N	100	N	--	10	75	5
534SS	200	50	N	20	N	100	N	--	10	45	2
535SS	300	50	N	20	N	150	N	--	10	40	4

**APPENDIX E**

**PANNED CONCENTRATE SAMPLE GEOCHEMICAL ANALYSES**

APPENDIX F  
SEDIMENT SAMPLE STATISTICAL DATA  
(see note)

APPENDIX G  
PANNED CONCENTRATE SAMPLE STATISTICAL DATA  
(see note)

APPENDIX H  
ROCK SAMPLE STATISTICAL DATA  
(see note)

Note: Appendices F, G and H have not been reproduced as part of this report. Each appendix consists of a series of computer generated tables relating to statistical analyses of collected sample data. All statistical analyses were done using the computer program "USGS STATPAC". The actual sample data are given in Appendices C, D and E. An example of each type of statistical analysis and results presentation format are included here for reference. Appendices F, G and H have been placed in open-file status and may be obtained upon request and payment of a reproduction and handling charge. Approximate length of the appendices are as follows: Appendix F, 58 pages; Appendix G, 63 pages; Appendix H, 81 pages. Copies may be obtained by writing or calling:

Director Public Affairs  
USAF Tactical Fighter Weapons Center  
Nellis AFB, NV 89191-5000

Telephone (702) 643-2750

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	X coor- dinate	Y coor- dinate	Fe-pct.	Mg-pct.	Ca-pct.	Ti-pct.	Mn-ppm	Ag-ppm	As-ppm	Au-ppm	B-ppm	Ba-ppm
			s	s	s	s	s	s	s	s	s	s
490C	60,559	415,218	.15	.07	2.0	1.50	200	N	N	N	<20	>10,000
491C	60,528	413,005	.30	.20	.5	>2.00	200	N	V	N	50	3,000
492C	60,910	413,250	.30	.20	1.0	>2.00	200	N	V	N	50	2,000
493C	61,710	414,960	.30	.20	1.0	1.50	300	N	N	N	70	700
494C	61,721	414,998	.30	.20	1.0	1.00	200	N	N	N	<20	500
495C	61,653	415,012	.20	.10	2.0	.10	100	N	V	N	<20	1,000
496C	61,355	414,816	.20	.15	2.0	2.00	300	N	V	N	20	500
497C	61,774	415,070	.20	.50	2.0	.50	200	N	N	N	<20	7,000
498C	61,605	415,270	.20	.20	3.0	2.00	300	N	N	N	20	1,000
499C	61,453	415,365	.15	.10	1.0	1.00	200	N	N	N	<20	>10,000
500C	61,371	415,428	.30	.10	1.5	>2.00	200	N	V	N	20	>10,000
501C	61,313	415,457	.50	.15	1.5	>2.00	150	N	V	N	30	1,500
502C	61,292	415,475	.20	.10	10.0	2.00	500	N	V	N	20	7,000
503C	61,309	415,535	.30	.10	15.0	>2.00	500	N	V	N	20	3,000
504C	61,320	415,549	.50	.15	15.0	2.00	500	N	N	N	<20	2,000
505C	61,094	415,614	.20	.07	15.0	2.00	500	N	V	N	<20	>10,000
506C	61,055	415,668	.30	.70	5.0	>2.00	300	N	V	N	20	>10,000
507C	60,921	415,751	.20	.15	15.0	2.00	500	N	N	N	N	>10,000
508C	60,875	415,700	.50	.15	1.0	>2.00	200	1.0	N	N	30	3,000
509C	60,900	415,900	.30	.10	15.0	>2.00	500	N	V	N	<20	>10,000
510C	60,865	415,875	.20	.07	10.0	>2.00	300	<1.0	N	N	20	5,000
511C	60,521	415,815	.20	.05	7.0	1.50	500	N	N	N	<20	500
512C	60,558	415,703	.20	.07	10.0	2.00	500	N	N	N	<20	>10,000
513C	60,597	415,593	.20	.10	7.0	2.00	300	N	N	N	<20	>10,000
514C	60,627	415,437	.30	.25	2.0	2.00	200	N	N	N	30	2,000
515C	60,577	415,304	.30	.15	1.5	1.50	200	N	N	N	20	10,000
516C	61,830	414,380	.30	1.00	3.0	2.00	300	N	N	N	20	2,000
517C	61,485	414,185	.30	.50	1.0	>2.00	200	N	N	N	<20	700
518C	61,625	413,085	.30	.70	1.5	1.50	200	N	V	N	20	700
519C	61,925	413,185	.20	.30	1.0	2.00	200	N	V	N	<20	500
520C	61,750	413,135	.30	1.00	2.0	.70	150	N	N	N	N	1,500
521C	60,200	414,200	.30	.20	1.0	2.00	150	N	N	N	20	1,000
522C	60,225	414,120	.30	.15	.7	>2.00	150	N	N	N	30	700
523C	60,240	414,070	.30	.15	.5	>2.00	150	N	V	N	20	700
524C	61,380	412,815	.20	1.00	3.0	.50	150	N	V	N	N	700
525C	61,290	412,665	.30	1.00	5.0	1.50	300	N	N	N	<20	700
526C	61,350	412,635	.20	1.50	3.0	2.00	200	N	N	N	<20	500
527C	60,525	414,100	.20	.10	.2	>2.00	150	N	N	N	20	5,000
528C	60,700	414,135	.20	.05	.3	2.00	200	N	V	N	30	200
529C	60,830	413,385	.50	.05	.5	>2.00	500	N	N	N	30	7,000
530C	60,825	413,380	.70	.05	.3	>2.00	300	N	N	N	50	10,000
531C	60,830	413,275	1.00	.07	.7	>2.00	700	N	N	N	100	10,000
532C	60,825	413,250	.50	.07	.7	>2.00	500	N	V	N	70	>10,000
533C	61,480	413,955	.30	5.00	10.0	.20	200	N	V	N	<20	500
534C	61,475	413,978	1.00	.20	3.0	>2.00	500	N	N	N	<20	70
535C	61,586	414,020	.50	2.00	5.0	2.00	300	N	N	N	<20	3,000

