0140 0004

Pershing County - General
Item 5

I. C. 6902
October 1936

INFORMATION CIRCULAR

DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

RECONNAISSANCE OF MINING DISTRICTS IN PERSHING COUNTY, NEV.[1]

By William O. Vanderburg[2]

CONTENTS

see individual mining district files for mine reports.

INTRODUCTION

This paper gives the results of a reconnaissance of the mining districts in Pershing County, Nev., made from March 9 to April 1, 1936. During the field work nearly all of the mining districts in the county were visited, and considerable data were obtained on active and inactive properties. The report covers the location of the various mining districts, nature of the deposits, information on past

1/ The Bureau of Mines will welcome reprinting of this paper, provided the following footnote acknowledgment is used: "Reprinted from U. S. Bureau of Mines Information Circular 6902."

2/ Mining engineer, U. S. Bureau of Mines.

operations and current activity, and general data likely to be useful to operators, investors, and others interested in mining. The geology of the deposits is discussed only briefly.

Many mining districts in the county have been active intermittently for 20 to 75 years and have experienced alternate periods of prosperity and decline. In past years numerous small mills have been built to treat ores in this area; many of these were unsuccessful owing either to scarcity of ore in the property for which the mill was erected or to poorly designed flow sheets. Custom milling or smelting plants have been erected from time to time to serve the various mining districts, but when the ore supply was exhausted these plants were dismantled.

Current metal-mining activity in Pershing County is characterized by a number of small-scale operations by lessees or owners. The ores are shipped mainly to smelters near Salt Lake City, Utah, for treatment.

ACKNOWLEDGMENTS

Thanks are due the many owners and operators in the county, all of whom wholeheartedly furnished information and assistance. The author is especially indebted to Ott F. Heizer, general manager of the Nevada-Massachusetts Co., Inc., and John T. Reid, mining engineer at Lovelock, Nev., for data on some of the mining districts mentioned in the report.

PERSHING COUNTY

General

Pershing County, in northwestern Nevada, was created out of the southern part of Humboldt County, and the boundaries were established by an act of the State legislature, approved March 18, 1919. This county was the last of the 17 counties of the State to be created. It has a land area of 6,053 square miles and a water area of 60 square miles, a total of 6,113 square miles. The water area comprises the eastern half of Winnemucca Lake on the Washoe-Pershing County boundary line. Figure 1 is a sketch map of the county.

According to the census of 1930 the population of the county was 2,652, about half of whom reside in Lovelock, the county seat. Lovelock, the principal town, is the center of an area devoted to stock raising, agriculture, and mining.

The assessed value of property for the fiscal year 1934-35 was $11,459,538.25. The county tax rate for that year was $1.48 per $100 exclusive of special taxes.3/

Physical Features

The physical features of Pershing County comprise a series of parallel mountain ranges striking north and south and separated by troughlike valleys. The alternation of mountains and valleys forms a series of basins that result in a unique hydrography; the receptacles of the drainage waters become, depending on

3/ Parke, W. W., Annual Report of the Auditor of the County of Pershing, State of Nevada, Fiscal Year July 1, 1934 to June 30, 1935, p. 13.

