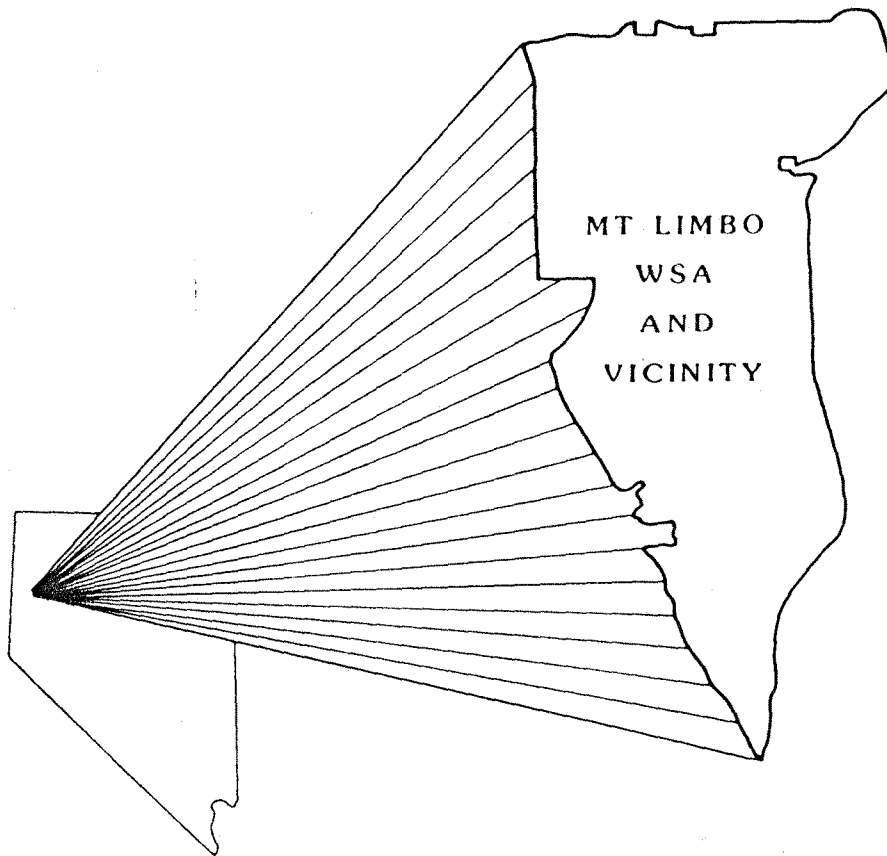


Mineral Land Assessment/1986
Open File Report

Mineral Resources of the Mt Limbo Wilderness Study Area and Vicinity, Pershing County, Nevada



BUREAU OF MINES
UNITED STATES DEPARTMENT OF THE INTERIOR

MINERAL RESOURCES OF THE MT. LIMBO WILDERNESS STUDY AREA
AND VICINITY, PERSHING COUNTY, NEVADA

By
Clayton M. Rumsey

Western Field Operations Center
Spokane, Washington

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

BUREAU OF MINES
Robert C. Horton, Director

PREFACE

The Federal Land Policy and Management Act (Public Law 94-579, October 21, 1976) requires the U.S. Geological Survey and U.S. Bureau of Mines to conduct mineral surveys on U.S. Bureau of Land Management administered land designated as Wilderness Study Areas ". . . to determine the mineral values, if any, that may be present" Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a U.S. Bureau of Mines mineral survey of an area which includes the Mt. Limbo Wilderness Study Area (NV-020-201), Pershing County, NV.

This open-file report will be summarized in a joint report published by the U.S. Geological Survey. The data were gathered and interpreted by Bureau of Mines personnel from Western Field Operations Center, East 360 Third Avenue, Spokane, WA 99202. The report has been edited by members of the Branch of Mineral Land Assessment at the field center and reviewed at the Division of Mineral Land Assessment, Washington, DC.

