UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

# Mines and prospects of the Butte $1^{o}x2^{o}$ quadrangle, Montana

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.



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# INTRODUCTION

The Butte quadrangle, in the Northern Rocky Mountains of southwestern Montana, has had a long, productive, and colorful mining history. Butte, the city from which the quadrangle takes its name, is located in the most famous mining district of the quadrangle. This district, the Butte or Summit Valley district, has been described as the "richest hill on earth" and is one of the richest and most productive mining districts of the world. The quantity of metals produced from this district alone are far greater than the combined total of all commodities from all other mining districts of the quadrangle. However, many districts other than Butte have had significant production as compared to other mining districts of the Northern Rocky Mountains. The dollar value of production from the Butte district is more than $6 billion (Miller, 1973) and that of the combined total of production from the other districts in the quadrangle is more than $400 million. These values are based on actual metal prices at the time of production. The totals would be many times larger if converted to present day commodity prices.

Mineral occurrence data for a total of 1111 mines, prospects, and mineral occurrences have been compiled for the Butte quadrangle. These mineralized sites are found throughout the quadrangle but most are concentrated in the major mining districts; 78 percent are clustered in 46 established mining districts and the remaining 22 percent are more widely scattered in 24 geographic areas (fig. 1). Only small areas of the quadrangle lack significant mines, prospects, or mineral occurrences. The locations of mines and prospects are shown on maps (pl. 1 and 2) and a brief description of each site is given in a table arranged by mining district or geographic area (table 1) (all tables are at end of report). This table gives a brief description of each district or area and details of each site within the district or area including site number, name and alternate name(s), location by latitude and longitude, commodities present, description of the site, and sources of data. Data for this report come from the U.S. Geological Survey Mineral Resource Data System (MRDS; this was formerly known as the Computerized Resource Information Bank (CRIB)), from many published and unpublished sources, and from geologic field work.

The Butte quadrangle is in southwestern Montana and is bounded by latitudes $46^{\circ}$ and $47^{\circ}$ N. and longitudes $112^{\circ}$ and $114^{\circ}$ W. The city of Butte is near the southern edge and in the southeastern corner of the quadrangle. Helena, the state capital of Montana, is located on the eastern edge and Missoula is located near the northwestern corner of the quadrangle. Most of the area of the quadrangle is in Granite, Powell, Lewis and Clark, and Jefferson Counties and the remaining area includes parts of Missoula, Ravalli, Deer Lodge, and Silver Bow Counties. The quadrangle includes a number of major and minor mountain ranges separated by intermontane valleys. The continental divide trends nearly north-south through the eastern part of the quadrangle to a point near Butte, then trends generally east-west near the southern boundary of the quadrangle, west of Butte. East of the divide the drainages are tributary to the Missouri River and west of the divide the drainages are tributary to the Clark Fork, which heads in the vicinity of Butte.

The geology of the Butte quadrangle is very complex. Sedimentary and igneous rocks range in age from Proterozoic to Tertiary. Most of the pre-Tertiary sedimentary rocks are structurally complex due to widespread faulting and folding. Due to thrust faulting, complete sequences of these sedimentary

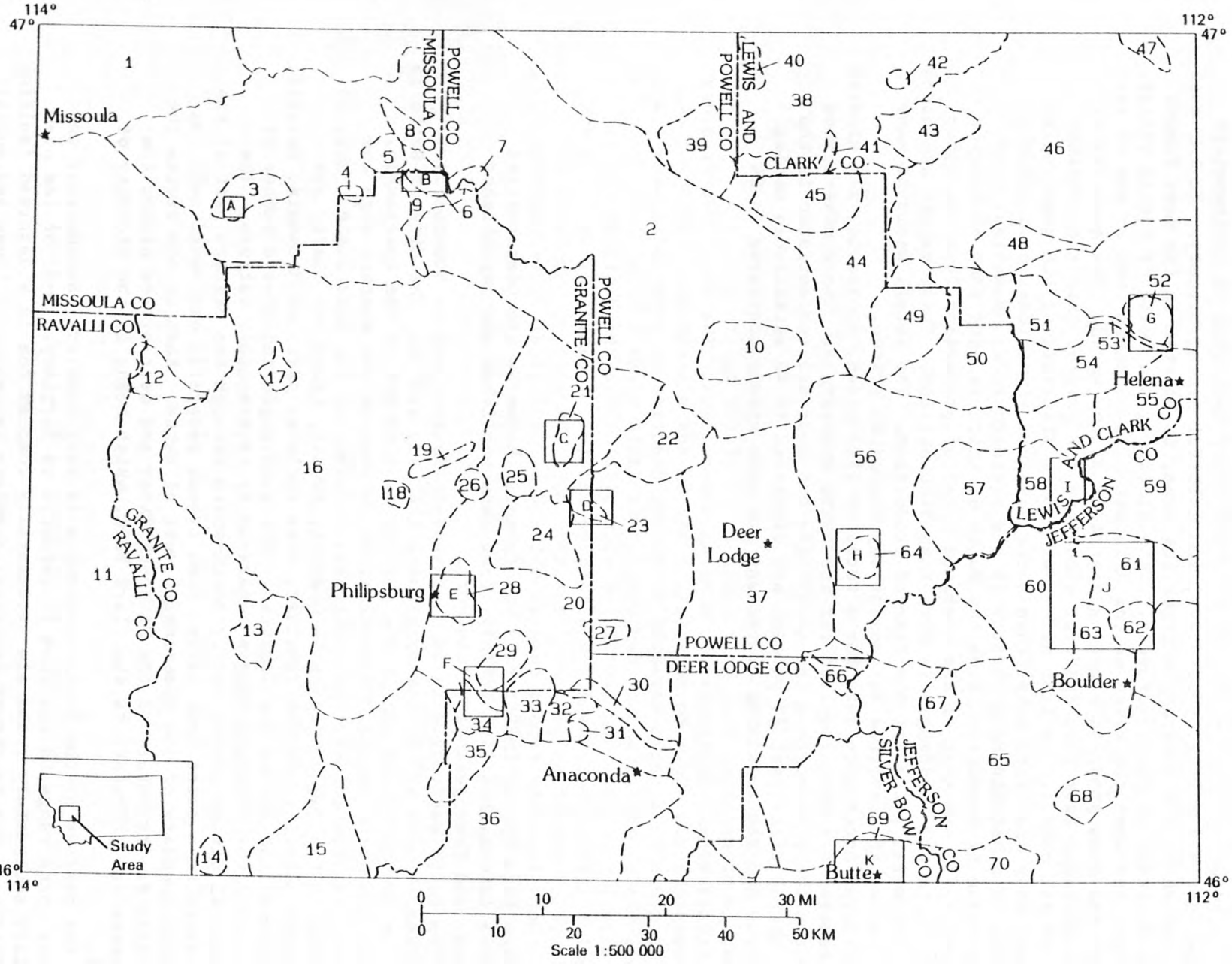


Figure 1. Index map showing locations of mining districts and geographic areas, Butte $1^{o}x2^{o}$ quadrangle, Montana.

EXPLANATION

| Map No. | Name |
|---|---|
| 1 | Rattlesnake Creek area |
| 2 | Garnet Range area |
| 3 | Clinton district |
| 4 | Copper Cliff district |
| 5 | Coloma district |
| 6 | Garnet (First Chance) district |
| 7 | Top O'Deep district |
| 8 | Elk Creek area |
| 9 | Bear Creek area |
| 10 | Garrison district |
| 11 | Sapphire Mountains area |
| 12 | Welcome Creek district |
| 13 | Rock Creek area |
| 14 | Frog Pond Basin district |
| 15 | Moose Lake district |
| 16 | John Long Mountains area |
| 17 | Alps district |
| 18 | Black Pine (Combination) district |
| 19 | Henderson Creek area |
| 20 | Flint Creek Range area |
| 21 | Dunkleberg district |
| 22 | Pioneer (Gold Creek) district |
| 23 | Rose Mountain (Gold Creek) district |
| 24 | Princeton (Boulder Creek) district |
| 25 | Douglas Creek (Gird Creek) district |
| 26 | Maxville area |
| 27 | Racetrack (Danielsville) district |
| 28 | Philipsburg district |
| 29 | Red Lion (Hidden Lake) district |
| 30 | Lost Creek district |
| 31 | Blue-Eyed Nellie district |
| 32 | Olson Gulch district |
| 33 | Johnson Basin district |
| 34 | Georgetown (Southern Cross, Cable, Gold Coin) district |
| 35 | Silver Lake district |
| 36 | Anaconda Range area |
| 37 | Deer Lodge Valley area |
| 38 | Blackfoot River area |
| 39 | Big Blackfoot (Ogden Mountain) district |
| 40 | Lincoln Gulch area |
| 41 | McClellan Gulch district |
| 42 | Seven-up Pete Gulch area |
| 43 | Stemple-Gould district |
| 44 | Nevada Creek area |
| 45 | Finn district |
| 46 | Little Prickly Pear area |
| 47 | Wolf Creek district |
| 48 | Marysville (Silver Creek) district |
| 49 | Ophir (Snowshoe Creek, Carpenter Creek) district |
| 50 | Dog Creek area |
| 51 | Austin district |
| 52 | Scratchgravel Hills area |
| 53 | Sevenmile Creek area |
| 54 | Stemwinder Hill area |
| 55 | Helena (Last Chance) district |
| 56 | North Boulder Mountains area |
| 57 | Elliston district |
| 58 | Rimini (Vaughn) district |
| 59 | Clancy district |
| 60 | Basin (Cataract) district |
| 61 | Wickes (Colorado) district |
| 62 | Amazon district |
| 63 | Boulder (Comet) district |
| 64 | Emery (Zosell) district |
| 65 | South Boulder Mountains area |
| 66 | Oro Fino district |
| 67 | Lowland district |
| 68 | Big Foot (State Creek) district |
| 69 | Butte (Summit Valley) district |
| 70 | Pipestone district |

A-K Location of detailed maps

units are not generally present in the quadrangle and the thicknesses and lithologies are variable from one thrust plate to another. The oldest rocks in the quadrangle are sedimentary rocks of the Belt Supergroup of Middle Proterozoic age. They form very thick sequences, are exposed over a large percentage of the area of the quadrangle, and include formations of the lower, middle, and upper parts of the Belt. Individual formations are as much as 13,000 ft thick (C. A. Wallace, unpub. data) and the maximum thickness of the Belt Supergroup in the quadrangle may be similar to that of the entire sequence near Alberton, Montana, to the northwest of the Butte quadrangle where it exceeds 67,000 ft (Harrison, 1972). In many areas of the quadrangle these Precambrian rocks are overlain by thin to moderately thick sequences of Cambrian to Permian sedimentary rocks. The maximum thickness of the Paleozoic section is about 8,000 ft (C. A. Wallace, unpub. data). A relatively thick sequence of Mesozoic sedimentary rocks, predominantly Cretaceous in age, which is found mostly in the central part of the quadrangle, overlies the Paleozoic rocks. If complete, the Mesozoic sequence would total about 28,000 ft (C. A. Wallace, unpub. data).

The Butte quadrangle is located in a structurally complex region. Most of the Butte quadrangle is in the southern part of the Montana Disturbed Belt, a tectonic belt in the Northern Rocky Mountains characterized by northwest-trending faults and intense deformation. An element of the Disturbed Belt, called the Sapphire Thrust System occupies most of the western two-thirds of the quadrangle. Sedimentary rocks of Cretaceous and older ages in the Sapphire Thrust System have been complexly folded and faulted.

Plutonic rocks, which intrude the sedimentary units, and volcanic rocks of Cretaceous and Tertiary ages are widespread in the quadrangle. Most of these are post-thrusting but some may be pre- or syn-tectonic and involved in the thrusting and folding. Most of the mineral wealth in the quadrangle, in the form of hydrothermal ore deposits, is genetically related to Cretaceous granitic plutonism. Igneous activity decreased but continued into Tertiary time, at least until the Oligocene.

In the Butte quadrangle the Cenozoic Era was important for normal faulting, volcanism, sedimentation, glaciation, and the formation of many important mineral deposits. Many normal faults were especially active during the Miocene and Pliocene and some were active into the Quaternary. Volcanic rocks of Eocene and Oligocene age cover large areas and are genetically related to several important mining districts. During Cenozoic time, thick accumulations of Tertiary basin-fill sediments, Pleistocene glacial till and outwash, and Holocene alluvium and colluvium were deposited. The Cenozoic was important for the formation of placer deposits valuable mainly for gold but some have produced important quantities of sapphires and tungsten.

This map is part of a folio of maps of the Butte $1^{\circ}x2^{\circ}$ quadrangle, Montana, prepared under the Conterminous United States Mineral Assessment Program (CUSMAP). Other maps to be published as part of this folio are a geologic map, geochemical maps, geophysical maps, maps of linear features and limonitic alteration interpreted from satellite and airborne radar data, and mineral resource assessment maps.

## HISTORY OF MINING

The mining history of the Butte quadrangle began in the mid-1800's with the discovery of gold in 1852 by Francois Finlay near the mouth of Gold Creek (Emmons and Calkins, 1913), in the central part of the quadrangle in what is

now known as the Pioneer district (no. 22, fig. 1). Finlay was the first to discover gold in Montana Territory. Although Finlay did not find deposits rich enough to mine, news of his discovery led others to prospect in the area. In 1858, a party led by Granville Stuart also found gold along Gold Creek and later, in 1860 and 1861, Stuart and others located promising placer ground in the same area (Pardee, 1951). In the summer of 1862, James and Granville Stuart and others built sluice boxes and recovered a small amount of gold (Emmons and Calkins, 1913).

Placer mining in the Pioneer district was, from the start, hindered by a lack of sufficient water to work gravel deposits above the active streams and by the abundance of large boulders in the stream channels. When rich and easily workable placers were found near Bannack, Mont., in 1862 and along Alder Gulch (near Virginia City, Mont.) in 1863, attention was focused on these areas and the Bannack and Virginia City districts developed rapidly as major mining centers (Lyden, 1948). Later, the construction of the Rock Creek ditch in 1868-69 led to renewed activity in the Pioneer district and to the discovery and mining of many rich placer deposits in succeeding years (Pardee, 1951). This district eventually produced approximately $6 million in gold.

The discovery and development of the rich placer deposits, especially those of Alder Gulch, led to a great influx of eager prospectors into Montana Territory and, in the next few years, all of the important placers were found as well as many important lode gold and silver deposits (Knopf, 1913). Last Chance Gulch, a rich gold-bearing placer and the present site of Helena, was located in the summer of 1864 and the Whitlatch-Union vein, carrying rich gold ore, was discovered a few miles south of Helena in September of the same year (Knopf, 1913). Silver-lead and silver lode deposits were found nearly simultaneously with the discovery of gold placers in the vicinity of Wickes, Jefferson City, and Clancy. The Gregory lode in the Wickes district (no. 61, fig. 1), one of the earliest finds, was located in 1864 by a party traveling from Alder Gulch to Helena following news of the discovery of the Last Chance Gulch placers. A smelter, the second in Montana, was erected at the Gregory mine in 1867 (Knopf, 1913).

Other important discoveries of gold placers in the Butte quadrangle during the 1860's were at Bear Creek, Lincoln Gulch, McClellan Gulch, Carpenter Creek, and Silver Bow Creek (Lyden, 1948). The Bear Creek placers were discovered in 1865 and within a few years they produced an estimated $5 million in gold. Also discovered about 1865, Lincoln Gulch had an estimated production valued at about $7 million, nearly all produced by early-day drift mining from a stretch of gulch 7,400 ft long. McClellan Gulch, south of Lincoln Gulch, was discovered in 1864 and by 1875 had reported production of $7 million in gold. The Carpenter Creek placers in the Ophir district (no. 49, fig. 1) were discovered in 1865 and are reported to have yielded gold worth $5 million in the first 4 years of mining. In its earliest period of mining, the Butte district (no. 69, fig. 1) was also a gold placer district, but the placer mining was short-lived and the production was lower than that in many of the other gold placer districts in the quadrangle (Miller, 1973). In the summer of 1864, gold placers were discovered along Silver Bow Creek and its tributaries. By 1867, the richer deposits were worked out after yielding an estimated $1.5 million in gold.

Important lode discoveries were also made during the 1860's in the Philipsburg, Wickes, Rimini, Georgetown, and Garnet districts. In the Philipsburg district (no. 28, fig. 11), the Hope mine was discovered in 1864 and, in 1867, a mill was built to treat the ores from the mine. This was the

first silver mill to be built in Montana and its construction required that materials be freighted in by wagon from Utah (Emmons and Calkins, 1913). In the Wickes district, in addition to the Gregory lode, the Minah and Alta mines were discovered in 1864 and 1869 respectively. The Lee Mountain mine, in the Rimini district (no. 58, fig. 1), was discovered in 1864 (Becraft and others, 1963). In the Georgetown district (no. 34, fig. 1), the Atlantic Cable mine was discovered in 1866 (Emmons and Calkins, 1913). Lode gold deposits in the Garnet district (no. 6, fig. 1) were first discovered in 1867 during the height of placer mining but they were not productive until 1896 (Pardee, 1918).

During the early days of mining, the development of lode deposits was hampered greatly by the lack of materials and the remoteness of supply points. Only ores of the highest grade could be mined because of the high cost of milling and smelting or of shipping ore to distant smelters. During the 1870's, the principal transportation route to and from Helena was the Missouri River, via Fort Benton, Montana, 150 miles northeast of Helena (Knopf, 1913). During high water, a period of only 4 to 6 weeks each year, steamers could navigate the Missouri to Fort Benton. Ore, principally complex silver ore, was hauled by wagon to Fort Benton, then by boat to seaports, and finally by ship to Swansea, Wales, for smelting. During low water, steamers could not navigate west of Fort Union, which is at the junction of the Yellowstone and Missouri Rivers and several hundred miles east of Fort Benton. Two other routes were used to receive supplies or ship ore or bullion to outside markets (Emmons and Calkins, 1913). One was by wagon to Salt Lake City, Utah, a distance of 500 miles. Ores were then sent by Union Pacific Railroad to San Francisco and then by sea to Europe. The third route was by wagon to Walla Walla, Washington, by boat down the Columbia River to the Pacific Ocean, and finally by ship to Europe. Milling costs were especially high for the treatment of silver ores, because salt, which was used in great quantity in silver mills, had to be transported from Utah and, in 1871, brought $120 per ton in Philipsburg (Emmons and Calkins, 1913).

The completion of the Northern Pacific Railroad through Helena, Garrison, and Missoula in 1883 greatly stimulated the mining industry of the Butte quadrangle (Knopf, 1913). The new transcontinental route led to the rapid development of many mining districts, the building of branch railroad lines to connect mining districts to the main line, and the building of new and the enlargement of old smelters to treat ores of the region.

The peak period of prosperity and production in most of the mining districts in the Butte quadrangle was from 1880 to 1900. This is particularly true for silver production but also generally true for gold production. In the Philipsburg and Georgetown districts, during this time, the Granite mine had its most productive period and the largest ore bodies of the Bimetallic, Hope, Cable, and other mines were discovered and exploited (Emmons and Calkins, 1913). Other districts, such as the Marysville district (no. 48, fig. 1), which was principally a gold producer, also flourished during this period.

Since 1900, mining activity in the region has generally declined and most districts never again reached the high production levels attained during the late 1800's. A notable exception is the Butte district where the highest production was attained after 1900. In many districts the production in the post-1900 period was highest during World War I and during the late 1930's to early 1940's.

Some strategic and industrial commodities have been produced only since 1900 from the Butte quadrangle because prior to that time they had few or no uses and thus there was little demand, or they had not been discovered in the quadrangle. Manganese, for example, was first produced in the Philipsburg district in 1900. This district became the country's leading producer of manganese during World War I and continued as an important producer until the 1960's. Butte was also an important manganese producer from World War I to about 1959 (Prinz, 1968). Until 1954, the Butte quadrangle was not a significant tungsten producer but under the incentive of the Government buying program from 1954 to 1957, significant quantities of tungsten were produced from the Henderson Creek tungsten-gold placer deposits and from several small lode mines. Phosphate was not produced from the quadrangle prior to World War II but, since about 1940, the region has been a large producer of phosphate, principally from the Garrison district (Swanson, 1968).

Mining in many gold placer districts was reactivated during the post-1900 period because of the development of bucket-line and dragline gold dredging. In the Butte quadrangle, a small amount of gold was dredged during the period from 1905 to 1910 but the most productive period was from 1933 to 1957. During this time, approximately $7,800,000 in gold was produced from dredges operating on Prickley Pear, Gold, Henderson, Bear, and Carpenter Creeks and at Helena (Lyden, 1948; Walker, 1960). In addition, approximately $200,000 in tungsten was recovered from Henderson Creek (Walker, 1960).

The Butte district is, by far, the largest and most productive district in the quadrangle. Because of its importance Butte's rich and colorful history is summarized here from reports by Miller (1973) and Weed (1912).

Following the decline of gold placer mining and prior to discovery of rich copper-bearing veins, the Butte district was one of the most important silver-producing districts in the United States. The silver mining period in Butte's history lasted from 1876 until 1892, when a decline in the price of silver caused the curtailment of the silver mining. The first important discovery of silver ore was in 1865 when the rich ore shoot of the Travona mine was found. Most of the important silver-bearing lodes were discovered and developed in the early 1870's, but silver ores were not successfully treated in the district until about 1876. By 1879, almost every important lode in the district had been located and Butte became the leading mining district in Montana Territory. At the peak of the silver mining period, in 1887, five major mills with a total of 290 stamps were working nearly 400 tons per day of silver ore that also carried gold. The average yield was probably about $25 a ton in gold and silver.

The copper era at Butte began with the discovery of high grade chalcocite ore on the Anaconda claim in 1882 by Marcus Daly and his associates during the development of the claim as a silver mine. This, the first major copper discovery in the district, was followed shortly by the discovery of rich copper ore on the Colusa claim by W. A. Clark. During the period of 1882-1884, 37,000 tons of ore averaging 45 percent copper were shipped from the Anaconda claim by Marcus Daly and by 1885, 25 mining companies were mining copper in the Butte district. The early shipments of high-grade copper ore were hauled by ox cart to Corinne, Utah; by rail to east coast ports; and finally by ships to Swansea, Wales, for smelting. Later, after the completion of the Northern Pacific Railroad in 1883, ore was hauled by rail to Portland, Oregon, and then by sea to Swansea. The high cost of transportation, however, combined with the growing awareness of the large size of the deposits and the richness of the copper ores led to the construction of railroads and smelters

to transport and process the ore locally. Much of this construction took place between 1884 and 1900 and was accompanied by the formation of large mining corporations and holding companies. By 1906, Butte had become the most important mining center in the United States and second in the world after the Rand in South Africa. To the end of 1906, the total production of the Butte district was estimated to be $650 million and Butte was producing about 20 percent of the total world copper production.

One of largest mining companies in Butte was the Daly syndicate, which was incorporated as the Anaconda Mining Company in 1891 and became the Anaconda Copper Mining Company in 1895. Other major companies, controlled by Boston mining men, were the Boston and Montana Consolidated Copper and Silver Mining Company and the Butte and Boston Consolidated Mining Company. Seeing great potential in the Butte copper mining, New York financiers organized a large holding company, the Amalgamated Copper Company, in 1899. This company secured stock control of the Anaconda Copper Mining Company and its subsidiaries as well as the Boston and Montana, Butte and Boston, and Parrott companies. During the period of 1898-1906, a major battle between some of the principal mining companies and F. Augustus Heinze was fought underground and in courtrooms over ownership of important mining properties and apex rights on several important Butte veins. This strife ended in 1906 when the holdings of Heinze were purchased by Amalgamated Copper Company (Sales, 1964). Later, in 1910, the various holdings of Amalgamated were merged to form the Anaconda Copper Mining Company, which became the principal operating company in the Butte district.

Until 1952, the copper ores of the Butte district were mined by traditional underground methods. During the period of 1952-1963 bulk-mining by block caving in the underground mines was successful in adding substantially to the district production. Open-pit mining in the Berkeley Pit commenced in 1955, and by 1964 production from open pit mining was approximately 61 percent of the annual copper production of the district. Underground mining was eventually phased out and open-pit mining continued as the principal mining method until all mining ceased in 1983. Significant quantities of copper were also recovered by precipitation from underground mine waters and from acid leaching of low-grade copper ore.

Copper is historically the principal metal produced in the Butte district; however, the district has also been a large producer of gold, silver, zinc, lead, manganese, and other commodities. Very high levels of copper production were achieved early and continued until 1983. Before block caving operations were started, the largest production year was 1916 when 292,698,764 lb of copper were produced from underground mines. In 1966, 1970, and 1972, when open-pit mining was the major contributor, the total production of copper by all methods combined was more than 300,000,000 lb in each year. Manganese was first mined at Butte in 1917 and for many years Butte was the largest U.S. producer of manganese. Butte was also an important producer of zinc from about 1916 to 1966. Other commodities produced at Butte include cadmium, bismuth, sulfuric acid, selenium, tellurium, and molybdenum.

## PRODUCTION

Production statistics for mining districts and geographic areas have been compiled from many sources and are shown in table 2. This table lists both quantity of metal produced, in troy ounces for gold and silver and in pounds for copper, lead, and zinc, and estimated or recorded dollar values at the

time of production. There are very few records of quantities of metals produced before 1900. Most of the available pre-1900 data is in the form of estimates of dollar value at time of production and, except for gold from placer deposits, quantities of metals produced cannot be estimated without making assumptions about composition, grade, and tonnage of ore. Mine production data for the period prior to 1904 is generally nonexistent or unavailable. Beginning in 1904, mine production was systematically recorded and reported in publications of the U.S. Geological Survey (1904-1923) and the U.S. Bureau of Mines (1924-present). The greatest period of production for most districts in the quadrangle was prior to 1900, therefore the quantities of metal shown in table 2 are minimum values and the dollar value of production is the more accurate measure of total production. Production of commodities other than gold, silver, copper, lead, and zinc are shown in footnotes. The reference numbers under "sources of data" are the same as those shown in the explanation in table 1. Except for gold, the quantities of metals produced are reported values, nearly all from published sources. For gold placer districts, where the quantity of gold (in troy ounces) produced was not available, ounces of gold were calculated from the price of gold at time of production. Average fineness values of the placer gold, where available, were taken into account in making this calculation.

As previously noted, the Butte district is by far the largest producing district in the quadrangle, with greater than $6 billion in production. The total of all other districts combined is about $400 million. If the Butte district is excluded, the total production of the remaining districts is still much greater than surrounding areas. The Dillon $1^{\circ}x2^{\circ}$ quadrangle, immediately south of the Butte quadrangle, which contains many mining districts has a total estimated production of about $200 million (Loen and Pearson, 1984). Based on the classification used here (see explanation in table 1), 17 districts or areas had very large production (greater than $5 million). The ten largest in order of dollar value are the Butte (>$6 billion), Philipsburg ($91 million), Wickes ($50 million), Marysville ($40 million), Garrison ($30 million), Helena ($29 million), Black Pine ($22 million), Boulder ($17 million), Basin ($16 million) districts, and the Sapphire Mountains area ($15 million).

A variety of commodities have been produced from the Butte quadrangle; the five most important, in order of value, are copper, silver, gold, zinc, and lead. Besides these base and precious metals, the Butte quadrangle has also been a significant producer of phosphate, manganese, tungsten, cadmium, bismuth, sulfuric acid, selenium, tellurium, fluorite, sapphires, limestone, and silica.

## DATA COMPILATION

Data on mines and prospects were compiled from many sources; the principal one was MRDS, a computer file that includes data on mineral occurrences throughout the United States. During this study all of the MRDS records for the Butte quadrangle were checked for accuracy against original sources, revised if necessary, and updated from current data. These additions included data from more recent published reports, unpublished records of the U.S. Forest Service, and data collected during the progress of the Butte CUSMAP project and wilderness study projects conducted by the U.S. Geological Survey and U.S. Bureau of Mines. The MRDS records are available to the public through U.S. Geological Survey offices in Menlo Park, California, and in Reston, Virginia.

Many of the records in the original file were deleted or were not included in this compilation for the following reasons:

(1) Many duplicate records existed; these were combined into one and duplicate records were deleted.
(2) If the information in the record or original sources was insufficient to locate the mine or prospect within a quarter section, it was not included.
(3) If the site was judged to be an insignificant occurrence or an occurrence of a commodity with low economic potential, it was not included. For example, many sites with reported metallic mineral occurrences that had little or no development, i.e. "dogholes," were not included and many records of nonmetallic commodities such as clay mineral occurrences were not included because they were judged to have low economic potential.

Some of the more important primary sources of data, used for MRDS records and updating of these records, are published reports that are, in part, compilations of information on mines and prospects. Several of these are publications by the Montana Bureau of Mines and Geology. These include a compilation of information on Montana mines by Krohn and Weist (1977), on gold placers by Lyden (1948), and county reports for mines and metallic mineral deposits for Jefferson County by Roby and others (1960), for Powell County by McClernan (1976), and for Lewis and Clark County by McClernan (1983). U.S. Geological Survey publications that were used extensively include a report on the Philipsburg district and surrounding region by Emmons and Calkins (1913), reports on the Helena mining region by Knopf (1913) and Pardee and Schrader (1933), a report on the Butte district by Weed (1912), and a report on the Jefferson City quadrangle by Becraft and others (1963).

During the course of field work in the Butte quadrangle, in the summers of 1980-1984, approximately 150 mines and prospects (about 15 percent of the total localities) were visited and examined. During these visits, the location of the mines or prospects were accurately plotted on 7.5 or 15 minute topographic sheets, the geology of the site was determined, the nature and extent of mine workings were examined, and geochemical samples were collected. The site examinations were useful for determining the identity of host rocks and associated igneous rocks, the kind and extent of alteration, the structural environment, and the mineralogy of ore and altered rocks. Geochemical samples were collected and analyzed to determine the presence and concentration of valuable metals and the geochemical suites or indicators for ore and altered rocks. The observations and collected data were used to verify, revise, or update the site information and to write the description of the site (table 1).

The final preparation of this mineral occurrence map and the accompanying tabulation of mines and prospects was done using the computer facilities in the Branch of Central Mineral Resources, Denver, Colo. Selected parts of the updated and revised MRDS records were written to magnetic tape from the main computer in the National Center at Reston, Va.; these data, including site name, latitude, longitude, commodities present, deposit type, production status, and references, were read onto a minicomputer. The data were reformatted into a table and grouped into mining districts and geographic areas. Descriptions of districts and areas and site descriptions were written using data from MRDS about deposit type, mine workings, production status, commodities produced, and geology, and other sources including unpublished geologic mapping. Information from field visits and the analyses of samples were added. References were coded and the sites were numbered.

When the file was completed on the minicomputer, site numbers, locations, and deposit types were transmitted to a file on a microcomputer. Using a microcomputer-based system (Selner and others, 1986), the final maps were prepared. Boundaries of maps and of mining districts and geographic areas were digitized from source documents, labels and leaders were digitized, and preliminary and final maps were then plotted by computer.

## MINES AND PROSPECTS

The locations of 1111 mines and prospects that occur in the Butte quadrangle are shown on plates 1 and 2. Most of these are shown on plate 1 at a scale of 1:250,000. Closely spaced localities in parts of several districts cannot be adequately displayed at this scale. Therefore, a series of eleven maps at scales of 1:24,000, 1:50,000, and 1:62,500 (maps A through K on plates 1 and 2) were prepared to show the sites in these districts.

Mining district boundaries shown on the index map and on plate 1 conform as much as possible to established use. For well-known districts, names and the actual location of boundaries were taken from published maps where available. In most cases, however, the boundaries are not shown on published maps and are poorly defined. For this report, unknown or inaccurately defined boundaries are drawn to include most or all of the sites that are clustered in or near a district. Where feasible, these district outlines are drawn along natural boundaries such as drainage divides. For mines and prospects that lie outside of established mining districts, the map area has been subdivided into geographic areas defined by natural boundaries such as streams or drainage divides. Within many of these areas, geologic as well as geographic coherence facilitates the description of the geology and the mineral deposits (table 1).

Deposit types are indicated by the use of various symbols and the site numbers are keyed to table 1, which is organized by mining district and geographic area. The sites are listed alphabetically within each district or area and site numbers were assigned, beginning with 1 near the northwest corner of the quadrangle. The numbers increase from north to south in the west half of the quadrangle and from north to south in the east half of the quadrangle. Numbers are sequential within each district or area and some gaps in the numbering sequence were left between districts and areas in order to accommodate unforeseen additions to the table after initial compilation.

Table 1 gives a brief description of each district or area and pertinent information about each site. The 1111 sites were assigned numbers in the sequence of 1 to 1196. Site numbers are sequential for each district or area and breaks in the sequence occur between some districts and areas to allow for the addition of new or previously unknown mines and prospects. Additional information about the sites can be obtained from published sources or from the MRDS file. The description of each district or area includes name (and alternate names), important geologic features, the type of deposits present, the production status, and the commodities produced. For each site the information includes name (and alternate names), location by latitude and longitude, commodities present, a brief description of each site, and sources of data.

Locations of sites were hand plotted on published 1:24,000 or 1:62,500 topographic quadrangle maps based on information given in references or from field visits. The latitude and longitude of each site was then measured using scales or templates. These locations were checked for accuracy but slight errors may still be present, due to the imprecision of the method used for

reading the site locations or from differences in topographic maps of different scales, such as between the source maps at 1:24,000 or 1:62,500 and the final compilation map at 1:250,000.

The list of "Commodities Present" includes both commodities that have been produced and those that are present in significant concentrations but that have not been produced. The commodities listed include those cited in recorded or estimated production data, those occurring as major elements in minerals reported to be present, and those detected by chemical analysis. Chemical data were obtained from published and unpublished references and from the analysis of mineralized rocks collected during field investigations. This list of commodities characterizes the rocks geochemically at a given site but does not necessarily reflect the past production or potential future production of these commodities. These data are useful for classifying sites into deposit types and for evaluating and interpreting the results of geochemical drainage surveys.

The description of deposits includes information on the size and extent of workings, the production status, the principal commodities produced, the type of deposit, and the geologic setting.

Mineral deposits in the quadrangle formed under varied conditions of pressure, temperature, and chemical environments and in a wide variety of host rocks. Deposits were classified into 13 deposit types (table 3). This classification is based primarily on form and shape of deposit and on commodities present. Most of these deposit types are hydrothermal and epigenetic but some, mostly nonmetallic types, are sedimentary and syngenetic such as phosphate, limestone, dolomite, and clay deposits.

The largest number of deposits, by far, are vein and replacement deposits of base and precious metals. This type includes many of the largest and most productive mines of the quadrangle including the high-grade copper-zinc-lead-silver veins of Butte, the silver-gold veins of the Granite-Bimetallic and Drumlummon mines, the vein and replacement silver-zinc-lead bodies of the Alta mine, and zinc-lead-silver replacement bodies of the Forest Rose mine. These deposits are epigenetic and predominantly mesothermal.

The second most abundant deposit type in the Butte quadrangle is the placer gold/tungsten/sapphire deposits. These include placer gold deposits in all of the major districts such as Helena, Lincoln Gulch, McClellan Gulch, and Pioneer as well as the Henderson Creek gold-tungsten placers and the Rock Creek sapphire placers.

Skarn tungsten/gold/copper and vein and replacement manganese are also abundant and have contributed significantly to past production. Examples include the Cable gold-silver-copper mine, Spring Hill gold deposit, and Finlay Basin tungsten prospect. Other important deposit types include porphyry or stockwork copper/molybdenum/tungsten, stockwork or disseminated gold/silver, and stratabound copper/silver. Although the number of known deposits are few, such deposits are large and have the greatest potential for future production. Examples of these include the Berkeley Pit mine, Montana Tunnels gold-silver deposit, and Bluebird copper prospect.

The description of each site includes some or all of the following: type and extent of mine workings, form and shape of deposit, important structures, host rock(s), associated igneous rock(s), and production data. Formation symbols for host rocks and associated igneous rocks are explained in the description at the end of table 1. The production of districts and mines with known past production has been classified into small, medium, large, and very large. This classification is based, if available, on dollar value of

production (at time of production), or, if dollar value is not available, on tonnage of ore produced: a small mine or district has produced less than $50,000 or less than 2,500 tons of ore, a medium producer has produced $50,000 to $499,000 or 2,500 to 24,000 tons of ore, a large producer has produced $500,000 to $5,000,000 or 25,000 to 250,000 tons of ore, and a very large producer has produced more the $5,000,000 or more than 250,000 tons of ore. This classification of known producers is arbitrary but was found to be useful in the mineral assessment of the Butte quadrangle. It may not be appropriate to other areas or to a different scale of analysis. Comments on metals or ore produced are based on the type of information in source documents. These documents state production in various terms such as "gold ore," "lead-silver ore," or "ore" as well as actual quantities of commodities produced.

All sources of data used for the compilation of mines and prospects are referenced by number in table 1. These include published and unpublished sources.

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Index to site names

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana

[Note: Sites are plotted by site numbers on plates 1 and 2. Commodities present are listed in approximate decreasing order of importance. Codes for commodities present, host rock(s), and associated igneous rocks and explained sources of data are listed following this table. References cited in district and area descriptions and numerical codes for sources of data are listed in Sources of Data at end of table, p. ]

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Rattlesnake Creek area** | | |
| | The predominant rock types in the area are quartzite, siltite, and argillite of the Middle Proterozoic Missoula Group. Impure carbonate rocks of the Helena Formation (Middle Proterozoic), small patches of Paleozoic sedimentary rocks, and diabase dikes and sills (Late Proterozoic) also occur. Many northwest-trending thrust and normal faults cut the sequences and two major structural provinces, the Rattlesnake and Sapphire Thrust Systems (Wallace and others, 1983), converge in the area. There is no recorded production from the area. | | | | | |
| 1 | Frenchman's prospect | 46-58-15 | 113-57-30 | Ag | Minor occurrence of silver in quartz veins in quartzite (Yms). No production. | 146 |
| 2 | Holiday claim | 46-57-24 | 113-59-15 | Ag, Pb, Zn, Au | Shallow pits and trenches along vein in argillite (Ymi). No production. | 124 |
| 3 | Rattlesnake barite prospect | 46-58-03 | 113-54-05 | Ba | Barite vein along fault in quartzite (Ypi). No production. | 8, 146 |
| | | | | **Garnet Range area** | | |
| | The Garnet Range area is a large area in the northern part of the Butte quadrangle that includes all of the Garnet Range and encloses several mining districts (discussed separately below). Rock types in the area include sedimentary rocks of Proterozoic, Paleozoic, Mesozoic, Tertiary, and Quarternary ages; plutonic igneous rocks of Cretaceous age; and volcanic rocks of Tertiary age. The structurally complex area has many northwest-trending thrust, normal, and strike-slip faults and folds. The southern part of the area is crossed by the leading edge of the Sapphire Thrust System which is a zone of imbricate thrusts involving Proterozoic, Paleozoic, and Mesozoic sedimentary rocks. Several mines and prospects occur in the area and outside of the known mining districts; these include base- and precious-metal veins and skarns, manganese veins, gold placers, and limestone quarries. The area was a large producer of silver, lead, manganese, and limestone. | | | | | |
| 4 | Baker and Sullivan mine | 46-47-00 | 113-16-57 | Pb, Ag, Cu | Several open pits and shafts along vein and replacement deposits in limestone (Cs). Small producer of lead-silver ore. | 91 |
| 5 | Big Horn calcium quarry | 46-42-37 | 113-12-07 | Lst | Surface workings in limestone (Mm). Small producer of limestone. | 77 |
| 6 | Blacktail mine (Linton mine) | 46-45-59 | 113-32-37 | Ag, Pb, Cu, Zn, Au | Open-pit mine in veins in limestone (Ch). Large producer of silver-lead ore. | 35, 124 |
| 7 | Bohrer mine | 46-43-15 | 113-02-40 | Au, Ag, Pb, Cu, Zn | Underground workings in veins in shale (Csh). Small producer of gold, silver, lead, copper, and zinc. | 132 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Chester mine | 46-52-57 | 113-38-00 | Pb, Ag, Au | Underground workings in a lenticular skarn zone at the contact of carbonate rock (Dj) and granodiorite (Kgd). Small producer of lead, silver, and gold. | 91 |
| 9 | Chloride mine | 46-47-20 | 113-30-20 | Pb, Ag | Underground workings in pipe-like structures and silicified zones in carbonate rock (Dj). Small producer of lead-silver ore. | 91 |
| 10 | Cook prospect (Arrowhead lease) | 46-44-15 | 113-36-00 | Mn, Au, Ag | Surface and underground workings in a manganese replacement zone in limestone (Es). Medium producer of manganese, gold, and silver. | 124 |
| 11 | Drummond quarry (Spring Gulch mine) | 46-40-10 | 113-08-13 | Ls | Surface and underground workings in limestone (Kk) beds. Small producer of limestone for smelter flux. | 19, 35, 52 |
| 12 | Hitchcock quarry | 46-44-10 | 113-13-20 | Lst | Surface workings in limestone (Mm) beds. Small producer of limestone. | 19 |
| 13 | Limestone mine | 46-41-20 | 113-03-15 | Lst | Surface workings in limestone (Mm) beds. Small producer of limestone. | 35 |
| 14 | Mitchell copper prospect | 46-42-30 | 113-23-11 | Cu, Pb | Underground workings in veins along fractures in quartzite (Je). Small producer of copper and lead. | 140 |
| 15 | Yourname Creek placer (Includes (Deer Gulch) | 46-53-11 | 113-09-00 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 84 |
| | **Clinton district** | | | | | |
| | The Wallace Creek granodiorite stock of Cretaceous age intrudes Cambrian and Middle Proterozoic age sedimentary rocks that have been thrust faulted and cut by northwest-trending normal faults. Veins occupy shear zones in sedimentary rocks and in granodiorite near the granodiorite contact. The district was a medium producer of copper, silver, lead, zinc, and gold. | | | | | |
| 16 | Adaline mine | 46-49-05 | 113-35-37 | Pb, Ag, Cu, Au, | Underground workings along veins in shear zones in shale (Csh) near granodiorite (Kgd) contact. Small producer of lead-silver ore. | 91 |
| 17 | Aladdin mine | 46-47-28 | 113-39-12 | Cu, Ag, Au | Surface and underground workings in veins in granodiorite (Kgd). Small producer of copper ore. | 91, 124 |
| 18 | Belleview mine | 46-47-52 | 113-38-47 | Cu, Ag, Au | Underground workings in veins in granodiorite (Kgd). Small producer of copper, silver, and gold. | 76, 91 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Clinton district--Continued** | | |
| 19 | Cape Nome mine (Bullion, Moose) | 46-47-22 | 113-39-11 | Cu, Ag, Au, Pb, Zn, Ba, As, Sb, Bi | Several levels of underground workings totaling 5,000 ft in veins in schist (Ymi) and granodiorite (Kgd). Small producer of copper, silver, and gold. | 39, 62, 65, 91, 124 |
| 20 | Charcoal mine (Shawbut mine) | 46-48-47 | 113-35-20 | Ag, Pb, Zn, Au, Cu | Greater than 425 ft of underground workings along veins in granodiorite (Kgd). Small producer of lead-silver ore. | 51, 91, 124 |
| 21 | Copper Bell mine | 46-47-20 | 113-39-45 | Cu, Au | Greater than 200 ft of surface and underground workings along three veins in granodiorite (Kgd). No production. | 91, 124 |
| 22 | Daisy mine | 46-48-52 | 113-35-45 | Pb, Ag, Cu, Au | Underground workings in veins in shale (Θsh) and quartzite (Θf, Ygr) near granodiorite (Kgd) contact. Small producer of lead-silver ore. | 91, 124 |
| 23 | Gowrie mine | 46-49-21 | 113-38-48 | Pb, Ag | Underground workings in veins in limestone (Cs) Small producer of lead-silver ore. | 91, 124 |
| 24 | Hidden Treasure group | 46-46-49 | 113-39-52 | Cu, Ag, Au, Pb, Zn, As, Mo, Bi | Main producer in district. Two adits, with workings totaling over 2,000 ft, follow a series of sulfide-bearing quartz lenses in a shear zone in quartzite (Yms) near the contact with granodiorite (Kgd). Medium producer of copper, silver, gold, lead, and zinc. | 39, 65, 91, 105, 119, 124 |
| 25 | Hobo claim (Blue Grouse) | 46-47-15 | 113-39-45 | Ag, Cu, Pb, Sb | Two adits and a drift in veins along a fault in granodiorite (Kgd). Small producer of silver, copper, and lead. | 124 |
| 26 | Jack Pot mine | 46-47-00 | 113-40-01 | Cu, Ag, Au | About 300 ft of underground workings on veins in granodiorite (Kgd). Small producer of copper ore. | 91, 124 |
| 27 | Mongar mine | 46-48-35 | 113-34-32 | Ag, Cu, Pb | Underground workings on veins in shear zone in limestone (Θs). Small producer of silver, copper, and lead. | 29 |
| 28 | Nellie mine | 46-48-31 | 113-36-25 | Pb, Ag, Cu, Au | Underground workings on veins in shear zone in granodiorite (Kgd). Small producer of lead-silver ore. | 91, 124 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 29 | Queen Mary Copper prospect (Northern Spy, Wisconsin) | 46-47-27 | 113-39-04 | Cu, Ag, Au, Ba | Adit, drift, shafts, and pits along veins in shear zone in granodiorite (Kgd). Small producer of copper ore. | 124 |
| 30 | Senate mine | 46-46-48 | 113-39-45 | Cu | Underground workings in veins in shear zones in quartzite (Yms) near contact with granodiorite (Kgd). Production undetermined. | 91, 124 |
| 31 | Sumpter mine (Black Hawk) | 46-48-47 | 113-37-57 | Cu, Ag | Underground workings in veins in shear zone in granodiorite (Kgd). Small producer of copper ore. | 91, 124 |
| 32 | Triangle and Grass Window mines (Morning mine) | 46-47-26 | 113-40-03 | Cu, Ag, Au | Numerous adits along a fracture zone in altered granodiorite (Kgd). Small producer of copper, silver, and gold. | 91, 124 |

