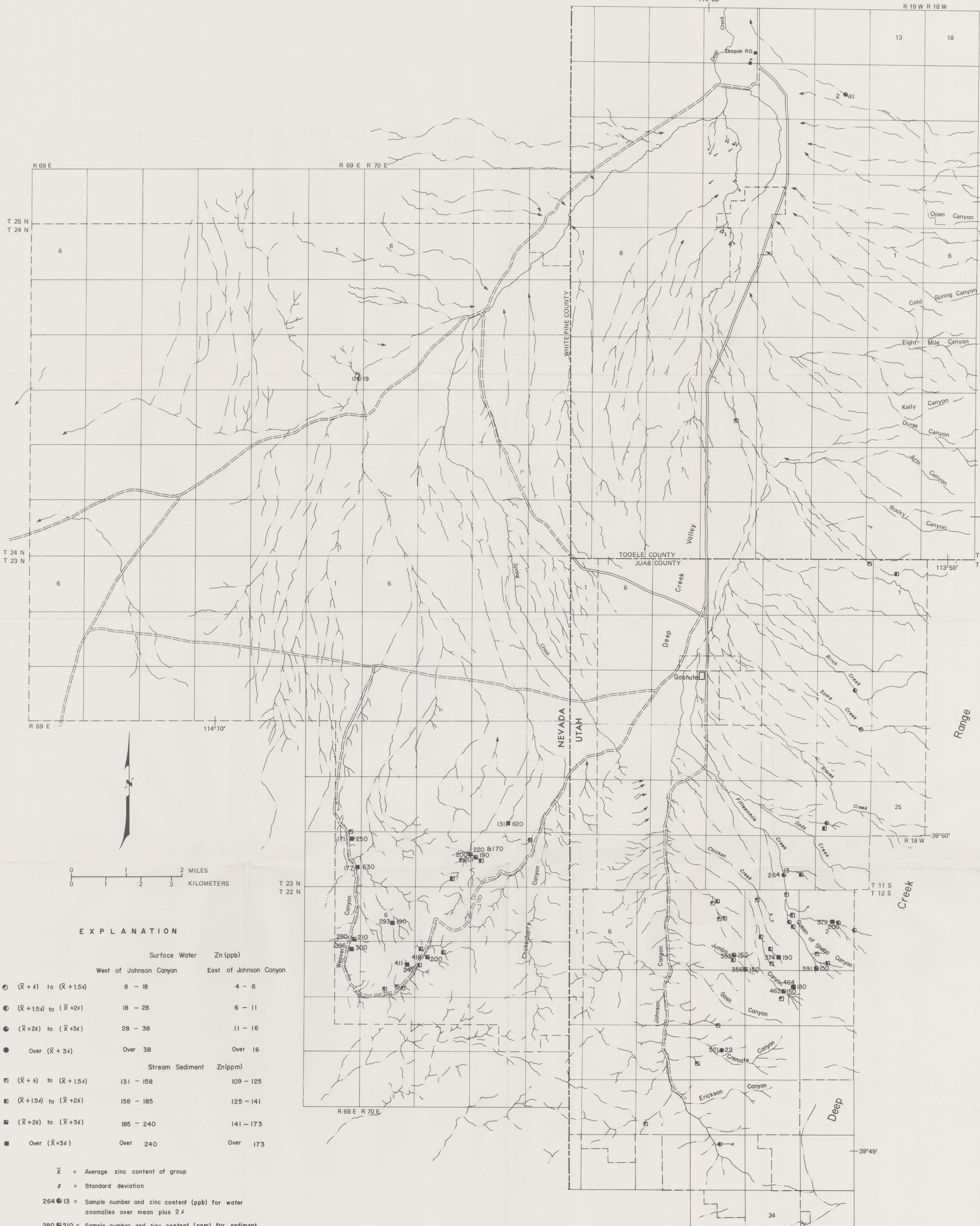

EXPLANATION

Surface Water Zn (ppb)

	West of Johnson Canyon	East of Johnson Canyon
$(\bar{X} + \sigma)$ to $(\bar{X} + 1.5\sigma)$	8 – 18	4 – 6
$(\bar{X} + 1.5\sigma)$ to $(\bar{X} + 2\sigma)$	18 – 28	6 – 11
$(\bar{X} + 2\sigma)$ to $(\bar{X} + 3\sigma)$	28 – 38	11 – 16
Over $(\bar{X} + 3\sigma)$	Over 38	Over 16

Stream Sediment Zn(ppm)

	West of Johnson Canyon	East of Johnson Canyon
$(\bar{X} + \sigma)$ to $(\bar{X} + 1.5\sigma)$	131 – 158	109 – 125
$(\bar{X} + 1.5\sigma)$ to $(\bar{X} + 2\sigma)$	158 – 185	125 – 141
$(\bar{X} + 2\sigma)$ to $(\bar{X} + 3\sigma)$	185 – 240	141 – 173
Over $(\bar{X} + 3\sigma)$	Over 240	Over 173

$\bar{X}$ = Average zinc content of group

σ = Standard deviation

264 ● 13 = Sample number and zinc content (ppb) for water anomalies over mean plus 2 σ

280 ■ 210 = Sample number and zinc content (ppm) for sediment anomalies over mean plus 2 σ

— · — Indian Reservation Boundary

Plate 5.--Anomalous zinc in stream sediments and surface water, Goshute Indian Reservation (see plate 2 for sample numbers and Appendix 4 for sample results).

PLATE 5

White Pine Co. - general
Item 64
(copy 1 of 2)

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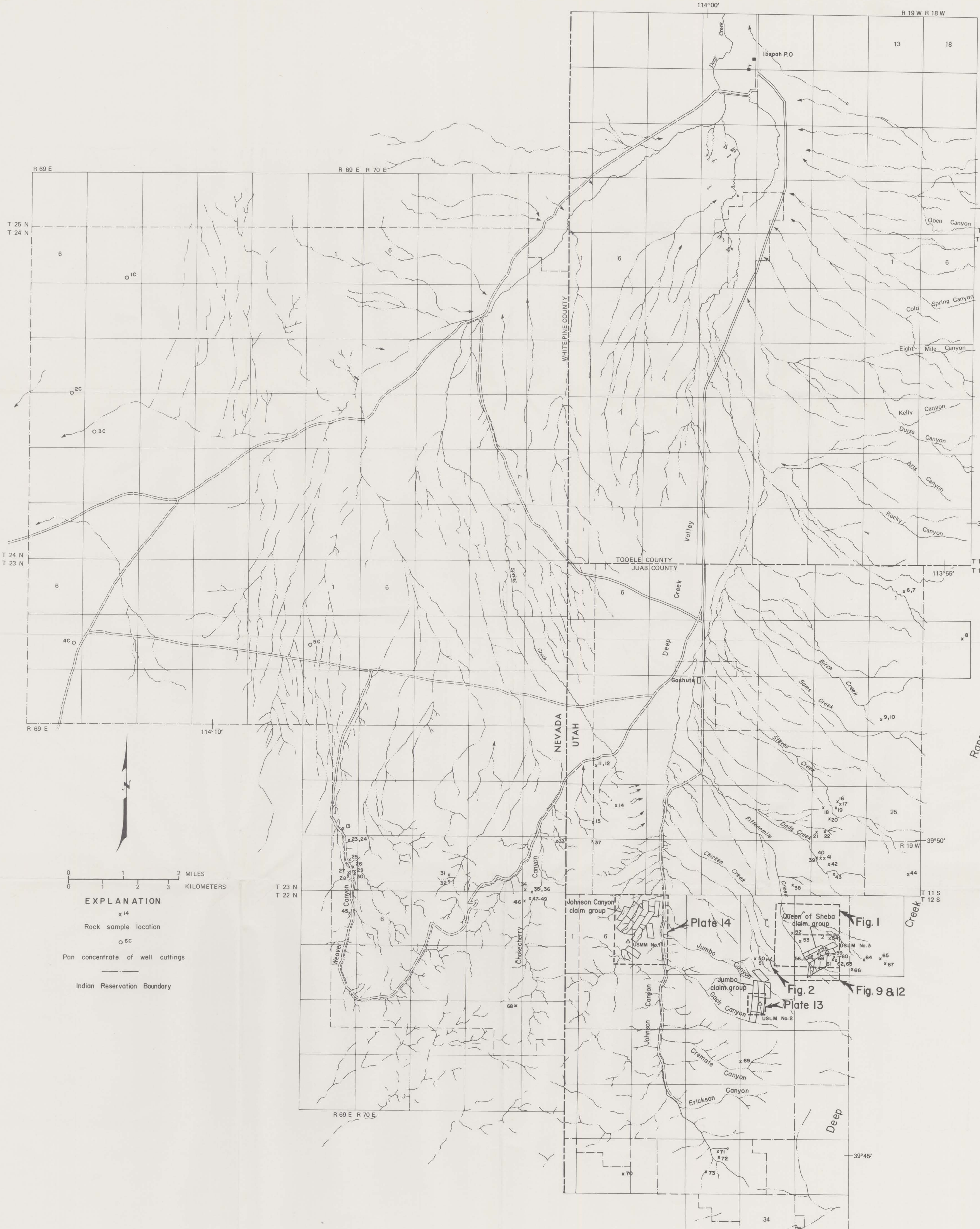

Plate 4.--Rock, well cutting samples, and detailed figure locations, Goshute Indian Reservation (see Appendix 5 for sample results).

PLATE 4

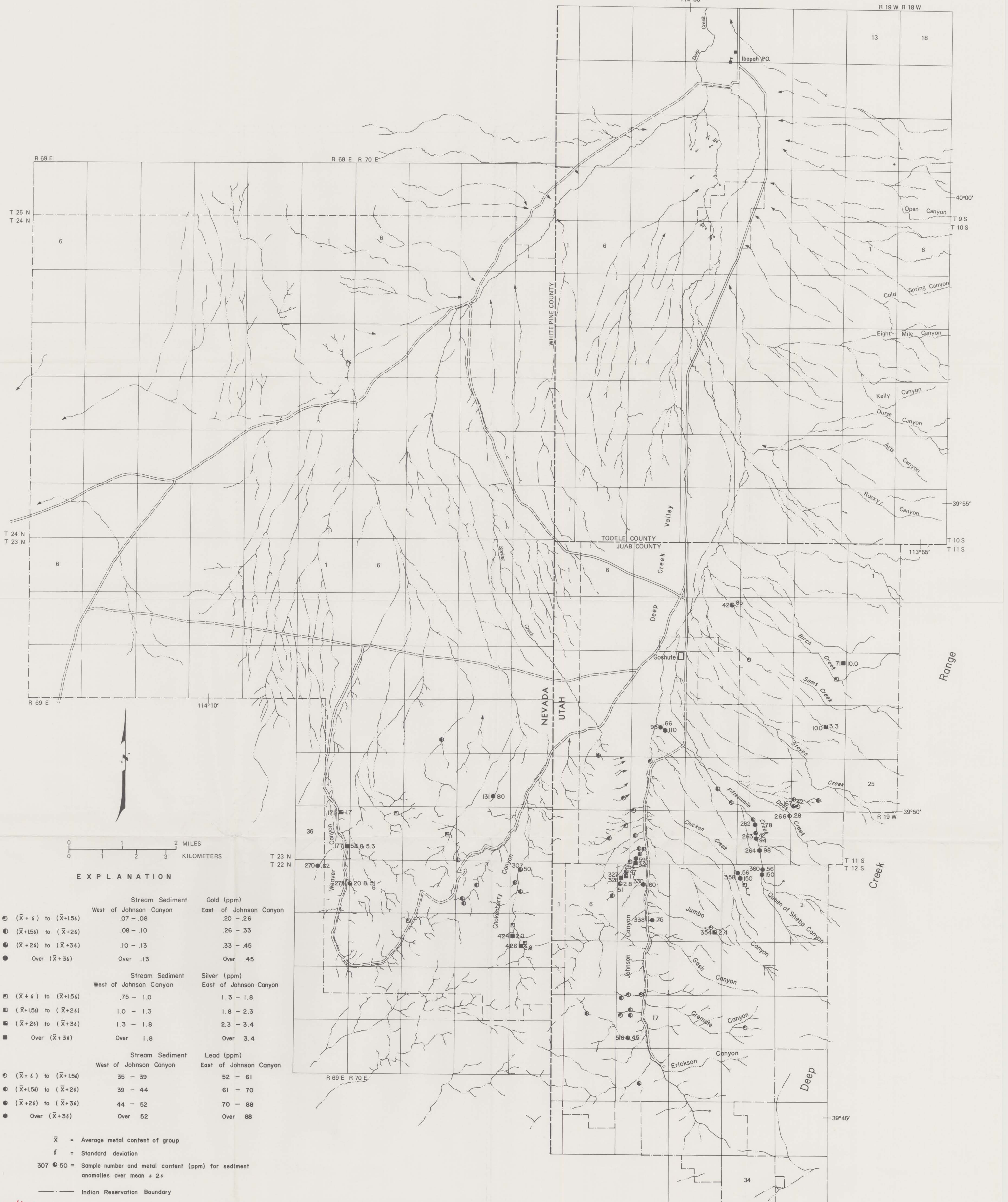

Plate 3.--Anomalous gold, silver, and lead in stream sediments, Goshute Indian Reservation (see plate 2 for sample numbers and Appendix 4 for sample results).

PLATE 3

White Pine Co.-general
Item 64
Copy 1 of 2

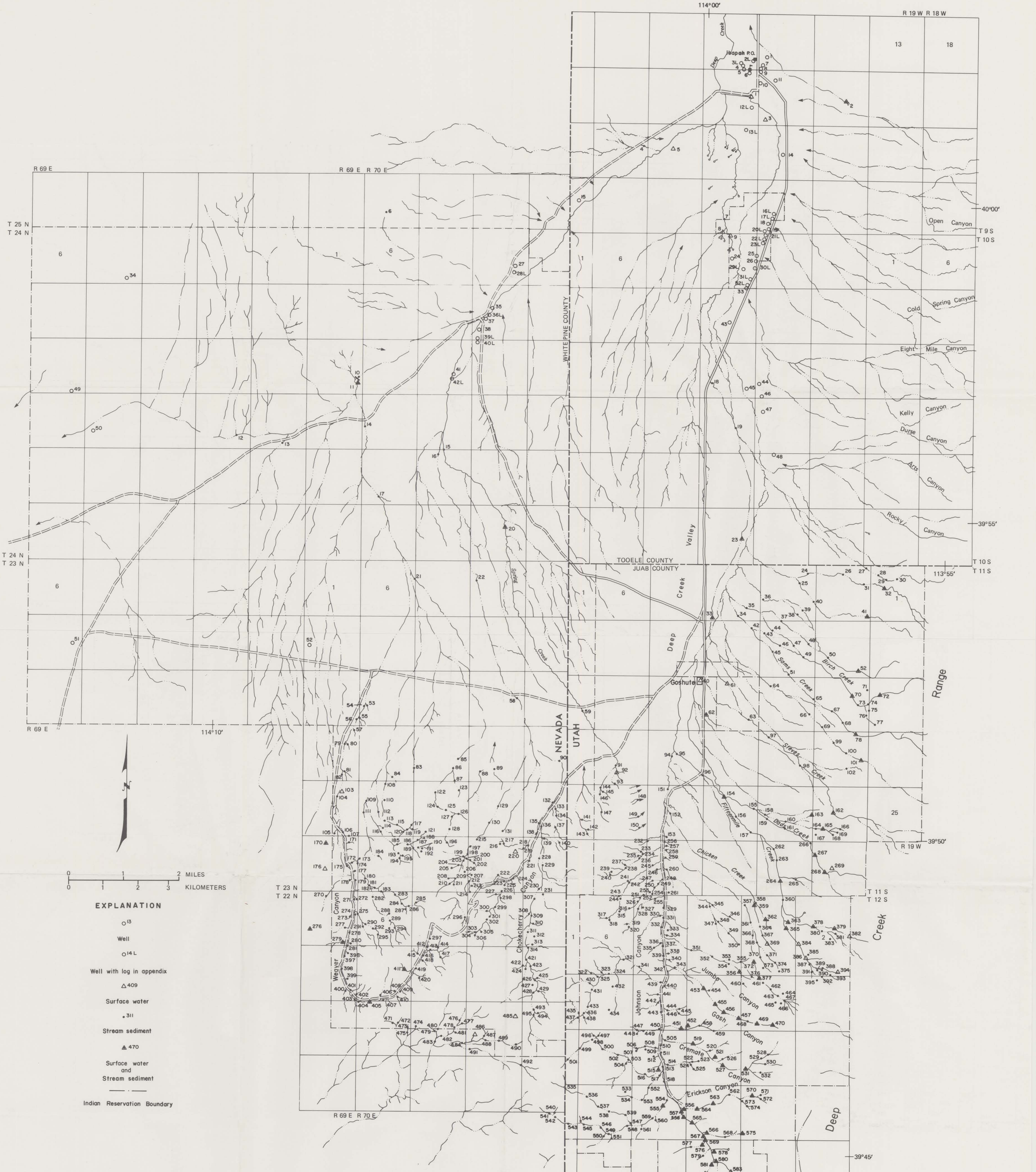

Plate 2.--Stream sediment, surface, and ground-water sample locations, Goshute Indian Reservation (see Appendices 4 and 6 for sample data).

PLATE 2

EXPLANATION

SEDIMENTARY ROCKS

Quaternary	Qa	Alluvium
Tertiary	Ts	Tertiary sedimentary rocks
Permian	Pa	Arcturus Formation
Mississippian	Ce	Ely Limestone
	Cs	Shale and limestone, undifferentiated
Devonian	Dg	Guilmette Formation
	Ds	Simonson Dolomite
	Dsy	Sevy Dolomite
Silurian	Sl	Laketown Dolomite
Ordovician	Ofh	Fish Haven Dolomite
	Oq	Eureka-Swan Peak Quartzites, undifferentiated
Cambrian	€u	Carbonate rocks, undifferentiated
	€mu	Middle-Upper Cambrian, undifferentiated
	€a	Abercrombie Formation
	€b	Busby Quartzite
	€p	Pioche Shale
	€pm	Prospect Mountain Quartzite
Precambrian	Gc	Goshute Canyon Formation
	P€w	Water Canyon sequence
	P€j	Johnson Peak sequence

IGNEOUS ROCKS

Tertiary	Tv	Volcanic rocks
	Ti	Intrusive rocks (Ibapah stock)

TECTONITIC ROCKS

wcb	Weaver Canyon breccia
ccb	Chokecherry Canyon breccia

ALTERED ROCKS

mbl	Marble, non-tectonitic

Contact, dashed where inferred

High-angle fault, dashed where inferred, dotted where concealed

Thrust fault, sawteeth on upper plate, dotted where concealed

Indian Reservation Boundary

Plate 1.--Geology of the Goshute Indian Reservation (adapted from Nelson, 1959, 1966, 1969; Thomson, 1973; Bick, 1958; Hose and Blake, 1970; and Nolan, 1935.

PLATE 1

White Pine Co.-general
Item 64
(copy 1 of 2)

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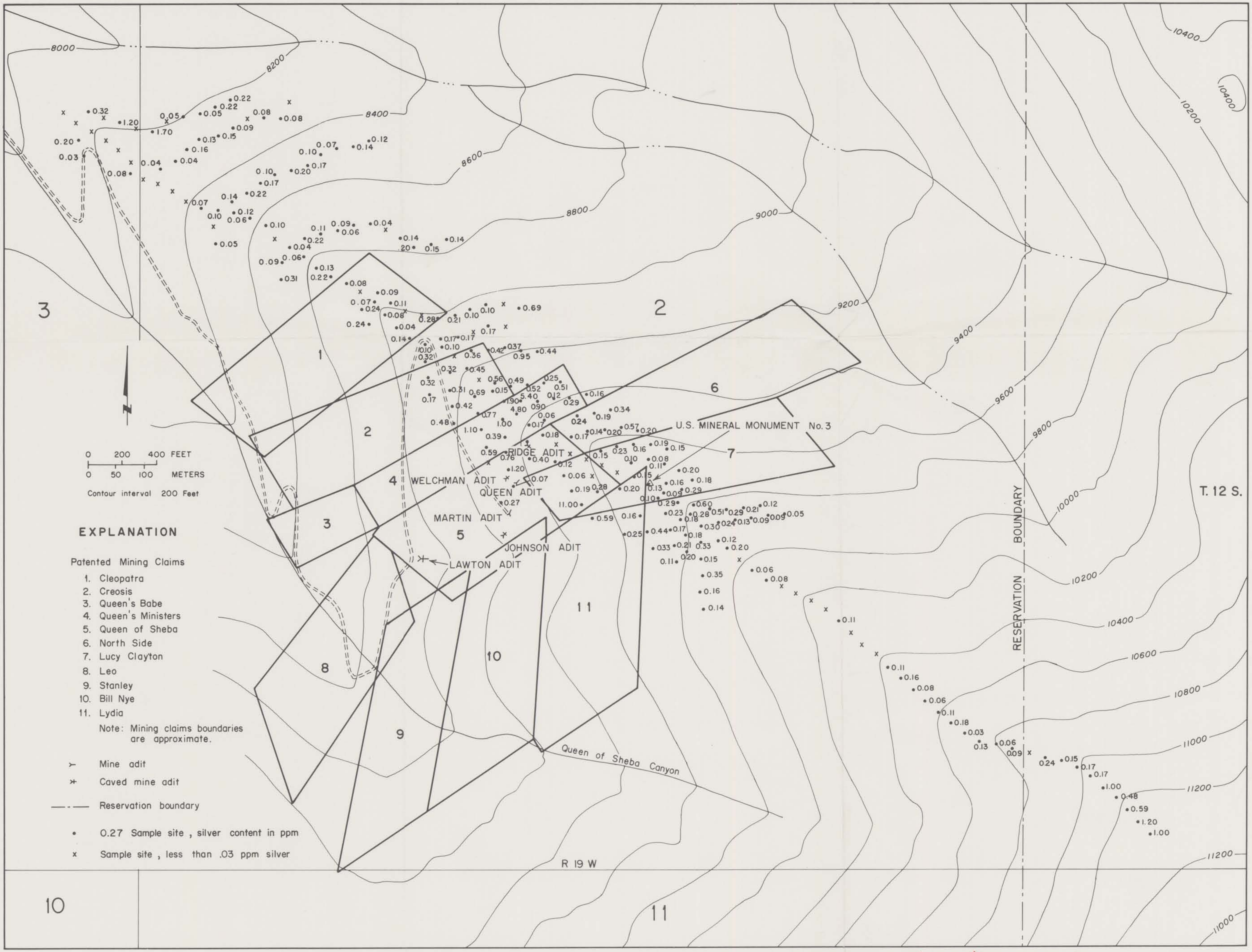

Plate 12.--Silver content in soil samples, Queen of Sheba area, Goshute Indian Reservation.

PLATE 12

White Pine Co. - general
Item 64
(copy 1 of 2)

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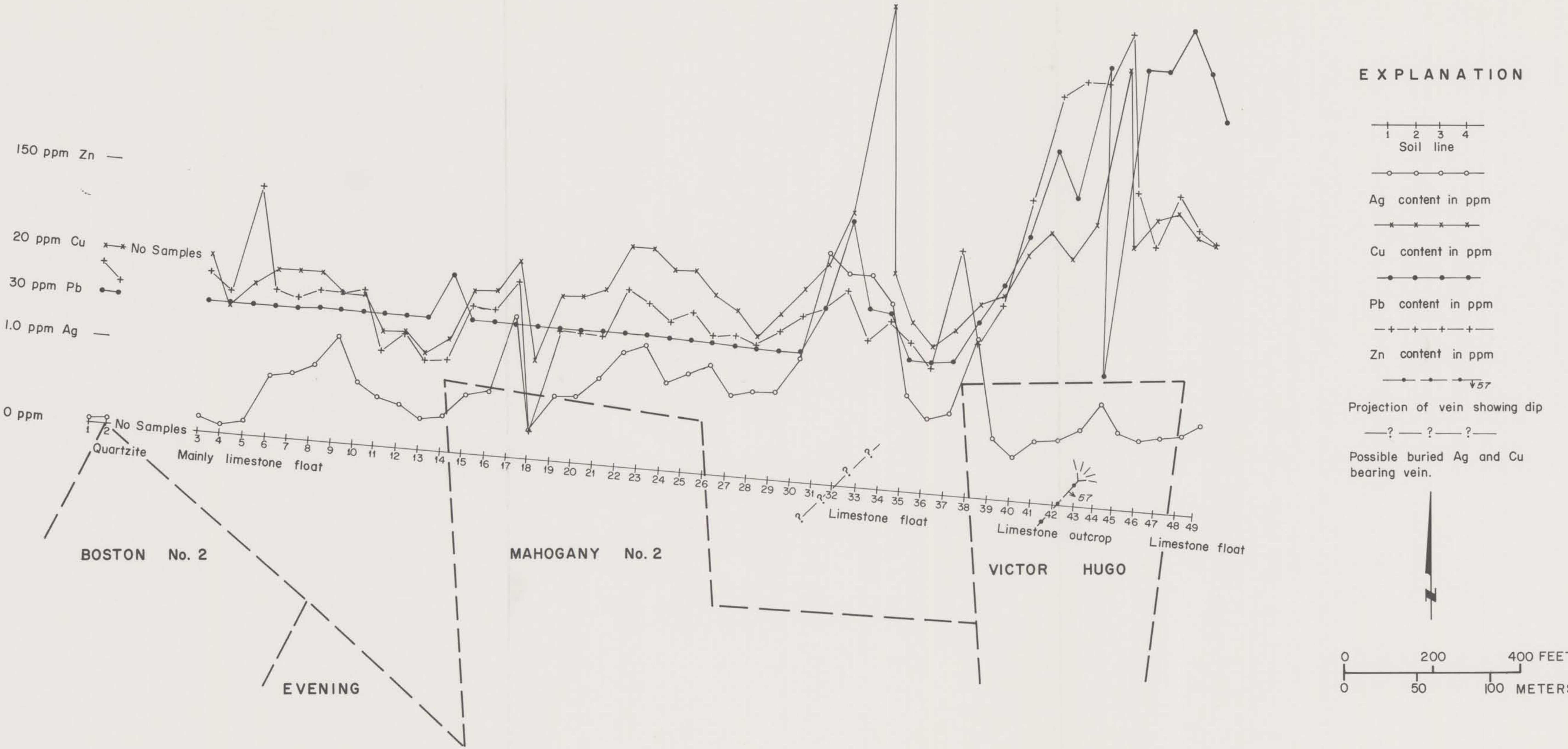

Plate 15.--Soil sample line and metal content, north end of patented claim group on the west side of Johnson Canyon, Goshute Indian Reservation.

PLATE 15

White Pine Co.-general
Item 64
(copy 1 of 2)

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United States Department of the Interior
BUREAU OF MINES
WESTERN FIELD OPERATIONS CENTER
EAST 360 3RD AVENUE
SPOKANE, WASHINGTON 99202

July 21, 1988

Larry Garside
Acting Director
Nevada Bureau of Mines & Geology
University of Nevada
Reno, NV 89557-0088

Dear Larry:

Enclosed are two copies of "Field Inventory of Mineral Resources, Goshute Indian Reservation, Nevada and Utah," Report BIA No. 13-II. This report has been approved by the Goshute Tribe for open-file status. Mr. Steve Manydeeds, Division of Energy & Minerals, BIA, agreed with the suggestion that copies be sent from our office since we have extra ones.

A similar report covering the Fort McDermitt Indian Reservation has also been approved for open file and should be sent to you shortly.

Sincerely,

J Satkoski

Jack Satkoski

Enclosure

FIELD INVENTORY OF MINERAL RESOURCES
GOSHUTE INDIAN RESERVATION
NEVADA AND UTAH

Report BIA No. 13-II

1980

by

Jack J. Satkoski and Michael Sokaski

U.S. Bureau of Mines

Contents

Page

Contents (Cont.)

Illustrations

[Plates in pocket]

Illustrations (Cont.)

Illustrations (Cont.).

Tables

SUMMARY AND CONCLUSIONS

Mineral resources of the Goshute Indian Reservation were investigated during the 1977 and 1978 field seasons. Target areas requiring detailed mineral resource evaluations were identified through geological mapping, stream sediment, water, and soil surveys. The Queen of Sheba area, with past gold production, and the nearby gold-silver Jumbo areas received special attention. Also, the Johnson Canyon area, with known silver mineralization, was thoroughly investigated. No mineralized zones on patented claims in the Queen of Sheba, Jumbo, and Johnson Canyon areas extend on the surface onto Indian land, but subsurface extensions of these zones into Indian land is possible.

Radiometric anomalies discovered in early 1977 in parts of the Deep Creek Range and valley led to a program to evaluate this area's uranium resources. Water draining from the Deep Creek Range into the Deep Creek valley, a closed basin, contains anomalous uranium. The surface water might indicate significant uranium deposits in the valley.

In some areas, especially the southwestern part of the reservation, favorable host rocks and anomalous metal concentrations in stream sediments may indicate possible buried deposits.

The reservation contains substantial resources of limestone, dolomitic limestone, quartzite, sand, and gravel, but the long distance to markets probably eliminates all but local use of these materials.

RECOMMENDATIONS

Three to five exploratory rotary drill holes to explore possible subsurface uranium deposits are recommended along the Deep Creek valley between the Toole-Juab County line and Chicken Creek. Cuttings would be sampled and the holes logged by differential gamma ray spectrometer. The completed holes might be developed as irrigation wells, if hydrological conditions warrant.

Gold deposits on the patented Queen of Sheba and Jumbo claims as well as silver deposits on the patented claims in the Johnson Canyon area have production potential. These deposits could extend into Indian land and additional exploration is recommended, preferably under cooperative agreement with the patented claim owners. These areas require detailed structural mapping, electromagnetic (EM) surveys, and exploratory drilling. A truck-mounted drill could be used in the Johnson Canyon area. The others would require a portable core drill with helicopter support.

Economic deposits of silver and base metals could be present in the southwestern part of the reservation. Other areas designated as geochemically anomalous by stream sediment, water, and soil surveys could also contain economic deposits. Additional exploration is recommended in these target areas.

INTRODUCTION 1/

Geographic Setting

The Goshute Indian reservation, an area of 109,013 acres, straddles the Utah-Nevada border about 125 miles southwest of Salt Lake City, Utah and 117 miles southeast of Elko, Nevada. It consists of two separate landholdings (plate 1); the larger is a maximum of 16.5 miles wide, and about 19 miles long, and straddles the Nevada-Utah border. The smaller, entirely in Utah, is about 1.3 miles wide and 1.7 miles long. The reservation includes parts of the southern portion of the Deep Creek Mountains, parts of the valleys of Deep Creek and Spring Creek, and several of the tributary stream valleys that empty into them. The topography of the range is moderately rugged, with altitudes ranging from about 6,500 feet at the western base of the mountains to more than 10,000 feet near the southeastern border of the larger reservation landholding. The area west of Deep Creek consists of rolling hills. The bottom lands of Deep Creek and Spring Creek are locally flat enough to be cultivated.

The principal community in the reservation is Goshute, which had a population of less than 100 in 1975. It may be reached from U.S. Highway Alt. 50 by approximately 50 miles of improved gravel roads. Many unimproved roads extend from the improved roads to most parts of the reservation.

The climate of the reservation is semiarid; the estimated average annual precipitation near Goshute is about 14 inches, but is probably more than 30 inches near Haystack and Ibapah peaks. This relatively high rain- and snowfall in the upper parts of the southern Deep Creek Mountains assures a perennial flow of several streams and many springs. The principal activities on the reservation include irrigated and dry farming, stock raising, and some timber cutting. Mining has been active in the past, but is now limited largely to intermittent leasing and prospecting.

Present Study and Acknowledgments

This field inventory of mineral resources was prepared by the U.S. Bureau of Mines under the authority of Interagency Agreement Nos. 6, 8, and 17 with the U.S. Bureau of Indian Affairs. The U.S. Geological Survey geology section of the Phase I report is included in this study. This Phase II study is largely based on two field seasons of detailed mapping and sampling.

1/ Introduction, and geology by H. T. Morris, U.S. Geological Survey, Morris and Satkoski (1976).

Special acknowledgment is made of the assistance received from Kenneth Thomson, Robert Nelson, and Robert Cadigan of the U.S. Geological Survey. Scanning electron microscope studies by Jim Sjoberg, U.S. Bureau of Mines, Reno Metallurgy Research Center, and petrographic analyses by Steve Koehler of Koehler Geo-Research Laboratory are footnoted. Bureau of Mines geologists, Robert Ingersoll, Samuel McNary, and Gary Galloway contributed greatly to the collection of field data including underground and soil surveys at the Queen of Sheba mine. Gary Galloway was responsible for computer evaluation of the gamma ray spectrometer survey.

Previous Investigations

All or parts of the Goshute Indian reservation have been the subject of past geologic studies, ranging from broad reconnaissance to detailed examination of individual mines. Some of these reports treat the geology of the reservation area only briefly, but others, which are discussed below, are either more inclusive, or discuss features of special interest within or near the reservation boundaries.

An early mention of the geology of the Deep Creek Mountains is by Beckwith (1855, p. 24) who noted metamorphic rocks, shale, and limestone in the area north of the Ibapah stock, and further described the general features of Deep Creek Valley. Beckwith's work was followed by Gilbert (1875, p. 30), Howell (1875, p. 242), and Emmons (Hague and Emmons, 1877, p. 472-476), who examined the Deep Creek Mountains, including areas that are now parts of the reservation, during the Wheeler and Fortieth Parallel Surveys, and presented the first systematic geologic reports on the region. These geologists did not recognize the intrusive character of the Ibapah stock, but considered it to be the Archean basement upon which the sedimentary rocks were deposited.

Gilbert (1890) returned to the area during his studies of Lake Bonneville. He noted that the Deep Creek Mountains were bounded by north-trending faults, and that small, partly dissected fault scarps were in the alluvial aprons east of Deep Creek. Shortly following Gilbert's report, Blake (1892) described some aspects of the mineral deposits of the Gold Hill area, and the intrusive character of the Ibapah stock. Spurr (1903), in his reconnaissance of the geology of Nevada south of the Fortieth Parallel, also recognized the intrusive character of the granitic bodies of the range, but believed they were local remobilizations of the "Archean" granites described earlier by Howell (1875).

The first comprehensive report of the geology and ore deposits of the Deep Creek Mountains was by Butler (1920, p. 469-486). This report, based on field studies made in 1912, describes the general geology of the area, as well as the Spring Creek and Trout Creek mining districts and the Queen of Sheba Mine. Regan (1917) presented a report on the geology of the Deep Creek region, followed 12 years later (Regan, 1929) by a report on the geology of the Deep Creek (Goshute) reservation and its environs.

Following Butler's preliminary studies in the Deep Creek Mountains, Nolan (1935) undertook a detailed survey of the Gold Hill mining district, beginning fieldwork in 1925. This investigation included only a small part of the area of the smaller landholding of the reservation, but it established the stratigraphic and structural basis for all subsequent studies in a large area of eastern Nevada and western Utah.

Since Nolan's report (1935), the Deep Creek Mountains have been the subject of many reports. Comprehensive geologic studies by Bick (1958, 1959, 1966) include parts of the Goshute Indian Reservation. The northernmost part of the Northern Snake Range and Kern Mountains in eastern Nevada and the southern Deep Creek Mountains in western Utah have been described by Nelson (1959, 1966). The mineral deposits of the area are described by Thomson (1970, 1973). The U.S. Geological Survey (Cadigan, and others, 1979) has released a report on uranium and other mineral resources of the Deep Creek Mountain withdrawal area. Other, less comprehensive but important studies are by Misch, Hazzard, and Turner (1957), Misch (1960), and Misch and Hazzard (1962), who have examined the geologic structure, stratigraphy, and metamorphism of a broad area in eastern Nevada and western Utah; by Woodward (1965), who discusses the correlations of some of the Upper Precambrian strata of the northern Deep Creek Mountains; and by others who have chiefly investigated selected aspects of the Paleozoic stratigraphy and Pleistocene glaciation of the area. In addition, many private geological reports have been prepared for individual mine owners and operators, but few of these reports are available for general study.

DATA COLLECTION AND PROCESSING

Mapping and Sampling

All sample locations were plotted on air photographs or topographic maps and later transferred to a 1:48,000 base map. Detailed mapping of mines and prospects was done by the Brunton compass and tape method. In Johnson Canyon, mapping and sample points were located with reference to patented claim corners. The geology of the reservation has been compiled from various studies and is shown on plate 2. A detailed description of Geology is given in Appendix 1.

Table 1 summarizes the information obtained from samples collected during the field investigation. Field sampling technique and laboratory procedures for most sample types are given in Appendix 2.

Table 1.--Sample data summary, Goshute Indian Reservation

Sample type	No. of samples	Location		Analyses and relevant data			
		Plate	Figure	Plate	Figure	Table	Appendix
Stream sediment	584	2, 3, 5, 6, 7, 8		3, 5, 6, 7, 8			3
Surface water	88	2, 7		5, 6, 7, 8			3
Ground water (from wells)	52	2, 7		8			6, 7
Rock (mine, prospect, and geochem)	214	4, 11, 13	2, 3, 7, 8, 9, 10, 11, 12	11, 13	2,3,6, 7,8,9, 10,11, 12	2, 3	4, 9, 10, 11
Rock (industrial)	10	17				5	
Well cuttings	5	4					5
Placer	7		1				
Soil	264	9, 12	15	9, 12	15		12
Gamma ray spectrometer	340	10		10		4	8

STREAM SEDIMENT AND WATER SURVEYS

Stream sediment and water samples were collected throughout the reservation. The purpose of these surveys was to localize areas that could contain subsurface and undiscovered mineral deposits. These favorable areas were then futher examined by additional geological field work, detailed mapping if required, and rock sampling.

The analyses of the stream sediment and water samples were examined statistically. Areas which exhibited anomalous metal concentrations were investigated further. Some geochemical anomalies were obviously a result of previous activities such as mining or contamination from farming and ranching. Some could be explained by follow-up field work, but others could not, and these areas require additional examination. A detailed explanation of the statistical procedure is given in Appendix 3. Sample locations are shown on plate 2. Stream sediment and surface water analyses as well as other relevant data are given in Appendix 4.

Gold

Stream sediment gold anomalies are in three drainages east of Johnson Canyon and in one creek west of Weaver Canyon (plate 3). Anomalies in Fifteenmile Creek are related to contamination from past mining along with minor placer accumulations from the Queen of Sheba vein system. Anomalies immediately north of Dad's Creek (S-167), near the head of Chicken Creek (S-358), a small tributary just east of Johnson Canyon (S-338), and west of Weaver Canyon (S-270) should be investigated further. Apparent anomalies along a tributary north of Birch Creek (S-52), the south fork of Birch Creek (S-77), a tributary south of Sam's Creek (S-101), and Steve's Creek (S-162) resulted from a higher analytical detection limit (Appendix 2).

Silver

Isolated silver anomalies occur northeast of Birch Creek (S-71), the tributary south of Sam's Creek (S-100), and in Jumbo Canyon (S-354) (plate 3). The anomaly in Jumbo Canyon may be related to the mining on the Jumbo claim group along the southern side of the canyon. Two silver anomalies (S-424, S-426) occur near the head of Chokecherry Canyon in W1/2 sec. 10, T. 22 N., R. 70 E. In Weaver Canyon, two anomalous stream sediments (S-171, S-177) are in E1/2 sec. 36, T. 23 N., R. 69 E. These stream sediments were further evaluated by collecting rock samples (plate 4, Appendix 5). Rock samples (R-23 to R-30) range from 0.11 parts per million (ppm) to 3.4 ppm silver, and less than 20 ppm to 2,000 ppm zinc. No specific target area was outlined but this general area warrants further sampling.

Silver-Lead

Numerous silver and lead anomalies are along the west side of Johnson Canyon (plate 3). These are related to the past mining on patented claims in areas containing silver and lead minerals. No new target areas were defined there, although the mineralized area appears larger than indicated by the patented claims.

Lead

Lead anomalies occur in Weaver Canyon (S-275), Chokecherry Canyon (S-307), and in a small drainage farther northwest (S-131, plate 3). On the west side of Johnson Canyon in secs. 17, 18 and 20, T. 12 S., R. 19 W. are five moderate lead anomalies. The isolated lead anomalies as well as anomalous clusters may be significant but are not associated with silver which was noted on the patented claim group.

The high lead content of sediments along the upper part of Fifteenmile Creek is the result of contamination from mining. Samples were taken in the vicinity of the stamp mill, bunkhouse, and road to the mine. Apparent anomalies in Jumbo Canyon (S-345, S-461) are caused by the unusually high analytical detection limit. An anomaly below the spring in Chicken Creek (S-358) was also anomalous in gold. The anomaly near the north of Birch Creek is probably related to contamination from farming.

Zinc

Anomalous zinc in stream sediments occurs along Weaver Canyon and its tributaries (plate 5). Sample S-177 was also anomalous in silver. A partial explanation of these higher values could be the presence of the Pilot and Chainman Shale Formations which have been mapped in the area. The average and median abundance of zinc in shales is 100 ppm (Levinson, 1974, p. 44), (Rose and others, 1979, p. 580).

Other zinc anomalies occur in Jumbo Canyon, and in the next drainage north. Stream sediment and water containing anomalous zinc occur in the upper part of Fifteenmile Creek. The anomalies at the head of Jumbo Canyon and in the north tributary of Dad's Creek indicate the area warrants additional exploration such as rock and soil sampling, while the others are the result of mining activity.

Copper

Copper anomalies in the Weaver Canyon area are distributed in patterns similar to those of the zinc anomalies (plate 6). The explanation given for the anomalous zinc in these areas also applies to copper. Copper anomalies also occur with anomalous silver and lead on and near the patented claims along the west side of Johnson Canyon.

On the east side of Johnson Canyon, copper anomalies are along Jumbo Canyon. These, like the zinc anomalies, may be the result of past mining. A copper anomaly on the north fork of Dad's Creek corresponds with anomalous gold. This area requires further examination.

Tungsten-Beryllium

Selected stream sediments from streams draining the Ibapah Stock and the Johnson Canyon area were analyzed for tungsten and beryllium. The highest tungsten value was 20 ppm (S-77) near the head of Birch Creek (plate 2). The highest beryllium value was 5 ppm. Tungsten and beryllium potential is low.

Uranium

The uranium content in stream sediments as well as in surface and ground water (plate 7) shows a definite trend of westward uranium migration from the Ibapah stock. Uranium in the minus 80 mesh fraction from stream sediments analyzed as high as 475 ppm, and surface water contained as much as 86.5 parts per billion (ppb). Anomalous uranium in stream sediments was found in most major creeks draining the Ibapah stock (plate 8). Water in these drainages also contains anomalous uranium.

Some samples collected west of Johnson Canyon contained anomalous uranium. The highest, 15.6 ppm, was in stream sediment from Weaver Canyon (S-177). Anomalous uranium is also in pond water in sec. 13, T. 24 N., R. 69 E. The magnitude of these uranium contents, although statistically significant, is believed too low to warrant further study.

Ground water from wells and surface water from streams indicate uranium is being leached from the Ibapah Stock. Forty-seven out of fifty-two wells in the Deep Creek Valley contain from <0.5 to 65 ppb uranium (plates 7, 8, and Appendix 6). Plate 2 shows the location of 47 wells on the reservation and in the Ibapah area. Five wells including one oil well are located north of the area shown in plate 2. Water analyses, well logs, and additional relevant data are given in Appendices 6 and 7.

Lithologic logs for wells on and near the reservation are given in Appendix 7. Most are very general, but the Goshute No. 1 and No. 2 logs along with the Gulf Oil log contain specific lithologic data. Well logs can be helpful as they may contain information useful in exploring for mineral deposits. For example, sandstone containing organic material or metallic sulfides can be a favorable environment for uranium deposition.

Water containing anomalous uranium was obtained from wells in the Ibapah area and in sec. 27, T. 9 S., R. 19 W. (plate 7). Well depth ranged from 35 to 75 feet (Appendix 6). Anomalous uranium was detected as far north as the Jay Hicks ranch and within 2 miles of the Tooele Juab County line at the G. Kemp ranch. No wells are south of the Kemp ranch on this anomalous trend and none were sampled north of the Hicks ranch.

ENERGY MINERALS

Texas Instruments Incoporated (1978) has completed an aerial radiometric and magnetic reconnaissance survey of the Delta Quadrangle, Utah. This report is one product of the National Uranium Resource Evaluation (NURE) program sponsored by the Department of Energy (DOE). Potential uraniferous metallogenic provinces include the Deep Creek Range which includes the Utah portion of the Goshute Indian reservation. Nine first priority anomalies are on the reservation. A first priority anomaly indicates eU, eU/eTh, and eU/K 1/ were simultaneously anomalous on the aircraft gamma ray sensor. The nine anomalies are classed as possible uranium prospects or possible uranium-enriched detritus from weathered tertitary intrusives. Ground checks of these anomalies were not made by Texas Instruments. Follow-up work is warranted but was not possible because the information was not available before our 1978 field season.