CONTENTS

	Page
Summary	3
Introduction	3
Setting	3
Previous studies	6
Present study	6
Acknowledgements	7
Geologic setting	7
Mining history	7
Appraisal of mineral resources	8
References	11

ILLUSTRATIONS

Figure 1. Location of the Mt. Limbo Wilderness Study Area (NV-020-201), Pershing County, NV	4
2. Mines, prospects, and mineralized sites in and adjacent to the Mt. Limbo Wilderness Study Area (NV-020-201), Pershing County, NV	5

TABLE

Table 1. Descriptions of prospects and sinter sites in the Mt. Limbo Wilderness Study Area	9
---	---

SUMMARY

In 1984, the U.S. Bureau of Mines conducted a mineral survey of a 26,598-acre study area which includes the 23,702-acre Mt. Limbo Wilderness Study Area (NV-020-201). The study area is 65 miles northeast of Reno, NV, and is underlain mainly by Cretaceous granodiorite that comprises the Selenite Range. Tertiary basalt, rhyolite, and sedimentary rock as well as Quaternary alluvium and lake deposits are exposed near the study area boundary.

Mines just north of the area in the Hooker mining district produced tungsten ore in the 1940's and 1950's. Similar deposits are not known in the study area. Disseminated gold is in sinter about 6 miles west of the study area and at several other locations regionally.

Sixteen mineralized sites, but no mines or active claims, are in the study area. Past interest centered on quartz veins which are locally well mineralized, but no vein resources were identified. Small, scattered calcareous sinter deposits in the southwest part of the study area contain low gold and silver values. These deposits may warrant further study to determine resources. Stone, sand, and gravel are present but are distant from anticipated markets.

INTRODUCTION

This report describes the USBM (U.S. Bureau of Mines) portion of a cooperative study with the USGS (U.S. Geological Survey) to evaluate mineral resources and potential of public lands recommended for wilderness. The USBM examines and evaluates individual mines, claims, prospects, and mineralized sites; the USGS conducts areal geological, geochemical, and geophysical surveys.

Information from these mineral surveys constitutes part of the data base used to determine an area's suitability for wilderness classification. Although the near-term goal is to provide data for land-use decisions, the long-term objective is to help ensure that the Nation has an adequate and dependable supply of minerals at reasonable cost.

Setting

The 26,598-acre study area includes the 23,702-acre Mt. Limbo WSA (Wilderness Study Area) 1/. It is 14 mi (miles) south of Gerlach, NV, and 65 mi northeast of Reno (fig. 1), directly northeast of

1/ A WSA is a roadless area or island that has been inventoried by the BLM (U.S. Bureau of Land Management) and found to have wilderness characteristics as described in Section 603 of the Federal Land Policy and Management Act (Public Law 94-579) and Section 2(c) of the Wilderness Act of 1964 (Public Law 88-577).

