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WILLDEN, RONALD

GEOLOGY AND MINERAL DEPOSITS OF HUMBOLDT COUNTY, NEVADA

Nevada Bureau of Mines Bulletin 59

PLATES

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TABLE 9. Mines and prospects of the Blue Mountain-Krum Hills-Winnemucca Mountain area (includes Winnemucca, Barrett Springs, and Ten Mile districts).

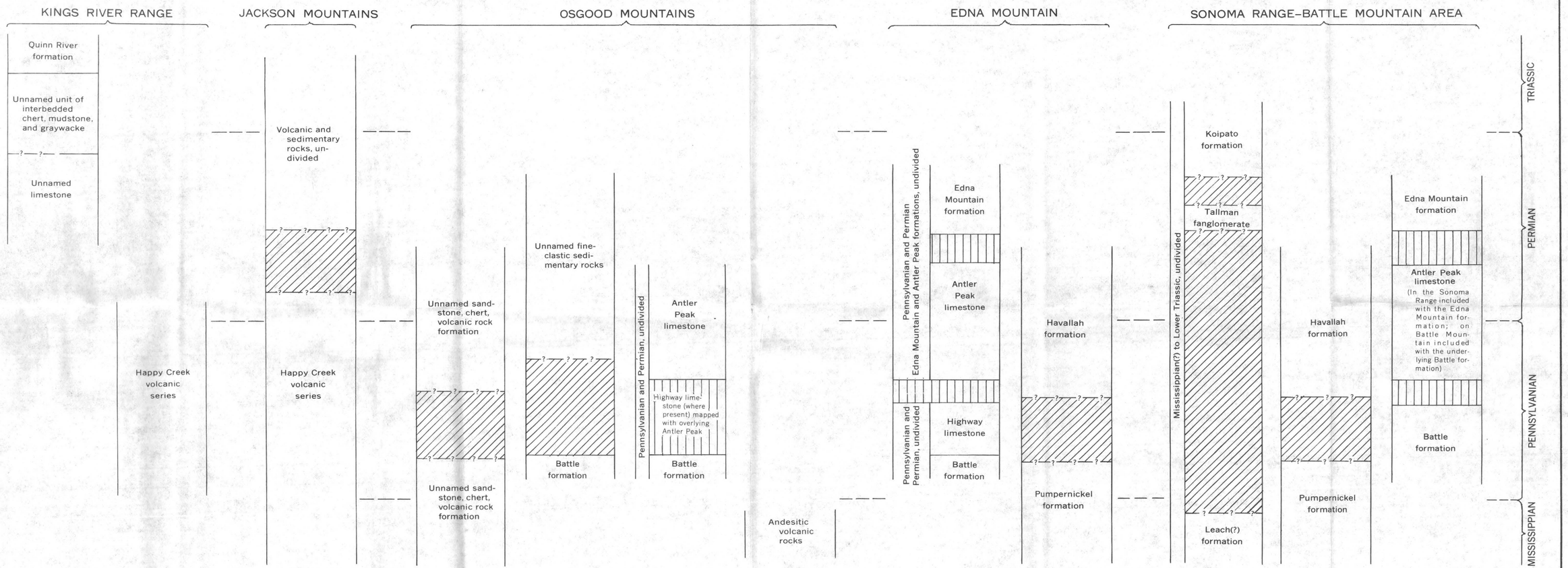
Name	Location	Owner	Commodity	Geology and workings	Production and remarks
9.[1] Shively strike.	Northwest part sec. 6, T. 36 N., R. 38 E.	Unknown.	Gold, silver(?).	Calcareous shale and limestone cut by quartz and calcite veins largely covered by soil.	Production unknown; but tailings suggest appreciable production.
10. Winnemucca Mountain mine (Gold Hill group).	Northeast part sec. 13, T. 36 N., R. 37 E.	Gus Rogers & associates, Winnemucca, Nevada.	Fluxing ore with small amount of gold and silver.	Limy shale and sandstone cut by a northwest-trending shear zone containing small amounts of gold and silver in a gangue of iron oxides and some quartz.	Couch and Carpenter (1943, p. 70) report a production of 2,227 tons yielding $27,282.
11. Pride of the Mountain mine (Pride of the West mine).	Northwest part of sec. 23, T. 36 N., R. 37 E., on the south slope of Winnemucca Mountain.	Unknown.	Gold, silver.	Quartz veins, reportedly containing some lead and copper in addition to gold and silver. Veins cut hornfels or slate.	Lindgren (1915, p. 16) reports a possible production of $1,000,000, but this is not supported by other data.
12. Adamson mine (A. & T. mine, Golden West group, Wannamuck mine).	Northeast part of sec. 11, T. 36 N., R. 37 E., on west slope of Winnemucca Mountain.		Gold.	Country rock is calcareous slate and phyllitic shale. Gold occurs in drusy quartz cementing brecciated shale. Cinnabar occurs in brecciated zones cemented with banded calcite.	Lindgren (1915, p. 15) reports a production of $8,000 from rich ore in 1911. Couch and Carpenter (1943, p. 70) report a production of 31 tons of material yielding $5,711 for the period 1911–1912. The old dumps have been shipped since that time, but there is no record of their returns.
13. Pansy Lee mine (West Coast mine).	Near extreme eastern edge of the center sec. 1, T. 36 N., R. 36 E.	West Coast Mines, Inc., Calif. State Life Bldg., Sacramento, California.	Silver, gold, lead, copper.	Siltstone and shale cut by northeast-trending shear zones that contain thin discontinuous quartz veins. Assays of 2 to 12–inch width vary considerably but typical range is from .20 to .60 oz gold and from 8 to 40 oz silver. Veins locally contain also copper and lead.	Couch and Carpenter (1943, p. 70) report a production of 1,677 tons yielding $54,248 from 1939 to 1940. In 1941, 407 tons of ore shipped to a smelter yielded 157 oz gold, 13,217 oz silver, 2,929 lb copper, and 30,894 lb lead; 39,598 tons of ore milled on the property yielded 5,314 oz gold, 453,508 oz silver, 71,130 lb copper, and 1,018,842 lb lead (U. S. Bureau of Mines Minerals Yearbook, 1941). Most of the $142,628 produced in the district in 1942 (U. S. Bureau of Mines Minerals Yearbook, 1942) probably came from this mine. The property was operated intermittently after the war but there is no record of this production.
14. Nevada Consolidated mine.	Southeast corner sec. 1, T. 36 N., R. 36 E.	William F. Stephens, Esparto, California.	Silver, gold.	Geology very similar to nearby Pansy Lee mine, but quartz veins are in general narrower and of somewhat lower grade.	Production small and included with the Pansy Lee mine.
Unknown.	Near center of sec. 12, T. 36 N., R. 36 E.	Unknown.	Gold, silver(?).	Siltsone, shale, and quartzite cut by shear zones that are occupied in places by narrow quartz veins.	Production unknown.
15. Barrett Springs mine.	Northwest part of sec. 14, T. 36 N., R. 36 E.	Unknown.	Gold, silver.	Northeast-trending shear zones cut shale, siltstone, and granodiorite. Contact between granodiorite and sedimentary rocks is not exposed. Quartz forms stockwork in wide shear zones and narrow discontinuous veins that are parallel to some of the narrower shear zones. Gold and silver values are generally low and restricted to very narrow widths. One 8-inch quartz vein assayed about $30.00 in combined gold, silver, and lead.	No recorded production, but there has been some stoping in north shaft.
16. Ten Mile mine.	Southwest corner sec. 23, T. 36 N., R. 36 E.	Unknown.			
Unknown.	Southeast corner sec. 22, T. 36 N., R. 36 E.	Unknown.			
Unknown.	Near west center sec. 4, T. 36 N., R. 36 E.	Unknown.		Light-gray phyllitic shale cut by thin quartz veins. Chalcopyrite, galena, and pyrite observed in quartz on dump.	No recorded production.
17. Atlas mine.	Southeast slope of Blue Mountain. Northeast cor. sec. 28, T. 36 N., R. 35 E.			Green shaly sandstone and light-green to light-gray phyllitic shale cut by thin quartz veins.	

[1]Numbers correspond to those shown on plate 3.

TABLE 19. Mines of the Osgood Mountains (Potosi-Getchell district).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
57.[1] (1) Getchell mine.	Sec. 33, T. 39 N., R. 42 E.	[2]Getchell Mine, Inc.	Gold.	"The Getchell veins are lenticular replacement bodies lying along arcuate branches of a complex range-front fault system. . . . The more intensely mineralized portions of the deposit form a shallow blanket with roots that project downward into areas of sparse mineralization. . . . Native gold and native silver are the only economic minerals." (Joralemon, 1951, p. 267). Realgar and orpiment are abundant gangue minerals.	Total production through 1951 amounted to about $11,000,000.
58. (2) Tonopah mine.	Sec. 33, T. 39 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Tactite exposed in pits for about 1,000 feet along the granodiorite-sedimentary rock contact. Contact and tactite transect bedding. Tactite extends down dip in tabularbodies that are continuous to at least the 500-foot level.	Production of Getchell tungsten mines not broken down by property name. Opened as prospect in 1943; active open-pit mining began in 1950; underground mine opened in 1953. Tungsten mining methods have been described by Newman (1957).
59. (3) T.N.T. mine.	Sec. 32, T. 39 N., R. 42 E.	T.N.T., Inc.	Tungsten.	Limestone bodies not abundant in Preble Formation in this area and tactites not well developed. Scheelite occurs in a calc-silicate rock but seems to be lacking in adjacent bleached and recrystallized carbonate rocks.	Operated by open pit from July to December 1954.
60. (4) Mountain King mine.	Sec. 31, T. 39 N., R. 42 E.	T.N.T., Inc. under lease to Ron Rex Mining Co. in 1956.	Tungsten.	Tactite formed in thin limestone interbedded with argillaceous hornfels transected at a slight angle by the granodiorite. Tactites thickest against granodiorite and pinched out to northeast along strike of beds.	Open-pit mining started in 1951, and continued intermittently through 1956.
61. (5) Richmond mine.	Sec. 31, T. 39 N., R. 42 E., and sec. 6, T. 38 N., R. 42 E.	Union Carbide Nuclear Co.	Tungsten.	Tactite deposits occur on the north side of a blunt westward projection of the contact of granodiorite with hornfels or limestone.	Operated as a silver property in early days. More than 31,500 tons of tactite were mined by open pit and underground methods between summers of 1942 and 1943 (Hobbs and Clabaugh, 1946, p. 19). West tactite mined by open pit from June to August 1954.
62. (6) Alpine (Porvenir) mine.	Sec. 6, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Most of the production has been from two pits at the north and south ends of the property. The ore bodies were roughly tabular or flattened lenses that lay parallel to the granodiorite contact. The south pit body is situated where the granodiorite contact makes a right angle turn.	Property operated in 1943. Idle from 1945 to 1950. Getchell commenced operating property in 1950. Property was idle by 1954.
63. (7) Riley extension.	Sec. 4, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Three tactite bodies, the eastern of which is continuation of body in Riley mine. The west vein was discovered underground about 125 feet west of Riley ore body and does not outcrop. Westernmost tactite mined at surface is in a limestone lens in hornfels near the granodiorite contact.	Underground mining started in 1951, open pit on west body sometime later.
64. (8) Riley mine.	Sec. 9, T. 38 N., R. 42 E.	Union Carbide Nuclear Co.	Tungsten.	One main tactite zone lies below marble or light-silicate rock and above granodiorite or schistose biotite hornfels. The tactite thickens in the southern part of the mine, in troughlike structures in the granodiorite-sedimentary rock contact.	Mine operated as open pit from 1942 to 1945. Some production from Oct. 1945 to 1948 by U. S. Vanadium Corp. Mine reopened in August 1952 and operated both underground and surface through 1957.
65. (9) Top Row mine.	Sec. 9, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Country rock consists of lenticular bodies of limestone in argillaceous hornfels adjacent to granodiorite. One body of limestone has been converted to tactite in small re-entrant angle in contact.	Small open-pit mine operated in summer of 1954.
66. (10) Kirby mine.	Sec. 17, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Tactite bodies along southwest contact of north lobe of stock. Important tactite bodies localized in limestone by abrupt bends in the granodiorite contact. Locally considerable scheelite occurs in quartz veins which cut tactite of northeastern pit.	Property known as early as 1917; acquired by Getchell in 1942; mined to summer of 1943. Mined again from 1952 to 1953 by open-pit methods.
67. (11) Marcus mine.	Sec. 24, T. 38 N., R. 41 E.	Getchell Mine, Inc.	Tungsten.	Tactite in limestone between main body of granodiorite and a northwestward-projecting tongue of the intrusive.	Property explored prior to 1955, but no attempts to mine until road was constructed to property from Granite Creek mine in 1955. Open-pit mining commenced in July 1955.
68. (12) Valley View mine.	Sec. 20, T. 38 N., R. 42 E.	R. B. Spitzer.	Tungsten.	Tactite bodies along or near the granodiorite-sedimentary rocks contact on both sides of Bunch Creek. Deposits on south side of creek are small. North pit developed in tactite body which is generally parallel to the contact but separated from it by a few feet of lime-silicate rock, except along south side where it is cut out by an eastward projection of granodiorite. Tactite is widest near this eastward projection of granodiorite.	Mined from 1943–44, and from 1951 through 1955. Originally prospected for silver and copper.
69. (13) Pacific mine.	Sec. 29, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Tactite at contact between limestone and granodiorite. Tactite widest and highest grade in steeply plunging troughlike structures formed at re-entrants in contact. Tactite not everywhere formed at contact between limestone (now lime-silicate rock) and granodiorite.	Open-pit and underground mine. Open-pit mining began in 1951 and accounted for the largest part of the production.
70. (14) Tip Top mine.	Sec. 30, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Rather narrow regular tactite bodies in limestone of Preble Formation adjacent to the granodiorite contact.	Open pits mined from summer of 1954 to summer of 1955.
71. (15) Granite Creek mine.	Secs. 29 and 30, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Ore in tactite formed at contact between granodiorite and limestone body of Preble Formation. Main ore body localized by troughlike re-entrant in granodiorite-limestone contact which plunges 50° in a S. 13° E. direction.	Mine worked principally from underground, from fall of 1942 to summer of 1944, and from December 1950 through June 1955 (time of visit by Hotz and Willden).
72. (16) Ogee and Pinson mine.	Sec. 32, T. 38 N., R. 42 E.	Operated by Getchell Mine, Inc. under lease.	Gold.	Deposit in fault zone which is either the southern continuation of Getchell fault zone or another fault of the same general fault system. Irregular zones of low-grade gold ore occurred along bedding planes and minor fractures in argillite in footwall of fault.	Mined in 1949 by open-pit methods. Produced 4,150 tons of ore assaying 0.186 ounces gold per ton (Huttl, 1950, p. 62).
73. (17) Getchell sec. 5 pit (Marshall Canyon).	Sec. 5, T. 38 N., R. 42 E.	Getchell Mine, Inc.	Tungsten.	Scheelite occurs in irregularly shaped bodies and veins of coarse glassy quartz which cuts altered granodiorite.	Operated briefly during summer of 1955 by open-pit methods. Previously prospected for silver.
74. (18) Tungsten prospect.	Sec. 25, T. 38 N., R. 41 E.	Unknown.	Tungsten.	Small prospect pit in limestone assigned to Pennsylvanian and Permian undivided unit. Marbleized limestone contains scattered lime silicate minerals. One sample assayed 0.25 percent WO_3, 0.26 percent Cu, and 0.2 ounces Ag.	No production.
75. Bluebell mine.	Sec. 32, T. 38 N., R. 42 E. and sec. 5, T. 37 N., R. 42 E.	Unknown.	Copper.	Limestone of Comus Formation explored by vertical shaft. Workings not visited. Limestone on dump considerably altered.	No known production.
76. Barite mine.	Sec. 12, T. 37 N., R. 41 E.	Barium Products, subsidiary of National Lead.	Barite.	Barite replaces limestone and chert(?) of Comus Formation. Rocks broken by numerous faults but barite not obviously related to faults. Submarginal under present market.	No known production.
77. Manganese.	Sec. 15, T. 39 N., R. 42 E.	Unknown.	Manganese.	Manganese oxides partially replace chert beds interbedded with quartzite of unnamed fine-clastic sedimentary rock formation.	No known production.