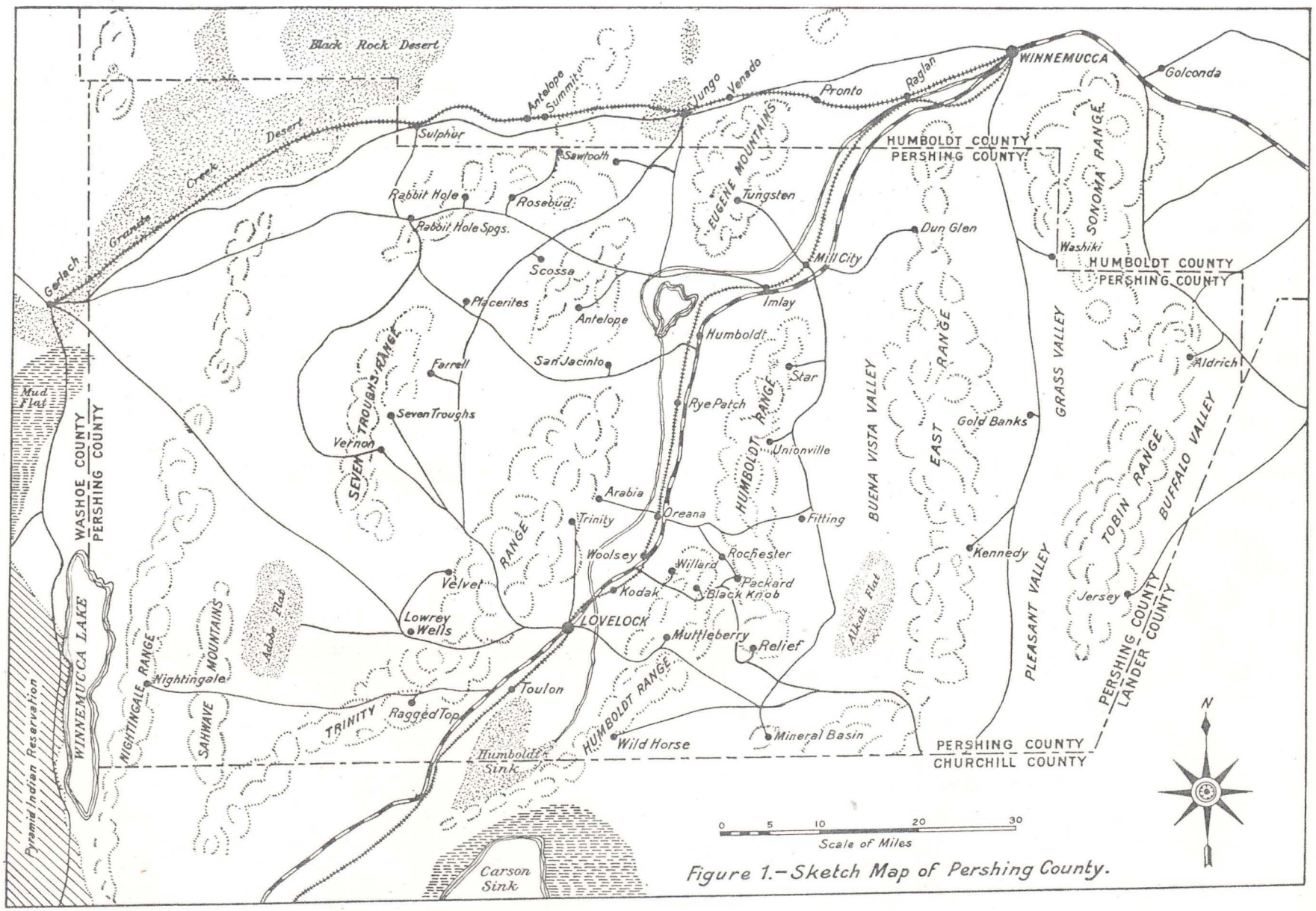

Figure 1.–Sketch Map of Pershing County.

conditions, sinks, alkali flats, or salt beds. The altitude of the lowest parts of the valleys ranges from 4,000 to 4,500 feet above sea level.

The mountains are less rugged and precipitous than in other parts of the State and present smooth, rounded outlines. Star Peak, the highest mountain in the county, in the northern part of the Humboldt Range, has an elevation of 9,835 feet.

The mountain ranges have virtually none of the stunted pinon pine, juniper, and mountain mahogany that are usually prevalent on the mountain ranges of the State above an altitude of about 7,000 feet. The lower areas are covered with sagebrush except for the parts of the valleys that have an alkaline soil which is injurious to vegetation.

The climate is mild and healthful with scanty rainfall. A little snow falls during the winter months, but mining operations can be carried on the year round without difficulty.