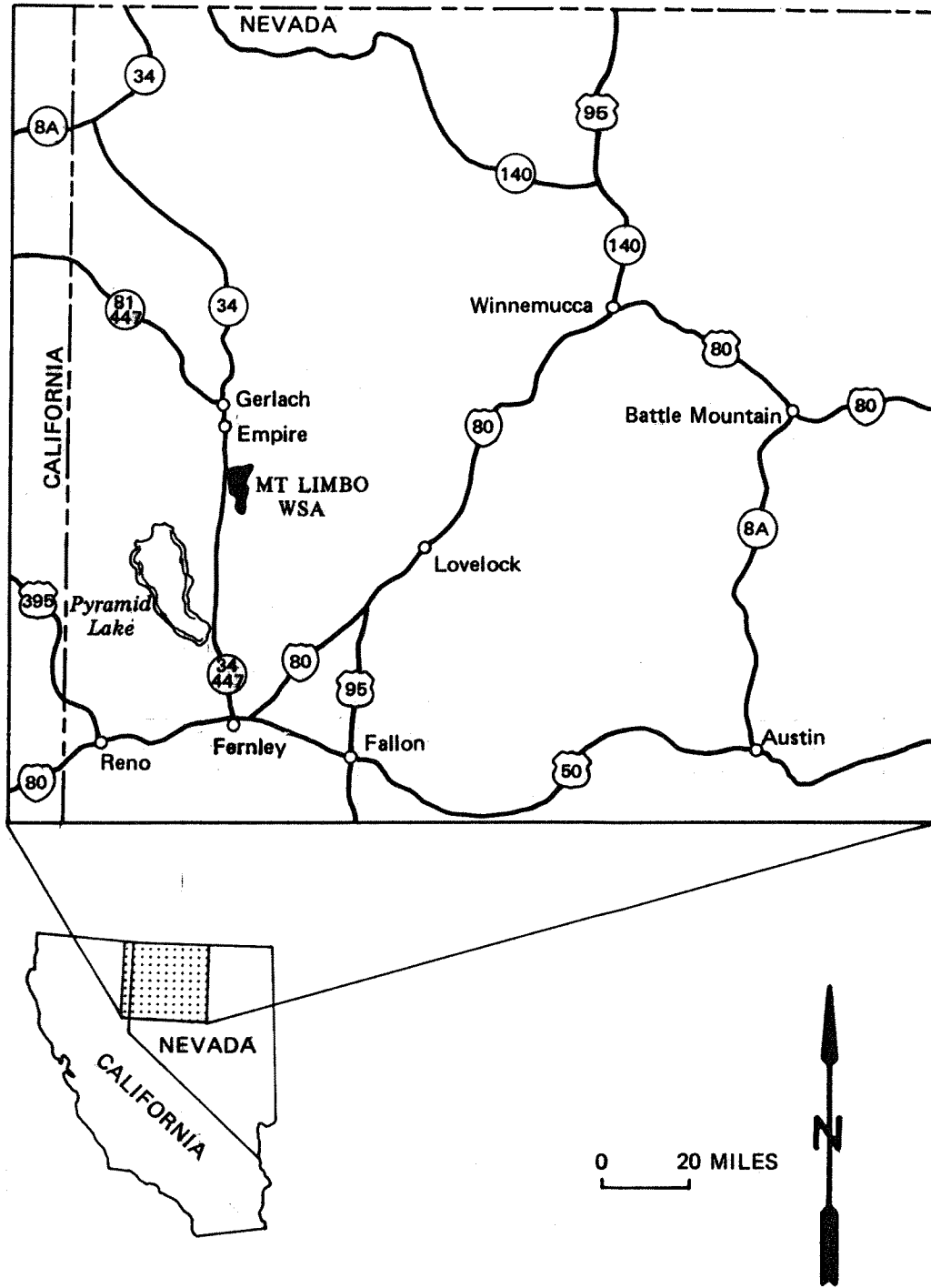


FIGURE 1. — Location of the Mt. Limbo Wilderness Study Area (NV-020-201), Pershing County, NV