1/ eU, etc., indicates equivalent amount of element. This means the content is derived from gamma ray daughter products, and may not be equal to a chemical analysis. U is uranium, Th is thorium, and K is potassium.

Uranium and Thorium

Well Cuttings

The stream sediment and water surveys of the reservation indicate that uranium has migrated westward from the Ibapha stock and could have been deposited in the western part of the reservation which is part of an essentially closed basin. From this area, pan concentrates were made of well cuttings from five deep irrigation wells. These were analyzed for uranium, thorium, silver, gold, copper, lead, and zinc. Samples C-2 and C-4 contained 114 ppm and 1,100 ppm thorium. None of the samples contained significant uranium. The locations of these wells are shown in plate 2 and the analyses of the well cuttings are given in Appendix 5.

Soil Survey

Soil samples were taken along a northwest-trending ridge just north of the Queen of Sheba mine (plate 9). The main reason for the soil survey was to detect any buried gold-silver-bearing structures that may trend into Indian land (discussed later in this report). Uranium content of these soil samples was also measured, because uranium deposits have been found in contact zones similar to those of the Ibapah stock and adjacent host rocks. The Midnite Mine, Washington, is an example of such a deposit.

Two hundred and ten samples average 4.0 ppm uranium with a standard deviation of 4.5 (Appendix 3). Only two from near the northwest end of the soil line are considered anomalous. Their uranium contents are 13.1 and 66.6 ppm.

Rock Samples

Eighteen samples of alaskite and quartz monzonite were taken along the western edge of the Ibapah stock in the Deep Creek Range (table 2). The average uranium content of all samples is 13.9 ppm with alaskite containing 15.5 ppm and quartz monzonite containing 13.3 ppm. These uranium values are high for granitic rock which normally contains about 4-5 ppm.

Rocks with anomalous uranium are not confined to the reservation but occur in other parts of the Deep Creek Range. For example, anomalous uranium in rock was found as far north as the Yellow Hammer mine located about 7 miles south of Gold Hill. This mine is located in highly altered quartz monzonite and has been a producer of tungsten (El Shatoury and Whelan, 1970, p. 33). A selected sample from the mine ran 0.05 ounce gold per ton, 0.2 ounce silver per ton, 5.5 percent copper, 0.41 percent tungsten oxide (WO_3), 0.22 percent molybdenum, and 0.02 percent uranium oxide (U_3O_8).

Table 2.--Uranium content in alaskite and quartz monzonite samples, Goshute Indian Reservation (see plate 4)

Sample no.	Rock type	Uranium (ppm)
6	Alaskite	16.4
7	Quartz monzonite	9.8
16	Alaskite	22.2
17	Porphyritic quartz monzonite	12.8
18	do	14.1
19	do	18.8
20	do	21.9
22	Quartz monzonite	14.8
38	Alaskite	17.2
39	Quartz monzonite	15.2
41	Porphyric quartz monzonite	15.2
42	Quartz monzonite	16.1
43	Porphyritic quartz monzonite	7.2
52	Quartz monzonite	3.6
56	Alaskite	15.9
57	Quartz monzonite	3.2
58	Alaskite	6.0

Radioactive Placer Sand

A small placer containing radioactive black sand was discovered on the road in sec. 21, T. 11 S., R. 19 W. (plate 8). A sample contained 170 ppm uranium and 260 ppm thorium. A bulk sample of this sand was concentrated on a Wilfley table and the heavy fraction from the table was passed through a magnetic separator. The nonmagnetic concentrate contained 1250 ppm uranium and 2300 ppm thorium. The results of this test are given in table 3.

Table 3.--Uranium and thorium content of radioactive black sand fractions, Goshute Indian reservation.

Sample fraction	Uranium (ppm)	Thorium (ppm)
Total	170	260
Magnetic fraction	57	370
Nonmagnetic fraction	1,250	2,300
Middlings	38	<20
Tailings	7	35

An examination of the uranium-bearing minerals with a scanning electron microscope indicated that most of the uranium and thorium is in the mineral monazite which can contain 500 to 3,000 ppm uranium (DeVoto, 1978, p. 54). Uranium was also found in a grain believed to be euxenite.

Similar occurrences of radioactive placer sand have been reported east of the Deep Creek Range (Mining Engineering, 1977, p. 18). Detailed work by the U.S. Geological Survey in the same area has outlined potential resources of uranium- and thorium-bearing minerals in placer deposits. These deposits were formed by wave action of Pleistocene Lake Bonneville which concentrated beach sand and gravel into heavy mineral layers. They contain the minerals monazite, sphene and zircon (Cadigen and others, 1979, p. 2).

Gamma Ray Spectrometer Survey

A gamma ray spectrometer survey was undertaken to determine the near surface distribution of radioactivity along the western front of the Ibapah stock. Gamma radiation can be detected by spectrometer to a maximum depth of about 3 feet in soil or unconsolidated material. The radiation energy is measured and converted to equivalent semi-quantitative uranium, thorium, and potassium contents. Accumulations of uranium and thorium minerals could occur as placers or be similar to the well-documented calcrete, dolocrete, and gypcrete carnotite deposits in arid western Australia and southwest Africa. In the southwestern U.S., similar occurrences are found in Clark County, Nevada, south of Las Vegas (Carlisle, 1978, p. 225).

A Scintrex GAD-4 gamma ray spectrometer with a GSP-3 3x3-inch sodium iodide crystal was used.1/ About 15 square miles of the western front of the Ibapah Stock was surveyed on a 1,000 to 2,000 foot grid spacing (plate 10). Most of this area is soil-covered colluvium and alluvium dissected by stream channels and dry washes. The instrument was calibrated in the Scintrex laboratory at Salt Lake City, and field calibrated before use each morning and afternoon. Two 100-second readings were made at each station and averaged. Background readings were taken about 10 miles north of the survey area. Vegetation, topography, and lithological variation were noted.

Early in the survey, two physiographic groupings (populations) of gamma ray information became apparent. These were from (1) gently sloping colluvial deposits and, (2) dry washes and stream beds. The latter group represents in some areas gravity concentration of insoluable uranium and thorium bearing minerals.

Equivalent uranium, thorium, and potassium data were analyzed by computer. Uranium and thorium values of populations 1 and 2 were statistically evaluated and plotted. A list of geographic coordinates with corresponding values of each element is in Appendix 8.

1/ Trade names are used for identification purposes. They are not intended as an endorsement by the U.S. Bureau of Mines.

No economic concentrations of uranium or thorium were discovered by the gamma ray spectrometer survey, but results indicate that resistant uranium and thorium bearing minerals are being eroded from the Ibapah stock and concentrated in creeks and washes (population 2). An example is the placer deposit of radioactive black sand discussed previously.

Sixteen bulk samples were taken under the spectrometer sensor and analyzed in the laboratory by the U.S. Geological Survey for equivalent potassium, uranium, and thorium. These values were compared to values derived at the same locations by the field survey (table 4). The best comparison resulted from field data that did not use the background correction. Ideally, background should be measured over a body of water, but that was not possible for this survey.

METALLIC MINERALS

Gold and Silver

Queen of Sheba Mine

Gold has been mined from the Queen of Sheba group of eight patented claims in sec. 2, T. 12 S., R. 19 W. (plate 4). The production history has been described by Thomson (1973, pp. 66-69). Some development work has been completed recently and limited mining may begin soon. Access is by a recently improved road up Fifteenmile Creek. Five adits totaling 2,195 feet in length have been driven but all are caved except the Martin and Queen adits. All are in the Johnson Pass sequence, a Precambrian red to brown quartzite-schist which has been intruded by the Ibapah quartz monzonite stock. Most of the production from the property has been from the Martin quartz vein which ranges from 1 to 40 feet wide. It strikes about N. 80° E. and dips 38° to 65° S. Abandoned workings are accessible through the Martin adit. Some production was from the overlying Queen of Sheba vein which is accessible in the Queen adit.

Nineteen samples were collected from the underground workings, and gold content ranged from a trace to 1.63 ounces per ton. Silver content ranged from 0.1 to 3.8 ounces per ton (plate 11).

Sixteen rock samples were collected from the surface in the vicinity and east of the Queen of Sheba mine (R-52-R-67) (plate 4, Appendix 5). Sample R-65, from east of the reservation near the summit of Red Mountain, contained 0.44 ppm gold and 0.96 ppm silver. It contained the highest gold and silver content and indicates the area warrants additional prospecting and sampling.

Table 4.--Comparison of field and laboratory derived equivalent U, Th, and K values on gamma ray spectrometer grid survey, Goshute Indian Reservation (Laboratory data by U.S. Geology Survey)(See plate 10 for locations).

X Feet	Y Feet	Population	U (ppm) Lab gamma ray spectrometer	U (ppm) Field gamma ray spectrometer	Th (ppm) Lab gamma ray spectrometer	Th (ppm) Field gamma ray spectrometer	K (percent) Lab gamma ray spectrometer	K (percent) Field gamma ray spectrometer
18,000	10,500	2	6.7	7.2	21.0	29.5	4.2	5.2
16,000	15,000	1	22.4	20.5	47.2	48.8	3.0	3.0
16,000	13,000	1	14.1	9.5	29.0	28.7	3.0	3.9
14,000	10,500	2	7.9	12.8	16.3	36.4	3.7	5.7
14,000	5,000	1	10.5	10.0	23.3	27.1	3.2	3.4
12,000	15,000	1	9.1	7.5	20.6	30.2	3.3	3.8
10,000	7,000	1	20.5	17.6	39.9	45.7	3.2	3.8
8,280	14,500	2	7.8	8.4	16.5	26.4	4.7	4.9
7,000	6,800	2	43.3	37.4	68.5	69.0	3.1	3.2
7,000	4,750	2	17.5	24.3	38.3	61.2	4.5	3.9
7,000	3,000	1	11.9	10.0	26.9	29.5	3.1	4.1
4,000	3,000	2	5.2	11.2	17.3	44.3	3.2	2.3
3,000	5,000	2	34.5	18.5	79.6	70.2	4.0	5.4
3,000	3,000	1	5.4	2.4	20.0	21.8	2.7	2.9
2,000	3,000	1	3.7	2.6	14.5	17.1	2.7	3.0
1,000	8,000	1	10.8	8.2	27.2	36.4	3.6	4.0

Soil Survey

Soil samples were collected from the area to determine if the Martin and Queen of Sheba veins or other mineralized structures extend into Indian land. A base line was surveyed from the ridge top in SW1/4 sec. 1, T. 12 S., R. 19 W. at an elevation of about 11,360 feet, down the ridge in a northwesterly direction through the Queen of Sheba patented claims, to a point in NE1/4 sec. 3, T. 12 S., R. 19 W., at an elevation of about 8,120 feet. Soil samples were collected at 100-foot intervals. Samples were also collected along branch lines that ranged up to 900 feet from the base line.

The gold content of 215 soil samples from the Queen of Sheba mine area was determined (plate 9). Less than 0.03 ppm gold was found in 175 samples. Soil from a talus slope about 400 feet east of the Martin adit contained 6.9 ppm gold. This high value may indicate an eastward extension of the mineralized veins. Two samples from the Queen adit dump contained 0.79 ppm and 3.3 ppm.

In order to statistically calculate the mean (average) value for gold in the soil samples, each of the 175 samples which contained less than 0.03 ppm was assigned a value of 0.015 ppm (one-half the detection limit). The three samples mentioned in the preceding paragraph as having the highest gold contents (0.79, 3.3, and 6.9 ppm) were biased samples and thus excluded from the calculations. The mean was determined to be 0.03 ppm. The threshold (upper limit of the background value) is 0.09 ppm. Five of the 212 samples tested statistically exceeded the threshold and are considered anomalous.

The highest silver values are found mainly within the patented claim boundaries near the old mine workings (plate 12). Two samples collected about 50 and 100 feet north of the Ridge adit contained 4.8 and 5.4 ppm silver, respectively. A soil sample from a talus slope about 400 feet east of the Martin adit contained 11 ppm silver. This sample may indicate the existence of an eastward extension of the mineralized veins. Two samples from the Queen adit dump contained 9.3 and 19 ppm silver.

Excluding the high values (those above 1.90 ppm) the mean (average) value for the silver content of 210 soil samples is about 0.25 ppm. This value may be considered the normal background for the area, and is higher than the 0.1 ppm value which is generally considered normal background for silver in soils (Hawkes and Webb, 1962, p. 372; Levinson, 1974, p. 43).

Anomalous values - that is, values which are considerably higher than normal background - are those greater than 1.10 ppm. Two anomalous values, 1.20 ppm and 1.70 ppm, were in samples from the extreme northwest end of the traverse. One sample containing 1.20 ppm silver was collected near the top of the ridge east of the reservation boundary.

The soil samples were also analyzed for copper, lead, and zinc. Except for higher values associated with obvious mining activity, distribution of these metals does not appear significant.

No conclusive observations or trends of gold and silver mineralization were found from soil samples, as most higher values are the result of contamination from mining. Inconclusive evidence suggests the vein extends east of the Martin adit. Anomalous gold and silver in stream sediments were not found in drainages north of the Queen of Sheba mine. Anomalous gold in stream sediments in Fifteenmile Creek and Queen of Sheba Canyon were further evaluated by examining the gold placer resources in these drainages.

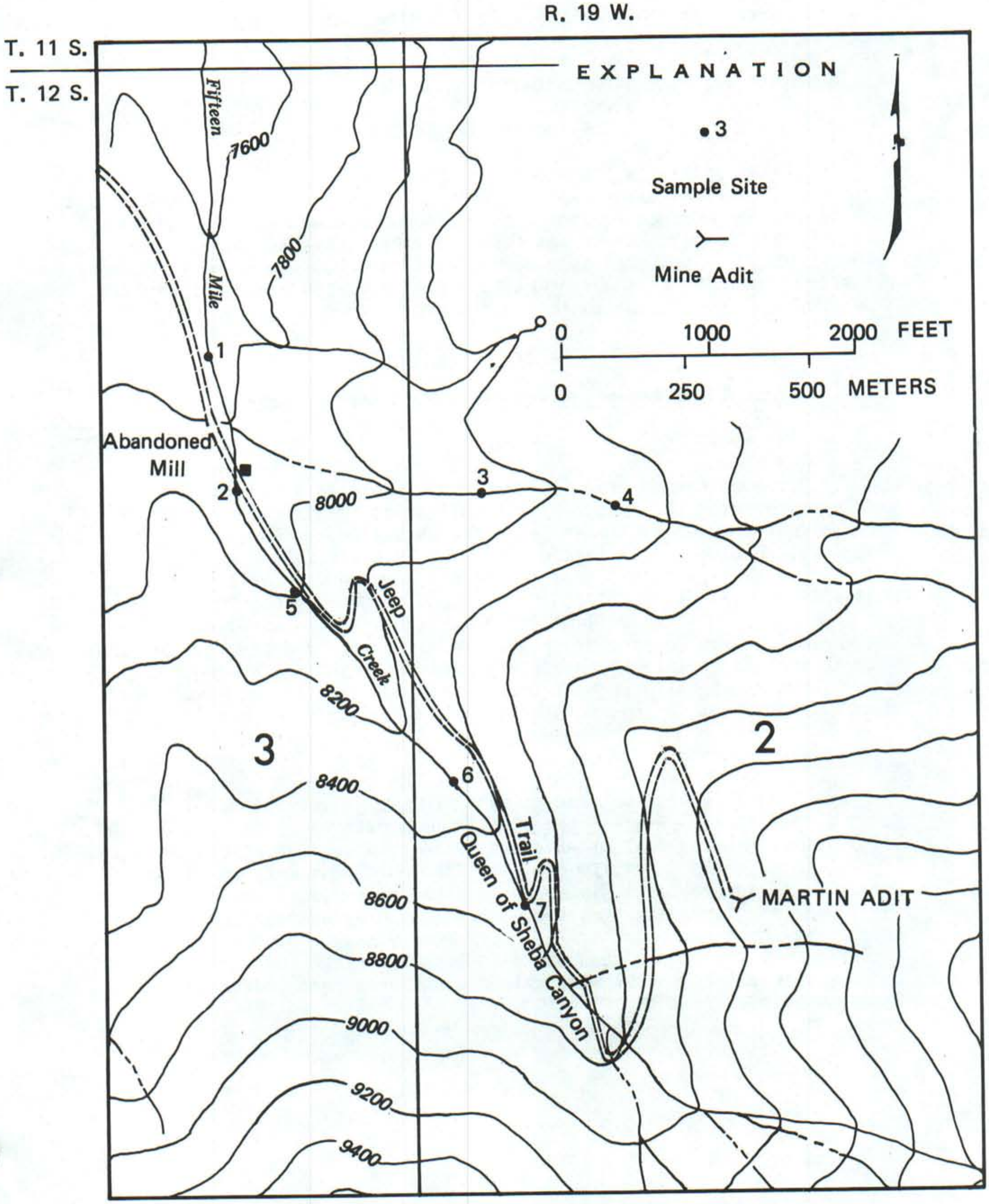
Placer Survey

Seven placer samples were collected from pits dug in the sand and gravel of Fifteenmile Creek and one of its tributaries (plate 4 and fig. 1). Sample sites were chosen to include material that would be enriched with gold transported from the Queen of Sheba mineralized area. The samples were concentrated by panning in the field and concentrated further in the laboratory with a Wilfley (hydraulic shaking) table. Gold was detected only in sample 1 collected below an abandoned stamp mill. Gold content was 0.087 ounces per cubic yard. Assuming 80 percent purity and gold value of $600 an ounce, a cubic yard of gravel would contain gold valued at $41.76. Some associated mercury was also detected indicating some gold in amalgam had been lost from the mill. The results of this examination indicate that gold is present only below the abandoned mill. A small recovery operation could be viable but more samples should be collected to further delineate and evaluate the gold-bearing area.

Jumbo Claim Group

The Jumbo Claim Group is in the SW1/4 sec. 3 and W1/2 sec. 10, T. 12 S., R. 19 W. on a ridge between Jumbo and Gash Canyons (plate 4). Seven patented claims comprise the group. The main development is in the northeast part of the Jumbo claim. It consists of about 400 feet of inclines, adits, and trenches. The main haulage shaft and one adit are caved but the remaining workings are accessible. All development work is in an east-west trending fault and breccia zone in the pebble conglomerate member of the Cambrian Prospect Mountain Formation (plate 13). The breccia zone is characterized by iron-staining, and contains minor irregular quartz veins; some are vuggy and limonite filled. Alteration has destroyed the pebble conglomerate texture. Development does not appear to have followed any major vein, but is in areas of greater brecciation, iron-staining, and irregular narrow quartz veins. Nine samples were taken of dump material and various parts of the breccia zone (plate 13 and Appendix 9). Selected dump quartzite and quartz vein material having a steel-gray coloration contained as much as 0.61 ounce of gold per ton and 76.0 ounces of silver per ton. Scanning electron microscope (SEM) examination determined that argentite is the silver-bearing mineral.

Figure 1. Placer sample locations below Queen of Sheba area, Goshute Indian Reservation.



This area warrants further exploration including magnetometer and electromagnetic surveys, possibly followed by a limited drilling program. Although mineralization appears confined to the patented claims, additional work may indicate extensions into Indian land.

One Hundred Ten Foot Adit

An unnamed adit was found between the Queen of Sheba and Jumbo properties. It was driven approximately S. 30° E. into a steep creek bank to explore a contact zone of quartz monzonite and spotted hornfels (plate 4 and fig. 2). Eight samples were taken of veins, dikes, and dump material. A selected dump sample contained 0.03 ounce gold per ton while the remainder of the samples contained 0.01 ounce per ton or less. Spectrographic results of these samples are in Appendix 9.

Silver-Lead-Zinc

Patented Claim Group and vicinity, West Side of Johnson Canyon

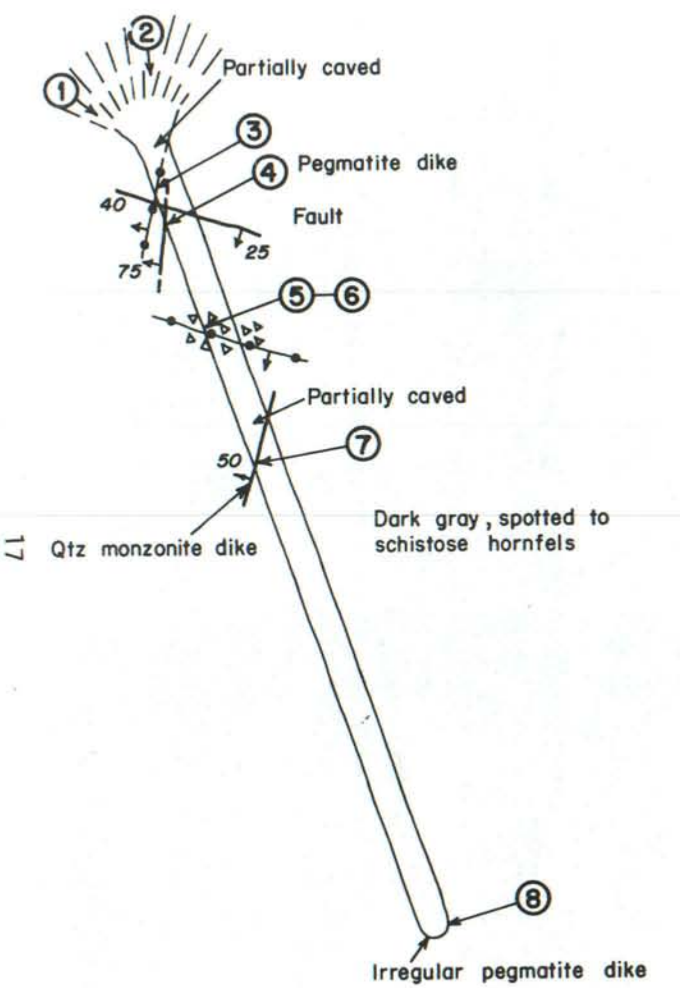
Geology

The Johnson Canyon area is structurally complex and lacks detailed studies concerning the origin of mineralization (plate 1). The general area has been mapped as Kanosh Shale and Unit A of the Pogonip Group (Thompson, 1973, pl. 2). Earlier works by Bick (1958) and Nelson (1959 and 1966) have mapped this area as Pogonip Group and Pogonip Group Unit A. Nelson (1969) has since discarded the use of Pogonip Group in this area and prefers to call the unit Cambrian carbonate rock-- undifferentiated. These rocks, which do not appear greatly deformed, have been subjected to several periods of folding, reverse and normal faulting, and uplift. The rocks are generally part of the Snake Range Decollement Thrust with principal movement to the southeast.

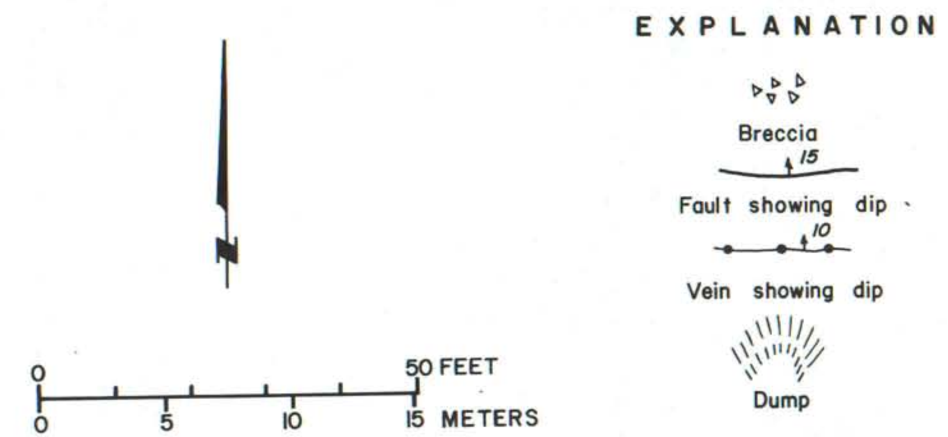
Mapping and Sampling

The Johnson Canyon patented claim group is in secs. 5 and 6, T. 12 S., R. 19 W. (plate 4). Most of the area is underlain by thick-bedded gray limestone with occasional brown chert lenses and laminae (plate 14). Iron-stained Eureka Quartzite comprises the northwest part of the map area. It is generally highly broken and may be in fault contact with the underlying limestone. Workings were mapped by Brunton compass and tape using known claim corners as reference points. The claim group and vicinity were thoroughly sampled to understand better the distribution and possible extensions of mineralized structures into Indian land. Thompson (1969, 1973) reported localized high silver values.

Figure 2. Geology, sample locations, and analyses of the 110 foot adit between the Queen of Sheba and Jumbo properties, Goshute Indian Reservation.



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	U ppm	WO_3 %	Spec. See Appendix 9
1	Selected stockpile of dump — limonitic qtz. vein material.	.03	Tr.	.02	.01	.003	1.6	< .01	✓
2	Random dump sample	.003	.01	.02	.003	.003			✓
3	Irregular qtz. vein up to 14 in. thick.	Tr.	.1	.006	< .006	.008	.3	< .01	✓
4	6 in. pegmatite dike	Tr.	.1	.004	.008	.003	1.3	< .01	✓
5	3 in. qtz. vein	.01	Tr	.007	< .006	.007	1.1	< .01	✓
6	2.5 Ft. chip in fault breccia	Tr.	Tr.	.007	< .006	.02	1.9	< .01	✓
7	2 Ft. qtz. monzonite dike	Tr.	.2	.002	< .006	.006	1.2	< .01	✓
8	Irregular decomposed pegmatite dike.	ND	.1	.002	< .006	.004	6.8	< .01	✓



One hundred and ten rock samples were collected in underground and shallow surface workings. Forty-nine soil samples were taken across the northern end of the claim group to test for mineralized structures trending into Indian land. Locations and analyses of samples are on Plate 14, 15. Figures 3-12, and Appendix 10-12. Spectrographic analysis of selected samples are listed in Appendix 11. Selected high grade samples were further examined by X-ray and scanning electron microscope (SEM) to identify silver-bearing minerals not apparent in hand specimens.

Mines and Prospects

A 180-foot adit, a shaft, a winze, raises, and some small stopes comprise the Evening No. 1 mine (fig. 3). It represents the main development and possibly some production from the Boston No. 2 claim. Development generally followed the strike of the beds and, judging from high grade dump material, some small replacement zones were mined. Remnants of these were not noted in the mine, but several chip samples of wallrock and brecciated limestone contained low silver values. The bottom of a winze near the adit face leads to a small room that is accessible but too dangerous for examination.

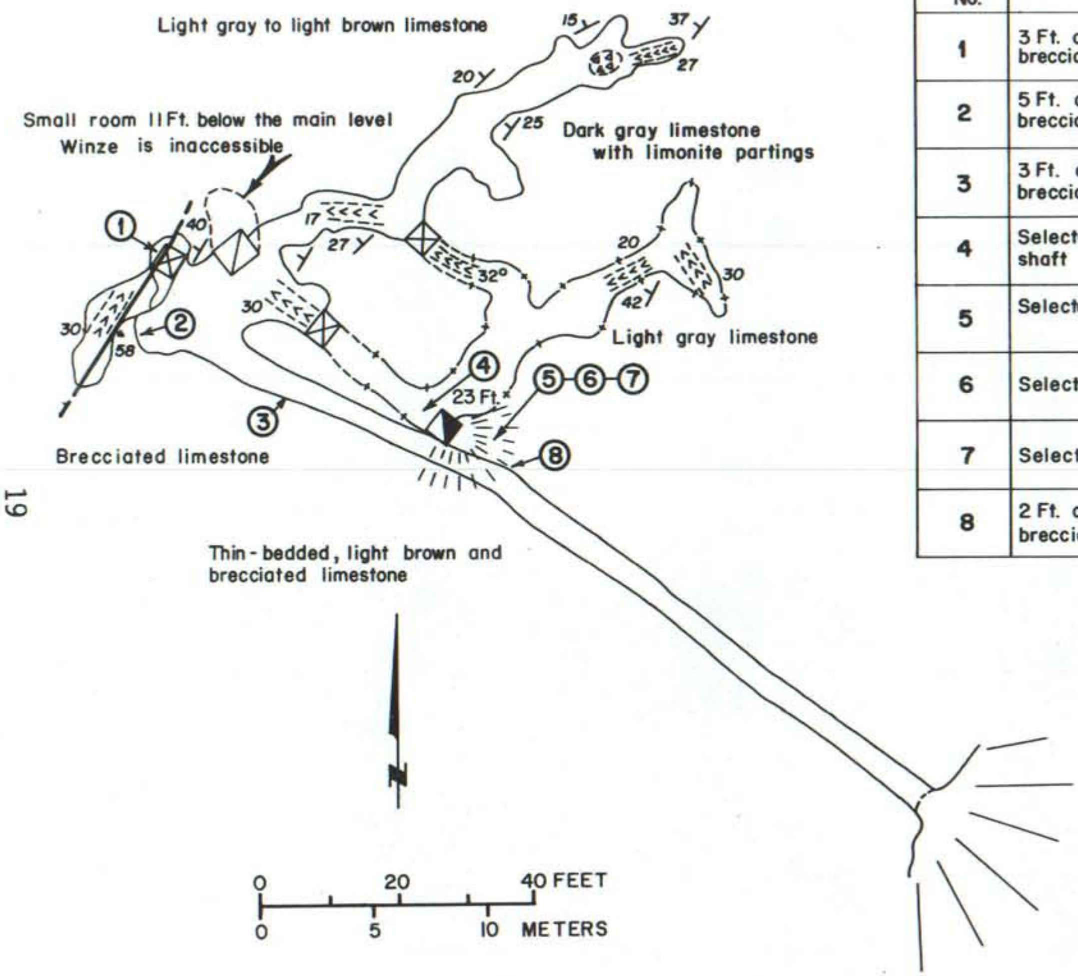
The Evening No. 1 mine as well as other nearby workings are shown in a photograph of the area (fig. 4). These nearby workings, which are small pits and cuts, have exposed well-mineralized, silicified, and limonitic material with high silver content. Argentojarosite-bearing material exposed in a small pit (fig. 5), assayed 0.02 ounce gold per ton and 141.2 ounces silver per ton. Additional workings in the area expose veins and pods of similar material; their lateral extent is uniformly small.

The metal distribution in an outcrop of relatively undisturbed limestone containing chert laminae on the Boston No. 2 claim is shown in figure 6. All parts of the outcrop contain silver but the content is especially high in the chert. Spectrographic analyses (appendix 11) indicate that a high silver content is always associated with a high silica content.

The Evening No. 2 mine is a 745-foot adit (fig. 7) east of the Evening No. 1 mine and the view shown in figure 4.

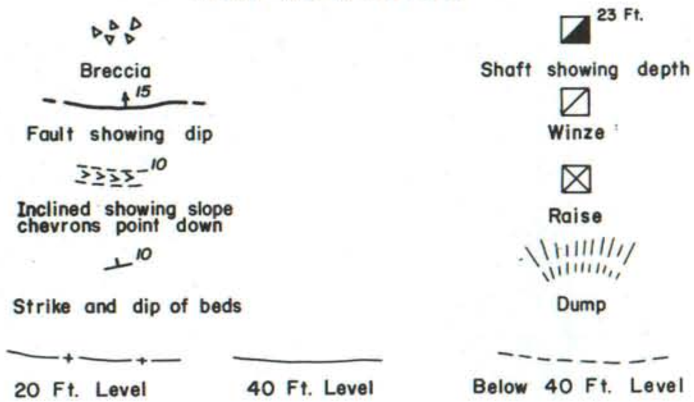
It appears to have been driven to intersect a silicified quartzite breccia zone with limestone inclusions (plate 14) which crops out near the edge of the Mahogany No. 1 claim. The zone has numerous near-vertical slickensides and appears to be a high angle fault. Detailed mapping of the area revealed that this zone is controlled by a low angle fault that dips to the southeast and crops out on the opposite, or southeast, side of the ridge. If the adit was driven to intersect this zone, it passed underneath the fault. Samples of breccia zones, limonite veins, and narrow faults in the adit assayed from a trace to 4 ounces of silver per ton.

Figure 3. Geology, sample locations, and analyses of the Evening No. 1 mine, Goshute Indian Reservation.



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Mn %	Spec. See Appendix II	Other
1	3 Ft. chip in limestone breccia	Tr.	.8	.01	.03	.03			
2	5 Ft. chip in limestone breccia	Tr.	.6	.05	.05	.17		✓	
3	3 Ft. chip in limestone breccia	Tr.	1.4	.02	.03	.07			
4	Selected stockpile in shaft	Tr.	7.9	.24	3.3	.11			
5	Selected dump	Tr.	30.7	.09	.21	.45	4.3	✓	>40% Si
6	Selected dump	.01	30.0	6.6	.2	5.0			(Thomson 1973, p63)
7	Selected dump	.01	70.0	3.4	.2	0			do
8	2 Ft. chip in limestone breccia	Tr.	1.2	.02	.11	.07			

EXPLANATION



(Adapted from Thomson 1973 P. 63)

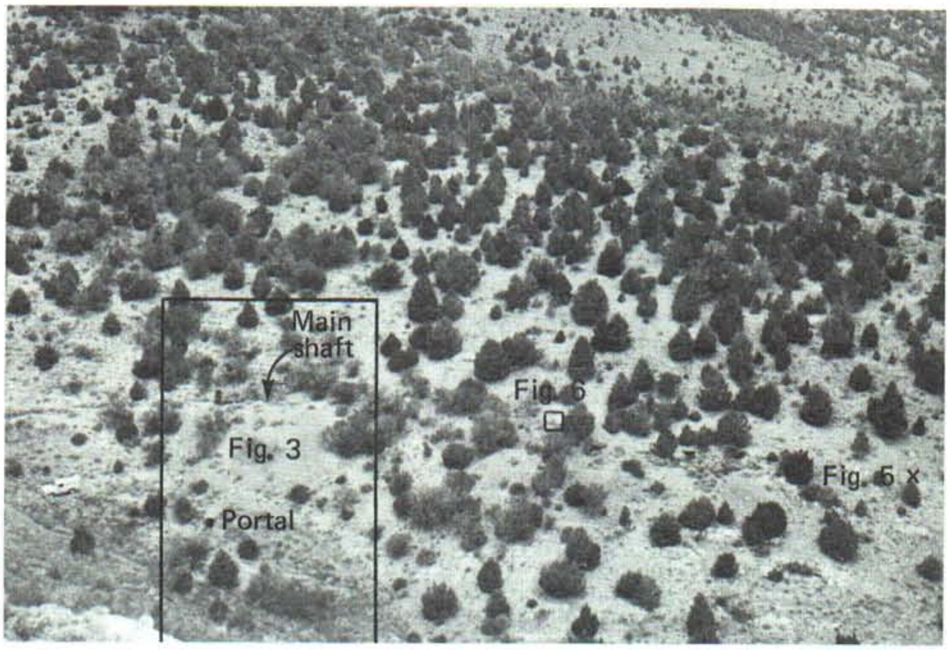
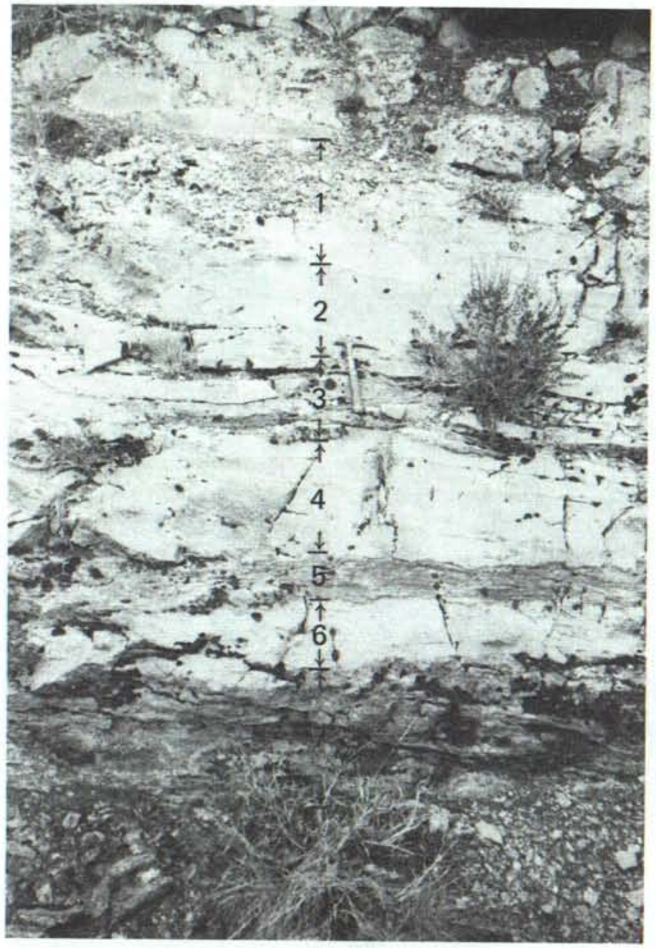


Figure 4.--Workings and figure locations of mineralized zones on Boston No. 2 claim, Goshute Indian Reservation.

Figure 5.--Argentojarosite-bearing pod in limestone on Boston No. 2 claim, Goshute Indian Reservation.



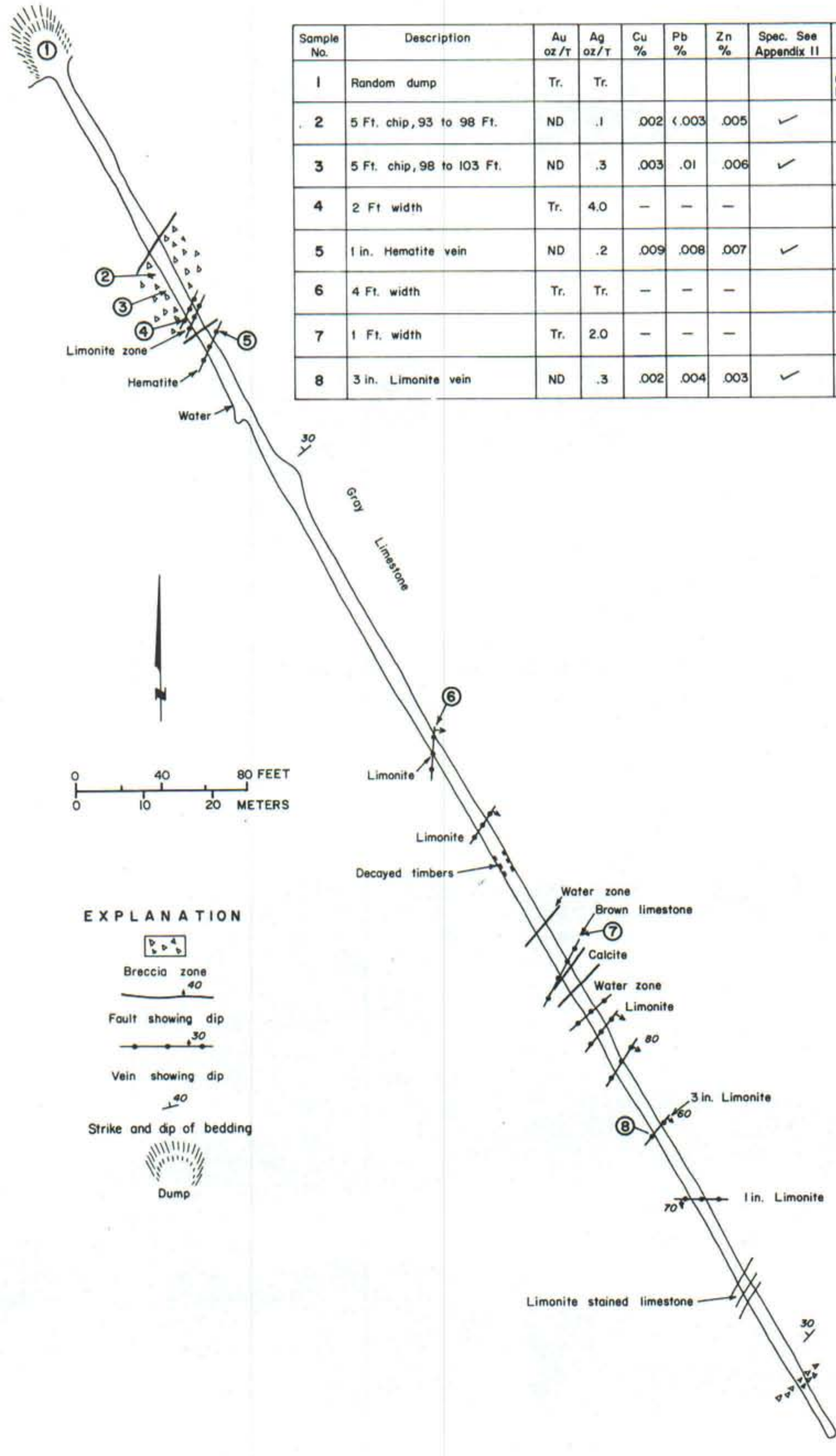
PPM

Sample no.	Sample width in.	Ag	Cu	Pb	Zn	Spec. in appendix 11
1	18	3.2	12	<30	27	x
2	15	3	5	<30	27	x
3	12	5.1	20	<30	28	x
4	18	2.7	16	30	45	x
5	5	14	58	130	130	x
6	8	10	33	80	110	x
7	18	230	150	1200	760	x

Figure 6.--Metal contents of chip samples across limestone bed with chert laminae on Boston No. 2 claim, Goshute Indian Reservation.

Figure 7. Geology, sample locations, and analyses of the Evening No. 2 mine, Goshute Indian Reservation.

Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Spec. See Appendix II	Other
1	Random dump	Tr.	Tr.					See industrial minerals section Pl.17, Tbl. 5 No.6
2	5 Ft. chip, 93 to 98 Ft.	ND	.1	.002	<.003	.005	✓	
3	5 Ft. chip, 98 to 103 Ft.	ND	.3	.003	.01	.006	✓	
4	2 Ft width	Tr.	4.0	—	—	—		Thomson, 1973 p. 64
5	1 in. Hematite vein	ND	.2	.009	.008	.007	✓	
6	4 Ft. width	Tr.	Tr.	—	—	—		Thomson, 1973 p. 64
7	1 Ft. width	Tr.	2.0	—	—	—		do
8	3 in. Limonite vein	ND	.3	.002	.004	.003	✓	



(Adapted from Thomson 1973 P 64)

Two shallow shafts connected by a crosscut are on the north end of the Mahogany No. 1 claim (fig. 8). The mineralized zone probably is an extension of silicified brecciated quartzite which trends along the western side of the claim. A 5-foot chip sample of manganese-stained and brecciated limestone analyzed 37.9 ounces silver per ton. A shallow pit and a very shallow trench in silicified limestone breccia are about 200 feet northwest of these two shafts (plate 14). The shallow trench apparently contained a small high-grade pod that is largely mined out, but two selected samples of dump material analyzed 66.8 and 97.6 ounces silver per ton. An SEM examination indicated these samples contained native silver, argentite, and galena. The galena contained no measurable silver.

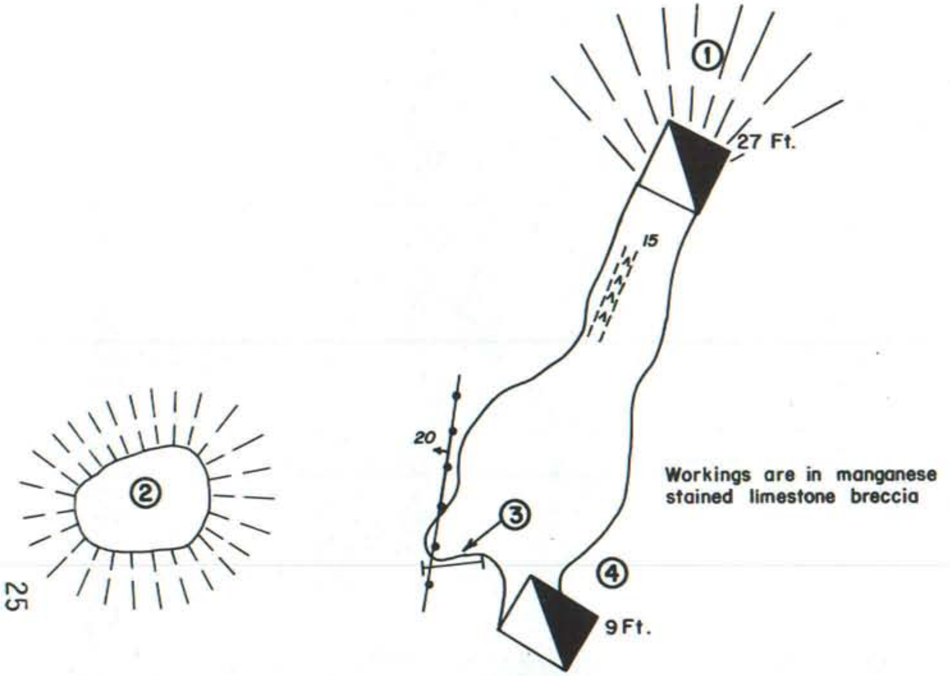
A 17-foot adit was driven along a small fault on the west side of Johnson Canyon, 400 feet west of the Lucky Strike mine (fig. 9). It is one of several workings along north-trending faults in limestone. The vein exposed by the adit assayed 0.25 ounce silver per ton and a selected dump sample contained 4.4 ounces silver per ton. A 26-foot shaft east of this adit was sunk on a similar north-trending fault showing limonite and malachite.