**Copper Cliff district**

Thrust-faulted sedimentary rocks of Middle Proterozoic and Cambrian age host base and precious metals in veins and breccia zones. The district was a small producer of copper, gold, and silver.

| | | | | | | |
|---|---|---|---|---|---|---|
| 33 | Blue Bell mine (Leonard mine) | 46-48-16 | 113-27-12 | Cu, Au, Ag, As, Sn, Sb | Vertical and inclined shafts along 10 ft-wide brecciated zone in quartzite (Ygr) and limestone (Csh). Small producer of copper ore. | 39, 91, 124, 132 |
| 34 | Copper Cliff mine | 46-48-32 | 113-27-14 | Cu, Au, Ag, Sb, As, Bi, Pb, Sn, Zn | About 1500 ft of underground workings in breccia zones in quartzite (Ygr). Small producer of copper, gold, and silver. | 35, 39, 91, 124 |

**Coloma district**

Cambrian and Middle Proterozoic sedimentary rocks are metamorphosed along the western contact of the Garnet stock (Cretaceous granodiorite). Base and precious metal veins, mined chiefly for gold, occupy shear zones in granodiorite near the contact with limestone. Placers were important producers of gold and silver during the late 1800's. The Mammoth and Olympiad mines accounted for most of the early lode production. The district was a medium producer of gold, silver, copper, and barite.

| | | | | | | |
|---|---|---|---|---|---|---|
| 35 | Coloma barite mine | 46-50-08 | 113-23-53 | Ba | Bulldozer cuts and trenches expose barite veins in quartzite (Ygr) and a latite porphyry (Tab) dike. Small producer of barite. | 32, 39, 54, 124, 156 |
| 36 | Dixie group | 46-50-40 | 113-22-42 | Au, Ag, Zn | Adit, 275-ft long, in fissure vein in granodiorite (Kgd). Small producer of gold ore. | 91, 124, 156 |
| 37 | Mammoth mine | 46-50-33 | 113-22-57 | Au, Ag, Cu, Sb, Pb | Shaft with several working levels. Veins follow contact of granodiorite (Kgd) and limestone (Cs). Medium producer of gold and silver ore. | 35, 39, 91, 110, 124, 156 |
| 38 | McGinnis and Washoe Creek placer | 46-50-41 | 113-22-43 | Au, Ag | Surface workings on placers in alluvium (Qs) in headwaters of creeks. Medium producer of gold and silver. | 33, 84 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Coloma district--Continued** | | |
| 39 | Olympiad mine (Comet mine) | 46-51-13 | 113-23-00 | Au, Ag, Cu, Sb | Greater than 1500 ft of workings along veins in shear zones in granodiorite (Kgd). Small producer of gold ore. | 91, 124, 156 |
| 40 | Rambler mine group (Valley, Crystal Springs, Clemantha, Cato) | 46-50-45 | 113-22-55 | Au, Ag, Cu, Sb, As, Mo, Pb | Series of prospects and several hundred feet of underground workings in veins in granodiorite (Kgd). Small producer of ore. | 39, 91, 124, 156 |
| 41 | Stinkwater Creek barite deposit | 46-52-08 | 113-23-40 | Ba | Surface prospects in barite veins in quartzite (Ygr). No production. | 15, 91 |
| | | | | **Garnet (First Chance) district** | | |
| | Sedimentary strata of Middle Proterozoic and Cambrian ages are folded, cut by thrust and normal faults, and intruded by granodiorite of the Cretaceous Garnet stock. Veins, valuable principally for gold, occur in granodiorite. Veins and replacement deposits occur along bedding planes in limestone, quartzite, and hornfels near the granodiorite contact. Skarn deposits are along granodiorite-limestone contacts. The district was a large producer of gold, silver, and copper. | | | | | |
| 42 | Alabama mine | 46-48-58 | 113-18-32 | Au | Underground workings along veins in shear zones in hornfels (Ygr) near granodiorite (Kgd) contact. Production undetermined. | 91, 124 |
| 43 | Arkansaw mine | 46-49-08 | 113-18-17 | Au | Underground workings, including a 65 ft shaft, in veins in granodiorite (Kgd) of the Garnet stock. Production undetermined. | 91, 124 |
| 44 | Armada prospect | 46-48-37 | 113-18-58 | Cu, Ag, Mo, W | Open cut in skarn deposit at contact of granodiorite (Kgd) with limestone (Ɛsh). Production undetermined. | 39 |
| 45 | Blue Moon prospect | 46-49-35 | 113-19-35 | W, Cu, Mo, Ag, Sn | Open cuts in skarn deposit at contact of granodiorite (Kgd) with carbonate rock (Dj). Production undetermined. | 39 |
| 46 | Cascade mine | 46-49-43 | 113-21-15 | Au, Ag, Cu, Sb | Two adit levels totaling greater than 1,150 ft along veins in shear zones in granodiorite (Kgd) of the Garnet stock. Small producer of gold, silver, and copper. | 91 |
| 47 | Dandy mine (Big Six property) | 46-49-00 | 113-17-52 | Au, Ag, Zn, Cu, Mo, Sb | Three adit levels with crosscuts and raises which total about 3,000 ft. Deposits are veins in shear zones in quartzite (Ygr). Small producer of gold ore. | 39, 54, 91, 124 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 48 | Dewey mine | 46-49-36 | 113-20-35 | Au, Ag, Cu, Ba, Sb | Several mine levels, with workings totaling 1,400 ft, follow veins in shear zone in granodiorite (Kgd). Medium producer of gold, silver, and copper. | 91, 110 |
| 49 | Fairview mine | 46-48-51 | 113-19-40 | Au, Ag, Cu, Ba, Bi, Mo, Te | Underground workings follow telluride-bearing veins in shear zones in quartzite (Ygr). Medium producer of gold and silver. | 91 |
| 50 | Fourth of July mine | 46-49-13 | 113-20-04 | Au, Ag, Cu, Pb, Ba, Sb | Four adit levels totaling greater than 750 ft. Workings follow veins in shear zone in quartzite (Ygr). Small producer of gold and silver. | 91, 137 |
| 51 | Grant and Hartford mine | 46-49-23 | 113-20-12 | Au, Ag, Cu, Pb, Sb, Ba | About 3,000 ft of workings follow vein and replacement deposits along bedding planes in quartzite (Ygr) near contact with granodiorite (Kgd). Small producer of gold and silver ore. | 35, 91, 110 |
| 52 | Haparanda mine (Aparanda) | 46-48-38 | 113-17-38 | Au | Underground workings in veins in quartzite (Ef) and schist (Ygr). Small producer of gold. | 91 |
| 53 | Herzer and Green property | 46-48-58 | 113-18-45 | Au, Ag | Three adits and one 60 ft shaft in veins in quartzite (Ygr) near contact with granodiorite (Kgd). Small producer of gold ore. | 137 |
| 54 | Idaho mine | 46-49-05 | 113-18-40 | Au | Adit, several hundred feet long, along veins in granodiorite (Kgd). Small producer of gold. | 91, 124 |
| 55 | Independence prospect | 46-48-42 | 113-18-40 | Au | About 150 ft of underground workings along veins in shear zones in quartzite (Ygr). Production undetermined. | 91 |
| 56 | International mine | 46-49-45 | 113-20-14 | Au, Ag, Cu | Over 100 ft of workings along veins in shear zones in granodiorite (Kgd) of the Garnet stock. Small producer of gold, silver, and copper. | 91 |
| 57 | Jackie Marie mine (Spokane mine) | 46-49-55 | 113-21-20 | Au, Cu | Underground workings follow veins in shear zones in granodiorite (Kgd) of the Garnet stock. Small producer of gold ore. | 54, 91 |
| 58 | Lowery mine | 46-49-32 | 113-20-52 | Au | Vein deposit in shear zone in limestone (Es) near contact with granodiorite (Kgd) of the Garnet stock. Production undetermined. | 91 |
| 59 | Lynx mine | 46-48-40 | 113-18-52 | Au, Cu | About 270 ft of adits and stopes along vein in shear zones in quartzite (Ygr). Small producer of gold and copper ore. | 91, 124 |
| 60 | Magone and Anderson mine | 46-49-22 | 113-20-04 | Au, Ag, Cu, Pb, Sb | Several mine levels in veins in shear zones along bedding planes in quartzite (Ygr). Medium producer of gold, silver, and copper. | 35, 91, 110 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Garnet (First Chance) district—Continued** | | |
| 61 | Masculine mine | 46-49-08 | 113-18-15 | Au | Short adit and shaft along vein in shear zone in granodiorite (Kgd). Production undetermined. | 91, 124 |
| 62 | Mountain View mine | 46-49-23 | 113-19-43 | Au | Underground workings and open cut follow quartz veins at and near the contact of granodiorite (Kgd) and limestone (Ꞓs). Producer of unknown quantity of ore. | 39 |
| 63 | Nancy Hanks mine (Minnie Palmer) | 46-49-39 | 113-20-43 | Au, Ag, Cu, Pb, Ba, Sb, As, Bi, Zn, Mo | Prominent mine with underground workings totaling about 1,500 ft. Deposit is a composite vein system in a shear zone in granodiorite (Kgd) of the Garnet stock and dolomite (Ꞓh). Medium producer of gold, silver, copper, and lead. | 35, 39, 62, 91, 110 |
| 64 | Ohio and Buckeye mine | 46-48-57 | 113-17-47 | Au | Underground workings along veins in shear zones in quartzite (Ygr). Production undetermined. | 91, 124 |
| 65 | Powers Placer mine | 46-49-48 | 113-18-24 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Production undetermined. | 91 |
| 66 | Red Cloud group (Red Cloud, Crescent, Lead King mines) | 46-49-20 | 113-20-10 | Au, Ag, Cu, Pb, Mo, Ba, Sb | Principal mine in district. Extensive underground workings totaling about 12,000 ft. Deposits are in veins along bedding planes in quartzite (Ygr) near the contact with granodiorite (Kgd) of the Garnet stock. Large producer of gold and silver. | 35, 91, 110, 120 |
| 67 | Robert Emmet mine | 46-49-18 | 113-20-04 | Au, Ag | Underground workings, including adit levels and an inclined shaft, follow veins in shear zones in quartzite (Ygr) near granodiorite (Kgd) contact. Small producer of gold and silver. | 91, 137 |
| 68 | Shamrock mine | 46-49-38 | 113-20-32 | Au, Cu, Pb, Sb, Ba | Several mine levels totaling 1,200 ft along veins in fracture zones in granodiorite (Kgd) of the Garnet stock. Medium producer of gold ore. | 91 |
| 69 | Sierra mine | 46-49-54 | 113-20-12 | Cu, Au, Ag, Sb | Two adits and an inclined shaft in a vein in granodiorite (Kgd). Small producer of ore. | 91 |
| 70 | Stone placer mine | 46-48-50 | 113-18-33 | Au, Ag | Open pit placer mine in high-level gravels (Qs) on drainage divide. Small producer of gold and silver. | 91 |
| 71 | Tiger mine | 46-49-33 | 113-20-40 | Au, Ag | Greater than 1,300 ft of workings along a fracture zone in recrystallized limestone and dolomite (Ꞓs) near contact with granodiorite (Kgd). Medium producer of gold and silver. | 91, 110, 141 |

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| 72 | Willie mine | 46-49-11 | 113-20-20 | Au | Brecciated and iron-stained quartzite (Ygr) in the core of an anticline is developed by one adit. Small producer of gold. | 91 |

**Top O'Deep district**

Paleozoic sedimentary rocks are cut by northwest-trending faults and intruded by a small stock of granodiorite that is similar to the the Garnet stock of Cretaceous age. The principal ore deposits are skarns along the granodiorite-limestone contacts which contain mainly gold, silver, and copper. The district was a medium producer of gold, silver and copper.

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| 78 | Bilk and Weasel Gulch placers | 46-49-03 | 113-14-47 | Au, Ag | Gold-bearing gravel and residual mantle (Qs), occupying gulches and drainage divides, was mined by ground sluicing and hydraulic giant. Medium producer of gold and silver. | 84, 91 |
| 79 | Boston mine (Hartford and Golden Angel (Klondike) claims) | 46-49-33 | 113-15-52 | Cu, Au, Mn, Ag, W, Zn | About 100 ft of workings in copper-bearing skarn in carbonate rock (Dj) near contact with granodiorite (Kgd). Production undetermined. | 39, 91 |
| 80 | Gold Leaf mine | 46-49-54 | 113-15-41 | Au, Cu | Several open cuts, an inclined shaft, and a 484 ft adit on a quartz vein in granodiorite (Kgd). Small producer of gold and copper ore. | 35, 91 |
| 81 | Mountain mine | 46-49-00 | 113-16-20 | Cu, Au, Ag, | Shaft, 50 ft of drifts, and an open cut in a skarn at the contact of limestone (Gsh) and granodiorite (Kgd). Small producer of copper ore. | 39, 91 |
| 82 | Pearl mine | 46-49-18 | 113-15-22 | Au, Cu, Mn, Mo, Sn, W | Vertical shaft, 300 ft deep, with four working levels in garnet-magnetite-epidote skarn at contact of carbonate rock (Dj) and granodiorite (Kgd). Small producer of gold and copper ore. | 39, 91 |
| 83 | Red Rock mine | 46-49-38 | 113-15-17 | Au, Ag, Cu | Principal mine in district. Open cuts, adits, and drifts follow vein for 500 ft or more in silicified carbonate rock (Dj) at the contact with granodiorite (Kgd). Small producer of gold ore. | 91 |

**Elk Creek area**

Elk Creek and its tributaries drain parts of the Coloma, Garnet, and Top O'Deep mining districts. The southern part of the area is underlain by the Garnet granodiorite stock (Cretaceous). Missoula Group sedimentary rocks (Middle Proterozoic), which border the north margin of the stock, underlie the northern part of the Elk Creek area. The Elk Creek gold placers, mined mainly during the late 1860's, are the principal mineral deposits. The area has been a large producer of gold and silver from placers, barite from veins, and copper from a skarn deposit.

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| 84 | Elk Creek barite mine (Greenough mine) | 46-52-50 | 113-22-26 | Ba, Pb, Zn | Greater than 700 ft of underground workings along barite veins in quartzite and argillite (Ymi). Medium producer of barite. | 8, 22, 32, 78, 124, 156 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Elk Creek area--Continued** | | |
| 85 | Elk Creek placer (Elk Creek Hydraulic, Warner, Davey, McKevitt and Iverson placers) | 46-53-38 | 113-23-05 | Au, Ag | Placer deposits in alluvium (Qs) were mined by sluicing, hydraulicking, drift-mining, dry-land dredge, and drag-line dredge. Large producer of gold and silver. | 33, 84, 91, 124, 156 |
| 86 | Morse and Kennedy mine | 46-52-56 | 113-21-55 | Cu | Skarn deposit at contact of limestone (Ymi) and granodiorite (Kgd). Developed by open cut and a 200 ft adit. Small producer of copper ore. | 91, 124 |
| | | | | **Bear Creek area** | | |
| | Bear Creek flows south, draining the part of the Garnet Range that includes the Garnet and Top O'Deep mining districts. The Bear Creek valley is underlain by thrust-faulted Middle Proterozoic and Paleozoic sedimentary rocks which are cut by northwest-trending normal faults. The placer deposits, discovered in 1865, were among the most productive in Montana. The area was a very large producer of placer gold and silver. | | | | | |
| 87 | Bear Creek placers | 46-43-00 | 113-19-42 | Au, Ag | Extensive placer mining of alluvium (Qs) by dredge, hydraulic giant, sluice, and drift. Very large producer of gold and silver from Bear Creek and Deep Creek and their tributaries. | 33, 34, 35, 84, 91 |
| | | | | **Garrison district** | | |
| | Thrust-faulted and folded Paleozoic and Mesozoic sedimentary rocks are the principal rock types in the area. These are covered in parts of the area by Tertiary volcanic and sedimentary units. Phosphate, mined from the Permian Phosphoria Formation, is the principal commodity present. The district is a very large producer of phosphate. | | | | | |
| 88 | Anderson mine (Brock Mine, Warm Springs, and Anderson open-cut mines) | 46-38-25 | 112-50-10 | P, F | Mine has greater than 9,000 ft of workings to a depth of 1,500 ft below the surface and large open cuts. Phosphorite beds (Pp) are 3.5 to 4 ft thick. Very large producer of phosphate. | 13, 28, 78, 107 |
| 89 | Gimlet mine | 46-38-24 | 112-43-43 | P | Haulage adit 6,100 ft long develops 3 ft phosphorite bd (Pp). Medium producer of phosphate. | 28, 51, 107 |
| 90 | Gravely mine | 46-38-36 | 112-41-32 | P | Haulage adit, and at least two working levels, total 3,300 ft in length. Phosphorite bed (Pp) is about 4 ft thick. Very large producer of phosphate. | 28, 97, 107 |

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| 91 | Luke mine (Mineral Hill) | 46-37-11 | 112-42-21 | P | Greater than 12,700 ft of workings including four adit levels, drifts, and stopes. Very large producer of phosphate. | 28, 51, 107 |
| 92 | Relyea mine | 46-37-44 | 112-48-15 | P | Underground workings along a 9-12 ft zone with several 1-2 ft phosphorite beds (Pp). Medium producer of phosphate. | 28, 78, 107 |
| 93 | Warm Springs Creek quarry | 46-39-00 | 112-45-30 | Ls | Surface workings on limestone (Mm) beds. Small producer of limestone. | 74, 85 |

**Sapphire Mountains area**

This large area includes all of the Sapphire Mountains which lie along much of the western border of the Butte quadrangle. The principal rock types are mapped as formations of the Belt Supergroup of Middle Proterozoic age. The area is structurally complex and lies within the Sapphire Thrust System; the sedimentary rocks are cut by numerous thrust, strike-slip, and normal faults. This area is along the northeastern margin of the Idaho batholith; the sedimentary rocks have been intruded by Cretaceous granitic rocks that are part of the batholith and by numerous other plutons of Cretaceous to Tertiary ages which range in composition from pyroxenite to granite. The relatively few mineral deposits include base and precious metal veins, a fluorite deposit, small placer gold deposits, and other miscellaneous types. The area was a medium producer of gold, silver, copper, and fluorite.

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| 94 | Ambrose Creek pegmatites | 46-32-07 | 113-55-44 | Sil | Bulldozer pits along quartz deposits in pegmatites in granodiorite (Kgd) of the Idaho batholith. Small producer of quartz for construction use. | 20 |
| 95 | Bee Bee No. 1 prospect | 46-12-30 | 113-33-23 | Au | One shaft, one adit, and several pits on vein in calcareous argillite (Ymi). Production undetermined. | 139 |
| 96 | Bentz mine | 46-07-31 | 113-36-55 | Mo, Ag | Two adits, totaling 120 ft, follow molybdenite-bearing quartz veins in shear zones in granodiorite (Kgd). Production undetermined. | 145 |
| 97 | Big Springs Creek placer | 46-24-46 | 113-42-40 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 98 | Broken Bottle prospect (Congdon mine) | 46-07-58 | 113-38-53 | Ag, Pb, Zn | Adit and underground workings along quartz vein in granodiorite (Kgd). Production undetermined. | 39 |
| 99 | Claremont mine | 46-29-01 | 113-54-32 | Cu | Several hundred feet of workings in vein in argillite (Yms). Production undetermined. | 124 |
| 100 | Crystal Mountain fluorspar mine (Retirement group, Lumberjack outcrops) | 46-00-21 | 113-53-12 | F, Co, Nb, Zr, Y, Ram | Open pit mine in pods and veins of fluorite in monzogranite (Kmg). Very large producer of fluorite. | 63, 77, 124, 125, 135, 136, 150, |
| 101 | Eight Mile Creek placer | 46-39-05 | 113-56-05 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 84 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Sapphire Mountains area--Continued** | | |
| 102 | Green Goose-Moly Hogan prospect | 46-04-54 | 113-39-47 | Cu | A 35-ft adit and two pits follow sulfide-bearing quartz veins beneath gabbroic sill (Kgb) in quartzite (Yms). No production. | 145 |
| 103 | Hamilton vermiculite deposit (Gird Creek prospect) | 46-15-43 | 113-53-18 | Vm | Deposit of vermiculite produced by alteration of pyroxenite (TKa). No production. | 103 |
| 104 | Iron Cap mine | 46-30-37 | 113-55-02 | Fe | Shallow shaft in quartz vein in quartzite (Yms). Production undetermined. | 124, 139 |
| 105 | Kent mine | 46-07-29 | 113-39-47 | Au, Ag, Cu, Pb, W | About 2000 ft of underground workings along quartz veins in shear zone in granodiorite (Kgd). Small producer of gold, silver, copper, and lead. | 39, 145 |
| 106 | Last Chance prospect | 46-04-40 | 113-39-55 | Au | Two adits and six trenches in quartz veins in granodiorite (Kgd). Production undetermined. | 145 |
| 107 | Little Wonder prospect | 46-03-55 | 113-40-04 | Au | Two adits in sulfide-bearing quartz veins along shear zone in granodiorite (Kgd). Producer undetermined. | 145 |
| 108 | McDonald mine | 46-12-35 | 113-33-12 | Au, Ag | Open pit, underground workings, and trenches in stratabound deposit in calcareous argillite and jasperoid (Yw). Producer of unknown quantity of gold-silver ore. | 39 |
| 109 | Missoula barite deposit | 46-49-18 | 113-59-34 | Ba | Several pits in barite vein in quartzite (Yms). No production. | 32, 124 |
| 110 | Prospect (name unknown) | 46-07-21 | 113-39-26 | Ag | Three pits in quartz vein in granodiorite (Kgd). No production. | 145 |
| 111 | Sand Basin placer (Coffee Pot, Cub, Elkhorn, Fred, Wanda, Little Jim, Lucky, Moose, Peanuts, Ranger) | 46-11-38 | 113-41-43 | W, Nb, Ta, REE, Th, | Rare-earth bearing placer deposits in alluvium (Qs). No production. | 64 |
| 112 | Sleeping Child "A" prospect | 46-00-39 | 113-49-46 | Sil | Small occurrence of quartz in pegmatite in tonalite (Kmg). No production. | 20 |

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| 113 | Slocum Gulch barite deposit | 46-30-30 | 113-55-40 | Ba | Bulldozer cuts along barite veins in quartzite (Yms). No production. | 32 |
| 114 | Stevens Ranch placer mine | 46-12-25 | 113-33-17 | Au, Ag | Pits and shallow shafts in soil and weathered bedrock consisting of altered argillite, silicified limestone, and jasperoid (Yw). Producer of unknown quantity of gold and silver. | 39 |
| 115 | Stevensville barite deposit | 46-28-16 | 113-54-20 | Ba | Bulldozer cuts along barite veins in quartzite (Yms). No production. | 32 |
| 116 | T. M. T. prospect | 46-03-28 | 113-40-15 | Au, Ag, Pb | Two pits expose quartz veins in granodiorite (Kgd). No production. | 145 |
| 117 | Three Mile Creek placer | 46-37-05 | 113-55-05 | Au, Ag | Minor ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 118 | Todd prospect | 46-04-38 | 113-42-53 | Au | Adit and pits along sulfide-bearing quartz vein in quartzite (Yms). No production. | 145 |
| 119 | Whaley mining claims | 46-41-13 | 113-59-12 | Cu, Ba, Au, Pb, Ag | Bulldozer cuts and underground workings in barite veins in quartzite (Yms). Production undetermined. | 32, 124 |
| 120 | White Cloud mine | 46-39-00 | 113-57-15 | Au, Ag | Two adits totaling 310 ft in length follow a vein in a shear zone in granodiorite (Kgd) of the Idaho batholith. Small producer of gold and silver. | 124 |

**Welcome Creek district**

Thrust-faulted Proterozoic sedimentary rocks of Mount Shields and Wallace Formations are cut by northwest-trending strike-slip and normal faults and intruded by the Tertiary or Cretaceous Welcome Creek monzogranite stock, and by Tertiary or Cretaceous mafic rocks. Base- and precious-metal-bearing quartz veins occupy shear zones in Middle Proterozoic argillite and quartzite. The district was a small producer of lode and placer gold and silver.

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| 126 | Cleveland mine | 46-36-55 | 113-49-15 | Au, Ag | Three caved adits and a trench on quartz veins or pods in fracture zone quartzite and argillite (Yms). Small producer of gold ore. | 79, 124 |
| 127 | BET claims | 46-34-45 | 113-48-48 | Au, W | Gossan-capped calc-silicate zone, apparently of replacement origin, in limestone (Yc). No production. | 79 |
| 128 | Cleveland Spring prospect | 46-37-08 | 113-49-10 | Au, Ag | Pits along quartz vein in quartzite and argillite (Yms). No production. | 79 |
| 129 | Lucky Star claim | 46-36-40 | 113-49-20 | Au, Ag | Two caved adits along a silicified zone in quartzite and argillite (Yms). Production undetermined. | 79 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Welcome Creek district--Continued** | | |
| 130 | Welcome Creek and Cinnabar Creek placers | 46-34-30 | 113-44-30 | Au, Ag | Intermittent ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 79, 121 |
| | | | | **Rock Creek area** | | |
| | Tertiary andesitic, latitic, and rhyolitic volcanic rocks overlie and rhyolite dikes intrude thrust-faulted Middle Proterozoic sedimentary rocks. Remnants of an extensive cover of Tertiary gravels mantle the volcanic and sedimentary rocks. Sapphires and gold have been produced from placer deposits in gulches. The area is a producer of undetermined quantities of sapphire and gold. | | | | | |
| 131 | Gem Mountain sapphire mine (Chaussee sapphire mine) | 46-14-52 | 113-35-28 | Cor | Producer of gem-quality sapphires from placer deposits in alluvium (Qs). Production of sapphire undetermined. | 1, 21, 78 |
| 132 | Basin and Quartz Creek placers | 46-19-11 | 113-34-58 | Au, Ag, Cor | Placer deposits in alluvium (Qs) mined by sluicing and hydraulic giant. Small producer of gold, silver, and sapphire. | 69, 84 |
| | | | | **Frog Pond Basin district** | | |
| | Thrust-faulted rocks of the Middle Proterozoic Wallace and Mount Shields Formations are intruded by Cretaceous granodiorite of the Sapphire batholith and covered by Quaternary glacial deposits. Sulfide-bearing quartz veins occupy shear zones in the Proterozoic rocks and in granodiorite. The district was a medium producer of gold, silver, copper, lead, and zinc. | | | | | |
| 133 | Anderson prospect | 46-02-17 | 113-40-37 | Ag, Cu, Pb, As, Sb | Prospect on fissure vein in shear zone in granodiorite (Kgd). No production. | 155 |
| 134 | Heaney mine (Frog Pond lode) | 46-01-31 | 113-40-41 | Au, Ag, Pb | Workings, about 500 ft long, follow sulfide-bearing quartz veins in granodiorite (Kgd). Small producer of gold, silver, and lead. | 145 |
| 135 | Joker prospect | 46-00-11 | 113-39-58 | Ag | Pits and trenches on quartz veins and stringers in granodiorite (Kgd) and quartzite (Yms). No production. | 145 |
| 136 | Log Cabin prospect | 46-01-53 | 113-39-21 | Ag | Five shafts with about 580 ft of workings, and pits and trenches on veins in shear zones in granodiorite (Kgd) and limestone (Yc). Production undetermined. | 145 |
| 137 | Lutz Creek placer (Gold Bar, Agnes, Townsend placer) | 46-01-47 | 113-39-52 | Au, Ag | Two trenches in alluvium (Qs) are possible sites of former ground sluicing. Production undetermined. | 145 |

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| 138 | Lutz mine (Gold Leaf mine) | 46-00-27 | 113-40-36 | Au, Ag, Cu, Pb, Zn | Three adits and five shafts on two veins in granodiorite (Kgd). Small producer of gold, silver, copper, and lead. | 39, 145 |
| 139 | Millers mine | 46-01-48 | 113-40-48 | Au, Ag, Cu, Pb, Zn, As, B | Inclined shaft with extensive underground workings on sulfide-bearing quartz veins in shear zones in granodiorite (Kgd). Small producer of gold, silver, copper, lead, and zinc. | 39, 145 |
| 140 | Montana Prince claim group | 46-00-50 | 113-40-55 | Au, Ag, Pb, Zn, Mo, Mn | Two adits and two shafts totaling over 1,500 ft in length, and numerous pits in several quartz veins in shear zones in granodiorite (Kgd). Production undetermined. | 39, 145 |
| 141 | Nancy Lee prospect | 46-01-42 | 113-40-50 | Au | Three shafts and five pits follow sulfide-bearing quartz vein in granodiorite (Kgd). Production undetermined. | 145 |
| 142 | O'Brien prospects (Hidden Lead) | 46-00-17 | 113-39-35 | Ag, Au, Pb, Cu, Zn, Sb | Numerous small workings on several sulfide-bearing quartz veins in shear zones in quartzite (Yms) near granodiorite contact. Production undetermined. | 39, 139, 145 |
| 143 | Prospect (name unknown) | 46-00-05 | 113-40-40 | Au, Ag | Workings along 280 ft zone of sulfide-bearing quartz veins and altered granodiorite (Kgd). Production undetermined. | 145 |
| 144 | Prospect (name unknown) | 46-00-08 | 113-40-05 | Au, Ag | Two caved adits on sulfide-bearing quartz vein 3.5 ft wide in granodiorite (Kgd). Production is undetermined | 145 |
| 145 | Townsend prospect | 46-01-49 | 113-40-10 | Au, Ag, Pb, Cu | Two shafts and 20 pits follow sulfide-bearing veins in granodiorite (Kgd). Production undetermined. | 145 |
| 146 | Tuscarora prospect | 46-30-00 | 113-40-15 | Au, Ag | Three shafts follow limonite-stained shear zones in altered granodiorite (Kgd). Production undetermined. | 145 |

**Moose Lake district**

A sedimentary sequence consisting mostly of quartzite and argillites of the Middle Proterozoic Mount Shields Formation but also of other sedimentary formations of Middle Proterozoic and Paleozoic ages forms the bedrock of the district. This sequence has been complexly folded and faulted. Several northeast-trending thrust faults have been mapped in the area. In the southeast part of the district this thrust-faulted sequence is intruded by two Cretaceous granodiorite stocks. Most of the mineral deposits are sulfide-bearing quartz veins, many of which are located along shear or fault zones. A stratabound zone of copper-silver mineralization in quartzite also occurs. The district was a medium producer of gold, silver, and copper.

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| 147 | Banner mine | 46-03-03 | 113-32-07 | Au, Ag, Cu, Zn, As | Caved shaft with two levels of workings in sulfide-bearing quartz veins in quartzite (Yms). Medium producer of gold, silver and copper. | 39, 145 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Moose Lake district--Continued** | | |
| 148 | Barbara Ann claim | 46-00-09 | 113-29-47 | Ag, Pb, Zn, Cu, Au | Shafts, adits, underground workings and pits in quartz veins in dolomite (Ch). Small producer of ore containing silver, copper, and lead. | 40 |
| 149 | Bluebird prospect | 46-04-16 | 113-28-56 | Cu, Ag | Shaft, adit, and pits in stratabound deposit in quartzite (Yms). No production. | 39 |
| 150 | Carp mine (Carpp mine) | 46-02-21 | 113-26-10 | Cu, Ag, Pb, Zn, Sb | Greater than 1000 ft of drifts and crosscuts in brecciated limestone (Ch) stained by copper minerals. Small producer of copper. | 39, 44 |
| 151 | Lucky Seven claims | 46-00-03 | 113-27-47 | Ag | Adit and open cuts in veins in granodiorite (TKgd). No production. | 40 |
| 152 | M and T mine | 46-04-05 | 113-31-55 | Au, Ag, Pb, Cu, As, Sb | Underground workings along veins in diorite (TKgb). Small producer of gold, silver, lead, and copper. | 39, 54, 132 |
| 153 | Muloney Basin prospect | 46-00-55 | 113-25-55 | Cu, Mo, Ag | Quartz vein in granodiorite (TKgd). No workings and no production. | 40 |
| 154 | Muloney mine | 46-01-59 | 113-26-16 | Ag, Cu, Pb, Zn, Au | Shaft, adits, and pits in quartz vein in dolomite (Ch). Production undetermined. | 40 |
| 155 | Old Dominion mine | 46-02-55 | 113-31-28 | Au | Underground workings in quartz veins in quartzite (Yms). Production undetermined. | 39 |
| 156 | Rainbow prospect | 46-00-22 | 113-34-29 | Au, Sil, Ag, Cu, Pb, Mo, Bi, Sb | Prospects for gold and quartz crystal along veins in quartzite (Ymi). Production undetermined. | 39, 145 |
| | | | | **John Long Mountains area** | | |
| | | | | | Proterozoic sedimentary rocks are folded into broad synclines and anticlines and are cut by imbricate thrust faults. Thrust-faulted Paleozoic and Mesozoic rocks occur in the northeast part of the area. The rocks are cut by post-thrusting normal and strike-slip faults which trend northwesterly. The Miners Gulch stock (Cretaceous granodiorite) intrudes Middle Proterozoic sedimentary rocks in the center of the area. Tertiary volcanic rocks and alluvial gravels locally mantle the older rocks. Mineral deposits are gold-bearing quartz veins in sedimentary rocks and in granodiorite of the Miners Gulch stock and gold placers. The area was a medium producer of gold, silver, and tungsten. | |
| 157 | Alder Gulch placer | 46-25-44 | 113-30-21 | Au, Ag | Placer deposits in alluvium (Qs) were mined by hydraulic mining and ground sluicing. Small producer of gold and silver. | 12, 80 |
| 158 | Amseley mine | 46-24-15 | 113-30-34 | Au, Ag | Underground workings in veins in argillite (Yms). Small producer of gold ore. | 12, 80 |

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| 159 | Annie claim | 46-27-32 | 113-16-57 | Au | Adit in vein in gabbro sill (TKgb) in limestone (Yc). Production undetermined. | 44 |
| 160 | Brewster Creek placer | 46-36-42 | 113-38-40 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 161 | Copper Creek prospect | 46-29-35 | 113-24-40 | Ag, Cu, Pb, Zn, As, Sb, Bi, Au | Adits and pits along quartz vein in quartzite (Yms). Production undetermined. | 39 |
| 162 | Copper State mine (Hoffman property) | 46-29-30 | 113-15-20 | Cu, Au, Ag | Short adits and shafts along vein in shear zone in limestone (Csh). Small producer of copper, gold and silver. | 44, 51, 141 |
| 163 | Douglas mine | 46-27-23 | 113-19-30 | Au, Ag | About 700 ft of workings follow vein in shear zone in sandstone and shale (Yc). Small producer of gold and silver. | 44 |
| 164 | Flint Creek placer | 46-19-50 | 113-19-08 | Au, Ag | Ground sluicing of placers in stream and bench deposits (Qs). Small producer of gold and silver. | 33, 84 |
| 165 | Franz prospect | 46-31-25 | 113-25-30 | W, Au, Ag | Adit, shafts, and bulldozer trenches in vein and replacement deposit along bedding of sandstone (Yms). Small producer of tungsten ore. | 143 |
| 166 | Harvey Creek placer | 46-35-50 | 113-26-55 | Au, Ag | Minor ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84, 137 |
| 167 | Hawkeye mine | 46-19-00 | 113-25-00 | Ag, Cu, Pb, Zn, As, Sb | Two shafts and several adits in quartz veins in argillite and siltite (Ysn). Production undetermined. | 39 |
| 168 | Last Chance mine | 46-28-30 | 113-15-55 | Au, Cu, Ag, | About 500 ft adit along vein in shear zone in limestone (Yc). Small producer of gold. | 44, 52, 62 |
| 169 | Mine (name unknown) | 46-19-48 | 113-33-17 | Au, Mo, Pb, As | Several hundred feet of underground workings along veins in limestone (Yh). Production undetermined. | 39 |
| 170 | Mine (name unknown) | 46-25-12 | 113-30-38 | Au, Ag, Cu, Pb, As | Three adits along veins in granodiorite (Kgd). Production undetermined. | 12, 80 |
| 171 | Miners Gulch-Cowan Gulch placers | 46-24-39 | 113-31-45 | Au, Ag, Ba | Alluvium and colluvium (Qs) were mined by ground sluicing and hydraulic giant. Numerous prospects in quartz-barite veins. Small producer of gold and silver. | 12, 80 |
| 172 | Mountain Ram mine | 46-14-08 | 113-27-10 | Ag, Au, Ba, Cu, Mo, Sn, As | Adits, shafts, and pits totaling over 350 ft in veins and replacement bodies in limestone (Yh). Small producer of silver and gold. | 39, 44 |
| 173 | Niles Gulch placer | 46-25-30 | 113-30-25 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 12, 80 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **John Long Mountains area--Continued** | | |
| 174 | Peacock mine | 46-27-55 | 113-19-15 | Ag, Cu | Two adits, totaling about 700 ft in vein in limestone (Yc). Small producer of silver and copper. | 44 |
| 175 | Prospect (name unknown) | 46-27-43 | 113-24-10 | Mo, Bi, As, Pb | Pits and drill holes in closely spaced and stockwork quartz veins in altered quartzite (Yms). No production. | 39 |
| 176 | Prospect (name unknown) | 46-20-15 | 113-33-02 | Au, Ba, Mo | Two adits expose veins in limestone (Yh) and granite porphyry (TKmg). No production. | 39 |
| 177 | Prospect (name unknown) | 46-20-09 | 113-33-10 | Au, Ba, As, Cu, Mo | Several prospect pits and an adit along quartz-barite filled breccia zones in limestone (Yh) near contact with granite porphyry (TKmg). No production. | 39 |
| 178 | Ramona Creek prospect | 46-29-52 | 113-34-55 | Mo, Sn | Molybdenum stockwork deposit in quartzite (Ybo) was explored by drilling. No production. | 39 |
| 179 | Sallie Mellen claim | 46-29-11 | 113-15-30 | Ag, Au, Cu, Pb | Underground workings along vein in shear zone in quartzite (Cf). Production undetermined. | 44 |
| 180 | Sawpit Gulch placer | 46-23-48 | 113-31-46 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing and using washing plants. Medium producer of gold and silver. | 12, 80 |
| 181 | Shakespeare mine | 46-16-00 | 113-29-18 | Ag, Cu, As, Sb | Several adits and pits in quartz vein in limestone (Yh). Production undetermined. | 39 |
| 182 | Silver King mine | 46-18-07 | 113-30-01 | Au, Ag, Cu, Pb, As, Sb, Bi | Two adit levels and several hundred feet of underground workings in a vein in limestone (Yh). Small body of granodiorite (Kgd) is exposed on south side of surface workings. Production undetermined. | 39, 78 |
| | | | | **Alps district** | | |
| | Quartzite and argillite of the Mount Shields, Bonner, and Snowslip Formations of Middle Proterozoic age are thrust-faulted and cut by northwest-trending normal and strike-slip faults. Sulfide-bearing quartz veins occupy fissures in the Mount Shields Formation. The district was a small producer of gold and silver. | | | | | |
| 188 | Alps mine | 46-35-25 | 113-34-45 | Au, As, Ba | Several adits and open cuts in quartz veins in siltite and quartzite (Yms). Production undetermined. | 39 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 189 | Argo mine | 46-34-35 | 113-34-50 | Au, Ag, W, Mo | Fissure filling veins in quartzite and argillite (Yms) contain pyrite, wolframite, and ferberite. Explored by 4,700 ft of workings on two main levels. Small producer of gold and silver. | 144 |
| 190 | Hidden Treasure mine | 46-35-34 | 113-35-50 | Au, W | Underground workings in vein in quartzite (Yms). Small producer of gold. | 110 |

**Black Pine (Combination) district**

Thrust-faulted quartzite and argillite of the Mount Shields Formation (Middle Proterozoic) are cut by northwest-trending normal faults. Quartz veins contain base and precious metals and tungsten. The district is a very large producer of silver, copper, gold, tungsten, lead, and zinc.

| | | | | | | |
|---|---|---|---|---|---|---|
| 191 | Bear and Float prospect | 46-26-42 | 113-21-55 | W | Shafts and bulldozer cuts explored for huebnerite-bearing vein in quartzite (Yms). No production. | 138, 143 |
| 192 | Black Pine mine (Combination mine) | 46-26-52 | 113-21-56 | Ag, Au, Cu, W, Pb, Zn, As, Sb | Extensive underground workings totaling more than 15,000 ft. Main veins follow bedding planes in quartzite and argillite (Yms). Very large producer of silver, gold, copper, tungsten, lead, and zinc. Has produced nearly continuously since 1974 to present. | 39, 44, 61, 76, 78, 142, 143, 151 |
| 193 | Double Eagle prospect | 46-27-18 | 113-23-00 | W, Ag, Cu, Sb | Shallow shaft, surface workings, and drill holes explored for huebnerite- and tetrahedrite-bearing quartz veins in quartzite (Yms). No production. | 143 |