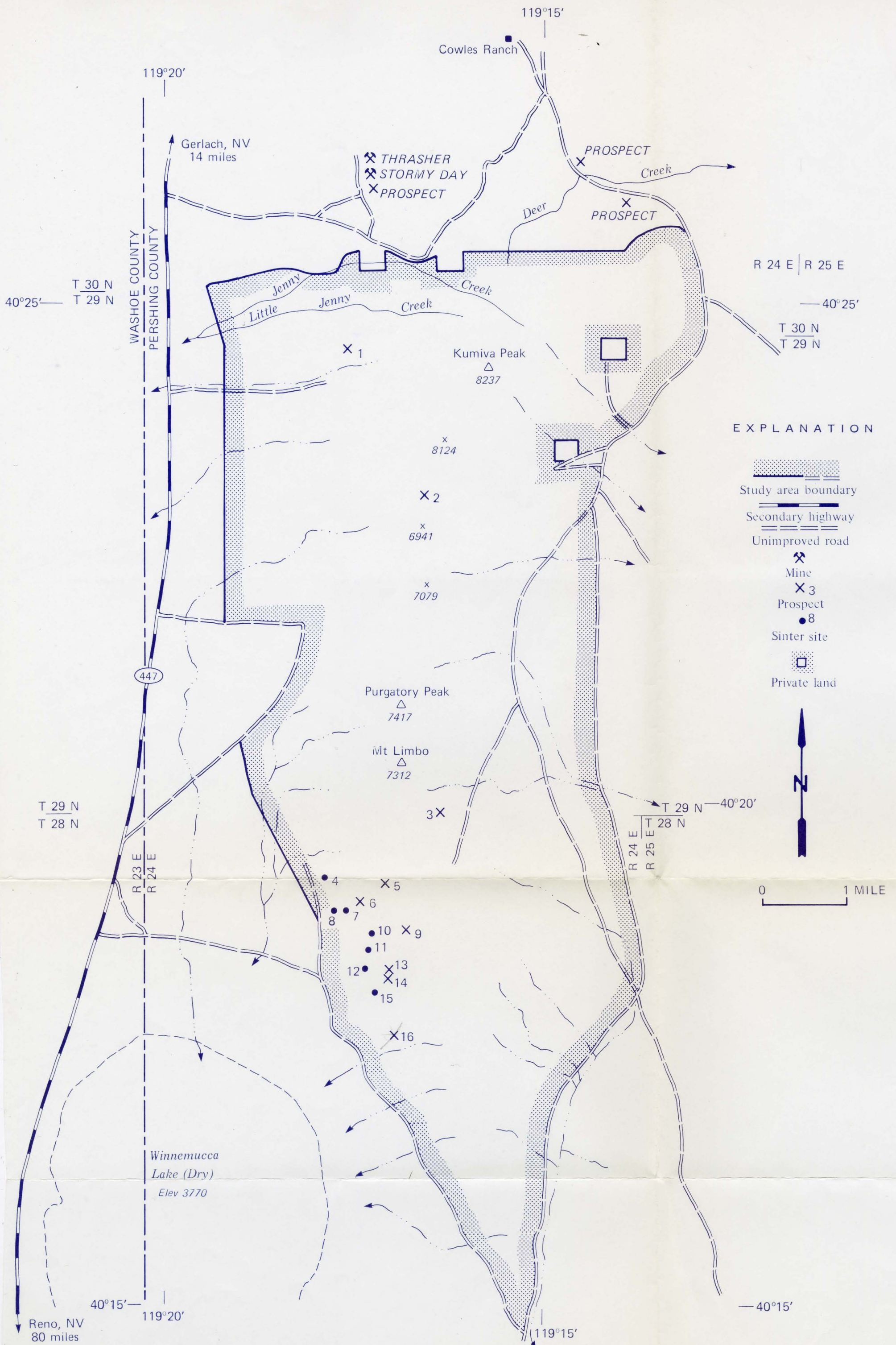


FIGURE 2.— Mines, prospects, and mineralized sites in and adjacent to the Mt. Limbo Wilderness Study Area (NV-020-201), Pershing County, NV

Winnemucca Lake (dry) near the west border of Pershing County (fig. 2). Unimproved roads lead to the study area from State Highway 447, about 1 mi to the west (fig. 2).

The study area is an uplifted, eastward-tilted fault block in the Basin and Range physiographic province (Fenneman, 1931; Crewdson, 1974, p. 43). Topography in the central part of the 8-mi-long, 1- to 4-mi-wide study area is precipitous, but is gently rolling near the boundary. The highest point is 8,237 ft (feet) above sea level at Kumiva Peak, and the lowest is about 4,000 ft near Winnemucca Lake. The study area is arid and is covered with desert vegetation.

Previous Studies

Smith and others (1971) studied the geology of the Selenite Range and compared it to the Sierra Nevada and Idaho batholiths. Crewdson (1974) studied the geology and mineral deposits of a 26,598-acre area which extends 1 mi south into the study area. Johnson (1977) compiled mining, mineral, and geologic facts about Pershing County. The U.S. Bureau of Land Management (1983) prepared a preliminary GEM (geology, energy, and minerals) report for the study area.