The Lucky Strike mine is a 165-foot adit that appears to have been driven to intersect near-vertical, fault-controlled, mineralized zones exposed by adits and shafts on the hillside 350 feet to the west (fig. 10). It was stopped 150 to 200 feet short of the projected intersection with the faults.

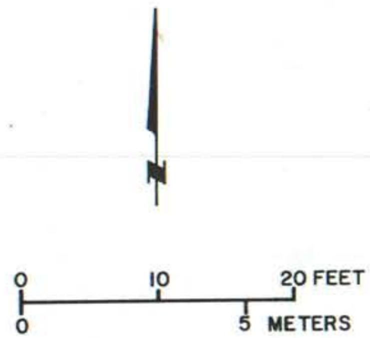
The Bismark mine is a 140-foot incline and crosscut in limestone breccia, decomposed alaskite, and white crystalline, dolomitic limestone on the Muldoon claim (fig. 11). The dolomitic limestone is apparently the result of contact metamorphic alteration from the intrusion of alaskite. Alteration is most intense near the alaskite intrusive that is exposed only in the mine. On the surface immediately east of the incline, bleaching and alteration are intense (plate 14), but are intermittent farther east. At the edge of the marbleized area, alteration is confined to bleached zones along joints. Silver content in samples from the mine was consistently low; the highest came from brecciated and silicified limestone near the portal. The alaskite contained 12 ppm silver. Except for the low silver content, the mineralized zone is similar to those on the Mahogany No. 1 claim. Samples of the dolomitic limestone were analyzed for industrial mineral uses which are discussed in a later section of this report.

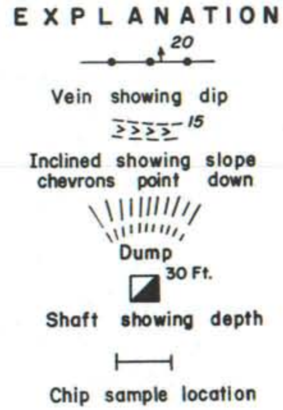
A shaft, a short adit, and a decline in gray limestone are on the hillside about 950 feet north of the junction of Johnson Canyon and Studhorse Canyon (fig. 12). The decline which appears to follow a fault, was unsafe for entry and sampling. Material from the fault was sampled at the top of the decline. This sample contained only a trace of silver, but a selected sample of dump material contained 7.8 ounces silver per ton.

Figure 8. Geology, sample locations, and analyses of workings on the Mahogany No. 1 claim, Goshute Indian Reservation.



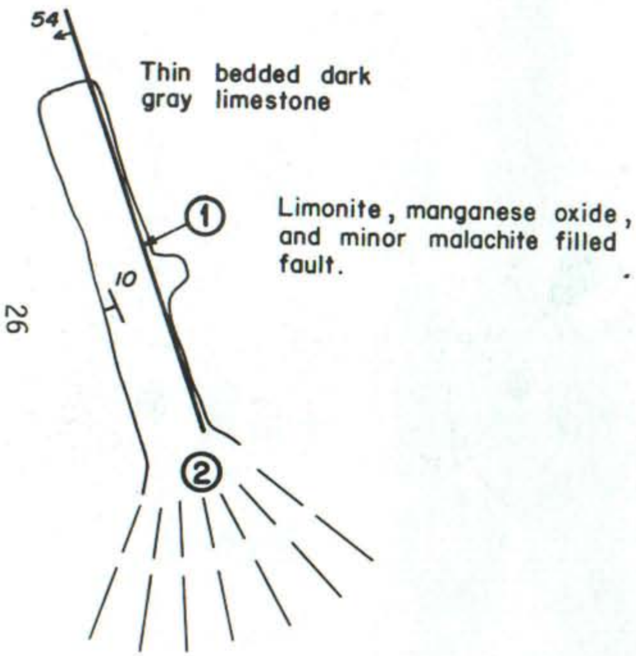
Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Mn %	Spec. See Appendix II
1	Selected dump, manganese oxide stained limestone	ND	6.5	.18	.50	.19	.28	
2	Selected limestone breccia	ND	2.7	.05	.32	.17		✓
3	5 Ft. chip in limestone breccia with calcite veins, manganese oxide, and malachite staining	Tr.	37.9	.15	.65	.69		
4	Selected dump, limonite and locally silicified limestone breccia	.01	18.6	.23	.75	1.0	.28	



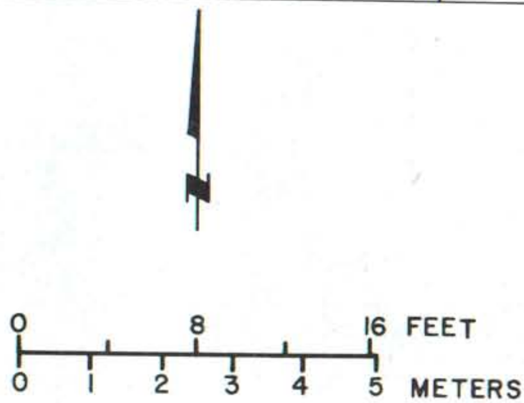


(Adapted from Thomson 1973 P. 65)

Figure 9. Geology, sample locations, and analyses of an adit 400 feet west of the Lucky Strike mine, Goshute Indian Reservation.



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	U ppm	Spec. See Appendix II
1	2 Ft. chip in fault gouge	.001	0.25	.005	.01	.007	1.7	✓
2	Selected limonite from dump	Tr.	4.4	3.4	2.2	.85	4.0	✓



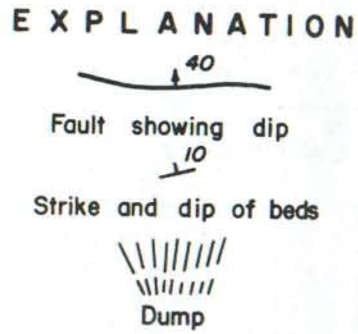
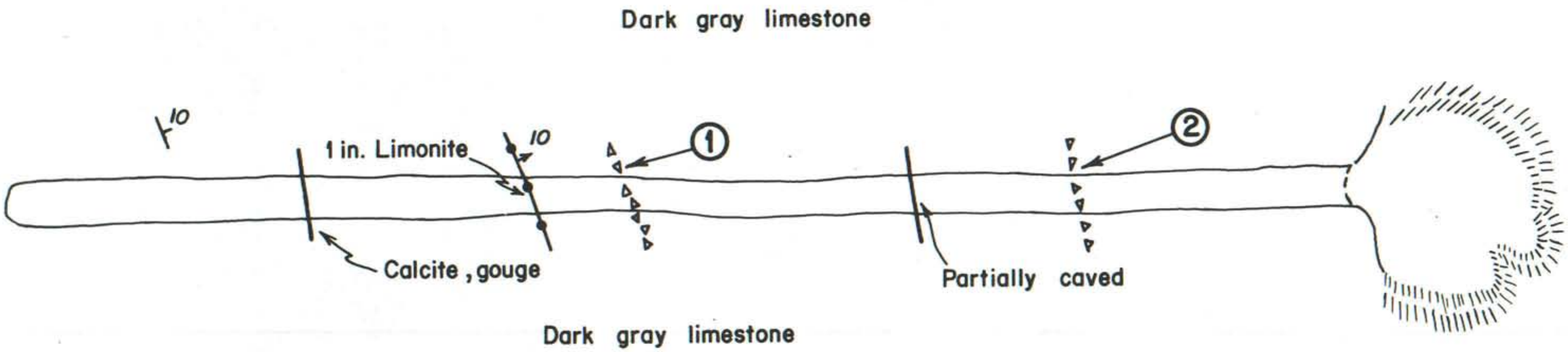
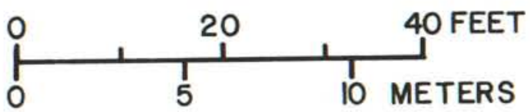


Figure 1 Geology, sample locations, and analyses of the [illegible]ky Strike mine, Goshute Indian Reservation.



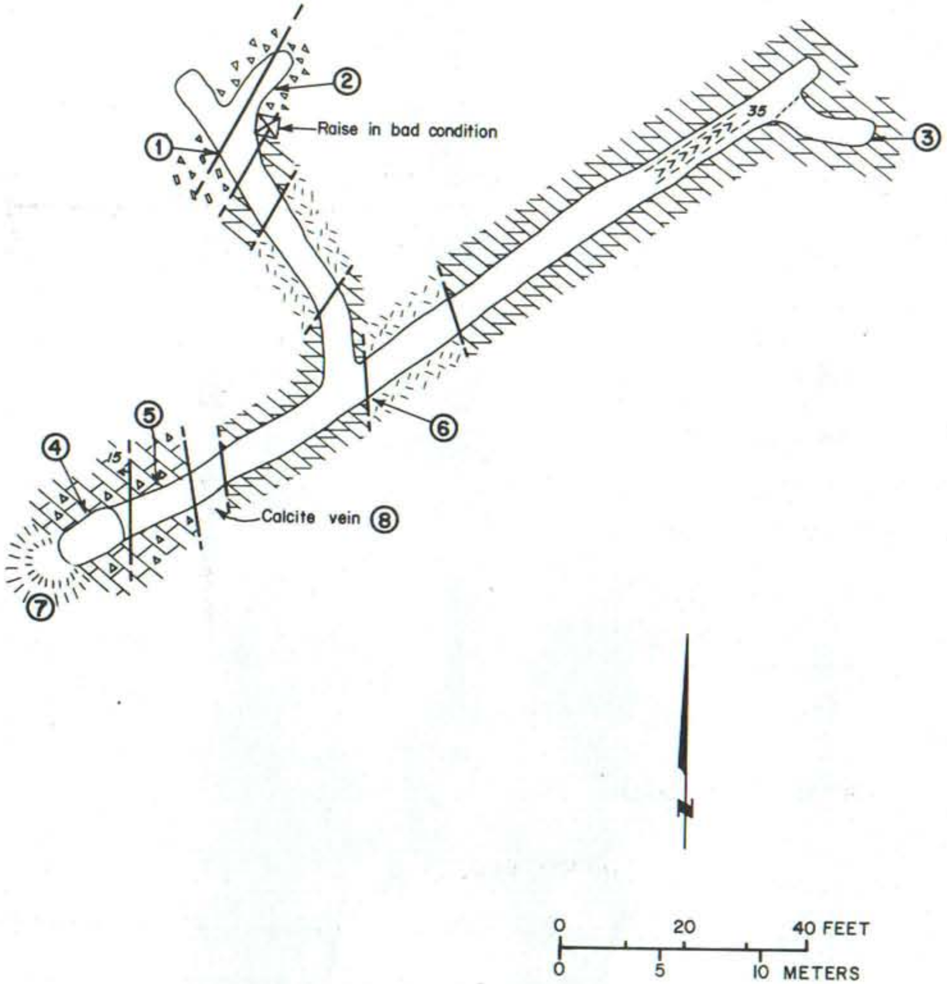


Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Spec. See Appendix II
1	1.5 Ft. limestone breccia	ND	ND	.002	‹ .003	.005	✓
2	1.5 Ft. limestone breccia	ND	ND	.002	‹ .003	.005	✓

EXPLANATION

(Adapted from Thomson 1973 P. 65)

Figure 11. Geology, sample locations, and analyses of the Bismark mine, Goshute Indian Reservation.



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Spec. See Appendix II	Other
1	3 Ft. limonite gouge zone	ND	.1	.007	.02	.008	✓	
2	2 Ft. width	Tr.	Tr.	0	0	0		Thomson, 1973 p. 64
3	4 Ft. width	Tr.	Tr.	0	0	0		do
4	Random limestone quartzite breccia	ND	.60	.005	<.003	.003	✓	
5	Limestone breccia with calcite 6 Ft. wide	ND	ND	.003	<.003	.007	✓	
6	Alaskite (decomposed)	Tr.	.35	.004	.014	.003		
7	Marbleized dolomitic limestone	Tr.	Tr.					See industrial minerals section Pl. 17, Tbl. 5 No. 7
8	8 Ft. width	Tr.	Tr.	0	0	0		Thomson, 1973 p. 64

EXPLANATION

Iron-stained breccia

Decomposed alaskite

Marbleized dolomitic limestone with local iron staining

Silicified and iron stained limestone and quartzite breccia

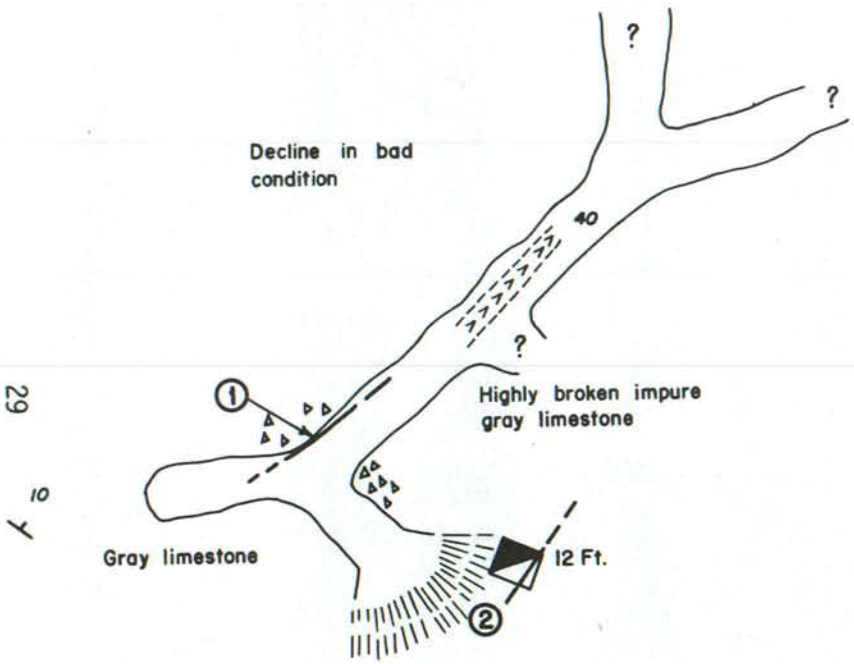
Fault showing dip, dashed where inferred

Incline showing slope chevrons point down

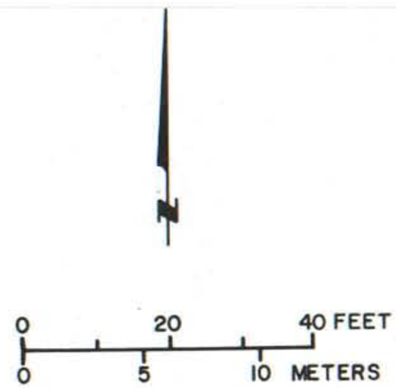
Dump

(Adapted from Thomson 1973 P. 64)

Figure 12. Geology, sample locations, and analyses of an adit and decline on the west side of Johnson Canyon, Goshute Indian Reservation.



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	U ppm	Spec. See Appendix II
1	5 Ft. chip in brecciated limonite zone	ND	Tr.	.004	.016	.009	1.5	✓
2	Selected dump	.015	7.8	1.7	6.9	1.3	6.8	✓



EXPLANATION

Breccia zone in impure gray limestone

Fault, dashed where inferred

40

Decline showing slope chevrons point down

23 Ft.

Shaft showing depth

10

Strike and dip of bedding

Dump

Many other small workings are in the Johnson Canyon area as shown in plate 14. All are the result of past prospecting and exploration. Nearly all brecciated, silicified, and limonitic zones that are evident from surface exposures have received varying degrees of attention. Most of these zones are only weakly mineralized. However, some are highly mineralized, containing up to 141 ounces silver per ton. Examination of those exposed on the surface by pits, trenches, and other workings invariably shows their very small lateral extent. Other high-grade zones may underlie the area.

Soil Survey

A soil survey was made across the northern end of the claim group on the west side of Johnson Canyon to determine if northeast-trending mineralized zones extend into Indian land (plate. 15). The silver, copper, lead, and zinc analyses were examined statistically using methods described in Appendix 3. Anomalous values are more than 2 ppm silver, 40 ppm copper, 91 ppm lead, and 213 ppm zinc. Metal contents of the soil samples are listed in Appendix 12.

A copper-lead-zinc anomaly occurs near the east end of the soil line (plate 15). Extension of an iron-stained calcite vein in a 23-foot-adit on the Victor Hugo claim into the survey area would be a reasonable explanation for this anomaly. The absence of a silver anomaly is unexpected, as samples from the vein and brecciated face of the adit contained 0.2 ounce silver per ton (6.9 ppm) and 0.1 ounce silver per ton (3.4 ppm). A second anomaly ocurrs between the Mahogany No. 2 and Victor Hugo claims: silver in four soil samples ranged from 2.1 to 2.6 ppm, and one contained 55 ppm copper. These values indicate a possible narrow mineralized zone. Only limestone float was noted on the surface. This survey indicates that the mineralized fault zones on the patented claims probably extend northward into Indian land.

The Johnson Canyon area has few exposures of silver-bearing rock. Nevertheless, major subsurface mineralized structures may be present. The north-trending faults may be imbricate faults related to a low angle thrust fault at depth. Nelson (1959, p. 103-104) reported a similar structural relationship in the White Cloud Hills of the Northern Snake Range. The Weaver Canyon and Chokecherry Canyon faults (Nelson, 1966, p. 927, 942-943) are low angle thrust faults to the west and stratigraphically higher than the rocks in the Johnson Canyon area. They are characterized by thick iron-stained and silicified breccia but contain only scattered silver anomalies. The hypothetical low angle thrust fault underlying the Johnson Canyon area would be below and parallel to the Weaver Canyon and Chokecherry Canyon thrust faults and consistent with the geological structure in this area. It would be truncated by the high angle north-south-trending normal fault immediately west of the Deep Creek Range. Plate 16 shows the generalized structural relationships in the Johnson Canyon area along with the hypothetical thrust fault underlying the area. Both the hypothetical low angle thrust fault and the associated imbricate faults could have been conduits for mineral-bearing solutions as well as sites for mineral deposition.

Origin of Silver Deposits

High silver content in the mineralized rocks on and near the patented claims in the Johnson Canyon area is commonly related to brecciation and silicification along north-trending faults. Other locales are in siliceous limonite along bedding plane and cross faults, or in small pods. The limonite is probably the oxidized end product of iron carbonate or possibly iron sulfides.

The silver mineralization in the Johnson Canyon area could be related to a subsurface alaskite intrusive. Mineralized rocks associated with alaskite occur in the Queen of Sheba mine farther east in the Trout Creek area (Thomson. 1973, p. 14). Alaskite is also present in the Bismark mine. Furthermore, an aeromagnetic survey indicates a magnetic high over the Johnson Canyon area inferring the presence of igneous rocks which are commonly slightly magnetic (USGS, 1971). The underlying alaskite intrusive could have caused the development of a hydrothermal system whereby solutions of meteoric origin flowed downward through the fractured Eureka Quartzite, as well as through other faults and fractures. They were then heated by the alaskite intrusive and extracted silver from source rocks or magma at depth. The silver-bearing solutions then migrated upward along near-vertical faults and deposited silver minerals along faults and other favorable sites near the surface.

Beryllium

Small, scattered beryl crystals were found in a pit mined for quartz crystal located in NW1/4 sec. 35, T. 11 S., R. 19 W. Beryl has also been reported in the Queen of Sheba Mine. In the stream gravel of Fifteen-mile Creek, the blue variety (aquamarine) has been noted. These areas were examined for beryl but none was found. Pegmatites associated with the Ibapah stock were examined but no beryl was noted. Two rock samples analyzed for beryllium contained less than 10 ppm. It is unlikely that a beryllium resource exists on the reservation.

Tungsten

Scheelite, a tungsten mineral, has been mined in the Trout Creek area about two miles south of the Ibapah quartz monzonite stock. The underground workings of the Queen of Sheba mine and the Johnson Canyon properties were examined with an ultraviolet light. No scheelite was detected. No tungsten was detected in any rock samples analyzed. The potential for tungsten resources on the reservation is poor.

INDUSTRIAL MINERALS

Deposits of limestone, dolomitic limestone, quartz, and quartzite are on the reservation. These deposits are shown in plate 10 which also shows sample locations. Sample analyses are given in table 5.

Table 5.--Analyses of limestone, dolomitic limestone, quartz, and quartzite, Goshute Indian Reservation (see plate 17)

Sample no.	Location	Description	CaO (percent)	MgO (percent)	SiO_2 (percent)	Al_2O_3 (percent)	Fe (percent)
		Limestone					
4	Sec. 30, T. 11 S., R. 19 W.	Guilmette limestone	45.2	1.24	5.9	0.48	0.24
6	Sec. 6, T. 12 S., R. 19 W.	745 foot adit dump	46.6	.61	7.1	.49	.24
8	Sec. 5, T. 12 S., R. 19 W.	Lucky Strike mine dump in Johnson Canyon	53.1	.41	2.6	.2	.24
		Dolomitic limestone					
3	Sec. 25, T. 11 S., R. 70 E.	Laketown dolomite	27.8	15.9	6.6	1.09	.48
2	Sec. 25, T. 11 S., R. 70 E.	Laketown dolomite	25.9	23.2	2.3	.16	.55
7	Sec. 6, T. 12 S., R. 19 W.	Bismark mine dump	26.7	20.6	6.0	.19	.30
		Quartz and quartzite					
5	Sec. 5, T. 12 S., R. 19 W.	Eureka quartzite			97.9	.63	2.12
9	Sec. 16, T. 12 S., R. 19 W.	Quartzite			97.6	.56	1.50
10	Sec. 30, T. 12 S., R. 19 W.	Quartzite			91.7	.53	1.96
1	Sec. 13, T. 11 S., R. 19 W.	Quartz in pegmatite			92.5	.20	2.44

Limestone

Limestone is the predominant rock type in the southern part of the reservation between Weaver and Johnson Canyons. The topography is rugged with high ridges and some cliffs. The limestone is often associated with dolomitic limestone and quartzite. In the Weaver Canyon area, shale and sandstone are interlayered with the limestone. The limestone-bearing formations cover an area of approximately 26 square miles and may be up to 2,200 feet thick in the Johnson Canyon area.

Limestone may be used for hundreds of purposes grouped into three main categories: chemical and metallurgical, agricultural, and construction. The limestone on the reservation could be used for many of these industrial purposes.

Dolomitic Limestone

Dolomitic limestone occurs in the southern part of the reservation between Johnson and Chokecherry Canyons. Its industrial uses are similar to those of limestone. Outcrop area is approximately 3.6 square miles with a thickness of about 750 feet. Hence, the total resources of dolomitic limestone might be as much as 2.7 billion cubic yards.

A small deposit of marbleized dolomitic limestone covering several acres occurs at the Bismark mine in sec. 6, T. 12 S., R. 19 W. The white crystalline texture of the crushed rock makes it suitable for decorative uses.

Quartzite and Quartz

The Eureka-Swan Peak Quartzite is exposed in a thrust plate between Johnson and Chokecherry Canyons. The outcrop area on the reservation is about 1.4 square miles. The quartzite is white and vitreous with some iron stain.

A quartzite deposit is north of Cremate Canyon in secs. 15 and 16, T. 12 S., R. 19 W. The outcrop covers an area of about 16 acres. The quartzite is white and vitreous, although locally iron-stained.

In the southern part of the reservation, E1/2 sec. 30, T. 12 S., R. 19 W., the boundary passes through a hill that is largely quartzite. The diameter of the exposed outcrop is about 800 feet, but the deposit is probably larger.

The Tertiary intrusive quartz monzonite that forms the Ibapah stock contains many pegmatites. These commonly contain milky quartz cores. The largest core found on the reservation, about 30 feet in diameter, is in SW1/4 sec. 13, T. 11 S., R. 19 W.

Plate 14.--Geology, workings, and sample locations, patented claim group and vicinity, west side of Johnson Canyon, Goshute Indian Reservation (see Appendices 10 and 11 for sample results).

PLATE 14

White Pine Co. - general
Item 64
(copy 1 of 2)

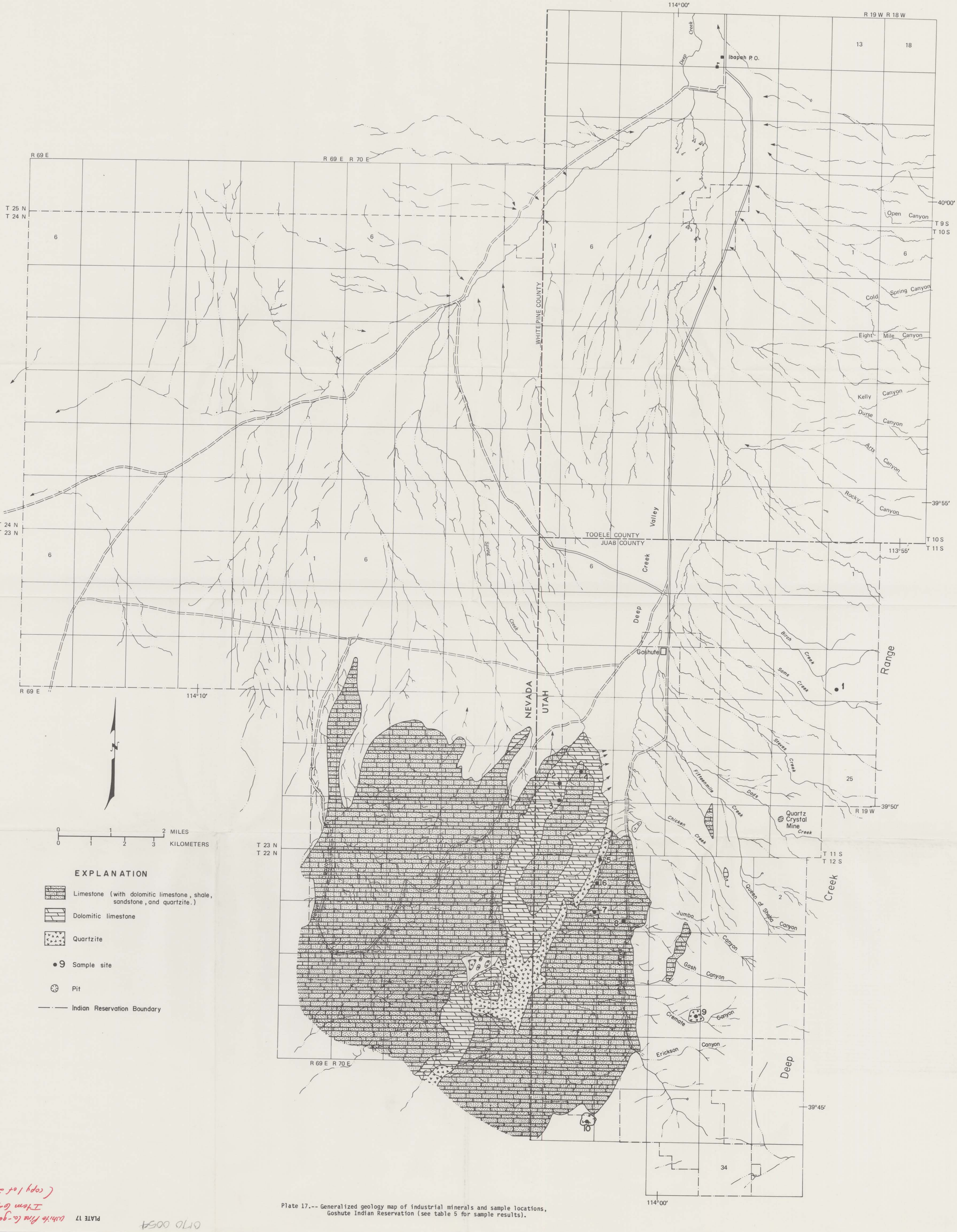
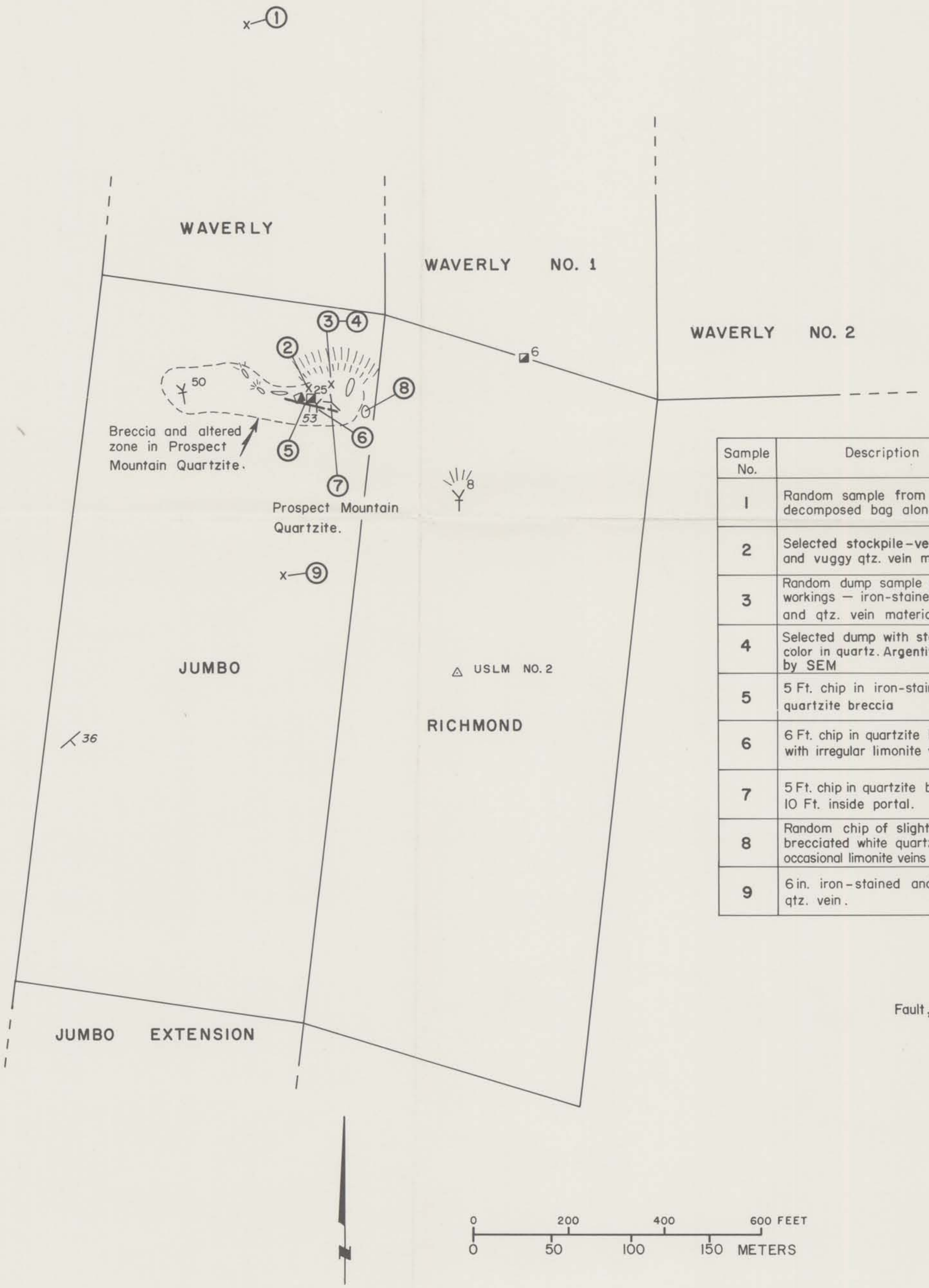


Plate 17.-- Generalized geology map of industrial minerals and sample locations, Goshute Indian Reservation (see table 5 for sample results).

PLATE 17



Sample No.	Description	Au oz/T	Ag oz/T	Cu %	Pb %	Zn %	Spec. See Appendix 9
1	Random sample from ore in decomposed bag along trail.	.27	36.7	.02	.21	.02	
2	Selected stockpile-very limonitic and vuggy qtz. vein material.	.17	12.5	.03	.33	.03	✓
3	Random dump sample of main workings — iron-stained qtzite. and qtz. vein material.	.07	8.7	.01	.05	.005	✓
4	Selected dump with steel-gray color in quartz. Argentite ident. by SEM	.61	76.0	.01	.03	(.002	✓
5	5 Ft. chip in iron-stained quartzite breccia	.09	10.6	.01	.03	.01	✓
6	6 Ft. chip in quartzite breccia with irregular limonite veins.	.13	16.0	.02	.02	,01	✓
7	5 Ft. chip in quartzite breccia 10 Ft. inside portal.	.04	.5	.01	.07	.005	
8	Random chip of slightly brecciated white quartzite with occasional limonite veins in fractures.	ND	.3	.009	.03	.005	
9	6 in. iron-stained and vuggy qtz. vein.	ND	ND	.007	ND	ND	✓

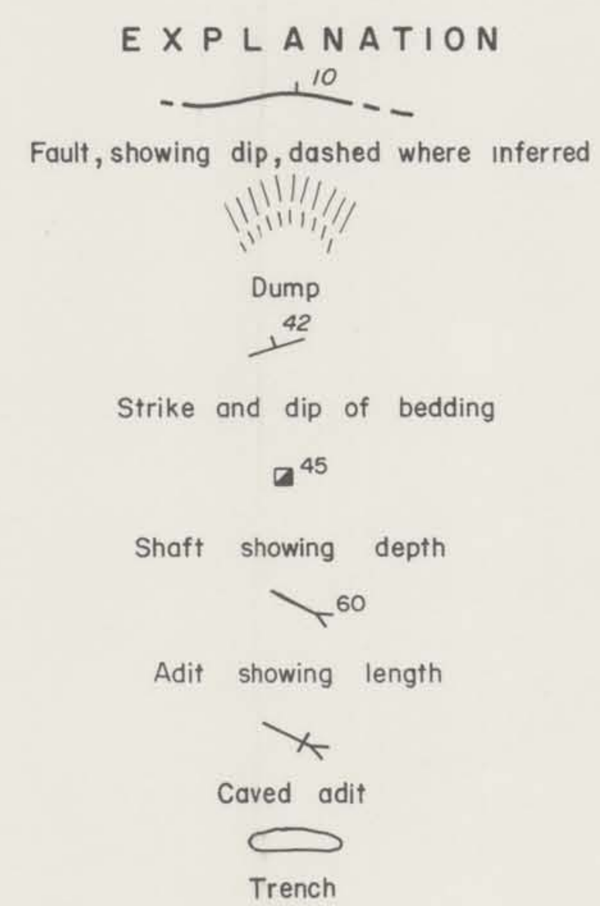


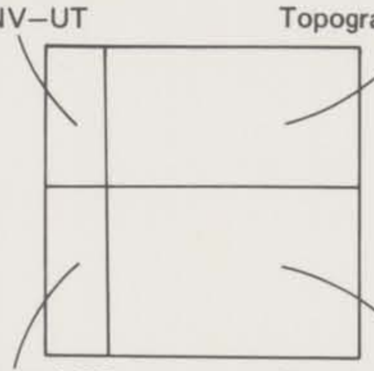
Plate 13.--Geology, mine workings, sample locations, and analyses of the Jumbo claim group, Goshute Indian Reservation.

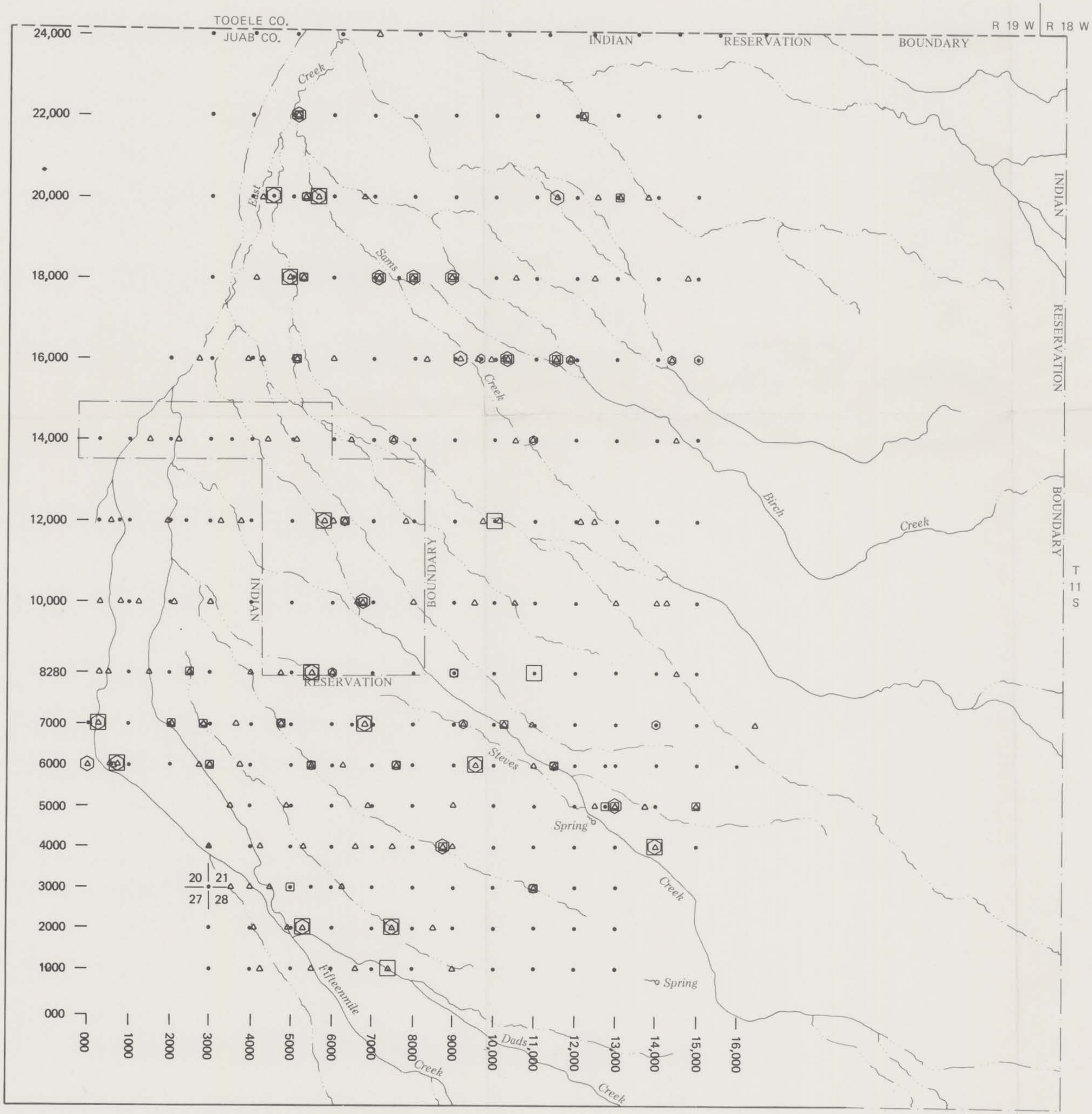
White Pine Co. - general
Item 64
(copy 1 of 2)

PLATE 13

0170 0054

Index of map coverage





EXPLANATION

• Population 1 station location

△ Population 2 station location

⬡ Above average uranium values (19–25.9 ppm)

⬡ Anomalous uranium values (26 ppm or greater)

□ Above average thorium values (50–63.9 ppm)

□ Anomalous thorium values (64 ppm or greater)

Anomalies based on population 1 and population 2 statistics (See Appendix 8)

N

0 — 1 MILE

0 — 1 KILOMETER

Plate 10.--Gamma ray spectrometer survey west of the Ibapah Stock, Goshute Indian Reservation.

PLATE 10

White Pine Co.- general
Item 64
(copy 1 of 2)

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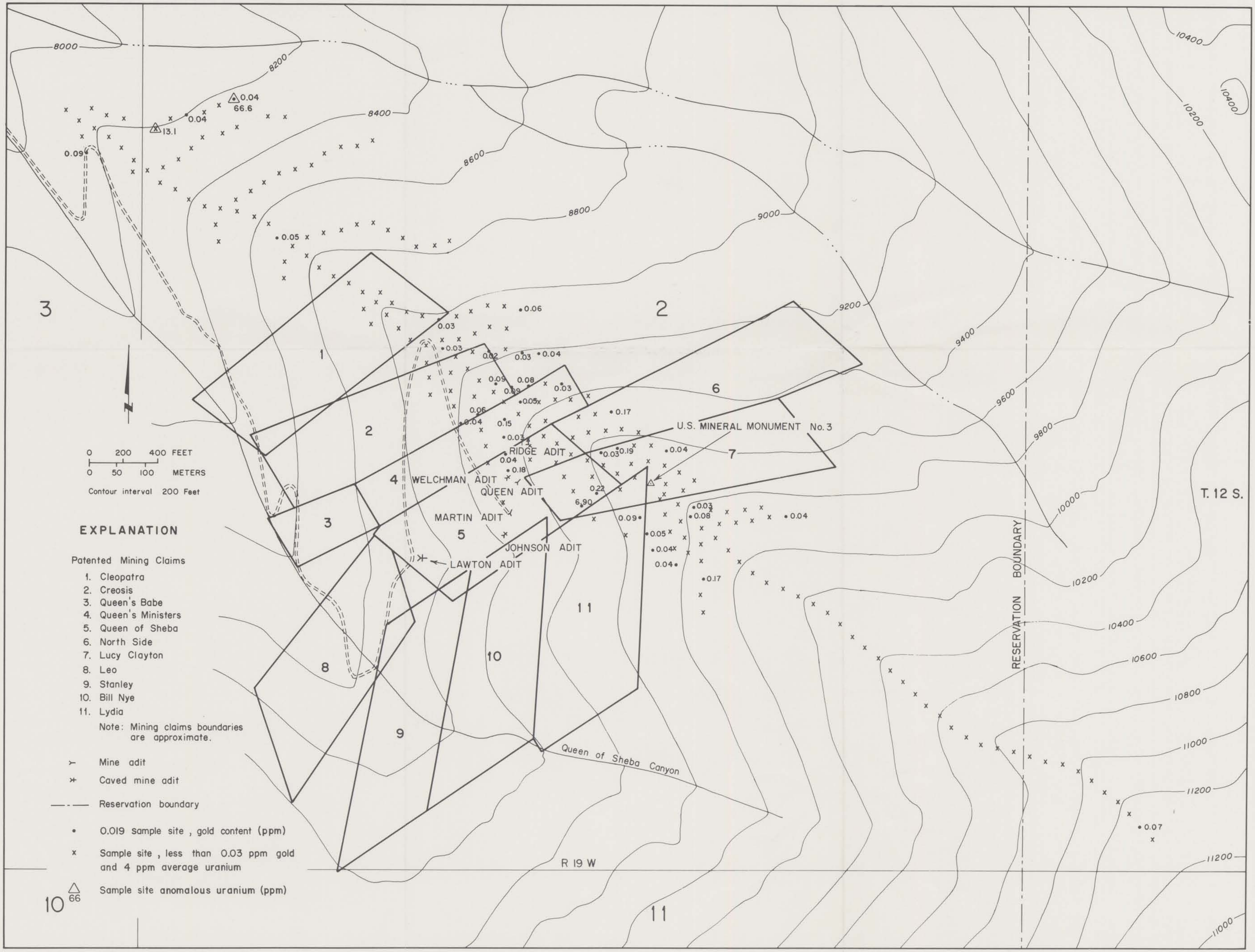

Plate 9.--Gold and uranium content in soil samples, Queen of Sheba area, Goshute Indian Reservation.