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s	Nb-ppm s	Ni-ppm s	Pb-ppm s	Sb-ppm s
490C	2	N	N	N	30	N	150	N	N	N	30	N
491C	N	N	N	N	100	200	200	N	<50	N	50	N
492C	N	N	N	N	70	N	150	N	N	N	100	N
493C	N	N	N	N	20	N	150	N	<50	N	<20	N
494C	5	N	N	N	50	N	200	N	N	<10	<20	N
495C	<2	N	N	N	N	N	200	N	N	N	<20	N
496C	<2	N	N	N	20	30	200	<10	<50	<10	150	N
497C	<2	N	N	N	<20	N	200	N	N	<10	30	N
498C	N	N	NN	<10	30	N	500	N	<50	<10	<20	N
499C	<2	N	N	V	<20	N	150	N	N	<10	<20	N
500C	N	N	N	N	70	N	100	N	<50	<10	30	N
501C	N	N	N	V	70	<10	150	N	N	N	20	N
502C	N	N	N	V	70	N	200	N	N	<10	<20	N
503C	N	N	N	NN	<10	70	300	N	<50	N	<20	N
504C	N	N	N	V	50	N	300	N	N	<10	20	N
505C	N	N	N	N	50	N	300	N	<50	<10	200	N
506C	N	N	NN	V	70	<10	200	N	<50	N	70	N
507C	N	N	N	V	20	N	500	N	50	<10	300	N
508C	N	N	NN	V	100	10	150	N	<50	<10	200	N
509C	N	N	N	<10	30	N	300	N	100	N	<20	N
510C	N	N	N	V	70	<10	200	N	<50	<10	200	N
511C	N	N	N	V	30	N	200	N	N	N	20	N
512C	N	N	N	V	50	N	200	N	N	<10	20	N
513C	N	N	NN	V	30	N	200	N	N	<10	<20	N
514C	<2	N	N	V	30	10	200	N	N	<10	20	N
515C	<2	N	N	N	20	<10	150	N	N	N	<20	N
516C	N	N	NN	V	50	20	200	N	N	15	<20	N
517C	N	N	NN	<10	50	N	150	N	70	10	50	N
518C	N	N	NN	V	50	N	200	N	N	<10	30	N
519C	N	N	N	V	70	N	200	N	N	10	<20	N
520C	N	N	N	N	20	N	200	N	N	<10	200	N
521C	N	N	NN	N	50	N	150	N	N	<10	<20	N
522C	N	N	NN	V	70	N	200	N	<50	<10	20	N
523C	N	N	NN	N	70	N	300	N	<50	<10	20	N
524C	N	N	N	V	20	N	200	N	N	N	<20	N
525C	N	N	NN	N	50	10	300	N	N	15	<20	200
526C	N	N	NN	N	50	N	300	N	N	10	30	N
527C	N	N	NN	N	70	N	200	N	N	<10	30	N
528C	N	N	NN	V	70	20	100	N	N	30	50	N
529C	N	N	N	N	70	10	70	N	N	15	20	N
530C	N	N	NN	N	70	20	200	N	N	50	150	N
531C	N	N	NN	10	100	30	200	N	N	20	100	N
532C	N	N	NN	<10	70	20	100	N	<50	20	20	N
533C	N	N	NN	N	N	N	70	N	N	N	<20	N
534C	N	N	NN	N	100	15	700	N	<50	15	70	N
535C	N	N	NN	N	50	<10	150	N	<50	10	20	500N

Table 2 -- Data Of Heavy-mineral Concentrate Samples From The Groom Range, Nevada--continued

Sample	Sc-ppm s	Sn-ppm s	Sr-ppm s	V-ppm s	W-ppm s	Y-ppm s	Zn-ppm s	Zr-ppm s	Th-ppm s	Hg-ppm inst
490C	50	N	200	30	N	700	N	>2,000	N	3.00
491C	150	N	500	50	N	1,000	N	>2,000	V	.30
492C	100	N	<200	70	N	1,000	N	>2,000	N	.30
493C	15	N	500	30	N	200	N	>2,000	N	<.20
494C	50	N	200	20	N	500	N	>2,000	N	N
495C	<10	N	700	<20	N	20	N	>2,000	N	<.20
496C	50	V	N	30	N	500	N	>2,000	V	<.20
497C	20	N	500	<20	N	300	N	>2,000	N	.20
498C	50	N	300	30	N	500	N	>2,000	<200	N
499C	20	N	1,500	20	N	300	N	>2,000	N	>5.00
500C	70	N	2,000	50	N	700	N	>2,000	N	>5.00
501C	100	N	700	50	N	1,000	N	>2,000	N	>5.00
502C	70	N	700	30	N	700	N	>2,000	N	.60
503C	100	N	500	50	N	1,000	N	>2,000	N	>5.00
504C	70	N	500	30	N	700	N	>2,000	V	3.80
505C	50	N	1,000	30	N	700	N	>2,000	N	.30
506C	100	N	2,000	50	N	1,000	N	>2,000	N	>5.00
507C	50	20	1,500	30	N	500	N	>2,000	N	>5.00
508C	150	N	N	100	N	1,000	N	>2,000	N	>5.00
509C	70	30	700	50	N	500	N	>2,000	N	>5.00
510C	100	N	N	50	N	700	N	>2,000	N	>5.00
511C	100	<20	<200	30	N	1,000	N	>2,000	N	1.90
512C	100	N	500	30	N	700	N	>2,000	V	.50
513C	50	N	700	30	N	700	N	>2,000	N	2.10
514C	100	N	N	30	N	1,000	N	>2,000	N	.50
515C	30	N	200	20	N	300	N	>2,000	V	2.30
516C	50	V	N	50	N	500	N	>2,000	V	>5.00
517C	70	N	N	30	N	500	N	>2,000	N	>5.00
518C	30	N	<200	30	N	500	N	>2,000	N	>5.00
519C	70	N	N	30	N	500	N	>2,000	N	.70
520C	10	N	300	20	N	150	N	>2,000	V	<.20
521C	100	N	N	30	N	700	N	>2,000	V	.60
522C	100	N	N	50	N	700	N	>2,000	N	.80
523C	100	N	N	50	N	700	N	>2,000	V	<.20
524C	<10	V	300	<20	N	150	N	>2,000	V	.40
525C	20	N	200	30	N	300	N	>2,000	N	<.20
526C	50	N	N	30	N	500	N	>2,000	N	<.20
527C	150	N	N	50	N	700	N	>2,000	N	.20
528C	150	V	N	50	N	1,000	N	>2,000	V	>5.00
529C	100	N	N	50	N	2,000	N	>2,000	N	4.40
530C	200	N	N	50	N	2,000	N	>2,000	N	1.00
531C	150	N	N	70	N	2,000	N	>2,000	V	.24
532C	100	N	N	70	N	3,000	N	>2,000	V	.28
533C	<10	N	500	<20	N	100	N	>2,000	N	1.90
534C	100	N	N	70	N	700	N	>2,000	N	>5.00
535C	50	N	<200	30	N	300	N	>2,000	N	>5.00

00010 FISHER-K STATISTICS - U S G S STATPAC (05/12/80)

DATE 7/13/85

TITLE  
Groome INPUT ID N M \*\*\*\*\* OPTIONS \*\*\*\*\*  
-ds-7 - 61 78 0 0 0 0 0 0 C C 0

NUMBER OF SELECTED COLUMNS = 35

SELECTED COLUMN INDICES

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38		

SELECTED COLUMN IDENTIFIERS

X-COORD.	Y-COORD.	S-FEZ	S-YGZ	S-CAZ	S-T1X	S-PH	S-AG	S-AS	S-AU
S-B	S-BA	S-BE	S-RI	S-CD	S-CO	S-ER	S-CU	S-LA	S-MD
S-HB	S-NI	S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y
S-ZN	S-ZR	S-TH	AA-AU-P	IVST-HG	AA-AS-P	AA-ZH-P	AA-SR-P		