Present Study

USBM studies included pre-field, field, and report preparation phases that spanned the years 1984 through 1986 and required about 6 employee-months. Pre-field studies included library research and perusal of Pershing County and BLM (U.S. Bureau of Land Management) mining records and USBM production records. Field studies consisted of searches for all prospects and mineralized sites indicated to be in the study area by the literature and by oral communication. The Thrasher mine and three nearby prospects (fig. 2) were also examined to determine whether mineralized zones might extend into the study area, and to become familiar with regional mineralization processes. In addition, ground and air reconnaissance was done in areas of obvious rock alteration. Sixteen mineralized sites in the study area were examined in detail from which 69 samples were taken including chips across mineralized zones and grabs from piles of mineralized rock. Samples were prepared for analysis at the USBM Western Field Operations Center and analyzed at the USBM Reno Research Center. All samples were assayed for gold and silver by combined fire assay-inductively coupled plasma methods. Other elements were determined by atomic absorption analysis. Selected samples from sites with more than background radioactivity were analyzed for uranium. Content of gold and silver is reported in ppm (part per million) or oz/ton (ounce per ton); content of other elements is reported in ppm or percent. Detection limits were: gold, 0.007 ppm; silver, 0.3 ppm; uranium 0.5 ppm; and lead, 30 ppm. Conversion factors are 1 ppm = 0.0292 oz/ton and 10,000 ppm = 1 percent.

Uranium values were converted to U₃O₈ by multiplying by a factor of 1.1792. At least one sample from each prospect was analyzed by semi-quantitative spectrography for 40 elements 2/ to check for unsuspected elements.

ACKNOWLEDGEMENTS

The author was assisted by Nancy Logue, physical science technician, USBM. Vic Dunn, geologist, BLM Winnemucca District Office, directed the author to mineralized sites. Helen Thrasher, owner, and Harold Playford, lessee, of the Thrasher mine provided local history and directions.

GEOLOGIC SETTING

Cretaceous granodiorite (Johnson, 1977, p. 58) forms the northerly trending Selenite Range, the southern portion of which includes the study area. The granodiorite is overlain by Tertiary rhyolite near the north boundary and by lake deposits and Tertiary basalt near the south boundary. Zones of slightly leached, mineralized, and iron-oxide-stained quartz veins occur in the exposed portions of the granodiorite. Slightly mineralized calcareous sinter of unknown thickness occurs at former thermal spring sites near the southwest boundary of the study area. Outward from these sites, the calcareous coating is punky and broken and reveals mostly granodiorite and occasionally basalt. Disseminated gold is in apparently similar calcareous sinter 6 mi west of the study area (Vic Dunn, oral commun., 1984), and at several other locations regionally, and have been the focus of commercial interest. Recent alluvium covers the valleys on both sides of the range.

MINING HISTORY

Tungsten was discovered in 1941 in the south part of the Hooker mining district which extends south about 1 mi into the study area. The Stormy Day mine (fig. 2), about 1 mi north of the study area, produced 19,523 tons of ore between 1944 and 1957 that contained 1.66 percent WO₃ (tungsten trioxide); the neighboring Thrasher mine (fig. 2) produced an unknown amount of tungsten ore (Johnson, 1977, p. 58). Both mines are now inactive. There is no record of mining or production from within the study area.

2/ Aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, calcium, chromium, cobalt, copper, gallium, gold, iron, lanthanum, lead, lithium, magnesium, manganese, molybdenum, nickel, niobium, palladium, phosphorus, potassium, platinum, scandium, silicon, silver, sodium, strontium, tantalum, tellurium, tin, titanium, vanadium, yttrium, zinc, and zirconium.

APPRAISAL OF MINERAL RESOURCES

The 16 prospects and mineralized sites examined (fig. 2) consisted of quartz veins and veinlets in granodiorite or calcareous sinter. Summary descriptions of these are in table 1. Quartz veins and veinlets at prospects in the study area are small and have low mineral values. Despite a relatively high sample value of 17 oz/ton silver from one prospect (fig. 2, no. 9), analyses of other samples are relatively low. Sinter deposits near Winnemucca Lake occur within an area the U.S. Bureau of Land Management (1983) classified as having moderate potential with moderate confidence for uranium. These deposits have many of the characteristics Silberman (1982, pp. 131, 133) considers typical of hot-springs type, large-tonnage, low-grade gold deposits, such as: nearby, complex high-angle structures; a lake basin location; a volcanic history; hydrothermal activity; and argillic alteration. Deposits elsewhere in the region, some used by him as examples, were being explored in 1982. Although precious metal resources may be at depth and warrant investigation, none were identified at the surface. Uranium resources are not indicated.