[1]Numbers in parentheses refer to figure 16; others correspond to those shown on plate 3.
[2]Getchell Mine, Inc., became a division of the Goldfield Corp. in 1962.



NOTE: Vertical lines indicate known hiatus; diagonal lines indicate possible hiatus. For each area the separate columns represent rocks on separate thrust sheets.

GENERALIZED CORRELATION DIAGRAM OF UPPER PALEOZOIC AND LOWERMOST TRIASSIC ROCKS IN HUMBOLDT COUNTY, NEVADA

TABLE 21. Mines and prospects of the Pine Forest Range (Warm Springs [Vicksburg and Ashdown], Leonard Creek, Pine Forest, and Cove Meadow districts).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
78.[1] Defense mine.	About 10 miles by road south of Denio, Nevada, on the west flank of the range.	Vern Cannon, Denio, Nevada.	Tungsten.	Faulted sequence of interbedded biotite schist, light-colored fine-grained gneiss and at least one marble bed. Gneissic biotite hornblende granodiorite intrudes southern part of area, and many aplite dikes cut granodiorite and metamorphic rocks. Ore body is on contact of marble and schist with granodiorite. Northeasterly trending shear zones mineralized with scheelite bound the ore body on the north and south.	Mined during World War II by glory hole and short adit. Worked underground in 1956. Some fairly high-grade ore was milled at the Ashdown mill.
79. Last Chance property.	About 1 mile south of Defense mine along range front.	M. A. Jensen and J. S. Alexander, in 1944.	Tungsten.	Country rocks are granodiorite, mica schist, and hornblende schist. There are several scheelite-bearing tactite bodies, none of which are wider than 2 feet. Some samples from prospect pits average 0.2 percent WO_3.	No record of production.
80. Ashdown mine.	About 12.5 miles by road south of Denio, Nevada, in canyon near west front of range.	Vern Cannon.	Gold.	Rather narrow, gently dipping (generally less than 40°) quartz veins in granodiorite become steeper downward. Granodiorite is locally gneissic. Intrusive rocks overlain to west by rhyolite tuff and dacitic welded tuff. Gold occurs free in quartz. Small amount of pyrite, tetrahedrite, and galena in quartz, also.	Most of the production from the area has come from this mine.
81. Cherry Gulch mine.	In canyon about 1 mile south of Ashdown mine.	Unknown.	Gold.	Quartz veins in granodiorite.	No record of production.
82 Homer Verne mine.	Sec. 6, T. 44 N., R. 30 E., east side of crest of range about 18.5 miles due south of Denio, Nevada.	Unknown.	Unknown.	Quartz veins cutting metamorphic rocks—hornfels, schistose, quartzite, slate. Explored by two adits, one of which is caved.	Local residents report considerable production.
83. Saddle prospect.	About 3 miles north of Sentinel Peak on and near the crest of the east ridge of the range.	J. Noviack and J. F. Barnes, Reno, Nevada.	Tungsten.	Tactite bodies sporadically distributed along contact between granodiorite and carbonate unit of pre-Cretaceous Mesozoic Age. Exploration program consisting of trenching and drifting along the contact failed to discover any large bodies of ore (R. G. Reeves, and H. W. Jones, written communication, 1956).	No record of production.
Juanita group.	Secs. 31, 32, T. 42 N., R. 28 E.	Mrs. Josie Pearl, in 1942.	Gold, antimony.	Unknown.	
Desert View prospect.	Southwestern part of Pine Forest Range. Sec. 35 (?), T. 43 N., R. 28 E.	Unknown.	Copper, molybdenum.	Porphyritic granodiorite and dark-gray, fine micaceous schist or phyllite. Granodiorite cut by steeply north-dipping quartz veins striking east to northeast, which pinch and swell along strike and contain molybdenite, chalcopyrite, and pyrite in the wider parts (C. A. Anderson and M. W. Cox, written communication, 1943). Low-grade veins with very little development work.	
84. Leonard Creek placers.	Near base of western ridge of range on southwest fork of Leonard Creek.	Unknown.	Gold.	Values in gold distributed throughout alluvium to bedrock which is soft tufa according to Vanderburg (1938, p. 30).	Vanderburg (1939, p. 29) says the production is reported to be about $5,000.
85. Cove Meadow.	Sec. 17, T. 42 N., R. 28 E.	Frank W. Roberts, Caldwell, Idaho.	Copper.	Trengove (1950, p. 3) reports copper deposits along a shear zone striking N. 45° W. and dipping 50°–60° NE. The shear zone cuts andesite which has been intruded by diorite and both of which have been intruded by granodiorite. Limonite, cuprite, malachite, azurite, and chrysocolla occur in the shear zone near the surface.	Trengove (1950, p. 1) reports the production to August 1, 1949 amounted to 98 tons of hand-sorted ore, assaying 5.1 percent copper.

[1]Numbers correspond to those shown on plate 3.

TABLE 22. Production by year of given commodities from mines in the Santa Rosa Range (includes National, Paradise Valley, Rebel Creek [New Goldfields], and Shon districts).

Year[1]	Gold		Silver		Copper		Lead		Zinc	Mercury		Total Production	
	Ounces	Value	Ounces	Value	Pounds	Value	Pounds	Value	Pounds	Flasks	Value	Tons	Gross value
1875	———	———	———	———	———	———	———	———	———	———	———	300	$12,600
1879	———	———	———	———	———	———	———	———	———	———	———	3,997	255,195
1880	———	———	———	———	———	———	———	———	———	———	———	6,664	215,436
1881	———	———	———	———	———	———	———	———	———	———	———	3,576	57,114
1882	———	———	———	———	———	———	———	———	———	———	———	3,232	38,374
1883	———	———	———	———	———	———	———	———	———	———	———	3,521	92,258
1884	———	———	———	———	———	———	———	———	———	———	———	5,033	210,961
1885	———	———	———	———	———	———	———	———	———	———	———	6,925	214,355
1886	———	———	———	———	———	———	———	———	———	———	———	7,372	322,120
1887	———	———	———	———	———	———	———	———	———	———	———	3,594	127,462
1888	———	———	———	———	———	———	———	———	———	———	———	2,165	17,240
1889	———	———	———	———	———	———	———	———	———	———	———	2,631	40,054
1890	———	———	———	———	———	———	———	———	———	———	———	1,199	9,264
1893	———	———	———	———	———	———	———	———	———	———	———	200	1,400
1908	———	———	———	———	———	———	———	———	———	———	———	1+	63,000
1909	4,544	$93,942	4,673	$2,430	———	———	———	———	———	———	———	173	96,372
1910	60,452	1,249,643	61,854	33,401	———	———	———	———	———	———	———	53	1,283,044
												3*	
1911	39,197	810,281	40,153	21,281	60	$8	390	$18	———	———	———	894	831,588
1912	27,837	575,449	33,719	20,737	———	———	———	———	———	———	———	4,514	596,186
		780**	2,492**	1,520**								53**	2,303**
1913	5,936	123,748	6,421	3,878	28	4	———	———	———	———	———	62	127,630
1914	3,850	79,593	13,925	7,701	———	———	———	———	———	———	———	2,809	87,294
1915	9,188	189,941	23,772	12,052	———	———	———	———	———	———	———	18,732	201,993
1916	5,929	122,554	13,075	8,603	———	———	———	———	———	———	———	27,478	131,157
1917	21	431	17	14	———	———	———	———	———	———	———	15	445
1918	1,012	20,920	4,444	4,444	———	———	———	———	———	———	———	38	25,364
1919	720	14,878	2,397	2,685	———	———	———	———	———	———	———	19	17,563
1920	1,093	22,594	3,662	3,992	110	20	———	———	———	———	———	11	26,606
1921	893	18,461	1,295	1,295	———	———	———	———	———	———	———	7	19,756
1922	403	8,333	465	465	———	———	———	———	———	———	———	3	8,798
1923	573	11,855	9,654	7,916	234	34	14	1	———	———	———	109	19,806
1924	1,096	22,658	27,771	18,607	281	37	333	27	———	———	———	1,099	41,329
1925	107	2,205	3,959	2,748	———	———	———	———	———	———	———	140	4,953
1926	9	189	193	120	———	———	———	———	———	———	———	2	309
1927	1	30	7,076	4,012	550	72	2,101	132	———	———	———	75	4,246
1928	786	16,246	19,727	11,540	893	129	2,407	140	———	———	———	238	28,055
1929	1,219	25,194	35,776	19,069	792	139	6,369	401	———	———	———	97	44,803
1932[2]	10	207	10	3	———	———	———	———	———	———	———	2	202
1933	———	———	———	———	———	———	———	———	———	———	———	14,658	29,624
1934	592	20,720	10,120	4,855	410	———	2,332	———	———	———	———	5,062	27,342
1935	4,454	155,890	80,862	51,972	76	———	29	———	———	———	———	18,943	213,999
1936	———	———	———	———	———	———	———	———	———	———	———	11,225	236,142
1937	———	———	———	———	———	———	———	———	———	———	———	13,087	115,573
1938	437	15,295	3,647	1,576	———	———	———	———	———	———	———	951	17,652
1939	———	———	———	———	———	———	———	———	———	———	———	3,921	38,352
1940[2]	352	12,320	11,426	3,973	200	———	1,500	———	———	———	———	653	20,543
1941[2]	1,187	41,545	3,517	1,223	———	———	100	———	———	———	———	792	44,052
1942	86	3,010	21	8	———	———	———	———	———	———	———	50	3,025
1943[3]	9	315	138	62	———	———	———	———	———	———	———	1	413
1945	75	2,625	17	9	———	———	———	———	———	———	———	90	2,637
1946	28	980	6	5	———	———	———	———	———	———	———	81	985
1947	23	805	4	3	———	———	———	———	———	———	———	36	809
1949[2]	5	175	1	1	———	———	———	———	———	———	———	11	176
1950[2]	3	105	3	2	———	———	———	———	———	———	———	———	108
1952	5	175	1	1	———	———	———	———	———	———	———	———	176
1958	16	560	530	472	———	———	400	———	100	———	———	114	1,096
1959	7	245	648	590	———	———	300	———	———	———	———	150	866
1929–43	———	———	———	———	———	———	———	———	———	[3]150	[3]$19,538	———	19,538
Total	172,205	$3,664,897	427,471	$253,265	3,634	$443	16,275	$719	100	150	$19,538	177,161	$6,049,743

[1]Data for 1875–93, 1933, 1936–37, and 1939 from Couch and Carpenter (1943, p. 67–68). Figures for 1909–29 are for the National district only (Vanderburg, 1938, table 4, p. 33–34), except as follows: *Rebel Creek district, and **Paradise Valley district (U. S. Geological Survey, Minerals Resources of the U. S., 1910, 1912). Data for other years through 1952 from U. S. Bureau of Mines Minerals Yearbooks for listed years. Data for 1958–59 (Shon district only) from Minerals Resource office, Area VI, U. S. Bureau of Mines. For years 1953–56, gold and/or silver production was indicated, but figures are unavailable.