NUMBER OF SELECTED ROW PAIRS = 1

SELECTED ROW PAIRS  
1- 61

00010 FISHER-K STATISTICS - U S G S STATPAC (06/12/80)

DATE 7/10/85

## Group

NO COLUMN	N	N	L	G	P	T	NO OF UNQUAL VALUES	NO OF IMPROPER QUAL VALUES	MINIMUM	MAXIMUM	NO
1 X-COORD.	0	0	0	0	0	0	61	0	60570.000	61290.000	1
2 Y-COORD.	0	0	0	0	0	0	61	0	413000.00	415757.00	2
3 S-FEX	0	0	0	1	0	0	60	0	3.2000000	15.0000000	3
4 S-MGX	1	0	12	0	0	0	48	0	0.0200000	5.0000000	4
5 S-CAZ	11	0	16	2	0	0	32	0	0.0500000	10.0000000	5
6 S-TIX	0	0	0	0	0	0	61	0	0.0050000	0.5000000	6
7 S-YH	0	0	1	0	0	0	60	0	10.0000000	5330.0700	7
8 S-AG	22	0	2	0	0	0	37	0	0.5000000	700.00000	8
9 S-AS	27	0	9	0	0	0	25	0	200.00000	2300.0000	9
10 S-AU	59	0	2	0	0	0	0	0	10.0000000	150.00000	10
11 S-B	5	0	6	0	0	0	50	0	20.0000000	5000.00000	11
12 S-BA	0	0	1	1	0	0	50	0	1.0000000	5.0000000	12
13 S-BE	16	0	22	0	0	0	23	0	10.0000000	50.0000000	13
14 S-BI	52	0	1	2	0	0	8	0	20.0000000	50.0000000	14
15 S-C0	54	0	3	1	0	0	3	0	20.0000000	500.00700	15
16 S-C0	25	0	12	0	0	0	24	0	5.0000000	150.00000	16
17 S-CR	16	0	18	0	0	0	27	0	10.0000000	30.0000000	17
18 S-CU	3	0	3	2	0	0	53	0	5.0000000	15000.000	18
19 S-LA	4	0	13	0	0	0	44	0	20.0000000	50.0000000	19
20 S-F0	32	0	5	0	0	0	24	0	5.0000000	200.00000	20
21 S-HB	61	0	0	0	0	0	0	0	5.0000000	200.00000	21
22 S-K1	9	0	13	0	0	0	39	0	5.0000000	200.00000	22
23 S-FB	1	0	6	8	0	0	46	0	10.0000000	2000.00000	23
24 S-SB	26	0	6	0	0	0	29	0	100.00000	5000.00000	24
25 S-SC	27	0	16	0	0	0	18	0	5.0000000	10.0000000	25
26 S-EN	58	0	1	0	0	0	2	0	20.0000000	30.0000000	26
27 S-SR	29	0	6	0	0	0	26	0	100.00000	2000.0700	27
28 S-V	4	0	18	0	0	0	39	0	10.0000000	100.00000	28
29 S-W	60	0	1	0	0	0	0	0	5.0000000	200.00000	29
30 S-Y	12	0	21	0	0	0	28	0	10.0000000	50.0000000	30
31 S-ZN	40	0	7	2	0	0	12	0	230.00000	5000.0700	31
32 S-ZP	1	0	2	0	0	0	58	0	10.0000000	1000.00000	32
33 S-TH	61	0	0	0	0	0	0	0	0.0500000	4.7000000	33
34 AA-AU-P	26	0	6	0	0	0	29	0	0.0500000	4.7000000	34
35 INST-HG	0	0	1	21	0	0	30	0	0.0500000	6.2000000	35
36 AA-AS-P	5	0	1	4	0	0	51	0	10.0000000	830.00000	36
37 AA-ZN-P	6	0	1	6	0	0	48	0	5.0000000	900.00000	37
38 AA-SB-P	8	0	1	8	0	0	44	0	2.0000000	1000.00000	38

## 00010 FISHER-K STATISTICS - U S G S STATPAC (06/12/80)

DATE 7/13/85

## Group

NO	COLUMN	K1 MEAN	SORT(K2) STD DEVIATION	K2 VARIANCE	K3	G1 SKEWNESS	K4	G2 KURTOSIS	NO
1	X-COORD.	60899.607	354.79215	125870.38	76147540.	1.7051814	3.34753950+10	2.1128061	1
2	Y-COORD.	414174.56	804.99510	648017.12	3.88372760+08	0.7445075	-2.35409970+11	-0.5604984	2
3	S-FEZ	3.0450000	3.6393529	13.244890	102.74381	2.1314892	751.79172	4.2854895	3
4	S-MGX	0.3314583	0.8304677	3.5396766	2.4378556	4.2563740	10.265116	21.581769	4
5	S-CAZ	1.2021875	2.2267563	5.9584434	31.376830	2.8417837	207.03150	8.4206518	5
6	S-TIZ	0.0857377	0.1306007	0.3170565	0.0060375	2.7103042	0.0018109	6.2246793	6
7	S-VH	639.33333	1291.1289	1357014.0	6.00864700+09	2.7916946	1.91529940+13	6.8922051	7
8	S-AG	86.748649	146.06200	21597.829	8943110.2	2.8175618	4.19348370+09	8.9834654	8
9	S-AS	516.00000	436.53942	193566.67	1.83712170+08	2.2083481	1.93785920+11	5.7361512	9
10	S-AU								10
11	S-B	35.200000	28.960917	833.73469	44889.260	1.8480152	2893729.0	4.1134728	11
12	S-RA	517.25814	830.23227	539285.62	1.98763500+09	3.4732641	7.14890260+12	15.046689	12
13	S-BE	1.4565217	0.9282565	0.3616601	2.3510023	2.9393350	7.2454763	9.7587007	13
14	S-SI	20.625000	13.479482	181.59643	4426.7793	1.8072786	105935.27	3.2088380	14
15	S-CD	183.33333	274.28695	75233.333	35688333.	1.7294611			15
16	S-CO	22.333333	38.544911	1135.7101	140213.59	2.4484372	11637134.	5.2720298	16
17	S-CR	15.743741	6.6076447	53.663969	289.37322	1.0030401	310.54131	0.1620043	17
18	S-CU	721.16981	2153.5996	4537991.2	5.87929540+10	5.8861375	7.30869540+14	38.625405	18
19	S-LA	29.772727	10.672424	113.90063	1226.4422	1.0089226	-1834.1486	-0.1413781	19
20	S-MO	28.291667	47.531664	2259.2591	320121.15	2.9810229	4412684.9	8.6451165	20
21	S-NB								21
22	S-NI	20.538462	38.325370	1168.8340	22009.63	3.9082524	33687014.	15.614106	22
23	S-PB	2131.8478	4554.4953	23743427.	2.50616740+11	2.6527019	2.82242750+15	6.5593647	23
24	S-SB	110P.6207	1338.9838	1792869.5	4.50161020+09	1.8751883	1.05779550+13	3.3219321	24
25	S-SC	6.0555556	1.9242179	3.7025144	11.283497	1.5837294	12.834067	0.9362198	25
26	S-SN	25.000000	7.0710678	50.000000					26
27	S-SR	359.61538	422.85204	178803.85	2.08483460+08	2.7574416	2.79665780+11	8.7475337	27
28	S-V	30.769231	27.157883	737.55C61	24646.966	1.2334833	195560.30	0.359495	28
29	S-W								29
30	S-Y	15.535714	8.2033514	67.204974	1697.1853	3.0671184	52616.013	11.618570	30
31	S-ZN	1000.0700	1381.0405	1207277.7	6.81054550+09	2.5856081	2.61530610+13	7.1894708	31
32	S-ZP	100.68966	133.43825	12797.752	13311446.	5.6063108	1.17968550+10	37.242245	32
33	S-TH								33
34	AA-AU-P	0.8172414	1.1461329	1.3136307	2.8496189	1.8927001	6.2019118	1.5040825	34
35	INST-HS	1.3069231	1.5442425	2.3846850	6.0977340	1.6558536	11.570157	2.0345914	35
36	AA-AS-P	227.54932	219.62325	41234.373	11758942.	1.1100264	4.77443350+08	0.2053010	36
37	AA-ZN-P	113.75000	183.95912	33840.957	20447446.	3.2845442	1.33418480+10	11.650128	37
38	AA-SD-P	145.40909	214.44783	45986.154	23653599.	2.3985972	1.34707160+10	6.3699570	38

NOTE: THE ABOVE STATISTICS ARE COMPUTED FOR THE JUNQUALIFIED VALUES ONLY.

