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MINING DISTRICTS OF HIDALGO COUNTY, NEW MEXICO

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INTRODUCTION

Hidalgo County stands second in production of non-radioactive metals among the counties of New Mexico, although far behind Grant County[1] and probably destined to be surpassed by Taos County. Total mineral production is now well over $50 million (table 1). Of this, nonmetals account for only about $1½ millon. Metal production is continuing at a rate between $1 million and $2 million per year.

Although the county has 11 mining districts, over 90 percent of production has come from three underground mines in the Lordsburg district. Copper accounts for nearly 75 percent of the output; gold and silver, largely by-products of copper mining, for 10 percent each. In most years, Hidalgo County has ranked first in gold and silver production in New Mexico and second in copper.

This article is a summary of a bulletin being prepared for publication by the New Mexico Bureau of Mines and Mineral Resources.

1. Hidalgo County was not separated from Grant County until 1920. This article covers the present area of Hidalgo County, even when referring to events before 1920.

HISTORY OF MINING

Prospecting in Hidalgo County began in 1870 but no serious mining could be attempted until the arrival of the Southern Pacific Railroad in 1880. From 1880 to 1893 the emphasis was on precious metals, especially silver. Base metals did not attract much attention until after the price of silver dropped disastrously in 1893. Proximity to smelters at El Paso, Texas and Douglas, Arizona, has favored development of mining in Hidalgo County, especially since much of the copper-silver-gold ore from the Lordsburg district can be shipped directly to smelters as siliceous flux.

TYPES OF ORE DEPOSITS

Three periods of mineralization can be recognized in Hidalgo County (table 2): (1) Late Cretaceous to early Tertiary (Laramide), (2) Middle Tertiary, and (3) Late Tertiary to Quaternary. Of greatest commercial importance are high-temperature base-metal veins and contact metasomatic deposits formed during the first period in and around porphyritic intrusive bodies. Next in importance are low-temperature gold-, silver-, and lead-bearing veins formed during the sec-

TABLE 1. SUMMARY OF VALUE OF PRODUCTION OF MINING DISTRICTS IN HIDALGO COUNTY 1870 TO 1961.

District	Value of production, in dollars[1]				Commodities, in order of importance
	1870-1920	1920-31	1931-61	Total	
Lordsburg	10,000,000[2]	10,000,000	27,000,000	47,000,000	Copper, gold, silver, gravel, lead, zinc, perlite, fluorite
San Simon	1,300,000[4]	300,000	350,000	1,950,000	Lead, silver, gold, zinc, copper
Animas				320,000[3]	Fire clay, manganese, fluorspar, silver
Caprock Mountain			300,000[3]	300,000[3-5]	Manganese
Sylvanite	165,000[2]		113,000	278,000	Gold, copper
Apache No. 2	35,000[3]	48,000	21,000	107,000	Copper, sliver, lead, gold, zinc, tungsten, bismuth
Gillespie	40,000[3]	22,000	38,000	100,000	Lead, silver
Gold Hill	90,000[3, 4]		10,000	100,000[6]	Gold
Fremont	13,000[2]	2,000	2,000	17,000[7]	Lead, silver, copper, gold, uranium
Big Hatchet		2,000[3]		2,000	Lead, silver, gypsum
Antelope Wells					Prospecting for uranium, manganese, No production.
Totals	11,643,000	10,374,000	27,834,000	50,171,000	

1. all figures rounded off
2. mainly after 1904
3. estimate
4. Mainly before 1904
5. mainly from Grant county
6. includes some production from Grant County
7. Hidalgo County only

Sources of data: U.S. Department of the Interior; State Inspector of Mines; Lindgren, Graton, and Gordon (1910); Lasky and Wootton (1933); and Northrop (1959).