[2]From 1932 on, individual values are based on Annual Average Metal Prices (Eng. and Mining Jour., February 1961); gross values are from U. S. Bureau of Mines Minerals Yearbooks. Individual values for gold production are based on legal coinage values; gross values probably include gold at weighted value per fine oz.

[3]Production figure for Buckskin National mine to end of 1943 (Bailey and Phoenix, 1944, p. 92). Value based on arbitrary price of $130.25 per flask.

TABLE 24. Production by year for given commodities from mines in the Sonoma Range (Gold Run [Adelaide] and Harmony districts). The Golconda district production through 1939 was included in table 11 which shows the production from mines of the Edna Mountain area.

Year[1]	Gold		Silver		Copper		Lead		Zinc		Total Production	
	Ounces	Value	Ounces	Value	Pounds	Value	Pounds	Value	Pounds	Value	Tons	Gross value
1872	———	———	———	———	———	———	———	———	———	———	20	$7,124
1898	———	———	———	———	———	———	———	———	———	———	1,564	10,184
1899	———	———	———	———	———	———	———	———	———	———	13,492	65,556
1900	———	———	———	———	———	———	———	———	———	———	5,121	41,744
1907	2	$41	1,266	$836	———	———	14,143	$750	———	———	44	1,627
1908	68	1,405	2,297	1,747	———	———	35,905	1,508	———	———	118	4,660
1909	953	19,698	5,886	3,061	4,485	$583	54,000	2,322	———	———	1,863	25,664
1910	2	49	926	500	———	———	13,233	582	———	———	15	1,131
1911	127	2,625	3,256	1,726	10,209	1,276	24,727	1,113	———	———	153	6,740
1912	554	11,454	491	302	———	———	3,376	152	———	———	2,461	11,908
1913	1,016	21,009	1,877	1,134	121	19	20,870	918	———	———	3,282	23,080
1914	476	9,843	4,629	2,560	30,861	4,105	———	———	———	———	1,577	16,508
1915[2]	128	2,655	2,721	1,380	38,416	6,723	32,584	1,531	———	———	763	12,289
1916	63	1,300	4,903	3,227	107,941	26,553	22,313	1,540	———	———	1,751	32,620
1917	130	2,698	28,321	23,345	488,760	133,421	42,725	3,674	———	———	7,116	163,148
1918	23	465	4,087	4,087	64,434	15,915	———	———	———	———	716	20,467
1919	50	1,037	1,846	2,068	7,223	1,343	34,086	1,806	———	———	70	6,254
1920	5,054	104,482	94,109	102,579	———	———	———	———	———	———	14,347	207,061
1921	111	2,296	2,228	2,228	———	———	———	———	———	———	30	4,524
1922	7	137	2,941	2,941	———	———	3,291	181	———	———	55	3,259
1923	12	249	2,498	2,048	85	13	11,009	771	———	———	84	3,081
1924	36	748	867	581	———	———	———	———	———	———	76	1,329
1925	4	81	90	63	———	———	971	84	———	———	3	228
1926	6	121	2,358	1,471	———	———	22,026	1,762	———	———	44	3,364
1927	8	158	214	121	———	———	3,753	236	———	———	5	515
1928	3	64	383	224	96	14	4,378	254	1,248	$76	26	632
1929	18	379	2,025	1,079	———	———	707	45	———	———	66	1,503
1930	1	21	152	59	5,855	761	1,900	95	———	———	38	936
1932	22	447	3	1	———	———	———	———	———	———	———	448
1933	44	1,136	32	11	———	———	———	———	———	———	14	1,147
1934	63	2,196	717	464	318	25	6,257	232	———	———	107	2,917
1935	50	1,759	1,471	1,057	———	———	12,753	510	———	———	43	3,326
1936	187	6,540	502	388	———	———	2,342	108	———	———	72	7,036
1937	90	3,150	241	108	2,500	329	800	48	———	———	84	3,686
1938	317	11,095	4,071	1,760	———	———	8,100	384	———	———	835	14,099
1939	91	3,185	2,959	1,156	1,000	110	16,900	854	6,000	307	245	6,404
1940[3]	2,859	100,065	37,592	13,072	700	79	61,300	3,175	———	———	23,630	129,941
1941[3]	6,646	232,610	117,371	40,825	———	———	———	———	———	———	100,739	316,074
1942[3]	4,876	170,660	136,837	52,454	400	47	11,700	758	8,000	660	92,437	269,542
1943[3]	28	980	1,198	536	———	———	300	20	———	———	12	1,854
1944[3]	5	175	———	———	———	———	———	———	———	———	———	175
1947[3]	83	2,905	2,058	1,478	2,200	461	1,000	147	———	———	300	5,373
1948[3]	17	595	1,255	933	300	66	13,200	2,382	3,100	421	3,100	4,571
1949[3]	103	3,605	34	24	———	———	100	15	———	———	———	3,651
1950[3]	173	6,055	184	136	100	21	1,500	199	400	55	35	6,503
1951[3]	17	595	20	18	———	———	———	———	———	———	1	613
1957[3]	2	70	———	———	———	———	———	———	———	———	———	70
Total	24,525	$730,848	477,926	$273,788	766,004	$191,874	482,249	$28,156	18,748	$1,519	276,554	$1,454,566

[1]Data for 1872 to 1900 from Couch and Carpenter (1943, p. 67); for 1907–1936 from Vanderburg (1938, table 3), and from 1937–57 from U. S. Bureau of Mines Minerals Yearbooks for listed years. For the years 1945, 1952, and 1954–55, production was indicated, but details are unavailable.

[2]Vanderburg (1938, p. 27) reports a shipment of 3½ carloads of copper ore carrying gold and silver values and averaging $23.00 per ton which is not included in total.

[3]Values of individual commodities based on Annual Average Metal Prices, 1898 to 1960, Eng. and Mining Jour. (February, 1961); gross value from U. S. Bureau of Mines Minerals Yearbooks. Difference between total individual commodity values computed by author and gross values as given by U. S. Bureau of Mines is difference between legal coinage value of gold and average weighted price per fine ounce.

TABLE 27. Mines and prospects of the Slumbering Hills (Awakening district).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
99.[1] Humboldt.	Northeast slope of Slumbering Hills, northernmost property in range.	Open ground.	Gold.	Vertical quartz vein 4 feet thick in slates and quartzite. Beds west of vein are nearly vertical, those on east are flat, suggesting vein occupies fault zone on which there has been considerable movement. Flat-bedding vein east of main vein contains galena.	"A carload of ore shipped to Salt Lake is said to have netted $1,000, chiefly from gold." (Calkins, 1938, p. 19).
100. Scheelite.	South end of low hills, east of range and about half a mile northwest of Daveytown.	Jay S. Jones, Orovada, Nevada.	Tungsten.	Granodiorite and intruded Triassic shale and quartzite are cut by andesite dike and numerous quartz veins with flat east dip, which are much less abundant in sedimentary rocks. Tungsten minerals absent in collected specimens.	Explored by shallow open pit. Appears to have been considerable material removed, but I have no record of production from the property.
101. Jumbo (Austin).	Near the range crest about 6 miles south of north end of range.	Kenneth Austin, Reno, Nevada.	Gold.	A stockwork of small veins in a part of section where quartzite is abundant. Small veins contain abundant adularia and small amounts of gold. Adularia is more widely distributed than pay ore.	Most of the production from the district (see table 26) has come from this mine.
102. Spanish Girl.	About half a mile east of the Jumbo mine.	Bob Williams, Winnemucca, Nevada.	Gold.	This property was not visited but presumably it is similar to the Jumbo mine.	
103. Mayday (Davey).	Base of hills about 2 miles due west of Daveytown.	C. H. Wilmot, Winnemucca, Nevada.	Gold.	Quartz vein about 1 to 3 feet strikes N. 30° E. and dips 80° W. nearly parallel to bedding of dark slate country rock. Quartz vein branches to north. Some branches follow reverse faults.	Calkins (1938, p. 17) reports that, "According to W. H. McCartney, about $300,000 in gold has been taken from the Mayday shaft and $75,000 from the glory hole south of it."
104. Siskiyou (Pipes).	On range front 3 miles west southwest of Daveytown.	Harry Wharton and C. L. Swett, Winnemucca, Nevada.	Gold.	Blue-black slate cut by vertical quartz vein about 6 feet thick. Quartz is milky and vein is sinuous with several contorted small branches.	Production unknown.
105. Alabama.	Half a mile south of the Siskiyou mine and 3.25 miles southwest of Daveytown.	B. L. Davis, Winnemucca, Nevada.	Gold.	Quartz vein between 3 and 6 feet thick strikes N. 15° W. and dips 40° W. Shaly country rock below vein more intensely crumpled than rock above vein. Gold appears to be in quartz veinlets ramifying through the country rock rather than in the main body of vein quartz. Vein explored to depth of 175 feet by inclined shaft and short levels at intervals of about 50 feet.	
106. Havalau.	Three-fourths mile south of the Alabama mine and 3.5 miles southwest of Daveytown.	Unknown.	Gold.	Adit driven on east-dipping quartz vein which is conformable with bedding of country rock. Crosscut from 100-foot shaft encountered a west-dipping conformable quartz vein but failed to hit the east-dipping vein.	No record of production.
107. Pick Handle.	West of range crest about 7 miles southwest of Daveytown.	Charles W. Wilmot, Winnemucca, Nevada.		Quartz vein containing chalcopyrite and galena cuts granodiorite.	No record of production but workings stoped to surface, therefore, presumably some production.
108. Silver State.	West front of southern part of range 7.5 miles a little west and south of Daveytown.	Gold Producers, Inc., Cain Springs, Nevada.		Property not visited, but presumably on quartz vein in granodiorite.	No record of production.

[1]Numbers correspond to those shown on plate 3.

TABLE 25. Mines of the Sonoma Range (includes Gold Run [Adelaide] and Harmony districts and some mines in unnamed districts).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
96.[1] Adelaide mine.	Sec. 20, T. 34 N., R. 40 E.	Unknown.	Gold, silver, copper, lead.	Replacement ore bodies in limestone. Ore erratically distributed throughout the limestone for 600 feet along the strike and 300 feet downdip. Limestone interbedded with dark calcareous phyllite which strikes north and dips steeply east. Sulfide minerals are pyrrhotite, chalcopyrite, sphalerite, and galena in a gangue of silicates and carbonates.	Bulk of the production from the Gold Run district prior to 1940 was from this mine.
97. Crown (Adelaide Crown) mine.	Sec. 24, T. 34 N., R. 39 E.	Roy Hardy and Associates, Reno, Nevada.	Gold, silver, lead, copper, zinc.	Shale and quartzite cut by north-trending silicified fault zone, which has been mineralized over a width of 10 to 80 feet and is stained by iron and manganese oxides.	Production from the district for 1940–1942 was from this mine.
98. Black Diamond claim.	Sec. 35, T. 33 N., R. 39 E.	Mrs. Mary Clough, Winnemucca, Nevada.	Manganese.	Trengove (1959, p. 16) reports the mine is in chert, shale, and greenstone of the Pumpernickel Formation. The ore occurs as finely divided manganese oxides in a chert and jasper bed. Braunite is the principal manganese mineral.	No known production.
Major claim.	12 miles south of Golconda in Gold Run district.	Unknown.	Manganese.	Manganese oxides derived from rhodonite, with which galena, quartz, and calcite are associated. These minerals replace shale and limestone.	No known production.
Molly claims.	11.1 miles south of Golconda.	W. A. Emmet and R. W. West, in 1943.	Tungsten.	Two 1-to-2-inch quartz seams in coarse biotite granite contain molybdenite and considerable powellite.	No known production.
Forgotten claim.	Gold Run district.	Unknown.	Tungsten.	Unknown.	200-ton shipment to Battle Mountain stockpile during early 1940's assayed about 0.15 percent WO_3.
Wolverine-Red Rose group.	In Harmony Canyon, 5 miles southeast of Winnemucca.	Unknown.	Copper, gold, silver.	Primary copper sulfides and secondary oxides are associated with gold and silver in at least three veins between 4 and 7 feet wide, which have a northerly strike and a steep easterly dip. Main shaft workings are in limestone and shale; adits to south are in quartzite and rhyolite.	One shipment of 3½ carloads of copper ore carrying gold and silver values averaged $23.00 per ton in 1915 (Vanderburg, 1938, p. 27).
Gayer-Moo property.	Sec. 1, T. 35 N., R. 38 E. South of Harmony Canyon.	Unknown.	Quicksilver.	"The ore is said to occur in a wide dike of rhyolite which cuts sandstone, grit, and quartzite breccia." (Bailey and Phoenix, 1944, p. 109).	No production.
Plymouth property.	Sec. 1, T. 35 N., R. 38 E.	F. R. O'Leary, in 1943.	Quicksilver.	"Scattered short adits explore mildly metamorphosed sandstone, grits, and easterly trending silicified and altered dikes of rhyolite. Cinnabar is said to occur as scattered pods and veinlets in the altered dikes." (Bailey and Phoenix, 1944, p. 110).	No production, but 600 pounds of ore reported to have yielded 6 pounds of quicksilver when treated in small retort.
Ole Bull mine.	Sec. 22, T. 35 N., R. 38 E., in Thomas Canyon.	David See, Winnemucca, Nevada, in 1943.	Zinc, lead, sliver.	Sphalerite and small amounts of galena occur in fissure in calcareous shale of Harmony Formation. The vein strikes N. 65° E. and dips 80° SE. and can be traced along a strike a distance of 135 feet from the main adit to a trench. Four samples gave a weighted average of 1.4 percent lead, 22.1 percent zinc, and 0.67 oz silver per ton, over average width of 1.5 feet.	Explored by short adits, short drifts along the vein, and a winze to a depth of 50 feet below the main adit level and short drifts of the winze at the 25-foot level. No known production.