**Henderson Creek area**

Sedimentary rocks of the Mount Shields, Snowslip, and Helena Formations have been thrust-faulted and subsequently cut by northwest-trending oblique-slip faults. After faulting, these rocks were intruded by granodiorite of the Henderson stock (Cretaceous); only a small part of the top of this intrusive is exposed in the valley of Henderson creek. Mineral deposits in the area include base and precious metal veins and replacement deposits, stockwork tungsten deposits in granodiorite, and placers which were mined for gold, silver, and tungsten. The area was a large producer of gold, tungsten (mainly from placers), silver, and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 194 | Bunker Hill mine | 46-28-50 | 113-19-15 | Au, Ag, Cu | Five adits, totaling 2,200 ft, in vein and replacement deposits in limestone (Yh) near contact with granodiorite (Kgd). Small producer of gold, silver, and copper. | 44, 141 |
| 195 | Deer Hunter prospect | 46-28-56 | 113-20-28 | W | Surface workings in vein and replacement deposit in quartzite (Yms). No production. | 143 |
| 196 | General Washington placer | 46-29-00 | 113-18-48 | W | Placers in alluvium (Qs) were mined for scheelite during 1940's. Small producer of tungsten. | 66, 143 |
| 197 | Henderson Gulch tungsten prospect | 46-28-50 | 113-19-27 | W, Au, Ag, Mo | Numerous exploratory trenches in deposit of disseminated scheelite in granodiorite (Kgd). No production. | 39, 66 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Henderson Creek area--Continued** | | |
| 198 | Henderson Gulch placer | 46-30-06 | 113-15-42 | Au, Ag, W | Gold and scheelite placers in alluvium (Qs) were mined by ground sluicing, hydraulic giant, drift mining, and drag-line shovel. Large producer of gold, silver, and tungsten. | 44, 84, 132, 142, 143 |
| 199 | Prospect (name unknown) | 46-29-04 | 113-18-54 | Au, Cu, As | Adit along vein in shear zone in argillite and quartzite (Ymi). Production undetermined. | 39 |
| 200 | Sunrise mine (Queen mine) | 46-29-05 | 113-19-42 | Au, Ag, Cu, Pb, W, As, Sb, Bi, Mo | Fourteen adits with greater than 7,000 ft of underground workings, in vein and replacement deposits in marble (Yc) near contact with granodiorite (Kgd). Medium producer of gold, silver, copper, and lead. | 13, 25, 39, 44, 143 |
| | | | | **Flint Creek Range area** | | |
| | This area includes all the Flint Creek Range outside of 14 established mining districts which are described separately below. The Flint Creek Range is underlain by tightly folded and thrust-faulted sedimentary rocks ranging in age from Middle Proterozoic to Upper Cretaceous age that have been intruded by three major plutons and several minor intrusive bodies. The principal plutons are Cretaceous in age and include the Philipsburg bathlith (granodiorite), the Royal stock (granodiorite), and the Mount Powell batholith (biotite-muscovite monzogranite). Other smaller intrusive bodies are Cretaceous or Tertiary in age, range from diorite to granite in composition, and include the Cable and Lost Creek stocks, the Racetrack Creek complex, and diorite porphyry sills in the Dunkleberg district. The range was deeply eroded during the Tertiary resulting in the accumulation of thick basin-fill deposits in valleys and along the range fronts are the result of strong glaciation during the Pleistocene. Mineral deposits of the area include base and precious metal veins, tungsten-bearing veins, skarns, molybdenum-bearing stockworks, and placers. The area was a medium producer of gold, silver, and copper. | | | | | |
| 201 | American Beauty prospect | 46-25-23 | 113-03-20 | Ag, Au, Mo | Two caved shafts, numerous trenches, and pits along pyrite- and molybdenite-bearing quartz veins in shear zones in altered granodiorite (Kgd). Production undetermined. | 41 |
| 202 | Arrowhead and South America prospect | 46-22-03 | 112-55-03 | Sil | Prospect pits in massive quartzite (Yms) near contact with granodiorite (Kgd) of Mount Powell batholith. No production. | 45, 159 |
| 203 | BM-COR prospect (Tolean prospect) | 46-25-16 | 113-03-03 | Mo, Zn | Caved shaft and adits and several pits and trenches in stockwork quartz-molybdenite veins in altered granodiorite (Kgd) of Royal stock. Drilling indicates large, subeconomic resource of molybdenum. No production. | 45, 159 |
| 204 | Billie Goat mine | 46-19-28 | 113-08-57 | Cu, Ag, Zn, Sb | Shaft and 34-ft adit in quartz vein in granodiorite (Kgd) of Philipsburg batholith. Production undetermined. | 45, 159 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 205 | Black Trail prospect | 46-19-07 | 113-08-33 | Ag, Cu, Pb | Caved shaft on 2-in. vein in a shear zone in granodiorite (Kgd) of the Philipsburg batholith. Production undetermined. | 45, 159 |
| 206 | Bluebird claim prospect | 46-25-26 | 113-00-20 | Au, Ag | One 20-ft-long adit along a quartz vein in a shear zone in granodiorite (Kgd) of the Royal stock. Production undetermined. | 41 |
| 207 | Copper lode prospect (Bonanza prospect, Manley claims) | 46-18-53 | 112-56-52 | Cu, Ag, Pb, Zn | Two adits in quartz vein in sheared argillite (Yc) near granodiorite (Kgd) contact. Production undetermined. | 45, 159 |
| 208 | Deceiver prospect | 46-27-03 | 113-00-01 | Ag, Cu | Shaft, 25-ft-deep along a 0.5 ft-thick quartz vein in a shear zone in granodiorite (Kgd) of the Royal stock. Production undetermined. | 41 |
| 209 | Dry Gulch placer (Dry Creek, Modesty Creek) | 46-15-43 | 112-57-08 | Au, Ag | Sluice workings in placers in alluvium (Qs). Small producer of gold and silver. | 33, 36, 84 |
| 210 | E. G. prospect (East Goat Mountain) | 46-23-28 | 113-01-42 | Mo, Au, Ag | Two adits in quartz veins in granodiorite (Kgd) of Royal stock. Molybdenum-bearing stockwork has been investigated by four drill holes, totaling 2,800 ft. No production. | 45, 159 |
| 211 | Eldorado claim | 46-25-42 | 113-03-52 | Au | Prospect with 200 ft adit along vein in a shear zone in granodiorite (Kgd) of the Royal stock. Production undetermined. | 44 |
| 212 | G. M. prospect | 46-24-35 | 112-57-02 | Cu, Pb, Ag, W | Shaft at contact of limestone (Cs) and dacite porphyry (Kdp). Production undetermined. | 45, 159 |
| 213 | Hidden Treasure-Ramona prospect | 46-18-45 | 113-08-15 | Au, Cu, Pb | Adit, shaft, and pits follow vein in shear zone in granodiorite (Kgd) of the Philipsburg batholith. Production undetermined. | 45, 159 |
| 214 | Independence mine | 46-27-00 | 113-00-22 | Au, Ag, Cu | Five adits and a trench in a sulfide-bearing quartz along a steeply dipping shear zone in granodiorite (Kgd). Small producer of gold, silver, and copper. | 41, 85 |
| 215 | Indian Meadows prospect | 46-19-23 | 113-05-50 | Ag | Iron- and manganese-stained shear zone in granodiorite (Kgd) of the Philipsburg batholith. Small amount of trenching. No production. | 45, 159 |
| 216 | Last Chance claim | 46-24-00 | 113-17-48 | Cu, Ag, Au, Sb | More than 500 ft of workings in a vein in a shear zone in limestone (Yh). Small producer of gold-silver ore. | 44, 52, 62 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Flint Creek Range area--Continued** | | |
| 217 | Montpark mine (Gypsy Queen, Pitman) | 46-22-56 | 113-03-15 | W, Cu, Au, Ag | Shafts, adits, and pits, totaling more than 165 ft in a scheelite-bearing skarn at the contact of limestone (Mm) and granodiorite (Kgd) of the Royal stock. Production undetermined. | 27, 144 |
| 218 | Mountain Top prospect | 46-25-20 | 113-03-57 | Au, Ag, Mo | Six adits and two pits in mineralized quartz veins along faults and shear zones in granodiorite (Kgd). Production undetermined. | 41 |
| 219 | New York prospect | 46-25-28 | 113-03-00 | Mo | One pit in a vein deposit in granodiorite (Kgd) of the Royal stock. No production. | 41 |
| 220 | North Star mine | 46-25-49 | 113-13-50 | Cu | Shaft and adits totaling about 300 ft along a copper-carbonate-bearing vein in a fault zone in quartzite (Yms). Small producer of copper. | 44, 77, 76, 141 |
| 221 | Northern Cross mine (Anna, Maude, Caledonia claims) | 46-17-13 | 113-07-10 | Au, Cu, As | Shaft and two adits in a quartz vein that follows a fault zone in limestone (Mm). Small producer of gold ore. | 36, 44 |
| 222 | Nugget prospect | 46-26-30 | 113-01-00 | Ag, Au | One 80-ft-long adit in a fractured quartz vein along a shear zone in granodiorite (Kgd). Production undetermined. | 41 |
| 223 | Phosphate prospect at Albicaulis Lake | 46-20-15 | 113-04-27 | P | Phosphorite (Pp) was prospected along a 10,000 ft strike length. Production undetermined. | 45, 159 |
| 224 | Rock Creek prospect | 46-24-50 | 113-03-53 | Au, Ag, Cu, Pb, Mo | Three adits and two pits along quartz vein in a shear zone in granodiorite (Kgd). Production undetermined. | 45, 159 |
| 225 | Ryan mine | 46-27-11 | 113-01-40 | Au, Ag, Cu, Pb, As, Sb, Bi, W, Zn | Several adits follow veins in quartzite (Je) cut by granodiorite (Kgd) dikes. Small producer of gold, silver, and copper. | 39, 85 |
| 226 | Schramm prospect | 46-26-55 | 112-57-47 | Au, Ag | Two adits, one 1400 ft long and the other caved, explore placer in subterranean stream deposit along fractures in limestone (Mm). No production. | 41 |
| 227 | Snow White silica mine | 46-15-01 | 112-58-30 | Sil | Surface workings on quartz-pebble conglomerate (Ygr). Small producer of industrial silica. | 20, 36, 52 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 228 | Thompson Lake prospect | 46-22-53 | 113-03-00 | Ag, W, Mo, Zn, Cu | Four shafts in a skarn zone at the contact of limestone (MPa) and granodiorite (Kgd) of the Royal stock. Production undetermined. | 45, 159 |
| 229 | Tibbets mine (Poker Chip) | 46-27-18 | 113-00-56 | Au, Ag, Cu, Pb | About 200 ft of underground workings along veins in quartzite (Kk). Small producer of gold, silver, and copper. | 39, 85, 139 |
| 230 | Tungsten mines (Entrepreneur National Silver and Tungsten Co. mine) | 46-16-25 | 113-03-55 | W, Ag, Mn, Pb, Cr | Surface and underground workings follow hubnerite-bearing veins in a shear zone in monzogranite (Kmg) of the Mount Powell batholith. Small producer of tungsten. | 36, 39, 44, 139, 144 |
| 231 | Twin Peaks mine | 46-17-31 | 113-08-15 | W, Mo | Underground workings in a skarn at the contact of limestone (Cs) and granodiorite (Kgd). No production. | 44, 144 |
| 232 | Warm Spring Creek placer | 46-15-40 | 113-08-14 | Au, Ag | Surface workings in placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 233 | Wight Manganese mine | 46-29-30 | 113-11-45 | Mn | Developed mine in manganese veins in limestone (Mm). Small producer of manganese. | 140 |
| 234 | Winchell placer (Kolbeck) | 46-33-30 | 113-12-20 | Au, Ag | Hydraulic mines in placers in conglomerate (Ts). Medium producer of gold and silver. | 84, 165 |

**Dunkleberg district**

Tightly folded and thrust-faulted Mesozoic strata are intruded by Cretaceous diorite porphyry. Lead-, zinc-, silver-bearing quartz vein and replacement deposits occur in Cretaceous sedimentary rocks. The district was a large producer of zinc, lead, silver, copper, and gold.

| | | | | | | |
|---|---|---|---|---|---|---|
| 239 | Bellaire mine | 46-31-13 | 113-05-20 | Pb, Zn, Ag, Cu | Adit and trenches in vein in shale and sandstone (Kb). Production undetermined. | 106 |
| 240 | Bouvard lode claim | 46-31-58 | 113-04-03 | Ag, Pb, Zn | Shaft along vein in shale (Kb). No production. | 139 |
| 241 | Culver mine | 46-30-46 | 113-05-55 | Ag, Pb | Surface workings in a vein and replacement deposit in shale and sandstone (Kb). Production undetermined. | 106 |
| 242 | Forest Rose mine (Simmer Jack) | 46-30-58 | 113-05-06 | Pb, Ag, Zn, Cu, Au, As, Sb, Sn, Cd | Several thousand feet of underground workings along vein and replacement deposits in fault zones in limestone (Kk) near the axis of an anticline. Medium producer of silver-lead ore. | 39, 92, 106, 132 |
| 243 | Hatta mine (Magnet mine) | 46-32-17 | 113-03-52 | Ag, Pb, Zn, Cu As, Sb, Sn | Surface and underground workings follow a vein in a shear zone in diorite porphyry (Kd). Small producer of silver-lead ore. | 39, 76, 92 |
| 244 | Henry lode claim | 46-31-40 | 113-04-00 | Ag, Pb, Zn | Two inclined shafts in a vein in sandstone and shale (Kb). No production. | 139 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Dunkleberg district--Continued** | | |
| 245 | Homestake mine | 46-29-40 | 113-05-18 | Zn, Pb, Cu, Ag, Au | Surface and underground workings in a replacement zone along faults in limestone and argillite (Kk). Production undetermined. | 106 |
| 246 | Jackson mine | 46-31-51 | 113-04-06 | Ag, Pb, Au, As, Cu, Sb, Sn, Zn | Underground workings along a vein in diorite porphyry (Kd). Small producer of silver-lead ore. | 39, 92, 106 |
| 247 | Kirkendal mine | 46-29-43 | 113-05-30 | Zn, Pb, Cu, Ag, Au, Sb | Adit, 740 ft long, in vein and replacement deposits in a fault zone in limestone and argillite (Kk). Production undetermined. | 106 |
| 248 | Koski mine (Lower Kirkendal adit) | 46-29-43 | 113-05-32 | Pb, Zn | Adit, 400 ft long, along replacement deposits in a shear zone in argillite (Kk). Production undetermined. | 106 |
| 249 | Monarch mine | 46-30-45 | 113-05-20 | Pb, Zn, Ag, Cu, Au | Adit and trenches along a vein and replacement deposit in shear zones in shale and limestone (Kk). Production undetermined. | 106 |
| 250 | Monitor mine | 46-30-47 | 113-05-36 | Ag, Pb | Shaft and trenches along a vein and replacement deposit in shear zone in shale and sandstone (Kb). Small producer of silver and lead. | 106 |
| 251 | Mountain Chief mine | 46-30-20 | 113-05-40 | Pb, Zn, Ag, Au, Cu | Underground workings in vein and replacement deposits at fault intersections in limestone and argillite (Kk). Small producer of lead-zinc ore. | 106 |
| 252 | Pearl mine | 46-30-36 | 113-05-50 | Pb, Ag, Cu | Underground workings in a vein along a fault in shale (Kb). Small producer of lead ore. | 92, 106 |
| 253 | Prospect (name unknown) | 46-29-58 | 113-05-52 | Ag, Zn, Cu, Cd | Several adits in a vein in limestone, sandstone, and argillite (Kk). Production undetermined. | 139 |
| 254 | Samuel lode claim | 46-32-00 | 113-04-00 | Ag, Pb | Underground workings along a vein in a shear zone in sedimentary rocks (Kk). No production. | 139 |
| 255 | Shamrock mine | 46-29-45 | 113-05-40 | Pb, Zn, Cu, Au, Ag | Underground workings follow vein and replacement deposits in fault zones in limestone and argillite (Kk). Small producer of lead-zinc ore. | 106 |
| 256 | Snowhome mine | 46-30-38 | 113-05-25 | Pb, Zn | Adit along a vein and replacement deposit in a shear zone in limestone (Kk). No production. | 106 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 257 | Summit mine | 46-30-50 | 113-05-55 | Ag, Pb, Au | Two short adits along a vein in a bedding plane in sandstone (Kb). Small producer of silver-lead ore. | 92, 106 |
| 258 | Sun mine | 46-30-40 | 113-05-36 | Ag, Pb | Shaft and trenches in vein and replacement deposits along a fault in shale and sandstone (Kb). Small producer of silver-lead ore. | 106 |
| 259 | Sunset mine | 46-31-55 | 113-04-55 | Ag, Pb, Zn, Cu | Adit, 100 ft long, in a vein in diorite (Kd). Small producer of silver-lead ore. | 92, 106 |
| 260 | Tangelfoot mine | 46-30-35 | 113-05-20 | Zn | Adit along vein and replacement deposit in a shear zone in limestone (Kk). Production undetermined. | 106 |
| 261 | Wasa mine | 46-29-47 | 113-05-37 | Zn, Ag, Cu, Pb, W | Four adits levels, totaling about 1,500 ft, follow a replacement deposit in limestone (Kk). Medium producer of zinc-silver ore. | 92, 106, 132 |

**Pioneer (Gold Creek) district**

This district was a very large producer, one of the largest gold producing districts in the Butte quadrangle; all of the production was from placers. The gold placers are in gravels which are a part of Tertiary basin-fill deposits that underly most of the rolling topography of the area, in glacial outwash and stream alluvium along the present drainages, and in Quaternary colluvium on hillslopes. Based on prior studies, it was believed that most of the important gold placer deposits were the result of transport by glaciers, deposition in moraines, and reworking into fluvial terraces during the Pleistocene. Present studies, however, show that most of the gold was transported and deposited in alluvial fan gravel deposits during the Tertiary and later reworked, in part, during the Pleistocene and Holocene into the present drainage channels. The first reported discovery of gold in Montana was made in this district in 1852 along lower Gold creek. Placer mining was most active between 1869 and 1900 but extensive dredging was conducted along Pioneer Gulch intermittently from 1905 to 1957.

| | | | | | | |
|---|---|---|---|---|---|---|
| 267 | Ballard Hill placers (Ballard mine, Job's Point) | 46-29-46 | 112-59-00 | Au, Ag | Hydraulic mines in alluvial fan gravels (Ts). Medium producer of gold and silver. | 98, 160 |
| 268 | Batterton Bar placer | 46-29-40 | 112-55-20 | Au, Ag | Hydraulic mines in alluvial fan gravels (Ts). Medium producer of gold and silver. | 98, 160 |
| 269 | Dry Gulch placer | 46-30-45 | 112-56-10 | Au, Ag | Gravels (Ts), alluvium (Qs), and colluvium (Qs) were mined by ground sluicing. Medium producer of gold and silver. | 98, 160 |
| 270 | French Gulch placer | 46-30-30 | 112-58-30 | Au, Ag | Extensive ground sluicing of glacial outwash (Qs) lying between glacial moraine (Qs) and alluvial fan deposits (Ts). Medium producer of gold and silver. | 98, 160 |
| 271 | Lower Gold Creek placer (China Bar) | 46-34-03 | 112-55-02 | Au, Ag | Ground sluicing of placers in outwash (Qs) and alluvium (Qs). Small producer of gold and silver. | 33, 44, 84, 98 |
| 272 | Lower Pioneer Gulch placer | 46-31-43 | 112-57-00 | Au, Ag | Three bucket line dredges have mined glacial outwash (Qs). Large producer of gold and silver. | 33, 84, 85, 98, 160 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Pioneer (Gold Creek) district--Continued** | | |
| 273 | Main Fork of Pioneer Gulch placer (includes K and K Bar, Kohrs and Bielenberg mine, and 1916 pit) | 46-30-00 | 112-58-00 | Au, Ag | Extensive hydraulic mine workings and underground workings in gravels (Qs, Ts) underlying glacial till (Qs), and in Pleistocene glacial outwash (Qs). Large producer of gold and silver. | 85, 98, 160 |
| 274 | Orphan Boy placer mine | 46-28-25 | 112-55-25 | Au, Ag | Gold-bearing alluvium (Qs) was mined by ground ground sluicing and washing plant. Small producer of gold and silver. | 98, 160 |
| 275 | Pikes Peak Creek placer | 46-31-00 | 112-54-45 | Au, Ag | Gravel (Ts) and outwash (Qs) were mined by dredging, sluicing, dragline, and hydraulic giant. Medium producer of gold and silver. | 33, 84, 98, 160 |
| 276 | Pilgrim Bar placer | 46-30-10 | 112-55-05 | Au, Ag | Extensive ground sluicing was done on gravels (Ts). Large producer of gold and silver. | 98, 160 |
| 277 | Pioneer Bar placer | 46-31-15 | 112-57-35 | Au, Ag | Extensive ground sluicing of gravel (Ts) and outwash (Qs). Large producer of gold and silver. | 85, 98, 160 |
| 278 | Reservoir Gulch placer | 46-31-15 | 112-57-50 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing and dredging. Medium producer of gold and silver. | 98, 160 |
| 279 | Squaw Gulch placers (Squaw Gulch and Kelly and Irvine pits) | 46-29-30 | 112-55-55 | Au, Ag | Extensive hydraulic workings in gravels (Ts). Medium producer of gold and silver. | 98, 160 |
| 280 | Treadwater Bar, Wilson Bar, and Wood's Flat placers | 46-31-12 | 112-55-30 | Au, Ag | Gravel (Ts) and colluvium (Qs) were extensively mined by ground sluicing. Medium producer of gold and silver. | 98, 160 |
| 281 | West Fork of Independence Creek placer (includes Windy Hill) | 46-31-47 | 112-53-30 | Au, Ag | Tertiary gravels (Ts), which form hill cappings on ridges, were mined by ground-sluicing and hydraulicking. Alluvium (Qs) in small valleys draining the gravel-capped ridges was also mined. Medium producer of gold and silver. | 98, 160 |

## Rose Mountain (Gold Creek) district

Folded and thrust-faulted Mesozoic sedimentary rocks were intruded by the Royal granodiorite stock of Cretaceous age. Lode deposits are principally narrow gold- and silver-bearing fissure quartz veins in granodiorite. The Pineau and Master mines have produced coarse placer gold from glacial deposits. The district was a medium producer of gold and silver.

| | | | | | | |
|---|---|---|---|---|---|---|
| 282 | Blue Streak No. 2 prospect | 46-26-16 | 113-02-57 | Au, Ag | Two adits and trenches along veins in shear zones in granodiorite (Kgd). Production undetermined. | 41 |
| 283 | Comet prospect | 46-26-00 | 113-01-20 | Ag, Au | One caved shaft in shear zone in altered granodiorite (Kgd). Production undetermined. | 41 |
| 284 | Gold Creek placer (McFarland) | 46-27-52 | 113-03-23 | Au, Ag | Sluice workings in placers in alluvium (Qs). Small producer of gold and silver. | 44, 84, 98 |
| 285 | Hawkeye, Florence and Josephine prospect | 46-25-58 | 113-03-15 | Au, Ag | One shaft and numerous pits in quartz veins along shear zones in altered granodiorite (Kgd). Production undetermined. | 41 |
| 286 | John G. Carlisle mine | 46-26-40 | 113-02-30 | Au, Ag, Cu, Pb, Zn | Five adits follow sulfide-bearing quartz veins along a shear zone in granodiorite (Kgd). Small producer of gold and silver. | 41, 44 |
| 287 | Lancaster prospect | 46-26-08 | 113-01-48 | Ag | One pit along iron-stained quartz veinlets in granodiorite (Kgd). No production. | 41 |
| 288 | Lost One prospect (Clear Grit) | 46-26-12 | 113-02-32 | Au, Ag, Cu | Caved adit and pits along iron-stained quartz veins in a hydrothermally altered shear zone in granodiorite (Kgd). Production undetermined. | 41 |
| 289 | Mudhole prospect | 46-25-55 | 113-02-21 | Au, Ag | Trenches and pits in pyrite- and limonite-bearing quartz veins in altered granodiorite (Kgd). No production. | 41 |
| 290 | Master placer mine | 46-28-15 | 113-03-00 | Au, Ag | Placers in glacial deposits (Qs) were mined by underground methods and by dragline. Medium producer of gold and silver. | 84, 98 |
| 291 | Neversweat prospect | 46-26-25 | 113-02-50 | Au, Ag | One trench along an iron-stained shear zone in altered granodiorite (Kgd). No production. | 41 |
| 292 | Pineau placer mine (Friday mine) | 46-27-37 | 113-03-50 | Au, Ag | Glacial deposits (Qs) were mined by dragline, bulldozer, washing plant, and sluicing. Medium producer of gold and silver. | 84, 98 |
| 293 | Potosi mine | 46-26-07 | 113-03-51 | Ag, Cu, Au | Developed mine in vein and replacement deposits in granodiorite (Kgd). Small producer of silver, copper, and gold. | 44, 52 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Rose Mountain (Gold Creek) district--Continued** | | | |
| 294 | Queen mine (Pikes Peak) | 46-25-48 | 113-01-05 | Ag, Pb, Cu, Ba, Sb | Two adits follow iron- and manganese-stained quartz veins in shear zones in granodiorite (Kgd). Production undetermined. | 41 |
| 295 | September Snow prospect | 46-25-42 | 113-02-15 | Ag, Au | Three adits and one trench along iron-stained quartz veins in hydrothermally altered shear zone in granodiorite (Kgd). Production undetermined. | 41 |
| 296 | Snow Bunny prospect (Majestic Claim) | 46-26-15 | 113-01-56 | Au, Ag, Cu | One adit and four shafts follow sulfide-bearing quartz veins along a shear zone in granodiorite (Kgd). Production undetermined. | 41 |
| 297 | Tibbets placer | 46-28-30 | 113-02-30 | Au, Ag | Placers in alluvium (Qs) were mined by sluicing. Small producer of gold and silver. | 44 |
| | | | **Princeton (Boulder Creek) district** | | | |
| | The Princeton district, which includes much of the drainage basin of Boulder Creek, is underlain by complexly folded and thrust-faulted sedimentary rocks of Middle Proterozoic through Cretaceous ages. The sedimentary rocks were intruded by two Cretaceous granodiorite plutons--the Royal stock to the east and the Philipsburg batholith to the south. The valley of Boulder Creek was strongly glaciated and contains abundant deposits of glacial till and outwash. Quartz fissure veins, containing mainly gold, silver, and copper, occur in the sedimentary rocks and in granodiorite. Skarn tungsten deposits and base and precious metal replacement deposits occur in limestone near igneous contacts. The district was a large producer of gold, silver, lead, copper and zinc. | | | | | |
| 298 | Albion mine | 46-23-42 | 113-05-30 | Ag, Au, Cu, Pb, F, Sb | More than 2,900 ft of underground workings, including two main adits. Two fissure veins follow shear zones along bedding planes in quartzite and shale (Kk, Je) and the near contact of these rocks with granodiorite (Kgd) of Royal stock. Small producer of silver-gold ore. | 44, 110, 118, 125 |
| 299 | Banker mine (Bryan and Banker claim) | 46-24-56 | 113-10-07 | Ag, Pb, Au, Zn, F | Underground workings along two veins in limestone (Crl). Small producer of silver ore. | 44, 118 |
| 300 | Bloomington mine | 46-24-21 | 113-06-03 | Pb | Over 875 ft of underground workings follow four veins in granodiorite (Kgd) of the Royal stock. Small producer of lead ore. | 44 |
| 301 | Blue Bird mine | 46-25-08 | 113-05-02 | Au, Ag, Cu, Pb | Adits, totaling 320 ft, follow veins in granodiorite (Kgd) of the Royal stock. Small producer of gold ore. | 44, 78 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 302 | Brooklyn mine (Pierre mine, S. Brooklyn mine) | 46-23-25 | 113-07-20 | Ag, Pb, Zn, Cu, Ba, Sb, As | Several adits, totaling 2,300 ft in length, follow veins in carbonate rocks (Mm, Dj). Small producer of silver, lead, zinc, and copper. | 39, 44, 76, 127 |
| 303 | Caroline and Iron Mountain claims | 46-23-28 | 113-07-22 | Au | Several short adits in a vein in limestone (Mm). Production undetermined. | 44 |
| 304 | Copper lode | 46-24-11 | 113-09-06 | Cu, Au, Ag | Vein deposit in shear zone in limestone (Mm). Production undetermined. | 138 |
| 305 | Deerlodge Basin prospect | 46-23-43 | 113-04-48 | Ag, Pb, W, Zn, Cu | Vein deposit in shear zone in granodiorite (Kgd) of Royal stock. Workings include pits and one adit. Production undetermined. | 45 |
| 306 | Delaware mine | 46-26-41 | 113-09-12 | Ag, Pb | Shaft and adit, totaling about 300 ft, in vein in shear zone in quartzite (Pq). Small producer of silver and lead. | 44 |
| 307 | Dg prospects (Dg 1-11 claims) | 46-23-03 | 113-07-10 | Ag, Pb, Zn | Four adits and prospect pits in vein deposit in limestone (Mm). No production. | 45 |
| 308 | Finley Basin prospect | 46-22-03 | 113-03-59 | W | Tungsten prospect in skarn at contact of limestone beds (MPa, Mm) and granodiorite (Kgd). Drilling done during 1974-79 indicates large tonnage of subeconomic tungsten resources. No production. | 45 |
| 309 | Goat Mountain vein | 46-22-49 | 113-03-55 | Ag, Cu, Au | Three adits on vein deposit in sandstone (Je). Production undetermined. | 44 |
| 310 | Gold Hill mine | 46-24-23 | 113-11-10 | Au, Cu | Six shafts, totaling about 300 ft, along veins in dolomite (Ch). Medium producer of ore. | 44, 110 |
| 311 | Gold Reef mine | 46-22-51 | 113-11-53 | Au, Ag, Cu | Two adits, totaling about 1,500 ft, in veins in quartzite and argillite (Ysn). Small producer of gold ore. | 44, 62 |
| 312 | Granite Creek prospect | 46-22-27 | 113-06-05 | Ag, Pb, Cu, Zn, W, Au | Adit in vein in limestone (Mm). Production undetermined. | 45, 139 |
| 313 | Jefferson mine | 46-22-46 | 113-08-45 | Cu, Pb | Two adits along vein deposit in limestone (Mm). Small producer of copper and lead. | 29, 44 |
| 314 | Little Gold Creek placer | 46-24-48 | 113-07-58 | Au, Ag | Placers in alluvium (Qa) were worked by ground sluicing. Small producer of gold and silver. | 84 |
| 315 | Mayflower Vein | 46-22-38 | 113-08-47 | Cu, Pb | Underground workings follow vein in limestone (Mm). Small producer of copper ore. | 44 |
| 316 | Moonlight mine (Sunlight mine) | 46-25-33 | 113-08-18 | Au, Ag, Cu, Pb, P | Weakly mineralized fault breccia in phosphatic shale (Pp) was mined. Small producer of gold, silver, copper, and lead. | 28, 52, 76, 107 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Princeton (Boulder Creek) district--Continued** | | |
| 317 | Mountain Lion mine | 46-25-09 | 113-08-12 | Ag, Pb | Vein deposit in shear zone in quartzite (Pq). Small producer of silver-lead ore. | 44 |
| 318 | Nonpareil mine | 46-23-55 | 113-08-15 | Ag, Pb, Cu | Shaft and two adit levels in vein deposit at faulted contact of two carbonate beds (Dj, Mm). Medium producer of silver-lead ore. | 44, 54, 127 |
| 319 | North Fork Granite Creek prospects | 46-23-03 | 113-05-05 | Ag, W, Cu, Pb, Zn | Four adits, two shafts, and trenches in vein and skarn zones in sandstone (Ks) and granodiorite (Kgd). Production undetermined. | 45 |
| 320 | Powell mine (Mount Powell mines) | 46-20-50 | 113-04-18 | Ag, Cu, Pb, Zn, Sb, As | Over 2,500 ft of workings, including four adits, deposit is vein in shear zone in sandstone, shale (Je) and limestone (Mm). Small producer of silver and copper. | 36, 39, 44 |
| 321 | Princeton Gulch placer (Maywood, Summit) | 46-25-15 | 113-09-50 | Au, Ag, PGM | Placers in outwash (Qs) were mined by ground sluicing and drifting. Small producer of gold and silver. | 33, 44, 54, 84 |
| 322 | Princeton mine | 46-25-05 | 113-09-45 | Ag, Pb, Zn | Shaft and adits, totaling 1,500 ft, along vein in limestone (Crl). Small producer of silver ore. | 44, 110 |
| 323 | Rombauer mine | 46-22-46 | 113-07-22 | Ag, Pb, Cu, Au | Underground workings in skarn deposit at contact of carbonate rock (Dj) and granodiorite (Kgd) of the Royal stock. No production. | 44 |
| 324 | Royal mine (Port Royal) | 46-24-39 | 113-05-30 | Au, Ag, Pb, Cu | Mine worked through five adits, totaling about 7,700 ft. Deposits are veins in a shear zone in granodiorite (Kgd) of the Royal stock. Large producer of gold ore. | 39, 44, 127 |
| 325 | Saranac mine | 46-25-10 | 113-09-54 | Ag, Pb, Zn, Cu, Au, Ba | Underground workings along vein in limestone (Cs). Small producer of silver, lead, zinc, copper, and gold. | 62, 75, 138 |
| 326 | Sixteen-to-One claim | 46-23-28 | 113-05-22 | Cu | Prospect in vein along bedding plane of quartzite (Kk). No production. | 44 |
| 327 | Starlight Quartz lode claim | 46-23-35 | 113-06-55 | Ag, Pb, Cu, Zn, Au | Shaft and adit along vein deposit in limestone (Mm). No production. | 139 |
| 328 | Sunday mine | 46-24-44 | 113-05-40 | Au, Ag | Shaft and adits, totaling greater than 940 ft, along veins in shear zone in granite (Kgd). Medium producer of gold ore. | 44, 127 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 329 | Travonia claim | 46-24-41 | 113-09-38 | Pb, Zn, Au, Ag, Cu | Adits, totaling 250 ft, in veins in limestone (Crl). Production undetermined. | 44 |
| 330 | Tussle mine | 46-25-27 | 113-05-10 | Ag, Au, Cu, Pb | Main shaft with three adit levels. Vein deposit in granodiorite (Kgd) of Royal stock. Small producer of silver, gold, copper, and lead. | 44, 141 |
| 331 | Upper Granite prospect | 46-23-27 | 113-05-13 | Ag, Pb, Cu, W | Trenches along vein in shear zone in granodiorite (Kgd) of Royal stock. No production. | 45 |

**Douglas Creek (Gird Creek) area**

Paleozoic and Mesozoic strata which strike north-south were cut by imbricate thrust-faults and deformed by isoclinal folding. The area is a small producer of phosphate from the Permian Phosphoria Formation.

| | | | | | | |
|---|---|---|---|---|---|---|
| 337 | Barnes mine (Nelly claims, Copper Queen, Snow storm, Black Bear) | 46-27-25 | 113-09-13 | Cu, P | Surface and underground workings in stratabound copper and phosphate deposits in sandstone (Je) and phosphorite (Pp). Production undetermined. | 44, 97, 107 |
| 338 | Blue Bell mine | 46-27-28 | 113-10-12 | P | Adits and trenches in phosphorite beds (Pp). Production undetermined. | 97 |
| 339 | Douglas Creek mine (Northwest Improvement Co. mine) | 46-29-30 | 113-09-02 | P | Three adit levels, totaling over 700 ft, in phosphorite beds (Pp). Small producer of phosphate. | 28, 52, 97, 107, 110 |
| 340 | Edgar mine (Omer Edgar mine) | 46-29-30 | 113-10-30 | P | Two adits and strip mine excavations in phosphorite beds (Pp). Small producer of phosphate. | 28, 97, 107 |
| 341 | Gird Creek prospect | 46-27-43 | 113-08-42 | P | Two adits and trenches on phosphorite beds (Pp). Production undetermined. | 107 |
| 342 | Prospect (name unknown) | 46-28-44 | 113-09-24 | P, Cr, Y, La | Test pit on phosphorite bed (Pp). Test samples contained high Cr, Y, and La. Production undetermined. | 139 |

**Maxville area**

Middle Proterozoic and Paleozoic age sedimentary rocks were cut by numerous thrust faults. The thrust sheets were offset by northwest-trending normal and oblique-slip faults. Veins, containing gold, silver, and copper, occupy shear zones in Middle Proterozoic quartzite and in Cambrian limestone. The district was a medium producer of gold, silver, and copper from veins, and of phosphate from phosphorite beds in the Permian Phosphoria formation.

| | | | | | | |
|---|---|---|---|---|---|---|
| 343 | Copper State mine | 46-28-50 | 113-15-20 | Cu, Au, Ag | Adits and shafts follow a vein in a shear zone in limestone (Yh). Small producer of copper ore. | 44, 141 |
| 344 | Durand mine | 46-27-53 | 113-14-25 | Au, Ag, As | Six adits, totaling about 375 ft, follow two veins along shear zones in quartzite (Cf). Small producer of gold and silver. | 44, 141 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Maxville area--Continued** | | |
| 345 | Eagle claim | 46-28-15 | 113-15-12 | Cu | Surface and underground workings along vein in shear zone in marble (Yh). Small producer of copper ore. | 44, 141 |
| 346 | Field's prospect (Field's tunnel) | 46-27-22 | 113-13-22 | P | Two adits follow phosphorite (Pp) bed. No production. | 90, 94, 107 |
| 347 | Homer claim | 46-28-30 | 113-14-58 | Au, Ag | Adit greater than 210 ft long, along vein in shear zone in quartzite (Cf). Production undetermined. | 44 |
| 348 | Johnson claim | 46-27-20 | 113-15-13 | Au, Cu | Prospect in vein along shear zone in quartzite (Yh). No production. | 44 |
| 349 | Londonderry mine (Goldonna mine) | 46-28-23 | 113-14-38 | Ag, Au, Pb, Zn | Short adits and open cuts in two veins in quartzite (Yms). Small producer of gold-silver ore. | 44, 141 |
| 350 | Mother Vein claim | 46-28-28 | 113-15-22 | Au, Cu | Prospect along 20 ft vein in shear zone in quartzite (Yh). No production. | 44 |
| 351 | New Seattle mine (Dolly Quartz mine) | 46-27-58 | 113-14-25 | Au, Ag | Underground workings in vein in quartzite (Cf). Small producer of gold ore. | 62, 78 |
| 352 | Skeels mine (Washington Phosphate and Silver Co.) | 46-27-08 | 113-13-30 | P | More than 620 ft of underground workings in phosphorite beds (Pp). Small producer of phosphate. | 28, 97, 107 |
| 353 | Twin Buttes claim | 46-27-29 | 113-14-27 | Cu, Pb | Adit, 180 ft long, along vein in shear zone in dolomite (Ch). Production undetermined. | 44 |

## Racetrack (Danielsville) district

Geologic map units within this district include a part of the Mount Powell muscovite-biotite monzogranite batholith of Cretaceous age and older rocks in contact with the batholith. The older rocks are complex in lithology and structure and are mostly covered by glacial and alluvial deposits; they include sedimentary rocks of Middle Proterozoic, Cambrian, and Mississippian age and the Racetrack Creek intrusive and metamorphic complex. This complex, of probable Cretaceous age, includes quartz diorite, diorite, granodiorite, and xenoliths of metasedimentary rocks; it has evidence of multiple deformation and has been intruded by abundant pegmatite and aplite dikes which are related to the Mount Powell batholith. Minor vein and replacement deposits in Cambrian limestone and Cretaceous quartz diorite and placer gold deposits have been exploited along the valley of Racetrack Creek. The district was a small producer of gold, silver, and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 354 | Amazon mine | 46-16-53 | 113-01-20 | Au, Ag, Cu | Four adits totaling 450 ft along a vein in quartz diorite (Kmd) of the Racetrack pluton. Medium producer of gold, silver and copper. | 36, 85 |
| 355 | Dark Horse mine | 46-18-01 | 112-59-40 | Au, Ag, Cu | Adits and shafts in vein and replacement deposits in dolomite (Ch). Small producer of gold, silver, and copper. | 36, 85 |
| 356 | Racetrack Creek placer | 46-17-23 | 113-00-32 | Au, Ag | Surface workings in placers in alluvium and surface mantle (Qs). Small producer of gold and silver. | 84 |
| 357 | Tungsten occurrence (name unknown) | 46-18-24 | 112-59-00 | W, Cu, Mn, Be, Zn, Ag | Surface workings in skarn and quartz vein at contact of limestone (Mm) and diorite (Kmd) and aplite (Ka). No production. | 39, 140 |
| 358 | Valley View mine (No. 4) | 46-18-01 | 112-58-48 | Ag, Au, Cu, Pb, Zn, Bi | One shaft and trenches on vein and replacement deposits in limestone (Mm). Small producer of silver, gold, and copper. | 39, 139 |

## Philipsburg district

A folded and faulted sequence of sedimentary rocks ranging in age from Proterozoic to Jurassic is in contact with granodiorite of the Philipsburg batholith of Late Cretaceous age. The mineral deposits include: (1) steeply dipping quartz veins; (2) quartz veins along bedding; (3) manganese-rich replacement deposits; and (4) skarn magnetite deposits. The most important deposits are east-west trending veins in the granodiorite, and northwest- and east-west-trending veins and various replacement deposits in Paleozoic carbonate rocks which have been folded into a north-plunging anticline. The principal sedimentary host rocks are carbonate beds of the Upper Cambrian Hasmark and Red Lion Formations and the Devonian Maywood and Jefferson Formations. This district has been a large producer of manganese, silver, zinc, lead, copper, and gold.

| | | | | | | |
|---|---|---|---|---|---|---|
| 359 | Annie Marony mine (Climax mine, Marony mine) | 46-19-30 | 113-15-35 | Mn, Pb, Ag | Adits, totaling greater than 970 ft, in vein and replacement deposits in dolomite (Ch) near contact with granodiorite (Kgd). Small producer of lead and manganese ore. | 44, 54, 95, 108 |
| 360 | Basin mine | 46-19-58 | 113-17-04 | Ag, Cu, Sb | Adits and pits, totaling 365 ft, in veins and skarn deposits in limestone (Crl). No production. | 44 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Philipsburg district--Continued** | | |
| 361 | Bernard mine | 46-19-36 | 113-15-58 | Mn | Shaft, 65 ft deep, along vein in limestone (Csh) near contact with granodiorite (Kgd). Small producer of manganese. | 57, 98 |
| 362 | Blackmail mine | 46-19-53 | 113-16-02 | Ag, Zn, Pb | Underground workings on vein and replacement deposits in carbonate rocks (Ch, Crl). Small producer of silver ore. | 44, 108 |
| 363 | Bryant mine (Lady Bryant, Seal Rock) | 46-19-55 | 113-16-16 | Ag, Mn | Open pit, shafts, and adits in vein and replacement deposits in dolomite (Ch). Small producer of silver and manganese ore. | 95, 108 |
| 364 | Cadgie Taylor mine | 46-20-49 | 113-16-12 | Ag, Cu, Au, Pb, Zn, Sil, Ba | Surface and underground workings along a vein that follows bedding of carbonate rock (Dj). Small producer of silver ore. | 44, 62, 75, 78, 108 |
| 365 | Chicago mine | 46-20-22 | 113-15-52 | Mn | Underground workings in replacement deposit in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of manganese. | 57, 108, 132 |
| 366 | Cliff mine | 46-19-51 | 113-16-14 | Ag, Mn | Two adits and shaft, totaling more than 650 ft, follow vein and replacement deposits in dolomite (Ch). Production undetermined. | 44, 95, 108 |
| 367 | Comanche mine (Comanche Extension) | 46-20-35 | 113-16-10 | Ag, Mn | Underground workings in vein and replacement deposits in carbonate rock (Dj). Small producer of ore. | 61, 95, 132 |
| 368 | Copper Jack mine | 46-21-14 | 113-16-58 | Cu | Shaft and adits, totaling 550 ft, in skarn at contact of limestone (Mm) and granodiorite porphyry (Kgd). No production. | 44 |
| 369 | Coyle mine (John Coyle and Torrit claims) | 46-19-37 | 113-15-54 | Ag, Mn | Adits and shafts, totaling more than 1,440 ft, in vein and replacement deposits in carbonate rocks (Ch, Csh) near contact with granodiorite (Kgd). Medium producer of ore. | 57, 95, 108 |
| 370 | Dissett mine (Red Hill) | 46-21-00 | 113-17-29 | P, Fe, Al | More than 1,700 ft of underground workings in phosphorite beds (Pp). Small producer of phosphate. | 28, 97, 107 |
| 371 | Flagstaff Hill prospect | 46-19-46 | 113-17-53 | P | Adit and several trenches along phosphate beds (Pp). Production undetermined. | 97, 107 |