D0101 CORRELATION ANALYSIS - USGS STATPAC (01/15/82)

DATE 7/10/85

TITLE Groom  
INPUT ID -ds-3 N 61 M 36 \*\*\*\* OPTIONS \*\*\*\*\* OUTPUT ID - N 36 M 36

NUMBER OF SELECTED COLUMNS 36

SELECTED COLUMN INDICES

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

SELECTED COLUMN IDENTIFIERS

S-FEX	S-PGZ	S-CAX	S-TIX	S-MN	S-AG	S-AS	S-AU	S-3	S-3A
S-BE	S-BI	S-CO	S-CO	S-CR	S-CU	S-LA	S-MO	S-NB	S-NI
S-PB	S-SB	S-SC	S-SN	S-SR	S-V	S-W	S-Y	S-ZN	S-ZR
S-TH	AA-AU-P	INST-HG	AA-AS-P	AA-ZN-P	AA-SB-P				

NUMBER OF SELECTED ROW PAIRS 1

SELECTED ROW PAIRS  
1- 61

PHASE TWO RESULTS

WARNING \*\* THE RESULTS FROM THIS PHASE "SHOULD NOT" BE ENTERED INTO D0096-FACTOR ANALYSIS.  
THE CORRELATION MATRIX FROM THIS PHASE DOES NOT HAVE THE GRAMIAN PROPERTIES  
WHICH ARE REQUIRED FOR FACTOR ANALYSIS.

## 00101 CORRELATION ANALYSIS - USGS STATPAC (01/15/82)

DATE 7/10/85

## ARRAY OF MEANS -

	1 S-FEZ	2 S-MGX	3 S-CAZ	4 S-TIZ	5 S-MN	6 S-AG	7 S-AS	8 S-AU	9 S-B	10 S-BA
1 S-FEZ	0.2263	0.3315	0.4745	0.2263	0.2352	0.2291	0.3635	0.2877	0.2311	0.2311
2 S-MGX	-1.1607	-1.1592	-1.0619	-1.1682	-1.1607	-1.0092	-0.8900	-1.2306	-1.1977	-1.1977
3 S-CAZ	-0.4837	-0.4345	-0.5063	-0.5063	-0.5063	-0.1377	-0.0537	-0.4981	-0.5224	-0.5224
4 S-TIZ	-1.3411	-1.2773	-1.2843	-1.3404	-1.3411	-1.3819	-1.4376	-1.2558	-1.3382	-1.3382
5 S-MN	2.1347	2.3363	2.3548	2.1299	2.1299	2.2346	2.2479	2.1921	2.1171	2.1171
6 S-AG	1.2022	1.1561	1.6611	1.2022	1.2022	1.2322	1.5704	1.2705	1.2273	1.2273
7 S-AS	2.6058	2.6181	2.6802	2.6058	2.6058	2.6010	2.6058	2.6025	2.5891	2.5891
8 S-AU	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
9 S-B	1.4332	1.4759	1.4614	1.4306	1.4296	1.4762	1.4888	1.4336	1.4192	1.4192
10 S-HA	2.3728	2.3194	2.4020	2.3716	2.3749	2.3160	2.2865	2.4159	2.3716	2.3716
11 S-DE	0.1048	0.1365	0.1253	0.1134	0.1134	0.0867	0.1112	0.1134	0.1195	0.1195
12 S-PI	1.2507	1.1590	1.1761	1.2507	1.2507	1.2507	1.2435	1.3306	1.2507	1.2507
13 S-CO	1.8257	2.0890	2.0880	1.8257	1.8257	1.8257	1.3891	1.8257	1.8257	1.8257
14 S-CO	1.0099	1.0174	1.1185	0.9969	0.9969	1.0552	1.2553	0.9726	1.0099	1.0099
15 S-CR	1.1516	1.1714	1.1861	1.1637	1.1637	1.1153	1.1188	1.1632	1.1632	1.1632
16 S-CU	1.9136	1.8817	1.8910	1.9020	1.9252	2.3167	2.5307	1.8778	1.8813	1.8813
17 S-L4	1.4488	1.4710	1.4675	1.4494	1.4436	1.4002	1.3893	1.4636	1.4499	1.4499
18 S-HO	1.1528	1.0643	1.0593	1.1528	1.1528	1.1735	1.2193	1.1270	1.1528	1.1528
19 S-NB	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
20 S-NI	1.0371	1.0936	1.1390	1.0438	1.0438	1.1359	1.2140	1.0468	1.0504	1.0504
21 S-PB	2.2844	2.1546	1.8582	2.2844	2.3062	2.8642	2.9444	2.1795	2.2752	2.2752
22 S-SB	2.7424	2.7223	2.7203	2.7424	2.7689	2.8280	2.8500	2.7092	2.7589	2.7589
23 S-SC	0.7654	0.7693	0.7737	0.7654	0.7654	0.7172	0.7233	0.7654	0.7607	0.7607
24 S-SN	1.3591	1.4771	1.4771	1.3891	1.3891	1.3891	1.3891	1.3010	1.3891	1.3891
25 S-SR	2.3202	2.3955	2.4140	2.3302	2.3802	2.4216	2.4481	2.3959	2.3533	2.3533
26 S-V	1.3299	1.3804	1.5345	1.3393	1.3404	1.1900	1.3921	1.3495	1.3495	1.3495
27 S-W	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
28 S-Y	1.1534	1.1652	1.1550	1.1562	1.1599	1.1741	1.1607	1.1586	1.1545	1.1545
29 S-ZN	2.7455	2.7559	2.8740	2.7455	2.7455	2.7364	2.8776	2.6401	2.7497	2.7497
30 S-ZR	1.8340	1.8408	1.7816	1.8421	1.8420	1.8694	1.8041	1.9082	1.8433	1.8433
31 S-TH	*****	*****	*****	*****	*****	*****	*****	*****	*****	*****
32 AA-AU-2	-0.5316	-0.6522	-0.7452	-0.5316	-0.5300	-0.5621	-0.6387	-0.4942	-0.5316	-0.5316
33 INST-HG	-0.1950	-0.2317	-0.1485	-0.1950	-0.1902	0.0475	0.3364	-0.0874	-0.1323	-0.1323
34 AA-AS-2	2.1162	2.0353	2.0962	2.1154	2.1208	2.3087	2.5688	2.1086	2.1317	2.1317
35 AA-ZH-2	1.6878	1.6219	1.7187	1.6875	1.6875	1.8603	1.9572	1.7176	1.6915	1.6915
36 AA-SB-2	1.7261	1.6302	1.5770	1.6937	1.6997	1.9630	2.2055	1.6595	1.6972	1.6972