PLATE 9

White Pine Co. - general
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(copy 1 of 2)

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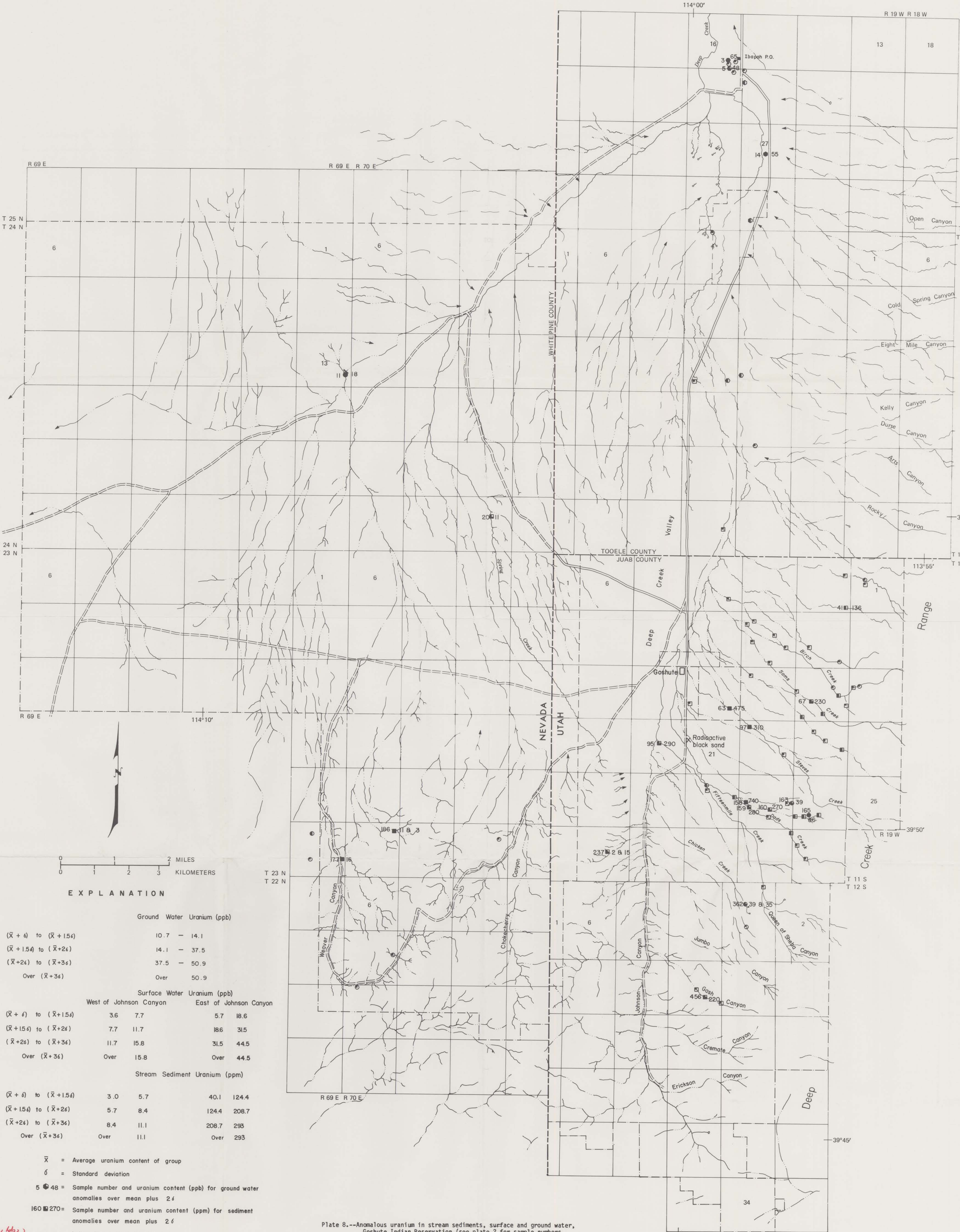

EXPLANATION

	Ground Water Uranium (ppb)	
$(\bar{X}+\sigma)$ to $(\bar{X}+1.5\sigma)$	10.7 — 14.1	
$(\bar{X}+1.5\sigma)$ to $(\bar{X}+2\sigma)$	14.1 — 37.5	
$(\bar{X}+2\sigma)$ to $(\bar{X}+3\sigma)$	37.5 — 50.9	
Over $(\bar{X}+3\sigma)$	Over 50.9	

Surface Water Uranium (ppb)

	West of Johnson Canyon		East of Johnson Canyon	
$(\bar{X}+\sigma)$ to $(\bar{X}+1.5\sigma)$	3.6	7.7	5.7	18.6
$(\bar{X}+1.5\sigma)$ to $(\bar{X}+2\sigma)$	7.7	11.7	18.6	31.5
$(\bar{X}+2\sigma)$ to $(\bar{X}+3\sigma)$	11.7	15.8	31.5	44.5
Over $(\bar{X}+3\sigma)$	Over	15.8	Over	44.5

Stream Sediment Uranium (ppm)

$(\bar{X}+\sigma)$ to $(\bar{X}+1.5\sigma)$	3.0	5.7	40.1	124.4
$(\bar{X}+1.5\sigma)$ to $(\bar{X}+2\sigma)$	5.7	8.4	124.4	208.7
$(\bar{X}+2\sigma)$ to $(\bar{X}+3\sigma)$	8.4	11.1	208.7	293
Over $(\bar{X}+3\sigma)$	Over	11.1	Over	293

$\bar{X}$ = Average uranium content of group

σ = Standard deviation

5 48 = Sample number and uranium content (ppb) for ground water anomalies over mean plus 2σ

160 270 = Sample number and uranium content (ppm) for sediment anomalies over mean plus 2σ

— - — Indian Reservation Boundary

Plate 8.--Anomalous uranium in stream sediments, surface and ground water, Goshute Indian Reservation (see plate 2 for sample numbers and Appendix 4 and 6 for sample results).

PLATE 8

White Pine Co.-general
Item 64
(copy 1 of 2)

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Plate 7.--Uranium in stream sediments, surface water, and groundwater, Goshute Indian Reservation (see plate 8 for statistical distribution).

PLATE 7

White Pine Co.-general
Item 64
(copy 1 of 2)

0170 005A

Quartzite and quartz are used in the metallurgical, chemical, abrasives, and ceramic industries. The largest demand for these siliceous raw materials is from the glass industry. The quartzite and pegmatitic quartz on the reservation cannot be used by the glass industry because the iron content is too high.

Clear quartz crystals and berl crystals have been mined from a pegmatite in NW1/4 sec. 35, T. 11 S., R. 19 W., but the mine is caved and the remaining resource could not be determined. Additional pegmatites containing salable crystals may occur on the reservation.

Sand and Gravel

Sand and gravel deposits of substantial size are present in Deep Creek valley. They are generally poorly sorted and uncemented. They have been used for road construction and sufficient resources are available for all foreseeable future needs.

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APPENDIX 1.--GEOLOGY OF THE GOSHUTE INDIAN RESERVATION

GEOLOGY 1/

General

The Goshute Indian reservation is in the central part of the Basin and Range Province, and includes part of a high, fault-bounded mountain range, and part of an adjacent alluviated structural valley (plate 1). Rocks forming the mountains include strata of Precambrian to Permian age, locally overlain by Tertiary latitic lavas and intruded by the large Ibapah quartz monzonite stock and smaller bodies of monzonite to granitic composition, also of probable Tertiary age. The deposits in the valleys include lacustrine sandstone, shale, marl, and tuffs of younger Tertiary age, and alluvium of Holocene age. Before intrusion of the igneous bodies, the Precambrian and Paleozoic rocks were strongly deformed by several superposed low angle faults and associated folds. During and shortly following the eruption and intrusion of the igneous rocks, base- and precious-metal ore deposits formed in both the igneous and adjacent sedimentary rocks. After this episode, probably during the Miocene, Basin and Range-style faulting defined the horst-like mountain block and the graben-like structural valley. Movement on the Basin-Range faults has continued intermittently to the present.

Rock Units

The distribution of the major rock units within the Goshute Indian reservation is shown in plate 1. Because of the structural complexity of the southern Deep Creek Mountains, this map is highly generalized, and chiefly shows units representing the principal periods of geologic time. The formations units which crop out both on and adjacent to the reservation are shown in the stratigraphic table (table 6). These data are from the reports listed on plate 1, and from Misch and Hazzard (1962), Woodward (1965), and other sources. Because of the structural complexities, complete sequences of undisturbed formations are rare, and large parts of some formations have been eliminated by low-angle faulting. The displacement on most of the thrust faults is not known with certainty, but not presumed to be large. Thus, at least parts of most of the stratigraphic units known in the region occur within the reservation area.

1/ Geology by H. T. Morris, U.S. Geological Survey, Morris and Satkoski (1976)

Table 6. Rock Units of the Goshute Indian Reservation

	Age	Rock Units	Thickness (feet)
Holocene	Quaternary	Undifferentiated alluvium and colluvium	0 - +100
Cenozoic	Tertiary	Consolidated alluvium, lacustrine deposits, tuffs and lavas	0 - +2,000
		Latite lavas and tuffs	0 - +1,200
U N C O N F O R M I T Y			
Palezoic	Permian	Arcturus Formation	+2,000
		Riepe Spring Limestone / South Ridge Sandstone; Ferguson Mountain Limestone	+1,700
	Pennsyl-vanian	Ely Limestone (restricted)	+1,400
	Mississip-pian	Chainman Shale	1,500 - 2,000
		Joana Limestone	0 - +240
	? ?	Pilot Shale	540
	Devonian	Guilmette Formation	+1,200
	? ?	Simonson Dolomite	850 - 1,000
		Sevy Dolomite	550 - 670
	Silurian	Laketown Dolomite	560 - 1,050
	Ordovician	Fish Haven Dolomite	250 - 300
		Eureka Quartzite	0 - 500

Table 6. Rock Units of the Goshute Indian Reservation (Continued)

	Age	Rock Units	Thickness (feet)
Paleozoic (Cont.)	Cambrian	1/ Carbonates undifferentiated	600 - +2,000
		Notch Peak Formation	1,230
		Corset Spring Shale	30
		Johns Wash Limestone	350
		Dunderberg Shale	50
		Hicks Formation	600
		Lamb Dolomite	1,000
		Trippe Limestone	800
		Young Peak Dolomite	350
		Abercrombie Formation	1,800
		Busby Quartzite	400
		Pioche Shale	500
		Prospect Mountain Quartzite	2,900
Precambrian	Late Precambrian	Water Canyon sequence	4,000
		Trout Creek and Johnson Pass sequences	+10,000

1/ This unit was called Pogonip Group undiff. of Ordovician Age in the Phase I Report. Further work by Nelson (personal commun., 1978) suggests the present name is more appropriate.

Precambrian rocks

The Precambrian rocks exposed in the Deep Creek Mountains are more than 14,000 feet thick, consisting of an older sequence of mica and quartzitic schists, with a younger sequence of lower-grade metamorphic rocks including quartzite and argillite. Because of the structural complexities, and the intrusion of the Ibapah stock, the specific relations of these rocks are not well known, but regional correlations indicate that both are of Late Precambrian age.

Johnson Pass and Trout Creek sequences

Nelson (1959) applied the name "Johnson Pass sequence" to the older series of interlayered garnet-bearing biotite-muscovite schist, schistose quartzite, marble, and sericite schist that crops out east of Johnson Canyon. These rocks are more than 10,000 feet thick and are similar to the rocks of the Trout Creek sequence of Misch, Hazzard, and Turner (1957), which are exposed on the southeastern flank of the Deep Creek Mountains.

However, tillitic schists, which are characteristic of the lower part of the Trout Creek sequence, were not recognized by Nelson in the Johnson Pass exposures. Misch and Hazzard (162, p. 320) correlate the Trout Creek sequence with strata in the lower part of the McCoy Creek Group of west-central Nevada, but believe that the lowest Trout Creek rocks -- presumably the tillitic schists -- are somewhat older than the oldest McCoy Creek strata. These tillitic schists are similar in many respects to the essentially unmetamorphosed glacial-boulder phyllites of the Dutch Peak Tillite Member of the Upper Precambrian Sheeprock Series of Cohenour (1959) exposed in the Sheeprock Mountains and adjacent areas in west-central Utah, and probably correlate with them.

Water Canyon sequence

The name "Water Canyon sequence" was applied by Nelson to the younger series of Precambrian quartzites and argillites that underlie the Cambrian Prospect Mountain quartzite in the south-central part of the reservation. These strata are slightly unmetamorphosed and are approximately 4,000 feet thick. The Water Canyon rocks are apparently identical to the Goshute Canyon Formation of Bick (1959), which crops out on the eastern flank of the Deep Creek Mountains north of the Ibapah stock. In both areas the late Precambrian strata are nearly parallel to the base of the overlying Prospect Mountain Quartzite, but Misch and Hazzard (1962) believe that the contact between them may represent a significant regional disconformity.

Woodward (1965) correlates the Goshute Canyon Formation of Bick (1959) with units D, E, F, and G of the Late Precambrian McCoy Creek Group of eastern Nevada. Correlation eastward with units in west-central Utah is less certain; however, the prevailing light color and fine-grained size of the quartzite units, and the abundance of gray-green argillite are more typical of the Upper Member of the Sheeprock Series of Cohenour (1959) than of the comparatively coarse-grained, dark red quartzites and purplish red argillites of the Late Precambrian Mutual Formation that overlies it.

Cambrian rocks

Rocks of Cambrian age in the Deep Creek Mountains have an aggregate thickness of about 10,000 feet and have been subdivided into 12 formations. They disconformably overlie the Precambrian strata, and, within the reservation, are most conspicuously exposed on the west side of Johnson Canyon and in the headwaters area of Water Canyon.

The lower third of the Cambrian sequence consists predominantly of quartzite and subordinate phyllitic shale, and the upper two-thirds of limestone and dolomite, also with some minor shale and calcareous sandstone. On plate 1, the basal Cambrian Prospect Mountain Quartzite is shown separately because of its relatively great thickness and its regional importance as a stratigraphic marker unit.

Ordovician Rocks

Strata of Ordovician age conformably overlie the Cambrian rocks and have an aggregate thickness of 850 - 2,550 feet. They are best exposed on the west slopes of Johnson Canyon and in the upper part of Cliff Spring Wash. The most distinctive formation is the light-colored, fine-grained Eureka Quartzite of Middle Ordovician age, which commonly forms a conspicuous ledge. A discontinuous bed of dolomite occurs near the middle of the quartzite unit. This bed may correlate with the Crystal Peak dolomite. If so, the quartzite and the name Eureka Quartzite should be applied only to the beds above it. The Lower Ordovician Pogonip Group below the Eureka quartzite in the southern Deep Creek Mountains consists of three or more formations (not differentiated on the geologic map) including the Lehman Limestone, about 700 feet thick, which is the uppermost formation of the group, and the distinctive olive-green Kanosh Shale about 300 feet thick, which underlies the Lehman. The limestone sequence below the Kanosh Shale has not been specifically subdivided, but may be correlative with all or parts of the Juab, Wahwah, Filmore, and (or) House Limestones of the lower part of the Pogonip Group. Subdivisions of the Pogonip Group below Kanosh Shale on the west side of Johnson Canyon have been reclassified as undifferentiated Cambrian carbonates by Nelson.1/ The Late Ordovician Fish-Haven Dolomite, which disconformably overlies the Eureka Quartzite, is chiefly dark-gray, massive cherty dolomite that is easily distinguished from the mostly thin-bedded and light-colored limestones of the Pogonip Group.

1/ See <u>Geology</u>, page 16

North of the Ibapah stock, the Eureka Quartzite is not present and strata equivalent to the upper part of the Pogonip Group have also been eroded below an unconformity at the base of the Fish Haven Dolomite.

Silurian Rocks

Silurian strata, disconformably overlying the Ordovician rocks, consist only of the Laketown Dolomite which crops out in the area between Johnson and Chokecherry Canyons, and in Cliff Spring Wash. The Laketown Dolomite typically ranges from light-gray to nearly black, and from fine- to coarse-grained. Some of the fine-grained beds are thinly laminated and many of the coarse-grained beds are massive and cherty. In the lower part, brown-weathering dolomitic sandstone laminae and beds are common, and at the top, large, irregular bodies of breccia apparently fill ancient channels, indicating a disconformity.

Devonian Rocks

Devonian strata are extensively exposed in the Goshute Indian Reservation in the upper plate of the Chokecherry thrust fault, on both sides of Chokecherry Canyon, and in the hills southeast of Gravel Creek Wash. These strata have an aggregate thickness of more than 2,800 feet, although some Devonian units may be cut out by low-angle faults. Both the Sevy and Simonson Dolomites forming the lower half of the Devonian section are light colored, brownish gray dolomite. The Guilmette, forming the upper half or more of the section, is blue-gray argillaceous limestone with a few interbeds of brown sandstone. Regionally, the contact between the Devonian and Mississippian strata is gradational, and is placed within the Pilot Shale, but this unit and the overlying Mississippian Joana Limestone have not been recognized with certainty in the southern Deep Creek Mountains, and appear to have been cut out by thrust faulting.

Mississippian Rocks

Highly deformed shale and subordinate limestone and quartzite of probable Mississippian age but uncertain formational assignment form the lower plate of the Weaver Canyon thrust fault in the upper parts of Gravel Creek Wash and Weaver Canyon in the southwestern part of the reservation. Nearby, these rocks include the Devonian and Mississippian Pilot Shale, the Early Mississippian Joana Limestone, and the Late Mississippian Chainman Shale. In the exposures in Gravel Creek Wash and Weaver Canyon more than 1,500 feet of the section may be exposed. The most distinctive unit is a blue-gray thin-bedded limestone, about 200 feet thick, that apparently overlies a unit of black shale and brown sandstone, perhaps 400 feet thick, and underlies a thick unit of dark blue-gray to brown shale containing thin lenses of black limestone. The presence of sandstone near the base of the deformed unit precludes a direct correlation of that part of the section with the Pilot Shale.

Pennsylvanian Rocks

Pennsylvanian strata crop out in the southwestern part of the reservation in the upper plate of the Rattlesnake Ridge thrust fault. On figure 1, these strata make up part of the Ely Limestone, which, following the example of Hose and Repenning (1959), was mapped by Nelson to also include some undifferentiated strata of Early Permian age, following the example of Hose and Repenning (1959). However, Steele (1960) restricted the name Ely Limestone to the light brownish gray, cherty, argillaceous limestone of Pennsylvanian age only, and he proposed the names "South Ridge Sandstone" and Riepe Spring Limestone" for the Permian age strata that locally are present between the restricted Ely Limestone and the Arcturus Formation. Berge (1960), who was studying an an area where the Lower Permian sandstone unit was not present, also proposed the restriction of the name Ely Limestone to the Pennsylvanian strata, and proposed the name "Ferguson Mountain Limestone" for the Permian limestone strata below the Arcturus. This nomenclature is shown in table 1.

In the Deep Creek Mountains, the Ely Limestone (restricted) is about 1,000 feet thick, but an unknown thickness of strata near the base probably has been cut out by low-angle faulting.

Permian Rocks

Strata of Permian age are widespread in the southwesternmost part of the Deep Creek Mountains. Two small isolated masses of Permian rocks also crop out above low-angle faults in the headwaters area of Gravel Creek Wash and in the east-central part of Johnson Canyon. The Early Permian unit that is probably equivalent to the Ferguson Mountain Limestone of Berge (1960) in the upper plate of the Rattlesnake Ridge thrust fault is discussed in the section on Pennsylvanian rocks. This unit is chiefly blue-gray, argillaceous limestone, and is about 1,700 feet thick. The Arcturus Formation, which lies above it, is the youngest Paleozoic unit exposed in the reservation. It consists of light yellowish gray, quartzofeldspathic sandstone with subordinate interbeds of gray, fine-grained cherty dolomite. The beds exposed in the southwestern part of the reservation have an aggregate thickness of about 2,000 feet, but the lower part of the formation is faulted, and the upper part is eroded prior to the eruption of the Tertiary lavas.

Older Tertiary Volcanic Rocks

Dark-colored lavas, with some interlayered ash flow tuff and related pyroclastic units, crop out extensively in low rounded hills in the western and southwestern part of the reservation. They overlie the faulted Paleozoic rocks above an unconformity that defines an erosion surface of moderate relief. The lavas and pyroclastics are mostly medium- to dark-brownish gray with textures ranging from glassy to medium-grained porphyritic. Microscopic examination indicates that most of the porphyritic flow rocks are latites, containing oligoclase and various amounts of augite, biotite, and hornblende, commonly in a matrix of devitrified or perlitic, potassium-bearing glass. Potassium-argon and fission track dating techniques indicate an Oligocene age (R. K. Hose, personal commun., Dec. 8, 1975) for similar lavas in the adjacent Antelope Range, Nevada.

Intrusive Rocks

The dominant intrusive rock in the Deep Creek Mountains is the Ibapah stock, which has a total outcrop area of approximately 40 square miles, and which extends into the eastern part of the reservation. It forms the highest part of the mountain range, including Ibapah and Haystack Peaks, both a short distance east of the reservation boundary. The Ibapah stock intrudes the faulted Paleozoic and Precambrian rocks, generally along sharp, steeply dipping contacts. Its rocks are medium- to light-gray, with a medium- to coarse-grained, remarkably equigranular texture. According to Bick (1966, p. 53), the most typical composition is about 40 percent quartz, 25 percent each oligoclase and potassium feldspar, and 10 percent biotite. The adjacent wallrocks -- chiefly quartzites, argillite, schists, and other nonreactive rocks -- show only moderate contact pyrometasomatism.

The exact age of the Ibapah stock is not known, but in plate 1 it is considered to be Tertiary. Zircon crystals dated by the lead-alpha technique indicate an age of 71 million years (Late Cretaceous) but some of the zircons might have been recycled from xenoliths derived from the older wallrocks. Biotite from the stock, according to Armstrong (1970), yields a potassium-argon isotopic age of 22 m.y. (Early Miocene), but this age seems unreasonably young when compared to many Oligocene igneous rocks in adjacent areas, and may represent a period of reheating.

Other intrusive rocks within the reservation include dikes of Ibapah granite, and undifferentiated small bodies of alaskite, a fine- to medium-grained quartz-feldspar rock that is exposed in several mines.

Tertiary Sedimentary Rocks

Light-colored sedimentary rocks, with some interlayered tuffs and dark-colored lava flows, mantle a large area in the northern parts of the reservation. These deposits consist largely of conglomerate, sandstone, calcareous siltstone, cream-colored marly limestone, volcanic tuff and bentonitic clay, that are typical of Late Tertiary valley fill deposits throughout the Basin and Range province. The thickness of these deposits is believed to exceed a thousand feet. According to C. A. Repenning (oral commun., 1975) beds exposed a few miles north of the reservation boundary yielded the fossilized remains of *Aelurodon savius*, *Pliohippus sp*., and *Merycodus furcatus*, which he regards as early Pliocene in age.

The volcanic rocks that are locally interlayed with the younger Tertiary basinal deposits are mostly alkaline olivine basalt and basaltic andesite. These rocks are not shown separately in figure 1, or are combined with the older Tertiary lavas.

Quarternary Deposits

Unconsolidated surficial deposits of several types occur throughout the reservation. The principal deposits are fanglomerates that extend outward from the mountains into the valley and pediment areas. Also important are the colluvial talus, landslide, and surficial deposits in the upland areas and the alluvial stream deposits of the creek bottoms. These deposits range from a featheredge locally to probably more than 1,000 feet thick in the valley of Deep Creek. Many of the perennial springs in the reservation are fed by aquifers in the Quaternary deposits.

Structure

The principal geologic structures of the Deep Creek Mountains and adjacent areas include low- and high-angle faults and simple to overturned folds. In general they indicate three main periods of crustal instability and tectonic deformation, which both predate and postdate igneous activity in the area, having extended from the Cretaceous Period to the Holocene. Several much older episodes of broad epigenic uplift that created the unconformities in the stratigraphic sections are also recognized, but are not considered in this report.

The oldest and most complicated group of structures, presumably of Late Cretaceous age, resulted from uplift, dislocation, and deformation of the Precambrian and Paleozoic strata during the prolonged Sevier orogeny (Harris, 1959; Armstrong, 1968). The dominant structural features produced during this episode are a series of superimposed low-angle faults, termed thrusts by Nelson (1966) and Bick (1966), above which great plates of sedimentary rocks were transported east-southeasterly from a nearby highland area. Associated with these thrust faults are large asymmetric folds and smaller compressional and drag folds, high- and low-angle tear faults, local reverse faults, and other similar features. The large thrust faults apparently originated as bedding plane faults, but as structural deformation intensified and tectonic dislocation increased, they moved slightly downward from the original decoupling plane, cutting cut significant parts of the stratigraphic sequence. At no place within the general area are older rocks emplaced on younger rocks as in the eastern part of the Sevier belt where imbricate structures indicating extensive gliding are common.

In the area east of Johnson Canyon, the Water Canyon thrust separates the relatively unmetamorphosed rocks of the Water Canyon sequence from the schists and metaquartzites of the Johnson Pass sequence. West of Johnson Canyon, several complex thrust zones are recognized. Two of these, the Chokecherry Canyon and Weaver Canyon thrusts are marked by thick masses of sole breccia. A higher structure, the Rattlesnake Ridge thrust is correlated by Nelson (1966, p. 922) with the great Snake Range decollement thrust of Misch (1960) and Misch and Hazzard (1962). Despite the abundance of thrust faults in the southern Deep Creek Mountains, and the evidence of considerable displacement on some of them, the general stratigraphic succession is remarkably consistent throughout the area.

The second period of deformation followed the early episode of uplift and thrusting after a period of tectonic quiescence. During this period of renewed activity, the area of the Deep Creek Mountains was uplifted and broadly arched, and the Ibapah stock was probably emplaced into the structurally deformed Precambrian and Paleozoic rocks.

The youngest period of deformation to affect the Deep Creek area was the Basin and Range orogeny, which probably started during the Miocene. During this event, the Deep Creek Mountains horst was formed by the relatively downward displacement of the structural valleys on either side of it along Basin Range faults of large magnitude. The rugged, youthful topography of the Deep Creek Mountains, their sharp, north-trending contacts with the valley fill deposits, and local scarplets in the alluvium all indicate containing displacement on these great fractures to the present.

Metamorphism

The metamorphism of the strata of the Johnson Pass and Trout Creek sequences presents a special problem in geologic interpretation. These rocks were originally quartzites, carbonate rocks, and shales or argillites that now consist of metaquartzites, marble, and staurolite- and garnet-bearing biotite-muscovite schists, locally retrograded to sericite schists and diaphthorites. This medium-grade metamorphism is interpreted by Misch and Hazzard (1962, p. 326-327) to be regional and synkinematic, commonly with a postkinematic stage. The metamorphism predates the Snake Range decollement, and is similar to the garnet-zone metamorphism of the McCoy Creek rocks of Nevada; it also predates the Sevier orogency, and thus may be the result of a previously unrecorded orogenic or thermal event of possible Mesozoic age. The validity of such an event can be determined only by additional detailed studies in the field.

APPENDIX 2.--SAMPLING PROCEDURES AND ANALYTICAL TECHNIQUES FOR STREAM SEDIMENT, SOIL, ROCK, AND WATER SAMPLES, GOSHUTE INDIAN RESERVATION.

The finest stream sediment was gathered along flowing streams and from dry stream beds. Check samples were taken by splitting a double volume of fine material. Notes were taken concerning the nature of the sediment, rock type in the area, and possible contaminants. Soil samples were taken at the upper B horizon. Samples were placed in brown Kraft paper envelopes, oven dried, and sieved through minus 80 mesh stainless steel screens.

Rock samples were taken from selected mineralized zones and dump material, as chip samples across a measured width of rock or vein, or as random or selected chips of unmineralized rock to determine trace element content. Sample size ranged from 4 to 8 pounds. Samples were then crushed and pulverzied to minus 80 mesh or finer. The pulverizer plates were cleaned with high purity quartz sand between each sample.

Water samples were collected in streams, springs, or as near to the well-head as possible. Abandoned wells were sampled by lowering a stainless steel bomb fitted with a one-way valve. Water samples were placed in quart polyethylene bottles that that been rinsed three times with water from the source to be sampled. Lo-ion paper was used for pH measurements. Samples were filtered by Whatman No. 41 Ashless filter paper (field season 1977) and by Millipore 0.45 micron filter paper and self-contained-hand vacuum pump and filter apparatus (field season 1978). The water samples were then acidified with six normal nitric acid to a pH of 1.

Stream sediment, soil, and rock samples were routinely analyzed for gold, silver, copper, lead, zinc, and uranium. Selected stream sediment samples from streams draining the Ibapah stock and nearby formations were analyzed for tungsten, molybdenum, and beryllium. Forty-element emission spectrographic analyses were performed for all soil samples, most rock samples, and about 40 percent of the stream sediment samples. Spectrographic analyses of stream sediments and soil samples were checked for anomalous concentrations of potentially economic and trace elements. These data are not included in this report but can be furnished upon request.

Surface water samples were analyzed for uranium, and selected samples were analyzed for gold, silver, copper, lead, and zinc. The metal content of all surface water samples tested for gold, silver, and lead was below detection limits. Most well water samples contained appreciable amounts of copper, lead, and zinc from contamination by pumps, sucker rods, and pipe. These analyses, therefore, are not included.

Gold and silver analyses were by the fire-assay atomic absorption method. Detection limit is 0.03 ppm if sufficient sample is available. Copper, lead, zinc, and molybdenum are analyzed directly by atomic absorption. Detection limits are:

	Rock, stream sediment, soil (ppm)	water (ppb)
Copper	4	2
Lead	30-60, 120	3-5
Zinc	5	5
Molybdenum	30	--

Tungsten is analyzed by colorimetry procedure or x-ray fluorescence. Detection limits are 10 ppm for the element (W) and 0.01 percent for the oxide (WO_3). Uranium and thorium were determined by a laboratory radiometric procedure. A five gram sample is counted in a multi-channel analyzer for one minute. Detection limit is 8 ppm uranium and 9 ppm thorium. Samples were later analyzed for uranium by fluorimetry. Detection limit for rock and soil is 0.4 ppm; for water, 0.5 ppb.

One step colorimetric field tests were used to determine the presence of secondary lead and zinc minerals. These tests were very useful, especially west of Johnson Canyon. Test specifications are as follows:

Special Colorimetric Field Test Applicable
to Secondary Zinc and Lead Minerals

Zinc

Sol. A	3 percent potassium ferricyanide	3 gms/100 ml water
Sol. B	3 percent oxalic acid .5 percent diethylaniline * .8 percent con. HCl	3 gms/100 ml water + .5 ml diethylaniline + .8 ml con. HCl

Mix equal portions of A + B into a small brown-glass dropping bottle and spray on a rock or mineral. A deep red color indicates the presence of zinc.

Lead

Sol. A	20 percent potassium iodide	20 gms/80 ml water
Sol. B	20 percent hydrochloric acid	dilute according to concentration

or

*Sol. A	10 percent acetic acid	10 gms/90 ml water
*Sol. B	5 percent potassium iodide	5 gms/95 ml water

Mix equal portions of A + B and spray on a rock or mineral. A yellow color indicates the presence of lead.

Solutions A and B for both tests rapidly deteriorate after mixing and become ineffective after 2-5 days.

*From Chemex Labs, Vancouver, B.C.

APPENDIX 3. - APPLIED STATISTICS, GOSHUTE INDIAN RESERVATION

Stream sediment and water analyses were divided into two populations. One includes analyses of samples collected west of Johnson Canyon and the Deep Creek valley; the other is analyses of samples collected east of Johnson Canyon and the Deep Creek valley. Samples taken in Johnson Canyon or Deep Creek were considered part of the eastern population. This division was necessary because the geologic environment and geochemical response of trace elements is different in each area. Precambrian quartzite and Tertiary quartz monzonite predominate to the east, whereas mainly Paleozoic carbonate rocks occur to the west.

If the elemental content of a sample was below the analytical detection limit, it was arbitrarily given a value of one-half the detection limit. Above normal detection limits related to laboratory procedure or samples from contaminated sources were not applicable to statistical treatment. For example, the detection limits for some gold samples were 0.5 ppm or 1 ppm; normal detection limit is 0.03 ppm. Analyses with abnormally high detection limits and those from obviously contaminated samples were not used in subsequent evaluations.

The usual statistical method as described by Levinson (1974) and pioneered by Hawkes and Webb (1962) is used in this report. It is based on normal probability relations and uses the standard deviation as an important statistical parameter in evaluating data. It was applied to the stream sediment, water, and soil surveys as well as the gamma ray spectrometer survey.

The probability that a single sample is statistically not part of a normal population is given as follows:

Content of element in a sample	Probability that sample is not part of a normal population
mean plus 1 standard deviation	6.3 to 1
mean plus 1.5 standard deviations	15 to 1
mean plus 2 standard deviations	44 to 1
mean plus 3 standard deviations	768 to 1

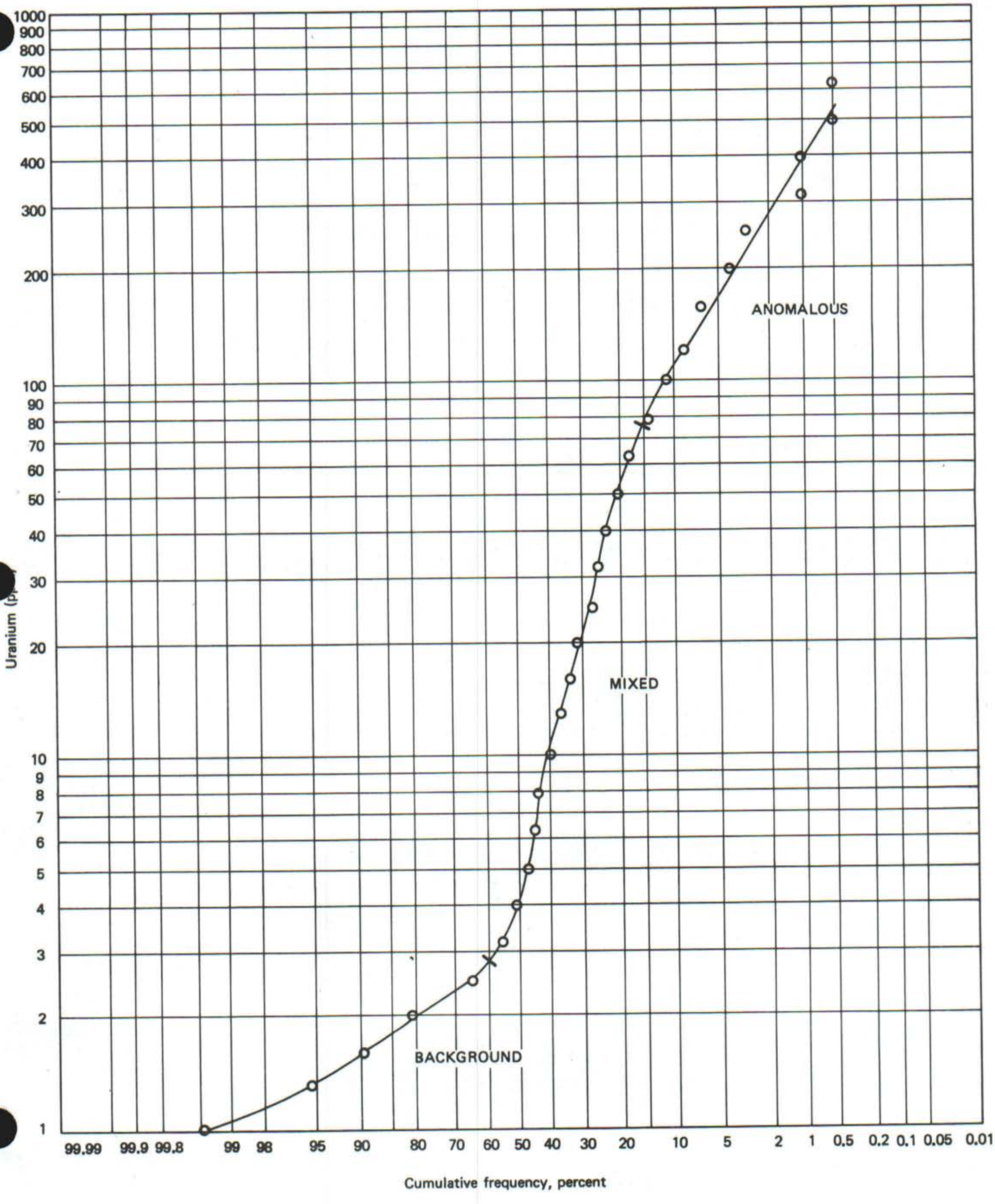
A single sample has been considered anomalous if the amount of a contained element exceeds the mean value in all the samples plus twice the standard deviation (Hawkes & Webb, 1962). Note the probability that the sample is not part of a normal population is 44 to 1. Clusters of samples can also form an anomaly with an average elemental content that is less than single anomalous samples. The minimum elemental contents of samples in a cluster in terms of deviation from the mean for the same 44 to 1 probability is given as follows:

Number of samples in cluster supporting an anomaly	Minimum number of standard deviations from mean for 44 to 1 probability that a cluster will be anomalous
1	2.
2	1.3
3	.57
4	.28

Most clusters will not conform exactly to the above table. However, the average of the individual deviations from the mean can be used as an approximation (Elkins, 1940). For example, if the standard deviations of the samples in a cluster of three are 0.25, 0.5, and 1.00, the average is 0.58. Since this is greater than 0.57 from the above table, the cluster is anomalous.

The statistical method of Hawkes and Webb (1962) for analyzing data was used in this report because it correctly identified samples from known mineralized areas as anomalous. Therefore, anomalous samples from areas on the reservation where mineralization is unknown, strongly infer mineral existence. Nevertheless, other methods for analyzing similar data have been reported. One receiving much attention utilizes curves relating cumulative frequency to the log of sample analyses (Sinclair, 1976; Lepeltier, 1969). Figure 13 shows this relation for uranium in stream sediment samples from east of Johnson Canyon. The data were cumulated from highest to lowest values following the method of Parslow (1974). Two populations are clearly indicated, i.e., samples containing only background uranium content or below 2.0 ppm, and anomalous samples containing above 68 ppm uranium. Samples with uranium content between these limits contain both background and anomalous material. Cumulative frequency curves were plotted for silver, copper, lead, and zinc content in stream sediments from both east and west of Johnson Canyon. Results from analyzing these curves do not differ significantly from those obtained by the statistical method of Hawkes and Webb (1962). Differences in interpretation do not usually depend on the method of data treatment but more commonly depend on the choice of elemental content distinguishing anomalous samples from those that are not anomalous. This choice is somewhat arbitrary and depends to a large degree on judgment and experience.

Figure 13. Cumulative frequency curve for uranium in stream sediment east of Johnson Canyon, Goshute Indian Reservation.



APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (see plate 2)

Coding explanation

A = alluvium	G = gravel	O = organics	Sh = shale
B = breccia	Ls = limestone	Q = quartzite	So = soil
C = creek	M = metamorphics	Qm = quartz monzonite	Tb = thrust breccia
D = dry	ND = not detected	P = pond	V = volcanics
Dol = dolomite	NF = not filtered	S = silt	W = Whatman no. 4 ashless
F = flowing	NM = not measured	Sa = sand	X = insufficient sample

After map number: A = check sample, R = rerun

Blank in element column indicates analysis not performed, map number underlined (W-1) indicates sample is west of Johnson Canyon or Deep Creek Valley. All others are east or in Johnson Canyon or Deep Creek Valley.