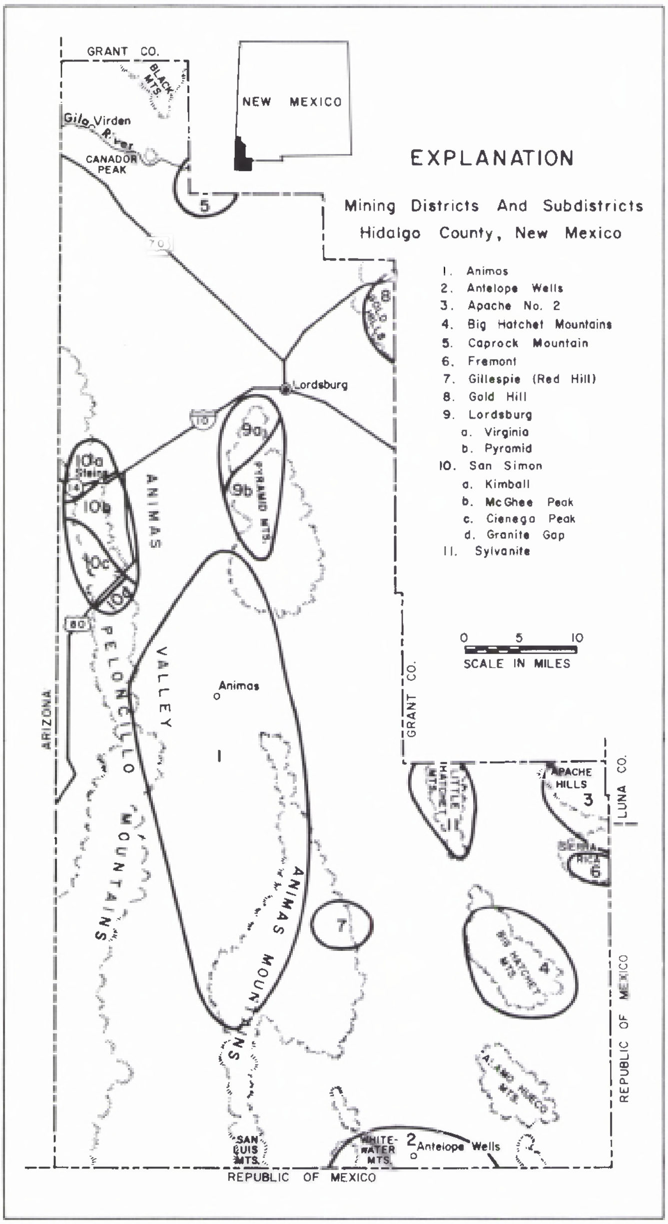

FIGURE 1

ond period. They are generally associated with volcanic rocks and their fine-grained intrusive equivalents. Some of the low-temperature psilomelane and fluorite veins of the third period grade into surficial hot-spring deposits.

Hidalgo County has many features of unusual geologic interest, among then (1) the Lordsburg district, the most important example of the copper-tourmaline class of ore deposits in the United States, (2) several examples of hypogene zoning, especially in the Lordsburg and San Simon districts, (3) the association of contact metasomatic deposits with small bodies of felsite differentiated from larger porphyry bodies rather than with the porphyry bodies themselves, in the San Simon, Apache No. 2, and Fremont districts and (4) the gradation of Plio-Pleistocene managanese and fluorite veins into travertine deposits in the Animas and Caprock Mountain districts.

MINING DISTRICTS

ANIMAS DISTRICT

The Animas district includes mines on both sides of the Animas Valley in the Pyramid, Animas, and Peloncillo Mountains. Table 3 summarizes the types of deposits in the district.

ANTELOPE WELLS DISTRICT

Antelope Wells is in the southern tip of Hidalgo County. The area has not been organized into a mining district and has no history of production, but small deposits of manganese (psilomelane veins in volcanic rocks) and uranium (uraniferous opal veins in volcanic rocks) have been reported.

APACHE NO. 2 DISTRICT

The Apache mine, in sec. 30, T. 28 S., R. 14 W., has accounted for virtually all of the production of the Apache No. 2 district. Between 1880 and 1929 it shipped thousands of tons of low-grade malachite-calcite ore as calcareous flux to the El Paso and Douglas smelters. Total production probably exceeded $100,000. Since 1929, there has been sporadic exploration but only small-scale production. The deposit was formed by contact metasomatic replacement of limestone beds in the Cretaceous U-Bar Formation near a rhyolitic phase of the Apache Hills composite stock. In addition to about 2 percent copper and 3 ounces of silver per ton, the ore locally contains lead, zinc, bismuth, and tungsten (Strongin, 1957).

None of the other mines in the district have produced as much as $10,000 worth of ore.

BIG HATCHET MOUNTAINS DISTRICT

Small limestone-replacement deposits of oxidized lead-zinc-silver ores are present in the Big Hatchet Mountains, but production, if any, has been small. Gypsum occurs in the Epitaph Formation (Permian) and the Hell-to-Finish Formation (Cretaceous) (Weber and Kottlowski, 1959).