## Q101 CORRELATION ANALYSIS - USGS STATPAC (01/15/82)

DATE 7/10/88

## RRAY OF VARIANCES -

	1 S-FEZ	2 S-MGX	3 S-CAX	4 S-TIX	5 S-MN	6 S-AG	7 S-AS	8 S-AU	9 S-B	10 S-PA
1 S-FEZ	0.237	0.231	0.180	0.237	0.236	0.201	0.225	0.209	0.239	
2 S-MGX	0.446	0.439	0.431	0.439	0.446	0.577	0.555	0.298	0.418	
3 S-CAX	0.528	0.530	0.532	0.532	0.532	0.725	0.607	0.479	0.541	
4 S-TIX	0.203	0.175	0.254	0.200	0.203	0.121	0.146	0.141	0.194	
5 S-MN	0.655	0.596	0.518	0.645	0.645	0.684	0.527	0.609	0.661	
6 S-AG	0.926	1.013	1.043	0.926	0.926	0.926	0.750	0.913	0.929	
7 S-AS	0.085	0.104	0.109	0.086	0.086	0.090	0.086	0.102	0.083	
8 S-AU	*****	*****	*****	*****	*****	*****	*****	*****	*****	
9 S-B	0.098	0.092	0.111	0.098	0.098	0.121	0.133	0.096	0.091	
10 S-PA	0.293	0.245	0.373	0.285	0.289	0.240	0.287	0.224	0.285	
11 S-BE	0.036	0.039	0.043	0.036	0.036	0.016	0.021	0.076	0.037	
12 S-RI	0.057	0.023	*****	0.057	0.057	0.066	0.066	0.073	0.057	
13 S-CO	0.580	0.746	0.746	0.580	0.580	0.580	0.016	0.580	0.580	
14 S-CO	0.226	0.235	0.287	0.220	0.220	0.280	0.359	0.196	0.226	
15 S-CR	0.026	0.031	0.028	0.029	0.029	0.021	0.015	0.029	0.030	
16 S-CU	0.942	0.938	1.166	0.931	0.920	0.819	0.808	0.849	0.835	
17 S-LA	0.021	0.020	0.023	0.021	0.020	0.016	0.019	0.021	0.021	
18 S-HO	0.200	0.084	0.117	0.200	0.200	0.220	0.227	0.152	0.200	
19 S-NB	*****	*****	*****	*****	*****	*****	*****	*****	*****	
20 S-HI	0.157	0.177	0.207	0.155	0.155	0.193	0.250	0.156	0.162	
21 S-PB	1.082	1.002	0.993	1.082	1.082	0.837	1.167	0.942	1.103	
22 S-S9	0.298	0.336	0.459	0.293	0.288	0.260	0.307	0.322	0.298	
23 S-SC	0.014	0.014	0.015	0.014	0.014	0.003	0.004	0.014	0.014	
24 S-SY	0.016	*****	*****	0.016	0.016	0.016	0.016	*****	0.016	
25 S-SR	0.131	0.155	0.170	0.131	0.131	0.118	0.139	0.146	0.133	
26 S-V	0.125	0.129	0.126	0.126	0.129	0.079	0.124	0.129	0.129	
27 S-W	*****	*****	*****	*****	*****	*****	*****	*****	*****	
28 S-Y	0.070	0.031	0.031	0.028	0.028	0.020	0.015	0.010	0.028	
29 S-ZH	0.208	0.207	0.209	0.208	0.208	0.228	0.239	0.140	0.229	
30 S-ZR	0.129	0.115	0.126	0.131	0.133	0.145	0.180	0.107	0.125	
31 S-TH	*****	*****	*****	*****	*****	*****	*****	*****	*****	
32 AA-AUL-P	0.418	0.450	0.336	0.438	0.452	0.475	0.577	0.479	0.438	
33 INST-HG	0.327	0.337	0.312	0.327	0.334	0.202	0.088	0.242	0.307	
34 AA-AS-P	0.254	0.226	0.273	0.259	0.263	0.171	0.057	0.210	0.250	
35 AA-ZN-P	0.349	0.409	0.435	0.343	0.343	0.255	0.225	0.357	0.323	
36 AA-SB-P	0.469	0.436	0.495	0.504	0.515	0.417	0.235	0.460	0.523	

## DOTOT CORRELATION ANALYSIS - USGS STATPAC (01/15/82)

DATE 7/10/85

COLUMN	VERSUS	COLUMN	CORRELATION COEFFICIENT	NO. OF PAIRS
1 (S-FEZ)	)	2 (S-MGX)	0.2774	47
1 (S-FEZ)	)	3 (S-CAZ)	0.3315	31
1 (S-FEZ)	)	4 (S-TIX)	0.2527	60
1 (S-FEZ)	)	5 (S-'4H)	0.3700	59
1 (S-FEZ)	)	6 (S-AG)	-0.0871	37
1 (S-FEZ)	)	7 (S-AS)	0.4771	25
1 (S-FEZ)	)	8 (S-AU)	*****	0
1 (S-FEZ)	)	9 (S-B)	0.1220	49
1 (S-FEZ)	)	10 (S-BA)	0.0502	58
1 (S-FEZ)	)	11 (S-BF)	0.2752	22
1 (S-FEZ)	)	12 (S-BI)	0.3250	8
1 (S-FEZ)	)	13 (S-CD)	0.3965	3
1 (S-FEZ)	)	14 (S-CO)	0.4376	23
1 (S-FEZ)	)	15 (S-CR)	0.2062	26
1 (S-FEZ)	)	16 (S-CU)	0.3193	52
1 (S-FEZ)	)	17 (S-LA)	0.1263	43
1 (S-FEZ)	)	18 (S-HO)	-0.0059	24
1 (S-FEZ)	)	19 (S-NB)	*****	0
1 (S-FEZ)	)	20 (S-NI)	0.3778	38
1 (S-FEZ)	)	21 (S-PB)	-0.3043	46
1 (S-FEZ)	)	22 (S-SB)	-0.1497	29
1 (S-FEZ)	)	23 (S-SC)	0.1208	18
1 (S-FEZ)	)	24 (S-SN)	-1.0000	2
1 (S-FEZ)	)	25 (S-SR)	0.1631	26
1 (S-FEZ)	)	26 (S-V)	0.3684	38
1 (S-FEZ)	)	27 (S-d)	*****	0
1 (S-FEZ)	)	28 (S-Y)	0.2159	27
1 (S-FEZ)	)	29 (S-ZN)	0.0552	12
1 (S-FEZ)	)	30 (S-ZR)	0.0140	57
1 (S-FEZ)	)	31 (S-TH)	*****	0
1 (S-FEZ)	)	32 (AA-AU-P)	0.3082	29
1 (S-FEZ)	)	33 (INST-HG)	0.2703	39
1 (S-FEZ)	)	34 (AA-AS-P)	0.1560	50
1 (S-FEZ)	)	35 (AA-ZN-P)	0.4037	47
1 (S-FEZ)	)	36 (AA-SB-P)	-0.1259	43
2 (S-MGX)	)	3 (S-CAZ)	0.9141	29
2 (S-MGX)	)	4 (S-TIX)	-0.3174	48
2 (S-MGX)	)	5 (S-'4H)	0.1886	47
2 (S-MGX)	)	6 (S-AG)	0.3355	28
2 (S-MGX)	)	7 (S-AS)	0.2605	18
2 (S-MGX)	)	8 (S-AU)	*****	0
2 (S-MGX)	)	9 (S-3)	0.2777	41
2 (S-MGX)	)	10 (S-BA)	-0.1267	45
2 (S-MGX)	)	11 (S-DE)	-0.3319	20
2 (S-MGX)	)	12 (S-BI)	-0.9107	3
2 (S-MGX)	)	13 (S-CD)	1.0000	2
2 (S-MGX)	)	14 (S-CO)	0.5328	22
2 (S-MGX)	)	15 (S-CR)	-0.0333	23
2 (S-MGX)	)	16 (S-CU)	0.3288	41
2 (S-MGX)	)	17 (S-LA)	-0.1563	34

D0036 GRAPHICAL ANALYSIS - U S G'S STATPAC (02/07/82)

DATE 7/10/85

TITLE	INPUT ID	N	M	***** OPTIONS *****
groom	-ds-3	61	36	1 C 0 0 2 1 0 0 0 0

VARIABLE NO. 8 CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

VARIABLE NO. 19 CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

VARIABLE NO. 27 CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

VARIABLE NO. 31 CONTAINS NO VALID DATA POINTS. THEREFORE THIS VARIABLE WILL BE SKIPPED.