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|---|---|---|---|---|---|---|
| 372 | Granite-Bimetallic mine (Blaine Shaft, Ruby Shaft, Granite Mountain) | 46-18-58 | 113-14-31 | Ag, Au, Cu, Pb, Zn, Sb, As | Extensive workings, including five main adits, two deep shafts, and a long drainage tunnel. Total length of workings is about 20 miles. Several steeply dipping subparallel veins cut granodiorite (Kgd). Supergene enrichment zones in veins were very rich in silver. Very large producer of silver, gold, copper, lead, and zinc. | 24, 43, 44, 75, 77 |
| 373 | Granite Belle claim | 46-19-12 | 113-14-43 | Ag, Pb, Cu, As | About 1,500 ft of underground workings along vein in granodiorite (Kgd). No production. | 44 |
| 374 | Headlight mine (Moonlight group) | 46-20-08 | 113-16-00 | Ag, Mn, Cu, Pb, Zn, Sb | About 50,000 ft of underground workings follow vein and replacement deposits in shear zones in carbonate rocks (Crl, Dj, Dm). Medium producer of manganese and silver ore. | 44, 57, 81, 95, 108 |
| 375 | Hobo mine (North Granite) | 46-20-10 | 113-15-14 | Ag, Au, Pb, Zn, Sb, As | Four adits, totaling 5,500 ft, follow a vein in granodiorite (Kgd). Medium producer of gold-silver ore. | 44, 61 |
| 376 | Hope group (Potosi, Porter, Take All, Field, Prince, Imperial, Little Emma, Comanche, Cuno Shaft, Jubilee, Shapleigh mine) | 46-20-38 | 113-16-27 | Ag, Cu, Pb, Au, Mn, Ba, Sb, As, F | Numerous shafts and adits, totaling about 18,000 ft. Many vein deposits are present and are localized along bedding plane fractures in carbonate rock (Dj) and in crests and troughs of minor folds. Large producer of silver-manganese ore. | 24, 44, 78, 108 |
| 377 | Horton mine (Horseshow) | 46-20-01 | 113-16-15 | Mn | Underground workings in vein and replacement deposits in dolomite (Ch). Small producer of manganese. | 95, 108 |
| 378 | Isabelle Queen prospect | 46-20-05 | 113-16-55 | Ag, Mn, W | Underground workings 90 ft long and shallow pits in replacement deposit in shear zone in dolomite (Ch). No production. | 143 |
| 379 | Levi Burr mine | 46-19-36 | 113-15-53 | Ag, Zn, Mn | Underground workings along vein and replacement deposits in dolomite (Ch). Small producer of silver ore. | 44, 108 |
| 380 | Little Emma mine | 46-20-45 | 113-16-21 | Mn, Ag | Underground workings follow vein and replacement deposits in carbonate rock (Dj). Small producer of ore. | 44, 76 |
| 381 | Marie mine | 46-20-29 | 113-15-52 | Mn, Ag, Zn | Shaft, adit, and pits in vein and replacement deposits in carbonate rock (Dj) near granodiorite (Kgd) contact. Medium producer of manganese and silver. | 95, 108, 110, 132 |
| 382 | Midnight mine (Imperial) | 46-20-02 | 113-16-08 | Ag, Cu, Mn, Ba | More than 150 ft of underground workings in vein and replacement deposits in dolomite (Ch). Small producer of silver ore. | 44, 108 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Philipsburg district--Continued** | | |
| 383 | Mitchell mine | 46-20-13 | 113-15-48 | Ag, Au, Pb, Mn, Zn, As, Sb | Underground workings, totaling 800 ft, in vein and replacement deposits in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of ore. | 44, 108 |
| 384 | Murphy mine | 46-21-13 | 113-15-10 | Ag, Cu, W | Surface and underground workings in vein and replacement deposits in limestone (Mm, Dj) near contact with granodiorite (Kgd). Scheelite occurs in disseminated zones. Small producer of silver and copper. | 143 |
| 385 | Mystery mine | 46-20-01 | 113-16-42 | Ag, Mn, Cu, Pb F | Underground workings, totaling 1,500 ft, in vein and replacement deposits in dolomite (Ch). Small producer of ore. | 44, 108, 118, 132 |
| 386 | N. G. group (Mountain View, Manganese fraction) | 46-20-03 | 113-16-37 | Mn, Ag | Surface workings along vein and replacement deposits in dolomite (Ch). Small producer of manganese. | 95, 108, 132 |
| 387 | North Star mine | 46-20-12 | 113-17-05 | Cu, Ag, W, Mo | Four adits, two shafts, and bulldozer cuts in veins and altered carbonate rocks (Dj, Dm) containing disseminated scheelite and powellite. Small producer of copper and silver. | 143 |
| 388 | Pearl mine | 46-19-39 | 113-15-33 | Ag, Pb, As, Sb | Underground workings, totaling 400 ft along vein in granodiorite (Kgd). Small producer of ore. | 44 |
| 389 | Puritan mine | 46-20-03 | 113-15-10 | Ag, Au, Pb, Zn, Sb | About 600 ft of underground workings follow vein in granodiorite (Kgd). Small producer of silver ore. | 44 |
| 390 | Redemption Iron mine (Iron Age) | 46-19-20 | 113-16-32 | Fe, Mn, Ag, Au, Pb, F | About 1,325 ft of underground workings in skarn, vein, and replacement deposits near the contact of dolomite (Ch) and granodiorite (Kgd). Small producer of iron, manganese, and silver ore. | 31, 44, 95, 108, 132 |
| 391 | Royal Metals tunnel | 46-19-20 | 113-14-40 | Ag | Underground workings, totaling about 750 ft, along three veins in granodiorite (Kgd). No production. | 44 |
| 392 | Salmon mine | 46-19-52 | 113-15-48 | Ag, Zn, Pb | Underground workings along vein in carbonate rock and shale (Crl, Ch) near contact with granodiorite (Kgd). Production undetermined. | 44 |

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|---|---|---|---|---|---|---|
| 393 | San Francisco mine | 46-20-30 | 113-15-45 | Au, Ag, Pb, Mn, Cu, Zn, As, Sb | Several mine levels, with workings totaling about 3,600 ft, in vein in granodiorite (Kgd). Small producer of gold-silver ore. | 44, 108 |
| 394 | Sanders mine (Saunders mine) | 46-20-17 | 113-15-53 | Ag, Au, Pb, Mn | Adit and open pit in vein and replacement deposits in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of silver, gold, and lead. | 44, 95, 108 |
| 395 | Scratch Awl mine | 46-19-54 | 113-15-58 | Ag, Pb, Zn, Mn, Cu, Au, As | Underground workings in vein and replacement deposits in carbonate rock (€h, €sh, €rl) near contact with granodiorite (Kgd). Medium producer of silver, lead, zinc, manganese, and copper. | 44, 57, 81, 95, 108 |
| 396 | Sharktown mine | 46-19-56 | 113-15-50 | Mn, Ag | More than 400 ft of underground workings along vein and replacement deposits in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of manganese. | 95, 108 |
| 397 | Silver Chief mine | 46-20-06 | 113-15-51 | Ag, Pb, Au | Underground workings in vein in granodiorite (Kgd). Medium producer of ore. | 44, 108 |
| 398 | Silver lode Iron mine (Kentucky) | 46-19-08 | 113-16-27 | Fe | Underground workings in a skarn deposit near the contact of dolomite (€h) and granodiorite (Kgd). Small producer of iron. | 44, 108 |
| 399 | Sweet Home mine | 46-20-37 | 113-16-17 | Ag, Mn, Au | Surface and underground workings in vein and replacement deposits along bedding planes in carbonate rock (Dj). Small producer of silver ore. | 13, 44, 141 |
| 400 | Terrid mine | 46-19-31 | 113-15-51 | Mn, Ag, Pb | Underground workings, totaling about 625 ft, in vein and replacement deposits in limestone (€sh). Small producer of manganese ore. | 44 |
| 401 | Three Metals and Salt Hill tunnel | 46-19-46 | 113-14-38 | Ag, Pb, As, Sb | At least 1,434 ft of underground workings along veins in granodiorite (Kgd). Small producer of ore. | 44 |
| 402 | Trout mine group (Pocahontas, Speckled Trout, Gem, Algonquin group) | 46-19-46 | 113-16-01 | Mn, Ag, Pb, Cu, Zn, Au, As | Ten levels of mine workings totaling about 30,000 ft. Deposit is a brecciated replacement zone containing irregular bodies of manganese ore in dolomite (Ch). Large producer of manganese, silver, lead, copper, zinc, and gold. | 24, 29, 44, 48, 57, 81, 95, 108, 155 |
| 403 | True Fissure mine | 46-20-06 | 113-15-53 | Ag, Pb, Zn, Mn, Cu, Ba, As, Sb | Shaft and adits follow several veins, and open pit follows manganese replacement deposit. Host rock is carbonate rock (Crl, Dj) near granodiorite (Kgd) contact. Medium producer of silver, lead, zinc, manganese, and copper. | 44, 57, 75, 81, 95, 108 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Philipsburg district—Continued** | | |
| 404 | Two Percent mine | 46-20-20 | 113-16-18 | Ag, Zn, Pb, Au, Mn, Cu, | Two inclined shafts with nine working levels, totaling about 4,000 ft. Vein and replacement deposits occur in carbonate rock (Dj). Medium producer of siver, zinc, lead, and gold. | 44, 57, 108, 110 |
| 405 | Wenger No. 2 mine (Wegner No. 2) | 46-19-44 | 113-16-27 | Mn, Ag | One adit along vein and replacement deposits in a shear zone in dolomite (Ɛh). Small producer of manganese and silver. | 95, 132 |
| 406 | White Horse mine | 46-19-46 | 113-16-37 | Mn, P | Underground workings, totaling about 345 ft, in a replacement deposit in dolomite (Ɛh). Small producer of manganese. | 95, 108, 132 |
| 407 | Young America claim | 46-19-13 | 113-15-20 | Au, Ag | Open cut along vein in shear zone in granodiorite (Kgd). Small producer of ore. | 44, 62 |
| | | | | **Red Lion (Hidden Lake) district** | | |
| | This district occupies the upper basins of the North Fork of Flint and Warm Springs creeks and most of Cable Mountain. Sedimentary rocks of Middle Proterozoic and Paleozoic ages have been folded and faulted along northeast trends and, in the northern part of the district, contact metamorphosed along the southern margin of the Philipsburg batholith (Cretaceous granodiorite). Types of deposits present in the district include quartz veins in quartzite; vein, skarn, and replacement deposits in carbonate rocks; and placers. Many deposits are in carbonate rocks just below a klippe of quartzite, of the Mount Shields Formation of Middle Proterozoic age, that forms the top of Cable Mountain. The district was a medium producer of gold and silver. | | | | | |
| 413 | Bronze lode | 46-14-30 | 113-13-10 | Au, Ag | Small prospect along vein in shear zone in limestone (Yh). No production. | 139 |
| 414 | Delta lode claim | 46-14-10 | 113-12-50 | Au | Adit follows vein in a shear zone in carbonate rock (Dj). No production. | 139 |
| 415 | Flint Creek mine (Alliance mine) | 46-14-11 | 113-12-40 | Au, Ag, Te, Bi | More than 1,000 ft of underground workings on a vein in shear zone in quartzite (Yms). Small producer of gold ore. | 31, 36, 44 |
| 416 | Golden Eagle mine | 46-13-58 | 113-12-50 | Au, Ag, Te, Bi | More than 900 ft of surface and underground workings along vein in a shear zone in quartzite (Yms). Small producer of gold ore. | 36, 44 |
| 417 | Golden Jubilee mine | 46-16-05 | 113-11-54 | Au, Ag | Open pit and decline along quartz vein in shear zone in dolomite (Ɛh). Medium producer of gold. | 39 |
| 418 | Gould-Corry lode | 46-17-00 | 113-09-23 | Au, Ag, Cu, W | Three shafts, totaling more than 60 ft, in replacement deposit and skarn zone between dolomite (Ɛh) and granodiorite (Kgd). Production undetermined. | 36 |

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|---|---|---|---|---|---|---|
| 419 | Greater New York mine | 46-16-51 | 113-09-53 | Au | Shaft, with greater than 100 ft of workings, along vein in shear zone in dolomite (Ch) and shale (Csh). Production undetermined. | 44 |
| 420 | Grubstake mine | 46-14-15 | 113-12-40 | Au, Ag | Underground workings in vein in quartzite (Yms). Small producer of gold and silver. | 36, 132 |
| 421 | Hannah mine | 46-16-48 | 113-10-42 | Au, Ag, Mn | More than 340 ft of workings in vein and replacement deposits in dolomite (Ch). Small producer of gold ore. | 36, 39, 44 |
| 422 | Hidden Lake mine | 46-13-54 | 113-11-57 | Au, Ag, As, Bi, Zn | About 2,100 ft of underground workings in vein in quartzite (Yms). Medium producer of gold and silver. | 36, 39 |
| 423 | Letus No. 1 lode claim | 46-16-25 | 113-11-50 | Au, Ag | Surface and underground workings follow vein in shear zone in limestone (Yh) near contact with granodiorite (Kgd). No production. | 139 |
| 424 | Lila Dixon and American Flag lodes | 46-16-36 | 113-10-25 | Au | Adits and trenches along veins in dolomite (Ch). Small producer of gold ore. | 36 |
| 425 | Mickey mine (Garrett mine) | 46-14-18 | 113-12-55 | Au, Ag, Mn, Bi | Adit, about 150 ft long, along vein in shear zone dolomite (Ch). Small producer of ore. | 36, 78, 139 |
| 426 | Modoc lode | 46-16-45 | 113-10-15 | Au, Cu | Surface and underground workings along contact of granodiorite (Kgd) and dolomite (Ch). Iron and copper sulfide minerals occur in limestone along the contact and disseminated in granodiorite. Production undetermined. | 36, 44 |
| 427 | Montana mine | 46-15-41 | 113-11-15 | Au | Underground workings totaling about 100 ft, follow vein in shear zone in quartzite (Yms). Small producer of gold ore. | 36, 44 |
| 428 | Nineteen Hundred mine | 46-16-30 | 113-09-23 | Au | More than 500 ft of underground workings along vein in shear zone in quartzite (Yms). Small producer of gold ore. | 36, 44 |
| 429 | North Fork of Flint Creek placers (Autumn, Little George, Willow claims) | 46-14-31 | 113-13-00 | Au, Ag | Prospects in placers in alluvium (Qs). Production undetermined. | 139 |
| 430 | Porter mine | 46-15-08 | 113-12-15 | Au | Underground workings in vein in dolomite (Ch). Small producer of gold ore. | 36, 44 |
| 431 | Radar lode | 46-15-57 | 113-11-53 | Au | Bulldozer cuts expose vein in shear zone in carbonate rock (Dj). Production undetermined. | 139 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Red Lion (Hidden Lake) district--Continued** | | | |
| 432 | Red Lion mine | 46-16-18 | 113-10-54 | Au, Ag, Co, Ni | Two shafts in veins in dolomite (Ch). Small producer of gold ore. | 34, 39, 44, 110 |
| 433 | Robinson mine (Blue-Eyed Annie) | 46-14-41 | 113-11-30 | Au, Ag, Bi | More than 230 ft of underground workings along vein in a shear zone in quartzite (Yms). Small producer of gold and silver. | 36, 39, 44 |
| 434 | St. Thomas mine | 46-16-35 | 113-09-30 | Au | More than 200 ft of underground workings in vein in quartzite (Yms). Small producer of gold ore. | 36, 44 |
| 435 | Yellow Metal mine | 46-16-10 | 113-09-35 | Au | About 500 ft of underground workings along vein in shear zone in quartzite (Yms). Small producer of gold. | 44 |
| | | | **Lost Creek district** | | | |
| | This district follows the valley of Lost Creek. It includes many Proterozoic, Paleozoic, and Mesozoic sedimentary rocks; Tertiary monzogranite; Tertiary volcanic rocks; and glacial and alluvial deposits of Quaternary age. Several thrust and normal faults have been mapped in the district. It was a small producer of gold, silver, copper, and lead from placer, vein, and replacement deposits. Most of the lode deposits are in Paleozoic carbonate rocks near the Lost Creek monzogranite stock which is enriched in several trace and minor elements including fluorine, tin, rubidium, niobium, lead, and zinc. | | | | | |
| 442 | Blue Bottle prospect | 46-13-17 | 113-04-52 | W | Surface and underground workings follow veins and zones of disseminated scheelite in carbonate rock (Dj). No production. | 143 |
| 443 | George mine | 46-13-28 | 113-04-00 | Ag, Pb, Cu, Sb | Adits and shafts in replacement deposits in limestone (Cs). Small producer of silver-lead ore. | 36, 44 |
| 444 | Great Eastern mine (Contact lode, Diamond placer) | 46-11-57 | 112-58-33 | Au, Ag, Lst, Cu, Zn | Three short adits and two short shafts, totaling about 300 ft, in replacement deposits in limestone (Mm) near monzogranite (Tmg) contact. Small producer of gold ore and limestone. | 7, 36, 77, 138 |
| 445 | Lost Creek placer (Antelope and Spring Creeks) | 46-09-45 | 112-53-25 | Au, Ag | Alluvium (Qs) mined by ground sluicing and by dry-land dredge. Small producer of gold and silver. | 84 |
| 446 | Silver King mine | 46-14-07 | 113-02-43 | Ag, Cu, Pb, Sb | Two incline shafts in replacement deposit in dolomite (Ch). Small producer of silver-copper ore. | 36, 44 |

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|---|---|---|---|---|---|---|
| 447 | Silver prospect | 46-13-17 | 113-04-23 | Ag, Pb, Zn, Cu, Sb | Nine shafts, two adits, and pits in a skarn deposit in limestone (Cs) near the monzogranite (Tmg) contact. Production undetermined. | 139 |
| 448 | Silver Queen mine | 46-13-10 | 113-01-07 | Au | A series of adits along a vein in shear zone in limestone (Yh). Small producer of gold. | 36, 44 |

**Blue-Eyed Nellie district**

This district is in a belt of imbricate thrust sheets consisting of sedimentary rocks of Middle Proterozoic and Paleozoic ages. The principal units are the Hasmark Formation of Cambrian age, the Madison group of Mississippian age, and the Quadrant Quartzite of Pennsylvanian age. The district was a medium producer of silver and lead from oxidized replacement deposits in the Hasmark Formation. Limestone from the Madison group and silica from the Quadrant Quartzite have been quarried to use in the nearby smelter at Anaconda, Montana.

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|---|---|---|---|---|---|---|
| 449 | Blue-Eyed Nellie Creek quarry | 46-10-31 | 113-03-58 | Sil | Open pit quarry in quartzite (Pq). Small producer of silica. | 36 |
| 450 | Blue-Eyed Nellie mine | 46-11-00 | 113-03-38 | Ag, Pb, Zn, Cu, Sb, Cd, As, Bi, Sn | About 2,400 ft of workings in replacement deposits in dolomite (Ch). Large producer of silver-lead ore. | 36, 39, 44, 110 |
| 451 | Brown's quarry | 46-10-06 | 113-03-58 | Ls | Open pits in limestone (Mm) beds. Large producer of limestone. | 19, 78, 141 |
| 452 | Luke quarry | 46-10-38 | 113-03-07 | Sil | Quarry in quartzite (Pq). Small producer of silica. | 74, 76, 141 |

**Olson Gulch district**

Complexly folded and faulted sedimentary rocks of Proterozoic and Paleozoic ages occur as part of a belt of imbricate thrust faults. After thrusting these rocks were intruded by small plutons of Cretaceous granodiorite. The district was a small producer of silver, gold, copper, iron, and tungsten from several small vein, replacement, and skarn deposits.

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| 453 | Big Bear prospect | 46-12-50 | 113-04-37 | W | Bulldozer cuts expose scheelite-bearing lenses of skarn in interbedded limestone and shale (Cs). No production. | 143 |
| 454 | Black Chief Iron mine | 46-10-51 | 113-06-20 | Fe, Zn | Open-pit mine with one adit in magnetite-bearing skarn at the contact of limestone (Mm) and granodiorite (Kgd). Small producer of iron ore for use as smelter flux. | 31, 36, 44, 139 |
| 455 | Bresnahan and Fenner prospect | 46-11-40 | 113-04-53 | Ag, Cu, Pb, W, Bi, Co | Bulldozer cut and adit in base- and precious-metal-bearing quartz vein and scheelite-bearing marble (Ch, Dj, Mm). No production. | 143 |
| 456 | Cameron mine | 46-10-10 | 113-06-20 | Ag, Cu, Pb, Sil | Shafts, adit, stopes, pits, and trenches in vein and replacement deposits in quartzite and dolomite (Cs). Small producer of silver ore. | 36, 39, 44, 52, 141 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Olson Gulch district--Continued** | | |
| 457 | Carbonator prospect | 46-11-23 | 113-06-35 | Ag, W | Shaft, 35 ft deep, along silver-bearing vein in shear zone. Scheelite float occurs above 150 ft adit. Host rocks are carbonate rock (Dj) and granodiorite (Kgd). No production. | 143 |
| 458 | Grey Rock claim (Bung Your Eye) | 46-10-41 | 113-06-25 | Au, Fe | Adit with about 350 ft of workings along a gold-bearing vein in a shear zone. Site is near contact of limestone (Mm) and granodiorite (Kgd). Skarn at contact contains magnetite. Production undetermined. | 36, 44 |
| 459 | Mayflower claim (Gold Crown lode) | 46-10-33 | 113-06-40 | Au | Adits and trenches totaling more than 775 ft. Deposit is in vein in shear zone in granodiorite (Kgd). Production undetermined. | 36, 44 |
| 460 | Pay Day mine | 46-12-28 | 113-05-30 | W | Trenching and diamond drilling were done on a scheelite-bearing skarn in fractured limestone (Csh) near contact with granodiorite (Kgd). Small producer of tungsten. | 143 |
| 461 | Rambler mine | 46-11-37 | 113-06-17 | Ag, W | Adits and pits along quartz vein in carbonate rock (Dj). Small producer of silver. | 36, 143 |
| 462 | Sager-Murphy prospect | 46-12-34 | 113-02-32 | W | Adit, shaft, pits, and trenches along quartz stringers in shear zone in limestone (Dj, Dm). No production. | 138, 144 |
| 463 | Silver Chain-Antelope mine | 46-12-20 | 113-05-52 | Ag, Cu, Pb, Zn, W, Sb, As, Cd, Bi | Shafts, adits, and pits in vein and replacement deposit in carbonate rocks (Mm, Ch) that are between a small granodiorite (Kgd) plug to the north and a diorite (Kd) stock to the south. Medium producer of silver ore. | 36, 44, 50, 141 |
| 464 | Smith prospect | 46-11-33 | 113-06-03 | Ag, W | Adit, shaft, five bulldozer cuts, and several pits in skarn in marble (Ch). Small producer of silver. | 143 |
| 465 | Stormway-Morgan Evans mine | 46-12-13 | 113-06-05 | Ag, Cu | Four adits, totaling more than 600 ft, in vein in diorite (Kd). Production undetermined. | 36, 44 |
| | | | | **Johnson Basin district** | | |
| The geology consists of complexly folded and faulted Paleozoic rocks ranging in age from Cambrian to Pennsylvanian that have been intruded by small bodies of plutonic igneous rocks; these are Cretaceous to Tertiary in age and are granitic to dioritic in composition. Most of the deposits are vein and replacement types in carbonate sedimentary rocks. The district was a small producer of silver, tungsten, copper, lead, and zinc. | | | | | | |

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| 466 | Ben G. prospect | 46-13-01 | 113-09-00 | W | Bulldozer cuts expose mineralized fractures in marble (Ch) near contact with granodiorite (Kgd). No production. | 143 |
| 467 | Cliff prospect | 46-13-06 | 113-07-45 | W | Adits and bulldozer cuts along zone of disseminated scheelite in carbonate rock (Dj) near contact with monzogranite (Kmg). No production. | 44, 143 |
| 468 | Fox prospect | 46-14-18 | 113-06-40 | Ag, Pb, Cu, W | Adit and shaft along vein in shear zone in limestone (Mm). No production. | 44, 143 |
| 469 | Mike Hannon mine (Hannon mine, McMasters shaft) | 46-13-18 | 113-09-25 | Ag | Underground workings totaling more than 500 ft along vein and replacement deposits in carbonate rock (Dj). Small producer of silver ore. | 36 |
| 470 | Mine (name unknown) | 46-13-38 | 113-07-05 | Ag, Cu, Ba | Shaft, pits in a vein in limestone (Mm). Production undetermined. | 139 |
| 471 | Moonlight prospect | 46-10-31 | 113-10-11 | W | Three adits follow a replacement deposit in a shear zone in dolomite (Ch). No production. | 143 |
| 472 | Richmond mine (Ontario mine) | 46-11-00 | 113-09-18 | Ag | More than 450 ft of underground workings in vein and replacement deposits in carbonate rocks (Cs). Small producer of silver ore. | 36 |
| 473 | Straw Hat prospect | 46-13-50 | 113-06-53 | W | Two shafts along scheelite-bearing fracture zone in granitic rocks (Kmg). No production. | 143 |
| 474 | Tip Top mine (Abbot, Bretz, Farmers mine, New Year, Emma) | 46-12-33 | 113-08-46 | W, Ag, Cu, Pb, Sb, As, Bi, Zn | Shaft, with about 300 ft of workings, in vein and replacement deposit in dolomite (Ch). Medium producer of tungsten and silver ore. | 36, 39, 44, 141, 143 |
| 475 | Welcome mine | 46-13-50 | 113-08-48 | Ag, Pb, Cu, Zn, Sb | Greater than 500 ft of underground workings in vein and replacement deposits in limestone (Mm, Cs). Small producer of silver ore. | 36, 44 |

**Georgetown (Southern Cross, Cable, Gold Coin) district**

A thrust- and normal-faulted sequence of Proterozoic and Paleozoic rocks have been intruded by granodiorite of the Cable stock. Most of the deposits are located in carbonate sedimentary rocks, especially the Hasmark Formation of Cambrian age, near the contact of the stock but some deposits occur up to a mile away from the stock or entirely in the stock. Types of deposits are gold-, copper-, and iron-bearing skarn deposits in carbonate rocks; gold, silver, and tungsten veins and replacement deposits in carbonate rocks; gold veins in granodiorite; and gold placers. The district has been a large producer of gold, silver, copper, lead, and tungsten.

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|---|---|---|---|---|---|---|
| 476 | Black Moon claim | 46-11-33 | 113-14-20 | Au | Underground workings along vein in a shear zone in granodiorite (Kgd). Production undetermined. | 44 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Georgetown (Southern Cross, Cable, Gold Coin) district--Continued** | | |
| 477 | Cable mine | 46-12-00 | 113-12-59 | Au, Ag, Cu, Pb, Fe, Mn, Zn, As, Sb | Extensive underground workings, totaling more than 15,000 ft, in vein, replacement, and skarn deposits in carbonate rocks and shale (Ch, Csh) near the contact of the Cable stock (Kgd). Oxidized, near-surface ore was richest. Large producer of gold, silver, copper, lead, iron, manganese, and zinc. Iron and manganese were used for smelter flux. | 36, 43, 44, 110, 132 |
| 478 | Cable placer | 46-11-47 | 113-12-50 | Au, Ag | Residual surface mantle (Qs) was mined on top of and down slope from the Cable mine orebody. Medium producer of gold and silver. | 33, 44, 84, 96 |
| 479 | Cable Creek placer (Paregon, Boca) | 46-11-20 | 113-11-40 | Au, Ag | Prospects in placers in alluvium (Qs). Production undetermined. | 44 |
| 480 | Champaign lode claim | 46-12-22 | 113-14-05 | Ag, Pb, Zn, Cu | Underground workings along vein in shear zone in limestone (Cs). Production undetermined. | 139 |
| 481 | Georgetown placers | 46-11-53 | 113-14-58 | Au, Ag | Alluvium (Qs) mined by ground sluicing and by dragline. Small producer of gold and silver. | 33, 36, 44, 84 |
| 482 | Gold Coin mine | 46-10-30 | 113-14-41 | Au, Ag, Cu, Pt | A series of adits, with about 2,500 ft of underground workings, in vein and replacement deposits cut by faults. Host rock is dolomite (Ch). Large producer of gold and silver | 29, 36, 44, 141 |
| 483 | Hold Fast-Short Shift-Goldenwedge mines | 46-12-30 | 113-14-00 | Au, Ag, Cu | Underground workings totaling 8,000 ft in vein and replacement deposits in dolomite (Ch). Large producer of gold, silver, and copper. | 36 |
| 484 | Luxemburg mine | 46-11-34 | 113-14-25 | Au | Adit and shafts, totaling about 700 ft, follow five veins in granodiorite (Kgd) of the Cable stock. Small producer of gold. | 36, 44 |
| 485 | Montana claim (Montana mine, Deer Lodge) | 46-12-20 | 113-14-50 | Au, Ag, Cu, Sb | Adit, with 104 ft of workings, along vein in shear zone in carbonate rock (Dj). Small producer of gold ore. | 36, 44 |
| 486 | Ontario mine | 46-12-01 | 113-15-08 | Ag, Pb, Cu, Ba, As | Underground workings in vein and replacement deposits in carbonate rock (Dj). Small producer of silver ore. | 36, 44 |
| 487 | Orphan Boy-Orofino mine | 46-12-35 | 113-14-00 | Au | Several shafts along vein and replacement deposits in carbonate rock (Dj). Small producer of gold ore. | 36, 44 |

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| 488 | Pyrenees mine | 46-11-43 | 113-14-15 | Au, Ag, Cu, As | More than 3,000 ft of underground workings along veins in shear zones in granodiorite (Kgd). Ore was oxidized and enriched near surface. Medium producer of gold ore. | 36, 44, 110, 141 |
| 489 | Reliance mine | 46-12-02 | 113-14-35 | Au | Adit, with more than 180 ft of workings, along vein in a shear zone in carbonate rock (Dj). Small producer of gold. | 44 |
| 490 | Revenue mine | 46-11-54 | 113-13-56 | Au | Adit, pits, and trenches follow vein in shear zone in granodiorite (Kgd). Small producer of gold. | 36 |
| 491 | Southern Cross mine | 46-12-37 | 113-14-07 | Au, Ag, Cu, Bi, As, Sb, Fe | Inclined shaft with five levels, totaling about 16,000 ft. Deposits are veins and replacements in dolomite (Ch). Large producer of gold, silver, and copper. | 9, 36, 44, 110, 141 |
| 492 | Twilight mine | 46-13-07 | 113-13-45 | Au | More than 625 ft of underground workings in vein and replacement deposits in dolomite (Ch). Small producer of gold. | 44 |

**Silver Lake district**

The geology and mineral deposits are similar to those of the Georgetown district except that no intrusive is exposed in the Silver Lake district. Folded and faulted Cambrian, Devonian, and Mississippian sedimentary rocks are predominant. The deposits are vein and replacement types in Cambrian and Devonian carbonate rocks. The district was a medium producer of tungsten, silver, copper, lead, zinc, and gold.

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|---|---|---|---|---|---|---|
| 493 | Blackshirt prospect | 46-09-06 | 113-13-55 | Ag, W | Shaft and bulldozer cuts along vein in fracture vein in fracture zone in carbonate rock (Dj). Production undetermined. | 143 |
| 494 | H. L. M. prospect | 46-08-40 | 113-13-15 | W, Ag | Two adits, with workings totaling 600 ft, follow vein in shear zone in limestone (Ch). Small producer of tungsten. | 143 |
| 495 | McCabe prospect | 46-10-16 | 113-13-33 | W | Adit and several trenches in scheelite-bearing vein in carbonate rock (Dj). Small producer of tungsten. | 132, 141, 143 |
| 496 | Mine (name unknown) | 46-07-10 | 113-17-05 | Ag | Underground workings along veins in dolomite (Ch). Production undetermined. | 140 |
| 497 | Mine (name unknown) | 46-06-48 | 113-17-48 | Ag | Underground workings along veins in dolomite (Ch). Production undetermined. | 140 |
| 498 | Minnie Lee prospect (Black Tail No. 1, Minnie Lee 1 and 2 mines, Lucky Seven) | 46-07-42 | 113-17-17 | Ag, Cu, W | Several adits and pits along a 1-ft-wide vein in carbonate rock (Dj). Small producer of ore. | 51, 143 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Silver Lake district--Continued** | | |
| 499 | Monk claim | 46-06-04 | 113-18-13 | Ag, Cu, Pb, Zn, As, Sb | Underground workings, pits, and trenches follow quartz vein in dolomite (Ch). Production undetermined. | 39, 40 |
| 500 | New Hope lode | 46-10-17 | 113-12-52 | Au, Ag, Pb | Adit, about 150 ft long, along vein in a shear zone in limestone (Cs). Production undetermined. | 139 |
| 501 | Okoreka mine | 46-08-28 | 113-14-18 | Ag, Pb, Cu, Sb | Underground workings in a replacement deposit in limestone (Dm). Small producer of silver ore. | 44 |
| 502 | Sheila prospect | 46-09-39 | 113-13-47 | W | Surface workings in disseminated scheelite zone in carbonate rock (Dj). No production. | 143 |
| 503 | Silver Hill mine | 46-08-20 | 113-13-57 | Cu | Underground workings in stratabound zone between dolomite and shale (Ch, Crl). Production undetermined. | 44 |
| 504 | Silver Moss mine (Hansen-Meloy prospect) | 46-09-40 | 113-13-11 | Ag, W | Two shafts and bulldozer cuts along vein and replacement deposits in limestone (Ch). Small producer of silver ore. | 44, 62, 75, 143 |
| 505 | Silver Reef mine (Silver Fleet mine) | 46-10-19 | 113-13-06 | Ag, Au, Pb, Cu, Zn, Sb | Adit and shafts, totaling about 300 ft, along vein and replacement deposits in shear zone in limestone (Crl). Medium producer of silver and gold. | 36, 44, 75, 76, 141 |
| 506 | Storm Lake tungsten prospect | 46-06-51 | 113-15-39 | W, Ag | About 650 ft of workings follow scheelite- and tetrahedrite-bearing zones at contact of limestone (Cs) and granodiorite (Kmd). Small producer of tungsten. | 44, 132, 141 |
| 507 | Sunshine mine (Tarlach mine, Tungstar mine) | 46-06-27 | 113-16-07 | Ag, W, Pb, Cu, Zn, Sb, As | Over 750 ft of workings on several tetrahedrite- and scheelite-bearing quartz veins in altered dolomite (Ch) in fault zone. Small producer of silver and tungsten ore. | 50, 132, 141, 143 |
| 508 | The Short Stuff prospect | 46-06-52 | 113-17-10 | Ag, Cu, Pb, Sb | Two adits and numerous pits along vein in dolomite (Cs). Production undetermined. | 139 |
| 509 | Tommy prospect | 46-08-25 | 113-14-00 | Ag, W | Surface workings expose vein in shear zone in carbonate rock (Dj). No production. | 143 |
| 510 | Trigger mine | 46-09-40 | 113-13-48 | W, Ag | Three adits, stopes, several bulldozer cuts, and drill holes in replacement deposits along shear zones in dolomite (Dj). Medium producer of tungsten. | 44, 132, 141, 143 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 511 | War Eagle claim (War Eagle mine) | 46-09-56 | 113-16-04 | Au, Cu | Adit, with more than 150 ft of workings, follows vein in shear zone in carbonate rock (Dj). Production undetermined. | 44 |

**Anaconda Range area**

The Anaconda Range area includes the northern end of the Anaconda Range, a northeast-trending range that forms the continental divide between the Big Hole Valley to the south and the Philipsburg and Deer Lodge Valleys to the north, and the foothills to the north and northwest of the range. The Anaconda range is cored by numerous plutons of Tertiary and Cretaceous intrusive rock that range in composition from diorite to two-mica monzogranite. The southeast side of the range is bordered by a major northeast-trending zone of normal faults that form the northwestern edge of the Big Hole Valley. The northern slopes and foothills of the range are underlain by complexly folded and faulted sedimentary rocks of Middle Proterozoic, Paleozoic, and Mesozoic ages. Many of the fold axes and faults have north to northwest trends. The range was strongly glaciated during the Pleistocene and all of the valleys have thick glacial deposits. Despite the history of intense igneous activity in the area, there are few mines and prospects. Known deposit types include veins, replacement bodies, pegmatites, and skarns and some parts of the area have potential for discovery of prophyry or stockwork deposits. The area was a small producer of silver ore and placer gold and silver.

| | | | | | | |
|---|---|---|---|---|---|---|
| 512 | Big Six prospect (St. Tung) | 46-05-00 | 112-59-30 | W, F, Be, Bi | Pits and trenches in sheared monzogranite (Kmg) and mylonite that has disseminated scheelite, wolframite, and fluorite. No production. | 39, 144 |
| 513 | Jetty mine (Balkan lode) | 46-09-31 | 113-05-15 | Ag, Ba, Zn, F, Pb, Cu, Sb | Four adits in vein and replacement deposits in quartzite (Pq) and limestone (Mm). Small producer of silver ore. | 32, 44, 125, 155 |
| 514 | Kurt Peak occurrence | 46-02-37 | 113-17-03 | Ag, Cu | Quartz vein in limestone (Yh). No workings and no production. | 40 |
| 515 | Main Range Beryl occurrence | 46-02-00 | 113-08-10 | Be | Small beryl occurrence in pegmatite in monzogranite (Kmg). No production. | 100 |
| 516 | Margaret and Lake View placers | 46-04-30 | 113-16-01 | Au, Ag | Minor surface workings in placers in alluvium (Qs). Production undetermined. | 84 |
| 517 | Mill and Clear Creek placers | 46-04-30 | 112-56-20 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 33, 84 |
| 518 | Mill Creek Beryl occurrence | 46-04-53 | 113-05-21 | Be, F | Beryllium- and idocrase-bearing zones at contact of quartz diorite stock (Kmd) and limestone (€sh). At least three beryllium-bearing zones up to 900 ft in length are present. No production. | 100 |
| 519 | One Hundred Acre Meadow prospect | 46-05-26 | 113-18-37 | Ag, Cu | Shaft and many pits and trenches along quartz vein in dolomite (€h). No production. | 40 |
| 520 | Rainbow Pass occurrence | 46-02-30 | 113-19-05 | Au, Ag, Cu | Quartz vein in limestone (Yh). No workings and no production. | 40 |
| 521 | Silver mine (name unknown) | 46-04-00 | 113-24-58 | Ag | Underground workings in veins in dolomite (€h). Production undetermined. | 140 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Anaconda Range area--Continued** | | |
| 522 | Weathervane Hill prospect | 46-06-00 | 112-55-00 | F, Pb, Ag | Shallow pits and adits along fault zone in limestone (MPa). Fluorite crystals up to 1-in-wide occupy fissures and vugs in veins up to 2 ft thick. Production undetermined. | 118, 125 |
| | | | | **Deer Lodge Valley area** | | |
| | The Deer Lodge Valley is a major north-south-trending intermontane basin between igneous terrane to the east, which consists of the Elkhorn Mountain Volcanics, the Boulder batholith, and the Lowland Creek Volcanics, and the sedimentary-plutonic terrane of the Flint Creek Range to the west. The valley contains a thick sequence of Tertiary and Quaternary basin-fill deposits. The only metallic mineral deposit is a gold placer deposit along Caribou Creek. The area was a medium producer of gold and silver. | | | | | |
| 523 | Caribou Creek placer | 46-19-06 | 112-44-05 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Medium producer of gold and silver. | 84 |
| | | | | **Blackfoot River area** | | |
| | Most of the Blackfoot River area is underlain by sedimentary rocks of the lower and middle Belt Supergroup of Middle Proterozoic age. These include the Spokane and Empire Formations of the Ravalli group and the Helena Formation. The Snowslip, Mount Shields, and Shepard Formations of the upper Belt Missoula Group occupy a small part of the area. In contrast to the structure of the Sapphire Thrust System to the southwest, the structure in this area is relatively simple and consists of broad, open folds, a few normal and strike-slip faults, and one mapped thrust. The area is bordered on the southwest by a major strike-slip fault which separates it from more structurally complex terrane. In the eastern part of the area the Proterozoic sedimentary rocks have been intruded and covered by andesitic and rhyolitic volcanic rocks of Tertiary age. Several plutons of Tertiary and Cretaceous granodiorite occur along the southern border of the area. Much of the western part of the area is covered by Quaternary glacial and alluvial deposits. Mineral deposits include base and precious metal veins and gold placers. The area was a small producer of gold, silver, copper, and lead. | | | | | |
| 524 | Butterfly Quartz lode | 46-52-46 | 112-34-48 | Au, Ag, Pb, Zn, Cu | Adit along vein in shear zone in argillite (Yh). No production. | 139 |
| 525 | Gold Dollar mine | 46-54-30 | 112-39-16 | Au | Adit, with 1,000 ft of workings, along vein in argillite (Ysn). No production. | 139 |
| 526 | Keep Cool Creek placer | 46-58-00 | 112-39-25 | Au, Ag | Placers in alluvium (Qs) were mined by surface workings and underground shafts. Small producer of gold and silver. | 84 |
| 527 | Liverpool Creek placer | 46-58-27 | 112-41-07 | Au, Ag | Placers in alluvium (Qs) were mined by surface workings. Small producer of gold and silver. | 84 |
| 528 | Mammoth mine | 46-54-46 | 112-31-25 | Cu, Ag, Au | Developed mine along vein in shear zone in andesite (Trv). Small producer of copper, silver, and gold. | 138 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 529 | Marcum Hill mines | 46-57-05 | 112-56-58 | Ag, Pb, Au, Cu | Open-pit mining of quartz vein in granodiorite (Kgd). Small producer of silver, lead, gold, and copper. | 85 |
| 530 | Moose Creek placer | 46-55-05 | 112-50-51 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 531 | Pack Horse lode | 46-54-22 | 112-38-05 | Au, Pb, Cu | Shaft along vein in limestone (Yh). No production. | 139 |
| 532 | Poorman Creek placer | 46-52-32 | 112-36-15 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 33, 84, 99 |
| 533 | Sauerkraut Gulch placer | 46-54-53 | 112-45-15 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Medium producer of gold and silver. | 84, 99 |
| 534 | Stonewall Creek placer | 46-57-50 | 112-42-05 | Au, Ag | Outwash (Qs) was mined by ground sluicing and dry-land dredge. Small producer of gold and silver. | 84 |

**Big Blackfoot (Ogden Mountain) district**

The Ogden Mountain stock (Cretaceous granodiorite) intruded sedimentary rocks of the Helena, Snowslip, and Shepard Formations of Middle Proterozoic age. The sedimentary rocks are offset by normal faults and, in the southwest part of the area, by a major zone of right-lateral strike-slip faults. Tertiary voclanic and sedimentary rocks locally cover the older rocks. Mineral deposits are base and precious metal veins, gold placers, and a tungsten skarn. The district was a medium producer of gold, silver, copper, and lead.