1/ Detection limit variation in sediment because of sample size

2/ Analysis by laboratory radiometric method

ppm = parts per million; for stream sediment samples (prefix S)

ppb = parts per billion; for water samples (prefix W)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock Type Drained	Gold 1/ ppm/ppb	Silver 1/ ppm/ppb	Copper ppm/ppb	Lead 1/ ppm/ppb	Zinc ppm/ppb	Uranium ppm	2/ Uranium ppm	Uranium ppb	Tungsten ppm
W-1	C	NF	7.5			A	<2	<1	<5	<5	140			19.0	
W-2	S	NF	7.0			Ls, Dol	<2	<1	<2	<3	11			3.6	
S-2				S, Sa	F	Ls, Dol	<.03	<.03	66	<30	62		1.8		
W-3	P	NF	7.0			A								2.5	
S-4				S, Sa	D	A	<.03	<.03	10	<30	50	17	X		<10
W-5	S	NF	7.0			A	<2	<1	7	<3	135			3.3	
S-6				S, Sa	D	A	<.10	.85	21	<30	73	8	X		<10
S-7				S, Sa	F	A	<.03	<.03	7	27	39		3.0		
W-8	C	NF	6.8			A	<2	<1	<5	<5	150			<.5	
W-9	C	NF	7.0			A	<2	<1	<5	<5	<50			6.2	
S-10				S, Sa	D	Ls, V	<.03	<.03	11	12	X		2.0		
W-11	P	W	6.5			Ls, V	<2	<1	8	<3	19			17.9	
S-11				S, O	D	Ls, V	<.03	.13	24	18	86		2.3		
S-12				S, So	D	A	<.03	.05	16	<30	64		2.0		<10
S-13				S, So	D	A	<.03	.10	22	<30	83		2.0		<10
S-14				S, Sa	D	A	<.03	.12	18	<30	80		1.8		<10

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock Type Drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium [2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-15				S, Sa	F	A	<.03	.11	11	<30	53		3.9		<10
S-16				S, Sa	D	A	<.03	.05	15	<30	59		2.0		<10
S-17				S, Sa	D	A	<.03	.12	16	<30	76		3.4		<10
S-18				S, Sa	D	A	<.14	<.14	16	<30	79		40.3		
S-19				S, Sa	F	A	<.03	.20	19	<30	110		35.9		
W-20	C	NF	7.0			A	<2	<1	<2	<3	5			2.0	
S-20				S, Sa	F	A	<.03	.19	11	<30	51		10.8		<10
S-21				S, Sa	D	A	<.03	.07	15	<30	69		2.1		<10
S-22				So, Sa	D	A	<.03	.12	92	<30	77		2.6		<10
W-23	C	NF	7.0			Qm	<2	<1	<2	<2	<5			3.0	
S-23				Sa, S	F	Qm	<.03	<.03	9	<30	70		37.8		
S-24				Sa, S, G	D	Q, Qm	<.03	.07	25	29	78		14.0		
S-25				Sa, G	D	Q, Qm	.18	.28	31	29	86		4.3		
S-26				Sa, G	D	Q, Qm	<.03	.05	22	29	72		10.0		
S-27				Sa, G, S	D	Q, Qm	.76	9.8	59	25	110		15.0		
S-27A				Sa, G, S	D	Q, Qm	<.03	<.03	X	X	X		13.0		
S-28				Sa, G, S	D	Q, Qm	<.03	.05	15	<30	100		16.0		
S-29				Sa, G, S	D	Q, Qm	<.03	.11	10	<30	67		21.0		
S-30				Sa, G, S	D	Q, Qm	<.06	.45	25	<30	135		15.9		
S-31				Sa, G, S	D	Q, Qm	<.03	<.03	110	46	96		97.0		
W-32	C	W	6.5			Qm	<2	<1	<2	<3	<5			14.4	
S-32				Sa, G, S	F	Qm	<.20	<.20	8	<30	93		81.3		
W-33	C	W	7.0			Qm	<2	<1	<2	<3	<5			1.9	
S-33				S, Sa	F	Qm	.04	.06	14	40	72		31.3		
S-34				So, Sa	D	Qm	<.03	.19	26	29	72		23.0		
S-35				So, Sa	D	Qm	<.03	.18	23	34	86		44.0		
S-36				So, Sa	D	Qm	<.03	.03	24	25	40		23.0		
S-37				Sa, S	D	Qm	<.03	.22	20	29	72		12.0		
S-38				Sa, G	D	Qm	<.03	<.03	19	25	43		11.0		
S-39				Sa, G	D	Qm	<.03	.03	22	29	72		5.9		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-40				Sa, G	D	Qm	<.03	.09	20	25	72		5.1		
W-41	C	W	6.5			Qm	<2	<2	<2	<3	<5			3.2	
S-41				Sa, G	F	Qm	<.03	<.03	7	<30	81		136.3		
S-42				Sa, G	F	Qm	<.03	.08	15	85	73		1.5		
S-43				Sa, G	F	Qm	<.03	.71	29	27	50		81.0		
S-44				Sa, G	D	Qm	<.03	.25	20	34	88		66.0		
S-45				Sa, G, S	F	Qm	.05	.15	27	29	48		64.0		
S-46				So, G	D	Qm	<.03	.28	26	31	63		6.1		
S-47				Sa, G	D	Qm	<.03	.10	20	31	55		74.0		
S-48				Sa, So	D	Qm	<.03	.88	22	34	80		17.0		
S-49				Sa, G	F	Qm	<.03	<.03	6	<30	56		77.5		
S-50				Sa, G	D	Qm	<.03	.09	21	29	46		110.0		
S-51				Sa, G	F	Qm	<.03	<.03	33	31	45		88.0		
W-52	C	W	6.5				<2	<2	<2	<3	<5			10.1	
S-52				Sa, G	F	Qm	<.5	<.6	7	<30	50	42	X		
S-53				Sa, S	D	Ls	<.03	<.03	17	<30	52		2.2		
S-54				Sa, S	D	Ls	<.03	.20	20	30	97		4.4		
S-55				Sa, S	D	Ls	<.03	.07	20	<30	69		2.2		
S-56				Sa, S	D	Ls	<.03	.14	16	<30	87		4.5		
S-57				Sa, S	D	Ls	<.03	.06	16	<30	69		2.0		
S-58				S, So	D	A	<.03	.12	16	<30	72		2.4		
S-59				S, Sa	F	A	<.06	.25	9	10	31		1.5		
W-60	S	W	7.0			Qm	<2	<2	<2	<3	275			3.2	
W-61	S	W	6.0			Qm	<2	<2	<2	<3	<5			1.4	
W-62	S	W	NM			Qm	<2	<2	<2	<3	<5			3.3	
S-62				S, Sa		Qm	<.03	.06	175	40	81		87.0		
S-63				S, Sa	F	Qm	<.03	<.03	5	30	51		475.0		
S-64				S, Sa	F	Qm	.25	<.03	340	23	100		67.0		
S-65				S, Sa	F	Qm	<.03	<.03	8	30	40		60.3		
S-66				Sa, G	D	Qm	<.03	<.03	36	23	63		13.0		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium ppm	[2/] Uranium ppm	Uranium ppb	Tungsten ppm
S-67				Sa, G	F	Qm	<.03	<.03	13	31	37		230.0		
S-68				Sa, G	F	Qm	.10	.06	17	27	45		200.0		
S-69				Sa, G, S	F	Qm	<.03	<.04	17	31	53		190.0		
W-70	C	W	7.0			Qm	<2	<1	<2	<3	6			8.4	
S-70				Sa, G, S	F	Qm	<.03	<.03	6	<14	47	34	X		
S-71				Sa, So	D	Qm	<.03	10	38	42	93		3.2		
W-72	C	W	6.5			Qm	<2	<2	<2	<3	<5			10.5	
S-72				Sa, S	F	Qm	<.03	.06	5	<30	41		49.4		<10
S-73				Sa, G		Qm	<.03	1.6	19	34	47		140.0		
S-74				Sa, G	F	Qm	<.03	<.03	6	<30	54		32.5		
S-75				Sa, G	D	Qm	<.06	<.06	13	31	73	59	X		<10
S-76				Sa, G	D	Qm	<.03	<.03	12	40	72		124.0		
S-77				Sa, G	F	Qm	<.45	<.45	X	X	X	254	X		20
W-78	C	W	6.5			Qm	<2	<1	<2	<3	5			3.5	
S-78				Sa, G, S	F	Qm	<.03	.13	29	29	83		5.3		
S-79				Sa, S	D	Ls	<.06	<.06	23	<30	70	8	X		
S-80				Sa, S	D	Ls	<.03	.08	12	<30	59		2.6		
S-81				Sa, S	D	Ls	<.03	.09	57	<30	86		2.9		
S-82				Sa, S	D	Ls	<.03	.10	14	<30	100		2.6		
S-83				Sa, S	D	Ls	<.03	.27	28	<30	83		2.0		
S-84				Sa, S	D	Ls	<.03	.06	22	<30	72		1.7		
S-85				Sa, S	D	Ls	<.03	.14	22	<30	67		2.0		
S-86				Sa, S	D	Ls	<.03	<.03	25	16	73		1.9		
S-86A				Sa, S	D	Ls	<.03	<.03	27	40	76		1.9		
S-87				Sa, S	D	Ls	<.06	.04	27	17	75		2.0		
S-88				Sa, S	D	Ls	<.06	.03	18	16	53		2.1		
S-89				Sa, S	D	Ls	<.06	.08	25	20	76		2.0		
S-90				Sa, S	D	Ls	.03	.31	15	<30	47		1.5		
S-91				Sa, S	F	Ls	.03	<.03	11	<30	52		1.5		
W-92	S	NF	7.0			Ls	<2	<2	<2	<3	6			1.2	

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
W-92A	S	NF	7.0			Ls	<2	<2	<2	<3	<5			1.8	
S-93				Sa, S	D	Ls	<.03	.18	25	40	70		1.7		
S-94				S, Sa	D	Ls,Q,Qm	<.03	.08	11	22	58		3.6		
S-95				S, Sa	F	Qm	.66	.68	9	110	83		290.0		
S-96				S, Sa	F	Qm	<.03	.05	11	25	49		4.3		
S-97				S, Sa	F	Qm	<.03	<.03	24	27	55		310.0		
S-98				S, Sa	F	Qm	<.03	.07	<5	30	44		102.0		
S-99				S, Sa	F	Qm	<.03	<.03	11	27	23		41.0		
S-100				S, Sa	F	Qm	<.03	3.3	45	27	61		83.0		
W-101	C	W	6.5			Qm	<2	<2	<2	<3	<5			0.9	
S-101				S, Sa, G	F	Qm	<.4	<.09	8	30	51		126.0		10
S-102				S, Sa	D	Qm	<.03	.08	<5	30	69		15.3		<10
W-103	S	W	6.5			Ls	<2	<2	<2	<3	<5			2.0	
S-104				S, Sa	D	Ls	<.03	.55	21	<30	20		3.1		
S-105				S, Sa	D	V	<.03	<.03	7	8	34		1.2		
S-106				S, Sa	D	Ls	<.03	.50	18	20	100		3.7		
S-107				S, Sa	D	Sh,Ls	<.03	.71	21	26	140		4.6		
S-107A				S, Sa	D		<.03	.70	19	<30	50		4.4		
S-108				S, Sa	D	Ls	<.03	.23	21	22	60		2.0		
S-109				S, Sa	D	Ls	.03	.21	22	<30	81		3.0		
S-110				S, Sa	D	Ls	<.03	.05	24	20	63		1.6		
S-111				S, Sa	D	Ls	X	X	X	X	X		2.9		
S-112				S, Sa	D	Ls	<.03	<.03	26	20	72		1.9		
S-113				S, Sa	D	Ls	<.03	<.03	20	20	60		1.9		
S-114				S, Sa	D	Ls	<.03	<.03	9	22	24		2.9		
S-115				S, Sa	D	Ls	<.03	<.03	16	16	43		1.5		
S-116				S, Sa	D	Ls	<.03	.05	18	26	48		3.1		
S-117				S, Sa	D	Ls	<.03	.05	14	18	41		1.6		
S-118				Sa, S	D	Ls	<.03	<.03	16	34	30		2.8		
S-119				Sa, S	D	Ls, Tb	<.03	1.9	18	22	58		1.3		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-119A				Sa, S	D	Ls, Tb	<.03	<.03	20	<30	54		1.9		
S-120				Sa, S	D	Ls, Tb	<.03	1.1	16	18	56		2.4		
S-120A				Sa, S	D	Ls, Tb	<.03	.05	18	<30	69		2.1		
S-121				G, Sa	D	Ls	<.03	<.03	18	30	50		2.5		
S-122				S, Sa	D	Ls	<.06	<.03	21	20	69		1.7		
S-123				S, Sa	D	Ls	<.03	.13	22	14	66		1.7		
S-124				S, Sa	D	Ls	<.06	<.03	22	20	67		1.5		
S-125				S, Sa	D	Ls	<.06	<.03	25	26	76		2.2		
S-126				Sa, S	D	Ls	<.06	.06	19	20	60		2.6		
S-127				Sa, S	D	Ls	<.06	<.03	23	22	70		2.0		
S-128				Sa, S	D	Ls	<.06	<.03	20	18	72		2.8		
S-129				Sa, S	D	Ls	<.06	.06	19	16	56		3.5		
S-130				Sa, S	D	Ls	<.06	<.06	38	<30	58	8	X		
S-131				Sa, S	D	Ls	<.03	<.30	28	80	620	25	X		
S-132				Sa, S	D	Ls	<.03	.21	29	<30	97		2.0		
S-133				Sa, S	D	Ls	<.03	.03	24	<30	75		1.7		
S-134				Sa, S	D	Ls	<.03	.03	25	<30	80		1.7		
S-135				So, S	D	Ls	<.03	<.03	18	<30	57		1.5		
S-136				Sa, S	D	Ls	<.03	.10	25	<30	94	<8	X		
S-137				Sa, S	D	Ls	<.03	<.03	21	<30	76		1.6		
S-138				Sa, S	D	Ls	<.03	<.03	22	<30	73		1.9		
S-139				Sa, S	D	Ls	<.03	<.03	21	<30	59		1.8		
S-140				Sa, S	D	Ls	<.03	<.03	18	<30	53		1.6		
S-141				Sa, G	D	Ls, Dol	<.03	.03	22	<30	78		2.3		
S-142				Sa, G	D	Ls, Dol	<.03	<.03	22	<30	105		2.1		
S-143				Sa, G	D	Ls, Dol	<.03	.10	23	<30	68		2.1		
S-144				Sa, S	D	Ls, Dol	<.03	.21	16	<30	33		2.0		
S-145				Sa, S	D	Ls, Dol	<.03	.07	18	<30	51		1.8		
S-146				Sa, S	D	Ls, Dol	<.03	.10	21	30	80		2.1		
S-147				Sa, S, G	D	Ls, Dol	<.03	.14	19	<30	77		2.3		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1] ppm/ppb	Silver[1] ppm/ppb	Copper ppm/ppb	Lead[1] ppm/ppb	Zinc ppm/ppb	Uranium[2] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-148				Sa, G	D	Ls, Dol	<.03	.06	13	28	33		1.4		
S-149				Sa, G	D	Ls, Dol	<.03	.15	21	30	58		2.1		
S-150				Sa, G	D	Ls, Dol	<.03	<.03	22	38	58		1.8		
S-151				S, Sa, G	D	Ls, Dol, Q, Qm	<.03	.04	10	35	70		21.1		
S-152				Sa, G	D	Ls, Qm	<.03	.13	40	47	100		X		
S-153				Sa, G	D	A	<.03	<.03	27	35	77		3.6		
W-154	C	NF	6.5			Qm	<2	<2	<2	<3	5			26.9	
S-154				S, Sa, G	F	Qm	<.03	<.03	6	<30	64		66.5		
S-155				S, Sa, G	F	Qm	<.03	<.03	5	30	68		134.0		
S-156				S, Sa, G	F	Qm	.07	.14	16	62	69		16.0		
S-157				S, Sa, G	F	Qm	.09	.14	20	58	77		22.0		
S-158				S, Sa, G	F	Qm	<.03	<.03	22	38	69		740.0		
S-159				S, Sa, G	F	Qm	<.03	<.03	15	31	69		280.0		
S-160				S, Sa, G	F	Qm	<.03	<.03	45	34	58		270.0		
S-161				S, Sa, G	F	Qm	<.03	<.03	18	27	53		110.0		
W-162	C	W	NM			Qm	<2	<2	<2	<3	<5			3.9	
S-162				Sa, G	F	Qm	<.40	<.09	<5	<30	35		27.5		
W-163	S	W	NM			Qm	<2	<2	<2	<3	<6			38.8	
S-163				Sa, G	F	Qm	<.03	<.03	<5	30	21		56.2		
S-164				S, Sa, G	G	Qm	.32	.09	150	42	96		130.0		
W-165	C	W	7.0			Qm	<2	<1	2	<3	8			86.5	
S-165				Sa, G	F	Qm	<.06	<.06	2	<15	20	170.	X		
S-166				Sa, G	F	Qm	<.06	<.06	13	62	93	170.	X		
S-167				Sa, G	D	Qm	.42	<.03	82	54	130		23.0		
S-168				Sa, G	D	Qm	X	X	X	X	X		2.0		
S-169				Sa, G	D	Qm	<.03	.58	X	X	X		2.1		
W-170	S	W	7.0			V								8.8	
S-170				S, Sa	F	V	<.03	<.03	7	12	32		2.3		
S-171				S, Sa	D	Sh	<.03	1.7	32	20	250		4.8		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-172				S, Sa	D	Ls	<.03	.23	24	25	82		4.0		
S-173				S, Sa	D	Sh	.03	<.03	14	30	30		2.9		
S-174				S, Sa	D	Ls	<.03	.24	18	20	60		3.4		
S-175				S, Sa	D	Ls, Tb	<.03	.51	X	X	X	8	X		
S-175A				S, Sa	D	Ls, Tb	<.03	.34	17	17	120		4.6		
W-176		W	NM			V	<2	<7	<6	<6	<5			6.9	
S-177				S, So	D	Ls, Sh	<.07	5.8	X	X	X	X	X		
S-177A				S, So	D	Ls, Sh	<.07	5.3	62	25	630		15.6		
S-178				S, Sa, G	D	Ls, Tb	<.03	.11	46	<60	77	X	X		
S-179				S, Sa	D	Ls	<.03	.42	15	20	76		4.4		
S-180				S, Sa	D	Ls	<.03	.28	22	22	76		2.9		
S-181				S, Sa	D	Ls	<.03	.45	23	20	100	8	X		
S-182				S, Sa	D	Ls	<.03	.15	33	32	64		2.8		
S-183				S, Sa	D	Ls	<.03	.09	14	20	42		3.3		
S-184				S, Sa, G	D	Ls	<.03	<.03	18	22	58		2.1		
S-185				S, Sa, G	D	Ls	<.03	.06	17	22	46		.1		
S-186				S, Sa, G	D	Ls, Tb	<.03	.88	X	X	X		11.4		
S-186A				S, Sa, G	D	Ls	<.03	.10	17	30	54		2.6		
S-187				S, Sa, G	D	Ls	<.03	<.03	18	28	46		2.4		
S-188				S, Sa, G	D	Ls	<.03	<.03	13	24	54	8	X		
S-189				S, Sa, G	D	Ls	<.03	.18	14	26	40		2.8		
S-190				S, Sa, G	D	Ls	<.03	<.03	19	28	48		2.6		
S-191				S, Sa, G	D		<.03	.11	20	22	68		4.8		
S-192				S, Sa, G	D	Ls	<.03	.07	20	26	56		2.2		
S-193				S, Sa, G	D	Ls	<.03	.04	18	26	48		2.0		
S-194				S, Sa, G	D	Ls	<.03	.07	15	26	50		2.9		
S-195				S, Sa	D	Ls	<.03	.04	21	26	52		2.3		
S-196				S, Sa	D	Ls	<.06	<.03	20	20	69		1.7		
S-197				S, Sa	D	Ls	<.03	<.03	11	20	45		2.0		
S-198				S, Sa	D	Ls	<.03	.12	18	30	80		2.2		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-199				Sa, G	D	Ls	<.03	.04	18	15	120		3.2		
S-200				Sa, G	D	Ls	<.03	.45	27	20	220		5.3		
S-200A				Sa, G	D	Ls, Tb	<.03	.34	27	<30	170		6.1		
S-201				Sa, So	D	Ls, Sh	<.03	.64	29	<30	190		5.2		
S-202				Sa, So	D	A	<.03	.66	23	<30	160		3.5		
S-203				Sa, G	D	Ls	<.03	<.03	14	15	63		2.5		
S-204				Sa, So, G	D	Ls	<.03	.86	20	25	140		3.5		
S-204A				Sa, So, G	D	Ls	<.03	.26	18	<30	93		2.9		
S-205				Sa, So, G	D	Sh, Ls	<.03	.32	12	<30	62		2.7		
S-206				Sa, G, So	D	Ls	<.03	.21	18	14	69		2.4		
S-207				Sa, So	D	Ls	<.03	<.03	11	6	29		1.3		
S-208				Sa, S, G	D	Ls	<.03	.04	10	<30	36		1.4		
S-209				Sa, S, G	D	Ls	<.03	<.03	23	15	70		2.5		
S-210				Sa, S, G	D	Ls	<.03	.60	46	16	170		5.3		
S-210A				Sa, S, G	D	Ls	<.03	<.03	9	<30	29		1.4		
S-211				Sa, S, G	D	Ls	<.03	<.03	14	10	50		1.5		
S-212				Sa, So	D	Ls	.03	.32	18	14	40		2.9		
S-213				Sa, So	D	Ls	<.03	.19	24	20	110		2.8		
S-214				S, Sa	D	Ls	<.03	.18	23	40	110		2.9		
S-215				S, Sa	D	Ls	<.03	.06	19	25	66		2.7		
S-216				S, Sa	D	Ls	<.06	.06	18	30	80		3.5		
S-217				S, Sa, G	D	Ls	<.03	.21	19	<30	120		4.8		
S-218				Sa, G	D	Ls	<.03	.06	29	<30	130		3.0		
S-219				Sa, G	D	Ls	<.03	.31	19	<30	78		2.4		
W-220	S	W	6.0			Ls, Tb								5.5	
S-221				S, Sa, G	D	Ls	<.03	<.03	28	<30	95		2.1		
S-222				S, Sa, G	D	Ls	<.03	<.03	18	<30	99		3.1		
S-223				S, Sa, G	D	Ls	<.03	.03	15	<30	97		2.0		
S-224				S, Sa, G	D	Ls	<.06	<.06	19	<30	74	<8	X		
S-225				S, Sa, G	D	Ls	<.03	<.03	26	<30	80		2.7		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-226				S, Sa, G	D	Ls	<.03	<.03	19	<30	61		2.0		
S-227				Sa, G	D	Ls	<.03	<.03	16	30	63		1.0		
S-228				S, Sa, G	D	Ls	<.03	<.03	12	<30	43		1.4		
S-229				S, Sa, G	D	Ls	<.03	<.03	19	<30	35		1.8		
S-230				S, Sa, G	D	Ls	<.03	<.03	21	<30	63		2.2		
S-231				S, Sa, G	D	Ls	<.03	<.03	21	<30	61		1.7		
S-232				Sa, G	D	Ls, Dol	<.03	.03	17	36	44		2.5		
S-233				Sa, G	D	Ls, Dol	<.03	.04	31	25	88		2.0		
S-234				S, Sa, G	D	Ls, Dol	<.03	.06	26	36	66		2.8		<10
S-235				S, Sa, G	D	Ls, Dol	<.03	.04	28	21	88		1.8		
S-236				S, Sa, G	D	Ls, Dol	<.03	<.03	36	31	66		2.1		
S-237				Sa, G	D	Ls, Dol	<.03	.05	31	25	82		1.8		
S-237A				Sa, G	D	Ls, Dol	<.03	<.03	29	25	88		15.0		
S-238				Sa, G	D	Ls	<.03	.38	40	41	63		1.9		
S-239				Sa, G	D	Ls	<.03	.09	28	33	69		2.4		
S-240				Sa, G	D	Ls	<.03	.35	48	33	80		2.6		
S-241				Sa, G	D	Ls	<.03	.07	31	25	69		2.1		
S-242				Sa, G	D	Ls, Dol	<.03	.05	25	25	63		2.2		
S-243				Sa, G	D	Ls	<.03	.06	54	29	77		3.1		
S-244				Sa, G	D	Ls	<.03	.08	42	29	82		2.8		
S-245				S, Sa, G	D	Ls	<.03	<.03	24	42	32		2.0		<10
S-246				S, Sa, G	D	Ls	<.03	<.03	17	22	47		2.1		<10
S-247				Sa, G, S	D	Ls	<.03	.36	19	34	47		1.4		<10
S-248				Sa, G, S	D	Ls	<.03	.85	20	43	68		X		
S-249				Sa, So	D	Ls	<.06	.33	19	42	40	8	X		30
S-250				S, So	D	Ls	<.03	.20	19	27	66		1.8		
S-251				S, So	D	Ls	<.03	.26	19	27	66		1.9		
S-252				S, So	D	Ls	<.03	.03	15	32	41	8	X		<10
S-253				Sa, G	D	Ls	<.03	.42	18	35	55		X		
S-254				S, G, S	D	Ls	<.03	3.2	24	59	71		1.2		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppb	Copper ppm/ppb	Lead[1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-255				S, So	D	Ls	<.03	.65	19	31	82		1.6		
S-256				S, Sa, G	D	Ls	<.11	<.11	14	<30	53		2.6		
S-257				S, Sa, G	D	Ls	<.03	.06	21	27	79		3.4		
S-258				S, Sa, G	D	Ls	<.03	.06	17	27	55		2.4		
S-259				S, Sa, G	D	Ls	.05	.07	22	27	77		2.4		
S-260				S, Sa, G	D	Ls	.03	.25	25	35	82		2.1		
S-261				S, Sa, G	D	Ls	<.03	<.03	17	31	63		2.5		
S-262				S, Sa, G	F	Qm	.28	.21	16	78	90		11.0		
S-263				S, Sa, G	F	Qm	.42	.41	24	94	93		21.0		
W-264	C	W	7.0				<2	<2	<2	<3	13			<.5	
S-264				S, Sa	F	Qm	.15	.44	17	98	100		14.0		
S-265				Sa, G	D	Qm	<.03	.04	27	38	130	42	X		<10
S-266				Sa, G	F	Qm	.28	.53	20	34	74		190.0		
W-267	C	W	NM			Qm	<2	<2	<2	<3	<5			<.5	
S-267				Sa, G	F	Qm	<.03	.10	10	40	93		70.6		
W-268	C	W	7.0			Qm	<2	<2	<2	<5				2.0	
S-268				Sa, G, S		Qm	<.03	.03	6	<30	77		65.6		
W-269	C	W	NM				<2	<2	<2	<3	<5			<.5	
S-270				Sa, G, S	D	V	.62	.14	15	<30	64		1.2		
S-271				Sa, G, S	D	Ls, Tb	<.03	.38	18	22	86		5.5		
S-272				Sa, G, S	D	Ls, Tb	<.03	.12	13	22	42	8	X		
S-273				Sa, G, S	D	Ls, Sh	<.03	.11	15	26	42		4.6		
S-274				Sa, G	D	Ls	<.03	.18	20	<33	110	X	X		
S-275				Sa, G	D	Ls, Tb	<.03	.49	20	20	100		5.4		
S-275A				Sa, G	D	Ls, Tb	<.03	.07	22	51	95		2.2		
W-276	S	W	6.0			V	<2	<2	<4	<3	<5			1.0	
S-276				S, Sa, G	F	V	<.03	.21	19	<30	87		1.5		
S-277				S, Sa, G	D	V, Ls	<.04	.62	X	X	X		X		
S-278				S, Sa, G	D	Ls	<.05	.38	X	X	X		X		
W-279	C	W	6.0			Ls, V								2.8	

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-279				Sa, G, S	F	Ls, V	<.03	.23	15	17	110		4.1		
S-280				Sa, G	D	Ls	<.03	.71	35	13	210		4.3		
S-281				Sa, S, G	D	Ls	<.03	.33	17	15	120		4.8		
S-282				S, Sa	D	Ls	<.03	.37	22	21	110		3.6		
S-283				S, Sa	D	Ls	<.03	.14	20	24	48		2.8		
S-284				S, Sa, G	D	Ls	<.03	.16	20	28	54	8	X		
S-285				Sa, G	D	Ls,Dol	<.03	.15	20	21	57		2.3		
S-286				Sa, G, So	D	Ls, Dol	<.03	.06	X	X	X		3.6		
S-287				S, G, So	D	Ls	<.03	.17	18	22	54		3.8		
S-288				Sa, G	D	Ls	<.03	.10	15	21	61		2.0		
S-289				Sa, G	D	Ls	<.03	.27	21	21	100		3.2		
S-290				Sa, G	D	Ls, Tb	<.03	.13	15	15	65		3.2		
S-291				Sa, G	D	Ls, Tb	<.03	.14	16	15	69		4.5		
S-292				Sa, G	D	Ls, Tb	<.03	.18	19	17	69		2.3		
S-293				Sa, So	D	Ls	<.03	.60	28	21	190		3.2		
S-294				Sa, So	D	Ls	<.03	.47	25	21	120		4.0		
S-295				Sa, So	D	Ls, Tb	<.03	.23	13	17	100		2.9		
S-296				Sa, G	D	Ls	<.03	.09	19	30	51		1.5		
S-297				Sa, So	D	Ls	<.03	.14	14	20	56		3.8		
S-298				Sa, G	D	Ls	<.03	<.03	19	30	84		1.5		
S-299				Sa, G	D	Ls	<.03	<.03	16	<30	45		1.3		
S-300				S, Sa, G	D	Ls	<.03	<.03	23	30	84		2.4		
S-301				S, Sa, G	D	Ls	<.03	<.03	16	40	42		1.6		
S-302				Sa, G	D	Ls	<.03	<.03	16	30	44		1.8		
S-303				Sa, So	D	Ls	<.03	<.03	21	20	68		2.3		
S-304				Sa, So	D	Ls	<.03	<.03	19	40	57		2.2		
S-305				Sa, G	D	Ls	<.03	<.03	19	30	65		2.0		
S-306				Sa, G, So	D	Ls	<.03	<.03	20	30	75		2.2		
S-306A				Sa, G, So	D	Ls	<.03	<.03	19	40	70		1.8		
S-307				Sa, S, G	D	Ls	<.03	.07	17	50	49		1.5		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-308				Sa, S, G	D	Ls	<.03	<.03	21	40	80		3.2		
S-309				Sa, S, G	D	Ls	<.03	<.03	13	30	28		1.6		
S-310				Sa, S, G	D	Ls	<.03	<.03	13	40	36		2.1		
S-311				Sa, S, G	D	Ls, Tb	<.06	.08	20	30	60		2.2		
S-312				Sa, S, G	D	Ls, Tb	<.03	.10	22	26	76		1.3		
S-313				Sa, G	D	Ls, Tb	<.03	.08	13	22	40		1.3		
S-314				S, Sa, G	D	Ls, Tb	<.03	.39	10	24	33		1.3		
S-315				Sa, G	D	Ls	<.03	.06	31	25	72		3.2		
S-316				Sa, G	D	Ls	<.03	.08	23	29	66		2.6		
S-317				Sa, G	D	Ls	<.03	.08	56	25	77		3.8		
S-318				Sa, G	D	Ls	<.03	.08	57	29	85		2.8		
S-319				Sa, So	D	Ls	<.03	.35	29	29	69		2.5		
S-320				Sa, So	D	Ls	<.03	.05	59	41	91		3.1		
S-321				S, Sa, G	D	Ls, Qm	<.03	<.03	11	<30	31		2.0		
S-322				Sa, G	D	Ls	<.03	.04	14	22	44		2.6		
S-323				Sa, G	D	Ls	<.03	.05	19	<30	44		1.5		<10
S-324				Sa, G	D	Ls	<.06	<.06	20	<30	59		1.6		<10
S-325				Sa, G	D	Ls	<.06	<.03	20	<30	74		1.3		<10
S-326				Sa, So	D	Ls	<.03	.16	16	22	52		1.1		
S-327				Sa, So	D	Ls	<.03	1.7	23	47	90		1.5		
S-328				Sa, So, O	D	Ls	<.03	2.8	21	51	85		1.5		
S-329				Sa, G	D	Ls	<.03	.09	14	<30	54		1.5		
S-330				Sa, S, G	D	Ls	<.03	.45	23	60	62		2.0		
S-331				S, Sa, G	D	Ls	<.03	.14	15	30	48		2.3		
S-332				S, Sa, G	D	Ls	<.03	.15	14	<30	51		1.7		
S-333				Sa, G	D	Ls	<.03	.14	21	31	79		2.2		
S-334				Sa, G	D	Ls	.03	.07	19	27	60		1.8		
S-335				Sa, G	D	Ls	<.03	.15	58	31	77		2.0		
S-336				Sa, G	D	Ls	.07	.10	44	31	77		2.6		
S-337				S, Sa, G	D	Ls	<.03	.10	12	26	40		1.8		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	Ph	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
S-338				Sa, G	D	Ls	.75	.18	17	22	63		1.1			
S-339				Sa, G, S	D	Ls	<.03	.08	14	<30	53		1.7			
S-340				Sa, G	D	Ls	<.03	.59	7	31	17		1.6			
S-341				S, Sa, G	D	Ls	<.06	<.06	11	<30	25		1.2		<10	<5
S-342				S, Sa, G	D	Ls	<.05	.07	16	34	55	17	X			
S-343				Sa, G	D	Ls, Q	<.03	<.03	18	45	56		3.1		<10	<5
S-344				Sa, G	D	A	<.03	<.11	22	30	110		1.8		<10	<5
S-344A				Sa, G	D	A	<.06	<.06	20	35	72	17	X		<10	
S-345				Sa, G	D	A	<.16	<.16	23	<120	140	8	X		<10	
S-346				Sa, G	D	A	<.03	<.03	14	26	52		1.5			
S-347				Sa, G	D	A	<.03	.09	28	30	110		2.9		<10	<5
S-348				Sa, G	D	A	<.03	.10	20	30	110		4.5		<10	5
S-349				Sa, G	D	A	<.03	.13	17	<30	84		2.0		<10	<5
S-350				Sa, G	D	A	<.03	.15	17	<30	88		1.5		<10	<5
S-351				Sa, G	D	A, Ls, M	<.06	<.06	13	40	42		3.0		<10	<5
S-352				Sa, G	D	A, Q	<.08	<.08	18	45	73		4.3		20	<5
S-353				Sa, G	D	Q, B	.21	.48	89	31	160	X	X			
S-354				So, Sa	D	Q, M, B	<.03	2.4	160	35	120	X	X			
S-355				Sa, G	D	Q, M, B	<.03	.33	83	39	100		6.3			
W-356	C	W	6.5			Q, B	<2	<2	<2	<3	<5			1.4		
S-356				Sa, G	D	Q, B	X	X	380	27	150	X	X			
S-357				Sa, G	D	M, Ls	<.03	.08	67	37	82		2.8			
S-358				Sa, G	D	M, Ls	.56	.34	40	150	100		3.3			
W-359	C	W	Nm			Ls	<2	<1	<2	<3	<5			1.5		
S-359				S, Sa, G	F	Ls	<.03	.20	37	37	110		3.8			
S-360				S, Sa, G	F	Qm, M	.56	.65	77	150	110		44.0			
S-361				So, Sa	D	M, Ls	<.03	<.03	21	28	80		2.0		<10	
W-362	S	W	7.0			Qm	<2	<1	<2	<3	<5			38.5		
W-362A	S	W	7.0			Qm	<2	<2	<2	5	<5			35.0		
S-362				S, S, G	F	Qm	<.03	1.5	86	29	50		11.0			

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
W-363	C	W	7.0			Qm, M	<2	<2	<2	<3	8			<.5		
S-363				S, S, G	F	Qm, M	.03	<.03	45	23	120		29.0			
S-364				Sa, S	D	Qm	<.03	.13	96	33	110		9.1			
W-365	C	W	7.0			Qm, M	<2	<2	<2	<3	6			.7		
S-365				S, Sa, G	F	Qm, M	.10	.07	130	33	130		4.6			
S-366				So, S	D	A	<.03	.08	20	<30	100		2.3			
S-367				S, G	D	Qm	<.03	<.03	15	26	52	17	X			
S-368				So, G	D	Qm, M	<.03	.23	100	41	130		3.3			
W-369	C	W	NM			Qm	<2	<1	<2	<3	<5			7.0		
S-370				Sa, S	D	Qm, M, B	<.03	.03	24	<30	96		4.8			
S-371				So, G	D	Qm, Q	<.03	.05	97	49	140		4.8			
W-372	C	W	6.0			Qm, M	<2	<1	<2	<3	<5			5.6		
S-372				Sa, G	F	Qm, M	.10	.23	14	<30	68		6.7		<10	<5
S-373				Sa, G, So	D	Qm, M	<.03	<.03	13	<30	110		2.6			
S-374				Sa, G, So	D	Qm, M	<.03	.06	23	<30	190		2.8			
S-375				Sa, G, So	D	Qm, M	<.03	.04	19	<30	76		3.2			
S-376				Sa, G, So	D	Q	<.03	.19	81	33	100		2.4			
W-377	C	W	6.5			Q, B	<2	<1	<2	<3	<5			.8		
S-377					F	Q, B	<.03	<.03	56	37	66		1.3			
W-378	C	W	7.0			Qm, Q	<2	<2	<2	<3	<6			<.5		
S-378				G, Sa	F	Qm, Q	<.03	.08	X	X	X		7.9			
W-379	C	W	NM			Qm, Q	<2	<2	<2	<3	8			<.5		
S-379				Sa, G	F	Qm, Q	<.03	.19	18	30	200		20.3		<10	
S-380				G, O	F	Qm, Q	<.03	<.03	X	X	X		14.0			
S-381				Sa, G	F	Qm, M	<.03	<.03	X	X	X		18.0			
W-382	C	W	7.0			Qm, Q	<2	<2	6	<3	8			<.5		
S-383				So, G	D	Qm, M	X	X	X	X	X		19.0			
W-384	C	W	7.0			Qm	<2	<1	<2	<3	<5			.7		
S-385				So, G	D	Qm, M	<.03	.15	16	26	120		3.3		<10	
W-386		W	6.5			M, Q	<2	<1	<2	<3	<5			1.2		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1] ppm/ppb	Silver[1] ppm/ppm	Copper ppm/ppb	Lead [1] ppm/ppb	Zinc ppm/ppb	Uranium[2] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-387				Sa, G	D	Q, M	<.03	.15	19	36	78		2.7		<10
S-388				Sa, G	D	Qm, M	<.03	.21	35	34	130		2.2		<10
S-389				Sa, G	D	M	<.03	.13	19	32	96		2.9		<10
S-390				Sa, G	D	Q	<.03	.06	18	30	100		2.5		<10
S-391				Sa, G	D	Q, M	<.03	.15	23	36	150		2.6		<10
S-392				Sa, G	D	Q, M	<.03	.20	19	32	92		3.1		<10
S-393				Sa, G	D	M, Dol	<.03	.34	21	24	94		X		<10
W-394	S	W	6.5			Q, M	<2	<1	<2	<3	<5			.7	
S-395				Sa, G	D	Q, M	<.03	<.03	18	28	76		2.3		<10
S-396				Sa, G, S	D	Ls	<.03	.64	41	17	300		6.7		
S-397				Sa, G, S	D	Ls	<.03	.30	15	17	120		4.2		
S-398				Sa, G, S	D	Ls, Sh	<.03	.33	11	13	95		4.5		
S-399				Sa, G, S	D	Ls, Sh	<.03	.24	X	X	X		5.5		
S-400				Sa, G, S	D	Ls, Sh	<.03	.37	20	21	120		3.2		
S-401				Sa, G, S	D	Ls, Sh	<.03	.31	14	15	120		4.0		
S-402				Sa, G, S	D	Ls, Sh	<.03	.44	X	X	X		6.1		
S-403				Sa, G, S	D	Ls, Sh	<.03	.31	17	21	170		3.3		
S-404				Sa, G, S	D	Ls, Sh	<.03	.26	15	13	110		4.0		
W-405	C	W	6.5				<2	<1	2	<3	<5			6.9	
S-405				S, Sa, G	F	Sh, Ls	<.03	.28	8	10	53		2.7		
S-406				S, Sa, So	D	Ls	<.03	.42	14	24	150		5.8		
S-407				S, So. O	D	Ls	<.03	.26	15	18	98		4.8		
S-408				S, So	D	Ls, Sh	<.03	.30	20	21	140		3.9		
S-409				S, G, So	D	Ls	<.03	.49	22	23	140		3.8		
S-410				Sa, G, S	D	Ls	<.03	.15	14	22	76		4.0		
W-411	P	W	7.0			Ls, Sh								4.6	
S-411				S	F	Ls Sh	<.03	.66	36	21	245		5.0		
S-412				Sa, G, S	D	Ls Sh	<.03	.36	16	22	72		4.8		
S-412A				Sa, G, S	D	Ls, Sh	<.03	.37	27	30	89		4.5		
S-413				Sa, G, So	D	Ls, Sh	<.03	.09	15	26	44		3.7		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
S-414				Sa, G, So	D	Ls, Sh	<.03	.48	22	17	120		3.8			
S-415				Sa, G, So	D	Ls, Sh	<.03	.88	23	17	140		3.5			
S-416				Sa, So	D	Ls, Sh	<.03	.48	20	18	110		4.0			
S-417				Sa, So	D	Ls	<.03	.32	21	17	170		3.2			
S-418				Sa, G, S	D	Ls, Sh	<.03	.65	35	19	200	<8	X			
S-419				S, Sa, G	D	Ls, Sh	<.03	.65	43	17	180		4.0			
S-420				S, Sa, G	D	Ls	<.03	.21	22	26	100		3.6			
S-421				S, Sa, G	D	Ls, Tb	<.03	.94	12	19	49		1.6			
S-422				S, Sa, G	D	Tb	<.03	.16	19	24	85		2.2			
S-423				S, Sa, G	D	Ls	<.03	<.03	5	14	16		.8			
S-424				S, Sa, G	D	Tb	<.03	2.0	17	28	67		1.6			
S-425				S, Sa, G	D	Ls	<.03	.79	11	14	38		1.3			
S-426				S, Sa, G	D	Q	<.03	2.8	9	19	13		.6			
S-427				S, Sa, G	D	Ls	<.03	.12	11	19	31		1.4			
S-428				S, Sa, G	D	Q, Ls	<.03	.07	13	24	56		2.1			
S-429				S, Sa, G	D	Q, Ls	<.03	.06	11	24	24		1.2			
S-430				S, Sa	D	Q, Ls	<.06	<.03	12	<30	32		1.7		<10	
S-431				Sa, G	D	Q, Ls	<.06	<.03	20	<30	66		1.2		<10	ND
S-432				Sa, G	D	Q, Ls	<.03	.05	20	<30	27		1.8		<10	<5
S-433				Sa, G	D	Q, Ls	<.06	<.03	16	<30	56		1.7		<10	ND
S-434				Sa, G, S	D	Ls	<.03	.05	19	<30	53		1.7		<10	<5
S-435				Sa, G,S	D	Q, Ls	<.06	<.03	20	<30	55		1.7		<10	ND
S-436				Sa, G, S	D	Q, Ls	<.06	<.03	16	<30	46		2.0		<10	ND
S-437				Sa, G	D	Q, Ls	<.06	<.03	14	<30	48		2.1		<10	ND
S-438				Sa, G	D	Q, Ls	<.06	<.03	17	<30	45		2.2		<10	ND
S-439				S, Sa, G	D	Ls	<.03	<.03	16	<30	51		1.9		<10	ND
S-440				S, Sa, G	D	Ls	<.03	.08	19	<30	74		1.5		<10	ND
S-441				S, Sa, G	D	Ls	<.06	.08	26	30	74		2.8		<10	<5
S-442				S, Sa, G	D	Ls	<.06	.07	27	30	73		1.2		<10	ND
S-443				S, Sa, G	D	Ls	<.06	.03	16	30	58		2.3		<10	ND

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
S-444				Sa, G, O	D	Ls	<.06	.03	23	30	90		1.1		<10	<5
S-445				Sa, G	D	Ls	<.06	<.03	19	30	79		1.2		<10	<5
S-446				Sa, G	D	Ls	<.06	<.03	23	30	82		1.6		<10	<5
S-447				Sa, G	D	Ls, Dol	<.03	.14	24	25	90		2.5		<10	5
S-448				Sa, G	D	Ls, Dol	<.03	.14	28	40	63		3.2		<10	<5
S-449				Sa, So	D	Ls	<.03	.14	21	35	90		2.1		<10	5
S-450				Sa, G	D	Ls	<.03	<.03	23	35	94		2.0		<10	5
W-451	S	W	7.0			Ls	<2	<1	<2	<3	8			4.4		
S-451				Sa, G	D	Ls	<.03	.13	14	30	60		2.3		<10	ND
W-452	C	Q	7.0			Ls	<2	<1	3	<3	<5			1.6		
S-452				Sa, G	F	Ls	<.06	.10	22	30	82	25	X		<10	ND
S-452A				Sa, G	F	Ls	<.06	.10	19	30	73		2.5		<10	<5
W-453	C	W	6.5			Q, M, B	<2	<1	3	<3	<5			.8		
S-453					F	Q, M, B	<.03	.07	72	29	42	X	X			
S-454				Sa, So	D	B, M	<.03	<.03	9	37	31	X	X			
W-455	C	W	6.5			Q, M	<2	<1	<2	<3	6			1.4		
S-455					F		<.03	.04	27	29	55		52.0			
W-456	S	W	6.0			Q, M	<2	<1	<2	<3	7			<.5		
S-456				Sa, G	F	Q, M	<.03	.04	24	29	50		220.0			
W-457	S	W	6.5			Q, M	<2	<1	<2	<3	<5			.8		
S-457				Sa, So	F	Qm	<.03	.19	8	33	36		100.0			
S-458				Sa, G	D	A	<.11	<.11	22	30	90	8	X		<10	ND
S-459				Sa, G	D	A	<.06	<.06	33	30	120		2.5			
S-460				Sa, G, S	D	Q	<.03	.02	73	31	60		2.2			
S-461				S, Sa, G	F	M	<.03	1.1	15	<100	60		X			
S-462				Sa, So	D	Q, B, M	<.03	.04	25	<30	140		2.1			
S-463				Sa, So	D	Q, M	X	X	22	<30	150		2.0			
S-464				G, So	D	Q, M	<.03	.03	19	<30	180		2.8			
S-465				G, So	D	Q, M	<.03	.04	13	<30	120		3.8			
S-466				G, So	D	Q, M	<.03	.14	17	<30	88		2.0			

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-467				G, So	D	Q, M	<.03	.11	26	<30	100		1.6		
S-468				G, So	D	M	X	X	19	<30	72		2.2		
W-469	C	W	6.0			M	<2	<1	<2	<3	6			.6	
S-469				G, S	F	M	<.03	.23	X	X	X		2.8		
W-470	S	W	6.0			Q, M	<2	<1	<2	<3	<5			1.4	
S-470				G, S	F	Q, M	<.03	.05	20	<30	61		3.3		
S-471				Sa, So	D	Ls	<.03	<.03	13	15	45		3.1		
S-472				Sa, So	D	Ls	<.03	<.03	22	28	67		3.4		
S-473				S, G, So	D	Ls	<.03	<.03	15	19	45		2.8		
S-474				S, G, So	D	Ls	<.03	.06	17	17	58		3.1		
S-475				Sa, G	D	Ls	<.03	<.03	19	19	85		3.3		
S-476				Sa, G	D	Ls	<.03	.32	22	15	125		4.3		
S-477				Sa, G	D	Ls	<.06	.30	19	<30	110		3.3		
S-478				Sa, G	D	Ls	.04	.21	20	28	95		3.4		
S-479				Sa, G, So	D	Ls	<.03	<.03	16	19	63		2.5		
S-480				Sa, G, So	D	Ls	<.03	.16	16	19	92		2.9		
S-481				Sa, G, S	D	Ls	<.03	.29	21	24	120		3.4		
S-482				Sa, S, G	D	Ls	<.03	.24	18	24	120		4.2		
S-483				Sa, S, So	D	Ls	<.03	<.03	19	19	85		3.8		
S-484				Sa, S, So	D	Ls	<.03	.14	17	24	68		3.6		
W-485	S	W	6.0			Ls	<2	<2	<5	<3	<5			2.6	
W-486	S	W	6.0			Ls	<2	<2	<2	<3	<5			2.2	
S-487				Sa, G, S	D	Ls, Q	<.03	.09	13	15	63		2.2		
S-488				Sa, G, S	D	Ls, Q	<.03	.04	16	23	61		2.0		
S-489				Sa, G, S	D	Ls, Q	<.03	.06	17	21	69		2.5		
S-490				Sa, G, S	D	Ls, Q	<.03	.13	14	17	61		2.2		
S-491				Sa, G, S	D	Q	<.03	<.03	13	19	40		2.2		
S-492				Sa, G, S	D		<.03	<.03	15	19	48		1.2		
S-493				Sa, G, S	D	Q	<.03	<.03	9	<15	27		1.1		
S-494				Sa, G, S	D	Q, Ls	<.03	<.03	12	15	22		1.2		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
S-495				Sa, G, S	D	Q, Ls	<.03	<.03	11	15	31		1.0			
S-496				Sa, So, G	D	Ls	<.03	<.03	14	30	63		1.8			
S-496A				Sa, So, G	D	Ls	<.03	.12	18	20	63		2.4		<10	<5
S-497				So, G	D	Ls	<.03	.08	15	35	66		2.0		<10	<5
S-498				So, G	D	Ls	<.03	.10	18	30	64		1.8			
S-499				So, G, Sa	D	Ls, Dol	<.03	<.03	16	<30	48		1.7			
S-500				So,Sa, G	D	Dol	<.03	.08	18	40	87		1.6		<10	<5
S-501				So, Sa, G	D	Dol	<.03	<.03	18	<30	55		2.1			
S-502				So, Sa, G	D	Dol	<.03	.09	24	45	73		1.8		<10	<5
S-503				So, Sa, G	D	Dol	<.03	.08	24	25	76		1.8		<10	ND
S-504				So, Sa, G	D	Dol	<.03	.11	19	25	73		2.1		<10	<5
S-505				S, Sa, G	D	Ls, Q, A	<.03	<.03	19	<30	68		1.5		<10	<5
S-506				So, G	D	Dol	<.03	.25	20	30	59		2.1		<10	<5
S-507				So, G	D	Dol	<.03	<.03	22	35	70		2.6		<10	<5
S-508				So, G	D	Dol	<.03	<.03	26	35	70		2.4		<10	<5
S-509				Sa, G	D	Dol	<.03	<.03	20	40	76		1.7		<10	<5
S-510				So, G	D	Dol	<.03	<.03	16	<30	65		1.7		<10	<5
S-511				S, Sa, G	D	Ls, Dol, M	<.03	<.03	18	<30	52		2.1			
S-512				So, G	D	Dol, Ls	<.03	<.03	24	<30	81		2.5			
S-513				So, g	D	Dol, Ls, M	<.03	<.03	21	<30	68		2.5			
S-514				S, Sa, G	D	Ls	<.03	.13	18	39	88		2.5			
W-515	C	W	6.0			Ls	<2	<1	3	<3	<5			1.3		
S-515				S, Sa, G	F	Ls, Dol	<.03	.08	15	20	42		2.0			
S-516				S, Sa, G	D	Ls, Dol	<.03	.08	22	45	73		1.8		<10	<5
S-517				S, Sa, G	D	Ls, Dol	<.03	.06	22	<30	79	8	X			
S-518				Sa, G	D	Ls, Dol	<.03	<.03	18	<30	69		2.0			
W-519	C	W	NM	S		M	<2	<1	<2	<3	6			1.1		
S-519				S, Sa, G	F	M	<.08	<.08	32	<30	71	8	X			