CAPROCK MOUNTAIN DISTRICT

The Caprock Mountain manganese district straddles the Hidalgo-Grant County line. North northwest-trending psilomelane-calcite-opal veins cut late Terti-

TABLE 2. CLASSIFICATION OF MINING DISTRICTS OF HIDALGO COUNTY BY TYPE OF MINERALIZATION

District or subdistrict	Age	Type of deposits	Metals non-metalic mineral mined	Production, (in dollars), through 1958	Production, percent of total Hidalgo County
Lordsburg	Laramide	Hypothermal to epithermal veins	Cu, Pb, Zn, Ag, Au, fluorspar	42,400,000	94.1
San Simon	Laramide	Contact metasomatic deposits, mesothermal (?) veins & limestone replacement deposits	*Pb*, Cu, Zn, Ag, W	1,440,000	3.2
Sylvanite	Laramide	Hypothermal veins, contact metasomatic deposits	Au, Cu, Pb, Ag	270,000	0.6
Apache No. 2	Laramide	Contact metasomatic deposits	Cu, Pb, Ag, Bi, W	100,000	0.2
Fremont	Laramide	Contact metasomatic, vein, and limestone-replacement deposits	Cu, *Pb*, Zn, Ag	17,000*	0.0
Kimball	Tertiary	Epithermal veins	Ag, Au	500,000	1.1
Animas, Gillespie & Big Hatchet Mountains (?)	Tertiary	Epithermal veins, limestone-replacement deposits	*Fire clay*, Pb, Ag, fluorspar	100,000	0.2
Gold Hill	Tertiary	Mesothermal to epithermal veins	Au	100,000**	0.2
Animas	Tertiary to Quaternary	Epithermal veins	*Fluorspar*, Mn	130,000***	0.3
Caprock Mountains	Tertiary to Quaternary	Epithermal veins	Mn	None **	——
Antelope Wells	Tertiary to Quaternary	Epithermal veins	Mn, U	None	——

* Exclusive of production from Luna County
** Exclusive of several hundred thousand dollars worth of production from Grant County
*** Exclusive of fire clay worth about $150,000 to $200,000
The most important product in each district is underlined

TABLE 3. MINERAL DEPOSITS OF THE ANIMAS DISTRICT

Commodity Mined	Name and Location of Deposit(s)	Geologic Type	Years in which active	Approximate value of production, in dollars
Fire clay	Phelps Dodge Corp. 1½ miles S. of Pratt	Hydrothermal (?) alternation of andesite along NE-trending fault	Early 1900's to present	150,000 to 200,000
Manganese	Ridge (Hoggett), secs. 31 and 32, T. 29 S., R. 18 W. Lucky, sec. 30, T. 29 S., R. 18 W.	Psilomelane veins in Tertiary quartz latite ash-flow tuff	WW II, 1953-59	60,000
Fluorspar	Doubtful sec. 15, T. 25 S., R. 19 W.	Vein grading into travertine in area of hot ground water	WW II, 1952	40,000 to 60,000
Silver, lead, zinc	Rincon, sec. 29, T. 28 S., R. 18., many other prospects in Animas Mts.	Limestone replacement	Early 1900's, 1940 to 1949	20,000

ary basalt and Gila Conglomerate. At least one vein, the Cliffroy, grades upward into travertine. Prior to expiration of the U.S. Government Carlot Manganese Purchase Program in 1959 the district produced about 15,000 tons of ore valued at several hundred thousand dollars. The chief mines were the Cliffroy in SW¼ sec. 33, T. 19 S, R. 19 W. and the Consolation, in SW¼ sec. 20, T. 19 S., R. 19 W., both in Grant County. The ore was of milling grade, and three mills, all located near the Gila River, were active at different times.

FREMONT DISTRICT

The Fremont district covers the Sierra Rica, which is partly in Hidalgo County, partly in Luna County, and partly in the Mexican state of Chihuahua. Production in Hidalgo County has probably amounted to less than $20,000. Most of it has come from a group of lead-silver, lead-zinc, copper-silver, and minor uranium-lead veins and limestone replacement deposits in sec. 25, T. 29 S., R. 14 W. Signs of thermal metamorphism are widespread even though no coarse-grained igneous rocks crop out. There are, however, exposures of several bodies of intrusive rhyolite, of the type that occurs in association with porphyry bodies in the Apache No. 2 and San Simon districts.

Gillespie (Red Hill) District

Virtually all production of the Gillespie district has come from the Red Hill lead-silver mine in sec. 30, T. 30 S., R. 17 W., which was sporadically active from the turn of the century to 1950. The deposit is a northwest-trending vein that cuts Tertiary quartz latite ash-flow tuff. The ore is thoroughly oxidized and consists mainly of cerussite, some anglesite, and a little residual galena. Records are incomplete, but 3,746 tons shipped between 1908 and 1950 yielded 1,019,500 pounds of lead and 14,249 ounces of silver, valued at $82,414. Total production must be around $100,000.