| | | | | | | |
|---|---|---|---|---|---|---|
| 535 | Blackfoot mine (Blackfoot Gold mine) | 46-51-50 | 112-50-48 | Au, Ag, Pb, Cu, W, Bi, Mo | Largest mine in district, containing 1,300 ft of workings along weathered veins in limestone (Yh) near granodiorite (Kgd) contact. Medium producer of gold, silver, copper, and lead. | 39, 85, 131 |
| 536 | C.D. Hurd placer | 46-51-35 | 112-53-57 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 54 |
| 537 | Chicken Creek placer | 46-48-40 | 112-49-00 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 538 | Chimney Creek placer | 46-50-41 | 112-51-10 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 539 | Deer Creek mine | 46-50-48 | 112-48-42 | Au, Ag | Over 3,000 ft of workings follow quartz veins lying on contact between argillite (Ysn) and granodiorite (Kgd). Production undetermined. | 131 |
| 540 | Deer Creek placer | 46-48-48 | 112-50-14 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 541 | Higgins mine | 46-52-11 | 112-52-00 | Au, Ag, Pb, W | Thirty feet of underground workings along quartz veins in shear zones in granodiorite (Kgd). Small producer of gold and silver. | 85, 144 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Big Blackfoot (Ogden Mountain) district--Continued** | | |
| 542 | Hobby Horse mine | 46-51-45 | 112-52-00 | Au, Ag, Pb, W, Bi | More than 390 ft of workings (two shafts, two working levels) in fissure veins in granodiorite (Kgd). Small producer of gold, silver, and lead. | 11, 39, 54, 85, 144 |
| 543 | Hunter mine | 46-52-20 | 112-49-50 | Ag, Pb, Cu, Sb | Developed mine in veins in argillite (Yh) near contact with granodiorite (Kgd). Small producer of silver, lead, and copper. | 131 |
| 544 | Last Chance mine (Christine mine) | 46-52-00 | 112-51-45 | Ag, Pb | Inclined shaft and trenches along quartz veins in granodiorite (Kgd). Production undetermined. | 131 |
| 545 | McCacran mine | 46-54-13 | 112-50-57 | Ag, Pb, Cu, W, Sb | Four adits in veins in granodiorite (Kgd). Production undetermined. | 85 |
| 546 | Nevada Creek placer | 46-49-58 | 112-53-40 | Au, Ag | Ground sluicing and dry-land dredging of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 547 | New Progress and Old Timer prospects (Western mines) | 46-52-18 | 112-50-12 | W, Ag, Au, Cu, Pb, Sb | Underground workings, totaling 420 ft, follow quartz vein in bedding-plane fault in limestone (Yh). Scheelite occurs in skarn between limestone (Yh) and granodiorite (Kgd). Production undetermined. | 138, 144 |
| 548 | Plutarc mine (Snowflake mine) | 46-52-06 | 112-51-55 | Au, Ag, Pb, W | Over 110 ft of adits and shafts along vein in fault zone in granodiorite (Kgd). Production undetermined. | 85, 132, 144 |
| 549 | Roselle mine | 46-52-01 | 112-53-05 | Au, W | Adit, 300 ft long, in vein in granodiorite (Kgd). No production. | 144 |
| 550 | Smith-Jones mine | 46-51-43 | 112-52-25 | Ag, Au, Sb | Inclined shaft, 40 ft deep, in vein in argillite (Yh). Production undetermined. | 140 |
| 551 | Wasson Creek placer | 46-54-00 | 112-52-25 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 552 | Wilson Creek placer (Kilburn, Raleigh) | 46-52-43 | 112-52-27 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Medium producer of gold and silver. | 132 |

### Lincoln Gulch area

Calcareous siltite and argillite and limestone of the Helena Formation are the principal rock type in the area. In a few places, thin intermediate to mafic dikes of Late Proterozoic age cut the Helena Formation. Quaternary glacial till and alluvial and terrace gravels occupy the valley of Lincoln Creek. The area is one of the most famous gold-producing districts of the quadrangle and was a very large producer of gold and silver from placer deposits. An undetermined amount of gold has also been produced from a vein deposit.

| | | | | | | |
|---|---|---|---|---|---|---|
| 553 | Lincoln Gulch placer | 46-56-30 | 112-45-05 | Au, Ag, W | Alluvium (Qs) was worked by dredge, underground workings, and by ground sluicing. Very large producer of gold and silver. | 84, 99, 110, 144 |
| 554 | Blackfoot mine | 46-56-36 | 112-45-23 | Au | Adit, with 2,500 ft of underground workings, along vein in shear zone in limestone (Yh) intruded by diorite dike (Kd). Production undetermined. | 99 |
| 555 | Mine (name unknown) | 46-59-08 | 112-46-56 | Au, Ag | Two adits in vein and replacement deposits in calcareous siltstone and argillite (Yh) that is intruded by dike of andesite porphyry (Kd). Production undetermined. | 39 |

### McClellan Gulch district

McClellan Gulch is underlain by a sequence of argillite, siltite, limestone, and quartzite of the Helena, Snowslip, Shepard, and Mount Shields Formations of Middle Proterozoic age. At the head of the gulch, granodiorite of the Dalton Mountain stock (Cretaceous) is exposed and is in contact with Mount Shields and Shepard Formations. The district was a very large producer of gold and silver, one of the largest producers in the Butte quadrangle, from placer deposits in the gulch. The source of the gold is probably vein deposits in and near the contact of the Dalton Mountain stock.

| | | | | | | |
|---|---|---|---|---|---|---|
| 556 | McClellan Gulch placer | 46-52-54 | 112-37-53 | Au, Ag | Extensive surface and underground workings in placer deposits in alluvium (Qs). Very large producer of gold and silver. | 33, 84, 99 |
| 557 | Wiggins mine | 46-50-18 | 112-38-55 | Au, Ag, Pb, Cu, Bi | Several adits along quartz veins in granodiorite (Kgd) of Dalton Mountain stock. Production undetermined. | 39 |

### Seven-Up Pete Gulch area

This area is a mineralized intrusive-extrusive volcanic center that was the probable source of much of the surrounding andesitic and rhyolitic volcanic rocks of Tertiary age. Sulfide-bearing quartz veins occur along shear and breccia zones in andesite. The area is a medium producer of gold and silver.

| | | | | | | |
|---|---|---|---|---|---|---|
| 558 | Columbia mine | 46-56-55 | 112-30-30 | Au, Ag, Mo | Three hundred foot shaft with several working levels along vein in andesite (Tab). Small producer of gold and silver. | 39, 99 |
| 559 | Last Chance mine | 46-56-28 | 112-31-27 | Au, Ag, Ba, As, Cu, Mo | About 3,000 ft of underground workings along vein in andesite (Tab). Small producer of gold and silver. | 39, 99 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Seven-Up Pete Gulch area--Continued** | | |
| 560 | Rover mine | 46-56-35 | 112-30-21 | Au, Ag | Underground workings in vein in andesite (Tab). Small producer of gold and silver. | 99 |
| | | | | **Stemple-Gould district** | | |
| | | | | | Sedimentary rocks of the Helena, Empire, and Spokane Formations (Middle Proterozoic) are intruded by diorite sills and dikes (Late Proterozoic), the Granite Butte granodiorite stock (Cretaceous) and a quartz monzodiorite stock (Tertiary). The rocks are cut by northwest-trending normal and strike-slip faults. Ore bodies are fissure-filling veins in the stocks, vein and replacement deposits in the sedimentary rocks, and placers. The district was a large producer of gold, silver, copper, and iron. | |
| 561 | Crown mine | 46-51-06 | 112-28-13 | Au | Underground workings, totaling more than 100 ft, in vein in granodiorite (Kqd). Small producer of gold. | 56, 99 |
| 562 | Gold Creek placer (Blue Jay) | 46-54-10 | 112-28-59 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Production undetermined. | 139 |
| 563 | Gould Creek placer (Blue Star) | 46-53-03 | 112-23-19 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Production undetermined. | 84, 139 |
| 564 | Homestake mine | 46-53-18 | 112-29-00 | Au, Cu | Two adits and stopes, totaling more than 500 ft, in veins in andesite (Tab). Small producer of gold ore. | 86, 99 |
| 565 | Hubbard mine (Mill tunnel) | 46-52-15 | 112-27-13 | Au | Underground workings, totaling about 7,000 ft, in vein and replacement deposits in granodiorite (Kgd). Small producer of gold. | 99 |
| 566 | Jay Gould mine (Stemple mine) | 46-52-55 | 112-27-31 | Au, Ag, Cu, Fe | More than 12,000 ft of underground workings along veins in shear zones in argillite and shale (Ye). Large producer of gold, silver, copper, and iron. | 76, 99 |
| 567 | Nakoma mine (Golconda mine) | 46-52-42 | 112-28-04 | Au | About 3,150 ft of underground workings along veins in shear zones in argillite and quartzite (Ye). Small producer of gold. | 99 |
| 568 | Prize mine | 46-51-12 | 112-28-20 | Au, Cu | Underground workings, totaling about 800 ft, in vein and replacement deposits in granodiorite (Kgd). Small producer of gold-copper ore. | 99 |
| 569 | Rooster Bill Creek placer (Margaret) | 46-54-03 | 112-27-03 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Production undetermined. | 139 |
| 570 | Silver Bell mine (Swansea mine) | 46-53-22 | 112-32-42 | Au, Ag, Cu, Pb | Two shafts, a crosscut tunnel, and drifts along vein near contact of granodiorite stock (Kgd) and calcareous argillite (Ye). Medium producer of gold, silver, copper, and lead. | 86 |

## Nevada Creek area

This area includes most of the Nevada Creek valley and the mountains along the north side except for the area of the Finn district. Folded and faulted sedimentary rocks of Cambrian through Middle Proterozoic age underlie the mountains. The valley, which is separated from the mountains by a major normal fault, is filled with Tertiary and Quaternary sediments. One gold placer is in the area. The area was a small producer of gold and silver.

| | | | | | | |
|---|---|---|---|---|---|---|
| 571 | Three Mile Creek placer | 46-42-25 | 112-35-15 | Au, Ag | Placer deposits in alluvium (Qs) were worked by ground sluicing. Small producer of gold and silver. | 84, 99 |

## Finn district

The Finn district includes gold placers along southwest-flowing tributaries to Nevada Creek. Thrust-faulted and folded sedimentary rocks of the Helena, Mount Shields, Shepard, and Snowslip Formations (Middle Proterozoic age) were intruded by the Dalton granodiorite stock (Cretaceous) in the mountainous northeastern part of the district. A northwest-trending normal fault has downdropped the rocks of the Nevada Creek valley relative to those in the mountains. The valley is underlain by Tertiary basin-fill deposits and Quaternary alluvium. The district is a large producer of gold and silver, mostly from placer deposits. Base and precious metal veins that occur near the contact of the stock have been mined for gold, silver, and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 572 | American Gulch placer | 46-46-27 | 112-38-52 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 84 |
| 573 | Buffalo Gulch placer | 46-48-38 | 112-44-30 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 84, 99 |
| 574 | Humdinger mine | 46-50-17 | 112-41-46 | Au, Ag, Cu | Developed mine in veins in quartzite (Yms) near contact with granodiorite (Kgd). Small producer of gold, silver, and copper. | 27 |
| 575 | Jefferson Creek placer | 46-47-33 | 112-42-56 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Medium producer of gold and silver. | 29, 54, 76, 84, 99 |
| 576 | Madison Gulch placer | 46-47-38 | 112-42-50 | Au, Ag | Placer deposits in alluvium (Qs) were mined by sluicing and dry-land dredge. Small producer of gold and silver. | 84 |
| 577 | Mine (name unknown) | 46-50-53 | 112-40-05 | Au, Ag, Pb, Cu, Bi | Several adits along quartz veins in granodiorite (Kgd) of Dalton Mountain stock. Production undetermined. | 39 |
| 578 | Washington Gulch placer | 46-47-02 | 112-39-57 | Au, Ag | Placer deposits in alluvium (Qs) were mined by sluicing and dry-land dredge. Most productive gulch in district. Medium producer of gold and silver. | 54, 84, 99, 137 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Little Prickly Pear area** | | | |
| | Most of the area is underlain by argillite, siltite, and quartzite of the Greyson, Spokane, and Empire Formations (Ravalli group of Middle Proterozoic age). These have been intruded by diorite sills of Late Proterozoic age. Middle and upper Belt units including the Helena, Snowslip, Shepard, and Mount Shields Formations and the Bonner Quartzite occur in the southwest part of the area, sedimentary rocks of Paleozoic and Mesozoic ages and a Cretaceous latite sill occur in the northeast corner of the area, and volcanic rocks of Tertiary age are found in the northwestern part of the area. The pre-Tertiary rocks have been deformed by west-northwest-trending strike-slip faults in the central and southern parts of the area, and by northwest-trending folds and normal faults. The principal mineral deposits are gold placers; base and precious metal veins also occur. The area was a large producer of gold, lead, zinc, copper, and silver. | | | | | |
| 579 | Big Ox mine | 46-47-30 | 112-17-43 | Pb, Zn, Cu, Ag | Underground workings along veins in argillite (Yh) cut by diorite (ZYg) dikes. Small producer of lead-zinc ore. | 2, 141 |
| 580 | Canyon Creek copper prospect | 46-59-45 | 112-19-00 | Cu, Ag | Occurrences of copper and silver in 25 ft sequence of quartzite interbedded with reddish shales (Ys, Ye). Ore minerals are chalcocite, digenite, bornite, and native silver. No production. | 140, 161 |
| 581 | Canyon Creek Gold prospect | 46-49-26 | 112-18-52 | Au, Ba, As | Thin quartz veins in silicified volcanic conglomerate (Tab). No production. | 39 |
| 582 | Canyon Creek placer | 46-51-04 | 112-17-40 | Au, Ag | Terrace deposits (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84, 99 |
| 583 | Cottonwood Creek and Gravel Range placers | 46-50-27 | 112-19-04 | Au, Ag | Placers in alluvium of two ages (Ts, Qs) were mined by ground sluicing. Small producer of gold and silver. | 84, 99 |
| 584 | Krasny Gulch placer | 46-50-46 | 112-15-50 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 140 |
| 585 | Piegan Gulch placer | 46-47-42 | 112-20-28 | Au, Ag | Dredging and ground sluicing of placers in alluvium (Qs). Medium producer of gold and silver. | 33, 84 |
| 586 | Sieben Ranch quarry (Picture Stone No. 1) | 46-51-10 | 112-11-52 | STN | Quarry in silty limestone (Yg). Small producer of building stone. | 7 |
| 587 | Virginia Creek placer (Tarhead, Lopear, and Specimen Creeks) | 46-53-08 | 112-20-30 | Au, Ag | Placer deposits in alluvium (Qs) were mined by ground sluicing and hydraulic mining. Large producer of gold and silver. | 84, 99 |

## Wolf Creek district

A northwest-trending zone of thrust-faults in sedimentary rocks which range in age from Middle Proterozoic to Cretaceous, underlie this district. Sulfide-bearing veins occupy shear zones in argillite of Middle Proterozoic age. The district was a small producer of silver and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 588 | Bissonette mine (Champion, Liberty) | 46-59-53 | 112-06-04 | Ag, Cu, Pb, Zn, Ba, As | Underground workings, totaling more than 800 ft, along veins in shear zones in argillite (Ys). Small producer of silver ore. | 75, 99 |
| 589 | Hudson group (Montreal, Hudson, and Honeycomb) | 46-59-30 | 112-06-20 | Cu, Ag, Au | About 450 ft of underground workings follow veins in shear zones in argillite (Yg). Small producer of copper, silver and gold. | 99 |
| 590 | Little Creek placer | 46-59-23 | 112-04-53 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 591 | Sheep Creek group | 46-58-06 | 112-03-55 | Cu | Two shafts along veins in shear zones in argillite (Ys). No production. | 99 |

## Marysville (Silver Creek) district

Limestone and argillite of the Helena and Empire Formations of Middle Proterozoic age have been folded, cut by normal faults, and intruded by the Marysville granodiorite stock, of Cretaceous age. The area is bordered on the southwest by a major strike-slip fault. A wide zone of contact metamorphosed rocks are present around the Marysville stock and above an unexposed granite stock (determined by drilling) in the area of Bald Butte. Mineral deposits include base and precious metal veins in granodiorite and hornfels, a stockwork molybdenum mineralized zone, mineralized breccias, skarns, and gold placers. The district was a large producer of gold, silver, lead, copper, and zinc.

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|---|---|---|---|---|---|---|
| 592 | Bald Butte mine | 46-43-22 | 112-20-47 | Au, Ag, Pb, F, Mo, Cu, Zn, Bi, W | Underground workings in veins in hornfels (Ye) near a diorite porphyry dike (Kd) and in contact zone of granite (Tmg). A stockwork molybdenum zone has been explored by core drilling. Large producer of gold-silver ore. | 2, 39, 71, 118, 125, 162 |
| 593 | Bell Boy mine | 46-44-22 | 112-21-42 | Au, Ag, Pb, Zn, Cu, F | About 1,000 ft of underground workings along veins in shear zones in hornfels (Ye). Large producer of gold-silver ore. | 99 |
| 594 | Belmont mine | 46-44-42 | 112-19-02 | Au, Ag | Underground workings along veins in shear zones in hornfels (Yh) near granodiorite (Kgd) of Marysville stock. Small producer of gold-silver ore. | 2, 71, 87, 99, 141 |
| 595 | Calumet mine | 46-45-15 | 112-17-40 | Au, Mn | Underground workings totaling 1,000 ft, in vein in limestone (Yc) near contact with granodiorite (Kgd). Small producer of gold ore. | 99 |
| 596 | Cruse mine (Bald Mountain mine) | 46-44-56 | 112-19-14 | Au, Ag, Pb | More than 1,000 ft of underground workings in veins in hornfels (Ye) near granodiorite (Kgd) of the Marysville stock. Small producer of gold ore. | 2, 71, 99 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Marysville (Silver Creek) district--Continued** | | |
| 597 | Drumlummon mine | 46-44-36 | 112-17-45 | Au, Ag, Cu, Mn, Sb, Be | More than 2,000 ft of underground workings in veins in hornfels (Yh) near granodiorite (Kgd) of the Marysville stock. Very large producer of gold, silver, copper, and manganese. | 2, 23, 39, 58, 62, 71, 99 |
| 598 | Earthquake mine | 46-44-17 | 112-22-09 | Pb, Cu, Ag, Zn, F, As | About 200 ft of underground workings follow veins in shear zones in hornfels (Ye). Small producer of lead-copper ore. | 39, 99 |
| 599 | Empire Creek placer (Lost Horse Creek) | 46-45-20 | 112-22-20 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| 600 | Empire mine | 46-45-21 | 112-20-52 | Au, Ag, Cu, Pb, Zn | Over 1,500 ft of underground workings in veins in hornfels (Yh). Medium producer of gold, silver, copper, and lead. | 3, 39, 62, 71, 99, 128 |
| 601 | Guerin lode | 46-44-21 | 112-22-56 | Cu, Pb, Ag, Au | Shaft, about 40 ft deep, along vein in hornfels (Ye). No production. | 139 |
| 602 | Little Ox mine | 46-46-22 | 112-19-12 | Au, Ag, Pb, Zn, Sb | Underground workings in veins in limestone (Ye). Small producer of gold, silver, lead, and zinc. | 2, 132, 141, 155 |
| 603 | M and L mine | 46-45-10 | 112-20-40 | Au, Ag, Cu, Pb | Several shafts and adits follow veins in hornfels (Yh) near the contact with granodiorite (Kgd). Medium producer of gold, silver, copper, and lead. | 62, 71, 99 |
| 604 | Mammoth claim | 46-44-18 | 112-22-07 | Au, Cu | Surface and underground workings along veins in shear zones in hornfels (Ye). Small producer of gold and copper. | 99, 141 |
| 605 | Nile mine | 46-44-17 | 112-21-55 | Pb, Cu | More than 1,250 ft of workings, on the surface and and underground, along veins in shear zones in hornfels (Ye). Small producer of lead ore. | 99 |
| 606 | Ottawa mine (Prentice property) | 46-44-50 | 112-17-10 | W, Cu | More than 1,440 ft of underground workings in skarn near the contact of limestone (Yh) and granodiorite (Kgd) of the Marysville stock. Skarn contains disseminated scheelite. Production undetermined. | 138, 144 |
| 607 | Penobscot mine | 46-43-50 | 112-21-22 | Au, Ag | About 1,000 ft of underground workings in veins in hornfels (Ye). Large producer of gold-silver ore. | 58, 71, 87, 99 |

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|---|---|---|---|---|---|---|
| 608 | Piegan-Gloster mine | 46-45-43 | 112-20-27 | Au | More than 1,200 ft of underground workings in veins in granodiorite (Kgd) of the Marysville stock. Small producer of gold. | 71, 99 |
| 609 | Shakopee mine | 46-44-24 | 112-22-05 | Ag, Pb, Cu, F | Underground workings along veins in shear zones in hornfels (Ye). Small producer of ore. | 99 |
| 610 | Shannon mine | 46-44-00 | 112-20-06 | Au, Ag | Numerous underground mine levels, totaling about 21,000 ft. Deposits are veins in shear zones in hornfels (Yh). Large production of gold and silver. | 2, 137, 141 |
| 611 | Silver Creek placer | 46-44-38 | 112-10-40 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Large producer of gold and silver. | 84 |
| 612 | Staples mine | 46-45-18 | 112-17-36 | Au | About 620 ft of underground workings along veins in hornfels (Yh) near contact with granodiorite (Kgd). Small producer of ore. | 99 |
| 613 | Towsley mine | 46-44-27 | 112-21-47 | Ag, Pb, Cu, F | Underground workings follow veins in shear zones in hornfels (Ye). Small producer of ore. | 99 |
| 614 | Trinity Gulch placer | 46-45-35 | 112-16-16 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 615 | Windy Ridge prospects | 46-46-18 | 112-19-33 | Au, W | Surface and underground workings in skarn in hornfels (Ye) near dikes of granodiorite (Kgd). No production. | 138, 144 |

**Ophir (Snowshoe Creek, Carpenter Creek) district**

The Blackfoot City granodiorite stock (Cretaceous) and a small satellitic granodiorite stock intrude folded sedimentary rocks of Middle Proterozoic through Cretaceous ages in the mountainous northern part of the district. The Avon valley, in the southern part of the district, occupies a basin formed by northwest-trending faults near the mountain front. The lode deposits are irregular pipes and ore shoots. These contain mainly gold, silver, and copper in limestone and occur primarily near the granodiorite contact. Placers occur in alluvium and in Quaternary terraces cut into Tertiary strata. The district was a very large producer of gold, silver, copper, lead, tungsten, and phosphate.

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|---|---|---|---|---|---|---|
| 619 | Ajax mine | 46-42-55 | 112-29-30 | Au, Ag, Cu | Underground workings in skarn in limestone (Cs) near contact with granodiorite (Kgd). Medium producer of gold, silver, and copper. | 85, 99 |
| 620 | Bumble Bee mine | 46-41-45 | 112-30-45 | Au, Cu | Shaft, about 100 ft deep, in skarn in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of ore. | 13, 62, 85 |
| 621 | Butterfly prospect | 46-40-19 | 112-32-04 | Au, Cu, Ag, Sb | Surface and underground workings along veins in shear zones in limestone (Mm) near contact with granodiorite (Kgd). Production undetermined. | 85 |
| 622 | Carpenter Creek placer | 46-36-00 | 112-33-16 | Au, Ag | Stream terraces and creek alluvium (Qs) were mined by ground sluicing and dredge. Large producer of gold and silver. | 84, 99 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Ophir (Snowshoe Creek, Carpenter Creek) district--Continued** | | | |
| 623 | Coon's Tungsten prospect | 46-41-18 | 112-31-50 | W, Mn, Cu, Mo | Open cut in skarn in limestone (Ymi) near contact with granodiorite (Kgd). Production undetermined. | 39, 85 |
| 624 | Cyclone mine | 46-41-55 | 112-29-45 | Cu, Au, Ag, W | Surface and underground workings in skarn in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of copper, gold, and silver. | 54, 85 |
| 625 | Denver mine | 46-40-54 | 112-32-32 | Au, Ag, Cu, Sb | Adit and shaft on veins in a shear zone in quartzite (Ybo) near contact with granodiorite (Kgd). Production undetermined. | 99 |
| 626 | Esmeralda mine | 46-41-17 | 112-26-30 | Au, Ag, Cu | Surface cuts and a 370 ft adit in skarn in limestone (Mm) near contact with granodiorite (Kgd). Small producer of gold and silver. | 85 |
| 627 | Fairview mine (Coulson mine) | 46-40-55 | 112-32-47 | Ag, Au, Pb, Cu, Sb, As, Te | Underground workings along veins in shear zones in granodiorite (Kgd). Small producer of silver, gold, lead, and copper. | 77, 85, 99 |
| 628 | Flagstaff mine | 46-40-47 | 112-28-13 | Ag, Cu, Ag, W | Underground workings in skarn in limestone (Mm) near contact with granodiorite (Kgd). Small producer of ore. | 85, 99 |
| 629 | Jack Pine mine (Trout Creek, Senecal) | 46-40-00 | 112-27-30 | P | Surface and underground workings in phosphorite beds (Pp). Small producer of phosphate. | 28, 107 |
| 630 | Ladysmith mine | 46-40-40 | 112-27-48 | W, Cu, Ag, Au | Developed mine in skarn in limestone (Mm) near contact with granodiorite (Kgd). Small producer of tungsten, copper, silver, and gold. | 85, 140 |
| 631 | Little Daisy mine (Orient, Maggie, Alice) | 46-41-10 | 112-29-45 | Ag, Au, Pb, Cu, Sb, As | Underground workings in skarn and veins in carbonate rock (Dj) near contact with granodiorite (Kgd). Small producer of silver-gold ore. | 85, 99 |
| 632 | McKay mine | 46-41-52 | 112-26-15 | Au | Underground workings in skarn and veins in altered limestone (Mm) near contact with granodiorite (Kgd). Small producer of gold ore. | 8, 85 |
| 633 | Ophir Creek placer | 46-37-55 | 112-32-32 | Au, Ag | Placers in alluvium (Qs) were worked by ground sluicing. Medium producer of gold and silver. | 84, 99 |

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| 634 | Ophir mine (Reservoir) | 46-40-27 | 112-32-23 | Cu, Au | Several shafts along veins in shear zones between quartzite (Ybo) and granodiorite (Kgd). Small producer of copper and gold. | 54, 85, 99 |
| 635 | Opsata mine | 46-40-36 | 112-32-26 | Au, Ag | Underground workings in veins in shear zones along contact between quartzite (Ybo) and granodiorite (Kgd). Small producer of gold-silver ore. | 99 |
| 636 | Potratz prospect | 46-42-40 | 112-29-00 | Au, Ag, Cu, W, Mo | Shafts and adits, totaling about 900 ft, in skarn in limestone (Cs) near contact with granodiorite (Kgd). Small producer of gold ore. | 144 |
| 637 | Price claims | 46-41-03 | 112-29-40 | Au, Ag, Cu | Surface and underground workings in vein and replacement deposit in carbonate rock (Dj) near granodiorite (Kgd) contact. Small producer of ore. | 52, 99 |
| 638 | Snowshoe Creek placer | 46-36-03 | 112-32-00 | Au, Ag | Placers in creek and terrace alluvium (Qs) were mined by hydraulic giant, ground sluicing, and by underground methods. Medium producer of gold and silver. | 84, 99 |
| 639 | Snowshoe Gulch tungsten prospect (Arnold Bielenberg, Strategic, Shamrock, Snowbird, Montana, Old Lady Smith, Friday) | 46-40-40 | 112-28-02 | W, Au, Cu, Ag, Pb, | Numerous adits and pits along skarn and veins in limestone (Mm) near granodiorite (Kgd). Small producer of tungsten and gold ore. | 85, 99, 144 |
| 640 | Victory mine | 46-42-27 | 112-30-20 | Au, Ag, Cu, Mo, Bi | About 500 ft of underground workings in replacement deposit in brecciated carbonate rock (Dj) near granodiorite (Kgd) contact. Medium producer of gold-silver ore. | 39, 85, 99 |

**Dog Creek area**

Most of the central and northern parts of the area are underlain by a sequence of sedimentary rocks ranging in age from Middle Proterozoic to Cretaceous that are folded into a southeasterly plunging syncline. In the southwestern part of the area this syncline is overlain by several thrust sheets that make up the leading edge of the Sapphire Thrust System. The allochthonous units in the thrust plates, including sedimentary rocks of Middle Proterozoic, Paleozoic, and Mesozoic ages, overly Cretaceous sedimentary rocks of the lower plate. Some normal faults occur in the northern part of the area. The southwestern corner of the area is covered by Tertiary basin-fill deposits, Tertiary rhyolite flows, and Quaternary deposits. The principal mineral deposits are gold placers and stratabound phosphate deposits. Some vein and skarn deposits also occur in the area. The area was a medium producer of gold, phosphate, limestone, copper, and silver.

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|---|---|---|---|---|---|---|
| 642 | Blue Bell mine | 46-37-28 | 112-18-15 | Cu, Ag, Au, Mo, Zn, Pb, Sn, W | Surface and underground workings in skarn in limestone (PDs) near granite (Kmg). Small producer of copper ore. | 39, 71, 85, 99 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Dog Creek area--Continued** | | | |
| 643 | Dog Creek and Tributaries placer (Uncle Ben Gulch) | 46-40-30 | 112-22-50 | Au, Ag | Placer deposits in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84 |
| 644 | Dog Creek phosphate | 46-40-05 | 112-23-10 | P | Shaft in phosphorite beds (Pp). Small producer of phosphate. | 28, 107 |
| 645 | Elliston phosphate mine (Little Blackfoot River mine) | 46-33-44 | 112-25-20 | P | Adit, 70 ft long, in phosphorite beds (Pp). Small producer of phosphate. | 28, 107 |
| 646 | Elliston quarry | 46-33-45 | 112-23-10 | Lst | Several quarries in limestone (Mm). Small producer of limestone. | 19, 50, 52, 69 |
| 647 | Gold Canyon Creek placer | 46-37-12 | 112-23-55 | Au, Ag | Placer deposits in alluvium (Qs) were mined chiefly by underground drifts. Medium producer of gold and silver. | 84 |
| 648 | Homestead property | 46-36-25 | 112-25-07 | Cu, Au, Ag | Underground workings along veins in quartzite (Cs). Small producer of ore. | 140 |
| 649 | Little Blackfoot River placer | 46-33-45 | 112-25-32 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 84, 99 |
| 650 | Newman Brothers | 46-34-03 | 112-25-58 | P | Surface workings in phosphorite beds (Pp). Production undetermined. | 107 |
| 651 | Sawmill Gulch Phosphate mine | 46-35-00 | 112-22-46 | P | Adit in phosphorite beds (Pp). Medium producer of phosphate. | 107 |
| 652 | Senecal incline | 46-33-45 | 112-24-10 | P | Inclined shaft, 80 ft deep, in phosphorite beds (Pp). Production undetermined. | 107 |
| | | | **Austin district** | | | |
| The Austin district includes part of the northern border zone of the Boulder batholith (granodiorite and monzogranite of Cretaceous age) and a sequence of Middle Proterozoic, lower Paleozoic, and upper Paleozoic sedimentary rocks in the contact metamorphic zone. This sedimentary sequence has been cut by numerous normal faults and intruded by several small bodies of Cretaceous granodiorite and Tertiary dacite. Mineral deposits include skarn, vein, and placer deposits. The district was a medium producer of silver, copper, lead, gold, iron, zinc, and tungsten. | | | | | | |
| 653 | Baldy Smith mine | 46-40-10 | 112-13-20 | Ag, Pb, Au, As | Surface and underground workings follow veins in shear zones in quartzite (Cf) and dacite (Td). Production undetermined. | 99 |

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|---|---|---|---|---|---|---|
| 654 | Blue Jay mine (Red Bird mine) | 46-40-55 | 112-14-35 | Cu, Ag, Pb, Fe, Sb | Inclined 350 ft shaft in skarn in limestone (Ysh) at a contact with andesite (Kem). Medium producer of copper, silver, lead, and iron (used as smelter flux). | 31, 99 |
| 655 | Boeing prospect | 46-39-00 | 112-18-15 | F, Pb, Cu, Au, Ag | Surface and underground workings in vein and replacement deposits containing fluorite and base and precious metals in limestone (Cs) associated with dacite dikes (Td). Production undetermined. | 118, 125 |
| 656 | Copper Hill mine | 46-39-25 | 112-14-25 | Ag, Fe, Au | Two adit levels in skarn at contact of limestone (Cs) and monzogranite (Kmg). Small producer of silver, iron, and gold ore. | 99 |
| 657 | Greenhorn and Skelly Creek placers (Evans-Jones placer) | 46-39-30 | 112-11-35 | Au, Ag, W | Surface and underground workings in placer deposits in alluvium (Qs). Small producer of gold, silver, and tungsten. | 33, 84, 99, 144 |
| 658 | King Tut mine | 46-39-43 | 112-14-10 | Ag, Pb, Zn, Sb, As | About 200 ft of underground workings in skarn in limestone (Cu) near contact with monzogranite (Kmg). Small producer of silver-lead ore. | 99 |
| 659 | Osage Chief mine (Crissman mine) | 46-39-02 | 112-14-39 | Au, Cu, Fe | Open cut and inclined shaft in skarn in limestone (Mm) near contact with monzogranite (Kmg). Small producer of gold-copper-iron ore. | 31, 99 |
| 660 | Strawberry mine | 46-42-24 | 112-16-35 | Au | Underground workings along veins in argillite (Yh) near diorite dike (Kd). Small producer of gold. | 71 |
| 661 | War Eagle mine | 46-38-30 | 112-13-03 | Fe, Ag, Pb | Underground workings in skarn in carbonate rock (Dj) near contact with monzogranite (Kmg). Medium producer of iron and silver ore. | 31, 99 |

**Scratchgravel Hills area**

The principal map unit in the area is the Cretaceous Scratchgravel Hills stock that consists of augite-hornblende monzonite. This stock intruded a sequence of Proterozoic rocks which includes Spokane and Empire Formations and diorite sills. The mineral deposits are precious-metal-bearing skarns, veins, and replacement bodies. The district was a large producer of gold, silver, lead, copper, and silica.

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| 662 | Ariadene claim | 46-39-51 | 112-03-23 | Ag, Pb | Underground workings follow veins in shear zones in monzonite (Kmd). Production undetermined. | 99 |
| 663 | Ajax mine | 46-39-17 | 112-03-39 | Au, Ag, Cu | Underground workings, including 2 inclined shafts, along veins in shear zones in monzonite (Kmd). Small producer of gold, silver, and copper. | 99 |
| 664 | Blue Bird Copper and Silver Mining Co. mine | 46-39-30 | 112-03-22 | Pb, Ag, Cu, As | Shaft, with two working levels totaling about 700 ft, along veins in shear zones in monzonite (Kmd). Small producer of lead-silver ore. | 99 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Scratchgravel Hills area--Continued** | | |
| 665 | Blue Bird mine | 46-40-07 | 112-05-50 | Ag, Pb | About 130 ft of underground workings along veins in shear zones in monzonite (Kmd). Small producer of silver-lead ore. | 99 |
| 666 | Bonanza mine | 46-40-00 | 112-03-51 | Ag, Pb, Au | About 120 ft of underground workings follow veins in shear zones in monzonite (Kmd). Small producer of ore. | 99, 141 |
| 667 | Butcherknife Creek placer | 46-41-16 | 112-05-00 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 33, 84, 99 |
| 668 | Come Again mine | 46-41-00 | 112-05-00 | Au, Ag, Sil | Surface workings in veins in hornfels (Ye) near monzonite (Kmd). Small producer of gold, silver, and silica. | 13 |
| 669 | Drumheller mine (Aster, Howard) | 46-40-22 | 112-06-25 | Pb, Ag, Au, Cu | Shaft with two working levels, totaling 500 ft, along veins in shear zones in shale (Ye) associated with diorite dikes (ZYg). Small producer of lead, silver, and gold. | 39, 99 |
| 670 | Elizabeth mine | 46-40-52 | 112-04-09 | Au, Ag, Pb, Cu, As | Surface and underground workings follow veins in shear zones in monzonite (Kmd). Small producer of gold ore. | 99 |
| 671 | Ella mine | 46-40-41 | 112-05-11 | Au, Mn | About 850 ft of underground workings along veins in shear zones in monzonite (Kmd). Small producer of gold ore. | 99 |
| 672 | Fairview claim | 46-38-45 | 112-04-04 | Pb, As | Open cuts expose veins in shear zones in monzonite (Kmd). Production undetermined. | 99 |
| 673 | Franklin mine (Sam Gaty, Doctor Steele) | 46-38-20 | 112-04-21 | Au, Ag, Cu, Pb, Sil, Zn | Extensive underground workings totaling about 5,800 ft in veins in shear zones along contact between argillite (Yra) and monzonite (Kmd). Medium producer of gold-silver ore. | 54, 75, 99 |
| 674 | General Harrison mine | 46-40-55 | 112-05-30 | Au, Cu | Surface and underground workings along veins in shear zones in argillite (Ye) near the monzonite (Kmd) contact. Production undetermined. | 99 |
| 675 | Golden Crown mine | 46-41-07 | 112-04-58 | Au, Ag, Cu, Sb | Glory hole, inclined shaft, and 680 ft of underground workings along veins in shear zones in hornfels (Ye) near contact with monzonite (Kmd). Small producer of silver ore. | 99 |

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| 676 | Guy mine | 46-40-03 | 112-03-40 | Ag, Pb | Three adits follow veins in shear zones in monzonite (Kmd). Production undetermined. | 99 |
| 677 | Hopeful mine | 46-40-14 | 112-03-48 | Au, Pb, Cu, As | Numerous adits and inclined shafts along veins in shear zones in monzonite (Kmd). Small producer of ore. | 99 |
| 678 | Iowa Gulch placer | 46-41-00 | 112-06-10 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 33, 84, 99 |
| 679 | Iridescent claim | 46-39-40 | 112-03-15 | Cu | Open pit in skarn in limestone (Yra) near contact with monzonite (Kmd). No production. | 99 |
| 680 | Julia mine | 46-39-24 | 112-03-55 | Pb, Ag, Au, As, Mn, Cu, Co | Shaft and open pit along veins in shear zones in monzonite (Kmd). Small producer of lead, silver, and gold. | 39, 51, 99 |
| 681 | Katy mine | 46-39-58 | 112-03-40 | Ag, Au, Pb, Cu | Several thousand feet of underground workings in three veins in altered monzonite (Kmd). Medium producer of ore. | 99 |
| 682 | Lexington mine | 46-39-45 | 112-04-10 | Ag, Pb, Au, Cu, Mn, As, Zn | Extensive underground workings in veins in shear zones near a skarn (Yra) in monzonite (Kmd). Medium producer of silver, lead, and gold. | 39, 76, 99 |
| 683 | Magpie group | 46-38-53 | 112-04-00 | Ag, Pb, Au, Cu | Inclined shaft and surface pits follow veins in shear zones in monzonite (Kmd) and skarn (Yra). Small producer of ore. | 99 |
| 684 | Moonlight mine | 46-40-19 | 112-03-51 | Ag, Pb, Cu | Adits and inclined shafts, totaling 400 ft of workings, along two veins in shear zones in monzonite (Kmd). Small producer of silver ore. | 99 |
| 685 | Mullin claim | 46-41-03 | 112-04-35 | Au, Cu | Adit, with 1,000 ft of underground workings, follows veins and skarn (Yra) in monzonite (Kmd) Small producer of gold ore. | 99 |
| 686 | Nettie mine | 46-40-09 | 112-05-40 | Au, Ag, Cu, Mo, Pb | Surface workings and an inclined shaft, with about 180 ft of workings, along veins in shear zones in monzonite (Kmd). Small producer of gold ore. | 99 |
| 687 | North Star claim | 46-40-55 | 112-04-25 | Au, Ag, Cu | Open cuts expose 3 veins in monzonite (Kmd). Small producer of gold ore. | 99 |
| 688 | Queen of The Valley claim | 46-41-00 | 112-04-25 | Au | Inclined shaft and open cuts along veins in shear zones in monzonite (Kmd). Production undetermined. | 99 |
| 689 | Regina claim | 46-40-40 | 112-05-55 | Au | Inclined shaft in veins in monzonite (Kmd). Production undetermined. | 99 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Scratchgravel Hills area--Continued** | | |
| 690 | Scratch Gravel gold mine | 46-38-15 | 112-03-55 | Au, Ag, Pb, Zn | About 3,000 ft of underground workings along veins in shear zones in hornfels (Yra) near contact with monzonite (Kmd). Medium producer of gold-silver ore. | 99 |
| 691 | Wayside mine | 46-40-22 | 112-05-58 | Au, Cu | Open cuts and underground workings along veins in shear zones in hornfels (Ye) near contact with monzonite (Kmd). Small producer of gold ore. | 99 |
| 692 | Yellowstone claim | 46-40-30 | 112-05-55 | Au | Open cuts follow veins in shear zones in monzonite (Kmd). Production undetermined. | 99 |
| | | | | **Sevenmile Creek area** | | |
| | Sevenmile Creek drains the Austin district and part of the Scratchgravel Hills area. The area is underlain by sedimentary rocks of the Helena, Spokane, and Empire Formations of the Belt Supergroup (Middle Proterozoic), diorite of Late Proterozoic age, and Cretaceous granodiorite. Quaternary alluvium in Sevenmile Creek and tributaries were mined for placer gold for an aggregate length of about 12 miles. The area was a large producer of gold and silver. | | | | | |
| 695 | Sevenmile Creek placer | 46-37-44 | 112-03-18 | Au, Ag | Extensive placer workings in alluvium (Qs). Large producer of gold and silver. | 84, 99 |
| | | | | **Stemwinder Hill area** | | |
| | The western part of the area is underlain by granodiorite of the Boulder batholith and Elkhorn Mountain Volcanics, both Cretaceous in age, and in the eastern part a sequence of metamorphosed sedimentary rocks of Middle Proterozoic through Upper Paleozoic age. Mineral deposits are in skarns and veins and contains silver, lead, gold, tungsten, and molybdenum. The area is a small producer of silver, lead, and gold. | | | | | |
| 696 | Anderson prospect | 46-36-55 | 112-11-15 | Au, W, Mo | Underground workings in vein in limestone (Mm) and granite porphyry (Kmg). Vein contains gold, scheelite, and molybdenite. Small production of gold. | 144 |
| 697 | Blue Cloud prospect | 46-35-55 | 112-10-10 | W, Mo | Scheelite-bearing skarn along contact of diorite porphyry (Kd) and limestone (Cs). No production. | 144 |
| 698 | Blue Cloud Mining Co. placer | 46-36-30 | 112-10-39 | Au, Ag | Placers in alluvium (Qs) were mined by dragline. Small producer of gold and silver. | 137 |
| 699 | Dutro mine (Old Dominion) | 46-35-33 | 112-09-38 | Au, Bi, Sn | Inclined shaft, 150 ft long, in gold-bearing skarn deposit at contact of dolomite (Cs) and diorite (Kd). Small producer of ore. | 71, 99 |

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| 700 | Helena mine | 46-37-37 | 112-07-27 | Au, Ag, Pb, Zn | Shaft, with about 2,000 ft of workings, in vein in argillite (Ye) near contact with monzogranite (Kmg). Small producer of gold, silver, and lead. | 99 |
| 701 | Looby mine | 46-37-32 | 112-07-27 | Au, Ag, Pb, Zn | Underground workings in vein in argillite (Ye) near the contact with monzogranite (Kmg). Small producer of gold, silver, and lead. | 99 |
| 702 | Perry claims (Fairview claims) | 46-36-28 | 112-10-20 | Pb, Ag, W | Shafts, pits, and trenches in vein in shale (Cs). No production. | 144 |
| 703 | Rock Rose mine (Dandy mine) | 46-37-42 | 112-07-20 | Au, Ag, Pb, Zn | Underground workings in vein in argillite (Ye) near contact with monzogranite (Kmg). Small producer of gold, silver, and lead. | 99, 132 |
| 704 | Silver Coin mine | 46-36-48 | 112-08-35 | Ag, Pb, Cu, Au, Zn, As, Sb, V | Underground workings, totaling over 400 ft, in skarn deposit at the contact of limestone (Yh) and granodiorite (Kgd). Small producer of silver ore. | 99, 132 |

**Helena (Last Chance) district**

The rocks of the Helena district are mainly limestone, shale, and sandstone of Middle Proterozoic, Paleozoic, and Mesozoic ages which have been folded, faulted, and, along the south and west parts of the district, intruded by Cretaceous monzogranite and granodiorite of the Boulder batholith. The lode deposits, valuable mainly for gold, are vein deposits in granodiorite and vein, replacement, and skarn deposits in Paleozoic limestone at or near contacts with granodiorite . Last Chance Gulch was a major producer of placer gold and silver. The district was a very large producer of gold and silver.