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm	Beryllium ppm
S-520				Sa, G	D	M	<.14	<.14	26	<30	74	8	X		<10	ND
W-521	S	W	7.0			M	<2	<1	5	<3	22			<.5		
S-521				Sa, G, O	F	M	<.06	.04	25	30	75	17	X		<10	5
S-522				Sa, G	D	M	<.03	.05	16	22	48		2.0			
S-523				Sa, G	D	M	<.03	.05	13	14	38		1.2			
S-524				Sa, G	D	A, M	<.03	.10	17	24	66		2.4			
S-525				Sa, G	D	A, M	<.03	.14	25	28	110		2.2			
S-526				Sa, G	D	M	<.03	.08	29	30	76		2.7		<10	5
W-527	C	W	6.5			M	<2	<1	<2	<3	<5			2.1		
S-527				Sa, G	F	M	<.11	<.11	17	<30	55	<3	X			
S-528				Sa, G	D	M	<.03	.11	22	22	94		1.8		<10	5
S-529				Sa, G	D	M	<.03	<.03	29	32	75		2.5		<10	
S-530				Sa, G	D	M	<.03	.09	34	52	81		2.5		<10	
W-531	C	W	6.0			M	<2	<1	<2	<3	<5			2.8		
S-531				Sa, G, S	F	M, Qm	<.12	.15	20	<22	50	8	X			
S-532				Sa, G	D	M	<.03	.18	24	32	100		2.2			
S-533				So, G	D	Dol	<.03	.03	16	<30	59		2.2			
S-534				So, G	D	Dol	<.03	<.03	18	<30	52		2.3			
S-535				So, G	D	Dol	<.03	<.03	20	30	75		2.1			
S-536				So, G	D	Dol	<.03	<.03	27	<30	84		2.0			
S-537				So, G	D	Dol	<.03	<.03	19	<30	64		2.0			
S-538				S, Sa, G	D	Dol	<.06	<.03	22	<30	110	17	X			
S-539				S, Sa, G	D	Dol, Ls	<.03	<.03	18	<30	44		2.1			
S-540				Sa, G	D	Ls, Dol	<.03	<.03	15	20	58		3.8			
S-541				Sa, G	D	Ls, Dol	<.03	<.03	18	20	71		1.6			
S-542				Sa, G	D	Ls	<.03	.05	14	18	64		2.0			
S-543				Sa, G	D	Ls	<.03	.07	15	20	42		1.3			
S-544				Sa, G	D	Ls	<.03	.05	14	20	51		1.1			
S-545				Sa, G	D	Ls	<.03	.06	15	22	51		1.2			
S-546				Sa, G	D	Ls	<.03	.09	14	18	24		1.2			

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold 1/ ppm/ppb	Silver 1/ ppm/ppm	Copper ppm/ppb	Lead 1/ ppm/ppb	Zinc ppm/ppb	Uranium 2/ ppm	Uranium ppm	Uranium ppb	Tungsten ppm
S-547				Sa, So, G	D	Ls	<.06	<.06	16	<30	31		1.2		
S-548				Sa, So, G	D	Ls	<.03	.06	21	<30	82		1.7		
S-549				Sa, G	D	Ls	<.03	<.03	19	30	68		2.2		
S-550				Sa, G	DS	Ls	<.03	.04	9	12	25		1.1		
S-551				So, Sa, G	D	Ls	<.03	.10	22	<30	68		1.6		<10
S-552				S, Sa, G	D	Ls, Dol	<.03	<.03	15	<30	34		1.1		
S-553				S, Sa, G	D	Ls, Dol	<.03	<.03	21	<30	53		1.4		
S-554				S, So	D	Ls, Dol	<.03	.06	16	<30	65		1.4		
W-555	C	W	6.0			Ls, Dol	<2	<1	<2	<3	6			<.5	
S-555				S, Sa, G	F	Ls, Dol	<.03	<.03	16	<30	63		2.0		
W-556	C	W	NM			M	<2	<1	3	<3	<5			1.3	
S-556				Sa, G, O	F	M	<.06	<.06	11	16	35	17	X		
W-557	C	W	6.0			Q	<2	<1	<2	<3	<5			<.5	
S-557				S, Sa, G	F	Q	<.06	.06	21	<30	81	8	X		
W-558	C	W	6.0			Q	<2	<1	<2	<3	<5			3.4	
S-558				S, Sa, G	F	Q	<.03	<.03	22	<30	78		2.5		
S-559				So, G	D	Ls	<.03	<.03	19	<30	84		1.4		
S-560				So, G	D	Ls	<.03	.12	28	40	120		1.6		
S-561				So, G	D	Ls	<.03	<.03	30	30	130		2.5		
S-562				Sa, G	D	M, Q	<.03	.09	20	26	51	8	X		
W-563	C	W	6.0			M, Q	<2	<1	3	<3	<5			<.5	
S-563				S, Sa, G	F	M, Q	<.06	<.06	11	16	34	17	X		
W-564	C	W	NM			M, Q	<2	<12	3	<3	<5			1.1	
S-564				Sa, G, O	F	M, Q	<.03	<.03	16	26	43	17	X		
W-565	C	W	6.0			Q	<2	<1	<2	<3	<5			<.5	
W-565A	C	W	6.0			Q	<2	<1	<2	<3	<5			<.5	
S-565					F	Q	<.03	<.03	21	<30	68		2.0		
S-565A					F	Q	<.03	.06	22	<30	74		2.5		
W-566	C	W	7.0			Q, M	<2	<1	<2	<3	<5			<.5	
S-566						Q, M	<.03	<.03	18	<30	82	17	X		

APPENDIX 4.--STREAM SEDIMENT AND SURFACE WATER DATA, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Water type	Filtration	pH	Sed. size	Creek cond.	Rock type drained	Gold[1/] ppm/ppb	Silver[1/] ppm/ppm	Copper ppm/ppb	Lead [1/] ppm/ppb	Zinc ppm/ppb	Uranium[2/] ppm	Uranium ppm	Uranium ppb	Tungsten ppm
W-567	C	W	6.0			Q, M	<2	<1	<2	<3	<5			<.5	
S-567						Q, M	<.03	.03	21	<30	76		1.6		
S-568				Sa, G	D	M, Q	<.03	<.03	19	18	64		2.8		
W-569	C	W	6.0			Q, M	<2	<1	<2	<3	<5			.9	
S-569						Q, M	<.03	.06	22	<30	78		3.1		
W-570	C	W	6.0			M, Q	<2	<1	<2	<3	6			<.5	
S-570					F	M, Q	<.03	<.03	14	18	38		1.3		
S-571				S, Sa, G, O	F	M	<.03	.05	13	18	47		1.4		<10
S-572				So, O	D	M	<.03	.05	23	22	74		2.2		
S-573				Sa, G	D	M	<.03	.09	14	20	40		1.2		<10
S-574				So, O	D	M	<.03	.17	13	18	36		1.2		
W-575	S	W	6.0			M	<2	<1	<2	<3	<5			2.4	
S-575				S, Sa, O	F	M	<.03	.06	20	24	62		2.2		
W-576	C	W	6.0			M, Q	<2	<1	<2	<3	<5			<.5	
S-576				S, Sa, G	F	M, Q	<.03	.03	24	<30	81		2.5		
S-577				S, Sa, O	D	M, Q	<.06	<.06	22	30	96		3.2		
W-578	C	W	6.0			Q, M	<2	<1	9	3	11			1.3	
S-578				S, Sa, G	F	Q, M	<.03	<.03	24	<30	95		1.7		
S-579				S, G, O	F	M, Q	<.03	.14	19	22	60		3.0		
W-580	C	W	6.0			M, Q	<2	<1	<2	<3	<5			.6	
S-580				S, Sa, G	F	M, Q	<.03	.03	17	16	57		2.0		
W-581	C	W	6.0			M, Tb	<2	<1	<2	<3	<5			<.5	
S-581				S, Sa, G	F	M, Tb	<.03	.19	35	30	96		3.6		
W-582	C	W	6.5			M, Tb	<2	<1	<2	<3	<5			.6	
S-582				S, Sa, G	F	M, Tb	X	X	X	X	X	8	X		
W-583	C	W	6.0			M	<2	<1	<2	<3	<5			<.5	
W=584	C	W	6.5			M, Q	<2	<1	<2	<3	<5			1.0	
S-584				S, Sa, G	F	M, Q	<.03	.14	7	10	25		.8		

APPENDIX 5.--METAL CONTENTS OF ROCK SAMPLES AND PAN CONCENTRATES FROM WELL CUTTINGS, GOSHUTE INDIAN RESERVATION (see plate 4)

C = pan concentrate R = rock sample
1/ Analysis by laborataory radiometric method

Sample no.	Sample description	Gold ppm	Silver ppm	Copper ppm	Lead ppm	Zinc ppm	Uranium 1/ ppm	Thorium 1/ ppm	Tungsten ppm	Beryllium ppm	Remarks
C-1	50 percent volcanics; 50 percent limestone	.23	.50	26	30	60	<8 1/	62			C-1 through C-5 rock estimates based on + 1/2 in. size fraction
C-2	90 percent volcanics; 10 percent limestone	.07	.15	22	140	70	<8 1/	114			
C-3	75 percent volcanics; 25 percent limestone	<.03	.13	11	25	50	<8 1/	35			
C-4	100 percent volcanics	.02	.03	8	25	55	<8 1/	1100			
C-5	50 percent volcanics; 50 percent limestone	<.04	.19	7	75	35	<8 1/	26			
R-6	Mafic dike	.18	.08	33	60	280	2.2				
R-7	Alaskite	<.03	<.03	18	60	10	16.4				
R-8	Quartz monzonite	<.03	.09	14	<30	31	9.8	53			
R-9	Milky quartz	.03	.03						<4	<10	
R-10	Slightly altered quartz monzonite	<.03	<.03	31	30	16	6.6			<10	
R-11	Silicified, limonitic, limestone and dolomite tectonic breccia	<.03	1.2	20	40	7	1.2				
R-12	do------------------------------	<.03	.51	30	<30	19	.4				
R-13	Silicified limestone thrust breccia	<.03	.21	51	<30	29	3.2				
R-14	Dark gray limestone	<.03	<.03	<4	30	4					
R-15	Gray dolomite	<.03	<.03	<4	<30	4					
R-16	Alaskite	<.03	.03	18	40	14	22.2				
R-17	Porphyritic quartz monzonite	<.03	<.03	11	30	33	12.8	35			
R-18	do------------------------------	<.03	<.03	28	30	36	14.1				
R-19	do------------------------------	<.03	<.03	9	<30	30	18.8	53			
R-20	do------------------------------	<.03	<.03	7	<30	24	21.9	44			
R-21	do------------------------------	<.03	<.03	22	39	23	17.0				

APPENDIX 5.--METAL CONTENTS OF ROCK SAMPLES AND PAN CONCENTRATES FROM WELL CUTTINGS, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Sample description	Gold ppm	Silver ppm	Copper ppm	Lead ppm	Zinc ppm	Uranium [1/] ppm	Remarks
R-22	Quartz monzonite (altered)	<.03	.29	38	1,200	130	14.8	Rerun
			.25		6,500			
R-23	Brown shale	<.03	.14	34	<30	34	2.0	
R-24	Black shale	<.03	.27	26	30	41	2.4	
R-25	7 ft. section of limonitic and sililceous lenses in limestone	<.03	3.4	57	30	260		
R-26	Thin bedded, calcareous pale brown shale	<.03	3.4	10	<30	<20		
R-27	Limonitic black fossiliferous limestone	.06	2.4	100	49	300	8.3	
R-28	Iron stained and silicified limestone thrust breccia	<.03	.75	42	50	79	1.6	
R-29	Very limonitic sandstone as scattered float	<.03	3.4	70	<30	2,000		
R-30	Limonitic black fossiliferous limestone	<.03	.11	120	39	58	2.6	
R-31	Ferrugenous and silicified thrust breccia with limonite	<.03	<.03	43	<30	580		
R-32	Silicified dacite porphyry dike intruding limestone	<.03	<.03	27	<30	63		
R-33	Silicified limestone with occasional quartz vein stockwork	<.03	.41	34	30	4	.9	
R-34	Grayish white limestone near thrust breccia	<.03	<.03	<5	<30	10	.5	

APPENDIX 5.--METAL CONTENTS OF ROCK SAMPLES AND PAN CONCENTRATES FROM WELL CUTTINGS, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Sample description	Gold ppm	Silver ppm	Copper ppm	Lead ppm	Zinc ppm	Uranium[1/] ppm	Remarks
R-35	Silicified thrust breccia with hematite and limonite. Occasional dark red chert fragments	<.03	.12	46	<30	140	4.3	
R-36	Chert fragments of R-35	<.03	.12	33	<30	140	4.3	See industrial minerals table 6, no. 3
R-37	Dark gray dolomite breccia	<.03	<.03	4	<30	9		
R-38	Medium-grained alaskite float	<.06	.06	20	54	10	17.2	
R-39	Quartz monzonite	<.03	<.03	7	<30	35	18.3	
R-40	Chip sample of quartz monzonite, aplite, and pegmatite at quartz prospect	<.03	.21	28	97	49	8.3	
R-41	Porphyritic quartz monzonite	<.03	.04	58	1,100 6,600	620	15.2	 Rerun
R-42	Quartz monzonite	<.03	.41	14	50	36	16.1	
R-43	Porphyritic quartz monzonite	<.03	.06	26	30	22	7.2	
R-44	Iron stained quartzite	.68	.05	13	90	50	7.4	
R-45	Tan to black thin bedded limestone	<.03	.14	20	<30	27	2.5	
R-46	Silicified thrust breccia with heavy iron staining	<.03	.11	35	<30	100	4.6	
R-47	Clinozoisite tactite - lime silicate rock derived from contact metamorphism of limestone	<.03	.07	20	<30	56	2.5	R-47 through R-49 Petrology by Koehler Geo. Research Lab., Grangeville, ID
R-48	Akermanite tactite - see R-47	<.03	<.03	16	<30	49	4.9	
R-49	Shonkinite dike, intrudes R-47 and R-48	<.03	<.03	20	<30	45		

APPENDIX 5.--METAL CONTENTS OF ROCK SAMPLES AND PAN CONCENTRATES FROM WELL CUTTINGS, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Sample description	Gold ppm	Silver ppm	Copper ppm	Lead ppm	Zinc ppm	Uranium 1/ ppm	Tungsten ppm	Molybdenum ppm	Remarks
R-50	Quartzite breccia with sericite altered aplite cement and limonite veins	<.03	3.4	20	200	20	<8	<80	<30	
R-51	Selected limonite veins of R-50	<.03	<.03	80	500	30	17		<30	
R-52	Quartz monzonite	<.03	<.03	20	<30	38	3.6			
R-53	Selected limonitic vein material from scattered ore stockpile. Site is end of Queen of Sheba tram line.	1.4	.03	78	920	620				
R-54	Selected iron stained quartzite from dump of short caved adit	<.03	3.4	60	40	60	25	<80	<30	
R-55	Grab sample of quartz vein from ridge adit	<.03	<.03	41	120	80				
R-56	Alaskite, Lawton dump	<.03	.24	12	50	25	15.9			
R-57	Quartz monzonite, Lawton dump	<.03	.14	16	50	130	3.2			
R-58	Alaskite on dump of caved adit	<.03	<.03	16	50	44	6.0			
R-59	Grab sample of quartz and quartzite from prospect pit									
R-60	do------------------------------	<.03	.31	28	70	30			<30	
R-61	Selected quartz from trench in quartzite	<.03	<.03	50	<60	30				
R-62	Quartz vein from trench in mafic dike or hornfels	<.03	<.03	43	<60	30				
R-63	Mafic dike or hornfels in above trench	<.03	<.04	42	<30	48				

APPENDIX 5.--METAL CONTENTS OF ROCK SAMPLES AND PAN CONCENTRATES FROM WELL CUTTINGS, GOSHUTE INDIAN RESERVATION (cont.)

Map no.	Sample description	Gold ppm	Silver ppm	Copper ppm	Lead ppm	Zinc ppm	Uranium 1/ ppm	Molybdenum ppm	Remarks
R-64	Alaskite dike in iron stained quartzite	<0.03	0.31	22	70	34		<30	
R-65	Limonitic quartzite 200 ft. below pegmatite dike	.45	.93						Rerun
		.44	.96	22	780	90	.5	<30	
R-66	Alaskite dike in quartzite	.04	.31	20	30	50	.6		
R-67	3 ft. wide pegmatite dike	.03	.3	20	100	20	1.0		
R-68	Silicified dolomite fault breccia with abundant limonite and goethite pods	<.03	.15	36	<30	49	1.0		
R-69	Quartzite	<.03	<.03					<30	See industrial minerals, table 6, no. 9
R-70	Gray quartzite	<.03	<.03						See industrial minerals, table 6, no. 10
R-71	Selected limonitic schistose shale in fault	<.03	.03	48	<30	81			
R-72	7 foot milky quartz vein with limonite in prospect pit. Same unit as R-71.	<.03	.03	34	<30	72		<30	
R-73	Limonite stained milky quartz pegmatite float in creek	<.03	.24	100	<30	62			

APPENDIX 6.--WATER WELL DATA AND URANIUM CONTENT, GOSHUTE INDIAN RESERVATION AND IBAPAH AREA
(see plate 2)

Filtration: W = Whatman no. 41 ashless; M = millipore 0.45 micron;
NF = not filtered; -- = not known

Map no.	Well name or owner (1978)	Total depth	Water level	Casing depth	Filtration	pH	Well log in appendix	Uranium ppb	Other information
NE of Plate 2	Gulf Dennison Federal No. 1	4,502	--	--	--	--	X	--	Abandoned oil well drilled (1954) NE 1/4 NW1/4, SW1/4 Sec. 20, T. 26 N., R. 70 E. White Pine Co., NV
N. of Plate 2	J. Hicks Ranch	306	--	260	W	6.5		4.5	Eight mi. N. of Ibapah
do-----	J. Hicks Ranch	15	10	--	W	6.0		12.9	Hand dug windmill pump
do-----	Bonnemont (abandoned roadhouse)	--	flowing	--	W	7.0		3.7	Sec. 34, T. 8 S., R. 19 W. (Ibapah guad)
do-----	S. Nicholes Ranch	535	367	392	NF	7.2	X	23.0	Sec. 9, T. 9 S., R. 19 W. (Ibapah guad) completed 6/46
W-1	--	40	16	40	M	7.5		5.2	Completed 8/78, water silty
W-2	Ibapah P.O.	70	14	70	W	7.0	X	15.4	Completed 9/55
W-3	W. Parrish	58	8	58	W	7.0	X	65.0	Completed 5/55
W-4	R. Bateman	15	8	--	NF	7.0		34.0	Hand dug 2.2 ppm zinc
W-5	do-----------------	75	--	75	NF	7.0		47.5	
W-6	Ibapah School	--	--	--	NF	6.5		12.8	
W-7	F. Meyers	30	--	30	NF	7.0		8.8	
W-8	Kelly	44	14	44	M	6.5		3.8	Completed 8/78, water silty
W-8A	do----------------	44	14	44	NF	6.5		5.9	Same water unfiltered

APPENDIX 6.--WATER WELL DATA AND URANIUM CONTENT, GOSHUTE INDIAN RESERVATION AND IBAPAH AREA (cont.)

Map no.	Well name or owner (1978)	Total depth	Water level	Casing depth	Filtration	pH	Well log in appendix	Uranium ppb	Other information
W-9	Kelly	35	15	--	M	7.3		12.0	Hand dug, abandoned, water foul
W-9A	do-----------------	35	15	--	NF	7.3		15.0	Same water unfiltered
W-10	B. Probert	30	15	--	NF	7.0		34.0	Hand dug
W-11	Ibapah Cemetary	25	15	--	NF	7.3		4.7	Well not in use
W-12	K. Snively	50	1	50	M	7.8	X	.7	Well rarely used, flows in spring, completed 9/55
W-13	F. Snively	70	14	70	NF	6.8	X	2.3	Completed 7/46
W-14	G. Cook	35	--	--	W	6.0		55.0	
W-15	--	--	--	--	NF	6.5		7.8	
W-16	G. Henroid	100	--	81	NF	7.5	X	9.7	Completed 4/78
W-17	V. Vasser	100	20	83	NF	7.5	X	3.3	Completed 4/78
W-18	Goshute Enterprise Fabrication Plant	--	--	--	W	7.0		20.5	May be same well as W-20
W-19	do-----------------	55	--	--	W	7.0		12.1	
W-20	No. 1 fabrication	180	<65	159	--	--	X	--	Not sampled, may be same as W-18, completed 4/77
W-21	M. Dick	115	35	101	NF	7.0	X	3.1	Completd 4/78
W-22	J. Steel	118	60	102	WF	7.5	X	2.1	Completed 4/78
W-23	J. Steel	--	--	--	W	7.0		8.1	Completed 4/78
W-24	--	46	6	--	M	6.8		.5	
W-25	E. Steel	60	--	--	--	7.0		9.4	
W-26	E. McCurdy	125	63	110	NF	7.5	X	6.3	Completed 4/78
W-27	R. Baker	197	101	197	NF	7.0		6.3	

APPENDIX 6.--WATER WELL DATA AND URANIUM CONTENT, GOSHUTE INDIAN RESERVATION AND IBAPAH AREA (cont.)

Map no.	Well name or owner (1978)	Total depth	Water level	Casing depth	Filtration	pH	Well log in appendix	Uranium ppb	Other information
W-28	R. Baker No. 2	107	flowing	101	--	--	X	--	Not sampled, drilled 6/77
W-29	Goshute No.1	400	flowing	--	M	7.3	X	3.0	Completed 10/77
W-30	E. Steel	100	17	62	NF	7.8	X	<.5	Completed 4/78
W-31	D. Murphy	117	35	101	--	--	X	--	Not sampled, completed 4/78
W-32	H. Pete No. 2	105	20	99	W	7.5	X	4.9	Drilled 6/77
W-33	H. Pete	42	16	--	W	7.0		3.9	
W-34	Stockwell (Windmill)	--	170	--	W	6.0		1.7	Abandon, 18 ppm zinc
W-35	J. Steel	--	--	--	NF	7.0		6.7	
W-36	L. Steel	94	60	82	NF	7.0	X	1.5	Completed 4/78
W-37	H. Steel	--	--	--	NF	7.0		5.1	
W-38	R. King	50	--	--	NF	7.0		7.0	
W-39	C. Steel	110	45	92	NF	7.5	X	1.7	Completed 4/78
W-40	I. Koeke	102	75	92	NF	7.0	X	2.8	Completed 4/78
W-41	B. Steel	201	100	--	NF	6.5		5.4	
W-42	Goshute No. 2	400	30	--	--	--	X	--	Completed 12/77, capped
W-43	G. Cook	30	--	--	W	6.5		10.5	
W-44	K. Kemp	110	--	--	W	6.5		21.8	
W-45	N. Kemp	118	--	--	W	7.0		19.0	
W-46	N. Kemp	172	50	--	M	7.8		3.0	
W-47	C. Woodard	92	60	--	W	7.0		9.0	
W-48	G. Kemp	198	128	128	W	7.0		14.0	
W-49	Stockwell (Windmill)	--	--	--	W	7.0		2.9	Used rarely, 1.7 ppm zinc
W-50	do------------------	290	263	--	W	7.0		2.2	Abandoned
W-51	Stockwell (Windmill)	290	277	--	W	6.0		1.2	Abandoned
W-52	do------------------	436	326	--	W	8.0		1.4	Abandoned, 21 ppm zinc
W-52A	do------------------	436	326	--	W	8.0		1.2	Check sample

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (See plate 2 and appendix 4)

Plate 2	Sample depth (feet)	Description
[1]Gulf-Dennison Federal No. 1 NE1/4 NW1/4 SW1/4 sec. 20	0 - 790	Sandstone, silty with interbedded volcanic ash and red and brown shales
T. 26 N., R. 70 E.	790 - 1750	Lava, gray, black, brown with few interbeds of volcanic ash and sandstone
	1750 - 2215	Shale, bentonitic, light gray to gray green with two 20-foot lava sections and two quartz sands.
		Top of Permian Gerster-Phosphoria
	2215 - 3245	Limestone, brown-gray, fine crystalline with brown-gray chert, some silty and sandy zones
	3245 - 3330	Siltstone, gray to black, limey and with chert beds
	3330 - 3350	Limestone, dark gray, silty, fossil fragments, chert
	3350 - 3540	Shale, black, silty, with interbedded dolomite, dark brown to black, very fine crystalline, cherty
	3540 - 3860	Dolomite, brown, fine crystalline, cherty, some silty zones
	3860 - 4030	Limestone, brown-gray, fine to medium crystalline, cherty
	4030 - 4502	Dolomite, brown, very fine to fine crystalline, with considerable silty and sandy interbeds

[1]Selected core, induction-electric, and gamma-neutron logs are available from the Nevada Bureau of Mines

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
S. Nicholes: SE corner NE1/4 sec. 9, T. 9 S., R. 19 W.	0 - 20	Earth and rock
	20 - 85	Brown clay
	85 - 183	Brown sand and clay
	183 - 187	Hard pan
	187 - 267	Brown clay
	267 - 290	White clay
	290 - 296	Hard pan
	296 - 320	White clay
	320 - 325	Hard pan
	325 - 355	Brown clay
	355 - 367	Hard pan
	367 - 377	Sand and gravel (first water)
	377 - 535	Brown clay
W - 2	0 - 4	Top soil
	4 - 15	Boulders
	15 - 34	Coarse gravel and sand
	34 - 37	Clay
	37 - 42	Gravel
	42 - 50	Clay
	50 - 55	Gravel (first water)
	55 - 65	Clay
	65 - 70	Gravel
W - 3	0 - 4	Top soil
	4 - 15	Boulders
	15 - 34	Coarse gravel and sand
	34 - 37	Clay
	37 - 42	Gravel
	42 - 50	Clay
	50 - 55	Gravel (first water)
	55 - 58	Clay
W - 12	0 - 12	Clay
	12 - 18	Gravel and clay
	18 - 21	Hard pan
	21 - 40	Clay
	40 - 50	Gravel (first water)
W - 13	0 - 46	Hard brown clay
	46 - 50	Sand and gravel (first water)
	50 - 56	Brown clay
	56 - 70	Sand and gravel

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
W - 16	0 - 4	Top soil
	4 - 23	Clay and gravel (first water 17 feet)
	23 - 31	Sandy clay
	31 - 34	Clay and gravel
	34 - 55	Sandy clay
	55 - 70	Sandy clay and gravel (second water 70 feet)
	70 - 90	Clay and gravel
	90 - 100	Brown clay
W - 17	0 - 9	Top soil
	9 - 28	Sandy clay and boulders (first water 20 feet)
	28 - 50	Sandy clay (second water 50 feet)
	50 - 60	Clay and gravel
	60 - 81	Sandy clay (third water 80 feet)
	81 - 100	Clay and gravel
W - 20	58 - 60	Sandy gravel
	60 - 74	Sandy clay
	74 - 80	Clay and gravel
	80 - 97	Sandy clay
	97 - 100	Coarse sand and clay
	100 - 111	Sandy clay
	111 - 115	Hard clay
	115 - 148	Clay
	148 - 150	Sand
	150 - 158	Sandy clay
	158 - 173	Clay
	173 - 180	Clay and some small gravel (first water)
W - 21	0 - 4	Top soil
	4 - 10	Clay and gravel
	10 - 16	Clay and gravel and cobbles
	16 - 21	Clay and gravel
	21 - 35	Clay (first water)
	35 - 54	Sandy clay (second water)
	54 - 85	Clay and gravel
	85 - 93	Clay with a little gravel
	93 - 115	Clay and gravel (third water)

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
W - 22	0 - 4	Top soil
	4 - 15	Clay, gravel, and boulders
	15 - 26	Clay
	26 - 30	Sand
	30 - 35	Clay
	35 - 56	Clay and gravel
	56 - 59	Sand
	59 - 65	Sandy clay (first water)
	65 - 118	Gravel (second water 100 feet)
W - 26	0 - 4	Clay
	4 - 25	Clay and gravel
	25 - 40	Sand and cobbles
	40 - 45	Clay with a little gravel
	45 - 63	Clay (first water 63 feet)
	63 - 80	Clay and gravel
	80 - 85	Sand (second water 85 feet)
	85 - 105	Clay and gravel (third water 105 feet)
	105 - 125	Pan clay and gravel
W - 28	0 - 27	Clay
	27 - 40	Clay and sand
	40 - 50	Hard pan
	50 - 53	Clay
	53 - 58	Clay, sand and gravel
	58 - 62	Clay and gravel
	62 - 90	Clay, with hard streaks (first water 84 feet)
	90 - 93	Clay and gravel
	93 - 100	Coarse gravel
	100 - 107	Coarse gravel with a little clay

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
W - 29	0 - 10	Clay, small rock
	10 - 20	Clay, small rock
	20 - 30	Clay, small rock
	30 - 40	Coarse gravel, large boulders, and some clay
	40 - 50	Coarse gravel, large boulders, and some clay
	50 - 60	Coarse gravel, large boulders, and some clay
	60 - 70	Coarse gravel, and layer of tight clay
	70 - 80	Coarse gravel, and layer of tight clay
	80 - 90	Coarse gravel, and layer of tight clay
	90 - 100	Tight clay, 10 feet coarse gravel
	100 - 110	Tight clay and trace of gravel
	110 - 120	Tight clay and trace of gravel
	120 - 130	Tight clay, thin layers coarse gravel, and a trace of soft sandstone
	130 - 140	Tight clay, thin layers coarse gravel, and a trace of soft sandstone
	140 - 150	Tight clay, thin layers coarse gravel, and a trace of soft sandstone
	150 - 160	Tight clay and thin layers medium gravel
	160 - 170	Tight clay and thin layers medium gravel
	170 - 180	Tight clay and thin layers medium gravel
	180 - 190	Tight clay and a 6-foot layer of coarse gravel
	190 - 200	Tight clay and a trace of gravel
	200 - 210	Tight clay and an 8-foot layer of coarse gravel
	210 - 220	Four feet coarse gravel and clay
	220 - 230	Clay and a trace of gravel
	230 - 240	Clay and a trace of gravel
	240 - 250	Clay layers and coarse gravel
	250 - 260	Clay layers and coarse gravel
	260 - 270	Clay layers coarse gravel
	270 - 280	Clay and 7 feet coarse gravel
	280 - 290	Eight feet coarse gravel and clay
	290 - 300	Clay and a trace of gravel
	300 - 310	Clay and a trace of gravel
	310 - 320	Clay and a trace of gravel
	320 - 330	Clay and a trace of gravel
	330 - 340	Clay and layers of gravel
	340 - 350	Clay, layers of gravel and a trace of soft lime
	350 - 360	Clay, layers of gravel, and a trace of soft lime
	360 - 370	Coarse gravel and small rock

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
	370 - 380	Coarse gravel and small rock
	380 - 390	Five feet coarse gravel and five feet of clay
	390 - 400	Clay and a trace of gravel
W - 30	0 - 7	Clay
	7 - 13	Clay and gravel
	13 - 21	Clay, gravel, and cobbles (first water 13 feet)
	21 - 52	Sandy clay
	52 - 54	Hard pan
	54 - 71	Gravel with a little clay
	71 - 82	Sandy clay (second water 80 feet)
	82 - 100	Clay and gravel
W - 31	0 - 2	Top soil
	2 - 17	Clay with hard streaks
	17 - 20	Clay and gravel
	20 - 60	Sandy clay (first water 93 feet)
	60 - 65	Heaving? clay (second water 60 feet)
	65 - 90	Clay
	90 - 117	Clay and gravel (third water 93 feet)
W - 32	0 - 17	Clay and gravel
	17 - 20	Gravel
	20 - 32	Clay, gravel, sand
	32 - 38	Gravel
	38 - 85	Clay
	85 - 86	Clay and gravel (first water at 86 feet)
	86 - 97	Gravel
	97 - 105	Clay and gravel
W - 36	0 - 52	Clay and little gravel
	52 - 60	Sandy clay (first water 60 feet)
	60 - 92	Clay and gravel (second water 80 feet)
W - 39	0 - 4	Top soil
	4 - 45	Sandy clay and gravel
	45 - 50	Gravel (first water 45 feet)
	50 - 75	Sandy clay and gravel
	75 - 80	Sand
	80 - 110	Clay and gravel (second water 90 feet)
W - 40	0 - 44	Sandy clay and gravel
	44 - 75	Sandy clay (first water 75 feet)
	75 - 80	Sand
	80 - 102	Clay and gravel (second water 87 feet)

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
W - 42	0 - 10	Top soil, clay
	10 - 20	Clay
	20 - 30	Clay
	30 - 40	Clay
	40 - 50	Clay
	50 - 60	Clay, five feet medium gravel
	60 - 70	Clay, medium gravel
	70 - 80	Clay, medium gravel
	80 - 90	Clay, medium gravel
	90 - 100	Soft sandstone, tight clay layers
	100 - 110	Soft sandstone, tight clay layers, trace medium gravel
	110 - 120	Soft sandstone, tight clay layers, trace medium gravel
	120 - 130	Tight gummy clay, trace medium gravel
	130 - 140	Tight gummy clay, trace medium gravel
	140 - 150	Tight gummy clay
	150 - 160	Four feet good coarse gravel and tight clay
	160 - 170	Tight clay
	170 - 180	Tight clay
	180 - 190	Tight clay, sandstone layers, trace of medium gravel
	190 - 200	Tight clay, sandstone layers, trace of medium gravel
	200 - 210	Tight clay, sandstone layers, trace of medium gravel
	210 - 220	Tight clay, sandstone layers, trace of medium gravel
	220 - 230	Tight clay, sandstone layers, trace of medium gravel
	230 - 240	Tight clay, sandstone layers, trace of medium gravel
	240 - 250	Tight clay, good layers of medium gravel, two feet hard rock
	250 - 260	Tight clay, good layers of medium gravel, two feet hard rock
	260 - 270	Tight clay
	270 - 280	Ten feet of good coarse gravel and tight clay
	280 - 290	Tight gummy clay, trace medium gravel
	290 - 300	Tight gummy clay, trace medium gravel
	300 - 310	Tight gummy clay, good layers of coarse gravel
	310 - 320	Tight gummy clay, good layers of coarse gravel

APPENDIX 7.--DRILL HOLE LOGS, GOSHUTE INDIAN RESERVATION AND DEEP CREEK VALLEY (Cont.)

Plate 2	Sample depth (feet)	Description
	320 - 330	Tight gummy clay, good layers of coarse gravel
	330 - 340	Tight clay, layers of sandstone
	340 - 350	Tight clay, layers of sandstone
	350 - 360	Tight clay, layers of sandstone
	360 - 370	Hard tight gummy clay
	370 - 380	Hard tight gummy clay
	380 - 390	Hard tight gummy clay
	390 - 400	Hard tight gummy clay
	750 gpm	Water flow at surface

APPENDIX 8.--GAMMA RAY SPECTROMETER DATA, GOSHUTE INDIAN RESERVATION

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
3000	3000	1	2.81	1.08	8.51	474	21.8	2.4	2.9	9.009
3000	3535	2	3.09	1.87	11.92	559	24.0	4.5	4.0	5.278
3000	4000	2	6.34	4.61	11.01	950	49.1	11.4	3.5	4.295
3000	4500	2	3.26	2.84	15.91	651	25.3	7.2	5.4	3.521
3000	5000	1	9.06	7.37	16.92	1364	70.2	18.5	5.4	3.795
3000	5500	1	4.44	3.29	11.38	756	34.4	8.2	3.8	4.206
3000	6000	1	5.28	5.65	11.83	959	40.9	14.5	3.8	2.819
3000	6280	2	5.10	6.02	13.25	972	39.5	15.6	4.3	2.539
3000	7000	1	3.34	2.75	11.71	661	25.9	6.9	3.9	3.745
3000	8000	1	3.58	2.66	12.58	672	27.8	6.6	4.2	4.194
3000	9000	1	3.90	4.08	11.47	765	30.2	10.5	3.8	2.889
3000	10000	1	4.44	4.38	11.42	845	34.4	11.2	3.7	3.077
3000	11000	2	7.53	8.39	14.24	1312	58.4	21.6	4.5	2.700
3000	12000	1	3.70	2.85	11.89	689	28.7	7.1	4.0	4.030
3000	13000	1	5.61	5.99	12.48	971	43.5	15.4	4.0	2.826
4000	3000	2	5.71	4.48	7.45	858	44.3	11.2	2.3	3.949
4000	3000	1	4.29	2.61	11.00	691	33.3	6.3	3.6	5.246
4000	4000	1	3.76	3.00	11.62	725	29.1	7.5	3.9	3.877
4000	4250	2	3.50	2.72	4.15	598	27.1	6.8	1.3	3.991
4000	5000	1	4.04	3.18	11.61	734	31.3	8.0	3.8	3.935
4000	5320	2	4.76	5.30	16.43	946	36.9	13.7	5.5	2.702
4000	6000	1	3.15	2.88	11.83	642	24.4	7.3	4.0	3.341
4000	6600	2	7.80	8.88	12.57	1300	60.5	22.9	3.9	2.639
4000	7000	1	3.93	3.60	12.00	759	30.5	9.1	4.0	3.334
4000	7500	2	5.45	5.70	15.00	1020	42.2	14.6	4.9	2.889
4000	8000	1	3.71	3.10	12.12	685	28.8	7.8	4.0	3.685
4000	8750	2	8.18	11.10	13.91	1516	63.4	29.0	4.3	2.190
4000	9000	2	4.32	3.50	12.46	789	33.5	8.8	4.1	3.812
4000	10000	1	4.14	3.47	12.71	771	32.1	8.7	4.2	3.673
4000	11000	1	4.17	3.65	11.25	771	32.3	9.2	3.7	3.503
4000	12000	1	4.02	3.64	11.68	748	31.2	9.2	3.9	3.376
4000	13000	1	4.10	3.77	10.56	729	31.8	9.6	3.5	3.320
4000	14000	2	8.38	10.30	8.95	1488	65.0	26.7	2.6	2.432
4000	15000	1	3.96	4.95	10.48	828	30.7	12.9	3.4	2.389
5000	3500	2	4.60	3.70	6.90	742	35.7	9.3	2.2	3.842
5000	4000	1	4.10	4.30	10.00	783	31.8	11.0	3.3	2.881
5000	4900	2	5.70	6.30	14.10	1037	44.2	16.2	4.6	2.723
5000	5000	1	4.20	4.20	4.30	788	32.6	10.7	1.3	3.032
5000	6000	1	3.70	3.30	13.10	708	28.7	8.4	4.4	3.432
5000	6900	2	4.90	4.40	15.00	878	38.0	11.1	5.0	3.407
5000	7000	1	5.80	6.20	12.60	1061	45.0	15.9	4.1	2.823
5000	8000	1	4.00	4.10	12.20	802	31.0	10.5	4.0	2.953
5000	9000	2	6.40	6.80	14.40	1118	49.6	17.5	4.7	2.841
5000	10000	1	4.00	3.40	13.10	735	31.0	8.6	4.4	3.617
5000	11000	1	4.30	4.40	11.00	808	33.3	11.3	3.6	2.958
5000	12000	1	4.10	3.90	11.40	774	31.8	9.9	3.8	3.201
5000	12500	2	5.50	6.20	8.30	1009	42.6	16.0	2.6	2.667
5000	12750	1	7.00	9.00	14.70	1290	54.3	23.4	4.7	2.318
5000	13000	2	7.80	10.70	15.50	1448	60.5	27.9	4.9	2.165
5000	13750	2	4.60	4.50	10.00	849	35.7	11.5	3.2	3.105

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
5000	14000	1	4.10	4.10	10.20	777	31.8	10.5	3.3	3.032
5000	15000	2	6.80	6.30	15.60	1134	52.7	16.0	5.1	3.293
6000	0	2	2.40	10.20	7.40	3738	18.6	27.6	2.2	0.674
6000	650	2	4.40	3.00	6.60	648	34.1	7.4	2.1	4.614
6000	700	2	5.80	5.20	6.00	885	45.0	13.2	1.8	3.413
6000	750	2	12.90	11.10	8.00	1747	100.0	28.0	2.1	3.569
6000	1000	1	3.20	2.30	9.30	556	24.8	5.7	3.1	4.351
6000	2000	1	3.90	2.40	9.30	628	30.2	5.8	3.1	5.179
6000	2750	2	4.90	3.80	5.90	744	38.0	9.5	1.8	4.000
6000	3000	2	6.60	6.40	11.90	106	51.2	16.3	3.8	3.135
6000	3000	1	4.50	4.10	11.30	773	34.9	10.4	3.7	3.353
6000	3750	2	3.10	2.40	15.40	638	24.0	6.0	5.2	4.007
6000	4000	1	4.20	4.50	10.50	790	32.6	11.6	3.4	2.816
6000	5000	1	4.30	3.70	12.00	772	33.3	9.3	4.0	3.569
6000	5500	2	7.50	9.70	15.10	1377	58.1	25.2	4.8	2.304
6000	6000	1	3.90	3.40	11.90	743	30.2	8.6	3.9	3.518
6000	6275	2	5.60	6.20	13.10	1011	43.4	16.0	4.2	2.718
6000	7000	1	4.70	4.60	11.30	829	36.4	11.7	3.7	3.103
6000	7600	2	7.40	8.40	14.60	1321	57.4	21.7	4.7	2.647
6000	8000	1	4.10	3.70	12.80	780	31.8	9.4	4.2	3.389
6000	9000	1	4.70	4.20	10.80	844	36.4	10.6	3.5	3.425
6000	9550	2	9.20	13.70	13.00	1702	71.3	35.9	3.9	1.986
6000	10000	1	4.10	4.70	12.00	808	31.8	12.1	3.9	2.619
6000	11000	2	5.80	6.90	12.90	1126	45.0	17.9	4.2	2.518
6000	11500	2	7.10	8.50	8.70	1239	55.0	22.0	2.6	2.501
6000	12000	1	3.40	2.50	12.20	641	26.4	6.2	4.1	4.242
6000	12750	1	4.10	2.10	12.20	662	31.8	5.0	4.1	6.393
6000	13000	1	3.50	2.10	12.00	598	27.1	5.1	4.0	5.329
6000	14000	1	3.60	2.30	12.60	636	27.9	5.6	4.2	4.964
6000	15000	1	3.40	1.80	12.20	594	26.4	4.3	4.1	6.152
6000	16000	1	3.90	3.70	11.90	712	30.2	9.4	3.9	3.210
7000	0	1	1.50	0.80	5.80	289	11.6	1.9	2.0	6.100
7000	250	2	14.30	11.80	7.10	1855	110.9	29.7	1.8	3.736
7000	1000	1	5.90	3.60	2.40	507	45.7	8.7	0.6	5.229
7000	2000	1	4.00	2.70	13.00	698	31.0	6.6	4.3	4.667
7000	2050	2	7.70	5.80	7.70	1054	59.7	14.5	2.3	4.131
7000	2850	2	7.00	7.00	14.60	1169	54.3	17.9	4.7	3.032
7000	3000	1	3.80	3.90	12.30	755	29.5	10.0	4.1	2.949
7000	3650	2	4.90	4.70	12.80	893	38.0	12.0	4.2	3.172
7000	4000	1	4.10	3.00	11.20	715	31.8	7.5	3.7	4.265
7000	4750	2	7.90	9.40	12.40	1333	61.2	24.3	3.9	2.517
7000	5000	1	4.60	3.50	11.40	777	35.7	8.7	3.8	4.085
7000	6000	1	4.80	5.50	10.30	889	37.2	14.2	3.3	2.620
7000	6500	1	4.30	4.50	11.50	815	33.3	11.5	3.8	2.888
7000	6800	2	8.90	14.20	11.00	1697	69.0	37.4	3.2	1.847
7000	7000	1	5.00	5.10	11.30	875	38.8	13.1	3.7	2.968
7000	8000	1	4.40	4.60	11.10	814	34.1	11.8	3.6	2.891
7000	9000	1	5.00	4.30	12.10	893	38.8	10.9	4.0	3.571
7000	9250	2	6.00	7.60	12.70	1119	46.5	19.7	4.1	2.355
7000	10000	1	5.30	5.30	13.10	957	41.1	13.5	4.3	3.032

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES (Cont.)