In secs. 3 and 4, T. 31 S., R. 18 W., there are a number of silver and fluorspar prospects in silicified limestone.

Gold Hill District

The Gold Hill district straddles the Hidalgo-Grant County line. The bedrock is a Precambrian migmatite complex cut by a diabase dike swarm of unknown age and by a few felsic dikes. All rocks are cut by gold-bearing quartz veins from a few inches to 4 feet wide, traceable for a few hundred feet on the surface. The veins have a strong affinity for mafic rocks, especially contacts between granite and a mafic rock such as biotite schist or diabase.

The district reached its peak in the 1890's, when three stamp mills treated oxidized free-milling ore from many shallow mines. The last period of activity in the Hidalgo County part of the district was between 1934 and 1940, when 355 tons of hand-picked ore yielded 224 ounces of gold and 402 ounces of silver. Prospecting of Precambrian pegmatites in 1950 resulted in the discovery of some radioactive minerals but no commercial deposits.

Lordsburg District

The Lordsburg district has dominated mining in Hidalgo County since the early years of this century. Between 1904 and 1961 alone it produced over 4,000,000 tons of siliceous fluxing ore and milling-grade ore, which yielded about 156,000,000 pounds of copper, 4,400,000 pounds of lead, 500,000 pounds of zinc, 157,000 ounces of gold and 6,700,000 ounces of silver. Almost all of this has come from three mines in the Virginia subdistrict, the Eighty-five in secs. 12 and 13, T. 23 S., R. 19 W., Bonney-Miser's Chest in secs. 14 and 23, T. 23 S., R. 19 W. and Henry Clay-Atwood in sec. 7, T. 23 S., R. 18 W. and sec. 12, T. 23 S., R. 19 W.

The Virginia subdistrict is the northern part of the Lordsburg district. Lasky (1938), showed that the most continuous veins trend northeast and cut both the Lordsburg granodiorite stock and the surrounding Cretaceous (?) basalt. Another set of veins, of westerly trend, has prominent wall-like outcrops, but only one ore shoot, in the South Atwood vein, has so far been successfully developed in them.

Hypogene zoning partly controls the types of ore mined. The central zone, near the apex of the Lordsburg stock, has yielded tourmaline-bearing siliceous chalcopyite-pyrite-gold-silver fluxing ores, shipped by the Eighty-five and Henry Clay-Atwood mines. It is surrounded by a zone of veins characterized by chalcopyrite and specularite, worked as milling-grade ore in the Bonney-Miser's Chest mine, the largest in Hidalgo County. The surrounding zinc-lead and lead zones have been explored by many small mines and prospects.

The Pyramid subdistrict, at the southern end of the Lordsburg district, in secs. 1 and 2, T. 24 S., R. 19 W., has veins of complex mineralogy, formerly worked in the Nellie Bly, Robert E. Lee, Venus, Last Chance, and Susie mines for copper and silver or for silver alone. Total production was between $550,000 and $600,000. The subdistrict either represents the outer zone of the Lordsburg district or a secondary center of mineralization (Clark, 1962). It is separated from the Virginia subdistrict by a zone, about 1½ miles wide, mineralized only by fluorite veins. These possibly belong to a younger period of mineralization than the metal veins. The mineralogy of the entire Lordsburg district has been further complicated by the presence of six stages of mineralization (Lasky, 1938).

In an age in which underground mining is facing increasing economic difficulties, the longevity of the larger mines of the Lordsburg district is remarkable. The Eighty-five mine was active from 1908 to 1932, and is presently undergoing renewed development. Banner Mining Company has operated the Bonney-Miser's Chest mine continuously since 1935. The Henry Clay-Atwood property was worked by numerous lessees from 1942 to 1964.

San Simon District

The San Simon district can be divided into four subdistricts: Kimball, McGhee Peak, Cienega Peak, and Granite Gap. Gillerman (1958) described the geology of the district, exclusive of the Kimball subdistrict.

The mines of the Kimball subdistrict worked north- or east-trending epithermal quartz veins in Late Cretaceous (?) and Tertiary volcanic rocks. The Volcano silver mine in sec. 17, T. 23 S., R. 21 W., the Mineral Mountain silver mine in sec. 17, T. 24 S., R. 21 W. and the Beck (or National) gold mine in sec. 30, T. 23 S., R. 21 W. together produced about $500,000 worth of ore, mainly before 1910.