[1]Numbers correspond to those shown on plate 3.

TABLE 17. Mines of the Jackson Mountains area (Bottle Creek, Jackson Creek, Red Butte, Sawtooth, and Sulphur districts).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
40.[1] Baldwin (Blue Bucket, Blue Bottle).	Sec. 8, T. 40 N., R. 33 E.	H. W. Baldwin in 1943.	Quicksilver.	Ore is silicified rhyolite dike which intrudes pre-Tertiary sediments. A rhyolite flow caps the hill north of the mine.	Property had produced 141 flasks to the end of 1942. Information from Bailey and Phoenix (1944, p. 81–82).
41. Birthday (Wootan, Wootan and McCown).	Sec. 18, T. 40 N., R. 33 E.	D. J. Wootan, Jerry Wootan, M. R. Wootan, and the estate of M. S. McCown in 1943.	Quicksilver.	"The workings explore a faulted diabase dike which cuts tuff and basalt of Tertiary (?) age. The dike is less than 10 feet wide and strikes northerly and dips 45°–50° to the west. . . . The ore bodies were confined to the dike and adjacent wall rocks and appear to have been most abundant where the dike was most faulted."	Production, 220 flasks to the end of 1943. Information from Bailey and Phoenix (1944, p. 83).
42. Blue Can (Bottle Creek Mercury mine, Tin Can).	Sec. 7, T. 40 N., R. 33 E.	C. P. Hoskins, C. T. Smith, and T. C. Niebuhr in 1943.	Quicksilver.	"The ore bodies were localized in broken portions of a diabase dike which in most places strikes northerly and dips westward. The wall rocks are greatly argillized, but appear to belong to both the pre-Tertiary and Tertiary sequences of sediments, tuffs, and flows."	Property had produced 1,728 flasks to the end of 1943. Information from Bailey and Phoenix (1944, p. 83–84).
43. McAdoo (Bluebird).	Sec. 7, T. 40 N., R. 33 E.	Mrs. W. McAdoo Overholser in 1943.	Quicksilver.	"The ore bodies lie either in or adjacent to parts of a diabase dike which trends northerly and dips westerly through altered pre-Tertiary and Tertiary sediments and tuffs."	Property produced 1,646 flasks to the end of 1942. Information from Bailey and Phoenix (1944, p. 86).
44. Niebuhr (Sunset-Big Four group).	Sec. 36, T. 41 N., R. 32 E.	T. C. Niebuhr in 1943.	Quicksilver.	"The shaft is in broken and silicified rhyolite and follows a shear zone which strikes N. 70° E. and dips 70° to the southeast. Cinnabar coats the rhyolite fragments, impregnantes the finely crushed material, and is said to have occurred as solid bunches weighing as much as two pounds."	Property produced 19 flasks to the end of 1942. Information from Bailey and Phoenix (1944, p. 87).
45. Red Ore.	Secs. 7 and 18, T. 40 N., R. 33 E.	Property under lease to John Etchart in 1957.	Quicksilver.	Extensive open cuts explore altered diabase dikes. Dikes trend northward. Cinnabar is disseminated in the dike and in narrow veins with calcite.	Production through 1943 was reported with that of White Peaks mine. Most of the production from the district since 1943 has been from this property.
46. White Peaks (Scossa mine, Bottle Creek mine).	Sec. 7, T. 40 N., R. 35 E.	James and Arnold Scossa in 1943.	Quicksilver.	Cinnabar fills fractures in a north-trending diabase dike which cuts argillized tuffs, sandstones, and fine gravels of Permian and Triassic Age. The cinnabar is disseminated also in the dike and adjacent wall rocks, and has almost completely replaced parts of the dike.	Property produced 773 flasks to the end of 1943. Information from Bailey and Phoenix (1944, p. 88–89).
47. Iron King (DeLong mine).	Sec. 31, T. 40 N., R. 32 E.	W. G. Austin, Reno, Nevada.	Iron.	The ore, which is predominantly magnetite, occurs as replacement deposits in greenstone adjacent to a north-trending fault system, and adjacent to or near diorite, to which they are thought to be related.	Mine has produced 421,886 long tons of ore. Geology from Shawe and others (1962). Production data from company files, published with their permission.
48. Jackson prospect.	On ridge west of north fork of Jackson Creek 1.5 miles north of the old Lay Ranch.	Property under lease to J. M. Helzer of Lovelock, Nevada in 1954.	Iron.	Hematite and magnetite stringers and pods along faults and fractures in the Happy Creek volcanic group.	No known production from the property. Information from Shawe and others (1962).
49. Red Bird.	About half a mile south of the Iron King mine.	Humboldt Metals, Winnemucca, Nevada.	Iron.	Ore, which is principally magnetite, occurs along several north-trending faults in diorite and Happy Creek volcanic rocks.	Property produced 21,400 long tons of ore to the end of 1957. Geology from Shawe and others (1962). Production data from company files, published with their permissoin.
50. Black Jack.	About 1 mile northeast of divide between Jackson Creek and Trout Creek.	Humboldt Metals, Winnemucca, Nevada.	Iron.	Deposit not visited, but reportedly similar to other iron deposits in area: magnetite and hematite replacing volcanic rocks along faults or shear zones.	Property produced 4,967 long tons to the end of 1957. Production data from company files, published with their permission.
51. Low prospect.	On north and east flanks of Navajo Peak.	Walter Low, Winnemucca, Nevada.	Iron.	Several small veins of hematite and magnetite cut Happy Creek volcanic rocks and diorite. Property includes 20 claims explored by bulldozer cuts.	No recorded production.
52. Low copper prospect.	On east flank of Navajo Peak.	Walter Low, Winnemucca, Nevada.	Copper.	An adit and inclined shaft explore quartz veins in King Lear Formation. Specimens of ore on dump contain azurite, and tetrahedrite in quartz, which, in turn, contains numerous fragments of dark shale.	No known production.
53. Red Butte area.	West side of Jackson Mountains.	Unknown.	Copper.	Several small prospects located on aplite dikes which cut diorite (locally gradational to gabbro) intrusive rocks.	Vanderburg (1938, p. 41) reports the district has produced 3 carloads of copper-lead ore, one carload of lead-zinc-silver ore, and about 20 tons of antimony ore.
54. Rattlesnake Canyon prospect.	Sec. 22, T. 37 N., R. 30 E.	Unknown.	Quicksilver.	Cinnabar fills fractures in igneous rocks adjacent to small shear zones and is disseminated in the shear zones.	Production very small. Information from Bailey and Phoenix (1944, p. 106–107).
55. Sawtooth district.	North and west sides of Sawtooth Knob.	Unknown.	Gold.	"Placer gold has been found over a partly level area of about 6 square miles . . . the best values are found at shallow depths. Much of the gold has been found above a false clay bedrock at depths of 8 inches to 2 feet. . . . The gravel is rough and angular, with a small percentage of boulders."	Production about $12,000. Information from Vanderburg (1938, p. 42).
56. Sulphur district.	West front range east of Sulphur, Nevada.	Under lease to Western Sulfur Corp., Winnemucca, Nevada in April 1957.	Sulfur, silver, alunite, quicksilver.	Sulfur is in veins in pebble conglomerate, pebbly sandstone, and tuffaceous sandstone, disseminated in conglomerate, and at one locality (Peterson mine) occurs along fault zone that brings preconglomerate volcanic rocks against the sedimentary section. Large masses of sulfur are quite pure, but ore mined runs from about 15 to 38 percent sulfur. Ore is ground and screened to yield approximately 35 percent product, which is bagged and shipped for use as a soil conditioner. Silver occurs as cerargyrite (horn silver) in narrow seams near the surface, at the south end of the sulfur deposits. Alunite occurs in veins just east of most of the sulfur pits. Cinnabar is associated with sulfur in small amounts. The only production has come from southern part of area.	Couch and Carpenter (1943, p. 68) report sulfur and silver production of $381,723. Bailey and Phoenix (1944, p. 108) report quicksilver production of 25 flasks to the end of 1943. Vanderburg (1938, p. 44) reports the silver production amounted to more than $100,000.

[1]Numbers correspond to those shown on plate 3.

TABLE 13. Mines of the Central district.

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
21.[1] Dutchman.	NW¼ sec. 18, T. 35 N., R. 35 E.				
22. Golden Eagle.	SE¼ sec. 20, T. 35 N., R. 34 E.	E. J. Baker in 1937.	Gold, silver, lead.	Nearly vertical 1½-foot-wide quartz vein containing gold, silver, and a little lead in shale and limestone. Development consists of several adits.	Production unknown.
23. King Midas group.	Half a mile south of Golden Eagle.	W. F. Fisk in 1937.	Gold, silver, lead.	Several narrow veins with variable strike and dip, cut shale and "granite," and contain values in gold, silver, and a little lead. Development consists of several small shafts, short adits, and scattered surface workings, totaling about 500 feet.	Production unknown.
24. Yellow Jacket group.	Adjoins King Midas group on the south.	S. L. Hershberger in 1937.	Gold, silver.	Narrow quartz veins with variable strike and dip in "granite." Ore, in places, contains considerable arsenic. Development consists of six adits and several shallow shafts totaling about 1,000 feet.	Production unknown.
25. Blackbird.	SE¼ sec. 34, T. 35 N., R. 34 E.				Couch and Carpenter (1943) list a production of $6,734 in 1893.
Monitor.					Couch and Carpenter (1943) list a production of $17,968 in 1872.

[1]Numbers correspond to those shown on plate 3.

TABLE 10. Mines of the Edna Mountain Area (Golconda district).

Name	Location	Owner	Commodity	Geology and workings	Production and remarks
18.[1] Golconda Tungsten.	Northwest part sec. 1, T. 35 N., R. 40 E.; and Southwest part sec. 36, T. 36 N., R. 40 E.	Rare Metals Corp., a subsidiary of Nevada-Massachusetts Co.	Tungsten.	Tungsten-bearing layers of ferruginous and manganiferous clayey gravel and tufa were worked by open pits and shallow flat stopes. The deposits are of hot-spring origin and are aligned above a north-northeastward vein system in steeply dipping Cambrian rocks.	White (1955, p. 135) reports the property produced 83,739 units of WO_3 from 105,591 tons of ore between 1941 and 1945. The property has been idle since early 1945.
19. Silver Coin group.	Southwest part sec. 1; Southeast part sec. 2, T. 35 N., R. 41 E.		Silver.	The workings explore a vein in silicified limestone and black shale (Vanderburg, 1938, p. 28–29). The vein strikes N. 15° E. and dips 32° W., and averages 3 feet in width. Cerargyrite, argentite, and tetrahedrite are associated with cerussite and oxidized copper minerals. Silver Coin shaft 165 feet deep on 30° incline.	From 1918 to 1924 the property produced 693.5 tons of ore containing 30,854 oz of silver. The ore contained also 0.02 oz of gold per ton and a little lead.
20. Kramer-Silver King mine.	West center sec. 1, and east center sec. 2, T. 35 N., R. 41 E.	Kramer-Silver King Mining Co.	Silver.	Property just north of Silver Coin group and in the same rocks.	No production.