Tungsten deposits at the Thrasher and Stormy Day mines just north of the study area do not extend into it. Stone, sand, and gravel are present but are not resources because they are too far from anticipated markets.

TABLE 1.--Descriptions of prospects and sinter sites in the Mt. Limbo Wilderness Study Area

Map No. (fig. 2)	Name	Summary	Workings and production	Sample and resource data
1	Pinto prospect (silver-uranium)	A 5-ft limonite-stained quartz vein and float are along a range-front fault that parallels a contact between granodiorite and volcanics. The fault strikes N. 10° E., dips 65° NW. and can be traced for 6 mi.	One prospect pit.	Eight samples: one chip sample across the quartz vein contained 3.532 ppm silver. One grab sample of quartz from the prospect pit contained no gold or silver. One of six other grab samples from along the fault contained 1.041 ppm silver and two each had 0.97 ppm U ₃ O ₈ .
2	Unnamed prospect (silver-uranium)	A 6-ft-thick, iron-oxide-stained, smoky quartz vein with an attitude of N. 45° W., 35° NE. is exposed for 7 ft in granodiorite.	One prospect pit.	One chip sample contained 9.19 ppm silver and 4.0 ppm U ₃ O ₈ .
3	Unnamed prospect (uranium)	Iron-oxide stained contact between granodiorite and rhyolite trends generally easterly.	Two 150- by 2-ft-deep trenches, and a prospect pit.	Three chip and two grab samples: chip samples of granodiorite contained 2.8 to 5.1 ppm U ₃ O ₈ ; a grab sample of concentrated black sand had 544 ppm U ₃ O ₈ , and a grab sample from a dump contained 3.5 ppm U ₃ O ₈ .
4	Sinter site (uranium)	About 80% of the granodiorite in a 500- by 2,200-ft area is coated with calcareous sinter that is 0.5 to 4 ft thick.	None.	Three chip samples and one grab sample of sinter contained between 1.8 and 2.8 ppm U ₃ O ₈ .
5	Unnamed prospect (uranium)	Altered rhyolite tuff and granodiorite are along a contact with an attitude of N. 85° E., 45° N.	A 90-ft trench.	Five chip samples taken along the contact contained from 2.8 to 7.0 ppm U ₃ O ₈ .
6	Unnamed prospect (silver-uranium-gold)	A 0.5-ft-thick, iron-oxide-stained quartz vein is in altered granodiorite.	Two 30-ft trenches.	Three chip samples contained 1.047 to 1.209 ppm silver and 2.7 to 4.0 ppm U ₃ O ₈ ; one had 0.04 ppm gold.
7	Sinter site (silver-uranium)	About 60% of a 170- by 85-ft area of granodiorite is coated with 1-ft-thick calcium carbonate.	None.	Four chip samples contained from 1.00 to 1.142 ppm silver; three contained 3.4 to 3.7 ppm U ₃ O ₈ .
8	Sinter site (gold-uranium)	Calcareous sinter at a former thermal spring coats about 25% of underlying granodiorite to a thickness of 1.5 ft, 50 to 300 ft from the spring.	None.	Four chip samples contained from 1.5 to 6.4 ppm U ₃ O ₈ ; one had 0.008 ppm gold.