00036 GRAPHICAL ANALYSIS - U S G S ST4TPAC (02/07/82)

DATE 7/13/32

TITLE	INPUT ID	N	M	***** OPTIONS *****
groom	-ds-3 -	61	36	1 0 0 0 2 1 0 0 0

NUMBER OF SELECTED VARIABLES = 32

### **SELECTED VARIABLE INDICES**

**SELECTED VARIABLE IDENTIFIER**

S-FEX S-MGX S-CAX S-TIX S-4H S-AG S-AS S-B S-B4 S-BF  
 S-BI S-CO S-CO S-CR S-CU S-LA S-PO S-NI S-PB S-SB  
 S-SC S-SN S-SR S-V S-Y S-ZN S-ZR AA-AU-P INST-HS AA-A3-2  
 AA-ZH-P AA-SH-P

**SELECTED ROW PAIRS**

1 TO 61

**LOWER BOUNDARIES OF THE LOWEST CLASS**

### **CLASS INTERVALS**

D0036 GRAPHICAL ANALYSIS - U S G S STATPAC (02/07/82)

DATE 7/10/85

## STUDY

## FREQUENCY TABLE FOR VARIABLE 1 (S-FEX )

LOG LIMITS LOWER - UPPER	OBS FREQ	CJ4 FREQ	PERCENT FREQ	PERCENT CJ4 FREQ	THEOR FREQ (NORMAL DIST)	(THEOR FREQ - OBS FREQ)**2/THEOR FREQ
N	0	3	0.00	0.00		
L	0	0	0.00	0.00		
T	0	0	0.00	0.00		
-7.500E-01 - -5.833E-01	1	1	1.64	1.64	1.45	1.45
-5.833E-01 - -4.167E-01	6	7	9.84	11.48	1.57	0.21
-4.167E-01 - -2.500E-01	5	12	8.20	19.67	2.71	4.00
-2.500E-01 - -8.333E-02	6	18	9.84	29.51	4.18	0.16
-8.333E-02 - 8.333E-02	7	25	11.48	40.98	5.77	0.01
8.333E-02 - 2.500E-01	4	29	6.56	67.54	7.16	0.00
2.500E-01 - 4.167E-01	7	36	11.48	59.02	7.95	1.96
4.167E-01 - 5.833E-01	10	46	15.39	75.41	7.92	0.11
5.833E-01 - 7.500E-01	7	53	11.48	86.89	7.07	1.21
7.500E-01 - 9.167E-01	1	54	1.64	88.52	5.66	0.32
9.167E-01 - 1.083E+00	3	57	4.92	93.44	4.06	2.31
1.083E+00 - 1.250E+00	3	60	4.92	98.36	2.61	0.06
G	1	61	1.64	100.00	1.45	0.01
H	0	51				
B	0	61				

TOTALS LESS H AND B

61

HISTOGRAM FOR VARIABLE 1 (S-FEX )  
MIDPOINTS ARE EXPRESSED AS ANTILOGS

2.154E-01 XX  
 3.162E-01 XXXXXXXXXX  
 4.642E-01 XXXXXXXX  
 6.813E-01 XXXXXXXXXX  
 1.000E+00 XXXXXXXXXXXX  
 1.468E+00 XXXXXXXX  
 2.154E+00 XXXXXXXXXXXX  
 3.162E+00 XXXXXXXXXXXXXXXXX  
 4.642E+00 XXXXXXXXXXXX  
 6.813E+00 XX  
 1.000E+01 XXXXX  
 1.468E+01 XXXXX

THE FOLLOWING STATISTICS ARE COMPUTED FOR THE UNQUALIFIED VALUES ONLY

MINIMUM ANTILOG = 2.00000E-01  
 MAXIMUM ANTILOG = 1.50000E+01  
 GEOMETRIC MEAN = 1.68785E+00  
 GEOMETRIC DEVIATION = 3.06641E+00  
 VARIANCE OF LOGS = 2.36200E-01

PERCENT TABLE FOR VARIABLE 1 (S-FEX ) BY LINEAR INTERPOLATION FROM FREQUENCY TABLE  
IF SELECTED PERCENTILES FALL WITHIN DATA EITHER ABOVE OR BELOW THE LIMITS OF DETECTION.

THE DATA VALUE ON THE TABLE IS GIVEN AS 0.9999991E 50

SELECTED PERCENTILE	DATA VALUE	ANTI LOG OF VALUE
90.00	9.666701E-01	0.261260E+00
95.00	1.136115E+00	1.358091E+01
98.00	1.237792E+00	1.723947E+01

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada  
 (N = not detected; < = detected but below the limit of determination shown; > = determined to be greater than the value shown.)

Sample	X coord- dinate	Y coord- dinate	Fe-pct. %	Mg-pct. %	Ca-pct. %	Ti-pct. %	Mn-ppm %	Ag-ppm %	As-ppm %	Au-ppm %
3000	61.085	415.757	.5	<.02	.10	.030	50	N	N	N
3001	61.172	415.463	.7	.05	.10	.100	50	N	N	V
3002	61.410	414.075	15.0	.10	.30	.070	70	1.5	1,533	V
3003	61.335	414.370	.7	.02	.30	.050	200	N	V	V
3004	61.800	413.901	.3	<.02	.05	.005	15	N	N	V
3005	61.045	413.027	.5	1.50	>20.00	.010	200	N	V	N
3006	60.876	413.280	2.0	1.00	5.00	.015	200	300.0	303	N
3007	60.891	413.460	3.0	.07	1.00	.150	500	2.0	1,033	V
3008	60.883	413.361	3.0	.30	1.50	.050	500	200.0	733	V
3009	60.892	413.374	5.0	1.00	10.00	.050	<.000	50.0	200	V
3010	60.619	413.820	.3	<.02	<.05	.015	15	N	V	N
3011	60.619	413.820	2.0	.05	.07	.070	15	N	N	V
3012	60.619	413.820	1.0	.05	<.05	.050	10	N	V	V
3013	60.635	413.892	2.0	.15	<.05	.200	15	1.5	<233	N
3014	60.643	414.027	.7	.03	<.05	.050	<.000	20.0	200	N
3015	60.643	414.027	1.0	.05	.05	.020	15	700.0	303	N
3016	60.668	414.029	.3	<.02	N	.010	20	70.0	533	V
3017	60.668	414.029	2.0	<.02	<.05	.020	30	153.0	733	V
3018	60.669	414.206	.2	.02	<.05	.015	20	N	N	N
3019	61.740	414.422	3.0	.03	.10	.500	70	N	N	N
3020	60.855	415.665	5.0	.03	N	.050	10	7.0	V	N
3021	60.855	415.585	1.0	.02	<.05	.050	50	1.0	N	V
3022	61.291	413.845	3.0	.05	1.50	.050	300	N	733	N
3023	61.760	414.405	3.0	.03	.10	.500	100	N	N	N
3024	61.290	414.630	3.0	.10	.20	.500	70	N	V	N
3025	61.890	414.130	5.0	.07	.20	.500	50	N	N	V
3026	61.100	413.000	10.0	.03	1.00	.020	<.000	<.5	<233	V
3027	61.120	413.025	15.0	.03	1.00	.015	200	N	303	N
3028	60.660	414.020	.5	.02	<.05	.050	500	100.0	<200	N
3029	60.660	414.020	.5	.02	<.05	.020	500	70.0	V	N
3030	60.660	414.000	1.5	.03	N	.050	700	70.0	200	<10
3031	60.630	414.300	3.0	.03	N	.070	<.000	.5	<233	V
3032	60.600	414.300	5.0	.03	<.05	.070	300	2.0	503	N
3033	60.619	413.820	.5	.01	N	.050	<10	N	V	V
3034	60.635	413.880	.7	.05	N	.070	15	7.0	200	V
3035	60.570	414.220	.3	.02	4	.030	10	N	V	V
3036	60.610	414.240	7.0	.02	.05	.020	100	N	N	V
3037	60.635	414.201	>20.0	.03	.05	.050	70	N	V	V
3038	60.605	415.390	10.0	.02	.15	.100	<.000	N	V	V
3039	60.910	413.315	10.0	5.00	7.00	.015	1,000	50.0	503	N
3040	60.885	413.335	1.0	1.50	3.00	.015	700	500.0	303	V
3041	60.900	413.345	5.0	2.00	>20.00	.015	<.000	.7	V	N
3042	60.920	413.335	2.0	1.00	2.00	.050	300	100.0	N	N
3043	60.920	413.360	15.0	1.00	2.00	.020	300	100.0	2,000	V
3044	60.925	413.380	3.0	.10	1.00	.030	700	200.0	700	V