The McGhee Peak subdistrict has produced base-metal sulfides mainly from contact metasomatic deposits in limestones next to felsite and monzonite bodies. The ores are associated with tactite minerals, especially garnet and wollastonite. The Silver Hill mine in sec. 3, T. 25 S., R. 21 W. and Carbonate Hill mine in sec. 34, T. 24 S., R. 21 W. each produced over $200,000 in lead, zinc, and silver between 1924 and 1952. The Johnny Bull mine in sec. 3, T. 25 S., R. 21 W. produced an unknown amount of copper, mostly before 1905. There are many smaller mines and prospects.

The Cienega Peak subdistrict has small contact metasomatic tungsten deposits and fluorite veins. A little tungsten was shipped in the early 1950's.

In the Granite Gap subdistrict pockets of thoroughly oxidized lead-silver ores replace Paleozoic limestone next to northeast-trending felsite dikes. No tactite minerals are present (Cargo, 1959). Lindgren, Graton, and Gordon (1910) estimated production prior to 1905 to have been at least $600,000. Output since then has been less. Most of the ore has come from the Bob Montgomery and World's Fair groups of claims in sec. 35, T. 25 S., R. 21 W. and sec. 2, T. 26 S., R. 21 W.

SYLVANITE DISTRICT

The Sylvanite district has many different kinds of mineral deposits (Lasky, 1947), but four types have accounted for virtually all past production. They are (1) contact metasomatic copper deposits, (2) high-temperature gold-copper-tourmaline-quartz veins, (3) gold placers, and (4) contact metasomatic tungsten deposits. Total production has been about $300,000.

The largest contact metasomatic copper deposit known in the district was worked in the Copper Dick mine in sec. 22, T. 28 S., R. 16 W., from which about 4,000 tons of ore was shipped between 1890 and 1954, worth $80,000 to $100,000 (net smelter return). Although the Buckhorn gold mine in sec. 27, T. 28 S., R. 16 W., was discovered in 1880, the discovery of additional gold veins and placers in 1909 touched off the last old-fashioned gold boom in New Mexico. It was short-lived and led to the recovery of less than 1,000 ounces of gold. An additional $70,000 worth of gold was mined during the 1930's, mostly in the Buckhorn mine.

Most of the tungsten has come from the Granite Pass area at the southern end of the district. About 650 tons of scheelite-garnet ore containing 0.44 percent WO_3 were shipped from the Eagle Point claims in S½ sec. 22, T. 29 S., R. 16 W., in 1943, and lesser amounts came from other claims (Dale and McKinney, 1959).

REFERENCES

Cargo, D. N., 1959, *Mineral deposits of the Granite Gap area, Hidalgo County, New Mexico:* Univ. New Mexico unpub. master's thesis, 87 p.

Clark, K. F., 1962, *Hypogene zoning in the Lordsburg mining district, New Mexico:* Univ. New Mexico unpub. master's thesis, 136 p.

Dale, V. B., and McKinney, W. A., 1959, *Tungsten deposits of New Mexico:* U.S. Bur. Mines Rept. Inv. 5517, 72 p.

Gillerman, E. G., 1958, *Geology of the central Peloncillo Mountains, Hidalgo County, New Mexico and Cochise County, Arizona:* New Mexico Bur. Mines and Mineral Res. Bull. 57, 152 p.

Lasky, S. G., 1938, *Geology and ore deposits of the Lordsburg mining district, Hidalgo County, New Mexico:* U.S. Geol. Survey Bull. 885, 62 p.

————, 1947, *Geology and ore deposits of the Little Hatchet Mountains, Hidalgo and Grant Counties, New Mexico:* U.S. Geol. Survey Prof. Paper 208, 101 p.

Lasky, S. G., and Wootton, T. P., 1933, *The metal resources of New Mexico and their economic features:* New Mexico Bur. Mines and Mineral Res. Bull. 7, 178 p.

Lindgren, Waldemar, Graton, L. C., and Gordon, C. H., 1910, *The ore deposits of New Mexico:* U.S. Geol. Survey Prof. Paper 68, 361 p.

Northrop, S. A., 1959, *Minerals of New Mexico, rev. ed.:* Albuquerque, Univ. New Mexico Press, 665 p.

State (of New Mexico) Inspector of Mines, 1912 to 1964, Annual Reports.

Strongin, Oscar, 1957, *Geology and ore deposits of Apache Hills and northern Sierra Rica, Hidalgo County, New Mexico:* Columbia Univ. unpub. Ph.D. dissertation, 221 p.

U.S. Department of the Interior, 1882 to 1932, Mineral Resources of the United States (annual), 1932-1961 Minerals Yearbook (annual).

Weber, R. H., and Kottlowski, F. E., 1959, *Gypsum Resources of New Mexico:* New Mexico Bur. Mines and Mineral Res. Bull. 68, 68 p.