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| 705 | Big Indian mine | 46-32-17 | 112-01-20 | Au | Open cuts, glory hole, and adits are along veins in shear zones in granodiorite (Kgd). Medium producer of gold. | 6, 99, 115 |
| 706 | Helena limestone mine | 46-34-49 | 112-03-05 | Lst | Open pit mine in limestone (Cs). Small producer of limestone. | 19 |
| 707 | Holmes Gulch placer | 46-33-10 | 112-00-00 | Au, Ag | Placer deposits in alluvium (Qs) were mined by sluicing, drag-line, and dry land dredge. Small producer of gold and silver. | 115 |
| 708 | Independant prospect | 46-33-12 | 112-04-08 | Au, Ag, W | Two adits, with greater than 150 ft of workings, in veins at contact of limestone (Mm) and andesite porphyry dike (Kd). Small producer of gold and silver. | 144 |
| 709 | Last Chance Gulch placer (Oro Fino, Dry and Grizzly Gulches) | 46-35-06 | 112-02-32 | Au, Ag | Placer deposits in alluvium (Qs) were mined by sluicing and dredging. Very large producer of gold and silver. | 14, 33, 59, 84, 99 |
| 710 | Nelson Gulch placer | 46-34-40 | 112-09-25 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 84, 99 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | **Helena (Last Chance) district--Continued** | | | |
| 711 | Spring Hill mine | 46-33-18 | 112-05-45 | Au, Ag, Pb, Cu, As, Bi | Open pit and three adit levels in skarn at contact of limestone (Mm) and granodiorite (Kgd). Large producer of gold ore. | 39, 68, 71, 99 |
| 712 | Whitlatch-Union mine (Owyhee and McIntyre inclines) | 46-32-53 | 112-05-34 | Au, Ag | Extensive underground workings in veins partly in hornfels (Kk, Js) and partly in granodiorite (Kgd). Very large producer of gold ore. | 71, 99, 110 |
| 713 | Yellowjacket mine | 46-32-20 | 112-02-00 | Au, Ag | Underground workings along two veins in shear zones in granodiorite (Kgd). Small producer of gold and silver. | 99, 115, 137 |
| | | | **North Boulder Mountains area** | | | |
| | Except for small areas of Mesozoic sedimentary rocks in the northern part, this area is entirely underlain by igneous and volcaniclastic rocks. Major units include the Cretaceous Elkhorn Mountain Volcanics, Tertiary and Cretaceous basaltic and andesitic rocks, and Tertiary rhyolitic volcanic rocks. Granodiorite and monzogranite of the Boulder batholith are exposed in the southeast corner of the area. The few mineral deposits of the area consist of veins and a placer deposit and they occur mainly in plutonic rocks of the Boulder batholith. The area was a small producer of silver, gold, lead, and copper. | | | | | |
| 714 | Blackbird mine | 46-16-30 | 112-26-55 | Au, Ag | Adit and shaft in quartz veins in alaskite (Ka) and monzogranite (Kmg). Production undetermined. | 39, 122 |
| 715 | Carbonate King mine | 46-31-43 | 112-25-54 | Ag, Pb, Au, Cu, Zn | More than 425 ft of underground workings along veins in shear zones in sandstone and shale (Kk). Small producer of silver, lead, gold, and copper. | 85 |
| 716 | Carlson prospect (Jefferson prospect) | 46-16-07 | 112-26-00 | Pb, Zn, Ag, Cu, Au, As, Sb | Prospect in vein in andesite (Kem). Production undetermined. | 115 |
| 717 | Carlson quartz prospect | 46-16-45 | 112-24-30 | Sil | Small prospect on quartz crystal occurrence in monzogranite (Kmg). No production. | 20, 122 |
| 718 | Gopher mine | 46-15-14 | 112-24-50 | Pb, Ag, Bi | Shaft and pits in quartz vein near contact of quartz latite (Tlc) with andesite (Kem). Production undetermined. | 39, 122 |
| 719 | Iron Mountain iron deposit | 46-18-03 | 112-23-11 | Fe, Ba | Inclined shaft and adit along barite vein in monzogranite (Kmg). Production undetermined. | 122 |
| 720 | Leadville mine | 46-18-52 | 112-32-40 | Ag, Pb, Au | More than 175 ft of workings on veins in monzogranite (Kmg). Small producer of silver, lead, and gold. | 75, 99, 115 |

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| 721 | Mike Renig Gulch placer (Mike Rienig Gulch placer) | 46-31-40 | 112-19-33 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 84 |
| 722 | North Boulder mine | 46-16-03 | 112-25-37 | Au, Pb, Ag, Bi, | Shaft and pits in quartz vein at andesite (Kem) contact with monzogranite (Kmg). Production undetermined. | 39, 122 |

**Elliston district**

The district is underlain by andesitic tuff, breccia, and flows of the Elkhorn Mountain Volcanics which have been intruded by Cretaceous monzogranite of the Boulder batholith. Ore deposits are base and precious metal veins in the volcanics and monzogranite and small gold placers. The district was a large producer of gold, silver, lead, and copper.

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| 723 | Anna R. and Hattie M. mine | 46-27-17 | 112-20-36 | Au, Ag, Cu, Pb, Mn, As, B, Zn, Bi | Underground workings, totaling about 1,200 ft, in veins along contact of monzogranite (Kmg) with aplite (Ka). Small producer of gold, silver, copper, and lead. | 39, 85, 122, 137 |
| 724 | Big Dick mine (Evening Star) | 46-28-35 | 112-24-25 | Au, Ag, Pb, Cu, Zn, As, Sb, Bi | Underground workings, totaling about 1,500 ft, in veins in andesite breccia (Kem). Medium producer of gold, silver, lead, copper, and zinc. | 39, 71, 85, 99, 122, |
| 725 | Black Jack mine | 46-28-42 | 112-24-15 | Au, Ag, Pb, Cu, Zn, As | About 650 ft of underground workings in veins in shear zones in andesite breccia (Kem). Small producer of gold, silver, lead, and copper. | 85, 99, 122 |
| 726 | Blackfeet Nos. 1 and 3 claims | 46-28-24 | 112-25-42 | Pb, Zn, Ag, Au | Underground workings in veins in andesite (Kem). No production. | 139 |
| 727 | Bluebird mine | 46-28-19 | 112-25-28 | Ag, Pb, Au | Two adits and stopes along veins in shear zones in andesite (Kem). Small producer of ore. | 85, 122, 144 |
| 728 | Brooklyn mine | 46-28-16 | 112-25-30 | Ag, Pb, Zn, As | More than 300 ft of underground workings in veins in andesite (Kem). Production undetermined. | 85, 99 |
| 729 | Bullion mine | 46-27-45 | 112-18-20 | Ag, Pb, Zn | Vertical shaft along veins in shear zones in monzogranite (Kmg). Production undetermined. | 85, 122 |
| 730 | Charter Oak mine | 46-29-25 | 112-24-59 | Ag, Au, Pb, Cu, Zn, Sb, As | Five adits along veins in shear zones in andesite (Kem). Small producer of silver, gold, lead, copper, and zinc. | 51, 85, 99, 122, 155 |
| 731 | Clark mine | 46-30-44 | 112-24-17 | Pb, Zn, Cu, Sb | Surface and underground workings follow veins in mineralized breccia in andesite (Kem). Production undetermined. | 85, 114 |
| 732 | Flora mine | 46-28-57 | 112-25-40 | Ag, Pb, Au, Zn | Adit, 500 ft long, along veins in shear zones in andesite (Kem). Production undetermined. | 85, 99, 122, 141 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Elliston district--Continued** | | |
| 733 | Golden Anchor mine | 46-28-40 | 112-24-40 | Au, Ag, Pb, Zn, As, Sb | Two shafts and two adits, totaling 5,000 ft along veins in shear zones in volcanic rocks (Kem). Small producer of gold, silver, lead, and zinc. | 85, 99, 122, 155 |
| 734 | Hard Luck mines | 46-25-43 | 112-22-12 | Ag, Au, Zn, Pb, Cu | Adit, 450 ft long, follows veins in shear zones in monzogranite (Kmg). Production undetermined. | 76, 85, 122, 138 |
| 735 | Hub Camp group | 46-28-56 | 112-21-33 | Au, Ag, Pb, Cu, Zn, As, Sb | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, copper, and zinc. | 85, 122 |
| 736 | Julia mine | 46-27-57 | 112-22-45 | Au, Ag, Pb, Cu, Zn, Sb | 300-ft shaft with two working levels which total over 1,500 ft along veins in shear zones in in monzogranite (Kmg) and andesite (Kem). Small producer of gold ore. | 71, 85, 99, 122 |
| 737 | Kimball mines | 46-27-50 | 112-25-00 | Au, Ag, Pb | Adit, 250 ft long, in veins in andesite (Kem). No production. | 85, 122 |
| 738 | Lilly-Orphan Boy group (Lily-Orphan Boy group) | 46-26-34 | 112-20-27 | Ag, Au, Pb, Zn, Cu, As, B, Sb, Bi | Surface and underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, lead, zinc, and copper. | 6, 39, 71, 85, 122 |
| 739 | Monarch mine | 46-24-25 | 112-24-10 | Ag, Pb, Au, Cu, Zn, As, Sb | Largest mine in district. About 3,000 ft of underground workings on veins in andesite (Kem) and monzogranite (Kmg). Large producer of silver, lead, gold, copper, and zinc. | 71, 77, 85, 99, 122 |
| 740 | Negros mine | 46-29-11 | 112-25-25 | Ag, Pb, Au, Zn, Cu | Two adits, with more than 350 ft of underground workings, in veins in andesite (Kem). Small producer of silver, lead, gold, zinc, and copper. | 77, 85, 122 |
| 741 | Ohio and Speculator prospect | 46-26-58 | 112-25-04 | Au | Two adits, totaling more than 250 ft in veins in andesite (Kem). Production undetermined. | 85, 122 |
| 742 | Ontario Creek placer (Eddy claim) | 46-25-53 | 112-23-10 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 84 |
| 743 | Ontario mine | 46-25-45 | 112-20-26 | Au, Ag, Pb, Cu, Zn, As, B, Bi | More than 1,120 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, and copper. | 39, 71, 85, 99, 122 |

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| 744 | Sadie mine | 46-29-55 | 112-24-05 | Ag, Pb, Cu, Au, Zn, As, Sb | About 1,000 ft of underground workings follow veins in shear zones in andesite (Kem). Production undetermined. | 85, 99, 122 |
| 745 | Surething mine (O'keefe) | 46-26-25 | 112-19-54 | Au, Ag, Pb, Zn, Cu, U, As, B, Sb, Bi | Adit and open cut along veins in monzogranite (Kmg). Medium producer of gold, silver, and lead. | 39, 85, 110, 122 |
| 746 | Telegraph Creek placer | 46-29-23 | 112-22-15 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 71, 84 |
| 747 | Telegraph mine | 46-27-52 | 112-18-50 | Au, Ag, Pb, Cu | Adit in veins in monzogranite (Kmg). Small producer of gold, silver, lead, and copper. | 85, 122 |
| 748 | Third Term mine | 46-30-10 | 112-21-08 | Au, Ag, Cu, Pb, Zn, Ni, Sb, As | Underground workings, totaling 900 ft, along veins in shear zones in andesite (Kem). Small producer of gold, silver, copper, lead, and zinc. | 78, 85, 155 |
| 749 | Viking mine | 46-28-36 | 112-22-24 | Ag, Pb, Au | Adit, 500 ft long, along veins in shear zones in monzogranite (Kmg). Production undetermined. | 85, 122 |
| 750 | Wolverine mine | 46-26-01 | 112-23-27 | Ag, Pb, Au, Cu, | Two adits in veins in andesite (Kem). Small producer of silver, lead, gold, and copper. | 13, 85, 122 |

**Rimini (Vaughn) district**

The principal country rocks in the district are Cretaceous monzogranite and aplite of the Boulder batholith. The batholith intruded andesitic rocks of the Elkhorn Mountain Volcanics. Tertiary rhyolite flows locally cover the older rocks. Veins in the granitic rocks contain silver, lead, gold, and locally, copper and zinc. The district was a very large producer of gold, silver, lead, zinc, and copper.

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| 756 | Alice lode | 46-28-58 | 112-15-35 | Pb, Ag | Shaft along veins in shear zones in monzogranite (Kmg). No production. | 139 |
| 757 | Alley mine | 46-27-42 | 112-14-50 | Ag, Pb, Zn, Cu, As | Shaft and adits, with about 580 ft of workings, along two veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 758 | American Flag mine | 46-28-15 | 112-14-14 | Ag, Au, Pb, Zn, Cu | Shaft along veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, gold, lead, and zinc. | 6, 99 |
| 759 | Armstrong mine | 46-28-51 | 112-17-01 | Ag, Pb, Au, Zn, Cu, Ram | Four adits, with workings totaling about 1,500 ft, follow veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, lead, gold, and zinc. | 99, 122 |
| 760 | Beatrice mine | 46-28-53 | 112-18-15 | Au, Ag, Pb, Zn, Cu | Adit and inclined shaft, with 1,350 ft of workings, along veins in shear zones in monzogranite (Kmg). Small producer of gold-silver ore. | 122 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Rimini (Vaughn) district--Continued** | | |
| 761 | Betsy Ross mine (1900 group) | 46-27-21 | 112-16-25 | Ag, Pb, Au | Two adits, with workings totaling more than 300 ft along veins in shear zones in monzogranite (Kmg). Production undetermined. | 99 |
| 762 | Bunker Hill mine | 46-28-10 | 112-14-52 | Ag, Pb, Au, Zn, As | Three adits, with workings totaling about 1,200 ft, along veins in shear zones in monzogranite (Kmg). Medium producer of ore containing silver, lead, gold, and zinc. | 6, 99, 141 |
| 763 | Carlson mine | 46-25-17 | 112-17-47 | Au | Shafts and adits, totaling about 1,000 ft, in silicified vein and replacement zones in rhyolite (Trv). Production undetermined. | 99, 122 |
| 764 | Daniel Stanton mine (Stanton mine) | 46-28-15 | 112-14-45 | Ag, Pb, Zn, Au, U | Two adit levels with raises and stopes along veins in shear zones in altered monzogranite (Kmg). Small producer. | 6, 99 |
| 765 | Eureka mine | 46-28-24 | 112-14-15 | Ag, Pb, Au, Zn | More than 1,900 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Small producer. | 6, 99 |
| 766 | Evergreen mine | 46-28-02 | 112-14-52 | Ag, Pb, Au, Zn, Cu, As, Sb, Ram | Two adits along veins in shear zones in monzogranite (Kmg). Medium producer of ore containing silver, lead, gold, zinc, and copper. | 6, 110 |
| 767 | Free Speech mine (Free Speech No. 1 mine) | 46-28-27 | 112-14-30 | Pb, Ag, Au, As | Two adits and a shaft along veins in shear zones in monzogranite (Kmg). Small producer of ore containing lead, silver, and gold. | 6, 62 |
| 768 | Hamlet mine | 46-28-10 | 112-14-32 | Ag, Pb, Au, As | Underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6, 99 |
| 769 | Horsefly mine | 46-27-32 | 112-12-35 | Ram | Adit along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 770 | Johny mine (Johnnie) | 46-28-24 | 112-14-56 | Pb, Ag | Adit along veins in shear zones in monzogranite (Kmg). Small producer. | 6, 99, 141 |
| 771 | Justice mine (Clementha, Clementh) | 46-28-24 | 112-16-57 | Au, Ag, Pb, Cu, As, Sb, Ram | Extensive underground workings, totaling about 1,600 ft, along veins in shear zones in monzogranite (Kmg). Small producer of ore containing gold, silver, lead, and copper. | 122 |

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|---|---|---|---|---|---|---|
| 772 | Lee Mountain mine | 46-29-08 | 112-14-49 | Ag, Au, Zn, Pb, Sb, As | Seven mine levels with about 9,600 ft of workings. Deposits are in parallel veins and stringers in shear zones in altered monzogranite (Kmg). Large producer of silver, gold, zinc, and lead. | 6, 99, 110 |
| 773 | Lexington mine | 46-28-21 | 112-14-24 | Ag, Au, Pb, Zn, As, Sb | Several adits with workings totaling more than 400 ft, along veins in shear zones in monzogranite (Kmg). Medium producer of ore containing silver, gold, and lead. | 6, 99 |
| 774 | Little Lilly group | 46-29-14 | 112-14-38 | Ag | More than 1,670 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver. | 6 |
| 775 | Little Sampson mine | 46-28-32 | 112-14-40 | Pb, Ag, Cu, Zn, Au, As, Sb | More than 1,150 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Small producer. | 6, 29, 99, 155 |
| 776 | Lucky Joe mine | 46-28-07 | 112-17-15 | Au, Ag, Cu | Underground workings in veins in monzogranite (Kmg). Small producer. | 76, 122 |
| 777 | Mammoth mine | 46-28-32 | 112-14-00 | Pb | Surface and underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6, 99 |
| 778 | McCawber mine (M'Cawber) | 46-28-15 | 112-14-35 | Ag, Pb | Shaft along veins in shear zones in monzogranite (Kmg). Small producer. | 6, 99 |
| 779 | Mine near Banner Creek (name unknown) | 46-25-57 | 112-13-35 | Ag, Pb, As, U | Surface and underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 780 | Monte Cristo mine | 46-27-00 | 112-15-52 | Ag, Au, Cu, Pb, Zn | Several adits and pits along veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, gold, and copper. | 77, 78, 122 |
| 781 | North Pacific mine | 46-28-20 | 112-14-10 | Ag, Pb, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, lead, and gold. | 99, 6 |
| 782 | O.H. Bassett mine | 46-28-26 | 112-14-36 | Ag, Pb, Au, Zn, As, Sb, Mn, Cu, Bi, W, Sn | Adit, 250 ft long, follows veins in shear zones in monzogranite (Kmg). Production undetermined. | 99, 6, 39 |
| 783 | Paupers Dream mine | 46-25-19 | 112-17-45 | Au, As | Open pits, adits, and shafts in disseminated deposit in rhyolite (Trv). Small producer of gold ore. | 122, 99 |
| 784 | Peerless Jennie mine (Peerless Jenny, Pearless) | 46-25-52 | 112-14-24 | Ag, Pb, Zn | Shaft and adits, totaling about 440 ft, along veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, lead, and zinc. | 99, 6, 71 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Rimini (Vaughn) district--Continued** | | |
| 785 | Porphyry Dike mine | 46-25-40 | 112-17-15 | Au, As | Open pit and two adits in disseminated gold deposit in rhyolite (Trv) cut by dikes and faults. Medium producer of gold ore. | 99, 71, 122 |
| 786 | Red Mountain tunnel (Montana Lead Crosscut tunnel No. 1) | 46-28-50 | 112-14-40 | Ag, Pb, Au, Zn, Cu, As | More than 3,600 ft of underground workings along about 40 veins in shear zones in monzogranite (Kmg). Small producer of ore. | 99, 6 |
| 787 | Russel mine (96 mine) | 46-28-08 | 112-14-56 | Ag, Au, Pb, Zn, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 99, 6 |
| 788 | S.P. Bassett mine | 46-28-00 | 112-14-45 | Ag, Pb, Cu, Zn, As, Sb | Adit and shaft along veins in shear zones in monzogranite (Kmg). Production undetermined. | 99, 6 |
| 789 | Silver Cord mine | 46-28-07 | 112-14-20 | Ag, Pb | Underground workings along veins in shear zones in monzogranite (Kmg). No production. | 99, 6 |
| 790 | South Pacific mine | 46-28-20 | 112-14-34 | Ag, Pb, Au, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of ore containing silver, lead, and gold. | 99, 6 |
| 791 | Teal Lake mine | 46-28-10 | 112-14-42 | Ag, Pb, Zn, Au, As | Adit follows veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, and gold. | 99, 6 |
| 792 | Tenmile Creek placer (Gould placer; Monitor, Tucker, and Minnehaha Creeks) | 46-30-28 | 112-15-38 | Au, Ag | Hydraulic mining and ground sluicing of placers in alluvium (Qs). Medium producer of gold and silver. | 33, 84, 99, 122 |
| 793 | Transit mines | 46-27-48 | 112-15-09 | Au, Ag, Pb, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of ore. | 122, 132 |
| 794 | Travis placer | 46-26-42 | 112-18-10 | Au, Ag | Placer workings in alluvium (Qs). Small producer of gold and silver. | 99 |
| 795 | Uranium occurrence (name unknown) | 46-29-25 | 112-13-35 | U | Shaft along veins in shear zones in monzogranite (Kmg). Zone of high radioactivity is present. No production. | 6 |
| 796 | Valley Forge mine | 46-29-30 | 112-14-25 | Au, Ag, Pb, Zn, Cu, As, Mn, B, Sb | Two shafts and two adits along veins in shear zones in monzogranite (Kmg). Medium producer of ore containing gold, silver, lead, and zinc. | 6, 39, 71, 99 |

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| 797 | Wolftone mine | 46-28-47 | 112-14-34 | Ag, Au, Pb, Zn, As | Underground workings along veins in shear zones in monzogranite (Kmg). No production. | 6, 99 |
| 798 | Woodrow Wilson mine | 46-25-18 | 112-15-50 | Au, Ag, Sil, Cly | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer. | 5, 29, 42, 122, 140 |

**Clancy (Lump Gulch) district**

This district is entirely within the Boulder batholith and is underlain by Cretaceous granodiorite, monzogranite, alaskite, aplite, and pegmatite. Mineral deposits include precious- and base-metal quartz veins and placers. The district is a large producer of gold, silver, and lead.

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| 804 | Argonne mine | 46-26-46 | 112-10-55 | Au, U, Zn | Surface and underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 805 | Buffalo Creek placer (Weber placer) | 46-29-40 | 112-07-00 | Au, Ag | Sluice and dry-land dredge workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 6, 84, 115 |
| 806 | Brown silica deposit | 46-24-04 | 112-02-00 | Sil | Surface workings in quartz body in monzogranite (Kmg). Small producer of silica. | 6, 20, 115 |
| 807 | Clancy Creek placer | 46-27-50 | 112-00-00 | Au, Ag | Dry-land dredge and sluice workings in placer deposits in alluvium (Qs). Large producer of gold and silver. | 6, 33, 84, 115 |
| 808 | Corral Gulch mine (Leu mine) | 46-28-00 | 112-07-42 | Sil | Prospect in quartz body in monzogranite (Kmg). No production. | 6, 20, 115 |
| 809 | Forest mine (Forrest mine) | 46-27-01 | 112-09-32 | Ag, Pb, Cu, Zn, Ram | Underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 810 | Free Coinage mine (Little Alma mine) | 46-29-10 | 112-02-00 | Ag, Pb, Zn, Au, Cu | Two shafts and about 3,300 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, gold, and copper. | 6, 115 |
| 811 | Frohner mine | 46-26-30 | 112-12-25 | Ag, Au, Pb, Cu, Zn, As | Adit, with greater than 2,000 ft of workings, veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, lead, copper, and zinc. | 6, 115 |
| 812 | G. Washington mine (Member of Presidents) | 46-26-55 | 112-00-21 | U | About 500 ft of underground workings along uranium-bearing veins in monzogranite (Kmg). Production undetermined. | 6 |
| 813 | Kain quarry | 46-27-40 | 112-01-30 | St | Rock quarry in monzogranite (Kmg). Small production. | 7 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Clancy (Lump Gulch) district--Continued** | | |
| 814 | King Solomon mine | 46-28-00 | 112-01-51 | Ag, Pb, Au, Cu, Zn, Mo, Sb, Ram | Two shafts; six levels, and about 1,000 ft of workings in veins in monzogranite (Kmg). Medium producer of silver, lead, gold, and copper. | 6, 13, 52, 71, 99, 115 |
| 815 | King Solomon Ridge group (Hinman mine, Fourty-Niner, President group) | 46-28-07 | 112-01-10 | U, Ag, Pb | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of uranium ore. | 6, 111, 115 |
| 816 | Lahey Quartz deposit | 46-25-10 | 112-04-08 | Sil | Surface workings in pegmatite in monzogranite (Kmg). Small producer of silica. | 20, 52 |
| 817 | Little Nell mine (Little Nellie) | 46-28-48 | 112-01-35 | Ag, Pb, Zn, Cu, Au | Shaft, with four working levels totaling about 500 ft, along veins in shear zones in monzogranite (Kmg). Medium producer of silver, lead, zinc, copper, and gold. | 6, 71, 99, 115, 132 |
| 818 | Loeber mine | 46-26-50 | 112-12-30 | Ag, Pb, Au, Cu, Zn, As, Sb | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, copper, and zinc. | 6, 115, 141, 155 |
| 819 | Lump Gulch placer | 46-27-35 | 112-06-25 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 6, 33, 84, 115 |
| 820 | Mary Tait prospect | 46-29-25 | 112-01-57 | U, Ba | Underground workings follow uranium-bearing veins in shear zones in monzogranite (Kmg). No production. | 6 |
| 821 | Mineral Hill mine (Yellowstone prospect) | 46-26-45 | 112-03-43 | Cu, Ag, Zn, Pb | More than 450 ft of underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6, 71, 99 |
| 822 | Montana mine | 46-27-35 | 112-02-52 | Ag, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver and gold. | 6, 115, 132 |
| 823 | Muskegon mine | 46-29-00 | 112-02-42 | Ag, Au | Underground workings, totaling 400 ft, along veins in shear zones in monzogranite (Kmg). Small producer. | 6 |
| 824 | Nellie Grant mine | 46-26-27 | 112-12-05 | Au, Ag, Cu, Pb, Zn, As, Sb | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, copper, lead, and zinc. | 6, 115, 141, 155 |

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| 825 | Panama mine | 46-25-26 | 112-12-09 | Ag, Pb, Au, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 826 | Prickly Pear Creek placer (Golconda Creek placer) | 46-25-08 | 112-00-00 | Au, Ag | Extensive ground sluicing and dredge workings in placer deposits in alluvium (Qs). Large producer of gold and silver. | 6, 33, 84, 99, 110 |
| 827 | Roosevelt mine | 46-29-46 | 112-01-17 | Ag, Pb, Au, Zn | Two shafts, with several hundred feet of workings, along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 828 | Silver mine (name unknown) | 46-26-30 | 112-12-40 | Ag, Pb, Zn | Four adits follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 829 | Silver mine (name unknown) | 46-26-20 | 112-12-30 | Ag, Pb, Zn, Cu | More than 200 ft of underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 830 | Silver mine (name unknown) | 46-26-19 | 112-09-40 | Ag, Pb, Zn, Ram | Three adits along veins in shear zones in monzogranite (Kmg). Small producer of ore. | 6 |
| 831 | Silver mine (name unknown | 46-29-57 | 112-00-15 | Ag, Pb, Zn, Cu | More than 200 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 832 | Yama group | 46-24-57 | 112-12-25 | Pb, Zn, Ag, Au | Three adits along veins in shear zones in monzogranite (Kmg). Small producer of lead-zinc ore. | 6, 115 |

**Basin (Cataract, Comet) district**

The district is underlain by Cretaceous monzogranite of the Boulder batholith and volcanic and volcaniclastic rocks of Tertiary and Cretaceous ages. The oldest unit in the district, the andesitic Elkhorn Mountain Volcanics of Cretaceous age was intruded by the Boulder batholith; this plutonic complex is overlain successively by quartz latitic volcanic rocks of the Lowland Creek Volcanics and rhyolite, both of Tertiary age. Most of the mineral deposits are in the eastern part of the area, in the batholith. These include fissure-filling quartz veins, replacement deposits, and placer deposits. The district was a very large producer of gold, silver, copper, lead, and zinc.

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| 838 | Ada mine | 46-21-45 | 112-15-03 | Ag, Pb, Cu, Zn, Au, Sb | More than 1,000 ft of underground workings along vein in shear zones in monzogranite (Kmg). Medium producer of silver and lead, with minor copper, zinc, and gold. | 122 |
| 839 | Alport mine (All Port mine) | 46-13-45 | 112-16-35 | Au, Ag, Zn | Shaft and working levels totaling over 110 ft along veins in shear zones in monzogranite (Kmg). No production. | 71, 99, 115 |
| 840 | Apollo mine (Appollo) | 46-21-05 | 112-13-20 | Au, Ag | Mine workings in veins in monzogranite (Kmg). Small producer of gold and silver. | 6, 115 |
| 841 | Aurora mine | 46-18-07 | 112-18-32 | Ag, Pb, Zn, Au, Cu | Five adits, totaling about 1,100 ft, along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, gold, and copper. | 115, 122, 132, 155 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Basin (Cataract, Comet) district--Continued** | | |
| 842 | Bakama mine | 46-22-15 | 112-10-47 | Ag, Cu | Underground workings in vein and replacement deposits in andesite (Kem). Small producer of silver and copper. | 6, 115 |
| 843 | Basin Bell mine (Latsch mine) | 46-17-09 | 112-16-51 | Ag, Cu, Pb, Au | Two adits, totaling 1,000 ft, in veins in monzogranite (Kmg). Small producer of silver, copper, lead, and gold. | 115, 149 |
| 844 | Basin Creek placer | 46-16-15 | 112-15-45 | Au, Ag, Sn | Extensive dredging of placers in alluvium (Qs). Medium producer of gold, silver, and tin. | 16, 33, 84, 115, 122 |
| 845 | Basin quartz quarry (Basin Blowout) | 46-16-10 | 112-13-49 | Sil | High-purity quartz produced for metallurgical use from quartz mass in monzogranite (Kmg). Workings include quarry and adit. Large producer of silica. | 20, 78, 99, 115 |
| 846 | Bell mine | 46-22-05 | 112-10-32 | Ag, Pb, Cu, Au | Underground workings in vein and replacement deposits in andesite (Kem). Small producer of silver, lead, copper, and gold. | 6, 115 |
| 847 | Black Bear mine | 46-20-55 | 112-14-45 | Ag, Au, Cu, Pb, Zn | More than 2,000 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, copper, and lead. | 6, 115 |
| 848 | Bonanza Jack mine | 46-16-20 | 112-16-45 | Au, Ag, Zn | Underground workings in veins in monzogranite (Kmg). Small producer of gold, silver, and zinc. | 115, 122 |
| 849 | Boulder Chief mine | 46-19-50 | 112-12-34 | Pb, Ag, Cu, Zn, As, U | About 1,500 ft of underground workings along veins in shear zones in monzogranite (Kmg) and andesite (Kem). Small producer of lead, silver, and copper. | 4, 6, 115 |
| 850 | Boulder mine | 46-16-44 | 112-17-18 | Au, Ag, Zn, Pb, Cu | Two adits, with workings totaling about 8,000 ft, follow veins in shear zones in monzogranite (Kmg). Medium producer of gold, silver, lead, zinc, and copper. | 115, 54, 122 |
| 851 | Boulder River placer | 46-16-15 | 112-15-40 | Au, Ag | Extensive workings in placer deposits in alluvium (Qs). Production undetermined. | 6, 33, 84, 115 |
| 852 | Boulder Vestal mine | 46-17-20 | 112-14-10 | Ag, Au | Adit, with greater than 625 ft of workings, along veins in shear zones in monzogranite (Kmg). Small producer of silver and gold. | 115 |

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| 853 | Buckeye mine (Boston mine) | 46-23-53 | 112-17-40 | Ag, Au, Pb, Zn, Zn, Cu, As | Underground workings, totaling greater than 200 ft, along veins in shear zones in monzogranite (Kmg). Medium producer of silver, gold, lead, zinc, and copper. | 115, 122 |
| 854 | Bullion mine | 46-21-22 | 112-17-40 | Ag, Cu, Pb, Au, Zn, U, Sb, As | Three adits and one shaft, totaling several thousand feet, and trenches along vein in shear zone in monzogranite (Kmg). Medium producer of silver, copper, lead, gold, and zinc. | 71, 76, 99, 115, 122, 155 |
| 855 | Butte and Philadelphia Lady mine (Leith-Cady, Leith mines) | 46-23-30 | 112-16-30 | Au, Ag, Pb, Zn, Ba | More than 900 ft of underground workings along three veins in shear zone in monzogranite (Kmg). Small producer of ore. | 71, 99, 115, 122 |
| 856 | Cataract Creek placer | 46-21-50 | 112-13-15 | Au, Ag | Extensive hydraulic and sluice workings in alluvium (Qs). Small producer of gold and silver. | 6, 33, 84, 115 |
| 857 | Condor lodes (Silver Right lode) | 46-18-34 | 112-13-50 | Au | Shaft and adit in vein in monzogranite (Kmg). No production. | 139 |
| 858 | Copper King prospect | 46-17-07 | 112-13-00 | Ag, Au, Sil, Cu, Sb | Underground workings, totaling 155 ft, along veins in shear zones in monzogranite (Kmg). Small producer of silver-gold ore. | 71, 99, 115 |
| 859 | Cracker mine (Mt. Thompson) | 46-19-22 | 112-14-11 | Ag, Pb, Cu | Adit, with 1,600 ft of workings, along veins in shear zones in monzogranite (Kmg). Small producer. | 6, 115 |
| 860 | Crescent mine | 46-25-16 | 112-14-42 | Au, Ag, Pb, Cu, Zn, Sb | Adit, with 875 ft of workings, along several veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, copper, and zinc. | 6, 77, 115, 155 |
| 861 | Crystal mine (St. Lawrence, Sparkling Water, Jack Fraction) | 46-21-00 | 112-15-38 | Au, Ag, Cu, Pb, Zn, Qtz, Sb, As | Numerous shafts, adits, and open pits with workings totaling more than 8,000 ft. During the 1970's, production was from open-pit operations. Deposits are in veins, averaging 2 to 5 ft in width, cutting monzogranite (Kmg). Large producer of gold, silver, copper, lead, and zinc. | 78, 99, 110, 115, 122, 155 |
| 862 | Custer mine | 46-18-15 | 112-13-45 | Ag, Au, Pb, Zn | Underground workings, totaling about 1,650 ft, along veins in shear zones in monzogranite (Kmg). Medium producer of silver and gold. | 6, 71, 99, 115 |
| 863 | Daily West mine | 46-17-44 | 112-17-43 | Ag, Pb, Zn, Cu, Sb | Developed mine along veins in shear zones in volcanic rocks (Tlc). Small producer of silver, lead, zinc, and copper. | 29, 76, 115, 122, 155 |
| 864 | Della prospect | 46-19-54 | 112-13-31 | Ag, Au | Surface and underground workings follow veins in shear zones in monzogranite (Kmg). No production. | 139 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Basin (Cataract, Comet) district--Continued** | | |
| 865 | Doris mine | 46-16-55 | 112-16-30 | Pb, Zn, Ag, Cu, Au | Underground workings in veins in monzogranite (Kmg). Small producer of lead, zinc, silver, copper, and gold. | 115, 122 |
| 866 | Dumortierite deposit | 46-21-55 | 112-18-55 | Kyn | Underground workings in dumortierite-bearing zone in quartz latite tuff (Kem). Small producer of kyanite. | 115, 122 |
| 867 | East Katie mine (Lot 7 mine) | 46-16-20 | 112-15-55 | Au, Ag, Cu, Pb | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold ore. | 99, 115 |
| 868 | Eldorado and Plateau mine | 46-24-25 | 112-14-10 | Au, Ag, Pb | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of ore containing gold, silver, and lead. | 140 |
| 869 | Enterprise mine | 46-23-21 | 112-17-30 | Au, Ag, Pb, Zn | More than 1,000 ft of underground workings on veins in shear zones in monzogranite (Kmg). Small producer of ore. | 115, 122 |
| 870 | Eva May mine | 46-20-56 | 112-13-20 | Ag, Pb, Cu, Au, Zn, Sb, As, Mn, | Several thousand feet of workings on eight underground levels. Deposits are veins in shear zones in monzogranite (Kmg). Large producer of silver, lead, copper, and minor gold. | 6, 39, 62, 71, 99, 110, 115 |
| 871 | First Shot mine | 46-21-30 | 112-16-00 | Ag, Au, Cu | Underground workings in veins in monzogranite (Kmg). Small producer of silver, gold, and copper. | 115, 122 |
| 872 | Grey Lead mine | 46-21-31 | 112-14-17 | Au, Pb, Ag, Cu, Zn | Two adits, totaling about 800 ft, along veins in shear zones in monzogranite (Kmg). Small producer of gold, lead, silver, copper, and zinc. | 115 |
| 873 | Hattie Ferguson mine | 46-19-58 | 112-14-51 | Ag, Pb, Au, Cu, Zn | More than 1,800 ft of underground workings along veins in shear zones in monzogranite (Kmg). Medium producer of silver, lead, gold, copper, and zinc. | 6, 71, 99, 115 |
| 874 | Hawkeye mine | 46-22-30 | 112-17-07 | Ag, Pb, Cu, As, Sb | About 400 ft of underground workings follow veins in shear zones in monzogranite (Kmg). No production. | 122 |
| 875 | Helper mine | 46-15-42 | 112-15-40 | Pb, Ag, Au, Cu, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of lead, silver, gold, copper, and zinc. | 115, 122 |

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| 876 | Hiawattaha mine (Hiawatha) | 46-18-22 | 112-13-15 | Ag, Au, Pb, Cu, Zn, Sb | About 1,400 ft of underground workings follow veins in monzogranite (Kmg) and tuff (Kem). Medium producer of silver and gold. | 6, 115, 141 |
| 877 | Hidden Treasure mine | 46-18-06 | 112-15-15 | Ag, Pb, Cu, Zn, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, copper, lead, zinc, and gold. | 115 |
| 878 | Ida M. mine | 46-19-50 | 112-12-40 | Ag, Pb, Zn | Adit, with about 1,000 ft of workings, in veins in andesite (Kem) and monzogranite (Kmg). Small producer. | 115 |
| 879 | Ida May mine | 46-25-10 | 112-13-47 | Ag, Pb, Au, Zn, Ram | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer. | 6, 115 |
| 880 | Indian Head Rock barite deposits | 46-16-05 | 112-18-33 | Ba | Underground workings along barite veins in volcanics (Kem). No production. | 32, 122 |
| 881 | Jib group (Hope-Katie, Katie Extension) | 46-16-15 | 112-16-06 | Au, Ag, Cu, Pb, Zn, Te, Sb | About 15,000 ft of underground workings in vein and replacement deposits in monzogranite (Kmg). Large producer of gold, silver, copper, lead, and zinc. | 76, 99, 115, 122 |
| 882 | John T. mine | 46-21-16 | 112-14-32 | Ag, Pb, Au | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, and gold. | 6, 115 |
| 883 | Josephine mine | 46-24-56 | 112-18-44 | Ag, Au, Pb, Zn, Cu, St, U, As | Several adits and shafts along veins in shear zones monzogranite (Kmg) near rhyolite (Trv). Small producer of silver, gold, lead, zinc, copper, and decorative stone. | 7, 115, 122 |
| 884 | Jumbo prospect | 46-20-22 | 112-12-38 | Ag, Pb | One adit along veins in shear zones in monzogranite (Kmg) and andesite (Kem). Production undetermined. | 6, 115 |
| 885 | Klondyke mine (Klondike) | 46-20-15 | 112-14-45 | Ag, Pb, Au, Cu, Zn | Shaft, 165 ft deep, with three working levels in veins in shear zones at a contact of monzogranite (Kmg) and andesite (Kem). Small producer of silver, lead, gold, copper, and zinc. | 6, 115 |
| 886 | Lady Hennessey mine | 46-25-06 | 112-16-55 | Ag, Pb, Au, Zn, Ram | Two shafts, adits, and pits, follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, and zinc. | 115, 122 |
| 887 | Last Chance mine | 46-15-57 | 112-15-35 | Ag, Cu, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, copper, and gold. | 115, 122 |
| 888 | Lizzie Osborne prospect | 46-20-54 | 112-12-32 | Ag, Pb, Zn | One 400 ft adit follows veins in shear zones in monzogranite (Kmg). Production undetermined. | 6, 115 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Basin (Cataract, Comet) district--Continued** | | |
| 889 | Lotta tunnel (Lotta mine) | 46-16-13 | 112-16-50 | Au, Ag, Zn | About 800 ft of workings along veins in shear zones in monzogranite (Kmg). Medium-producer of gold. | 115, 122, 132 |
| 890 | Manhattan mine | 46-17-56 | 112-13-45 | Ag, Pb, Au, Zn, Cu | More than 640 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 891 | Mantle and South Mantle mine (Rock of Ages) | 46-17-27 | 112-14-30 | Au, Pb, Ag, Cu | More than 900 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, and copper. | 6, 115 |
| 892 | Marguerita mine (Maruerita mine) | 46-18-09 | 112-16-55 | Au, Ag | More than 650 ft of underground workings along veins in shear zones in volcanics (Kem). Small producer of gold and silver. | 115, 122 |
| 893 | Mine (name unknown) | 46-17-20 | 112-13-10 | Ag, Pb, Au, Cu, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 894 | Minneapolis mine | 46-17-53 | 112-14-02 | Ag, Pb, Zn, Cu, Au, Sb | Underground workings, totaling about 4,000 ft, along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, copper, and gold. | 6, 99, 115 |
| 895 | Morning Glory mine | 46-19-04 | 112-14-35 | Au, Ag, Pb, Cu, Zn, As, Sb | Three adits, with workings totaling about 3,200 ft, along veins in shear zones in monzogranite (Kmg) and tuff (Kem). Medium producer of gold, silver, lead, copper, and zinc. | 6, 115 |
| 896 | Morning mine (Midnight) | 46-21-55 | 112-16-15 | Ag, Pb, Au, Zn, Cu, As, Sb | Shafts and adits, totaling over 700 ft, follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, zinc, and copper. | 115, 122, 132, 155 |
| 897 | Morning Star mine | 46-22-05 | 112-21-10 | Ag, Pb, Au, Cu, Zn, As, Sb | Surface and underground workings along veins in shear zones in andesite (Kem). Small producer of silver, lead, gold, copper, and zinc. | 71, 99, 115, 122 |
| 898 | Mt. Chief mine | 46-19-00 | 112-13-40 | Ag, Pb, Au, Zn | Underground workings in veins in shear zones in monzogranite (Kmg). Small producer of ore. | 6, 51, 115 |
| 899 | Mt. Thompson mine | 46-18-55 | 112-13-07 | Au, Ag, Sil, Pb | Three adits, totaling about 500 ft, follow veins in shear zones in monzogranite (Kmg). Small producer of gold-silver ore. | 6, 51, 52, 115, 141 |