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada

Sample	B-ppm s	Ba-ppm s	Be-ppm s	Bi-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mo-ppm s
3000	10	200	1.5	N	N	N	N	7	33	5
3001	50	1,500	1.0	N	N	N	N	5	53	4
3002	70	70	N	N	N	N	15	10	4	23
3003	15	100	N	N	N	N	<10	10	33	4
3004	N	20	N	N	N	<5	N	<5	23	4
3005	N	<20	N	N	N	N	N	5	4	4
3006	15	700	<1.0	N	>100	<5	N	2,000	23	4
3007	100	>5,000	1.0	N	N	5	15	15,000	30	4
3008	150	1,000	<1.0	N	N	100	N	>20,000	23	30
3009	50	100	N	N	N	50	N	1,000	<23	10
3010	20	100	N	N	N	N	N	7	<23	4
3011	30	300	<1.0	N	N	N	10	7	33	4
3012	30	500	<1.0	N	N	N	<10	4	33	N
3013	70	300	1.0	N	N	5	10	10	33	<5
3014	50	150	2.0	<10	N	7	10	300	30	10
3015	50	500	<1.0	N	30	N	15	500	23	13
3016	<10	200	N	15	<20	N	N	3,000	23	13
3017	10	300	<1.0	30	20	N	N	700	33	50
3018	N	50	N	N	N	N	<10	<5	33	4
3019	15	1,500	<1.0	N	N	7	20	20	33	<5
3020	15	300	<1.0	N	N	N	10	2,000	23	4
3021	<10	100	<1.0	N	N	N	<10	15	23	<5
3022	15	200	1.0	N	N	<5	10	7	20	15
3023	15	1,000	<1.0	N	N	5	10	15	53	<5
3024	30	1,500	1.0	N	N	<5	20	15	53	4
3025	50	1,500	1.0	N	N	<5	20	20	53	N
3026	30	70	3.0	N	N	10	<10	7	<23	7
3027	30	150	1.0	N	N	<5	20	20	33	4
3028	20	100	N	N	N	5	<10	100	33	13
3029	15	200	<1.0	N	N	N	<10	200	33	<5
3030	20	100	1.0	N	N	<5	<10	400	23	7
3031	70	200	1.0	N	N	7	10	10	33	13
3032	50	200	<1.0	N	N	<5	10	100	33	15
3033	30	150	N	N	N	N	N	5	53	4
3034	50	200	<1.0	10	N	N	<10	150	53	N
3035	<10	70	N	N	N	N	N	N	33	N
3036	10	50	5.0	N	N	N	N	4	33	4
3037	20	200	2.0	N	N	5	30	20	33	4
3038	15	200	1.0	N	N	<5	<10	<5	33	33
3039	N	30	N	N	N	100	<10	2,000	4	N
3040	10	20	N	N	<20	7	8	3,000	23	4
3041	N	200	N	N	N	5	<10	15	<23	N
3042	70	300	1.0	N	500	<5	10	700	33	4
3043	30	70	N	N	N	20	10	1,000	4	5
3044	100	200	<1.0	N	N	150	N	>20,000	<23	53

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada

Sample	Nb-ppm	Bi-ppm	Pb-ppm	Sb-ppm	Sc-ppm	Sn-ppm	Er-ppm	V-ppm	Mg-ppm	T-ppm
	s	s	s	s	s	s	s	s	s	s
3000	n	n	20	n	<5	n	100	<10	v	15
3001	n	n	20	n	5	n	100	<10	n	15
3002	n	15	<10	100	<5	n	n	15	v	<10
3003	n	5	<10	n	5	n	n	15	v	20
3004	n	5	n	n	n	n	n	20	n	n
3005	n	7	<10	n	n	n	150	10	v	10
3006	n	<5	>20,000	5,000	n	n	n	<10	v	n
3007	n	10	500	100	7	n	2,000	20	v	20
3008	n	200	>20,000	2,000	5	n	700	<10	v	15
3009	n	50	>20,000	100	5	n	200	<10	v	20
3010	n	n	70	<100	n	n	n	<10	v	n
3011	n	5	15	100	<5	n	<100	30	v	10
3012	n	<5	15	n	<5	n	100	20	v	<10
3013	n	10	100	<100	5	n	150	50	v	30
3014	n	<5	10,000	300	n	n	n	50	v	<10
3015	n	n	20,000	2,000	n	n	n	70	n	n
3016	n	n	15,000	1,500	n	n	n	<10	v	v
3017	n	7	>20,000	3,000	n	n	n	<10	v	n
3018	n	n	50	n	n	n	n	<10	n	n
3019	n	7	50	n	7	n	1,000	100	v	10
3020	n	n	3,000	150	n	n	n	10	v	<10
3021	n	<5	20	n	n	n	n	10	v	n
3022	n	<5	10	<100	5	n	150	70	v	10
3023	n	5	30	n	5	n	1,000	70	x	<10
3024	n	<5	30	n	10	n	500	70	n	10
3025	n	<5	30	n	10	n	500	70	v	10
3026	v	10	10	<100	5	n	n	100	v	15
3027	n	7	10	100	n	n	300	70	n	<10
3028	n	n	2,000	1,000	n	n	n	10	n	n
3029	n	<5	3,000	500	n	n	n	10	n	<10
3030	n	5	1,000	700	<5	n	n	20	v	<10
3031	n	20	50	<100	<5	n	n	10	v	15
3032	n	7	500	300	<5	n	<100	10	n	<10
3033	n	<5	20	100	n	n	n	20	n	10
3034	n	<5	300	700	<5	n	n	20	n	10
3035	n	n	<10	n	n	n	n	10	v	v
3036	n	5	<10	n	n	n	100	10	v	<10
3037	n	20	<10	n	<5	n	n	50	n	15
3038	n	<5	10	n	5	n	<100	10	<50	15
3039	n	50	2,000	2,000	<5	n	<100	<10	v	15
3040	n	10	>20,000	5,000	<5	n	100	v	v	10
3041	n	15	200	n	n	n	200	n	n	15
3042	n	20	>20,000	300	5	n	150	10	n	<10
3043	n	10	>20,000	1,000	<5	n	200	<10	v	<10
3044	n	150	>20,000	2,000	5	n	200	n	v	20