Water Resources

The Humboldt River, the largest and longest stream in Nevada, normally empties into the Humboldt sink in southwest Pershing County. In 1935 the Federal Government constructed an earth dam at Rye Patch to irrigate Lovelock Valley. The town of Lovelock depends largely on the waters of the Humboldt River for its existence. Winnemucca Lake is a long, narrow body of alkaline water on the boundary line between Pershing and Washoe Counties. The water of Winnemucca Lake is not used for irrigation or other purposes.

Most of the precipitation is in the form of snow during the winter months. The sides of the mountain ranges are traversed by numerous canyons in which, during the spring, small streams are formed by melting snow. Where the drainage area is large these small mountain streams contain enough water for irrigation. In addition to Lovelock Valley ranching is carried on in Buena Vista, Grass Valley, and Pleasant Valley in the eastern part of the county.

Springs or shallow wells are distributed throughout the area, and frequently they have furnished enough water for milling and domestic uses. As far as the writer is aware no artesian wells have been sunk.

Power Facilities

Most of the mining areas in Pershing County depend on either Diesel or gasoline engines for power. The only public service power company operating in the county is the Sierra Pacific Power Co., which serves Lovelock Valley, and the Rochester, Relief, and Mill City districts. The main transmission line parallels the western side of the Humboldt Range, and the mining districts on the western slope of the range are convenient to the power line. The average cost of desert transmission line is about $1,200 per mile, including good, used, substation equipment.

The rates for wholesale low-voltage power service under Schedule K of the Sierra Pacific Power Co., applicable where less than 2,200 volts are furnished, is as follows:

Demand charge of $2.40 per month per kilowatt of maximum demand, plus an increase of 1 percent for each 1 percent that the average power factor falls below 80 percent. The maximum demand on which the demand charge will be based will not be less than 50 percent of the greatest maximum demand occurring during the 11 preceding months.

Plus a kilowatt-hour charge of:

	Cents per kw.-hr.
First 3,000 kw-hr. per month.....	1.6
Next 3,000 kw-hr. per month.....	1.4
Next 3,000 kw-hr. per month.....	1.2
Next 3,000 kw-hr. per month.....	1.0
All over 12,000 kw-hr. per month.....	.8

Discount of 20 cents per kilowatt of demand will be allowed when payment is made within 10 days from the date bill is rendered.

Transformers to be furnished by company or customer at the option of the company.

The rate for high-voltage power applicable where service is furnished at 2,200 volts or over is figured on the same basis as for low-voltage power, with one of the following discounts:

(a) Discount of 10 percent will be allowed where the company furnishes power at 60,000, 22,000, or 13,000 volts and meters at its option on either the low-tension or high-tension side of the transformers.

(b) Discount of 5 percent will be allowed where the company furnished power and meters at 2,200 volts or 4,000 volts and customer owns distribution transformers.

(c) Discount of 2½ percent will be allowed where the company furnished power and meters at 2,200 volts or 4,000 volts and company owns distribution transformers.

(d) Discount of 2½ percent will be allowed where the company furnishes power at 2,200 volts or 4,000 volts and meters at 110 volts or 220 volts or 440 volts and customer owns distribution transformers.

The maximum demand for any one month shall be the average total load in kilowatts in that 15-minute interval in which consumption of electric energy is greater than in any other similar interval during the month.

Term of contract not less than 1 year.

Where a consumer notifies the company in writing that he will not require service for a period of 60 days or more from and after a certain date when the discontinuance of the use of power is due to climatic conditions preventing operations by the consumer, said notice to be mailed or otherwise delivered to the company at least 15 days prior to the date when it is desired to discontinue operations and does not demand service from the company for such a period, the company will disconnect the service and waive the minimum charge in effect for the period during which the service is disconnected. When the consumer resumes service, if at all, the maximum demand on which the demand charge for any month will be based will not be less than 50 percent of the maximum demand occurring during the 11 months preceding the month for which billing is made, excluding the months during which service is not used. This rule applies only to power used for mining and for the milling and reduction of ores.