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
7000	10250	2	6.90	4.80	11.50	1179	53.5	11.9	3.7	4.512
7000	10950	2	5.30	4.40	14.30	913	41.1	11.1	4.7	3.711
7000	11000	1	4.70	3.70	12.50	802	36.4	9.3	4.1	3.934
7000	12000	1	3.50	2.60	12.00	635	27.1	6.5	4.0	4.195
7000	13000	1	3.60	2.10	13.40	642	27.9	5.1	4.5	5.503
7000	14000	1	5.30	7.40	13.70	1084	41.1	19.3	4.4	2.125
7000	15000	1	3.70	2.70	11.40	650	28.7	6.7	3.8	4.278
7000	16450	2	4.90	4.90	12.40	910	38.0	12.5	4.1	3.032
8280	275	2	2.50	1.00	7.80	392	19.4	2.3	2.6	8.579
8280	500	2	3.10	2.00	7.80	497	24.0	4.9	2.6	4.910
8280	1000	1	3.40	2.10	8.80	536	26.4	5.1	2.9	5.157
8280	1500	2	2.90	2.10	9.10	561	22.5	5.2	3.0	4.315
8280	2000	1	4.60	3.30	10.10	714	35.7	8.2	3.3	4.360
8280	2500	2	6.80	8.20	13.40	1223	52.7	21.2	4.3	2.482
8280	3000	1	4.00	3.30	10.00	740	31.0	8.3	3.3	3.737
8280	4000	2	5.80	5.80	13.00	1014	45.0	14.8	4.2	3.032
8280	4750	2	4.80	5.30	14.10	915	37.2	13.6	4.6	2.726
8280	5000	1	3.90	4.10	10.10	793	30.2	10.5	3.3	2.873
8280	5500	2	8.80	11.70	13.40	1605	68.2	30.5	4.1	2.238
8280	6000	2	6.00	7.50	11.90	1122	46.5	19.5	3.8	2.389
8280	6000	1	4.20	4.20	11.10	823	32.6	10.7	3.6	3.032
8280	7000	1	4.50	3.90	12.30	822	34.9	9.9	4.1	3.541
8280	8000	1	4.30	4.40	10.40	818	33.3	11.3	3.4	2.958
8280	9000	1	6.90	7.80	10.20	1181	53.5	20.1	3.2	2.659
8280	10000	1	4.60	3.90	10.90	787	35.7	9.8	3.6	3.627
8280	11000	1	9.60	4.10	11.00	812	74.4	9.4	3.5	7.925
8280	12000	1	4.00	4.00	12.00	791	31.0	10.2	4.0	3.032
8280	13000	1	4.40	4.40	11.80	822	34.1	11.2	3.9	3.032
8280	14000	1	3.80	3.10	10.70	688	29.5	7.8	3.5	3.783
8280	14500	2	3.40	3.30	14.60	681	26.4	8.4	4.9	3.132
8280	15000	1	3.90	2.60	11.90	657	30.2	6.4	4.0	4.732
10000	275	2	2.40	1.80	8.20	437	18.6	4.5	2.7	4.150
10000	800	2	2.50	1.90	7.10	423	19.4	4.7	2.4	4.090
10000	1000	1	2.60	1.50	9.50	472	20.2	3.6	3.2	5.573
10000	1250	2	4.90	3.80	7.10	753	38.0	9.5	2.2	4.000
10000	2000	1	4.50	3.10	10.90	731	34.9	7.6	3.6	4.562
10000	2100	2	3.80	3.00	13.30	696	29.5	7.5	4.4	3.922
10000	3000	2	5.30	6.10	14.40	1014	41.1	15.8	4.7	2.608
10000	4000	1	4.40	4.50	12.90	826	34.1	11.5	4.3	2.960
10000	5000	1	4.10	3.60	11.30	734	31.8	9.1	3.7	3.491
10000	6000	1	4.80	5.00	11.70	800	37.2	12.8	3.8	2.902
10000	6600	2	4.50	5.60	5.50	847	34.9	14.5	1.6	2.400
10000	6750	2	8.20	10.60	7.60	1482	63.6	27.6	2.1	2.305
10000	7000	1	5.90	6.80	11.90	1075	45.7	17.6	3.8	2.604
10000	8000	2	5.40	5.80	12.40	991	41.9	14.9	4.0	2.808
10000	9000	1	3.90	3.70	11.30	750	30.2	9.4	3.7	3.210
10000	9500	2	5.00	4.70	12.00	912	38.8	12.0	3.9	3.242
10000	10000	1	5.10	5.00	12.00	903	39.5	12.8	3.9	3.098
10000	10500	2	5.30	5.50	13.90	944	41.1	14.1	4.6	2.914
10000	11000	1	4.30	3.50	11.90	765	33.3	8.8	3.9	3.793

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES (Cont.)

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
10000	12000	1	4.60	3.20	12.90	763	35.7	7.9	4.3	4.512
10000	13000	2	5.20	5.80	13.90	981	40.3	14.9	4.5	2.697
10000	14000	2	4.60	2.60	10.50	705	35.7	6.3	3.5	5.705
10000	14250	2	4.20	3.10	14.10	751	32.6	7.7	4.7	4.225
10000	15000	1	3.90	3.00	11.50	685	30.2	7.5	3.8	4.036
12000	250	1	1.80	1.20	8.40	350	14.0	2.9	2.8	4.732
12000	550	2	3.30	2.00	7.50	516	25.6	4.9	2.5	5.269
12000	750	1	3.10	2.10	7.00	483	24.0	5.2	2.3	4.648
12000	1000	1	2.80	1.70	6.70	448	21.7	4.1	2.2	5.258
12000	1950	2	5.30	4.40	9.50	864	41.1	11.1	3.0	3.711
12000	2000	1	4.20	3.60	11.80	743	32.6	9.1	3.9	3.584
12000	2400	1	3.90	3.80	10.50	769	30.2	9.7	3.4	3.118
12000	3000	1	3.90	3.80	11.30	736	30.2	9.7	3.7	3.118
12000	3250	2	5.10	5.80	11.20	962	39.5	15.0	3.6	2.642
12000	3750	2	3.50	2.70	15.30	688	27.1	6.7	5.2	4.023
12000	4000	1	4.60	4.70	12.30	864	35.7	12.0	4.0	2.963
12000	5000	1	4.10	4.30	11.66	802	31.8	11.0	3.8	2.881
12000	5800	2	9.30	13.40	3.60	1624	72.1	35.1	0.6	2.056
12000	6000	2	4.80	4.60	11.30	865	37.2	11.7	3.7	3.175
12000	6300	2	6.50	7.90	11.70	1146	50.4	20.5	3.7	2.461
12000	7000	1	4.60	5.30	11.70	902	35.7	13.7	3.8	2.605
12000	7800	2	5.40	5.40	14.70	979	41.9	13.8	4.8	3.032
12000	8000	1	4.30	3.00	12.20	751	33.3	7.4	4.1	4.497
12000	9000	1	4.20	3.10	11.00	713	32.6	7.7	3.6	4.225
12000	9700	2	5.60	4.50	9.50	972	43.4	11.3	3.0	3.846
12000	10000	1	8.40	4.40	11.10	831	65.1	10.5	3.5	6.228
12000	10100	2	4.70	6.40	14.20	903	36.4	16.7	4.6	2.182
12000	11000	1	4.00	3.10	11.50	744	31.0	7.7	3.8	4.003
12000	12000	1	3.30	3.00	12.50	674	25.6	7.6	4.2	3.362
12000	12100	2	3.60	4.00	12.90	737	27.9	10.3	4.3	2.708
12000	12450	2	5.70	6.80	12.30	1048	44.2	17.6	3.9	2.510
12000	13000	1	3.20	3.20	12.70	657	24.8	8.2	4.3	3.032
12000	14000	1	3.00	3.00	12.00	629	23.3	7.7	4.0	3.032
12000	15000	1	4.00	3.80	11.90	752	31.0	9.7	3.9	3.205
14000	250	1	2.50	1.30	8.20	405	19.4	3.1	2.8	6.281
14000	1000	1	2.40	1.60	8.70	412	18.6	3.9	2.9	4.732
14000	1500	2	2.60	2.00	12.60	484	20.2	5.0	4.3	4.036
14000	2000	1	2.40	1.50	8.80	438	18.6	3.7	3.0	5.089
14000	2200	2	6.20	5.30	11.20	977	48.1	13.4	3.6	3.595
14000	3000	1	3.20	2.70	10.50	604	24.8	6.8	3.5	3.646
14000	3500	1	5.10	4.30	12.30	845	39.5	10.8	4.0	3.649
14000	4000	1	3.50	3.90	11.80	744	27.1	10.0	3.9	2.700
14000	4400	2	4.50	5.90	5.40	881	34.9	15.4	1.6	2.271
14000	5000	1	3.50	3.90	10.40	716	27.1	10.0	3.4	2.700
14000	5100	2	4.90	5.70	16.20	950	38.0	14.7	5.4	2.579
14000	6000	1	4.10	3.30	10.20	725	31.8	8.3	3.4	3.840
14000	6450	2	5.60	5.60	8.30	937	43.4	14.3	2.6	3.032
14000	7000	1	3.60	2.70	10.80	663	27.9	6.7	3.6	4.150
14000	7480	2	5.90	7.50	16.50	1130	45.7	19.5	5.4	2.347
14000	8000	1	3.90	3.60	11.50	738	30.2	9.1	3.8	3.306

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES (Cont.)

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
14000	9000	1	2.90	3.30	11.50	628	22.5	8.5	3.8	2.640
14000	10000	1	3.30	3.30	12.10	669	25.6	8.4	4.0	3.032
14000	10500	2	4.70	5.00	17.20	926	36.4	12.8	5.7	2.837
14000	10950	2	4.60	8.30	12.60	1045	35.7	22.0	4.0	1.624
14000	11000	1	3.60	3.60	11.50	727	27.9	9.2	3.8	3.032
14000	12000	1	3.70	4.00	12.50	781	28.7	10.3	4.1	2.789
14000	13000	1	3.80	4.00	11.20	746	29.5	10.3	3.7	2.870
14000	14000	1	3.50	3.80	12.40	733	27.1	9.8	4.1	2.776
14000	14475	2	5.20	5.60	15.10	1020	40.3	14.4	5.0	2.800
14000	15000	1	3.80	3.80	11.90	743	29.5	9.7	3.9	3.032
16000	2000	1	2.60	1.90	8.50	443	20.2	4.7	2.8	4.272
16000	2700	2	4.30	3.40	8.40	666	33.3	8.5	2.7	3.915
16000	3000	1	3.50	2.40	9.80	580	27.1	5.9	3.3	4.585
16000	3900	2	3.30	3.50	6.30	648	25.6	9.0	2.0	2.846
16000	4000	1	4.00	4.20	8.70	749	31.0	10.8	2.8	2.877
16000	4250	2	5.50	4.70	11.20	923	42.6	11.9	3.6	3.596
16000	5000	1	4.40	3.70	12.30	778	34.1	9.3	4.1	3.660
16000	5100	2	7.50	8.50	14.70	1338	58.1	21.9	4.7	2.651
16000	6000	2	5.30	4.90	12.10	888	41.1	12.4	3.9	3.301
16000	7000	1	3.10	3.70	10.10	750	24.0	9.6	3.3	2.509
16000	8000	1	4.40	4.30	11.00	778	34.1	11.0	3.6	3.108
16000	8300	2	4.90	7.00	12.30	1040	38.0	18.3	4.0	2.074
16000	9000	1	3.40	3.40	11.60	695	26.4	8.7	3.9	3.032
16000	9125	2	5.50	12.20	12.20	1398	42.6	32.5	3.8	1.311
16000	9600	2	3.50	3.90	12.70	750	27.1	10.0	4.2	2.700
16000	9630	1	4.50	7.30	13.40	1027	34.9	19.2	4.4	1.815
16000	9900	2	3.60	3.20	15.20	730	27.9	8.1	5.1	3.445
16000	10000	1	3.60	3.80	12.20	744	27.9	9.8	4.1	2.861
16000	10200	2	5.50	6.80	14.50	1061	42.6	17.6	4.7	2.417
16000	10300	2	7.50	12.40	13.20	1555	58.1	32.7	4.1	1.779
16000	11000	1	3.60	3.70	12.00	747	27.9	9.5	4.0	2.944
16000	11500	2	6.50	10.90	11.60	1408	50.4	28.7	3.6	1.753
16000	11850	2	4.50	9.30	11.90	1145	34.9	24.7	3.8	1.411
16000	12000	1	3.50	4.70	11.80	794	27.1	12.3	3.9	2.214
16000	13000	1	3.70	3.70	11.80	735	28.7	9.5	3.9	3.032
16000	14000	1	3.40	3.80	12.90	745	26.4	9.8	4.3	2.691
16000	14350	2	5.60	9.50	10.20	1246	43.4	25.1	3.1	1.732
16000	15000	1	6.30	7.90	9.70	1168	48.8	20.5	3.0	2.381
18000	3000	1	1.90	1.50	8.60	376	14.7	3.8	2.9	3.922
18000	4100	2	4.00	3.50	9.30	681	31.0	8.8	3.0	3.504
18000	4900	2	9.00	12.50	14.40	1711	69.8	32.7	4.4	2.137
18000	5000	1	3.80	3.40	10.40	692	29.5	8.6	3.4	3.420
18000	5250	2	7.60	9.30	11.70	1325	58.9	24.1	3.6	2.443
18000	6000	1	3.30	3.30	10.80	643	25.6	8.4	3.6	3.032
18000	7000	1	3.30	3.20	10.00	636	25.6	8.2	3.3	3.135
18000	7100	2	8.10	13.10	12.10	1684	62.8	34.5	3.6	1.821
18000	7600	1	3.80	4.30	14.30	762	29.5	11.1	4.8	2.656
18000	7970	2	7.70	14.90	10.20	1728	59.7	39.5	2.9	1.510
18000	8000	1	2.90	2.70	13.60	652	22.5	6.9	4.6	3.276
18000	8900	2	6.60	13.90	12.80	1536	51.2	37.0	3.9	1.383

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES (Cont.)

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
18000	9000	1	2.70	3.60	10.50	683	20.9	9.4	3.5	2.231
18000	10000	1	3.70	3.60	10.90	723	28.7	9.2	3.6	3.123
18000	10500	2	3.80	2.90	15.50	696	29.5	7.2	5.2	4.071
18000	11000	1	3.40	3.70	10.70	700	26.4	9.5	3.5	2.769
18000	12000	1	3.50	3.60	10.70	701	27.1	9.2	3.5	2.942
18000	12450	2	4.30	6.80	12.30	984	33.3	17.9	4.0	1.864
18000	13000	1	3.20	3.10	9.80	657	24.8	7.9	3.2	3.138
18000	14000	1	4.20	4.80	10.80	822	32.6	12.4	3.5	2.628
18000	14750	2	3.80	2.70	12.80	669	29.5	6.7	4.3	4.407
18000	15000	1	4.00	1.70	12.00	606	31.0	3.9	4.0	7.972
20000	3000	1	2.90	2.30	8.70	494	22.5	5.8	2.9	3.902
20000	4000	1	2.30	1.90	6.70	426	17.8	4.8	2.2	3.732
20000	4250	2	4.00	3.40	8.50	649	31.0	8.6	2.8	3.617
20000	4500	1	11.70	15.40	13.10	1962	90.7	40.1	3.8	2.262
20000	5000	1	5.00	4.30	9.90	811	38.8	10.9	3.2	3.571
20000	5300	2	7.80	9.20	15.80	1336	60.5	23.8	5.0	2.541
20000	5600	2	8.40	11.30	12.90	1512	65.1	29.5	4.0	2.210
20000	6000	1	3.50	3.00	12.50	666	27.1	7.6	4.2	3.584
20000	6750	2	4.00	2.80	16.90	709	31.0	6.9	5.7	4.481
20000	7000	1	3.40	3.10	12.80	665	26.4	7.9	4.3	3.351
20000	8000	1	3.40	3.50	11.40	660	26.4	9.0	3.8	2.939
20000	9000	1	3.50	3.30	11.80	646	27.1	8.4	3.9	3.231
20000	10000	1	3.50	2.60	11.50	609	27.1	6.5	3.8	4.195
20000	11000	1	3.50	1.90	12.20	588	27.1	4.5	4.1	5.976
20000	11500	2	5.80	10.70	12.40	1278	45.0	28.3	3.9	1.587
20000	12000	1	4.60	2.50	11.90	701	35.7	6.0	4.0	5.968
20000	12500	2	5.90	5.40	11.80	960	45.7	13.7	3.8	3.337
20000	13000	1	3.60	2.10	10.40	634	27.9	5.1	3.5	5.503
20000	13050	2	6.60	5.50	12.70	1048	51.2	13.8	4.1	3.696
20000	13750	2	3.80	3.80	14.50	941	29.5	9.7	4.8	3.032
20000	14000	1	3.10	1.80	15.60	587	24.0	4.3	5.3	5.532
20000	15000	1	5.30	2.40	11.80	744	41.1	5.6	3.9	7.389
22000	3000	1	2.50	1.70	8.60	429	19.4	4.2	2.9	4.628
22000	4000	1	5.10	4.20	8.50	756	39.5	10.6	2.7	3.744
22000	5000	1	4.60	4.00	11.50	756	35.7	10.1	3.8	3.528
22000	5100	2	6.80	13.20	13.20	1515	52.7	35.0	4.1	1.505
22000	6000	1	4.10	3.40	10.60	695	31.8	8.6	3.5	3.716
22000	7000	1	2.70	1.90	13.20	536	20.9	4.7	4.5	4.455
22000	8000	1	3.90	2.50	13.10	638	30.2	6.1	4.4	4.945
22000	9000	1	3.00	2.10	13.10	564	23.3	5.2	4.4	4.481
22000	10000	1	3.90	2.20	13.00	627	30.2	5.3	4.4	5.718
22000	11000	1	4.00	2.60	14.40	659	31.0	6.4	4.8	4.868
22000	12000	1	3.90	2.30	13.70	632	30.2	5.6	4.6	5.435
22000	12150	2	7.10	4.00	15.80	962	55.0	9.6	5.2	5.727
22000	13000	1	3.51	2.00	13.00	579	27.2	4.8	4.4	5.653
22000	14000	1	4.70	2.30	11.00	670	36.4	5.4	3.6	6.742
22000	15000	1	4.90	2.10	11.80	673	38.0	4.8	3.9	7.892
24000	3000	1	2.50	1.80	6.80	429	19.4	4.5	2.3	4.343
24000	4050	1	3.30	2.50	9.30	561	25.6	6.2	3.1	4.105
24000	5100	1	2.60	2.00	8.20	445	20.2	5.0	2.7	4.036

GOSHUTE INDIAN RESERVATION - ALL POPULATION SAMPLES (Cont.)

-X- ft	-Y- ft	Pop	CTS/SEC thorium	CTS/SEC uranium	CTS/SEC potassium	Gross counts	ET PPM	EU PPM	EK PCT	ET/EU RATIO
24000	6200	1	2.90	1.90	11.20	523	22.5	4.7	3.8	4.825
24000	7100	2	3.80	3.80	14.70	721	29.5	9.7	4.9	3.032
24000	8100	1	3.50	1.90	11.00	564	27.1	4.5	3.7	5.976
24000	9200	1	5.30	2.70	10.80	709	41.1	6.4	3.5	6.433
24000	10300	1	3.50	1.40	10.60	528	27.1	3.2	3.6	8.579
24000	11300	1	4.90	2.30	11.40	678	38.0	5.4	3.8	7.081
24000	12400	1	3.90	2.10	11.70	609	30.2	5.0	3.9	6.033
24000	13500	1	5.20	2.10	11.20	683	40.3	4.8	3.7	8.480
24000	14500	1	2.80	1.50	12.10	572	21.7	3.6	4.1	6.068
24000	15500	1	4.20	2.50	11.90	665	32.6	6.1	4.0	5.378
24000	16600	1	4.20	1.70	8.70	553	32.6	3.9	2.9	8.456
1000	3000	1	2.20	1.30	9.60	390	17.1	3.1	3.2	5.423
1000	4000	1	2.50	1.50	8.70	432	19.4	3.6	2.9	5.329
1000	4250	2	3.30	1.20	14.20	516	25.6	2.7	4.8	9.649
1000	5000	1	3.90	2.00	10.90	584	30.2	4.7	3.6	6.383
1000	5500	2	3.60	2.40	7.20	577	27.9	5.9	2.3	4.732
1000	6000	1	4.40	3.60	12.60	763	34.1	9.0	4.2	3.771
1000	6600	2	4.80	3.40	17.00	802	37.2	8.4	5.7	4.422
1000	7000	1	4.90	4.50	13.40	869	38.0	11.4	4.4	3.325
1000	7400	2	11.00	10.20	7.70	1552	85.3	25.9	2.1	3.290
1000	8000	1	4.70	3.30	12.10	771	36.4	8.2	4.0	4.466
1000	9000	2	4.10	3.30	13.10	737	31.8	8.3	4.4	3.840
1000	10000	1	3.90	2.90	12.50	706	30.2	7.2	4.2	4.190
1000	11000	1	4.00	3.20	12.80	732	31.0	8.0	4.3	3.865
1000	12000	1	4.20	3.40	12.50	746	32.6	8.5	4.1	3.815
1000	13000	1	4.60	3.50	11.90	756	35.7	8.7	3.9	4.085
2000	3000	1	2.20	1.10	9.00	376	17.1	2.6	3.0	6.575
2000	4000	1	3.80	2.00	9.70	578	29.5	4.8	3.2	6.194
2000	4100	2	3.00	1.60	12.90	524	23.3	3.8	4.4	6.100
2000	4950	2	6.10	4.40	7.90	876	47.3	10.9	2.5	4.334
2000	5000	1	4.70	3.70	11.00	797	36.4	9.3	3.6	3.934
2000	5300	2	11.20	10.80	17.20	1703	86.8	27.5	5.4	3.154
2000	6000	1	4.20	3.30	11.90	743	32.6	8.3	3.9	3.943
2000	7000	1	3.60	3.00	12.70	681	27.9	7.6	4.2	3.696
2000	7500	2	11.00	10.80	12.40	1746	85.3	27.6	3.7	3.093
2000	8000	1	3.40	3.00	13.50	680	26.4	7.6	4.5	3.473
2000	8500	2	5.60	5.20	13.20	957	43.4	13.2	4.3	3.285
2000	9000	1	4.10	2.60	13.60	733	31.8	6.3	4.6	5.006
2000	10000	1	4.00	3.60	12.20	745	31.0	9.1	4.0	3.398
2000	11000	1	4.70	3.80	12.20	801	36.4	9.5	4.0	3.821
2000	12000	1	4.30	3.40	12.50	755	33.3	8.5	4.1	3.915
2000	13000	1	3.80	3.80	12.60	759	29.5	9.7	4.2	3.032

Element	No. Samples	Mean	Var.	S.D.	Min.	Max
			Population 1			
eT	210	31.3	80.2	9.0	11.6	90.7
eU	210	8.7	16.5	4.1	1.9	40.1
eK	210	3.7	.4	.6	.6	5.4
			Population 2			
eT	130	44.1	264.1	16.3	18.6	110.9
eU	130	16.3	78.9	8.9	2.3	39.5
eK	130	3.8	1.2	1.1	.6	5.7
			Population 1 and 2			
eT	340	36.1	195.0	14.0	11.6	110.9
eU	340	11.5	57.0	7.5	1.9	40.1
eK	340	3.7	.6	.8	.6	5.7

Population 1 Anomalies

	Threshold	Mean + 1 S.D	Mean + 2 S.D.	Mean + 3 S.D.
eT	31.3	40.3	49.3	58.3
eU	8.7	12.8	16.9	20.0
eK	3.7	4.2	4.9	5.5

Population 2 Anomalies

	Threshold	Mean + 1 S.D	Mean + 2 S.D.	Mean + 3 S.D.
eT	44.1	60.4	76.7	93.0
eU	16.3	25.2	34.1	43.0
eK	3.8	4.9	6.0	7.1

	Threshold	Mean + 1 S.D	Mean + 2 S.D.	Mean + 3 S.D.
		Population 1 and 2 Anomalies		
eT	36.1	50.1	64.1	78.1
eU	11.5	19.0	26.4	33.0
eK	3.7	4.5	5.3	6.1

APPENDIX 9.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE JUMBO CLAIM GROUP AND THE 110 FOOT ADIT NORTH OF JUMBO CANYON, GOSHUTE INDIAN RESERVATION

	Plate 13					
	Sample Number					
Element	2	3	4	5	6	9
Ag	.06	.2	.07	<.001	.05	<.003
Al	.6	>2	.8	>4	.7	.7
As	<.03	<.01	<.02	<.03	<.009	<.02
Au	<.002	<.003	<.002	<.002	<.002	<.003
B	.009	.01	.01	<.006	.01	.01
Ba	.003	.003	<.002	.2	<.002	.009
Be	<.0001	.0003	<.0002	<.0001	<.0002	<.0001
Bi	<.03	<.02	<.02	<.03	<.02	<.04
Ca	<.05	<.05	<.05	3	<.05	.2
Cd	<.0005	<.0005	<.0005	<.0005	<.0005	<.0005
Co	.004	<.001	<.001	<.001	<.001	<.001
Cr	<.001	<.0008	<.002	<.0008	<.001	<.0008
Ci	.02	.005	.007	<.0006	.005	.003
Fe	5	3	4	3	4	4
Ga	<.0009	<.0002	<.0002	<.0002	<.0002	<.0005
K	<.6	<.6	<.6	<.6	<.7	<.6
La	<.01	<.01	<.01	<.01	<.01	<.01
Li	<.004	>.04	.02	.02	.007	<.002
Mg	.2	.1	.05	4	.03	.3
Mn	.02	.02	.03	.07	.03	.5
Mo	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Na	<.3	<.3	<.3	<.3	<.3	<.3
Nb	<.007	<.007	<.007	<.007	<.007	<.007
Ni	.001	.001	.002	<.0006	.002	.002
P	<.7	<.7	<.7	<.7	<.7	<.7
Pb	.8	.03	.02	<.002	.03	<.002
Pd	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Pt	<.0006	<.0006	<.0006	<.0006	<.0006	<.0006
Sb	<.06	<.06	<.06	<.06	<.06	<.06
Sc	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004
Si	>10	>10	>10	>10	>10	>10
Sn	.003	.002	.003	<.0008	.003	.005
Sr	<.0001	<.0001	<.0001	.003	<.0001	<.0001
Ta	<.02	<.02	<.02	<.02	<.02	<.02
Te	<.04	<.1	<.05	<.04	<.09	<.04
Ti	<.05	<.05	<.03	<.06	<.03	<.04
V	.03	<.01	<.009	<.006	<.005	<.01
Y	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009
Zn	.03	.004	.03	.04	.04	.002
Zr	.008	.003	<.003	<.003	<.003	.03

APPENDIX 9.--SPECTROGRAPHIC ANALYSES OF SELECT ROCK SAMPLES FROM THE JUMBO CLAIM GROUP AND THE 110 FOOT ADIT NORTH OF JUMBO CANYON, GOSHUTE INDIAN RESERVATION (cont.)

Figure 2

Element	Sample Number 1	2	3	4	5	6
Ag	<.002	<.003	.003	<.003	<.002	<.003
Al	10	10	.4	11	4	5
As	<.007	<.009	<.01	<.01	<.01	<.009
Au	<.001	<.002	.001	<.002	<.001	<.002
B	.01	.02	.01	<.02	.02	.02
Ba	.06	.03	<.002	.004	.01	.01
Be	<.001	<.001	<.001	<.001	<.001	<.001
Bi	<.06	<.08	<.06	<.08	<.06	<.08
Ca	.3	<.2	<.1	<.2	<.1	<.2
Cd	<.001	<.002	<.001	<.002	<.001	<.002
Co	<.001	<.001	<.001	<.001	<.001	<.001
Cr	.01	<.002	.003	<.002	.002	<.002
Cu	.05	.02	.03	<.001	.009	.004
Fe	10	12	4	2	4	6
Ga	<.001	<.001	<.001	<.001	<.001	<.001
K	<2	<3	<2	3	<2	<3
La	<.01	<.02	<.01	<.02	<.01	<.02
Li	<.001	<.002	<.002	<.002	<.001	<.002
Mg	.3	.8	.08	.2	.6	1
Mn	.03	.06	.04	.02	.05	.1
Mo	<.002	<.004	<.002	<.004	<.002	<.004
Na	<1	<2	<1	<2	<1	<2
Nb	<.002	<.003	<.002	<.006	<.002	<.003
Ni	.005	<.01	.004	.002	<.001	<.001
P	<.2	<.2	<.2	<.2	<.2	<.2
Pb	<.03	<.04	<.03	<.04	<.03	<.04
Pd	<.001	<.001	<.001	<.001	<.001	<.001
Pt	<.008	<.004	<.01	<.004	<.003	<.004
Sb	<.03	<.05	<.03	<.05	<.03	<.05
Sc	<.001	<.001	<.001	<.001	<.001	<.001
Si	>20	>20	>20	>20	>20	>20
Sn	<.004	<.007	<.004	<.007	<.004	<.007
Sr	.003	.003	<.007	<.007	<.004	<.007
Ta	<.03	<.05	<.001	<.001	<.001	<.001
Te	<.07	>1	<.03	<.05	<.03	<.05
Ti	1	<.3	<.1	<.2	<.1	<.1
V	.002	>12	<.2	<.3	<.2	1
Y	.01	.6	<.001	<.002	<.001	<.002
Zn	<.001	<.001	<.04	<.06	<.04	<.06
Zr	.07	>17	<.005	<.007	<.005	<.007

APPENDIX 9.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE JUMBO CLAIM GROUP AND THE 110 FOOT ADIT NORTH OF JUMBO CANYON, GOSHUTE INDIAN RESERVATION (cont.)

	Figure 2	
	Sample Number	
Element	7	8
Ag	<.003	<.002
Al	9	9
As	<.009	<.001
Au	<.02	<.01
B	.06	.01
Ba	<.001	<.001
Be	<.08	<.06
Bi	<.2	<.1
Ca	<.002	<.001
Cd	<.001	<.001
Co	<.002	<.001
Cr	<.001	<.001
Cu	4	1
Fe	<.001	<.001
Ga	<3	3
K	<.02	<.01
La	<.002	<.001
Li	2	.2
Mg	.07	.03
Mn	<.004	<.002
Mo	<2	<1
Na	<.003	<.005
Nb	.002	.001
Ni	<.2	<.2
P	<.04	<.03
Pb	<.001	<.001
Pd	<.004	<.003
Pt	<.05	<.03
Sb	<.001	<.001
Sc	<.007	<.004
Si	>20	>20
Sn	.004	.001
Sr	<.05	<.03
Ta	<.2	<.2
Te	.7	<.2
Ti	<.002	<.001
V	<.007	<.005
Y	<.001	<.001
Zn	<.001	<.001
Zr	<.003	<.002

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
1	Impure grayish-white, iron stained Eureka Quartzite	ND	Tr					See industrial minerals section plate 17, table 6 No. 5
2	4 ft. chip at face, limestone with calcite and limonite breccia	ND	0.1	0.003	0.007	0.01	X	
3	Iron stained 6 in. calcite vein 15 ft. from the portal	ND	.2	.09	1.0	.42	X	
4	Random stockpile of brown limonite from 140' incline	Tr	2.2	1.8	8.6	1.1	X	
5	do------------------------	Tr	1.1	1.8	4.8	.96	X	
6	Selected limestone from same dump th malachite and smithsonite	ND	.2	.72	.57	32.3	X	
7	18 in. limonite seam in small stope 40 ft. down decline	ND	.1	.33	1.3	.24		
8	24 in. limonite zone below sample 6	Tr	.4	.59	2.9	.56	X	
9	18 in. limonite seam 90 feet down decline	ND	ND	1.5	7.1	1.1	X	
10	Selected dump with abundant pyrolusite	ND	3.9	.04	.06	.16	X	Mn > 6 percent by spec.

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 9) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
11	Selected dump containing abundant limonite and malachite staining	ND	182.3	4.7	5.7	.54	X	Bromyrite identified by scanning electron microscope (SEM)1/
12	do------------------------	0.01	105.4	2.2	2.6	.53		
13	Random dump of 12 ft. shaft, rock is brown limestone breccia	Tr	2.7	.27	7.1	3.5	X	
14	Two ft. chip of fault breccia with limestone fragments	Tr	.1	.06	.69	.41	X	
15	One ft. chip abundant limonite in fault at bottom of shaft	Tr	.58	.57	3.6	.99	X	
16	Selected pyrolusite and limonite limestone breccia	Tr	1.1	.06	.80	.16	X	Manganese >1 percent spec.
17	Selected brown oxide coated limestone from dump	Tr	.2	.06	1.7	1.5	X	
18	10 in. chip irregular limonite seam in limestone	.04	71.6	.19	2.3	.07	X	
19	Selected limonite from 18	.02	141.2	.39	3.6	.10	X	Possible argentojarosite identified by SEM1/
20	30 in. chip through irregular limonite zone	Tr	16.9	.14	.48	.12		

1/ Scanning electron microscope determination by J. Sjoberg, Reno Research Center, U.S. Bureau of Mines

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
21	Selected limonite from 20	ND	20.6	0.57	2.9	0.14	X	
22	Selected pyrolusite rich limonite from 20	ND	7.8	.04	.24	.05	X	
23	24 in. chip in limonite and pyrolusite-rich seam	ND	5.6	.06	.20	.46	X	Manganese >4 percent (spec.)
24	2 in. chip in pyrolusite and brown calcite pod	ND	4.8	.04	.31	.05		Manganese 3.8 percent assay
25	Limonite and silicified limestone breccia, very irregular	Tr	1.2	.01	.03	.05	X	
26	Random chip rusty-red silicified outcrop	ND	.2	.006	<.006	.002		
27	Selected silicified limestone breccia with malachite and limonite	Tr	97.6	.57	1.6	.17	X	
28	do-------------------------	Tr	75.7	.40	1.7	.26	X	
29	do-------------------------	ND	66.8	.54	1.3	.20	X	SEM determined native silver, argentite, and galena with no measurable silver1/
30	3 in. irregular silicified vein in limestone	Tr	.1	.13	.97	.12	X	

1/ Scanning electron microscope determination by J. Sjoberg, Reno Research Center, U.S. Bureau of Mines

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
31	Random chip of limonitic and silicified limestone	Tr	33.5	0.13	1.2	0.12	X	
32	Two ft. limonite vein at portal	ND	0.1	.003	<0.006	.008	X	
33	0.5 in. remains of wider limonite vein in pit	Tr	.1	.003	.01	.006	X	
34	Selected limonitic limestone from dump	ND	ND	.003	<.006	.007	X	
35	dump	Tr	6.0	0	0	2.5		(Thomson 1973 p. 63)
36	One ft. chip limonitic limestone breccia 7 ft. from collar of shaft	ND	.2	.002	.006	.002		
37	Selected limonitic limestone from dump	Tr	.1	.003	<.006	.003		
38	Dump	Tr	12.5	0	2.0	0		(Thomson 1973 p. 63)
39	Selected limonitic limestone breccia from dump	0.02	ND	.005	<.003	.005	X	
40	Random chip silicified quartzite breccia	ND	.05	.01	.003	.03	X	
41	do------------------------	.01	3.1	.04	.21	.13		
42	Selected dump silicified limestone and quartzite breccia	.01	1.5	.02	.16	.04		

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
43	Random chip at face of silicified quartzite and chert breccia	ND	10.0	0.15	0.39	0.20	X	>5 percent manganese spec.
44	Pyrolusite-rich limestone from dump	ND	4.3	.36	1.0	.27	X	
45	Four ft. chip north side of portal in silicified quartzite zone with malachite	0.01	20.7	.34	2.0	.05	X	
46	Selected limonitic limestone from dump	Tr	1.7	.47	2.8	.39	X	
47	do----------------------------	.01	6.4	.69	5.3	.77	X	
48	Selected malachite from veins in limestone	ND	0.06	34.0	.54	7.3	X	
49	2 ft. chip limonite malachite veins in limestone	Tr	3.2	5.0	8.4	1.7	X	
50	Random dump of vesicular limestone	ND	.01	.02	.01	.02	X	
51	Random chip at face of adit on 1 in. limonite vein	Tr	Tr	.02	.21	.11	X	
52	Six ft. chip across adit face in limonitic limestone breccia	Tr	.7	.52	3.4	.70	X	

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
53	Selected dump of limonitic and geothitic rock with malachite staining	ND	0.2	1.1	5.6	1.8	X	
54	do-------------------------	Tr	1.2	0.82	4.8	1.1	X	
55	Selected dump of dark limonite and malachite vein material	Tr	1.7	.47	2.8	0.39	X	
56	Selected limonitic limestone breccia in trench	ND	ND	.003	<0.003	.005	X	
57	Very dense yellowish red silicified quartzite	ND	ND	.006	<.006	.008		
58	Limestone breccia in small stope	ND	ND	.003	<.006	.004		
59	1.2 ft. wide	0.01	10.0	3.0	0	0		(Thomson 1973 p. 63)
60	Selected limonitic limestone from dump	Tr	.01	.004	.01	.009	X	
61	Irregular limonitic pod in limestone breccia	ND	.2	.005	.04	.009	X	
62	Silicified stockwork in limonitic limestone breccia	ND	Tr	.008	.04	.01	X	

APPENDIX 10.--ANALYSES OF ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 14) (Cont.)

Sample No.	Description	Gold (oz/t)	Silver (oz/t)	Copper (percent)	Lead (percent)	Zinc (percent)	Spec. in Appendix 11	Other
63	Selected white calcareous dolomite	ND	ND	0.002	<0.006	0.002	X	1/
64	Selected chert and calcite breccia from stockpile	ND	4.6	.006	<.006	.002	X	
65	Selected hematite and limonite breccia from dump	0.05	1.0	.03	<.003	.004	X	
66	Random limestone from dump	ND	0.01	.008	.003	.003	X	
67	Two ft. chip across shear zone in limestone breccia	.01	ND	.001	<.003	Tr	X	
68	Random chip of red quartzite breccia	Tr	.2	.005	<.003	.001	X	
69	Silicified limestone and quartzite breccia float	.05	.5	.003	.003	.001	X	

1/ Petrology or SEM work by J. Sjoberg, USBM, Reno, Nevada.