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada

Sample	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm s	Hg-ppm inst	As-ppm s	Zn-ppm s	Sb-ppm s	
3000	N	50	N	N	>5.00	10	40	N	
3001	N	100	N	N	.10	N	5	N	
3002	200	50	N	N	>5.00	>1,000	110	70	
3003	N	70	N	N	.12	20	5	N	
3004	N	15	N	N	<.02	N	25	N	
3005	N	15	N	N	.06	20	5	15	
3006	>10,000	N	N	N	>5.00	100	>1,000	>500	
3007	500	150	N	N	2.30	>1,000	310	20	
3008	<200	50	N	N	>5.00	700	35	>500	
3009	N	20	N	N	7.60	500	N	96	
3010	N	50	N	.80	.42	80	10	20	
3011	N	150	N	2.70	.62	140	35	60	
3012	N	100	N	.05	.70	60	N	2	
3013	N	200	N	.40	1.50	200	N	42	
3014	N	70	N	2.00	>5.00	190	25	173	
3015	<200	100	N	.15	>5.00	350	110	523	
3016	N	20	N	.25	>5.00	500	90	1,000	
3017	N	70	N	2.90	>5.00	750	50	>1,000	
3018	N	30	N	N	.06	N	N	5	
3019	N	150	N	N	.18	20	20	N	
3020	300	150	N	N	.34	110	250	140	
3021	N	50	N	N	.10	50	20	14	
3022	N	70	N	N	4.40	500	20	54	
3023	N	100	N	N	.52	50	20	N	
3024	N	100	N	<.05	.26	N	5	N	
3025	N	100	N	N	.48	N	5	N	
3026	700	20	N	N	.54	500	900	50	
3027	<200	15	N	N	4.70	250	120	103	
3028	N	70	N	N	>5.00	<10	25	450	
3029	N	100	N	.05	>5.00	40	35	183	
3030	N	50	N	4.70	>5.00	200	50	153	
3031	200	200	N	.10	1.10	50	190	16	
3032	N	50	N	.05	>5.00	450	50	220	
3033	N	70	N	.50	.42	70	N	30	
3034	N	300	N	1.70	3.80	250	10	253	
3035	N	50	N	.30	.08	10	N	<2	
3036	N	70	N	N	.06	50	35	10	
3037	<200	200	N	N	>5.00	120	100	2	
3038	<200	100	N	N	4.50	40	210	13	
3039	700	10	N	.05	>5.00	560	>1,000	>500	
3040	1,500	30	N	.05	>5.00	400	>1,000	>500	
3041	<200	<10	N	N	.55	45	160	10	
3042	>10,000	15	N	.15	>5.00	60	>1,000	233	
3043	2,000	<10	N	N	>5.00	>1,000	>1,000	>500	
3044	<200	70	N	N	>5.00	>1,000	130	>500	(1)

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada--continued

Sample	X coor- dinate	Y coor- dinate	Fe-pct. %	Mg-pct. %	Ca-pct. %	Ti-pct. %	Mn-ppm %	Ag-ppm %	As-ppm %	Au-ppm %
3045	60,917	413,425	3.0	.05	.30	.200	500	<.5	N	N
3046	60,917	413,480	1.5	.02	.15	.070	500	N	N	N
3047	60,820	413,380	1.0	<.02	.05	.020	30	N	<200	N
3048	60,900	415,515	5.0	.03	.05	.070	300	1.5	200	N
3049	60,895	415,510	1.0	.05	N	.070	300	2.0	<200	N
3050	60,753	415,470	3.0	<.02	<.05	.500	20	150.0	300	N
3051	60,765	415,455	1.0	N	N	.070	10	100.0	500	<10
3052	60,775	415,460	1.5	<.02	<.05	.020	20	1.5	500	N
3053	60,775	415,500	.7	.02	N	.050	150	1.5	<200	N
3054	60,675	413,937	.3	<.02	<.05	.020	200	20.0	200	N
3055	60,650	413,925	.3	.02	<.05	.050	300	10.0	N	N
3056	60,650	413,910	2.0	<.02	<.05	.020	30	15.0	200	N
3057	60,647	413,900	.5	<.02	<.05	.070	10	3.0	<200	N
3058	60,640	413,830	.7	<.02	N	.020	20	1.0	N	N
3059	60,785	415,610	2.0	.02	.05	.050	3,000	1.0	<200	N
3060	60,785	415,755	1.5	.02	.05	.030	1,000	200.0	200	N

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada--continued

Sample	R-ppm s	Ba-ppm s	Be-ppm s	Ni-ppm s	Cd-ppm s	Co-ppm s	Cr-ppm s	Cu-ppm s	La-ppm s	Mn-ppm s
3045	70	500	1.0	N	N	7	20	200	50	N
3046	30	3,000	1.0	N	N	<5	<10	50	20	4
3047	15	1,000	<1.0	N	N	7	10	7	<20	N
3048	20	100	1.5	N	N	5	15	200	<20	10
3049	15	70	<1.0	N	N	7	20	20	<20	4
3050	10	300	<1.0	15	N	N	20	500	50	150
3051	<10	5,000	N	10	N	N	<10	200	20	200
3052	<10	1,500	<1.0	N	N	N	<10	5	<20	N
3053	15	150	1.0	N	N	N	N	10	<20	4
3054	15	100	<1.0	N	N	5	10	300	20	10
3055	20	200	<1.0	20	N	5	10	200	<20	N
3056	15	300	2.0	50	N	N	<10	300	20	5
3057	70	150	1.0	N	N	N	15	700	20	4
3058	20	2,000	<1.0	N	N	<5	<10	20	<20	4
3059	15	700	1.5	N	N	5	10	10	<20	5
3060	<10	50	<1.0	15	<20	7	<10	3,000	<20	5

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada--continued

Sample	Nb-ppm S	Ni-ppm S	Pb-ppm S	Sb-ppm S	Sc-ppm S	Sn-ppm S	Sr-ppm S	V-ppm S	W-ppm S	Y-ppm S
3045	N	10	200	N	10	N	100	30	V	50
3046	N	10	30	N	5	N	<100	10	V	<10
3047	N	7	15	N	N	N	150	<10	V	<10
3048	N	20	200	N	<5	N	N	<10	V	<10
3049	N	7	150	N	<5	N	N	10	V	<10
3050	V	5	2,000	2,000	5	20	300	<10	V	15
3051	N	<5	15,000	300	N	<10	200	N	N	<10
3052	N	<5	20	N	N	N	<100	10	V	V
3053	N	5	70	N	N	N	N	<10	N	<10
3054	N	15	700	300	N	N	N	<10	V	V
3055	N	5	7,000	<100	N	N	N	10	N	<10
3056	N	10	3,000	500	<5	N	N	10	N	10
3057	N	7	1,500	300	<5	N	500	10	N	10
3058	N	5	70	N	N	N	200	10	V	<10
3059	N	15	50	N	5	N	N	<10	V	10
3060	N	5	10,000	700	N	30	N	<10	N	<10

Table 3 -- Data Of Rock Samples From The Groom Range, Nevada--continued

Sample	Zn-ppm s	Zr-ppm s	Th-ppm s	Au-ppm aa	Hg-ppm inst	As-ppm aa	Zn-ppm aa	Sb-ppm aa
3045	N	200	N	<.05	.65	40	90	8
3046	N	50	N	<.05	.95	60	65	22
3047	N	70	N	.20	.60	150	20	6
3048	500	100	N	<.05	.70	170	P60	12
3049	N	150	N	<.05	.70	150	60	22
3050	N	1,000	N	.75	>5.00	500	80	>500
3051	N	150	N	1.40	>5.00	700	70	340
3052	N	50	N	.05	>5.00	800	15	45
3053	N	70	N	.10	2.60	120	140	8
3054	200	70	N	.05	2.70	320	310	270
3055	N	70	N	.05	.70	30	5	82
3056	N	70	N	2.30	1.00	350	75	300
3057	N	150	N	.20	6.20	210	<5	430
3058	N	50	N	1.50	.26	100	390	6
3059	200	70	N	<.05	2.20	160	16	803
3060	5,000	70	N	.20	1.20	300	>2,000	