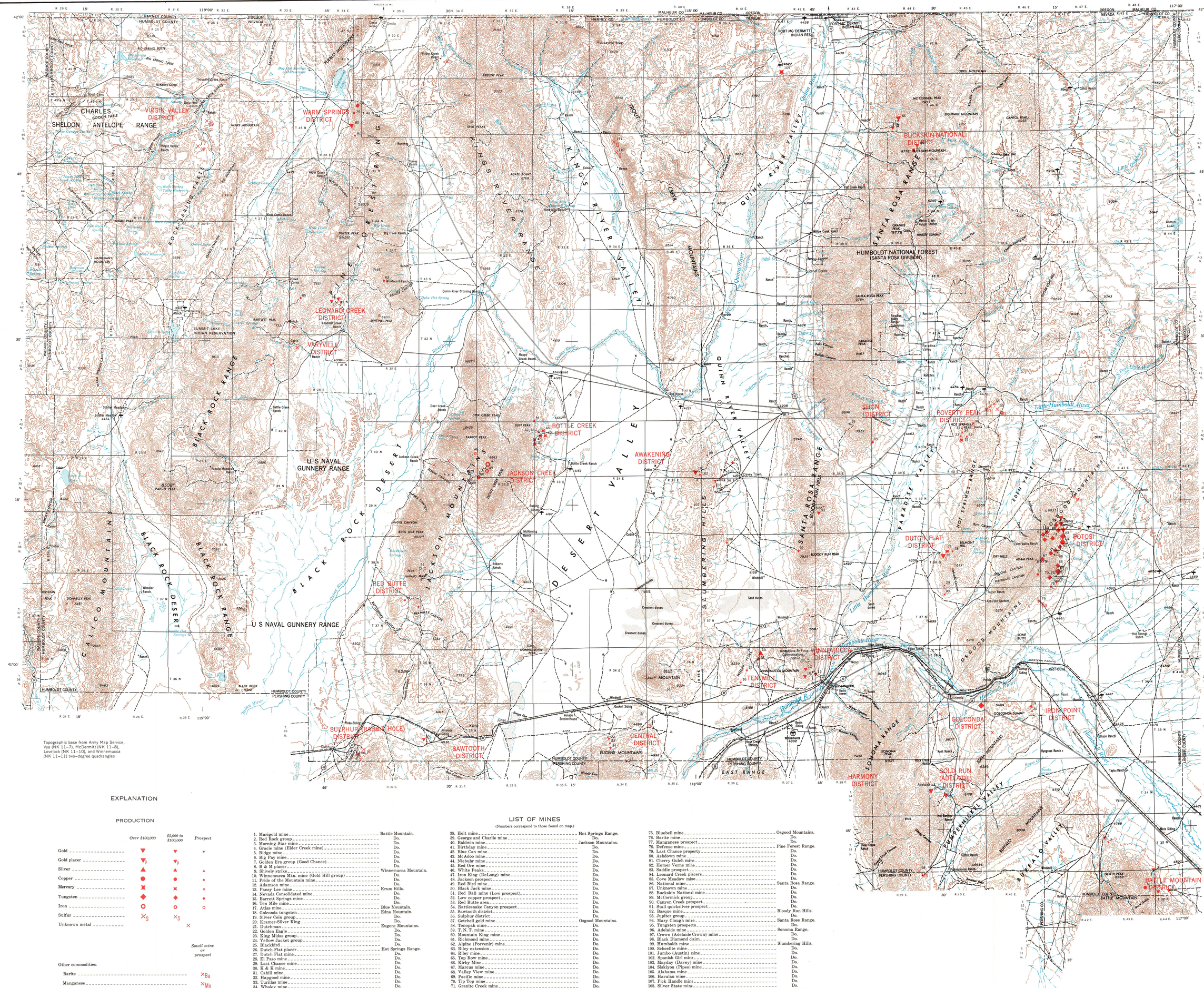
[1]Numbers correspond to those shown on plate 3.

TABLE 6. Mines of the Battle Mountain district within Humboldt County.

Name	Location	Owner	Commodity	Geology and workings	Production and remarks[1]
1.[2] Marigold mine.	NE¼ sec. 18, T. 33 N., R. 43 E.		Gold.	Ore developed in basal conglomerate of Battle Formation, which rests unconformably on quartzite and shale of the Valmy Formation. 785 feet of drifts and crosscuts on main adit level. 330 feet of drift on sublevel, 26 feet above main adit level.	Production records incomplete. Several thousand tons of ore averaging about $7.00 per ton from time of discovery in 1937 to 1940. Several unsuccessful attempts to operate the property have been made since 1940.
2. Red Rock group.	About half a mile south of Marigold mine	George Hinman, Battle Mountain, Nevada.	Gold.	Workings explore fault zone that strikes north and dips steeply west, in the Battle Formation. Fault zone is iron stained and reported to have fair-grade gold assays. Workings consist of shaft 100 feet deep, 40-foot adit, and several shallow cuts.	No production.
3. Morning Star mine.	On small hill near mouth of Elder Creek in SE¼ sec. 36, T. 33 N., R. 43 E.	J. E. Broyles, Battle Mountain, Nevada.	Copper, gold, silver.	Workings explore zones of silicification and argillic alteration adjacent to faults of small displacement that cut dark biotite hornfels and quartzite of Harmony Formation. Faults strike northwestward and dip steeply to southwest. Workings consist of a glory hole, 660 feet of drifts and crosscuts, a winze 105 feet deep, and a 40-foot raise.	From 1905 to 1938 the mine produced 271 tons of ore containing 264.96 oz of gold, 582 oz of silver, 18,524 lb of copper, and 2,291 lb of lead. The lead came from shipment of 46 tons of ore shipped in 1935, which probably came from some other property.
4. Gracie mine, (Elder Creek mine).	NE¼ sec. 11, T. 32 N., R. 43 E.	James Bennett, Battle Mountain, Nevada.	Copper, silver, gold.	Workings in highly metamorphosed shale and sandstone of Harmony Formation cut by faults with northwest strikes and southwest dips. One mineralized fault that strikes N. 16° W. and dips 40°–75° SW. explored for 500 feet along strike and 250 feet down dip. Chalcocite is the main ore mineral.	From 1917 to 1928 the mine produced 1,949 tons of ore containing 118,558 lb of copper, 3,829 oz of silver, and 50.73 oz of gold.
5. Ridge mine.	NE¼ sec. 12, T. 32 N., R. 43 E. east side of Elder Creek, about 1 mile from mouth.	George Hinman, Battle Mountain, Nevada.	Copper, silver, gold (lead).	Workings explore mineralized fault in slightly metamorphosed rocks of Harmony Formation. Fault strikes N. 10°–25° E. and dips 75°–85° NW. and has been intruded by a 1-to-3-foot-wide pebble dike. Small amounts of malachite and chalcocite occur along fault. Workings consist of adit 455 feet long, 170 feet of drift along fault and an inaccessible winze and drift. Winze reported to be 108 feet deep and drift 80 feet long at 50-foot depth of winze.	From 1924 to 1939 the mine produced 116 tons of ore containing 19,828 lb of copper, 1,914 oz of silver, and 15.04 oz of gold. 489 lb of lead were recovered from a 1-ton shipment made in 1924.
6. Big Pay mine.	SE¼ sec. 1, T. 32 N., R. 43 E.	George Hinman, Battle Mountain, Nevada.	Copper, silver, gold (lead).	Workings explore mineralized faults of small displacement that cut slightly metamorphosed shale and sandstone of the Harmony Formation. Ore minerals are chrysocolla, malachite, chalcocite and a little azurite and copper pitch. Workings consist of vertical shaft and 155 feet of level workings 45 feet below collar of shaft. Shaft filled with water below 80 feet.	From 1929 to 1937 the mine produced 68 tons of ore containing 5,154 lb of copper, 6,000 lb of lead, 624 oz of silver, and 4.85 oz of gold. It is unlikely that the lead ore came from this mine.
7. Golden Era group (Good Chance).	In canyon southeast of Snow Gulch in E½ sec. 18, T. 32 N., R. 44 E., 22 claims.		Silver, gold, lead, copper.	Workings explore mineralized fault zone that cuts metamorphosed sandstone and shale of Harmony Formation. Pyrite, quartz, arsenopyrite, and minor amounts of free gold, galena, chalcopyrite, and sphalerite in fault zone. Old workings inaccessible. Workings since 1938 include 200-foot inclined shaft, main adit level 850 feet long, 180 feet of drift, 90 feet of crosscuts, and 150 feet of raises connecting two sublevels.	From 1908 to 1940 property produced 728 tons of ore that contained 4,036 oz of silver, 398.34 oz of gold, 7,338 lb of lead, and 1,146 lb of copper.
8. B & M placer.	Secs. 17 and 18, T. 32 N., R. 44 E. at mouth of Snow Gulch.	Gordon Estes, Battle Mountain, Nevada.	Gold.	Gold found in a channel averaging 30 feet wide and extending for about 2,000 feet down the fan. Bedrock averaged 22 feet in depth. Gold was coarse (averaging more than one-eighth inch in diameter) and was generally distributed uniformly throughout the gravel.	Property operated in 1940 and 1941 with a washing plant utilizing water pumped from the Humboldt Valley. Production totaled about $47,000.

[1]In addition to the production attributed to individual porperties, the district produced in 1941, 390 oz of gold and 52 oz of silver with a value of $13,687 (U. S. Bureau of Mines Minerals Yearbook, 1941); in 1942, 11 oz of gold and 4 oz of silver from 26 tons of ore with a value of $388 (U. S. Bureau of Mines Minerals Yearbook, 1942); in 1950, 1 oz of gold, 30 oz of silver, and 2,600 lb of copper from 14 tons of ore with a value of $603 (U. S. Bureau of Mines Minerals Yearbook, 1950); and in 1951, 69 oz of gold and 7 oz of silver from 1,000 tons of ore with a value of $2,421 (U. S. Bureau of Mines Minerals Yearbook, 1951).

[2]Numbers correspond to those shown on plate 3 and figure 11.



Topographic base from Army Map Service, Vya (NK 11-7), McDermitt (NK 11-8), Lovelock (NK 11-10), and Winnemucca (NK 11-11) two-degree quadrangles

EXPLANATION

PRODUCTION

	Over $100,000	$5,000 to $100,000	Prospect
Gold	▼	▼	▾
Gold placer	▼p	▼p	
Silver	▲	▲	▴
Copper	●	●	•
Mercury	✖	✖	×
Tungsten	◆	◆	◆
Iron	○	○	○
Sulfur	×S	×S	
Unknown metal			×

Small mine or prospect

Other commodities:

Barite	×Ba
Manganese	×Mn
Opal	×op
Uranium	×U

LIST OF MINES

(Numbers correspond to those found on map.)

1. Marigold mine — Battle Mountain.
2. Red Rock group — Do.
3. Morning Star mine — Do.
4. Gracie mine (Elder Creek mine) — Do.
5. Ridge mine — Do.
6. Big Pay mine — Do.
7. Golden Era group (Good Chance) — Do.
8. B & M placer — Do.
9. Shively strike — Winnemucca Mountain.
10. Winnemucca Mtn. mine (Gold Hill group) — Do.
11. Pride of the Mountain mine — Do.
12. Adamson mine — Do.
13. Pansy Lee mine — Krum Hills.
14. Nevada Consolidated mine — Do.
15. Barrett Springs mine — Do.
16. Ten Mile mine — Do.
17. Atlas mine — Blue Mountain.
18. Golconda tungsten — Edna Mountain.
19. Silver Coin group — Do.
20. Kramer-Silver King — Do.
21. Dutchman — Eugene Mountains.
22. Golden Eagle — Do.
23. King Midas group — Do.
24. Yellow Jacket group — Do.
25. Blackbird — Do.
26. Dutch Flat placer — Hot Springs Range.
27. Dutch Flat mine — Do.
28. El Paso mine — Do.
29. Last Chance mine — Do.
30. K & K mine — Do.
31. Cahill mine — Do.
32. Hapgood mine — Do.
33. Turillas mine — Do.
34. Wholey mine — Do.
35. Prentiss mine — Do.
36. Snowdrift mine — Do.
37. King group — Do.
38. Holt mine — Hot Springs Range.
39. George and Charlie mine — Do.
40. Baldwin mine — Jackson Mountains.
41. Birthday mine — Do.
42. Blue Can mine — Do.
43. McAdoo mine — Do.
44. Niebuhr mine — Do.
45. Red Ore mine — Do.
46. White Peaks — Do.
47. Iron King (DeLong) mine — Do.
48. Jackson prospect — Do.
49. Red Bird mine — Do.
50. Black Jack mine — Do.
51. Red Ball mine (Low prospect) — Do.
52. Low copper prospect — Do.
53. Red Butte area — Do.
54. Rattlesnake Canyon prospect — Do.
55. Sawtooth district — Do.
56. Sulphur district — Do.
57. Getchell gold mine — Osgood Mountains.
58. Tonopah mine — Do.
59. T. N. T. mine — Do.
60. Mountain King mine — Do.
61. Richmond mine — Do.
62. Alpine (Porvenir) mine — Do.
63. Riley extension — Do.
64. Riley mine — Do.
65. Top Row mine — Do.
66. Kirby Mine — Do.
67. Marcus mine — Do.
68. Valley View mine — Do.
69. Pacific mine — Do.
70. Tip Top mine — Do.
71. Granite Creek mine — Do.
72. Ogee and Pinson mine — Do.
73. Getchell Sec. 5 pit — Do.
74. Tungsten prospect — Do.
75. Bluebell mine — Osgood Mountains.
76. Barite mine — Do.
77. Manganese prospect — Do.
78. Defense mine — Pine Forest Range.
79. Last Chance property — Do.
80. Ashdown mine — Do.
81. Cherry Gulch mine — Do.
82. Homer Verne mine — Do.
83. Saddle prospect — Do.
84. Leonard Creek placers — Do.
85. Cove Meadow mine — Do.
86. National mine — Santa Rosa Range.
87. Unknown mine — Do.
88. Buckskin National mine — Do.
89. McCormick group — Do.
90. Canyon Creek prospect — Do.
91. Stall quicksilver prospect — Do.
92. Basque mine — Bloody Run Hills.
93. Jupiter group — Do.
94. Mary Clough mise — Santa Rose Range.
95. Tungsten prospects — Do.
96. Adelaide mine — Sonoma Range.
97. Crown (Adelaide Crown) mine — Do.
98. Black Diamond calm — Do.
99. Humboldt mine — Slumbering Hills.
100. Scheelite mine — Do.
101. Jumbo (Austin) mine — Do.
102. Spanish Girl mine — Do.
103. Mayday (Davey) mine — Do.
104. Siskiyou (Pipes) mine — Do.
105. Alabama mine — Do.
106. Havalau mine — Do.
107. Pick Handle mine — Do.
108. Silver State mine — Slumbering Hills.
109. Cordero mine — Trout Creek Mountains.
110. Moonlight mine — Do.
111. Granite Point claims — Do.