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| 900 | Obelisk mine | 46-16-17 | 112-13-17 | Ag, Pb, Zn, Au, Cu | One shaft, two adits, and 1,500 ft of underground workings in breccia pipe in monzogranite (Kmg). Small producer of silver, lead, zinc, and gold. | 6, 54, 115, 141, 155 |
| 901 | Red Wing mine (Red Wing group) | 46-18-25 | 112-13-00 | Ag, Pb, Au, Cu | Two adits, with greater than 475 ft of underground workings, along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, and copper. | 6, 99, 115 |
| 902 | Rose mine | 46-17-05 | 112-14-50 | Au, Ag, Pb, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, and copper. | 6, 115 |
| 903 | Saturday Night mine | 46-18-02 | 112-15-12 | Ag, Pb, Au, Cu, As | Adit and shaft, with workings totaling about 650 ft, along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, and gold, and copper. | 115, 122 |
| 904 | Sirius mine (Sirius group) | 46-20-10 | 112-14-40 | Au, Ag, Pb, Zn, Cu | About 2,000 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, copper, and zinc. | 6, 115 |
| 905 | Solar mine (Solar Pearl, Solar and Pearl) | 46-24-07 | 112-19-00 | Ag, Au, Pb, Cu, As, Sb | More than 650 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, and lead. | 6, 122 |
| 906 | Sylvan mine | 46-18-20 | 112-15-30 | U | Three adits in uranium-bearing veins in monzogranite (Kmg). No production. | 122 |
| 907 | Totten mine (Monitor mine) | 46-20-45 | 112-11-15 | Au, Ag, Cu, Pb, Bi, Zn | About 1,100 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of gold-silver ore. | 110, 137 |
| 908 | Uncle Sam mine (Jennie B.) | 46-19-35 | 112-15-03 | Ag, Pb, Zn, Au, Cu, U, Sb | More than 2,000 ft of underground workings along veins in shear zones in monzogranite (Kmg) and andesite (Kem). Medium producer of silver, lead, and zinc, with minor gold and copper. | 71, 99, 115, 122 |
| 909 | Venus mine | 46-25-04 | 112-17-20 | Au, As | Underground workings, totaling 1,000 ft, in a zone of disseminated ore minerals in rhyolite (Trv) and monzogranite (Kmg). Small producer of gold. | 99, 122 |
| 910 | Vera and Marie mine | 46-19-08 | 112-14-08 | Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver. | 13, 62 |
| 911 | Vindicator mine | 46-22-16 | 112-17-02 | Ag, Au, Pb, Zn, Cu, Sb | About 1,000 ft of underground workings in veins in monzogranite (Kmg). Small producer of silver and gold. | 110, 115, 122 |
| 912 | Waldy mine | 46-18-29 | 112-13-02 | Ag, Pb, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Wickes (Colorado) district** | | |
| | In the western part of the district a large number of mines are in a large inlier of volcanic and volcaniclastic rocks that is surrounded by plutonic rocks of the Boulder batholith. This inlier includes units of the pre-batholithic Cretaceous Elkhorn Mountain Volcanics and the post-batholithic Eocene Lowland Creek Volcanics. Cretaceous monzogranite, alaskite, aplite, and pegmatite of the Boulder batholith underlie the rest of the district. The principal ore deposits that have been mined are base- and precious-metal-bearing veins and replacement bodies in monzogranite and andesitic volcanic and volcaniclastic rocks. Disseminated or stockwork copper and gold-silver deposits also occur and a large, low-grade diatreme-hosted gold deposit is presently being developed for mining. The district was a very large producer of silver, lead, gold, copper, and zinc. | | | | | |
| 918 | Alta mine | 46-22-20 | 112-05-35 | Ag, Pb, Zn, Au, Cu, Sil, Sb, As | Extensive underground workings on 13 levels, totaling about 2,100 ft, and open pits. Vein and replacement deposits occur in shear zones in andesite (Kem). Very large producer of silver, lead, zinc, gold, copper, and silica. | 6, 39, 62, 71, 99, 115, 155 |
| 919 | Ariadne mine | 46-23-19 | 112-07-17 | Ag, Au, Pb, Zn, Cu | About 1,100 ft of underground workings along vein and replacement deposits in shear zones in andesite (Kem). Small producer of silver, gold, lead, zinc, and copper. | 6, 115 |
| 920 | Beavertown copper-molybdenum prospect | 46-20-30 | 112-04-45 | Cu,Mo | Exploratory drill holes in porphyry or disseminated deposit and supergene-enriched zone in monzogranite (Kmg) of the Boulder batholith. No production. | 39 |
| 921 | Bertha mine | 46-22-49 | 112-05-14 | Cu, Ag, Au, Pb, Zn, Bi, Sb | About 1,400 ft of underground workings, including two shafts and five working levels. Deposits are in vein and replacement bodies in monzogranite (Kmg) and andesite (Kem). Large producer of copper, silver, gold, and lead. | 6, 18, 71, 99, 115 |
| 922 | Blackbird group (Wickes-Corben, Wickes Manganese property) | 46-22-05 | 112-09-45 | Mn, Fe | Four adits, a shaft, and extensive bulldozer cuts along manganese veins in andesite (Kem) and bog deposits. Small producer of manganese and iron. | 6, 115 |
| 923 | Blizzard mine | 46-21-37 | 112-08-28 | Ag, Au, Pb, Cu, Zn, As | More than 4,100 ft of underground workings on veins in shear zones in andesite (Kem). Medium producer of silver, gold, lead, copper, and zinc. | 6, 71, 99, 115 |
| 924 | Blue Bird mine | 46-21-32 | 112-09-58 | Au, Ag, Cu, Pb, Zn, As, Sb, B, B | Extensive surface and underground workings, including greater than 7,500 ft of shafts, adits, and drifts on several working levels. Deposits are in veins in shear zones in tuffs (Kem) near the contact with monzogranite (Kmg). Medium producer of gold, silver, copper, and lead. | 6, 39, 71, 99, 115, 132, 154, 155 |

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|---|---|---|---|---|---|---|
| 925 | Bluestone mine | 46-21-05 | 112-08-51 | Cu, Ag, Pb, Au, Zn, As | Two adits and shafts, with workings totaling about 500 ft, along veins in shear zones in andesite (Kem). Small producer of copper, silver, and gold. | 6, 99, 115 |
| 926 | Comet and Spring Creek placers | 46-22-50 | 112-03-20 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 6, 84, 115 |
| 927 | Copper Nugget placer | 46-20-35 | 112-03-15 | Cu | More than 100 ft of underground workings, pits, and drill holes in bog copper deposit in alluvium (Qs). No production. | 47, 115 |
| 928 | Daily mine (Atlas, Dailey) | 46-21-05 | 112-06-10 | Ag, Cu, Pb, Au, Zn, As, Sb | Vertical shaft, 340 ft deep, with three working levels along veins in shear zones in andesite (Kem). Medium producer of silver, copper, lead, gold, and zinc. | 6, 99, 115, 132 |
| 929 | David Copperfield adit | 46-21-30 | 112-06-00 | Au | Underground workings follow veins in shear zones in andesite (Kem). Production undetermined. | 6 |
| 930 | Dow Crosscut | 46-22-06 | 112-09-04 | Ag, Pb, Cu | About 1,200 ft of underground workings along veins in shear zones in andesite (Kem). Production undetermined. | 6 |
| 931 | Eldelweiss mine (Argentine) | 46-23-22 | 112-12-10 | Ag, Pb, Zn, Mn | Surface workings follow vein in shear zone in monzogranite (Kmg). No production. | 76, 115 |
| 932 | Elkador mine (Little Nancy) | 46-21-42 | 112-08-20 | Cu, Ag, Pb, Au, Zn, Sb | Adits and shafts in vein and replacement deposits in volcanic rocks (Kem) near monzogranite (Kmg). Small producer of copper, silver, lead, and gold. | 6, 115, 132 |
| 933 | General Harris prospect | 46-22-12 | 112-08-15 | Mn | Surface trenches expose manganese veins in shear zones in andesite (Kem). No production. | 6 |
| 934 | Glenbeg mine (Glenberg) | 46-22-08 | 112-08-50 | Ag, Cu, Au, Pb | About 700 ft of underground workings along veins in shear zones in andesite (Kem). Small producer of silver, copper, and gold. | 6, 115 |
| 935 | Golconda mine (Golden Assets) | 46-19-55 | 112-00-05 | Au, Ag, Pb, Cu, Zn, As | Three adits in stockwork deposit in monzogranite (Kmg). Medium producer of gold, silver, lead, copper, and zinc. | 6, 78, 110, 115 |
| 936 | Gregory mine | 46-23-24 | 112-06-53 | Ag, Pb, Au, Cu, Zn, As | Shaft, 730 ft deep, with 6 working levels, along veins in shear zones in andesite (Kem) and monzogranite (Kmg). Very large producer of silver, lead, gold, copper, and zinc. | 6, 99, 115, 132 |
| 937 | Helena-Jefferson mine | 46-21-25 | 112-02-45 | Pb, Ag, Zn, Cu, Mo | Inclined shafts up to 550 ft deep along veins in monzogranite (Kmg). Small producer of lead, silver, zinc, and copper. | 6, 99, 115 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Wickes (Colorado) district--Continued** | | |
| 938 | Horseshoe claim | 46-22-57 | 112-05-45 | Au | Underground workings along veins in shear zones in andesite (Kem) near contact with monzogranite (Kmg). No production. | 71, 99, 115 |
| 939 | Kady Gulch manganese deposit | 46-23-05 | 112-09-45 | Mn | Surface workings in bog manganese deposits in alluvium (Qs). Small producer of manganese. | 6 |
| 940 | Lone Eagle mine | 46-24-28 | 112-09-25 | U, Ag, Pb, Zn | Two adits, with workings totaling 900 ft, along veins in shear zones in monzogranite (Kmg). Small producer of uranium ore. | 5, 6, 115, 138 |
| 941 | Madison mine (Black Rock) | 46-22-45 | 112-00-05 | Au, Ag, Pb | Surface and underground workings in veins in monzogranite (Kmg). Production undetermined. | 6, 99, 115 |
| 942 | Minah mine (Mina mine) | 46-21-55 | 112-08-01 | Ag, Au, Pb, Zn, Cu, As, Sb | More than 1,500 ft of underground workings follow vein in shear zones in andesite (Kem) and dacite (Tlc). Large producer of silver, gold, lead, zinc, and copper. | 6, 71, 82, 99, 115, 132 |
| 943 | Minnesota mine | 46-23-10 | 112-07-25 | Au, Ag, Pb, Cu, Zn, As | Underground workings along veins in shear zones in monzogranite (Kmg) and andesite (Kem). Medium producer of gold, silver, lead, copper, and zinc. | 6, 71, 99, 115 |
| 944 | Montana Tunnels mine | 46-22-17 | 112-07-35 | Au, Ag, Zn, Pb | Two adits, with greater than 200 ft of workings, in disseminated and veinlet mineralization in diatreme breccia (Tlc). Small producer of ore. Presently being developed as large, low-grade open-pit mine with very large reserves of ore containing gold, silver, zinc, and lead. | 6, 71, 158 |
| 945 | Monte Christo adits | 46-23-34 | 112-05-39 | Ag, Pb, Zn, As | About 1,100 ft of underground workings along veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 946 | Mount Washington mine | 46-21-23 | 112-08-37 | Ag, Au, Pb, Cu, Zn, Bi, Sb, As | Main shaft, 1,000 ft deep, with 10 working levels, along veins in shear zones in tuff (Kem) and monzogranite (Kmg). Large producer of silver, gold, lead, copper, and zinc. | 6, 99, 115 |
| 947 | Northern Pacific mine | 46-22-16 | 112-06-30 | Ag, Pb, Au, Zn | Underground workings follow veins in shear zones in andesite (Kem). Small producer of silver, lead, and gold. | 6, 71, 99, 115 |
| 948 | Pen Yan mine (Penn Yan) | 46-21-28 | 112-10-23 | Au, Ag, Cu, Pb | Shaft, 215 ft deep, with five working levels, along veins in shear zones in volcanic rocks (Kem) and monzogranite (Kmg). Medium producer of gold, silver, copper, and lead. | 6, 115, 137, 154 |

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|---|---|---|---|---|---|---|
| 949 | Polaris mine | 46-21-55 | 112-03-35 | Ag, Pb, Cu, Zn, Mo | Two adits follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 6 |
| 950 | Rarus mine (Ratus) | 46-23-33 | 112-04-57 | Ag, Zn, Pb, Cu, Au, Ba, Sb | About 300 ft of underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, zinc, lead, copper, and gold. | 6, 115 |
| 951 | Salvail mine (Bernice) | 46-21-02 | 112-08-38 | Ag, Au, Cu, Zn, Pb, As, Sb | About 2,600 ft of underground workings along veins in shear zones in andesite (Kem). Small producer of silver, gold, and copper. | 54, 99, 115 |
| 952 | Silver claim mine | 46-23-28 | 112-05-50 | Ag, Pb, Zn, Au | Underground workings along veins in shear zones in andesite (Kem) and monzogranite (Kmg). Small producer of silver, lead, zinc, and gold. | 115, 132 |
| 953 | Silver Tip mine (Reddings mine) | 46-22-05 | 112-00-25 | Ag, Pb, Au, Zn | Three adits totaling 800 ft along veins in monzogranite (Kmg). Small producer of silver, lead, gold, and zinc. | 6, 99, 115 |
| 954 | Wickes-Corbin Copper Company mine (Bunker Hill, Bonanza, Dewey, and Rosalie) | 46-22-20 | 112-09-17 | Ag, Pb, Cu, Zn | About 4,000 ft of underground workings follow veins in shear zones in andesite (Kem). Production undetermined. | 6, 18, 99, 115 |

**Amazon district**

The district is underlain by Cretaceous monzogranite, alaskite, aplite, and pegmatite of the Boulder batholith and, in the northwest, by Cretaceous andesitic rocks of the Elkhorn Mountain Volcanics. Ore deposits are in sulfide-bearing quartz veins. The district is a medium producer of silver, lead, gold, and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 960 | Amazon mine | 46-17-11 | 112-07-45 | Ag, Pb, Au, Cu, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, and copper. | 71, 99, 115 |
| 961 | Australian mine | 46-18-40 | 112-08-35 | Ag, Pb, Cu, Au, Zn, As | Two shafts in veins in altered monzogranite (Kmg) lying along the Bismark-Van Armin shear zone. Small producer of silver, lead, copper, gold, and zinc. | 6, 115 |
| 962 | Bismarck mine | 46-18-45 | 112-07-55 | Ag, Pb, Au, Zn, Cu | Several adits, totaling more than 550 ft along three parallel veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, zinc, and copper. | 6, 115 |
| 963 | Bob Ingersol mine | 46-19-28 | 112-06-00 | Ag, Pb, Au, As | Veins in shear zone near contact of andesite (Kem) with monzogranite (Kmg). Production undetermined. | 6, 115 |
| 964 | Cleveland mine | 46-17-51 | 112-07-38 | Ag, Pb, Cu, Zn, Au | Three shafts along vein in shear zone in monzogranite (Kmg). Small producer of silver, lead, copper, zinc, and gold. | 6, 115 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Amazon district--Continued** | | |
| 965 | Golden Point mine | 46-17-07 | 112-08-04 | Ag, Cu, Pb, Au | Three adits follow veins in shear zones in monzogranite (Kmg). Small producer of silver, copper, lead, and gold. | 115 |
| 966 | Mayflower mine | 46-18-44 | 112-06-23 | Au, Ag, Pb | Developed mine in veins in monzogranite (Kmg). Small producer of gold, silver, and lead. | 6, 115, 137 |
| 967 | Mono group (Mono mine, East Mono mine) | 46-17-58 | 112-06-13 | Pb, Ag, Au, Cu, Zn, Sb | Underground workings along four parallel veins in Comet-Gray Eagle shear zone in monzogranite (Kmg). Small producer of lead-silver ore. | 6, 115 |
| 968 | Montana mine (Hector and Victor mine) | 46-18-38 | 112-08-09 | Ag, Pb, Au | Developed mine in monzogranite (Kmg). Small producer of silver, lead, and gold. | 6, 115 |
| 969 | Pilot mines | 46-18-22 | 112-06-15 | Pb, Ag, Cu, Au, Zn, U | Two shafts along quartz veins in shear zones in monzogranite (Kmg). Small producer of lead, silver, copper, and gold. | 6, 115 |
| 970 | Robert Emmet mine | 46-19-37 | 112-05-45 | Ag, Cu, Zn, Pb, Au | Over 1,600 ft of workings along veins in shear zone in monzogranite (Kmg) near contact with andesite (Ka). Small producer of silver, copper, zinc, lead, and gold. | 6, 71, 76, 99, 115 |
| 971 | Uranium occurrence (name unknown) | 46-18-00 | 112-07-35 | Ram | Prospect in altered zone in monzogranite (Kmg). Dump is slightly radioactive. No production. | 6 |
| 972 | Van Armin mine | 46-18-35 | 112-07-54 | Pb, Ag, Cu, Zn | Over 1,050 ft of underground workings follow veins in monzogranite (Kmg) along the Bismark-Van Armin shear zone. Medium producer of ore containing lead, silver, and copper. | 6 |
| 973 | Virginia C. mine | 46-19-29 | 112-06-20 | Ag, Pb, Zn, As | Adit, 180 ft long, in veins along base of sill (Ka) in welded tuff (Kem). Production undetermined. | 6 |
| 974 | Wilbur Silver mine | 46-18-47 | 112-07-30 | Ag, Pb, Au, Cu, Zn | Crosscut adit and shaft along veins in monzogranite (Kmg). Small producer of silver, lead, gold, and copper. | 6, 115 |

## Boulder (Comet) district

Most of the district is underlain by granitic rocks of the Boulder batholith of Cretaceous age. Some areas in the north are underlain by Cretaceous andesitic rocks of the Elkhorn Mountains Volcanics and Eocene quartz latitic rocks of the Lowland Creek Volcanics. Nearly all of the ore deposits are in quartz-sulfide veins in monzogranite. The most important mine in the district is the Comet mine and, based principally on this mine, the district is ranked as a very large producer of silver, gold, lead, copper, and zinc.

| | | | | | | |
|---|---|---|---|---|---|---|
| 975 | Baltimore mine | 46-17-13 | 112-08-59 | Ag, Au, Pb, Zn, Cu, As | Over 3,000 ft of workings including eight mine levels along veins in shear zones in monzogranite (Kmg). Medium producer of silver, gold, lead, zinc, and copper. | 6, 71, 99, 115 |
| 976 | Boomerang Gulch placer | 46-15-35 | 112-11-05 | Au, Ag | Small producer of gold and silver from workings in alluvium (Qs). | 84, 115 |
| 977 | Chinese Diggings placer | 46-12-20 | 112-07-20 | Au, Ag | Placer mining of 5-10 ft thick gold-bearing gravel (Qs) using large earth-moving equipment, including scrapers and bulldozers, and by 40 by 16 ft sluice. Overburden of 40-50 ft of gravel was removed before mining. Producer of unknown quantity of gold and silver. | 39 |
| 978 | Comet mine | 46-18-35 | 112-10-00 | Au, Ag, Cu, Pb, Zn, U, As, Sb | About 18,000 ft of underground workings, including a 900 ft vertical shaft with nine levels, and a surface open cut in three main veins along Comet-Gray Eagle shear zone in monzogranite (Kmg). Very large producer of gold, silver, copper, lead, and zinc. | 4, 6, 71, 99, 115 |
| 979 | Comstock group | 46-16-16 | 112-12-30 | Pb, Ag, Zn, Cu, U | Adit with 400 ft of workings follow vein in shear zone in monzogranite (Kmg). Small producer of lead-silver ore. | 115 |
| 980 | Free Enterprise mine (Silver Bell) | 46-15-21 | 112-08-52 | Ag, U, Pb, Cu, Zn, Mo, Ba, As, Sb | Vertical shafts and drift levels along veins in shear zones in monzogranite (Kmg). Small producer of silver-uranium ore. | 6, 111, 112, 115 |
| 981 | Galena Gulch placer | 46-15-15 | 112-10-55 | Au, Ag | Surface mining of placer deposits in alluvium (Qs). Small producer of gold and silver. | 84, 115 |
| 982 | Golden Thread mine | 46-18-44 | 112-10-45 | Ag, Pb, Cu, Zn, Au | Underground workings along veins in monzogranite (Kmg). Small producer of silver, lead, copper, zinc, and gold. | 6, 115, 132 |
| 983 | Gray Eagle mine | 46-18-48 | 112-11-56 | Ag, Pb, Cu, Zn, Au, U, Mo, Sb, As | Numerous adits, with workings totaling about 10,000 ft, along veins in shear zones in welded tuffs (Kem) and monzogranite (Kmg). Large producer of silver, lead, copper, zinc, and gold. | 6, 71, 99, 115, 132 |
| 984 | High Ore Creek placer | 46-15-45 | 112-12-47 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Small producer of gold and silver. | 6, 84, 115 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Amazon district--Continued** | | |
| 985 | High Ore mine (Hi Ore, Montana Consolidated) | 46-17-40 | 112-11-50 | Pb, Ag, Zn, Au, Cu, Ram | More than 25,000 ft of underground workings on veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, gold, and copper. | 6, 115, 141 |
| 986 | Hope and Bullion mine (Bullion) | 46-18-30 | 112-09-30 | Au, Ag, Pb, Mn, Cu, Zn | Surface and undergound workings follow veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, copper, and zinc. | 6, 115 |
| 987 | King Cole mine (Boulder-California) | 46-17-45 | 112-11-32 | Ag, Au, Cu, Zn | Two adits with about 1,600 ft of workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, and copper. | 6, 115 |
| 988 | Lewis prospect | 46-15-05 | 112-07-55 | Hg | Surface workings in veins in monzogranite (Kmg). No production. | 99, 115 |
| 989 | Molly Mcgregor mine (Emma Bell, Adolphus) | 46-17-37 | 112-08-59 | Pb, Ag, Au, Cu | Five adits and five shafts along veins in shear zones in monzogranite (Kmg). Small producer of lead, silver, gold, and copper. | 6, 115 |
| 990 | Nickelodeon prospect | 46-11-46 | 112-09-17 | Cu, Au, Mo, W, U | Underground workings follow veins in shear zones in monzogranite (Kmg). Production undetermined. | 115 |
| 991 | Queen of The Hills mine | 46-17-00 | 112-12-35 | Ag, Pb, Zn, Au, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, zinc, gold, and copper. | 6, 115 |
| 992 | Reliance mine | 46-16-50 | 112-12-00 | Ag, Cu, Pb, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver, copper, lead, and gold. | 6, 115 |
| 993 | Rumley mine | 46-18-36 | 112-10-20 | Ag, Pb, Au, Cu, Zn, U | Underground workings along veins in shear zones in monzogranite (Kmg). Medium producer of silver, lead, gold, and copper. | 6, 115 |
| 994 | Silver Hill mine | 46-18-40 | 112-10-15 | Ag, Pb, Au, Zn, Cu, Ram | Shaft, with several working levels, along 3 veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, zinc, and copper. | 4, 6, 62, 115 |
| 995 | Skookum placer | 46-17-40 | 112-10-35 | Au, Ag | Ground sluicing of placers in alluvium (Qs). Small producer of gold and silver. | 77, 78 |
| 996 | Virginia mine | 46-17-25 | 112-12-30 | Ag, Pb, Au, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver, lead, gold, and copper. | 6, 115 |

## Emery (Zosell) district

Basaltic and andesitic flows, tuffs, and breccias of probable Upper Cretaceous or Lower Tertiary age underlie the district. A northwest-trending normal fault cuts the volcanic rocks in the northern part of the district. Fissure-filling quartz veins are the principal deposit type. The district was a large producer of gold, silver, and lead.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1003 | Argus mine | 46-23-30 | 112-34-40 | Ag, Pb, Au, Cu, Zn, Ni, As | Three shafts along veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 85, 99, 113 |
| 1004 | Baggs Creek sapphire deposit | 46-24-08 | 112-34-00 | Cor | Prospects in sapphire-bearing placer deposits in alluvium (Qs). No production. | 140 |
| 1005 | Bell mine | 46-22-51 | 112-34-18 | Ag, Pb, Zn, Au, As, Cd | Underground workings along veins in shear zones in andesite and basalt (TKab). Small producer of ore containing silver, lead, and zinc. | 99, 113 |
| 1006 | Bertha May mine | 46-23-14 | 112-34-40 | Ag, Pb, Au, Cu, Zn, Sb | Underground workings follow veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 85, 113 |
| 1007 | Black-Eyed May mine | 46-23-12 | 112-34-20 | Ag, Pb, Au, Zn, Cu, As, Cd | Surface and underground workings along veins in shear zones in basalt (TKab). Small producer of silver, lead, and gold. | 85, 99, 113 |
| 1008 | Blue-Eyed Maggie mine | 46-22-31 | 112-34-58 | Ag, Au, Pb, Cu, Zn, Sb, As | Three adits, with four working levels, along veins in shear zones in basalt (TKab). Medium producer of silver, gold, lead, and copper. | 85, 99, 113 |
| 1009 | Bonanza mine | 46-22-46 | 112-34-12 | Au, Ag, Pb, Zn, Cu, As, Sb | At least eight underground mine levels, with a total of about 4,300 ft of workings, follow veins in shear zones in basalt (TKab). Medium producer of gold, silver, lead, zinc, and copper. | 29, 85, 99, 113, 129 |
| 1010 | Bull Moose mine | 46-23-17 | 112-34-30 | Ag, Pb, Au, Cu, Zn, As, Sb | Underground workings follow veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 85, 110, 113 |
| 1011 | Caroline and William Coleman mine (Colman mine) | 46-22-21 | 112-35-06 | Ag, Pb, Au, Zn, As | Underground workings follow veins in shear zones in basalt and andesite (TKab). Small producer. | 85, 99, 113 |
| 1012 | Copper Cliff prospect | 46-24-12 | 112-34-52 | Cu | Prospect in disseminated deposit in basalt (TKab). No production. | 113 |
| 1013 | Ding Bat mine | 46-22-32 | 112-35-02 | Ag, Pb, Cu, Zn, As, Sb | More than 500 ft of underground workings along veins in shear zones in basalt (TKab). Production undetermined. | 85, 113 |
| 1014 | Emery mine (Carbonate Hill mine) | 46-22-38 | 112-34-45 | Au, Ag, Pb, Zn, Cu, As, Sb | Ten mine levels, with workings totaling about 9,000 ft, along veins in shear zones in andesite and basalt (TKab). Large producer of gold, silver, lead, zinc, and copper. | 2, 38, 85, 99, 113 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Emery (Zosell) district--Continued** | | |
| 1015 | Emma Darling mine | 46-23-10 | 112-34-02 | Ag, Pb, Au, Cu, Zn, As | About 2,000 ft of underground workings follow veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 85, 99, 137 |
| 1016 | Hercules mine | 46-23-10 | 112-35-00 | Ag, Pb | Surface workings along veins in shear zones in basalt (TKab). Small producer of silver and lead. | 85, 113 |
| 1017 | Hidden Hand mine | 46-23-20 | 112-34-40 | Au, Ag, Pb, Zn, Cu, Ni, As, Sb | About 2,200 ft of underground workings, and surface workings along veins in shear zones in andesite and tuff (TKab). Medium producer of gold, silver, lead, zinc, and copper. | 77, 85, 99, 113, 155 |
| 1018 | Kirby mine | 46-22-50 | 112-34-45 | Ag, Au, Pb, Zn | 350-ft shaft along veins in shear zones in andesite (TKab). Small producer. | 53, 99 |
| 1019 | Paymaster mine | 46-22-45 | 112-35-05 | Ag, Pb, Cu, Zn, As, Sb | Two adits follow veins in shear zones in basalt (TKab). Production undetermined. | 113 |
| 1020 | Prospect | 46-23-18 | 112-35-06 | Ag, Pb, Zn, As | Underground workings in veins in basalt (TKab). Production undetermined. | 113 |
| 1021 | Sabbath Day mine (Poor Man) | 46-22-40 | 112-34-45 | Ag, Pb, Au, Cu, Zn, As, Sb | 500-ft shaft along veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 85, 113 |
| 1022 | Spring Creek and Rocker Gulch placers | 46-21-55 | 112-35-40 | Au, Ag | Ground sluicing of placer deposits in alluvium (Qs). Medium producer of gold and silver. | 84, 99, 113 |
| 1023 | Sterrett mine | 46-23-07 | 112-33-55 | Ag, Pb, Au, Zn | Three shafts, two adits, along veins in shear zones in basalt (TKab). Small producer of silver, lead, and gold. | 85, 99, 113 |
| 1024 | Swan mine | 46-22-46 | 112-35-20 | Ag, Pb, Au, Cu, Zn, As, Sb | Underground workings along veins in shear zones in basalt (TKab). Small producer of silver, lead, gold, and copper. | 99, 113 |
| 1025 | Wake Up Jim mine | 46-23-29 | 112-34-35 | Ag, Pb, Ni | Three adits follow veins in shear zones in basalt (TKab). Production undetermined. | 113 |

## South Boulder Mountains area

This is a large area in the southeastern part of the Butte quadrangle and partially or completely encloses but excludes known mining districts such as Butte, Orofino, Lowland, Big Foot, and Pipestone. The area includes a large part of the Boulder batholith and the principal rock types that underlie that area are granitic rocks of the batholith. In the west, Lowland Creek Volcanics of Eocene age occur in a northeast-trending graben within the batholith, and in the southeast, Cretaceous Elkhorn Mountains Volcanics are exposed along the eastern border of the batholith. A satellitic stock of Cretaceous quartz monzonite occurs along the southeastern border of the area. Numerous northeasterly and north-south-trending normal faults have been mapped in the area. The few, scattered mineral occurrences in the area include quartz-sulfide veins and placers. The area is a small producer of gold, silver, lead, copper, and sapphires.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1030 | Butte-Elk Park Extension mine (Elk Park) | 46-11-00 | 112-22-30 | Ag, Cu, Pb, Bi, As | About 1,350 ft of underground workings on veins in monzogranite (Kmg). Small producer of silver, copper, and lead. | 115, 155 |
| 1031 | Copper prospect (name unknown) | 46-12-52 | 112-39-35 | Cu, Ag | Adit along veins in monzogranite (Kmg). Production undetermined. | 139 |
| 1032 | Dry Cottonwood Creek placer | 46-12-15 | 112-38-57 | Au, Ag, Cor | Extensive hydraulic and dredge workings on placer deposits in alluvium (Qs). Small producer of gold, silver, and sapphires. | 84, 99, 110 |
| 1033 | Matchless lode | 46-12-51 | 112-40-21 | Au, Ag | Underground workings on veins in shear zones in monzogranite (Kmg). No production. | 139 |
| 1034 | Mine (name unknown) | 46-09-16 | 112-37-45 | Au, Ag, As, Sb | Underground workings on quartz veins along shear zone in quartz latite (Tlc) of Lowland Creek Volcanics. Producer of unknown quantity of ore. | 39 |
| 1035 | Montreal Star mine | 46-07-20 | 112-27-45 | Ag, Pb, Cu, Au, Zn | A 100 ft shaft, 500 ft adit, drifts, and open cuts along veins and breccia zone in monzogranite (Kmg) and aplite (Ka). Small producer of silver, lead, copper, and gold. | 139 |
| 1036 | Shamrock Copper prospect | 46-15-20 | 112-29-40 | Cu | Underground workings in vein in andesite (Kem). No production. | 122 |
| 1037 | Silver Bell mine | 46-02-30 | 112-12-46 | Ag, Pb, Au | Three adits and a shaft, totaling greater than 525 ft, along veins in shear zones in monzogranite (Kmg). No production. | 115 |
| 1038 | Silver mine (name unknown) | 46-12-08 | 112-38-22 | Ag, Zn, As, Cr | Four adits in vein in monzogranite (Kmg). Production undetermined. | 139 |
| 1039 | Silver mine (name unknown) | 46-12-14 | 112-38-07 | Ag, Cr | Shaft in vein in rhyolite tuff (Kem). Production undetermined. | 139 |
| 1040 | Silver mine (name unknown) | 46-12-30 | 112-38-22 | Ag, As | Two shafts in veins in monzogranite (Kmg). Production undetermined. | 139 |
| 1041 | Silver mine (name unknown) | 46-13-30 | 112-37-35 | Ag, As | Two adits in veins in monzogranite (Kmg). Production undetermined. | 139 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **South Boulder Mountains area--Continued** | | |
| 1042 | Tuxedo mine | 46-04-15 | 112-42-55 | Au, Ag, Sil | Shaft, underground workings, and open pits follow quartz veins and silicified zone in altered welded tuff (Tlc) of the Lowland Creek Volcanics. Medium producer of gold, silver, and silica (for smelter flux). | 39 |
| 1043 | Wilson Creek placer | 46-09-44 | 112-12-40 | Au, Ag | Ground sluicing and dredge mining of placers in alluvium (Qs). Small producer of gold and silver. | 84 |
| | | | | **Oro Fino district** | | |
| | This district is in the western margin of the Boulder batholith of Cretaceous age. The predominant rock type is monzogranite but small areas of Tertiary Lowland Creek Volcanics and rhyolite also occur. Two types of deposits occur: placer deposits containing gold and silver, and base- and precious-metal-bearing vein deposits. The district was a large producer of silver, gold, and copper. | | | | | |
| 1044 | Champion silver mine | 46-13-59 | 112-36-36 | Ag, Au, Pb, Zn, Sb, As | Adit along veins in shear zones in monzogranite (Kmg). Large producer of silver-gold ore. | 39, 75, 99, 110, 141 |
| 1045 | Orofino Creek placer | 46-14-15 | 112-37-15 | Au, Ag | Surface workings in placer deposits in alluvium (Qs). Small producer of gold and silver. | 84, 99 |
| 1046 | Silver mine (name unknown) | 46-15-05 | 112-36-30 | Ag, Pb, Zn, Cu, As, Cd | Adits in veins in monzogranite (Kmg). Production undetermined. | 139 |
| 1047 | Silver prospect (name unknown) | 46-15-05 | 112-37-00 | Ag, Pb, Zn, Bi | Prospect in veins in monzogranite (Kmg). No production. | 139 |
| | | | | **Lowland district** | | |
| | The district is underlain by Tertiary quartz latitic flows, welded tuffs, and breccias of the Lowland Creek Volcanics. Several northeast-trending normal faults cut the volcanic rocks. The principal mineral deposits are veins that occupy fissures and breccia zones in the volcanic rocks. The district was a large producer of gold and silver. | | | | | |
| 1048 | Columbia mine | 46-11-38 | 112-25-50 | Au, Ag, Cu | Several adits along veins in shear zones in quartz latite (Tlc). Medium producer of gold, silver, and minor copper. | 71, 99, 115 |
| 1049 | Kit Carson mine | 46-12-10 | 112-26-58 | Au, Ag, Cu | Shaft and two adits along veins in shear zones in quartz latite (Tlc). Medium producer of gold, silver, and minor copper. | 71, 99, 115 |
| 1050 | Lowland Creek placer (Kit Carson placer) | 46-14-40 | 112-25-25 | Au, Ag, Cor | Placer deposits in alluvium (Qs) were worked by ground sluicing and by dredge. Large producer of gold and silver. | 39, 84, 115, 137 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1051 | Memphis prospect | 46-11-57 | 112-26-40 | Au, Ag | Underground workings follow veins in shear zones in dacite (Tlc). Production undetermined. | 71, 99, 115 |
| 1052 | Ruby mine | 46-11-52 | 112-26-04 | Au, Ag, Pb, Zn, Cu | Over 10,000 ft of underground workings along veins in shear zones in quartz latite (Tlc). Large producer of gold and silver. | 71, 75, 99, 115 |

**Big Foot (State Creek) district**

The district is underlain principally by Cretaceous monzogranite, alaskite, aplite, and pegmatite of the Boulder batholith. A small inlier of Cretaceous volcanic rocks occurs in the north of the area. Ore deposits are vein and replacement deposits in monzogranite and placer deposits. The district was a medium producer of silver, lead, gold, zinc, and copper.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1053 | Big Foot Creek placer | 46-07-05 | 112-09-02 | Au, Ag | Placer deposits in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 84, 115 |
| 1054 | Big Four group (Includes Hoosier Boy, Big Four, Terror, Nickel Plate, Searchlight, and Ajax) | 46-06-16 | 112-11-03 | Pb, Zn, Ag, Au, Cu | Extensive underground workings include two shafts and three main levels along vein and replacement deposits in monzogranite (Kmg). Small producer of lead, zinc, silver, gold, and copper. | 115, 155 |
| 1055 | Mine (name unknown) | 46-06-40 | 112-10-25 | Au, Pb, Ag, Zn | Shaft in quartz vein in monzogranite (Kmg). Production undetermined. | 39 |
| 1056 | Mountain Queen mine | 46-04-23 | 112-11-30 | Ag, Pb, Au, Cu, Zn, U | Underground workings follow vein in monzogranite (Kmg) of the Boulder batholith. Small producer of silver, lead, gold, copper, and zinc. | 78, 115, 132 |
| 1057 | Silver prospect (name unknown) | 46-06-45 | 112-10-09 | Ag, Pb, Zn, Cu, As, Sb | Underground workings follow vein in shear zone in monzogranite (Kmg) of the Boulder batholith. Production undetermined. | 155 |
| 1058 | State mine (State group) | 46-06-24 | 112-13-35 | Au, Ag, Cu, Pb, As, Sb | Underground workings in replacement vein in monzogranite (Kmg) of the Boulder batholith. Small producer of gold, silver, copper, and lead. | 39, 115 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district** | | |
| | | | | | The Butte district is, by far, the most productive mining district in the Butte quadrangle and, based on total metal production and remaining mineral reserves, is one of the leading mining districts of the world. Metal production began in the Butte district with the discovery of gold-bearing placer deposits in 1864. Placer mining was brief, however, and by 1867 the better placers had been worked out yielding an estimated $1.5 million in gold and silver. During the 1870's Butte was a very important silver-producing district following the discovery and development of many important silver-bearing veins. The first important discovery of copper was in 1882 when high-grade copper ore was found on the Anaconda and Colusa claims. Since then, copper has been the principal metal produced. During several periods the district has also been a leading producer of manganese and zinc. Before the introduction of large-scale mining by block-caving and open-pit methods, the largest production year in Butte's history was 1916 when 292,698,764 pounds of copper were produced from underground mines. From 1900 until the early 1970's the annual production commonly ranged between 100,000,000 and 200,000,000 lbs. of copper.<br>The principal rock types underlying the Butte district and which host the ore deposits are monzogranite, alaskite, aplite, and pegmatite of the Cretaceous Boulder batholith. These are cut by at least three pre-mineralization dikes of quartz porphyry. In the western part of the district the plutonic rocks are covered by post-mineralization quartz latitic rocks of the Eocene Lowland Creek Volcanics. Normal faults which cut the batholith and the overlying volcanics are common in this part of the district. Most of the underground mining in the Butte district was conducted on thick high-grade veins that form two principal systems; the Anaconda or steep east-west system and the Blue or northwest system. Recent underground block-caving and open-pit mining has been concentrated on lower grade ore from zones of stockwork veining and on shallow supergene enriched zones. The Butte district was a very large producer of copper, zinc, manganese, lead, silver, gold, and molybdenum as well as many other commodities including cadmium, bismuth, sulfuric acid, selenium, and tellurium. The total dollar value of production (at time of production) exceeded $6 billion. | |
| 1059 | Adams mine | 46-00-43 | 112-30-44 | Cu, Ag, Au | Shafts and adits along 3 veins in monzogranite (Kmg). Producer of unknown quantity of ore containing copper, silver, and gold. | 149 |
| 1060 | Agnostic mine | 46-01-15 | 112-35-40 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1061 | Alice mine (Alice pit) | 46-01-58 | 112-32-11 | Ag, Au, Zn, Pb, Mn, Be | Extensive surface and underground workings along abundant veins in shear zones in monzogranite (Kmg). Very large producer of ore containing silver, gold, zinc, lead, and manganese. | 11, 93, 100, 141, 148, 149 |
| 1062 | Altona mine | 46-00-15 | 112-28-35 | Cu, Ag, Mo | Shaft with several working levels along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore containing copper and silver. | 149 |
| 1063 | Amy Silversmith mine | 46-01-56 | 112-32-36 | Ag, Pb, Zn, Mn | Underground workings follow three veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore containing silver, lead, zinc, and manganese. | 141, 149 |
| 1064 | Anaconda, Neversweat, St. Lawrence group | 46-01-02 | 112-31-30 | Cu, Ag, Au, Zn, As | Extensive underground workings along four veins in shear zones in monzogranite (Kmg). Now part of Berkeley Pit. Very large producer of copper, silver, gold, and zinc. | 141, 149 |

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|---|---|---|---|---|---|---|
| 1065 | Anderson mine | 46-00-35 | 112-31-13 | Cu | More than 1,000 ft of underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1066 | Anselmo mine | 46-01-02 | 112-32-49 | Ag, Pb, Zn, Cu, Au, As | Shaft, more than 400 ft deep, and underground along three veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore containing silver, lead, zinc, copper, and gold. | 51, 132, 141, 149, 163 |
| 1067 | Antlantic mine | 46-01-44 | 112-29-34 | Ag, Cu | Shaft 600 ft deep on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1068 | Badger mine | 46-01-55 | 112-31-05 | Zn, Ag, Pb, Cu, Au | Shaft, more than 400 ft deep, and underground workings along veins in shear zones in monzogranite (Kmg). Very large producer of zinc, silver, lead, copper, and gold. | 51, 54, 163 |
| 1069 | Belmont mine | 46-00-41 | 112-31-17 | Cu, Ag, Pb, Zn, Au, As | Shaft and underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore containing copper, silver, lead, zinc, and gold. | 132, 141, 149 |
| 1070 | Berkeley pit | 46-00-56 | 112-30-33 | Cu, Zn, Pb, Au, Ag | Major open pit mine in vein deposits and supergene enriched zone in monzogranite (Kmg). Workings include areas which were previously mined by underground methods. Very large producer of copper, zinc, lead, gold, and silver. | 89 |
| 1071 | Bertha group | 46-00-30 | 112-28-50 | Cu, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of copper ore. | 141, 149 |
| 1072 | Birdie mine | 46-00-50 | 112-27-30 | Ag, W, Cu, Sb | About 1,100 ft of underground workings along brecciated quartz vein in a shear zone in monzogranite (Kmg). Medium producer of silver and tungsten ore. | 138, 144, 149 |
| 1073 | Black Warrior group | 46-00-55 | 112-35-37 | Mn, Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of manganese-silver ore. | 149 |
| 1074 | Blue Bird mine (Bluebird) | 46-00-40 | 112-35-40 | Ag, Zn, Mn, Au | About 20,000 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Large producer of silver ore. | 149 |
| 1075 | Brilliant mine | 46-01-18 | 112-35-09 | Ag, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver and manganese ore. | 132, 141, 149 |
| 1076 | Brown's Gulch placer | 46-00-08 | 112-42-05 | Au, Ag | Placers along Brown's Gulch and its tributaries were mined by ground sluicing and dredge. Producer of unknown quantity of gold and silver. | 33, 84 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district--Continued** | | |
| 1077 | Burlington mine | 46-00-47 | 112-35-15 | Mn, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese and silver ore. | 149 |
| 1078 | Cambers mine | 46-00-45 | 112-31-15 | Cu, Ag, Zn | Shaft with extensive underground workings along veins in shear zones in monzogranite (Kmg). Producer unknown quantity of copper-silver ore. | 149 |
| 1079 | Clear Grit mine | 46-01-12 | 112-32-04 | Ag, Cu, Pb, Zn | Several mine levels on major vein along fault zone in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1080 | Colusa mine (East Colusa pit) | 46-01-20 | 112-30-36 | Cu, Ag | Surface and underground workings (now part of Berkeley Pit) along veins in shear zones in monzogranite (Kmg). Large producer of copper ore. | 132, 141, 149 |
| 1081 | Continental East pit | 46-00-57 | 112-27-43 | Cu, Zn, Ag, Pb, Mo | Open pit in veins along shear zones in monzogranite (Kmg). Very large producer of copper, zinc, silver, lead, and molybdenum. | 89 |
| 1082 | Copper Czar mine | 46-00-40 | 112-27-22 | Cu, Ag, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 137 |
| 1083 | Corra mine | 46-01-39 | 112-31-34 | Cu, Ag, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1084 | Creole mine | 46-00-54 | 112-34-45 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1085 | Cumberland mine | 46-01-15 | 112-35-15 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132 |
| 1086 | Czarina mine (Tzarina) | 46-00-13 | 112-33-35 | Ag, Mn, Pb, Zn | About 2,000 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 157 |
| 1087 | Diamond-Bell mine | 46-01-29 | 112-31-18 | Cu, Ag, Au, As | Extensive underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 132, 141, 149 |