Transportation Facilities

The Southern Pacific Railroad traverses the county northeast-southwest, following the course of the Humboldt River. The Western Pacific Railroad passes through the northwestern part of the county. There are no branch-line railroads.

The Transcontinental Victory Highway parallels the Southern Pacific Railroad. All the districts mentioned in this report are accessible by fair dirt or gravel roads on which automobiles can travel 20 to 30 miles per hour.

The Southern Pacific Railroad freight rates on ores from Lovelock, Kodak, and Woolsey to Utah smelters are shown in the following table:

Value of ore per ton	$15	$20	$30	$40	$50	$60	$70	$80
40-ton car.....	3.20	3.90	4.60	5.30	6.00	6.70	7.40	8.10
20-ton car.....	5.10	5.80	6.50	7.10	7.60	8.10	8.60	9.10
Value of ore per ton	$90	$100	$150	$200	$250			
40-ton car.....	8.80	9.50	11.20	11.50	13.40			
20-ton car.....	9.60	10.30	11.20	11.50	13.40			

A 10-percent surtax also is effective until June 30, 1936.

The rates to Utah smelters from Oreana, Mill City, and Bennin are the same on ores valued up to $90 per ton. Above that value the rates are a little less than those stated.

The Western Pacific Railroad freight rates from Sulphur, Antelope, Jungo, Venado, Gaskell, Pronto, Raglan, Crum, and Winnemucca to Salt Lake smelters are as follows:

Value of ore per ton	$10	$15	$20	$30	$40	$50	$60	$70
40-ton car.....	4.00	4.00	5.00	5.50	6.00	6.50	7.00	7.50
20-ton car.....	3.20	3.20	3.20	3.90	4.60	4.75	5.25	6.00
Value of ore per ton	$80	$90	$100	$110	$120	$130	$150	
40-ton car.....	8.00	8.50	8.85	....	....	....	....	
20-ton car.....	6.75	7.50	8.25	9.10	9.35	9.60	10.35	
Value of ore per ton	$200	$250	$300					
20-ton car.....	10.80	12.20	12.60					

Rates to Selby smelter in California are practically the same.

History of Mining

Mining activity in the area covered by this report began about 1860 with the organization of the Humboldt mining district. In 1861 the Star and Buena Vista districts were discovered, and the town of Unionville became the center of mining activity in the region. During the decade following the Civil War a number of mining districts were organized, thousands of locations made, towns built, and large sums of money expended in mining. Abundant evidences of this early activity remain in numerous prospect holes in the Humboldt Range. The writer believes that the Humboldt Range has been prospected more thoroughly than any other mountain range in Nevada. Several Stetefeldt furnaces were erected, one at Oreana and one at Winnemucca, to treat the base ores. The Oreana smelter was the first in Nevada from which lead was shipped in commercial quantities, and it contests with Argenta, Mont., the honor of being the birthplace of the silver-lead smelting industry in the United States. In addition to these smelters numerous 5- to 10-stamp mills were erected in the sixties and seventies in the Buena Vista, Sierra, and other districts of the region. Most of these early mines reached the zenith of their production before the first railroad was completed.

The Central Pacific Railroad (now Southern Pacific Railroad) was completed across the State on May 10, 1869, and prior to this date supplies and machinery had to be hauled by wagon team from Marysville or Sacramento, Calif. Railroad communication did not improve mining facilities sufficiently to offset the decrease in the grade of the ore so that mining gradually declined in the older districts.

Before completion of the railroad considerable quantities of high-grade ores were packed by wagon train to the coast. Some of these ores were shipped to Swansea, Wales, for smelting. Even after the railroad was completed some ore was transported by rail to the coast and then shipped to England via Liverpool. According to Whitehill[4/] ores were shipped to England as ballast in sailing vessels so that the cost of freight from mines to England was only $35 per ton.