Williams & Heintz Map Corporation, Washington 27, D.C.

MINERAL RESOURCE MAP OF HUMBOLDT COUNTY, NEVADA

By
Ronald Willden

SCALE 1:250 000

5 0 5 10 15 MILES

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTAL CONTOURS AT 100 FEET

TABLE 23. Mines of the Santa Rosa Range (includes National, Paradise Valley, Rebel Creek [New Goldfields], and Shon districts).

	Name	Location	Owner	Commodity	Geology and workings	Production and remarks
	[1](1) Edmunds mine.	West center sec. 27, T. 46 N., R. 39 E.			Adit 485 feet long in N. 22° W. direction driven in basalt (andesite). A quartz seam 2 inches thick was cut 320 feet from the portal and sunk on for 130 feet. Rhyolite dike cut 370 feet from portal.	No known production.
	(2) Crawford mine.	West center sec. 27, T. 46 N., R. 39 E. Southwest of and about 40 feet above Edmunds tunnel.			Northwest-trending adit 300 feet long. Country rock basalt. Two narrow veins containing quartz and calcite were cut in the adit.	No known production.
	(3) Hatch (Morning Star) mine.	West side of National Gulch, in the southwestern part of sec. 27, T. 46 N., R. 39 E.		Gold, silver.	Adit about 900 feet long driven to intersect National vein, assumed to be faulted across the gulch. Rock cut in the adit includes rhyolite near the portal and brecciated basalt tuff containing pyrite that yields low values in gold and silver.	No known production.
86.	(4) National mine (Stall shaft).	Southwest part sec. 27, T. 46 N., R. 39 E.	Under lease to Welchell Mines, Inc., in 1957.	Gold, silver.	Lindgren (1915, p. 32) states, "The one really important development in the camp is the gold shoot of the National mine. Encountered 40 feet below the surface in the Stall shaft, it has been followed on the dip of the vein a distance of about 800 feet, the stope length reaching 250 feet. Within this distance the vein carries much coarse electrum, or silver-gold alloy, mostly in the footwall seam, and much of the ore is extremely rich, averaging $20 or $30 to the pound. This high-grade ore is so irregularly distributed that entirely barren quartz may adjoin streaks of rich quartz a foot or two in width. Small grains of the common sulphides are found at the walls of the gold-bearing footwall veinlet, which is from a few inches to a foot wide and is beautifully banded by alternating deposition of radial and fine-grained quartz. . . . In places the quartz contains a little stibnite, but it is not directly associated with the gold. This gold shoot has been stoped down to the tunnel level No. 5, and it did not outcrop at the surface. The total production of this shoot is said to have been about $3,500,000. It is not probable that any other shoots with coarse gold occurred in the mass of rock removed by erosion, for no placer gold has ever been found either in Charleston Gulch or along any other creek in the district."	The bulk of the production from the district came from this mine.
	(5) Indian Valley mine.	Northwest part sec. 27, T. 46 N., R. 39 E.			Lindgren (1915, p. 49–50) says, "A tunnel has been driven 500 feet south, on a vein which contains much stibnite in spots. The vein is in places 5 feet wide and consists mainly of altered rhyolite, with some quartz stringers. The vein has a steep dip and strikes N. 8° E. A specimen of the ore shows well-crystallized stibnite, cementing the fragments of a rhyolite breccia which contains finely divided pyrite. . . Picked specimens of stibnite contain only a trace of gold and less than 1 ounce of silver to the ton."	
	(6) Stall shaft of National mine.	Near SE. cor. of SW¼ sec. 27, T. 46 N., R. 39 E.	Under lease to Welchell Mines, Inc.	Gold, silver.	(See National mine.)	
	(7) Caustin mine.	Near NE. cor. of NW¼ sec. 34, T. 46 N., R. 39 E.			Lindgren (1915, p. 49) says, "A few hundred feet south of the Stall shaft is the shaft sunk by Caustin and Jarvis to a depth of at least 180 feet as an incline sloping 50° W. A vein with some quartz was said to have been cut, but presumably no ore was found, for the operations were long ago suspended."	
	(8) First National mine.	East center of NW¼ sec. 34, T. 46 N., R. 39 E.			Unknown.	
	(9) Utah National mine.	Near center of NW¼ sec. 34, T. 46 N., R. 39 E.			Unknown.	
	(10) Mammoth mine.	Southwest part of SW¼ sec. 27, T. 46 N., R. 39 E.			Lindgren (1915, p. 45–46) says, "Three tunnels have been driven . . . near the property lines of the National Mines Co. "Tunnel No. 1 (elevation, 6,672 feet) enters rhyolite. About 58 feet from the portal, on the contact with basalt, lies a small vein which in 1911 had not been traced further. This is practically on the level of the collar of the Stall shaft. "Tunnel No. 2 (elevation, 6,499 feet) follows nearly the line between West Virginia claim and West Virginia claim No. 1. The portal of this tunnel cuts into latite. About 600 feet from the portal a vein was cut which the company considered to be the southern continuation of the National vein. Basalt lies in the footwall, and the vein when entering this rock splits into several seams. The vein strikes N. 7° E., dips 70° W., is 3 feet wide, and consists of a clay gouge with broken quartz seams. Excellent ore, said to assay $100 in silver and $2 to $3 in gold, was found in this vein and small shipments were made. "Tunnel No. 3 (elevation, 6,300 feet) was 500 feet long in June, 1911 and is entirely in rhyolite. Toward the face the rock is pyritic and contains quartz seams."	
	(11) Blum shaft.	Near west center SE¼ sec. 28, T. 46 N., R. 39 E.			Lindgren (1915, p. 47–48) says, ". . . the Blum shaft, which is vertical and is 260 feet deep . . . is apparently sunk in the rhyolite dike. The rock is a soft earthy rhyolite with sparse crystals of pyrite. . . . The vein is narrow but well defined, strikes N. 8° E. and dips 70° W. It consists of clay gouge with several quartz stringers 8 to 10 inches wide. Much of the soft stuff on the dump contains cinnabar, shown by panning. Cinnabar was found at a depth of 30 feet, and more abundantly in solid streaks 1 inch to 2 inches wide at a depth of 60 feet."	
	(12) Chefoo tunnel.	North of center sec. 33, T. 46 N., R. 39 E.			Lindgren (1915, p. 46–47) says, "The crosscut tunnel trends N. 55° W. and encounters a vein at 416 feet. On this vein drifts have been extended 45 feet south and 20 feet north. The tunnel is driven wholly in decomposed basalt that includes some harder residual boulders which show that the basalt contained phenocrysts of triclinic feldspar. "The rock exposed in the footwall in the south drift is a basalt but is greatly altered by the development of sericite, calcite, and pyrite. The hanging wall is still more strongly sericitized. Adjoining the unaltered footwall is a vein 3 feet wide of soft white rock containing several clay partings; next follows a seam of clay, which widens to a 4 or 5 inch vein of silicified and pyritic material, made up of fragments of country rock, and containing also small crystals of arsenopyrite, and between these fragments are crusts of fine quartz crystals resting upon narrow bands of pyrite, zinc blende, and chalcopyrite. In the vugs delicate capillary needles of stibnite rest upon quartz crystals. This stibnite and some marcasite are the latest minerals formed. . . . Assays of specimens of good-looking ore from this locality gave 20 cents in gold and 16 ounces of silver to the ton. Some ore obtained here is said to have contained tetrahedrite and is reported to have contained $40 in gold and $625 in silver to the ton. None has been shipped, and the vein is probably too narrow for exploitation."	
87.	(13) Unknown.	SE. part of NW¼ sec. 33, T. 46 N., R. 39 E.		Gold, silver, lead, copper.	Mine opened by adit driven in altered andesitic and basaltic volcanic rocks. Workings not examined.	Reported to have accounted for most of the production from the district from the closing of National mine in 1917 through the 1920's.
88.	(14) Buckskin National mine.	West center sec. 11, T. 45 N., R. 39 E.	Buckskin National Gold Mining Company.	Gold, silver.	According to Vanderburg (1938, p. 35), "Ore is present in a quartz fissure vein having a strike of N. 15° W., a dip of 76° westerly, and an average width of 4 feet. . . . Formation is rhyolite and andesite. . . . The average grade of ore mined is $16 per ton."	
89.	(15) McCormick group.	SW¼ sec. 11, T. 45 N., R. 39 E.	John Dermody, Julia P. Ward, and Mrs. Chalmers McCormick, McDermitt, Nevada.	Quicksilver.	Bailey and Phoenix (1944, p. 93) state, "A blanket of silicified ash and tuff, or opalite, about 50 feet thick overlies the rhyolite and contains all the known ore bodies. . . . Interbedded with the silicified tuffs are thin layers of chalcedonic rock whose upper surfaces are in many places cracked. . . . Much of the cinnabar occurs in, and on, these layers."	Geologic maps of the area have been prepared by Roberts (1940b); and Benson (1956, fig. 21) presents an assay map of the workings. Production reported by Bailey and Phoenix (1944, p. 92) to be about 150 flasks to the end of 1943.
90.	Canyon Creek prospect.	Sec. 13, T. 45 N., R. 38 E.	Unknown.	Quicksilver.	Bailey and Phoenix (1944, p. 94) report, "The workings which consist of two 70-foot adits, connected by a 20-foot raise, explore a highly altered diabase dike which strikes N. 15° E. and dips steeply eastward. The walls are fine-grained altered and silicified sedimentary rocks . . ."	No known production, but small calcine dump indicates some production.
91.	Stall Quicksilver prospect.	Sec. 31, T. 45 N., R. 39 E.	F. W. Stall of Sacramento, California, in 1943.	Quicksilver.	Bailey and Phoenix (1944, p. 94–95) report, "The rocks of the area are silicified and altered rhyolite flows and rhyolitic and glassy tuffs which strike northerly and dip gently eastward. . . . The only ore mineral seen was cinnabar, but native mercury is said to have been panned from the soil."	Production has amounted to only a few flasks.
92.	Basque mine.	Sec. 19, T. 39 N., R.38 E.	Unknown.	Gold.	Vanderburg (1938, p. 43) reports, "The ore occurs in a vein system that strikes north and south and dips about 65° to the west. The values are all in gold, which occurs in a free state in a quartz gangue. The average grade of the ore mined . . . was $12 per ton."	Vanderburg estimated about 800 tons of ore were treated in a mill on the property and several carloads of ore were shipped to smelters.
93.	Jupiter group.	Sec. 10, T. 38 N., R. 37 E.	Unknown.	Tungsten.	According to Vanderburg (1938, p. 43), claims located on two scheelite and molybdenite-bearing quartz veins that cut granodiorite. The quartz veins have an average width of about 5 feet, strike north, and dip about 35° to the west.	No recorded production.
94.	Mary Clough mine.	Sec. 3, T. 40 N., R. 38 E.	Charleston Hill National Mining Company.	Gold, silver, tungsten.	Peter Joralemon (written communication, 1943) reports the property is underlain by hornfels, shale, and schist cut by large steeply dipping granodiorite dike. Pyrite and other sulfides are disseminated through sediments, and all rock types are cut by quartz seams and veins from a fraction of an inch to 2 feet in width. The larger veins contain gold, silver, pyrite, and chalcopyrite. The narrow seams, less than an inch wide, contain scheelite, with the highest grade at the intersection of the seams.	Production unknown.
95.	Tungsten prospects.	Sec. 13, T. 40 N., R. 38 E.	Unknown.	Tungsten.	Quartzite, slate, and calc-slates intruded by granodiorite. Scheelite in tactite and disseminated in quartzite.	Production unknown.
	Sand dunes.	South end of range.		Sand.	Sand dunes exploited on small scale as source of plaster sand and for use as an abrasive by Pacific Stones, Inc., for saws used in quarrying at their building stone property in Virgin Valley.	Amount produced is small.