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| 1088 | Eagle Bird mine | 46-00-04 | 112-34-09 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1089 | East Grey Rock mine | 46-01-30 | 112-31-25 | Cu, Ag, Zn, As | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1090 | Easter mine | 46-00-30 | 112-34-30 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1091 | Elba mine (Elbe) | 46-00-23 | 112-34-02 | Mn, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver ore. | 141 |
| 1092 | Ella mine | 46-01-22 | 112-30-00 | Ag, Mn, Cu, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver ore. | 149 |
| 1093 | Elm Orlu mine | 46-01-58 | 112-31-10 | Zn | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1094 | Emma mine (Ancient, Black Chief) | 46-00-35 | 112-32-13 | Mn, Zn, Pb, Ag, Au | Shaft more than 200 ft deep and numerous adits and working levels along veins in shear zones in monzogranite (Kmg). Very large producer of ore containing manganese, zinc, lead, and silver. | 141, 149, 163 |
| 1095 | Fairview mine | 46-00-52 | 112-35-55 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132 |
| 1096 | Fredonia mine | 46-00-41 | 112-35-15 | Ag, Mn | Underground workings along two veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-manganese ore. | 132, 141, 149 |
| 1097 | Gagnon Pit | 46-01-02 | 112-32-31 | Cu, Ag, Au, Zn, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 72, 132, 141, 149 |
| 1098 | Garibaldi mine | 46-00-28 | 112-34-49 | Ag, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-manganese ore. | 141, 149 |
| 1099 | Geneva mine | 46-00-09 | 112-33-11 | Mn, Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver ore. | 149 |
| 1100 | Glengarry mine | 46-00-36 | 112-30-41 | Cu, Ag, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 141, 149 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district--Continued** | | |
| 1101 | Gold Hill mine | 46-00-57 | 112-32-04 | Zn, Cu, Pb | Two shafts on a vein in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1102 | Goldsmith mine | 46-02-00 | 112-32-44 | Ag, Pb, Zn, Au, Cu | More than 5,500 ft of underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-lead-zinc ore. | 137, 141, 149 |
| 1103 | Great Republic mine | 46-01-02 | 112-35-22 | Mn, Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver ore. | 132, 141, 149 |
| 1104 | Green Copper mine | 46-00-30 | 112-31-00 | Cu, Ag, Au, Zn, As | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of ore containing copper, silver, gold, and zinc. | 141, 149 |
| 1105 | Gregory mine | 46-02-35 | 112-33-10 | Ag, Pb, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-lead-zinc ore. | 132, 141, 149 |
| 1106 | Grey Eagle mine | 46-00-57 | 112-35-55 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1107 | Ground Squirrel mine | 46-00-38 | 112-30-34 | Cu, Ag, Au, As | Three shafts along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore containing copper, silver, and gold. | 149 |
| 1108 | Hesperus mine | 46-00-40 | 112-31-40 | Ag, Cu, Zn | Underground workings along a vein in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1109 | Hibernia mine | 46-00-52 | 112-34-39 | Ag, Au, Mn, Pb, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Large producer of silver, gold, lead, and zinc. | 141, 149 |
| 1110 | High Ore mine | 46-01-19 | 112-31-05 | Ag, Cu, Au | Shaft, 2,800 ft deep, on vein in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1111 | Homestake mine | 46-01-40 | 112-27-30 | Ag, Au, Cu, Zn, Sb | Underground workings follow three veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1112 | Humbolt mine | 46-00-20 | 112-33-48 | Ag, Mn, Pb, Zn, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of silver-manganese ore. | 141, 149 |

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|---|---|---|---|---|---|---|
| 1113 | I.X.L. claim | 46-00-50 | 112-35-55 | Mn, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of manganese-silver ore. | 149 |
| 1114 | Ida mine | 46-00-10 | 112-28-30 | Cu, Ag, Zn, Mo, Sb | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1115 | Iduna mine | 46-00-41 | 112-31-05 | Cu, Ag, Au, Zn, As | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1116 | Independence mine (Independent) | 46-00-46 | 112-35-24 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 141 |
| 1117 | Iowa mine | 46-01-26 | 112-35-08 | Ag, Cu, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1118 | J.I.C. mine | 46-00-30 | 112-30-55 | Cu, Ag, Au, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1119 | Kelley mine | 46-01-13 | 112-31-35 | Cu, Au, Ag | Shaft, approximately 5000 ft deep, and underground workings along veins in shear zones in monzogranite (Kmg). Main shaft for hoisting ore from block-caving project. Supergene enrichment was an important ore-forming process. Very large producer of copper ore. | 89, 163 |
| 1120 | Kit Carson mine | 46-00-47 | 112-34-11 | Ag, Au, Cu | Shaft with five working levels along five veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1121 | Kossuth mine | 46-01-32 | 112-35-44 | Mn, Ag, Cu | Shaft, 90 ft deep, on vein in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1122 | Late Aquisition mine | 46-01-08 | 112-32-11 | Ag, Cu, Zn | Three shafts along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1123 | Lavena mine | 46-01-17 | 112-36-02 | Ag, Au, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-manganese ore. | 56, 132, 141, 149 |
| 1124 | Leonard mine | 46-01-15 | 112-30-25 | Cu, Ag, W | Shaft and extensive underground workings along numerous veins in monzogranite (Kmg) (now part of the Berkeley Pit). Producer of unknown quantity of copper ore. | 77, 89, 149, 163 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district--Continued** | | |
| 1125 | Lexington group (Allie Brown, Wappello, La Plata) | 46-01-41 | 112-32-06 | Ag, Au, Pb, Cu, Zn, Mn, Be | Main shaft, more than 3000 ft deep, and underground workings along three veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 100, 141, 149, 163 |
| 1126 | Little Annie mine | 46-01-48 | 112-33-35 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1127 | Little Darling mine | 46-00-34 | 112-35-43 | Ag, Pb, Mn, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Small producer of silver-lead ore. | 149 |
| 1128 | Little Mina mine | 46-01-12 | 112-31-40 | Ag, Cu, Pb, Zn, W, As | Several levels of underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-lead ore. | 149 |
| 1129 | Little Sarah mine | 46-01-00 | 112-34-55 | Mn | Surface and underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1130 | Lizzie mine (Hayes mine) | 46-00-58 | 112-31-06 | Cu, Ag, Pb, Zn, Au, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Medium producer of ore containing copper, silver, lead, and zinc. | 141, 149 |
| 1131 | Magna Charta mine | 46-02-00 | 112-31-55 | Ag, Au, Cu, Mn, Pb, Zn, Be | Underground workings along five veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 132, 141, 149 |
| 1132 | Mapleton mine | 46-01-05 | 112-35-02 | Ag, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-manganese ore. | 132, 141, 149 |
| 1133 | Marget Ann mine | 46-02-16 | 112-31-32 | Au, Ag, Cu, Pb, Zn, Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 132, 149 |
| 1134 | Marie mine | 46-02-25 | 112-32-35 | Mn, Pb, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 149 |
| 1135 | Mat mine (Alelaidmat mine) | 46-01-35 | 112-30-24 | Ag, Cu, Zn, Pb, Mn, Au, Sb | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 54, 141, 149 |

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|---|---|---|---|---|---|---|
| 1136 | Missoula Gulch placer (Summit Valley placer) | 46-00-15 | 112-32-55 | Au, Ag | Alluvium (Qs) in Missoula Gulch and tributaries was mined by ground sluicing and hydraulic mining. Large producer of gold and silver. | 33, 84, 149 |
| 1137 | Modoc mine | 46-01-25 | 112-30-43 | Cu, Ag, Au | Two shafts along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper-silver ore. | 149 |
| 1138 | Montana claim | 46-00-55 | 112-35-45 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1139 | Montgomery mine | 46-00-30 | 112-28-45 | Cu | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 149 |
| 1140 | Moody claim (Sankey mine) | 46-01-30 | 112-35-38 | Mn, Ag, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver-copper ore. | 132, 141, 149 |
| 1141 | Moose mine | 46-01-54 | 112-31-38 | Ag, Cu, Pb, Zn | Underground workings along three veins in shear shear in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1142 | Moscow mine | 46-01-18 | 112-32-39 | Cu, Ag, Zn | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1143 | Moulton mine | 46-02-00 | 112-32-25 | Pb, Zn, Ag, Mn, Au | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of lead, zinc, silver, and manganese. | 141, 149 |
| 1144 | Mount Moriah | 46-01-05 | 112-32-39 | Cu, Zn | Several shafts along veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1145 | Mountain Con mine | 46-01-24 | 112-31-55 | Cu, Ag, Au, Zn, As | Shaft, more than 5000 ft deep, with many working levels along veins in shear zones in monzogranite (Kmg). Very large producer of copper ore. | 54, 141, 149, 163 |
| 1146 | Mountain View mine | 46-01-10 | 112-31-03 | Cu, Ag, Au, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Now part of the Berkeley Pit. Large producer of copper-silver ore. | 141, 149 |
| 1147 | Narrow Gage mine | 46-01-35 | 112-35-25 | Ag, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Medium producer of silver-manganese ore. | 149 |
| 1148 | Nemo mine | 46-01-25 | 112-35-28 | Ag, Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Medium producer of silver-manganese ore. | 149 |
| 1149 | Nettie mine (Nettie-Hibernia, Nettie-Hubernic) | 46-00-50 | 112-34-41 | Mn, Ag, Pb, Zn, Au | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 93, 141, 149 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district--Continued** | | |
| 1150 | Nipper mine | 46-01-09 | 112-31-41 | Ag, Cu, Pb, Zn, W, As | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1151 | Northwestern mine | 46-00-55 | 112-29-00 | Cu, Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper-silver ore. | 149 |
| 1152 | Norwich-Plutus group | 46-01-05 | 112-34-45 | Mn, Ag, Pb, Zn, Mo, Au, Cu | Underground workings follow four veins in shear zones in monzogranite (Kmg). Small producer of manganese ore. | 26, 138, 141, 150 |
| 1153 | Number Three mine | 46-00-44 | 112-30-40 | Cu, Ag, Au, As | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. Now part of the Berkeley Pit. | 149 |
| 1154 | Olsen Fraction mine | 46-01-54 | 112-35-16 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1155 | Original mine | 46-01-02 | 112-32-15 | Cu, Ag, Zn, F, As | Shaft, more than 3000 ft deep, and underground workings along three veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 72, 102, 110, 149, 163 |
| 1156 | Orphan Girl mine | 46-00-37 | 112-33-52 | Ag, Pb, Zn, Mn, Cd | Shaft, more than 2500 ft deep, and underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-lead-zinc ore. | 132, 141, 149, 163 |
| 1157 | Otisco mine | 46-00-31 | 112-31-28 | Ag, Pb, Zn, Cu, Au | More than 2,600 ft of underground workings follow veins in shear zones in monzogranite (Kmg). Large producer of silver-lead-zinc ore. | 141, 149 |
| 1158 | Parnell mine | 46-01-14 | 112-31-17 | Ag, Cu, Au, As | Shaft, with numerous working levels, along three veins in shear zones in monzogranite (Kmg). Now part of Berkeley Pit. Producer of unknown quantity of silver-copper ore. | 149 |
| 1159 | Parrot mine | 46-00-57 | 112-31-45 | Cu, Ag, As | Shaft, 2,000 ft deep, with 12 working levels along two main veins in monzogranite (Kmg). Very large producer of copper. | 110, 149 |
| 1160 | Pennsylvania mine | 46-00-52 | 112-30-48 | Cu | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |

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|---|---|---|---|---|---|---|
| 1161 | Philadelphia mine | 46-00-43 | 112-34-58 | Mn, Ag, Pb, Zn | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1162 | Poulin, Stella, and Buffalo mine group | 46-01-22 | 112-32-09 | Cu, Ag, Au, Zn, As | Shaft, 1,200 ft deep, with several working levels along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 149 |
| 1163 | Preferencia, Green Mountain, Alliance group | 46-01-25 | 112-31-40 | Cu, Ag, Au, As | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper ore. | 149 |
| 1164 | Prospector mine | 46-00-35 | 112-34-25 | Zn, Ag, Pb, Mn, Au | Underground workings follow veins in shear zones in monzogranite (Kmg). Medium producer of zinc, silver, lead, and manganese. | 149 |
| 1165 | Reins Copper Co. mine | 46-01-16 | 112-30-15 | Cu, Ag, Zn, Au | Shaft, greater than 800 ft deep, along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper-silver ore. | 149 |
| 1166 | Saint Patrick mine | 46-00-30 | 112-34-10 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of manganese ore. | 149 |
| 1167 | Scarfield mine | 46-00-28 | 112-28-50 | Cu, Ag, Mo | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity copper ore. | 141, 149 |
| 1168 | Scotia mine | 46-01-30 | 112-34-58 | Mn, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver ore. | 132, 141, 149 |
| 1169 | Self Rising mine | 46-00-36 | 112-34-38 | Mn, Ag | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese-silver ore. | 132, 149 |
| 1170 | Silver Bow Creek placer (Clark Fork River placer) | 46-00-47 | 112-43-35 | Au, Ag | Alluvium (Qs) was mined by ground sluicing. Medium producer of gold and silver. | 84 |
| 1171 | Silver Bow deposits (Bull Moose, Merrimac, Wrong Font, Eva, Superior, Delia, Little Jack) | 46-00-20 | 112-39-05 | F, Au, Ag, Ba | Pits and trenches in vein and replacement fluorite deposits in monzogranite (Kmg). Small producer of fluorite. | 118, 125 |
| 1172 | Silver Bow mine | 46-00-48 | 112-30-39 | Cu, Ag, Au, As | 1,000-ft shaft along veins in shear zones in monzogranite (Kmg). Now part of the Berkeley Pit. Producer of unknown quantity of copper-silver ore. | 149 |

Table 1.--Mines and prospects, Butte 1°x2° quadrangle, Montana (continued)

| Site No. | Site Name (Alternate names) | Latitude North | Longitude West | Commodities Present | Description | Sources of Data |
|---|---|---|---|---|---|---|
| | | | | **Butte (Summit Valley) district--Continued** | | |
| 1173 | Silver Cleft mine | 46-00-39 | 112-34-37 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 149 |
| 1174 | Silver King mine | 46-00-58 | 112-32-25 | Ag, Au, Pb, Zn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-gold ore. | 149 |
| 1175 | Silver Lick mine | 46-02-12 | 112-32-35 | Ag, Au, Pb, Be | Shaft along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 100, 149 |
| 1176 | Snowdrift mine | 46-02-18 | 112-32-51 | Ag, Mn, Au, Sb | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-manganese ore. | 132, 141, 149 |
| 1177 | Speculator mine | 46-01-33 | 112-31-08 | Cu, Ag | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1178 | Springfield mine | 46-02-43 | 112-32-54 | Ag, Cu, Au, Pb, Zn, As, Sb | Shaft along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore | 149 |
| 1179 | Stanislas mine | 46-00-40 | 112-32-21 | Au, Ag, Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 140 |
| 1180 | Steward mine | 46-01-07 | 112-32-07 | Cu, Ag, Au, Zn, Ba, As, F | Shaft, more than 4,600 ft deep, with many underground levels along veins in shear zones in monzogranite (Kmg). Very large producer of copper ore. | 77, 89, 149 |
| 1181 | Sunset mine | 46-02-32 | 112-27-32 | Au, Ag, Pb, Cu | Underground workings follow veins in shear zones in monzogranite (Kmg). Small producer of gold, silver, lead, and copper. | 115 |
| 1182 | Travona mine | 46-00-18 | 112-32-42 | Mn, Ag, Zn, Pb, Cu, Au | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 93, 110, 132, 141, 149 |
| 1183 | Unita mine | 46-00-35 | 112-35-15 | Mn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132, 141 |
| 1184 | Valdemere mine | 46-01-57 | 112-31-42 | Ag, Au, Mn, Pb, Zn | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of ore. | 93, 132, 141, 149 |

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| 1185 | Wabash mine | 46-02-38 | 112-32-57 | Ag | Underground workings on veins in monzogranite (Kmg). Producer of unknown quantity of ore. | 149 |
| 1186 | Wake Up Jim mine | 46-01-27 | 112-31-29 | Cu, Ag, Au | Shaft, 1,000 ft deep, with several working levels along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of copper-silver-gold ore. | 149 |
| 1187 | West Grey Rock mine | 46-01-30 | 112-31-26 | Ag, Cu, Zn, As | Underground workings along 5 veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of silver-copper ore. | 149 |
| 1188 | West Mapleton mine | 46-01-03 | 112-35-12 | Mn | Underground workings follow veins in shear zones in monzogranite (Kmg). Producer of unknown quantity of manganese ore. | 132 |
| 1189 | West Nettie mine | 46-00-46 | 112-34-59 | Au, Ag | Underground workings along veins in shear zones in monzogranite (Kmg). Producer of unknown quantity gold-silver ore. | 132, 149 |
| 1190 | Yankee Doodle Creek placer | 46-02-57 | 112-30-14 | Au, Ag | Placers in alluvium (Qs) were mined by ground sluicing. Small producer of gold and silver. | 33, 84 |

**Pipestone district**

Only the northern part of this district lies within the Butte quadrangle and it extends south into the Dillon quadrangle. It is underlain by plutonic rocks of the Cretaceous Boulder batholith including monzogranite, aplite, alaskite, and pegmatite. Several northeast-trending normal faults have been mapped in the area. The mineral deposits are in sulfide-bearing quartz veins, in scheelite- and molybdenite-bearing veins and in shear zones. A mine in the northern part of the district was a small producer of silver, gold, and lead.

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|---|---|---|---|---|---|---|
| 1195 | Nellie mine (Mascot) | 46-02-02 | 112-24-22 | Ag, Au, Pb | Six adits and two shafts, with workings totaling greater than 5,700 ft, along veins in shear zones in monzogranite (Kmg). Small producer of silver, gold, and lead. | 115 |
| 1196 | Niki mine (Lonnie Stevens) | 46-01-05 | 112-24-37 | Au, W, Mo | Several adits and pits along veins in shear zones containing disseminated scheelite and molybdenite in monzogranite (Kmg). Production undetermined. | 132, 144 |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

**CODES USED IN TABLE 1**

LIST OF COMMODITIES

| Code | Commodity | Code | Commodity | Code | Commodity | Code | Commodity |
|---|---|---|---|---|---|---|---|
| Ag | SILVER | Cor | CORUNDUM (GEM SAPPHIRE) | Mo | MOLYBDENUM | Sn | TIN |
| Al | ALUMINUM | Cr | CHROMIUM | Nb | NIOBIUM | St | BUILDING STONE |
| Au | GOLD | Cu | COPPER | P | PHOSPHATE | Ta | TANTALUM |
| B | BORON | F | FLUORINE | Pb | LEAD | Te | TELLURIUM |
| Ba | BARIUM | Fe | IRON | Pgm | PLATINUM GROUP MINERALS | Th | THORIUM |
| Be | BERYLLIUM | Hg | MERCURY | Ram | RADIOACTIVE MINERALS | U | URANIUM |
| Bi | BISMUTH | Kyn | KYANITE | Ree | RARE-EARTH ELEMENTS | Vm | VERMICULITE |
| Cd | CADMIUM | La | LANTHANUM | Sb | ANTIMONY | W | TUNGSTEN |
| Cly | CLAY MINERALS | Ls | LIMESTONE | Sil | SILICA (INCLUDES INDUSTRIAL SILICA, | Y | YTTRIUM |
| Co | COBALT | Mn | MANGANESE | | QUARTZ CRYSTAL, AND SMELTER FLUX) | Zn | ZINC |
| | | | | | | Zr | ZIRCONIUM |

## FORMATION SYMBOLS

### SEDIMENTARY AND VOLCANIC ROCKS

| Symbol | Age and description |
|---|---|
| | Quaternary |
| Qs | Surficial deposits |
| | Tertiary |
| Ts | Sedimentary deposits and rocks |
| Trv | Rhyolitic volcanic rocks, includes rhyolitic, quartz latitic, and andesitic volcanic rocks, plugs, and dikes |
| Tab | Andesitic and basaltic volcanic rocks |
| Tlc | Lowland Creek Volcanics |
| | Tertiary or Cretaceous |
| TKab | Andesitic and basaltic volcanic rocks |
| | Cretaceous |
| Kem | Elkhorn Mountains Volcanics |
| Ks | Sedimentary rocks, undivided |
| Kb | Blackleaf Formation |
| Kk | Kootenai Formation |
| | Jurassic |
| Js | Sedimentary rocks, undivided |
| Je | Ellis Group; includes Swift, Reirdon, and Sawtooth Formations |
| | Permian |
| Pp | Phosphoria Formation |
| | Pennsylvanian |
| Pq | Quadrant Quartzite |
| | Permian, Pennsylvanian, Mississippian, and Devonian |
| PDs | Sedimentary rocks, undivided |
| | Pennsylvanian and Mississippian |
| MPa | Amsden Formation |
| | Mississippian |
| Mm | Madison Group: includes Mission Canyon Limestone and Lodgepole Limestone |
| | Devonian |
| Dj | Jefferson Formation |
| Dm | Maywood Formation |
| | Cambrian |
| Cs | Sedimentary rocks, undivided |
| Crl | Red Lion Formation |
| Ch | Hasmark Formation |
| Csh | Silver Hill Formation |
| Cf | Flathead Quartzite |

### SEDIMENTARY AND VOLCANIC ROCKS (continued)

| Symbol | Age and description |
|---|---|
| | Middle Proterozoic |
| Ymi | Missoula Group: includes Pilcher Quartzite; Garnet Range and McNamara Formations; Bonner Quartzite; Mount Shields, Shepard, and Snowslip Formations |
| Yc | Middle Belt carbonate: includes Wallace and Helena Formations |
| Yra | Ravalli Group: includes Empire, Spokane, and Greyson Formations |
| Ypi | Pilcher Quartzite |
| Ygr | Garnet Range Formation |
| Ybo | Bonner Quartzite |
| Yms | Mount Shields Formation |
| Ysn | Snowslip Formation |
| Yh | Helena Formation |
| Yw | Wallace Formation |
| Ye | Empire Formation |
| Ys | Spokane Formation |
| Yg | Greyson Formation |

### INTRUSIVE ROCKS

| Symbol | Age and description |
|---|---|
| | Tertiary |
| Td | Dacite |
| Tmg | Granitic rocks: includes Lost Creek and Hearst Lake stocks and Pintlar Creek batholith |
| | Tertiary or Cretaceous |
| TKmg | Granitic rocks: includes Welcome Creek stock |
| TKgd | Granodioritic rocks: includes Gird Point, Maloney Basin, and Beaverhead Mountain stocks |
| TKgb | Gabbroic and dioritic rocks |
| TKa | Alkalic rocks: includes Cretaceous Skalkaho Mountain stock |
| | Cretaceous |
| Ka | Aplite, alaskite, and pegmatitie |
| Kmg | Granitic rocks: includes La Marche Creek, Mill Creek, and Broadwater stocks; Butte Quartz Monzonite and other units of the Boulder Batholith; units of the Idaho and Sapphire Batholiths and the Big Spring Creek stock; and the Mount Powell batholith |
| Kgd | Granodioritic rocks: includes units of the Boulder, Idaho, and Sapphire Batholiths; Philipsburg batholith; Short Peak, Royal, Marysville, Granite Butte, Dalton Mountain, Ogden Mountain, Mineral Hill, Blackfoot City, Garnet, Wallace Creek, Henderson Creek, Cable, and Miners Gulch stocks |
| Kd | Diorite and diorite porphyry; andesite and andesite porphyry |
| Kmd | Monzodioritic and monzonitic rocks: includes Storm Lake and Racetrack Creek intrusive complexes and Scratch Gravel Hills stock |
| | Late or Middle Proterozoic |
| ZYg | Gabbroic and dioritic rocks |

Table 1.--Mines and prospects, Butte $1^{o}x2^{o}$ quadrangle, Montana (continued)

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TABLE 2. Production data for mining districts and areas, Butte 1°x2° quadrangle, Montana

[Dashes (---) indicate no data available]

| NAME OF DISTRICT OR AREA | PRODUCTION Au (1000 oz) | Ag (1000 oz) | Cu (1000 lb) | Pb (1000 lb) | Zn (1000 lb) | Value ($1000) [1] | Years | Accuracy | SOURCES OF DATA | TOTAL VALUE ($1000) |
|---|---|---|---|---|---|---|---|---|---|---|
| Alps district | 0.75 | 0.36 | 1.00 | 0.80 | 0.70 | 26.2 | 1932-1951 | Recorded | 141 | 26.20 |
| Amazon district | 1.04 | 70.60 | 49.45 | 493.95 | 22.54 | 119.9 | 1902-1957 | Recorded | 115 | 119.86 |
| Anaconda Range area | 0.01 | --- | --- | --- | --- | 0.4 | 1934 | Recorded | 84 | 0.35 |
| Austin district | --- | --- | --- | --- | --- | 327.0 | Pre-1928 | Estimated | 99 | |
| | 0.44 | 0.44 | 0.26 | 7.73 | --- | 11.7 | 1928-1944 | Recorded | 84, 141 | 338.73 |
| Basin district | --- | --- | --- | --- | --- | 8,000.0 | Pre-1902 | Estimated | 99 | |
| | 88.14 | 2,426.52 | 2,001.85 | 6,758.47 | 3,715.16 | 7,609.6 | 1902-1957 | Recorded | 115 | 15,609.65 |
| Bear Creek area | 430.00 | --- | --- | --- | --- | 10,000.0 | 1865-1950 | Estimated | 35, 84, 91, | 10,000.00 |
| Big Blackfoot district | 4.45 | 2.57 | 0.40 | 13.94 | 0.40 | 133.5 | 1902-1962 | Recorded | 84, 85 | 133.48 |
| Big Foot district | 0.70 | 12.86 | 12.75 | 320.83 | 137.96 | 67.4 | 1920-1957 | Recorded | 115 | 67.41 |
| Black Pine district | 2.82 | 2,433.60 | 479.93 | 262.89 | 27.92 | 2,094.3 | 1888-1964 | Recorded [2] | 44, 165 | |
| | --- | --- | --- | --- | --- | 20,000.0 | 1974-1983 | Estimated | 141 | 22,094.33 |
| Blackfoot River area | 0.78 | 0.29 | 0.09 | 12.10 | --- | 26.9 | 1910-1946 | Recorded | 84, 85 | 26.94 |
| Blue-Eyed Nellie district | --- | 600.00 | --- | 9,000.00 | --- | 1,000.0 | 1890-1906 | Estimated | 36 | 1,000.00 |
| Boulder district | --- | --- | --- | --- | --- | 12,794.0 | Pre-1902 | Estimated | 71 | |
| | 46.04 | 3,531.59 | 2,604.01 | 30,481.57 | 23,897.30 | 4,655.6 | 1902-1957 | Recorded [3] | 115 | 17,449.58 |
| Butte district | 72.57 | --- | --- | --- | --- | 1,500.0 | 1864-1867 | Estimated | 89 | |
| | 2,779.20 | 679,068.10 | 18,402,980.00 | 854,797.00 | 4,909,202.00 | >6,000,000.0 | 1875-1973 | Recorded [4] | 89 | >6,001,500.00 |
| Clancy district | --- | --- | --- | --- | --- | 500.0 | 1865-1907 | Estimated [5] | 99 | |
| | 60.31 | 235.24 | 11.46 | 473.10 | 180.74 | 2,287.7 | 1902-1957 | Recorded | 84, 115 | 2,787.70 |
| Clinton district | --- | --- | --- | --- | --- | 185.0 | Pre-1934 | Estimated | 91, 124 | |
| | 0.21 | 31.77 | 226.55 | 36.64 | 3.20 | 63.2 | 1934-1955 | Recorded | 124 | 248.23 |
| Coloma district | 22.29 | 21.95 | 13.50 | 18.86 | 0.80 | 545.4 | 1897-1956 | Recorded | 35, 84, 124 | |
| | --- | --- | --- | --- | --- | 100.0 | 1956 | Recorded [6] | 141 | 645.43 |
| Copper Cliff district | 0.26 | 0.57 | 110.90 | --- | --- | 20.2 | 1891-1945 | Recorded | 35 | 20.24 |

TABLE 2. Production data for mining districts and areas, Butte 1°x2° quadrangle, Montana (continued)

| NAME OF DISTRICT OR AREA | PRODUCTION Au (1000 oz) | Ag (1000 oz) | Cu (1000 lb) | Pb (1000 lb) | Zn (1000 lb) | Value ($1000)[1] | Years | Accuracy | SOURCES OF DATA | TOTAL VALUE ($1000) |
|---|---|---|---|---|---|---|---|---|---|---|
| Deer Lodge Valley area | 4.00 | --- | --- | --- | --- | 80.0 | 1867-1869 | Estimated | 84 | 80.00 |
| Dog Creek area | 4.61 | 0.03 | 0.16 | --- | --- | 95.2 | 1911-1936 | Recorded[7] | 84, 85, 107 | 95.19 |
| Douglas Creek area | --- | --- | --- | --- | --- | 695.0 | 1930-1951 | Recorded[8] | 141 | 695.00 |
| Dunkleberg district | --- | --- | --- | --- | --- | 200.0 | Pre-1917 | Estimated[9] | 92 | |
| | 0.20 | 199.89 | 221.01 | 3,571.72 | 5,148.10 | 950.0 | 1912-1957 | Recorded | 106, 141 | 1,150.00 |
| Elk Creek area | 75.00 | --- | --- | --- | --- | 2,600.0 | 1886-1966 | Estimated[10] | 84, 91, 141 | 2,600.00 |
| Elliston district | --- | --- | --- | --- | --- | 2,550.0 | Pre-1909 | Estimated | 99 | |
| | 9.70 | 175.94 | 103.33 | 1,914.08 | 251.53 | 608.8 | 1909-1968 | Recorded | 85 | 3,158.80 |
| Emery district | 4.29 | --- | --- | --- | --- | 75.0 | 1872-1892 | Estimated | 99 | |
| | 31.38 | 865.98 | 42.97 | 2,389.75 | 693.95 | 1,884.3 | 1902-1966 | Recorded | 85 | 1,959.30 |
| Finn district | 85.00 | --- | --- | --- | --- | 1,500.0 | 1865-1869 | Estimated | 84 | |
| | 10.12 | 1.02 | --- | --- | --- | 294.5 | 1903-1957 | Recorded | 85 | 1,794.50 |
| Flint Creek Range area | 5.70 | --- | --- | --- | --- | 100.0 | Unknown | Estimated | 84, 166 | |
| | 0.54 | 0.26 | 0.17 | --- | --- | 12.3 | 1926-1937 | Recorded[11] | 84, 85 | 112.28 |
| Frog Pond Basin district | 1.10 | 4.35 | 2.41 | 83.72 | 22.40 | 31.1 | 1907-1937 | Recorded | 145 | 31.08 |
| Garnet district | 43.66 | --- | --- | --- | --- | 1,400.0 | Pre-1917 | Estimated[12] | 91 | |
| | 49.26 | 46.06 | 100.67 | 11.74 | 1.74 | 1,654.9 | 1917-1952 | Recorded | 141 | 3,054.85 |
| Garnet Range area | --- | --- | --- | --- | --- | 50.0 | Unknown | Estimated[5],[13] | 20, 91, 132 35, 52, 140 | |
| | 0.01 | 6.49 | 1.30 | 3,336.17 | 26.70 | 675.7 | 1932-1956 | Recorded[14] | 84, 124 | 725.66 |
| Garrison district | --- | --- | --- | --- | --- | 30,000.0 | 1929-1961 | Estimated[15] | 107 | 30,000.00 |
| Georgetown district | 493.30 | 592.69 | 1,042.62 | --- | --- | 11,630.6 | 1865-1968 | Estimated | 36, 44 | 11,630.60 |
| Helena district | 1,131.28 | 65.00 | 25.00 | 1,120.00 | 20.00 | 23,500.0 | 1864-1928 | Estimated | 99 | |
| | 147.59 | 46.52 | 21.83 | 515.16 | 161.20 | 5,211.6 | 1931-1953 | Recorded | 141 | 28,711.57 |
| Henderson Creek area | 56.91 | --- | --- | --- | --- | 1,176.3 | 1866-1912 | Estimated | 26, 44 | |
| | 22.38 | 10.00 | 352.90 | 0.35 | --- | 1,052.1 | 1913-1949 | Recorded[16] | 26, 143 | 2,228.39 |

TABLE 2. Production data for mining districts and areas, Butte 1°x2° quadrangle, Montana (continued)

| NAME OF DISTRICT OR AREA | PRODUCTION Au (1000 oz) | Ag (1000 oz) | Cu (1000 lb) | Pb (1000 lb) | Zn (1000 lb) | Value ($1000)[1] | Years | Accuracy | SOURCES OF DATA | TOTAL VALUE ($1000) |
|---|---|---|---|---|---|---|---|---|---|---|
| John Long Mountains area | 5.00 | --- | --- | --- | --- | 100.0 | Unknown | Estimated[5,17] | 44, 80, 84, 143 | 100.00 |
| Johnson Basin district | --- | 15.00 | --- | --- | --- | 9.0 | Pre-1906 | Estimated | 36 | |
| | --- | --- | --- | --- | --- | 459.0 | 1954-1956 | Recorded[18] | 143 | 468.00 |
| Lincoln Gulch area | 368.42 | --- | --- | --- | --- | 7,000.0 | Pre-1900 | Estimated | 99 | |
| | 4.04 | 0.85 | 0.31 | 2.00 | --- | 123.8 | 1909-1951 | Recorded | 141 | 7,123.78 |
| Little Prickly Pear area | 33.38 | --- | --- | --- | --- | 690.0 | Pre-1927 | Estimated | 84 | |
| | 0.15 | --- | --- | --- | --- | 5.0 | 1931-1941 | Recorded | 84 | 694.96 |
| Lost Creek district | 1.99 | 8.93 | 0.50 | 2.00 | --- | 47.1 | 1865-1968 | Estimated | 36 | 47.10 |
| Lowland district | 31.42 | 655.62 | | --- | --- | 1,024.0 | Pre-1906 | Estimated[5] | 71, 115 | |
| | 20.00 | 202.06 | 0.55 | --- | --- | 656.3 | 1906-1941 | Recorded | 84, 115 | 1,680.25 |
| Marysville district | | --- | --- | --- | --- | 30,000.0 | Pre-1912 | Estimated | 71, 147 | |
| | 154.80 | --- | --- | --- | --- | 3,200.0 | Pre-1921 | Estimated[19] | 84 | |
| | 262.06 | 844.08 | 264.60 | 3,083.71 | 406.85 | 7,207.6 | 1909-1956 | Recorded | 84, 141 | 40,407.64 |
| Maxville area | --- | --- | --- | --- | --- | 75.0 | Pre-1911 | Estimated | 44 | |
| | 0.59 | 47.07 | 20.73 | 63.71 | 0.40 | 52.1 | 1926-1948 | Recorded[20] | 141 | 127.08 |
| McClellan Gulch district | 340.00 | --- | --- | --- | --- | 7,000.0 | 1864-1875 | Estimated | 99 | 7,000.00 |
| Moose Lake district | 1.98 | 6.02 | 20.98 | 0.39 | --- | 111.9 | 1931-1970's | Estimated[5] | 40, 141, 145 | 111.91 |
| North Boulder Mountains area | 0.01 | 2.98 | 0.27 | 78.03 | 1.28 | 7.7 | 1908-1950 | Recorded | 85, 115 | 7.70 |
| Olson Gulch district | 2.18 | 38.41 | 4.00 | --- | --- | 83.6 | 1865-1968 | Estimated[21] | 36, 44, 143 | 83.59 |
| Ophir district | 169.30 | --- | --- | --- | --- | 3,500.0 | Pre-1900 | Estimated | 99 | |
| | 15.38 | 189.76 | 591.78 | 197.40 | 2.77 | 671.9 | 1902-1968 | Recorded[22] | 85, 144 | 4,171.88 |
| Oro Fino district | --- | --- | --- | --- | --- | 350.0 | Pre-1933 | Estimated | 99 | 350.00 |
| Philipsburg district | 188.68 | 39,000.00 | --- | --- | --- | 39,000.0 | Pre-1910 | Estimated | 44 | |
| | 70.48 | 17,386.18 | 3,700.87 | 18,059.94 | 54,366.43 | 52,019.6 | 1910-1960 | Recorded[23] | 141 | 91,019.64 |

TABLE 2. Production data for mining districts and areas, Butte 1°x2° quadrangle, Montana (continued)

| NAME OF DISTRICT OR AREA | PRODUCTION Au (1000 oz) | Ag (1000 oz) | Cu (1000 lb) | Pb (1000 lb) | Zn (1000 lb) | Value ($1000)[1] | Years | Accuracy | SOURCES OF DATA | TOTAL VALUE ($1000) |
|---|---|---|---|---|---|---|---|---|---|---|
| Pioneer district | 216.20 | --- | --- | --- | --- | 4,000.0 | Pre-1897 | Estimated | 98 | |
| | 65.52 | 7.50 | --- | --- | --- | 2,051.6 | 1902-1968 | Recorded | 85 | 6,051.62 |
| Pipestone district | 0.05 | 8.05 | 0.18 | --- | --- | 5.0 | 1911-1940 | Recorded | 115 | 5.00 |
| Princeton district | 50.00 | --- | --- | --- | --- | 1,250.0 | Pre-1909 | Estimated | 44 | |
| | 11.69 | 168.86 | 568.49 | 863.35 | 250.00 | 620.0 | 1909-1953 | Recorded[24] | 107, 141 | 1,870.00 |
| Racetrack district | 3.67 | 0.45 | 0.08 | --- | --- | 75.8 | 1902-1968 | Recorded | 85 | 75.75 |
| Red Lion district | 24.85 | 12.23 | 1.49 | --- | --- | 841.2 | 1865-1981 | Estimated | 36, 39 | 841.15 |
| Rimini district | | | | | | 6,416.0 | Pre-1909 | Estimated | 99 | |
| | 9.98 | 515.62 | 121.79 | 5,836.01 | 965.71 | 1,372.2 | 1909-1957 | Recorded | 141 | 7,788.20 |
| Rock Creek area | 3.16 | 0.71 | 0.13 | --- | --- | 101.4 | 1914-1942 | Recorded[25] | 141 | 101.39 |
| Rose Mountain district | 4.65 | 0.68 | 0.10 | 3.00 | --- | 114.0 | 1896-1951 | Estimated | 84, 141 | 114.00 |
| Sapphire Mountains area | 0.11 | 5.97 | 0.20 | 2.16 | --- | 15,000.0 | Unknown | Estimated[5],[26] | 141, 145 | 15,000.00 |
| Scratchgravel Hills area | --- | --- | --- | --- | --- | 500.0 | Pre-1914 | Estimated[5] | 99 | |
| | 32.11 | 171.11 | 50.03 | 587.28 | 164.47 | 972.5 | 1914-1955 | Recorded | 141 | 1,472.49 |
| Sevenmile Creek area | 58.06 | --- | --- | --- | --- | 1,200.0 | Pre-1933 | Estimated | 99 | 1,200.00 |
| Seven-Up Pete Gulch area | --- | --- | --- | --- | --- | 25.0 | 1920-1940 | Estimated[5] | 86, 99 | 25.00 |
| Silver Lake district | 0.13 | 50.00 | 2.50 | 95.00 | 55.00 | 477.1 | 1884-1974 | Estimated[27] | 36, 39, 44, 143 | 477.06 |
| South Boulder Mountains area | 1.05 | 22.00 | 2.80 | 5.52 | --- | 47.5 | Unknown | Estimated[5],[28] | 39, 84, 115 | 47.50 |
| Stemple-Gould district | --- | --- | --- | --- | --- | 2,920.0 | 1884-1914 | Estimated | 99 | |
| | 68.97 | 459.92 | 25.40 | 22.79 | --- | 2,364.2 | 1917-1948 | Recorded | 86 | 5,284.20 |
| Stemwinder Hill area | 1.21 | 65.06 | --- | 1,265.71 | 43.40 | 118.0 | 1895-1920 | Estimated | 99 | 118.00 |
| Top O'Deep district | --- | --- | --- | --- | --- | 50.0 | Pre-1917 | Estimated | 91 | 50.00 |

TABLE 2. Production data for mining districts and areas, Butte 1°x2° quadrangle, Montana (continued)

| NAME OF DISTRICT OR AREA | PRODUCTION Au (1000 oz) | Ag (1000 oz) | Cu (1000 lb) | Pb (1000 lb) | Zn (1000 lb) | Value ($1000) 1/ | Years | Accuracy | SOURCES OF DATA | TOTAL VALUE ($1000) |
|---|---|---|---|---|---|---|---|---|---|---|
| Welcome Creek district | 1.47 | --- | --- | --- | --- | 30.5 | 1890-1941 | Estimated | 79, 84 | 30.50 |
| Wickes district | --- | --- | --- | --- | --- | 42,646.0 | 1866-1901 | Estimated 5/ | 71, 99 | |
| | 30.73 | 3,472.68 | 4,880.71 | 27,254.78 | 9,717.80 | 7,495.5 | 1902-1957 | Recorded 29/ | 115 | 50,141.47 |
| Wolf Creek district | --- | --- | --- | --- | --- | 50.0 | 1890-1933 | Estimated | 99 | |
| | 0.01 | 0.48 | 2.29 | 1.83 | | 4.3 | 1934-1948 | Recorded | 141 | 54.25 |
| TOTALS | 7,939.51 | 753,808.95 | 18,420,667.26 | 973,045.18 | 5,009,488.43 | >6,404,236.4 | | | | >6,402,736.450 |

1/ Actual recorded value at time of production or estimated value calculated from recorded or estimated quantity of metal produced and average metal prices during the years of production.
2/ Minor amount of tungsten also produced
3/ Includes production of 150 tons of uranium-silver ore
4/ Value includes production of 3,702,787,341 lb manganese; 4,306,156 lb cadmium; 4,042,663 lb bismuth; 316,855 lb selenium; 237,256 lb tellurium; and 9,456,105 dry tons sulfuric acid
5/ Estimated by authors based on best available data. Other estimates are from sources of data listed.
6/ Includes production of 10,000 tons barite
7/ Minor amounts of phosphate ore and limestone also produced
8/ Value of phosphate ore produced
9/ Value based on an estimated production of silver-lead ore
10/ Includes an estimated production of 100,000 tons barite
11/ Minor quantities of manganese, tungsten, and silica also produced
12/ Value based on estimated production of gold-silver-copper ore
13/ Value based on estimated small production of gold, silver, lead, copper, and limestone
14/ Includes production of 2,532 tons manganese ore
15/ Value based on an estimated 7.84 million tons phosphate ore
16/ Includes production of 141,884 lb contained tungsten
17/ Includes small production of silver, copper, and tungsten
18/ Includes production of 121,329 lb contained tungsten
19/ Placer production only
20/ Includes production of 1,320 tons phosphate ore
21/ Includes small production of iron and tungsten
22/ Includes production of 1,760 lb contained tungsten
23/ Includes production of 976,595 tons manganese ore
24/ Includes production of 6,259 tons phosphate ore
25/ Large quantities of sapphires of unknown value have also been produced
26/ Includes an estimated very large production of fluorite
27/ Includes production of 91,766 lb contained tungsten
28/ Small quantities of sapphires also produced
29/ Includes small production of manganese and uranium

Table 3. Mineral deposit types and frequency of each type, Butte $1^{o}x2^{o}$ quadrangle, Montana

| | DEPOSIT TYPE | NUMBER OF SITES |
|---|---|---|
| 1. | Vein and replacement base and precious metals | 772 |
| 2. | Placer gold/tungsten/sapphire | 135 |
| 3. | Porphyry or stockwork copper/ molybdenum/tungsten | 10 |
| 4. | Skarn tungsten/gold/copper | 49 |
| 5. | Stockwork or disseminated gold/silver | 5 |
| 6. | Stratabound copper/silver | 4 |
| 7. | Vein and replacement manganese | 46 |
| 8. | Vein and replacement tungsten | 19 |
| 9. | Stratabound phosphate | 21 |
| 10. | Vein barite | 10 |
| 11. | Vein and replacement fluorite | 4 |
| 12. | Miscellaneous nonmetallic deposits-- limestone, dolomite, silica, clay, vermiculite | 23 |
| 13. | Miscellaneous metallic deposits-- vein uranium, bog copper/manganese, vein and pegmatite beryllium | 13 |
| | TOTALS..... | 1111 |

POCKET CONTAINS
2 ITEMS