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION

Plate 14

Element	Sample Number 2	3	4	5	6	8
Ag	0.006	0.006	<0.005	0.02	<0.003	<0.005
Al	.1	.1	2	.2	.3	3
As	<.02	.06	.2	.1	<.009	.1
Au	<.003	<.002	<.002	<.002	<.002	<.004
B	<.003	<.004	<.02	<.003	<.02	<.03
Ba	.003	<.002	<.004	.004	<.004	<.007
Be	<.0001	<.0001	<.001	<.0001	<.001	<.001
Bi	<.02	<.01	<.1	<.01	<.08	<.4
Ca	>10.	>10.	1	<.06	5	>20
Cd	<.0005	<.0005	<.002	<.0005	.05	<.004
Co	<.001	<.001	<.001	.008	<.001	<.003
Cr	<.0008	<.0008	<.002	<.0008	<.002	<.004
Cu	.0009	.09	4	4	1	1
Fe	.6	.5	>20	>10	.9	18
Ga	<.0002	<.0002	<.001	<.0009	<.001	<.002
K	<.6	<.6	<3	<.6	<3	<6
La	<.01	<.01	<.02	<.01	<.02	<.03
Li	<.002	<.002	<.003	<.002	<.004	<.006
Mg	4.	.3	.1	.03	.2	.5
Mn	.3	.7	.9	.3	.4	.4
Mo	<.0001	<.0001	<.004	<.0001	<.004	<.007
Na	<.3	<.3	<2	<.3	*	<4
Nb	<.05	<.007	<.003	<.007	<.003	<.005
Ni	.001	.0009	<.005	<.002	<.001	<.003
P	<.7	<.7	<.2	<.7	<.2	<.5
Pb	.03	3.	11	4	.3	4
Pd	<.0001	<.0001	<.001	<.0001	<.001	<.001
Pt	<.001	<.0006	<.004	<.001	<.004	<.008
Sb	<.06	<.06	<.3	<.2	<.05	<.1
Sc	<.0004	<.0004	<.001	<.0004	<.001	<.002
Si	.1	5.	7	3	5	9
Sn	<.002	<.0008	<.04	<.0008	<.007	<.01
Sr	<.0001	<.0001	<.001	<.0001	<.001	.002
Ta	<.02	<.02	<.2	<.02	<.05	<.1
Te	<.04	<.04	<.1	<.04	<.2	<.3
Ti	<.04	<.03	<.3	<.06	<.3	<.5
V	<.006	.04	.7	.1	<.002	.3
Y	<.0009	<.0009	<.06	<.0009	<.06	*
Zn	.006	.4	.3	.2	>20	.7
Zr	<.003	<.003	<.005	.01		<.005

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

	Sample Number					
Element	9	10	11	13	14	15
Ag	<0.005	<0.005	0.3	<0.003	<0.005	<0.005
Al	2	.4	.7	.5	.6	.6
As	.7	<.009	.3	.06	<.02	.08
Au	<.004	<.002	<.002	<.002	<.004	<.002
B	<.03	<.005	<.003	<.02	<.03	<.003
Ba	<.007	.2	.002	<.004	<.007	<.002
Be	<.001	<.0001	<.0001	<.001	<.001	<.0002
Bi	<.5	<.01	<.01	<.08	<.5	<.01
Ca	.7	3	5	5	>20	2
Cd	<.004	<.0005	<.003	.002	<.004	<.0005
Co	<.003	<.001	<.001	<.001	<.003	<.003
Cr	<.004	<.0008	<.0008	<.002	<.004	<.0008
Cu	4	.02	10	2	.1	.3
Fe	>20	2	6	>20	3	9
Ga	<.002	<.0002	<.0002	<.001	<.002	<.0002
K	<6	<.6	<.6	<3	<6	<.6
La	<.03	<.01	<.01	<.02	<.03	<.01
Li	<.007	<.002	<.002	<.003	<.007	<.002
Mg	.2	.1	.1	1	5	.6
Mn	.06	>6	.2	1	.7	.8
Mo	<.007	<.0001	<.0001	<.004	<.007	<.0001
Na	<4	<.3	<.3	*	<4	<.3
Nb	<.01	<.007	<.007	<.003	<.005	<.007
Ni	<.003	<.002	.002	<.003	<.003	<.002
P	<.5	<.7	<.7	<.2	<.5	<.7
Pb	6	.06	6	>20	.6	2
Pd	<.001	<.0001	<.0001	<.001	<.001	<.0001
Pt	<.008	<.0006	<.0006	<.004	<.008	<.0006
Sb	<.2	<.08	2	<.2	<.1	<.06
Sc	<.002	<.0004	<.0004	<.001	<.002	<.0004
Si	10	>10	>10	17	16	>10
Sn	<.03	<.0006	<.002	<.03	<.01	<.0009
Sr	.002	.02	<.0001	.002	<.001	<.0001
Ta	<.1	<.02	<.02	<.1	<.1	<.02
Te	<.2	<.04	<.04	<.1	<.3	<.04
Ti	<.5	<.03	<.07	<.3	<.5	<.05
V	.4	<.009	.02	.04	<.004	.2
Y	<.1	<.0009	<.0009	*	*	<.0009
Zn	.6	.2	.4	5	.4	.3
Zr	<.005	<.003	<.003	<.005	<.005	.006

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

	Sample Number					
Element	16	17	18	19	21	22
Ag	<0.004	0.007	0.5	>0.6	0.07	0.07
Al	.5	.2	1	.7	.8	.7
As	<.02	<.02	.3	.3	.2	<.02
Au	<.002	<.004	<.004	<.002	<.002	<.002
B	<.003	<.03	<.03	<.006	<.004	<.005
Ba	<.002	<.007	<.007	.008	.002	<.002
Be	<.0001	<.001	<.001	<.0001	<.0001	<.0001
Bi	<.01	<.4	<.5	<.03	<.01	<.01
Ca	>10	>20	.8	.2	.1	5
Cd	<.0005	.007	.02	<.002	<.0005	<.0005
Co	<.001	<.003	<.003	<.004	<.003	<.001
Cr	<.0008	<.004	<.004	<.0009	<.0008	<.0008
Cu	.06	.06	.2	.3	.3	.05
Fe	2	10	6	5	6	3
Ga	<.0002	<.002	<.002	<.0008	<.0004	<.0002
K	<.6	<6	<6	<.6	<.6	<.6
La	<.01	<.03	<.03	<.01	<.01	<.01
Li	<.002	<.006	<.007	<.003	<.003	<.004
Mg	<.7	6	.2	.03	.04	.04
Mn	>1	1	.1	.2	.08	.5
Mo	<.0001	<.007	<.007	<.001	<.0001	<.0001
Na	<.3	<4	<5	<.3	<.3	<.3
Nb	<.007	<.005	<.005	<.007	<.007	<.007
Ni	<.0007	.008	.006	<.0007	<.0007	<.0004
P	<.7	<.5	<.5	<.7	<.7	<.7
Pb	2	4	3		3	.4
Pd	<.0001	<.001	<.001	<.0001	<.0001	<.0001
Pt	<.0006	<.008	<.008	<.0006	<.0006	<.0006
Sb	<.06	<.1	2	5	<.06	<.06
Sc	<.0004	<.002	<.002	<.0004	<.0004	<.0004
Si	>10	13	>20	>10	>10	>10
Sn	<.0006	<.01	<.01	<.002	<.0009	<.0006
Sr	<.0001	<.001	.002	.0002	.0002	.0002
Ta	<.02	<.1	<.1	<.02	<.02	<.02
Te	<.04	<.3	<.3	<.04	<.04	<.04
Ti	<.03	<.5	<.5	.1	<.07	<.03
V	.05	<.004	.02	.07	.02	<.005
Y	<.0009	*	<.1	<.0009	<.0009	<.0009
Zn	.2	.9	.1	.1	.1	.1
Zr	<.003	<.005	<.005	.008	.007	<.003

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

Sample Number

Element	23	25	27	28	29	30
Ag	0.01	<0.003	0.3	0.3	0.3	0.5
Al	>3	2	.6	.9	.9	2
As	<.03	<.009	.06	.07	.07	.1
Au	<.002	<.002	<.001	<.001	<.002	<.004
B	<.003	<.02	<.01	<.01	.01	<.03
Ba	.04	<.004	<.002	<.002	<.002	<.007
Be	<.0001	<.001	<.001	<.001	<.0001	<.001
Bi	<.03	<.08	<.06	<.1	<.02	<.3
Ca	3	32	3	4	.6	7
Cd	<.001	<.002	.002	.004	<.009	.01
Co	<.001	<.001	<.001	<.001	<.001	<.003
Cr	<.0008	<.002	.003	<.001	<.0008	.009
Cu	.06	<.001	1	1	.8	.3
Fe	3	2	6	5	5	11
Ga	<.0002	<.001	<.001	<.001	<.0002	<.002
K	<.7	<3	3	<2	<.6	<6
La	<.01	<.02	<.01	<.01	<.01	<.03
Li	<.003	<.002	.003	.003	<.004	.007
Mg	.2	.5	.04	.1	.03	.1
Mn	>4	.2	.2	.2	.1	.4
Mo	<.0001	<.004	<.002	<.002	<.0001	.01
Na	<.3	<2	<1	<1	<.3	<4
Nb	<.007	<.003	<.002	<.002	<.007	<.005
Ni	<.001	<.001	<.001	.002	.001	.004
P	.7	<.2	<.2	<.2	<.7	<.5
Pb	.3	<.04	8	2	4	3
Pd	<.0001	<.001	<.001	<.001	<.0001	<.001
Pt	<.0006	<.004	<.003	<.003	<.0006	<.008
Sb	<.06	<.05	.6	.5	.8	1
Sc	<.0004	<.001	<.001	<.001	<.0004	<.002
Si	>10	32	>33	>20	>10	>20
Sn	<.0006	<.007	<.004	<.004	.002	<.01
Sr	.002	<.001	<.001	<.001	<.0001	.002
Ta	<.02	<.05	<.03	<.03	<.02	<.1
Te	<.04	<.1	<.07	<.09	<.08	<.3
Ti	<.03	<.3	.2	<.2	<.03	<.5
V	<.005	<.002	<.001	<.001	<.005	<.004
Y	<.0009	*	<.04	<.04	<.0009	<.1
Zn	.1	.004	.08	.3	.2	.3
Zr	<.003	<.003	<.002	<.002	<.003	<.005

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

Sample Number

Element	31	32	33	34	39	40
Ag	0.06	<0.005	<0.005	<0.002	0.01	0.006
Al	.4	5	2	9	>4	>3
As	.008	<.02	<.02	<.006	.08	<.03
Au	<.001	<.004	<.004	<.001	<.002	<.002
B	<.01	<.03	<.03	<.01	.01	<.007
Ba	<.002	.03	<.007	.02	.009	.007
Be	<.001	<.001	<.001	<.001	.0003	<.0001
Bi	<.1	<.2	<.5	<.06	<.07	<.03
Ca	5	11	>20	>20	.2	2
Cd	.002	<.004	<.004	<.001	<.0005	<.0005
Co	<.001	<.003	<.003	<.001	.005	<.003
Cr	.002	.007	<.004	.05	<.002	<.001
Cu	.05	<.001	<.001	<.001	.003	.008
Fe	2	4	5	6	10	4
Ga	<.001	<.002	<.002	<.001	<.001	<.0006
K	<2	<6	<6	<2	<.7	<.9
La	<.01	<.03	<.03	<.01	<.02	<.01
Li	<.002	<.005	<.007	<.001	.01	.01
Mg	.05	4	.5	4	.1	.2
Mn	.2	.07	.1	.09	<.002	.1
Mo	<.002	<.007	<.007	<.002	<.0001	<.0001
Na	<1	<4	<4	<1	<.3	<.3
Nb	<.002	<.005	<.005	<.002	<.01	<.007
Ni	.002	<.003	<.003	.01	<.001	.001
P	<.2	<.5	<.5	<.2	<.7	<.7
Pb	.6	<.09	<.09	<.03	<.002	<.006
Pd	<.001	<.001	<.001	<.001	<.0001	<.0001
Pt	<.003	<.008	<.008	<.003	<.0006	<.0006
Sb	.07	<.1	<.1	<.03	<.1	<.06
Sc	<.001	<.002	<.002	<.001	<.0007	<.0004
Si	>20	>20	13	>20	>10	>10
Sn	<.004	<.01	<.01	<.004	<.004	<.002
Sr	<.001	.006	.001	.005	.001	<.0001
Ta	<.03	<.1	<.1	<.03	<.02	<.02
Te	<.1	<.3	<.3	<.09	<.04	<.04
Ti	<.2	2	<.5	.4	.2	.1
V	<.001	<.004	<.004	<.001	.05	.02
Y	<.04	*	*	*	<.0009	<.0009
Zn	.07	<.001	<.001	.001	.004	.02
Zr	<.002	<.005	<.005	<.002	.01	.008

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

	Sample Number					
Element	43	44	45	46	47	48
Ag	0.2	0.02	0.1	0.05	0.02	0.01
Al	>7	.5	.9	.2	.4	.1
As	<.1	<.02	.1	.4	.3	.04
Au	<.002	<.002	<.002	<.002	<.002	<.002
B	.02	<.008	<.008	<.003	<.004	<.003
Ba	.05	.003	.005	.006	<.002	.004
Be	<.0002	<.0001	<.0001	<.0001	<.0001	<.0001
Bi	<.2	<.01	<.01	<.01	<.01	<.03
Ca	>10	9	.2	.4	.4	<.05
Cd	<.02	<.0007	<.0005	<.01	<.002	<.0005
Co	<.002	<.001	<.002	.01	<.003	.01
Cr	.007	<.0008	<.001	<.002	<.0008	<.0008
Cu	.4	.2	.3	1	.7	>10
Fe	7	3	5	10	10	.6
Ga	<.001	<.0002	<.0004	<.001	<.0003	<.001
K	<.9	<.6	<.6	<.6	<.6	<.6
La	<.01	<.01	<.01	<.01	<.01	<.01
Li	.01	<.002	<.003	<.002	<.002	<.002
Mg	2	.07	.06	.06	.04	.04
Mn	>5	>3	.1	.02	.02	.2
Mo	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Na	<.5	<.3	<.3	<.3	<.3	<10
Nb	<.01	<.007	<.007	<.007	<.007	<.007
Ni	<.002	<.0004	.001	<.001	<.0007	<.0006
P	<1	<.7	<.7	<.7	<.7	<.7
Pb	4	2	5	5	4	3
Pd	<.0002	<.0001	<.0001	<.0001	<.0001	<.0001
Pt	<.0008	<.0006	<.0006	<.0006	<.0006	<.0006
Sb	<.1	<.06	1	2	2	<.06
Sc	<.0006	<.0004	<.0004	<.0004	<.0004	<.0004
Si	>10	>10	>10	>10	>10	3
Sn	<.003	<.0006	<.001	<.0009	<.001	<.0008
Sr	.001	.001	.0006	<.0001	<.0001	<.0001
Ta	<.02	<.02	<.02	<.02	<.02	<.02
Te	<.06	<.04	<.04	<.04	<.04	<.04
Ti	.2	<.03	<.06	.08	<.03	<.07
V	.03	<.005	.02	.04	.02	.04
Y	<.001	<.0009	<.0009	<.0009	<.0009	<.0009
Zn	.5	.3	.05	.3	.3	.7
Zr	<.004	<.003	.005	.01	.006	.01

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

	Sample Number					
Element	49	50	51	52	53	54
Ag	0.01	<0.001	<0.002	<0.005	0.01	0.01
Al	.2	.7	.4	.7	.6	.2
As	.1	<.01	<.006	.1	.6	.5
Au	<.002	<.002	<.001	<.004	<.004	<.002
B	<.003	<.003	<.01	<.03	<.03	<.003
Ba	<.002	<.002	<.002	<.007	<.007	.003
Be	<.0001	<.0001	<.001	<.001	<.001	<.0001
Bi	<.03	<.01	<.08	<.5	<.5	<.01
Ca	5	10	10	>20	.9	.4
Cd	<.0005	<.0005	<.001	<.004	.008	<.0005
Co	<.001	<.001	<.001	<.003	<.003	.007
Cr	<.0008	<.0008	<.001	<.004	<.004	<.0008
Cu	10	.003	.007	.9	2	.7
Fe	3	1	1	13	>20	>10
Ga	<.0002	<.0002	<.001	<.002	<.002	<.0007
K	<.6	<.6	<2	<6	<6	<.6
La	<.01	<.01	<.01	<.03	<.03	<.01
Li	<.002	<.002	<.002	<.007	<.008	<.002
Mg	.2	2	2	.3	.05	.03
Mn	.6	.7	.08	.6	.04	<.007
Mo	<.0001	<.0001	<.002	<.007	<.007	<.0001
Na	<.3	<.3	<1	<4	<4	<.3
Nb	<.007	<.007	<.002	<.005	<.005	<.007
Ni	<.0004	<.0004	<.001	<.003	.008	<.002
P	<.7	<.7	<.2	<.5	<.5	<.7
Pb	7	<.002	<.03	2	8	3
Pd	<.0001	<.0001	<.001	<.001	<.001	<.0001
Pt	<.0006	<.0006	<.003	<.008	<.008	<.0006
Sb	.4	<.06	<.03	.5	.5	<.2
Sc	<.0004	<.0004	<.001	<.002	<.002	<.0004
Si	>10	>10	2	4	3	3
Sn	<.0006	<.0006	<.004	<.01	.08	<.002
Sr	<.0001	<.0001	<.001	<.001	<.001	<.0001
Ta	<.02	<.02	<.03	<.1	<.1	<.02
Te	<.04	<.04	<.1	<.3	<.2	<.04
Ti	<.03	<.03	<.2	<.5	<.5	<.04
V	<.01	<.005	<.001	.3	.03	.04
Y	<.0009	<.0009	*	*	<.1	<.0009
Zn	.7	.01	.01	.6	.7	.2
Zr	<.003	<.003	<.002	<.005	<.005	.01

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

Element	Sample Number 55	56	60	61	62	63
Ag	0.01	0.01	<0.002	<0.005	<0.005	<0.004
Al	.4	>2	>3	2	.8	.06
As	<.03	.4	.2	<.02	<.02	<.02
Au	<.002	<.002	<.002	<.004	<.004	<.002
B	<.005	.01	<.008	<.03	<.03	<.003
Ba	<.002	.005	<.002	<.007	<.007	<.002
Be	<.0001	<.0002	<.0001	<.001	<.001	<.0001
Bi	<.01	<.1	<.03	<.5	<.5	<.01
Ca	3	.2	.7	>20	>20	>10
Cd	<.002	<.0005	<.0006	<.004	<.004	<.0005
Co	<.001	.004	<.001	<.003	<.003	<.001
Cr	<.0008	<.0008	<.0008	<.004	<.004	<.0008
Cu	.3	.001	.002	.008	.007	<.0006
Fe	5	10	6	2	2	.03
Ga	<.0002	<.0006	<.0002	<.002	<.002	<.0002
K	<.6	<.6	<.6	<6	<6	<.6
La	<.01	<.01	<.01	<.03	<.03	<.01
Li	<.002	<.002	<.002	<.007	<.007	<.002
Mg	.2	.1	.2	1	1	>9
Mn	.1	.01	.02	.1	.1	.004
Mo	<.0001	<.0001	<.0001	<.007	<.007	<.0001
Na	<.3	<.3	<.3	<4	<4	<.3
Nb	<.007	<.007	<.007	<.005	<.005	<.02
Ni	.0009	<.001	.002	<.003	<.003	<.0006
P	<.7	<.7	<.7	<.5	<.5	<.7
Pb	3	<.003	<.006	<.09	<.09	<.002
Pd	<.0001	<.0001	<.0001	<.001	<.001	<.0001
Pt	<.0006	<.0006	<.0006	<.008	<.008	<.0006
Sb	.3	<.1	<.06	<.1	<.1	<.06
Sc	<.0004	<.0004	<.0004	<.002	<.002	<.0004
Si	>10	>10	>10	7	5	.5
Sn	<.0006	<.002	<.001	<.01	<.01	<.0006
Sr	<.0001	<.0001	.002	<.001	<.001	<.0001
Ta	<.02	<.02	<.02	<.1	<.1	<.02
Te	<.04	<.04	<.04	<.3	<.3	<.04
Ti	<.03	<.06	<.05	<.5	<.5	<.03
V	<.006	.02	<.005	<.004	<.004	<.007
Y	<.0009	<.0009	<.0009	*	*	<.0009
Zn	.3	.006	.007	<.001	<.001	<.0001
Zr	<.003	.007	<.003	<.005	<.005	<.003

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Plate 14

Element	Sample Number					
	64	65	66	67	68	69
Ag	0.007	0.01	<0.0007	<0.002	0.008	0.006
Al	.5	.05	.7	>2	.9	.4
As	<.009	.03	<.03	<.01	.05	.4
Au	<.002	<.002	<.002	<.002	<.003	<.002
B	<.005	<.004	.01	<.005	.01	<.004
Ba	<.002	.006	<.002	.05	.004	.003
Be	<.0001	<.0001	<.0001	<.0001	<.0001	.0004
Bi	<.01	<.01	<.02	<.01	<.04	<.01
Ca	6	5	5	>10	10	4
Cd	<.0005	<.0005	<.0005	<.0005	<.0005	<.04
Co	<.001	.006	<.001	<.001	<.001	.004
Cr	<.0008	<.001	<.0008	<.0008	.003	<.0008
Cu	.0006	.009	.002	<.0006	.002	.001
Fe	3	7	3	2	4	6
Ga	<.0002	<.0002	<.0002	<.0002	<.0002	<.0002
K	<.6	<.6	<.6	<.6	<.6	<.6
La	<.01	<.01	<.01	<.01	<.01	<.01
Li	.005	<.002	<.002	<.002	<.003	.02
Mg	.6	.4	.05	1	.07	.06
Mn	.08	.06	.03	.03	.07	.04
Mo	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Na	<.3	<.3	<.3	<.3	<.3	<.3
Nb	<.007	<.007	<.007	<.007	<.007	<.007
Ni	.001	.004	.001	.001	.003	.003
P	<.7	<.7	<.7	<.7	<.7	<.7
Pb	<.002	<.002	<.002	<.003	<.004	<.002
Pd	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
Pt	<.0006	<.0006	<.0006	<.0006	<.0006	<.0006
Sb	<.06	<.07	<.06	<.06	<.06	<.06
Sc	<.0004	<.0004	<.0004	<.0004	<.0004	<.0004
Si	>10	>10	>10	>10	>10	>10
Sn	<.0009	<.004	<.0008	<.0009	.003	.005
Sr	<.0001	<.0001	<.0001	.0003	<.0001	<.0001
Ta	<.02	<.02	<.02	<.02	<.02	<.02
Te	<.04	<.04	<.04	<.04	<.04	<.04
Ti	<.03	.1	<.03	<.05	<.07	<.04
V	<.005	.02	<.005	<.005	<.005	.02
Y	<.0009	<.0009	<.0009	<.0009	<.0009	<.0009
Zn	.002	<.0005	.002	<.0001	<.0006	.001
Zr	<.003	.004	<.003	<.003	<.003	.006

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Figure 3

Sample Number

Element	2	5
Ag	0.005	0.2
Al	2	1
As	<.02	<.009
Au	<.004	<.002
B	<.03	<.02
Ba	.05	.1
Be	<.001	<.001
Bi	<.5	<.08
Ca	>20	27
Cd	<.004	<.002
Cd	<.003	<.001
Cr	<.004	<.002
Cu	<.001	<.001
Fe	1	3
Ga	<.002	<.001
K	<6	<3
La	<.03	<.02
Li	<.006	<.002
Mg	.5	.6
Mn	7	15
Mo	<.007	<.004
Na	<4	<2
Nb	<.005	<.003
Ni	<.003	<.001
P	<.5	<.2
Pb	<.09	.3
Pd	<.001	<.001
Pt	<.008	<.004
Sb	<.1	<.05
Sc	<.002	<.001
Si	13	>40
Sn	<.01	<.007
Sr	.01	.02
Ta	<.1	<.05
Te	<.3	<.1
Ti	<.5	<.3
V	<.004	<.002
Y	<.01	<.007
Zn	.3	.5
Zr	<.005	<.003

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Figure 6

Element	Sample Number						
	1	2	3	4	5	6	7
Ag	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01
Al	2	.2	3	1	4	2	1
As	<.02	<.02	<.02	<.02	<.02	<.02	<.02
Au	<.004	<.004	<.004	<.004	<.004	<.004	<.004
B	<.03	<.03	<.03	<.03	<.03	<.03	<.03
Ba	<.007	<.007	<.007	<.007	<.007	<.007	<.007
Be	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Bi	<.5	<.5	<.4	<.4	<.5	<.5	<.5
Ca	>20	13	>20	>20	>20	>20	>20
Cd	<.004	<.004	<.004	<.004	<.004	<.004	<.004
Cd	<.003	<.003	<.003	<.003	<.003	<.003	<.003
Cr	<.004	<.004	<.004	<.004	<.004	<.004	<.004
Cu	<.001	<.001	<.001	<.001	.006	<.001	.02
Fe	1	.3	3	.7	3	.6	.9
Ga	<.002	<.002	<.002	<.002	<.002	<.002	<.002
K	<6	<6	<6	<6	<6	<6	<6
La	<.03	<.03	<.03	<.03	<.03	<.03	<.03
Li	<.007	<.008	<.006	<.007	<.005	<.007	<.007
Mg	.08	.03	.6	.3	.6	.5	.2
Mn	.1	.04	.2	.1	.3	.3	.8
Md	<.007	<.007	<.007	<.007	<.007	<.007	<.007
Na	<4	<5	<4	<4	<4	<4	<4
Nb	<.005	<.005	<.005	<.005	<.005	<.005	<.005
Ni	<.003	<.003	<.003	<.003	<.003	<.003	<.003
P	<.5	<.5	<.5	<.5	<.5	<.5	<.5
Pb	<.09	<.09	<.09	<.09	<.09	<.09	<.09
Pd	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Pt	<.008	<.008	<.008	<.008	<.008	<.008	<.008
Sb	<.1	<.1	<.1	<.1	<.1	<.1	<.1
Sc	<.003	<.002	<.002	<.002	<.002	<.002	<.002
Si	5	.9	>20	4	>20	5	10
Sn	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Sr	.01	.001	.01	.008	.008	.01	.007
Ta	<.1	<.1	<.1	<.1	<.1	<.1	<.1
Te	<.3	<.3	<.3	<.3	<.3	<.3	<.3
Ti	<.5	<.5	<.5	<.5	<.5	<.5	<.5
V	<.004	<.004	<.004	<.004	<.004	<.004	<.004
Y	<.01	<.01	<.01	<.01	<.01	<.01	<.01
Zn	<.001	<.001	<.001	<.001	.006	.02	.1
Zr	<.005	<.005	<.005	<.005	<.055	<.005	<.005

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

Figure 7

Element	Sample Number 2	3	5	8
Ag	<.002	<.002	<.002	<.002
Al	>3	>3	>3	>4
As	<.01	<.009	.2	.04
Au	<.002	<.002	<.002	<.002
B	<.005	<.003	<.003	<.003
Ba	.003	<.002	.008	<.002
Be	<.0001	<.0001	<.0001	<.0001
Bi	<.01	<.02	<.02	<.01
Ca	10	10	10	>10
Cd	<.0005	<.0005	<.0006	<.0005
Cd	<.002	<.001	<.001	<.001
Cr	<.002	<.0008	<.002	<.0009
Cu	<.0006	<.0006	.002	<.006
Fe	1	1	5	2
Ga	<.0002	<.0002	<.0002	<.0002
K	<.6	<.6	<.6	<.6
La	<.01	<.01	<.02	<.01
Li	<.002	<.002	.005	<.002
Mg	.7	.9	.6	.8
Mn	.03	.05	.4	.1
Mo	<.0001	<.0001	<.0001	<.0001
Na	<.3	<.3	<.3	<.3
Nb	<.01	<.007	<.007	<.007
Ni	.0009	<.0006	.002	.0008
P	<.7	<.7	<.7	<.7
Pb	<.002	<.002	<.002	<.002
Pd	<.0001	<.0001	<.0001	<.0001
Pt	<.0006	<.0006	<.0008	<.0006
Sb	<.06	<.06	<.06	<.06
Sc	<.0004	<.0004	<.0004	<.0004
Si	>10	>10	>10	>10
Sn	<.0006	<.0006	<.0006	<.0006
Sr	.003	.001	.001	.01
Ta	<.02	<.02	<.02	<.02
Te	<.04	<.04	<.04	<.04
Ti	.09	<.07	.2	.08
V	.01	<.005	.03	<.005
Y	<.0009	<.0009	<.0009	<.0009
Zn	<.0006	.004	.005	.001
Zr	.005	<.003	.007	<.0003

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

	Figure 8	Figure 9		Figure 10	
	Sample Number			Sample Number	
Element	2	1	2	1	2
Ag	0.02	<0.003	0.02	<0.003	<0.003
Al	>3	.9	.4	.7	>4
As	.04	.1	.2	<.01	<.009
Au	<.002	<.002	<.002	<.002	<.002
B	<.003	<.007	<.007	<.003	<.007
Ba	.02	<.002	<.002	.003	.02
Be	<.0001	<.0001	<.0001	<.0001	<.0001
Bi	<.01	<.01	<.06	<.01	<.02
Ca	>10	2	<.05	>10	10
Cd	<.0005	<.003	<.0005	<.0005	<.0005
Co	<.001	<.001	<.002	<.001	.004
Cr	<.001	<.0008	<.0008	<.002	<.002
Cu	.06	.3	.7	<.0006	<.0006
Fe	3	6	9	.4	2
Ga	<.0002	<.0002	<.0004	<.0003	<.001
K	<.6	<.6	<.6	<.6	<.6
La	<.01	<.01	<.01	<.01	<.02
Li	<.002	<.002	<.002	<.002	.006
Mg	.6	.1	.03	.5	1
Mn	>3	.4	.04	.05	.04
Mo	<.0001	<.0001	<.0001	<.0001	<.0001
Na	<.3	<.3	<.3	<.3	<.3
Nb	<.007	<.007	<.007	<.007	<.04
Ni	<.0006	.001	<.002	.001	.002
P	<.7	<.7	<.7	<.7	<.7
Pb	1	3	8	<.002	<.002
Pd	<.0001	<.0001	<.0001	<.0001	<.0001
Pt	<.0006	<.0006	<.0006	<.0009	<.0007
Sb	<.06	.08	.7	<.06	<.06
Sc	<.0004	<.0004	<.0004	<.0004	<.0004
Si	4	>10	>10	3	>10
Sn	<.0009	<.002	<.004	<.0006	<.001
Sr	.001	<.0001	<.0001	.004	.007
Ta	<.02	<.02	<.02	<.02	<.02
Te	<.04	<.04	<.04	<.04	<.04
Ti	.1	<.03	<.04	.08	.2
V	<.01	.04	.06	.02	.03
Y	<.0009	<.0009	<.0009	<.0009	<.0009
Zn	.1	.4	.4	.001	.002
Zr	<.003	<.003	.007	.004	.01

APPENDIX 11.--SPECTROGRAPHIC ANALYSES OF SELECTED ROCK SAMPLES FROM THE PATENTED CLAIM GROUP AND VICINITY, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (Cont.)

	Figure 11			Figure 12	
	Sample Number			Sample Number	
Element	1	4	5	1	2
AG	<0.002	0.006	<0.002	<0.002	0.04
AL	.9	>3	>4	.6	.3
AS	.1	<.06	<.02	<.01	.4
AU	<.002	<.002	<.002	<.002	<.002
B	<.005	.02	<.005	<.003	<.003
BA	.01	.006	.006	<.002	<.002
BE	<.0001	<.0002	<.0001	<.0001	<.0001
BI	<.01	<.06	<.02	<.01	<.01
CA	.5	.5	>10	>10	<.05
CD	<.0005	<.0006	<.0007	<.0005	<.03
CO	.008	<.002	<.002	<.001	.005
CR	<.002	<.001	<.002	<.0008	<.0008
CU	.001	.002	<.0009	.0006	4
FE	7	5	3	.7	>10
GA	.002	<.0007	<.0003	<.0002	<.0004
K	<.6	<.6	<.9	<.6	<.6
LA	.06	<.01	<.01	<.01	<.01
LI	.02	.02	<.002	<.002	<.002
MG	.03	.01	.7	.4	.04
MN	.01	.02	.4	.1	.07
MO	<.0002	<.0001	<.0001	<.0001	<.0001
NA	<.3	<.3	<.5	<.3	<.3
NB	.04	<.008	<.01	<.007	<.007
NI	.002	.002	.002	<.0005	<.002
P	<.7	<.7	<1	<.7	<.7
PB	<.004	<.002	<.002	.009	5
PD	<.0001	<.0001	<.0002	<.0001	<.0001
PT	<.0006	<.0006	<.0008	<.0006	<.0006
SB	<.06	<.06	<.1	<.06	1
SC	.003	<.0004	<.0006	<.0004	<.0004
SI	>10	<10	>10	4	2
SN	<.001	<.003	<.0009	<.0006	<.002
SR	.001	.001	.0006	.004	<.0001
TA	<.02	<.02	<.02	<.02	<.02
TE	<.04	<.1	<.06	<.04	<.04
TI	.2	.1	<.08	<.03	<.05
V	.05	.02	<.02	<.005	.04
Y	<.0009	<.0009	<.001	<.0009	<.0009
ZN	.005	.004	.002	.008	.2
ZR	.02	.01	.007	<.003	.009

APPENDIX 12.--METAL VALUES IN SOIL ALONG THE NORTH END OF THE PATENTED CLAIM GROUP, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 15)

Sample	Values in ppm					
No.	Gold	Silver	Copper	Lead	Zinc	Comments
	all values					
1	<0.03	<0.03	20	<30	87	
2		.03	20	<30	80	
3		.17	20	<30	87	
4		.11	14	<30	78	
5		.18	17	<30	140	
6		.72	19	<30	81	
7		.77	19	<30	79	
8		.88	19	<30	84	
9		1.2	17	30	83	
10		.68	17	<30	86	
10A		.43	16	<30	80	Check of sample No. 10
11		.58	13	<30	57	
12		.51	13	<30	63	
13		.37	11	<30	50	
14		.42	13	40	52	
15		.63	19	30	83	
16		.68	19	<30	81	
17		1.6	22	<30	100	
18		.35	11	<30	32	
19		.75	19	<30	74	
20		.78	19	<30	75	
20A		.47	18	<30	80	Check of sample No. 20
21		1.0	20	<30	72	
22		1.3	25	<30	100	
23		1.4	25	<30	92	
24		1.0	23	<30	84	
25		1.1	23	<30	89	
26		1.2	20	<30	77	
27		.92	19	<30	79	
28		.97	16	<30	75	
29		.99	19	<30	85	
30		1.4	22	<30	92	
30A		.40	19	<30	83	
31		2.6	25	40	100	
32		2.4	31	60	110	
33		2.4	55	40	83	
34		2.1	25	40	96	
35		1.1	19	<30	83	
36		.85	17	<30	70	
37		.91	19	30	140	
38		1.8	22	40	86	

APPENDIX 12.--METAL VALUES IN SOIL ALONG THE NORTH END OF THE PATENTED CLAIM GROUP, WEST SIDE OF JOHNSON CANYON, GOSHUTE INDIAN RESERVATION (see plate 15) (Cont.)

Sample No.	Values in ppm Gold	Silver	Copper	Lead	Zinc	Comments
39	all values <0.03	0.64	23	50	110	
40		.57	28	60	170	
40A		.40	27	50	180	Check of Sample No. 40
41		.64	31	80	230	
42		.75	28	70	240	
43		.84	32	100	240	
44		1.2	50	28	270	
45		.91	30	100	180	
46		.82	33	100	150	
47		.83	34	110	180	
48		.78	31	100	160	
49		1.1	31	90	155	

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Sample No.	Description	Au oz/ton	Ag oz/ton
1	Vuggy quartzite vein, 16 in. chip	0.11	0.4
2	Alaskite with limonite stringers, 3 ft. chip	Tracé	.1
3	Vuggy quartzite vein, 2 ft. chip	.15	.4
4	Vuggy quartzite on fault, 16 ft. chip	.02	.1
5	Mineralized quartzite, 3 ft. chip	.10	.2
6	Quartz vein, 3.5 ft. chip	.23	.3
7	Limonitic brecciated quartzite, 2 ft. chip	Trace	.1
8	4 ft. chip	.16	.3
9	Bridge across vein in back, 6 ft. chip	.07	.3
10	Vein with limonite, 3.5 ft. chip	.50	1.0
11	6 in. vein and 6 in. footwall, chip	.08	.2
12	2 ft. of vein, chip	.36	.9
13	Vein, 2 ft. chip	.04	.2
14	1.8 ft. vein and 1.3 ft. footwall	.01	.3
15	5.5 ft. chip	.20	.3
16	Selected alaskite with limonite veinlets, chip	.01	.3
17	5.8 ft. chip	.39	1.0
18	4 ft. chip	1.33	1.3
19	Secondary vein, chip	1.63	3.8

Workings After R.J. Bryant, 1932
Geology by Thomson 1973 P. 68

PLATE 11

(copy 1 of 2)

White Pine Co. - general
Item 64

0170 0054

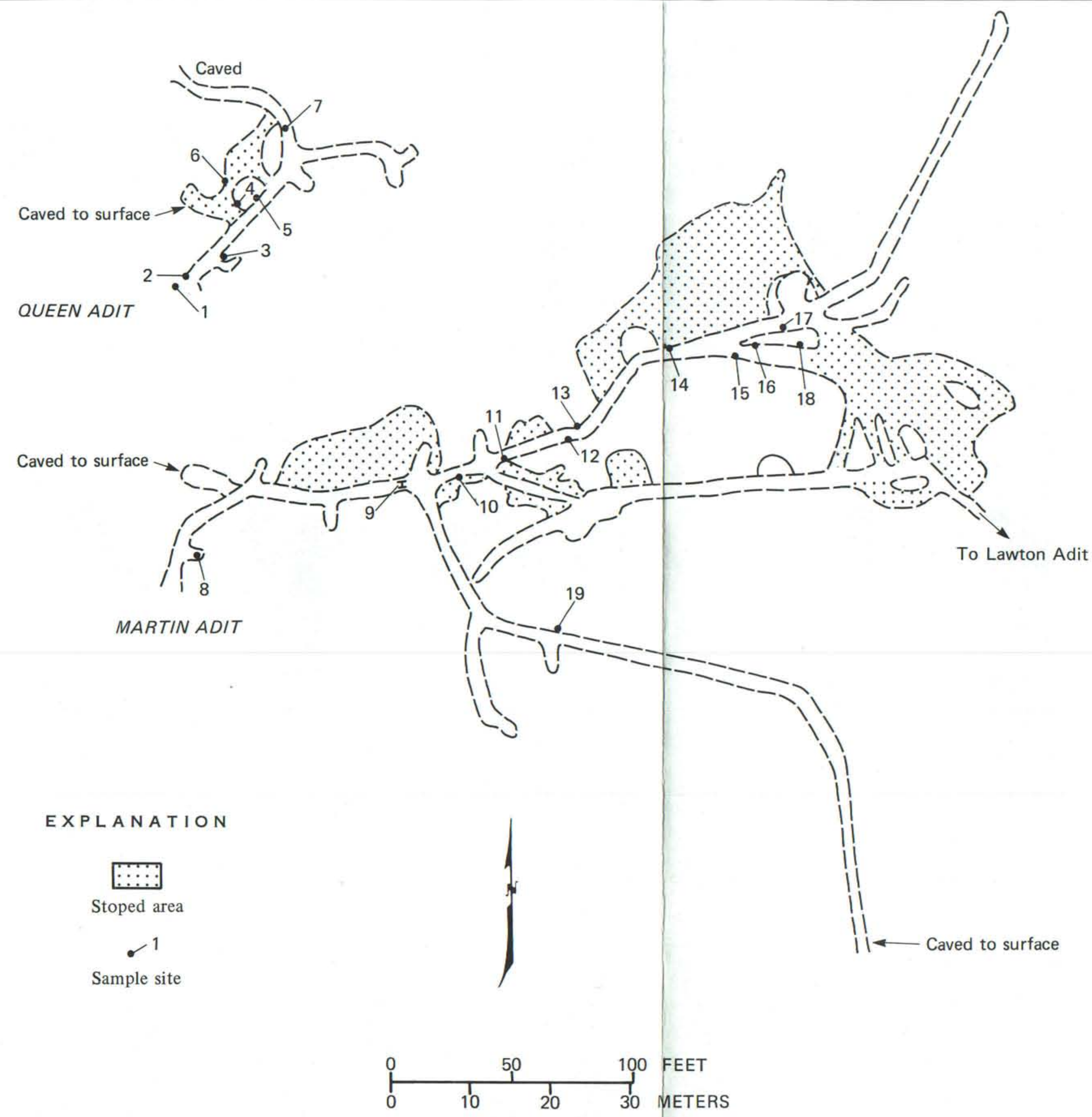


Plate 11.--Underground sample locations with gold and silver content, Queen of Sheba mine, Goshute Indian Reservation.

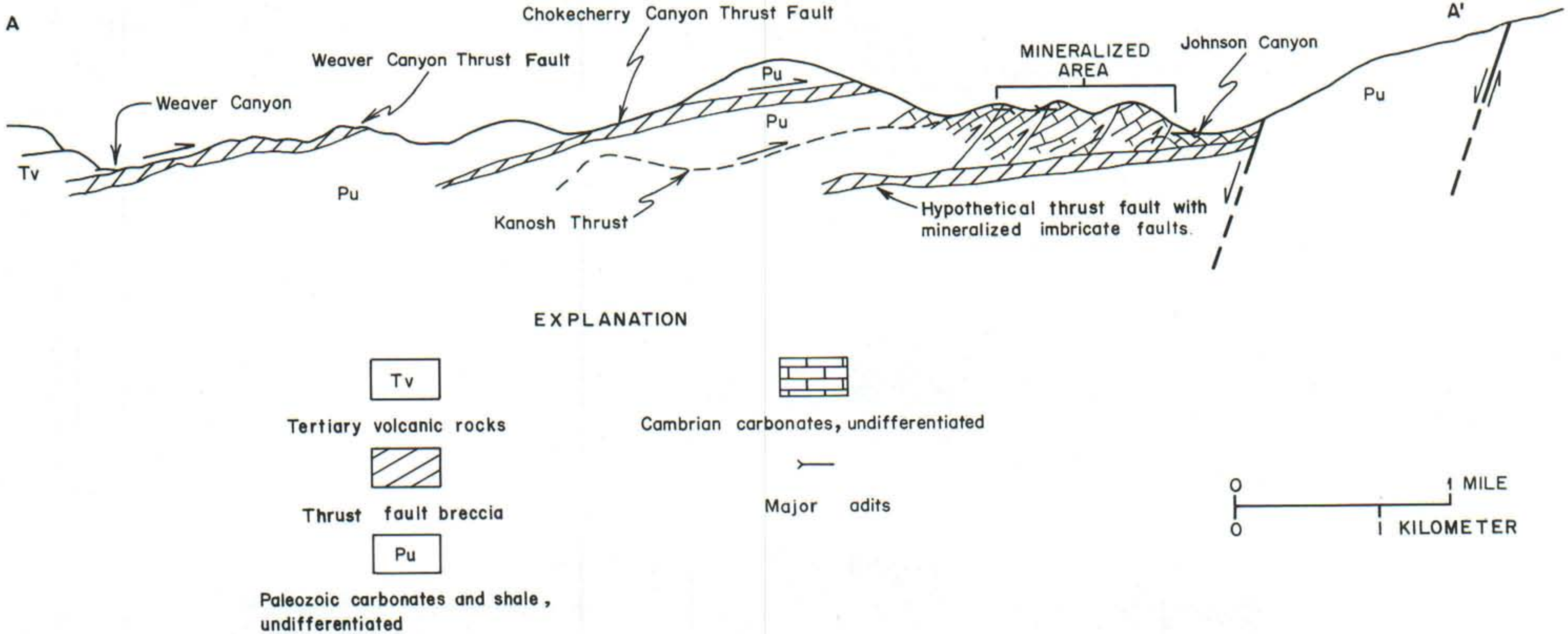
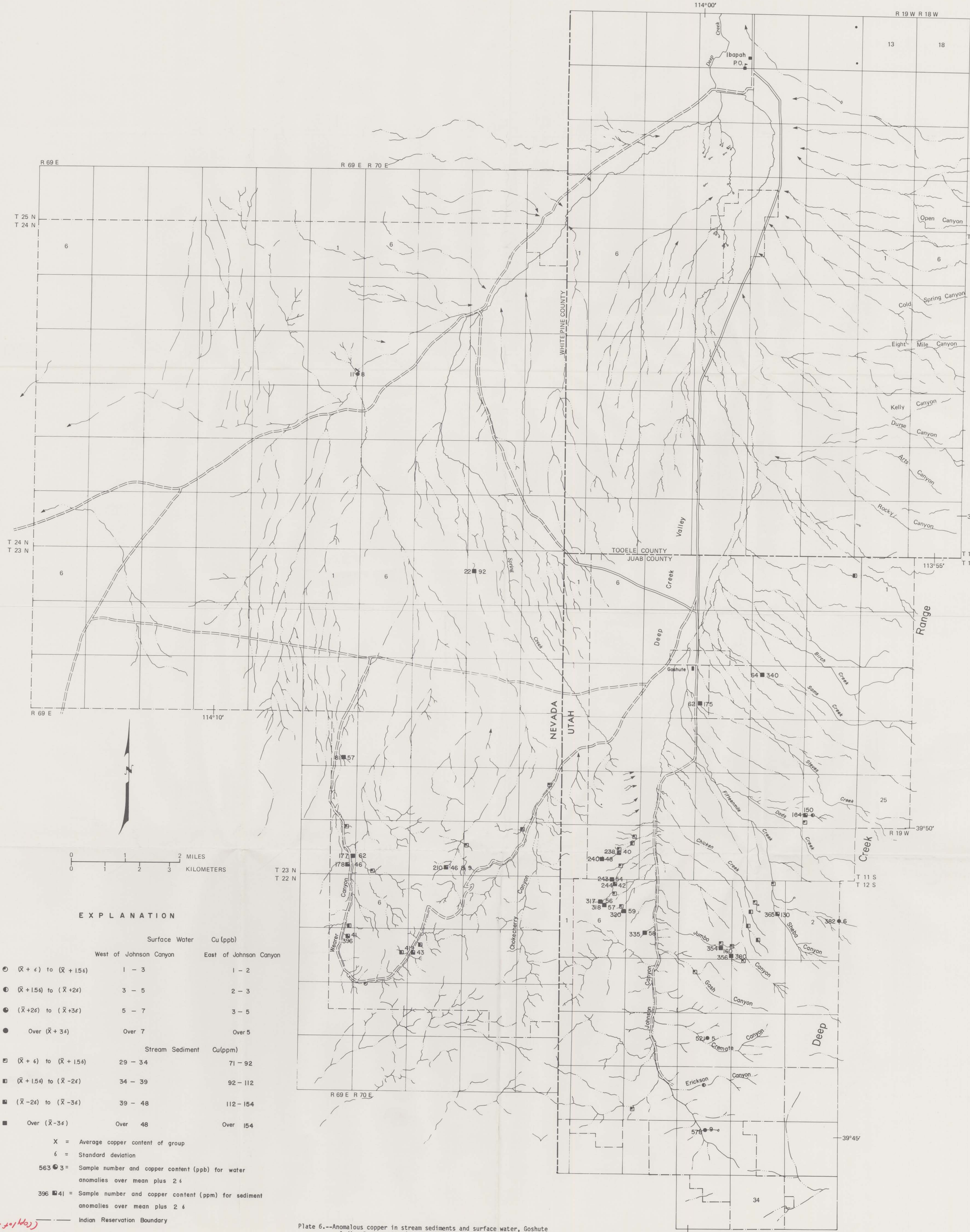


Plate 16.--Generalized geologic structure of the Johnson Canyon area showing the hypothetical thrust fault and its relation to the Johnson Canyon mineralized area, Goshute Indian Reservation.



EXPLANATION

	Surface Water	Cu (ppb) West of Johnson Canyon	Cu (ppb) East of Johnson Canyon
◔	($\bar{X}$ + 6) to ($\bar{X}$ + 1.56)	1 – 3	1 – 2
◑	($\bar{X}$ + 1.56) to ($\bar{X}$ + 26)	3 – 5	2 – 3
◕	($\bar{X}$ + 26) to ($\bar{X}$ + 36)	5 – 7	3 – 5
●	Over ($\bar{X}$ + 36)	Over 7	Over 5
	Stream Sediment	**Cu (ppm)**	
◰	($\bar{X}$ + 6) to ($\bar{X}$ + 1.56)	29 – 34	71 – 92
◧	($\bar{X}$ + 1.56) to ($\bar{X}$ - 26)	34 – 39	92 – 112
◩	($\bar{X}$ - 26) to ($\bar{X}$ - 36)	39 – 48	112 – 154
■	Over ($\bar{X}$ - 36)	Over 48	Over 154

X = Average copper content of group

6 = Standard deviation

563 ◕ 3 = Sample number and copper content (ppb) for water anomalies over mean plus 2 6

396 ◩ 41 = Sample number and copper content (ppm) for sediment anomalies over mean plus 2 6

—·—·— Indian Reservation Boundary

Plate 6.--Anomalous copper in stream sediments and surface water, Goshute Indian Reservation (see plate 2 for sample numbers and Appendix 4 for sample results).

PLATE 6

White Pine Co. - general Item 64 (Cop 1 of 2)

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