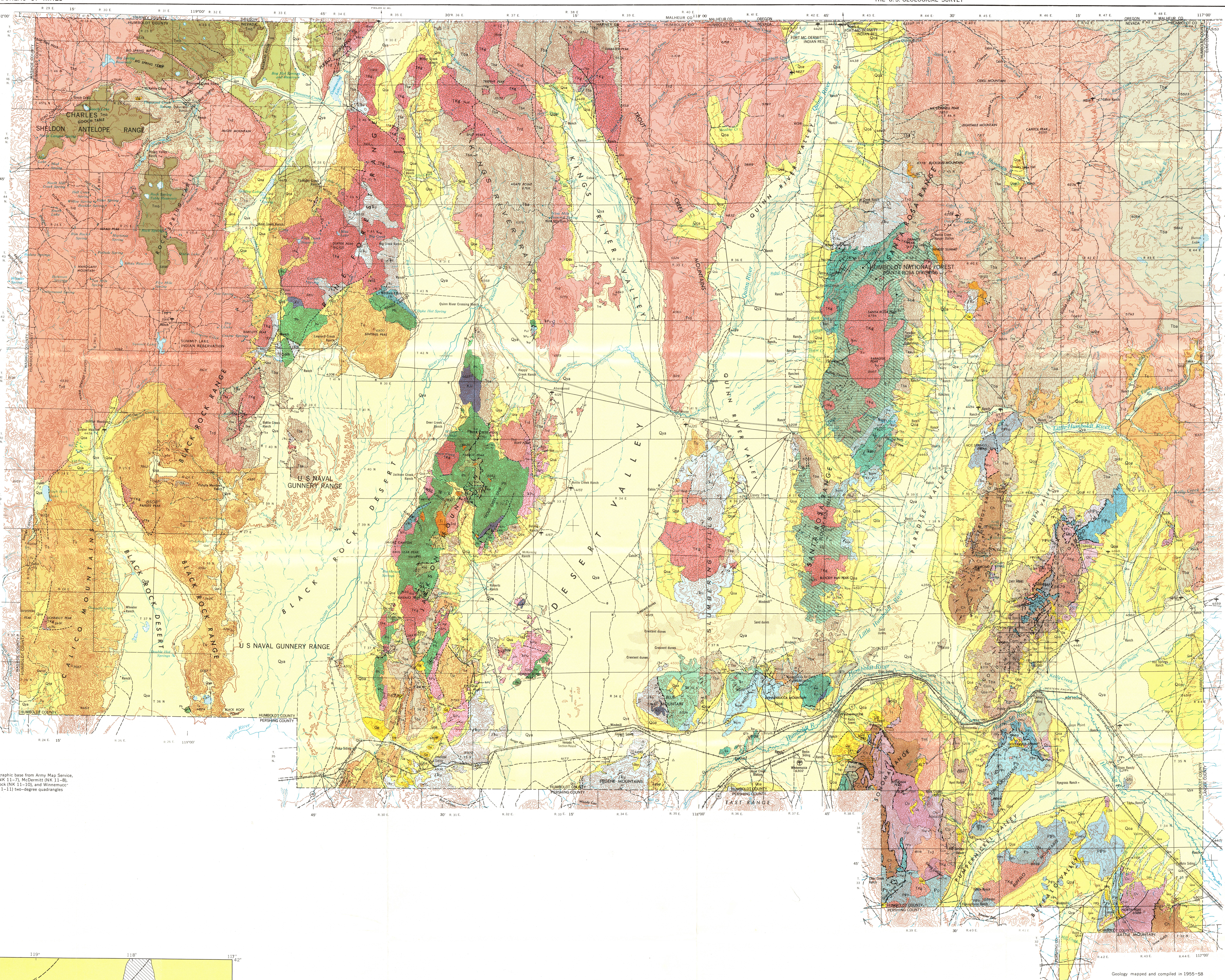
[1]Numbers in parentheses refer to locations given on figure 17; other numbers correspond to those shown on plate 3.

TABLE 15. Mines and prospects of the Hot Springs Range (Dutch Flat and Poverty Peak districts).

	Name	Location	Owner	Commodity	Geology and workings	Production and remarks
26.[1]	Dutch Flat Placer.	Mouth of Sodarisi Canyon.	Dutch Flat Mines, Inc.	Gold, tungsten, quicksilver.	Stream gravels, slopewash materials, and alluvial-fan deposits. Combined value of three metals averages $1.50 per cubic yard from preliminary sampling of 50,000 square yards. (Willden & Hotz, 1955, p. 666).	Vanderburg (1936, p. 94) reports $200,000 production, but in later publication (Vanderburg, 1938) reports value of $100,000.
27.	(1) Dutch Flat mine.	Near north center NE¼, sec. 17, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Quicksilver.	Shear zone strikes N. 10° E. and dips 20°–35° E. Cuts altered shale and sandstone of Harmony Formation.	70 flasks of mercury to end of 1942 with intermittent production since.
28.	(2) El Paso mine.	Near south center NW¼ NW¼ sec. 16, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Discontinuous brecciated quartz stringers in fault zone that strikes N. 20° E. and dips steeply west.	No recorded production, but considerable gold reported to have been produced from small highgrade pockets of ore.
	(3) Unknown.	Near NE. corner sec. 17, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Quartz vein 2–3 feet wide strikes N., dips 20°–30° W. In weathered granite.	No recorded production.
	(4) Unknown.	Extreme SE. corner sec. 8, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Altered hornfels in contact with granite. Hornfels cut by N. 5°–10° E. fault zone that contains quartz stringers.	No recorded production.
	(5) Unknown.	Extreme SW. corner sec 9, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Altered and weathered granite in contact with altered hornfels and sandstone of Harmony Formation. Fault zone 90 feet from portal of main adit strikes N. 50° E. and dips 60° NW., contains quartz stringers. Some quartz contains small amounts of scheelite.	No recorded production.
	(6) Unknown.	Bottom of gully NW. part NW¼ sec. 16, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Altered and weathered granite with altered sandstone in fault contact in crosscut 210 feet from portal of adit. Granite cut by several faults with heavy clay gouge along some of the faults. Small amounts of scheelite in two thin quartz veins near portal of adit.	No recorded production.
	(7) Unknown.	On ridge near SE. corner NE¼ sec. 17, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Fault zone in shale and sandstone strikes N. 30°–35° E. with a steep dip variable from east to west. Quartz vein 2–5 feet thick occupies fault zone for part of its length. One assay from stope above main level ran 0.02 oz gold and 0.4 oz silver.	No recorded production; believed to have been some production, however, from size of workings and lack of quartz on dump.
	(8) Unknown.	Bottom of gully in south center NW¼ sec. 16, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Several northwest to northeast-trending fault zones cut shale and sandstone. Small amounts of brecciated quartz in places along some of the fault zones.	No recorded production.
	(9) Unknown.	Near south center SW¼ sec. 9, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Discontinuous pods and stringers of quartz 1–3 feet thick in a fault zone that cuts feldspathic sandstone of the Harmony Formation. Fault zone strikes N. 5°–10° E. and has an average dip of 55° W. Galena and sphalerite found in small quantities in quartz on dump.	No recorded production; however, the general scarcity of quartz on the dump suggests some shipment of material.
	(10) Unknown.	Near center SW¼ sec 9, T. 38 N., R. 40 E.	Dutch Flat Mines Inc. J. A. Cowan, president Winnemucca, Nevada.	Gold.	Calcareous shale, limestone, and feldspathic sandstone of the Harmony Formation cut by northeast-trending quartz stringers, some of which occupy fault zones.	No recorded production.
29.	Last Chance.	In NW¼ SE¼ sec. 32, T. 38 N., R. 40 E.	Unknown.	Quicksilver.	Altered sandstone and sandy shale with limonite streaks and layers parallel to the bedding of the rocks.	Production reported to be about one flask (Bailey and Phoenix, 1944, p. 91).
30.	K & K mine (Aurum Co., Red Devil, Golconda Quicksilver).	Just south of center sec 5, T. 37 N., R. 40 E.	Charles Kassabaum, Winnemucca, Nevada; L. H. Davey, Winnemucca, Nevada.	Quicksilver.	Feldspathic sandstone, limestone, and shale striking nearly north and cut by several northwest-trending fault zones one of which contains an average of about five pounds per ton of quicksilver over about 3-foot width.	Very small production reported by Bailey and Phoenix (1944, p. 91).
	Silver Hill mine.	Near center NE¼ sec 4, T. 37 N., R. 40 E.	Unknown.	Lead, copper.	Shale and sandstone of the Harmony Formation cut by several east-trending fault zones. Brecciation of country rock along fault zones and zones occupied in places by quartz stringers containing small amounts of galena, anglesite, chalcopyrite, covellite, pyrite, and sphalerite.	No recorded production.
31.	(11) Cahill.	Sec. 15(?), T. 40 N., R. 40 E.	Mrs. Cahill, Reno, Nevada. Under lease to Belco Corp. in 1957.	Quicksilver.	Bailey and Phoenix (1944, p. 103) said, "Cinnabar was localized beneath a narrow gouge zone lying along a fault which for the most part is parallel to beds of limy quartzite and recrystallized sandy dolomite. The fault is locally multiple and in places dies out only to reappear a few feet above or below; the displacement is obviously small. . . . The ore in part occurred as nearly pure cinnabar veinlets filling openings along, and close beneath, the fault; but the richest ore occurred as pods resulting from replacement of highly fractured silicified dolomite and extended several feet into the footwall."	Bailey and Phoenix (1944, p. 101) report a production of 545 flasks through 1943. Most of the approximately 300 flasks produced from the district since 1943 has either come from this property or has been credited to the property.
32.	(12) Hapgood (Grayson group).	Sec. 15(?), T. 40 N., R. 40 E.		Quicksilver.	Bailey and Phoenix (1944, p. 104) said, "The rocks consist of half-a-foot to two-foot beds of sandy limestone with thin interbeds of shale. . . . Cinnabar occurs along several closely spaced parallel bedding plane shears as veinlets and locally forms isolated bunches in the limestone away from the shears. Associated minerals include calcite, quartz, gypsum, and some clay."	The property had produced 104 flasks to the end of 1942 (Bailey and Phoenix, 1944, p. 104) and has had only minor production since then.
33.	(13) Turillas.	Sec. 15(?), T. 40 N., R. 40 E.	Under lease to Belco Corp. in 1957.	Quicksilver.	Bailey and Phoenix (1944, p. 106) report, "The rocks consist of silicified limestone, quartzite, and phyllite trending northeasterly and dipping steeply both to the northwest and southeast. The more limy sediments are cut by numerous irregular veinlets of calcite and quartz. . . . Most of the ore is confined to brecciated bedding shears and crush zones, but some good ore also fills cross fractures."	Bailey and Phoenix (1944, p. 108) report no production from the mine. Part of the production since 1943 assigned to the Cahill mine has probably come from this mine.
34.	(14) Wholey (Long Horn group).	Sec. 9(?), T. 40 N., R. 40 E.		Quicksilver.	Bailey and Phoenix (1944, p. 106) report, "Cinnabar occurs as veinlets and crystals along bedding faults that strike northerly and dip to the west in the surface workings."	The property had produced 14 flasks to the end of 1942 (Bailey and Phoenix, 1944, p. 106).
35.	(15) Prentiss.	Sec. 9(?), T. 40 N., R. 40 E.		Quicksilver.	Bailey and Phoenix (1944, p. 105) report, "Cinnabar forms crystalline veinlets with calcite and some quartz, and occurs also as scattered isolated crystals in limestone and calcareous quartzite. The best ore . . . was formed along bedding shears striking N. 10° W. and dipping steeply eastward."	No production reported by Bailey and Phoenix.
36.	(16) Snowdrift.	West side of Hot Springs Peak, sec. 3(?), T. 40 N., R. 40 E.	Calder, Winnemucca, Nevada.	Quicksilver.	Irregular quartz and calcite veins in quartzite. Some exceptionally well-formed cinnabar crystals were handsorted and sold to mineral collectors. The Snowdrift Property listed by Bailey and Phoenix (1944, p. 105) is on the opposite side of the hill but is a similar occurrence.	Production small.
37.	(17) King group.	Sec. 30, T. 41 N., R. 41 E.	George Reed, Paradise Valley, Nevada.	Manganese.	Manganese oxides replace chert in interbedded chert and greenstone sequence.	Reported by owner that Modarelli and Galli, lessees, made two shipments to Government stockpile at Linden, Arizona. Ore contains about 45 percent Mn., 1.4 percent Fe, and 12.5 percent silica and alumina.
38.	(18) Holt.	Sec. 30, T. 41 N., R. 41 E.	Ralph Hold, Paradise Valley, Nevada.	Quicksilver.	Property not visited by Bailey and Phoenix, and only briefly visited as part of this study. Adit 250 feet long driven across strike of steeply dipping thin-bedded chert. Some cinnabar in quartz vein along fracture parallel to bedding in chert at 185 feet from portal.	
39.	(19) George and Charlie mine.	Sec. 32, T. 41 N., R. 41 E.	George Reed, Paradise Valley, Nevada.	Manganese.	R. J. Roberts visited the property in 1951 and reports (oral communication) that manganese oxides replace chert and cherty shale along irregular northeast-trending shear zone.	Owner reports cars of ore have been shipped from property.