TABLE 1.--Descriptions of prospects and sinter sites in the Mt. Limbo Wilderness Study Area--Continued

Map No. (fig. 2)	Name	Summary	Workings and production	Sample and resource data
9	Unnamed prospect (silver-lead-uranium)	A 1,600-ft-wide zone of leached and iron-oxide stained quartz veins trends northeasterly in granodiorite.	About an acre of the ridge top was bulldozed.	Three chip and two grab samples: one chip sample from a small vein contained 0.01 ppm gold, 17 oz/ton silver, 2.19% lead, and 59 ppm U ₃ O ₈ . The other chip samples contained 0.8 and 2.966 ppm silver, and 33 and 50 ppm lead. One grab sample contained no gold or silver; the other contained 3.22 ppm silver, 0.019 ppm lead, and 2.2 ppm U ₃ O ₈ .
10	Sinter site (silver-uranium-gold)	Calcareous sinter, at least 0.5 ft thick, overlies granodiorite 520 ft from former thermal springs.	None.	Three chip samples contained from 0.989 to 1.191 ppm silver and 3.4 to 5.1 ppm U ₃ O ₈ ; two had 0.024 and 0.058 ppm gold.
11	Sinter site (silver-gold)	Calcium carbonate sinter of undetermined thickness coats granodiorite over a 50-ft diameter area.	None.	Three chip samples contained from 1.042 to 1.217 ppm silver; two had 0.018 and 0.124 ppm gold.
12	Sinter site (silver-uranium)	Calcium carbonate sinter 0.1 to more than 10 ft thick coats about 80% of the granodiorite within a 1-acre area that includes former thermal springs.	None.	Four chip samples contained from 2.4 to 3.8 ppm U ₃ O ₈ ; three had 0.997 to 1.106 ppm silver.
13	Unnamed prospect (silver-uranium)	Two 1-ft-thick aplite dikes enclose 0.3-ft-thick veins of iron-oxide-stained quartz. The dikes are 5 ft apart, exposed for 50 ft, trend northward, and dip 10° eastward in granodiorite.	None.	Two chip samples contained 1.175 and 1.336 ppm silver, and 5.9 and 6.5 ppm U ₃ O ₈ .
14	Limbo Group (uranium-silver-gold)	A 4-ft-thick, iron-oxide-stained quartz vein which strikes N. 30° W. and dips 60° NE., is exposed for 200 ft in granodiorite.	One 18-ft adit.	Ten samples of the quartz vein contained from 3.2 to 153 ppm U ₃ O ₈ . Two samples had 0.007 and 0.013 ppm gold, and nine contained from 1.149 to 5.023 ppm silver.
15	Sinter site (uranium)	Calcium carbonate sinter 1 to 5 ft thick near a former thermal spring coats basalt on a mound that is 100 ft wide and 50 ft high.	None.	Two chip samples contained 1.3 and 4.1 ppm U ₃ O ₈ .
16	Unnamed prospect (uranium)	Three 2-ft-thick, aplite dikes within 400 lateral feet strike between due north and N. 30° W. and dip vertically in altered granodiorite.	Minor trenches and topsoil bulldozed from a 40- by 100-ft area.	Five samples: four had from 1.8 to 7.5 ppm U ₃ O ₈ .

REFERENCES

- Crewdson, R. A., 1974, The geology and mineral deposits of part of the Selenite Range, Pershing County, Nevada: M.S. thesis, Colorado School of Mines, 65 p.
- Fenneman, N. M., 1931, Physiography of the western United States: McGraw-Hill Book Company, New York, NY, 534 p.
- Johnson, M. G., 1977, Geology and mineral deposits of Pershing County, Nevada: Nevada Bureau of Mines and Geology Bulletin 89, 115 p.
- Silberman, M. L., 1982, Hot-spring type, large tonnage, low-grade gold deposits: U.S. Geological Survey Open-File Report 82-795, p. 131-143.
- Smith, J. G., McKee, E. H., Tatlock, D. B., and Marvin, R. F., 1971, Mesozoic granite rocks in northwestern Nevada--a link between the Sierra Nevada and Idaho Batholiths: Geological Society of America Bulletin, v. 82, p. 2933-2944.
- U.S. Bureau of Land Management, 1983, Mt. Limbo Wilderness Study Area, in Winnemucca Wilderness Technical Report, p. 131-146.