From 1881 to 1900 the gold placers discovered in American Canyon, Spring Valley, and Dry Gulch in the eastern part of the Humboldt Range and the placers in the East Range attained considerable prominence and were actively worked by American and Chinese miners.

Important discoveries at Seven Troughs in 1907 and at Rochester in 1912 revived mining activity for a number of years.

In recent years the mining of tungsten ores has been the outstanding development in the mineral industries of Pershing County. At present precious-metal mining in Pershing County is confined largely to small-scale operations either by lessees or owners.

Metal Production

Pershing County is distinguished for the variety of its mineral resources. The principal minerals produced in the past have been silver, gold (both lode and placer), tungsten, and quicksilver. In recent years the principal output of the county has been tungsten concentrates from the Mill City deposits. Table 1 shows the production of the principal metals exclusive of tungsten and quicksilver.

Other minerals that have been produced in commercial quantities are antimony, arsenic, sulphur, copper, lead, dumortierite, diatomaceus earth, gypsum, and small quantities of iron and zinc.

In March 1936 the writer estimates that 340 men were employed directly in the mining industries of the county.

4/ Whitehill, H. R., State mineralogist, Biennial Report of State Mineralogist, State of Nevada, 1871-72, p. 49.

TABLE 1. - Metal production Pershing County, 1919-34

Year	Lode gold		Placer gold		Silver, lode and placer	
	Fine ounces	Value	Fine ounces	Value	Fine ounces	Value
1919	7,143.87	$147,677	45.72	$945	706,734	$791,542
1920	6,916.76	142,982	3.43	71	653,669	712,499
1921	9,384.17	193,988	4.21	87	739,975	739,975
1922	5,450.60	112,674	17.27	357	836,199	836,199
1923	6,412.01	132,548	49.68	1,027	731,222	599,602
1924	6,031.59	124,684	99.75	2,062	352,168	235,953
1925	1,743.78	36,047	41.84	865	71,978	49,953
1926	629.07	13,004	46.34	958	20,643	12,881
1927	2,366.41	48,918	63.90	1,321	168,327	95,441
1928	2,037.41	42,117	48.33	999	252,881	147,935
1929	516.88	10,685	149.40	3,088	55,944	29,818
1930	10,836.63	224,013	71.84	1,485	24,514	9,438
1931	6,398.56	132,270	184.41	3,812	14,113	4,093
1932	1,622.43	33,539	214.61	4,436	13,228	3,730
1933	3,848.49	79,555	492.74	17,186	28,023	9,808
1934	9,904.11	346,149	557.15	19,472	53,939	34,870
Total	81,242.77	1,820,850	2,090.62	58,171	4,723,557	4,313,737

Year	Copper		Lead		
	Pounds	Value	Pounds	Value	Total value
1919.....	186,025	$34,601	21,578	$1,144	$975,909
1920.....	3,751	690	101,298	8,104	864,346
1921.....	1,020	132	82,928	3,732	937,914
1922.....	6,726	908	96,801	5,324	955,462
1923.....	210	31	48,549	3,398	736,606
1924.....	2,196	288	32,815	2,625	365,612
1925.....	1,981	281	99,977	8,698	95,844
1926.....	4,245	594	215,995	17,280	44,717
1927.....	552	72	96,972	6,109	151,861
1928.....	5,314	765	77,269	4,482	196,298
1929.....	27,975	4,924	36,102	2,274	50,789
1930.....	33,357	4,337	36,032	1,802	241,075
1931.....	2,220	202	11,520	426	140,803
1932.....	2,888	182	605	18	41,905
1933.....	.....	.....	22,980	850	107,399
1934.....	3,853	308	35,838	1,326	402,125
Total.	282,313	48,315	1,017,259	$67,592	$6,308,665

INDEX OF MINES, MILLS, AND OPERATORS

INDEX OF MINES, MILLS, AND OPERATORS