[1]Numbers in parentheses refer to mine locations on geologic map of Dutch Flat district, figure 12; and geologic map of the north end of the Hot Springs Range, figure 13. Other numbers correspond to those shown on plate 3.

PREPARED IN COOPERATION WITH
THE U.S. GEOLOGICAL SURVEY



Topographic base from Army Map Service, Vya (NK 11-7), McDermitt (NK 11-8), Lovelock (NK 11-10), and Winnemucca (NK 11-11) two-degree quadrangles

EXPLANATION

QUATERNARY

Qya — Younger alluvium
Includes playa, dune, and stream deposits, and deposits of Lake Lahontan

Qoa — Older alluvium
Includes alluvial-fan and some upland alluvial deposits

Qg — Gravel deposits
Includes bench gravels and landslide deposits

TERTIARY AND QUATERNARY

QTb — Vesicular olivine basalt

TERTIARY

Tmb — Mesa basalt of Merriam (1910)

Ttc — Thousand Creek beds of Merriam (1910)
Tuff, tuffaceous shale, sandstone, mudstone, and conglomerate

Tvv — Virgin Valley beds of Merriam (1907)
Volcanic ash, tuff, shale, mudstone, and sandstone regarded by Merriam as in part equivalent to Thousand Creek beds and in part older

Ts — Sedimentary rocks
Includes shale, sandstone, conglomerate, tuff, and diatomaceous shale

Trd — Rhyolitic and dacitic volcanic rocks
Locally includes some more basic rocks and some interbedded sedimentary rocks

Ti — Intrusive rocks
Includes rhyolite and dacite plugs, rhyolite dikes, and one diabase plug

Tba — Basaltic and andesitic volcanic rocks
Locally includes more silicic rock types and sedimentary rocks

Tu — Volcanic and sedimentary rocks, undivided

CRETACEOUS AND TERTIARY

TKg — Granodiorite
Used for all quartz-bearing pre-late Tertiary intrusive rocks. Principally granodiorite with local compositional variations to quartz diorite and quartz monzonite; large stock in the Slumbering Hills is mainly quartz monzonite, and the small body in the low hills east of Black Rock Range is quartz monzonite. Includes dioritic intrusive rocks of the Jackson Mountains

TKpl — Pansy Lee conglomerate

CRETACEOUS

Kkl — King Lear formation

JURASSIC(?) AND CRETACEOUS

KJi — Intrusive rocks
Includes dioritic intrusive rocks of the Jackson Mountains and Pine Forest Range, gabbro intrusives on Blue Mountain, and diorite intrusives on Winnemucca Mountain

TRIASSIC AND JURASSIC(?)

JȽl — Limestone

JȽu — Phyllite, slate, and fine-grained quartzite

TRIASSIC

Ƚr (Ƚm, Ƚa, Ƚs) — Raspberry formation
In the Santa Rosa Range includes the Mullinix, Ƚm; Andorno, Ƚa; and Singas, Ƚs, formations of Compton (1960)

Ƚqm — Quartzite and mudstone
Thickness 2,000 to 4,000 feet. Correlative unit in the Santa Rosa Range named O'Neill formation by Compton (1960)

Ƚw — Winnemucca formation

Ƚdg — Dun Glen formation
Exposed only in the west part of the Sonoma Range

Ƚgv — Grass Valley formation

Ƚnp — Natchez Pass formation
Recognized only in the Sonoma Range

Ƚqr — Quinn River formation
Exposed at only one locality on west side of southern end of the Kings River Range

PERMIAN AND TRIASSIC

ȽPu — Volcanic and sedimentary rocks, undivided
Symbol used in Jackson Mountains, in Kings River Range, and in Pueblo Mountains

PERMIAN

Pul — Unnamed limestone formation
Present only in the south end of the Kings River Range

Ph — Happy Creek volcanic series

PENNSYLVANIAN / CARBONIFEROUS

PPfc — Unnamed fine clastic sedimentary rocks
Present only in the Osgood Mountains

PPh — Havallah formation

PPs — Unnamed sandstone, chert, and volcanic rock formation
Present only in the Osgood Mountains

PPa — Edna Mountain formation and Antler Peak limestone
Used in Sonoma Range and Edna Mountain. Elsewhere Antler Peak included with underlying Highway limestone and Battle formation

PPhp — Havallah(?) and Pumpernickel(?) formations, undivided
Used only in the Hot Springs Range for rocks similar to the Havallah and Pumpernickel formations

PPu — Antler Peak limestone, Highway limestone, and Battle formation, undivided

MISSISSIPPIAN(?) TO TRIASSIC

Ƚ-Mu — Koipato formation, Tallman fanglomerate, and Leach(?) formation, undivided
Used only on west side of Sonoma Range

Pp — Pumpernickel formation

MISSISSIPPIAN

Mvr — Unnamed volcanic rocks

ORDOVICIAN(?) AND ORDOVICIAN

Oc — Comus formation

Ov — Valmy formation

Osr — Sonoma Range formation

CAMBRIAN

Ch — Harmony formation

Cc — Unnamed chert

Cp — Preble formation

CAMBRIAN(?)

Com — Osgood Mountain quartzite

Contact
Dashed where approximately located or inferred; dotted where concealed

High-angle fault
Normal, reverse, or strike-slip. Dashed where approximately located or inferred; dotted where concealed; queried where doubtful. U, upthrown side; D, downthrown side

Thrust fault
Dashed where approximately located. Saw-teeth on side of upper plate

Anticline

Overturned anticline

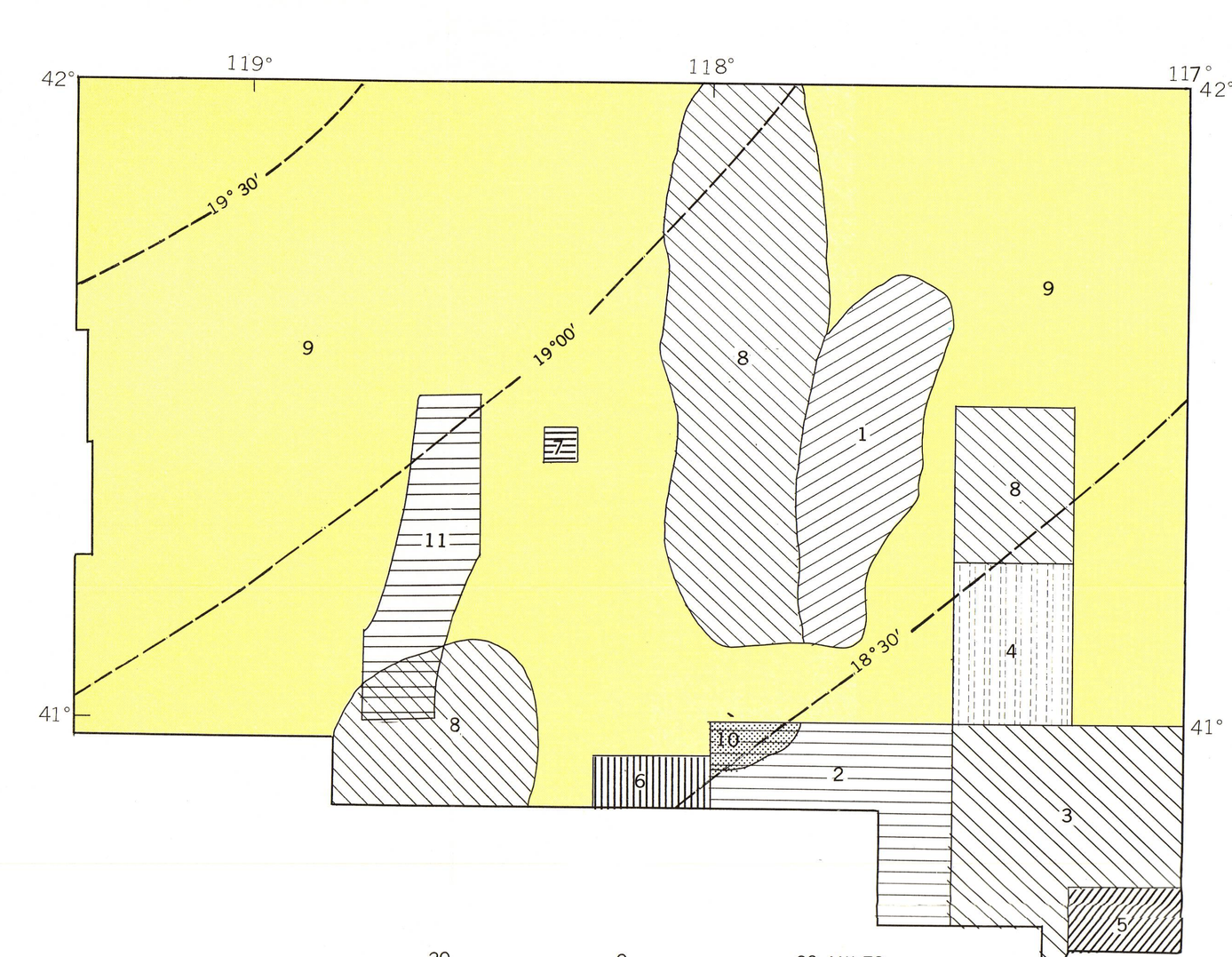
Syncline

Overturned syncline

Strike and dip of beds

Strike and dip of overturned beds

Strike of vertical beds



INDEX MAP OF HUMBOLDT COUNTY, NEVADA
SHOWING SOURCES OF GEOLOGIC DATA
AND MAGNETIC DECLINATION

SOURCES OF DATA USED IN COMPILING GEOLOGIC MAP OF HUMBOLDT COUNTY, NEVADA

(Numbers correspond to those shown on index map.)

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4. P. E. Hotz and Ronald Willden, 1961, Preliminary geologic map and sections of the Osgood Mountains quadrangle, Humboldt County, Nevada: U. S. Geol. Survey, Mineral Inv. Field Studies Map MF-161.
5. R. J. Roberts, 1951, Geologic map of the Antler Peak quadrangle, Nevada: U. S. Geol. Survey, Geol. Quad. Map GQ-10.
6. Ward C. Smith, 1939, written communication.
7. R. J. Roberts, 1940, Quicksilver deposits of the Bottle Creek district, Humboldt County, Nevada: U. S. Geol. Survey Bull. 922-A.
8. F. R. Shawe and Ronald Willden, 1955-56, this report.
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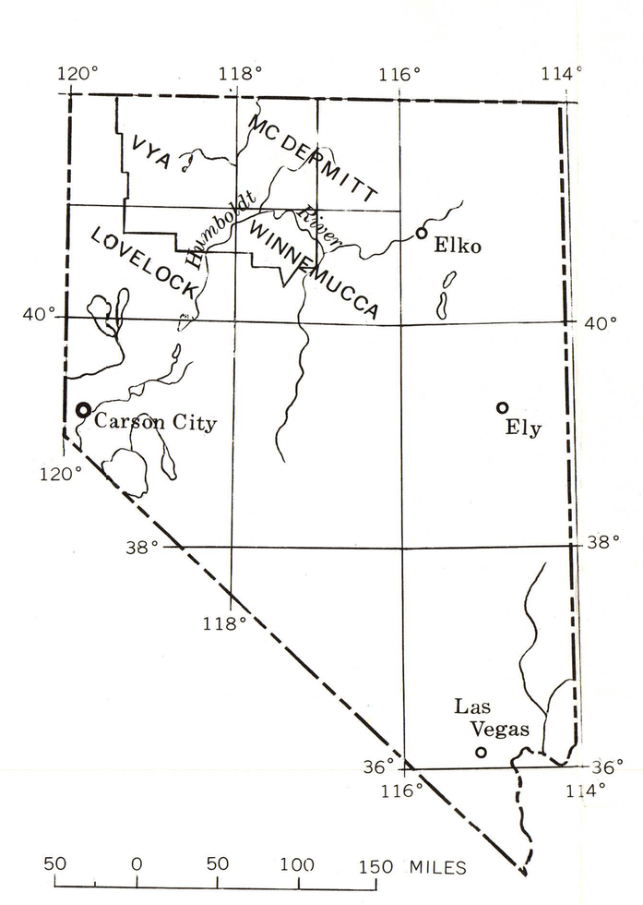
10. Modification of No. 2 by Ronald Willden.
11. Ronald Willden, 1963, General geology of the Jackson Mountains, Humboldt County, Nevada: U. S. Geol. Survey Bull. 1141-D.



INDEX MAP OF NEVADA
SHOWING LOCATION OF HUMBOLDT COUNTY AND ARMY MAP SERVICE QUADRANGLE COVERAGE

GEOLOGIC MAP OF HUMBOLDT COUNTY, NEVADA

By
Ronald Willden

SCALE 1:250 000

5 0 5 10 15 MILES

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTAL CONTOURS AT 100 FEET

1963

Williams & Heintz Map Corporation, Washington 27, D.C.