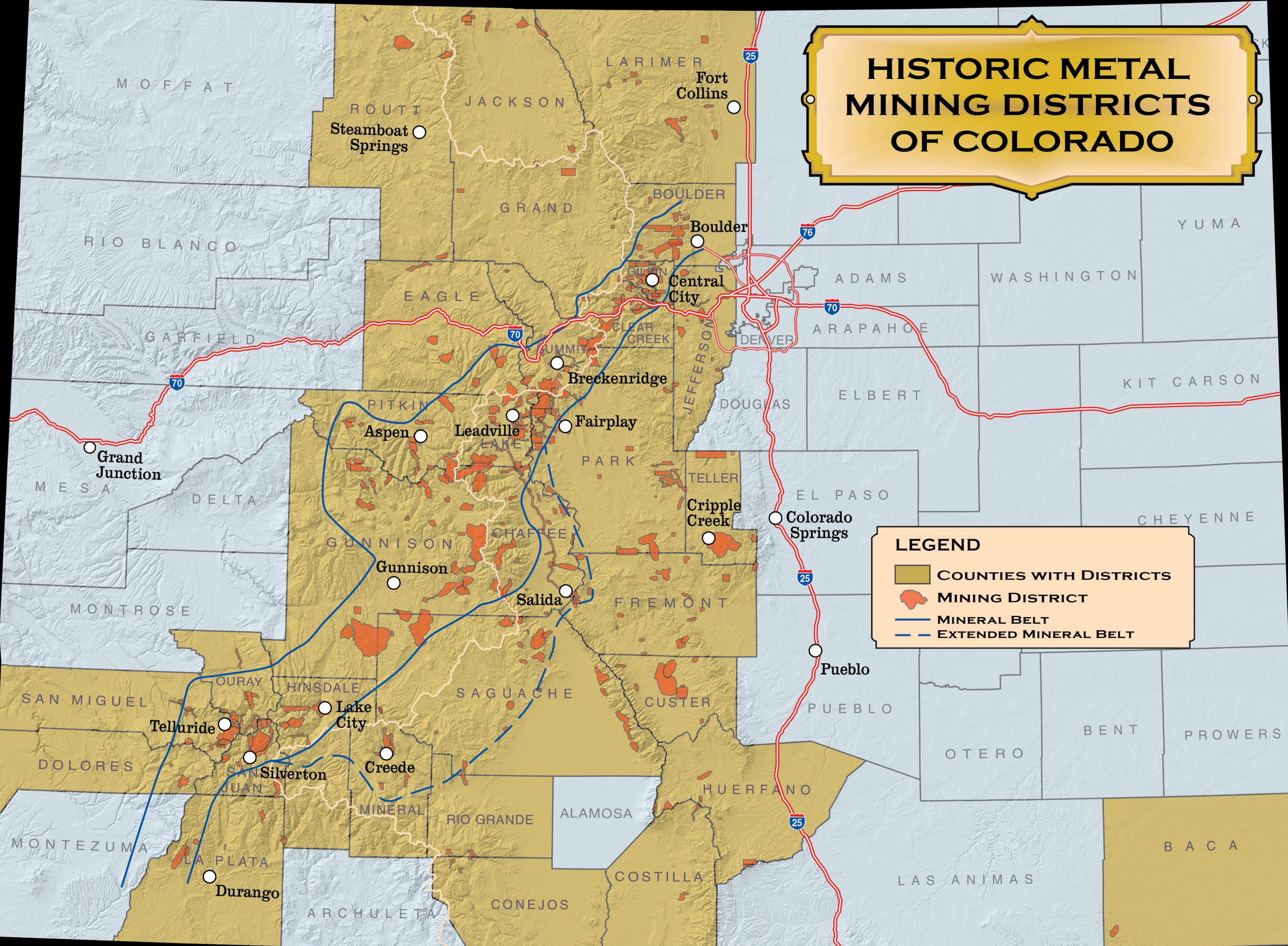


# HISTORIC METAL MINING DISTRICTS OF COLORADO



**LEGEND**

- COUNTIES WITH DISTRICTS
- MINING DISTRICT
- MINERAL BELT
- EXTENDED MINERAL BELT

MOFFAT

ROUTT  
Steamboat Springs

JACKSON

LARIMER  
Fort Collins

BOULDER  
Boulder

GRAND

RIO BLANCO

EAGLE

Central City

ADAMS

WASHINGTON

YUMA

GARFIELD

SUMMIT

Breckenridge

DEVELOPER

ARAPAHOE

KIT CARSON

ELBERT

DOUGLAS

Aspen

Leadville

Fairplay

MESA

Grand Junction

DELTA

Gunnison

CHAFFEE

Cripple Creek

Colorado Springs

EL PASO

CHEYENNE

MONTROSE

Gunnison

Salida

FREMONT

**LEGEND**

COUNTIES WITH DISTRICTS

MINING DISTRICT

MINERAL BELT

EXTENDED MINERAL BELT

Pueblo

PUEBLO

BENT

PROWERS

SAN MIGUEL

OURAY

HINSDALE

Lake City

SAGUACHE

CUSTER

OTERO

DOLORES

Telluride

Silverton

Creede

RIO GRANDE

ALAMOSA

HUERFANO

MONTEZUMA

LA PLATA

Durango

ARCHULETA

CONEJOS

COSTILLA

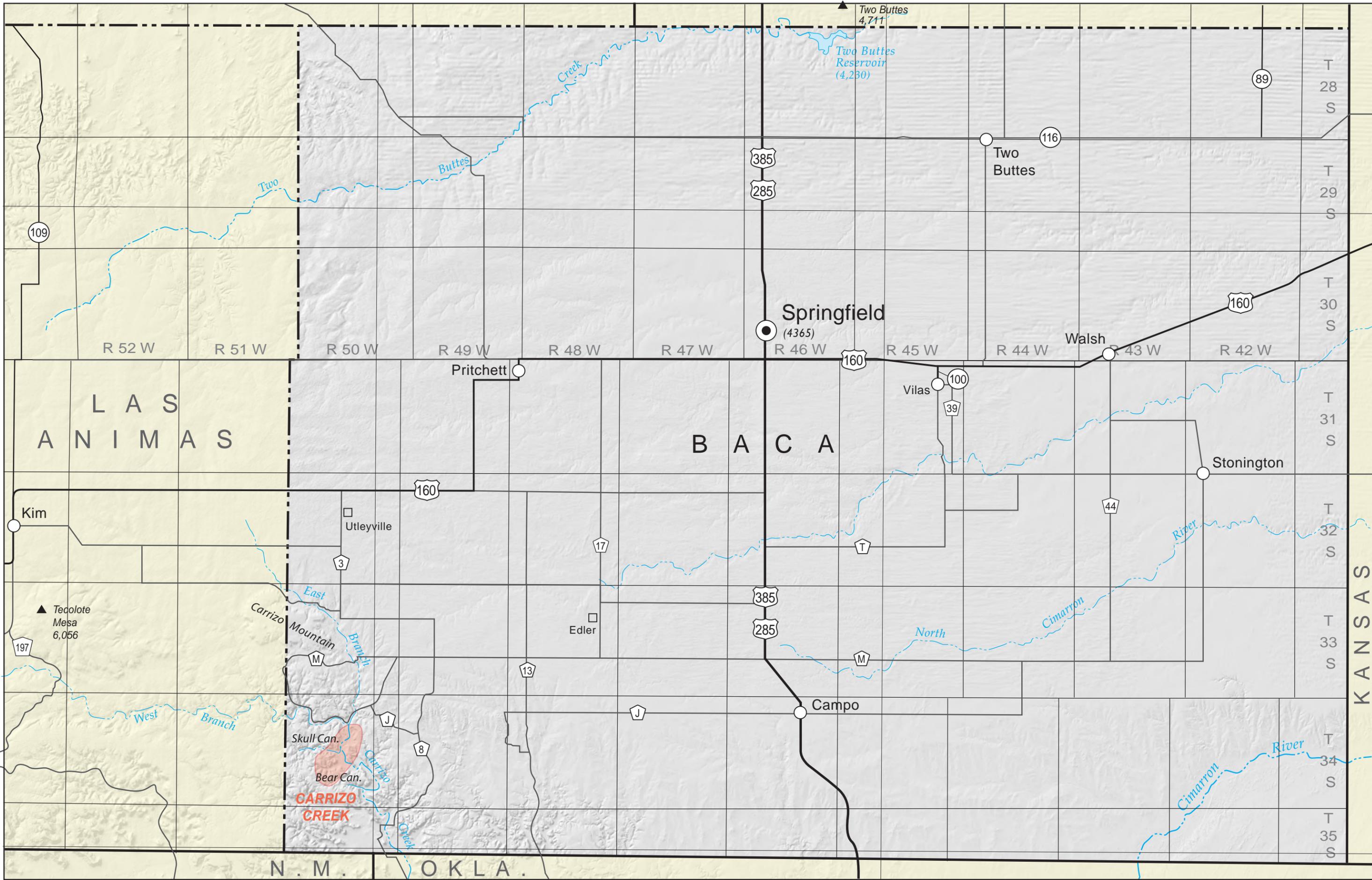
LAS ANIMAS

BACA

103°

102° 30'

102°



37° 30'

37°

L A S  
A N I M A S

B A C A

K A N S A S

**CARRIZO  
CREEK**

▲ Tecolote  
Mesa  
6,056

▲ Two Buttes  
4,711  
Two Buttes  
Reservoir  
(4,230)

Springfield  
(4365)

Two Buttes

Pritchett

Vilas

Walsh

Stonington

Kim

Utleyville

Edler

Campo

Skull Can.

Bear Can.

Carrizo Mountain

West Branch

East Branch

North

Cimarron

Cimarron River

Cimarron

River

N . M .

O K L A .

## **Baca County**

### **Carrizo Creek District**

The Carrizo Creek District lies in the southeastern portion of Baca County, approximately 45 miles southwest of Springfield. The District is known for its stratabound, red-bed copper deposit with considerable amounts of silver.

The mineralization occurs in the Purgatoire Formation of the Cretaceous Dakota Group. The host formation is described as a fine, porous arkosic sandstone, nearly flat-lying with a slight North dip. Copper mineralization consists of black chalcocite in irregularly-shaped volumes particularly concentrated along sandstone fracture planes. Malachite and azurite also occur toward the rim of these volumes.

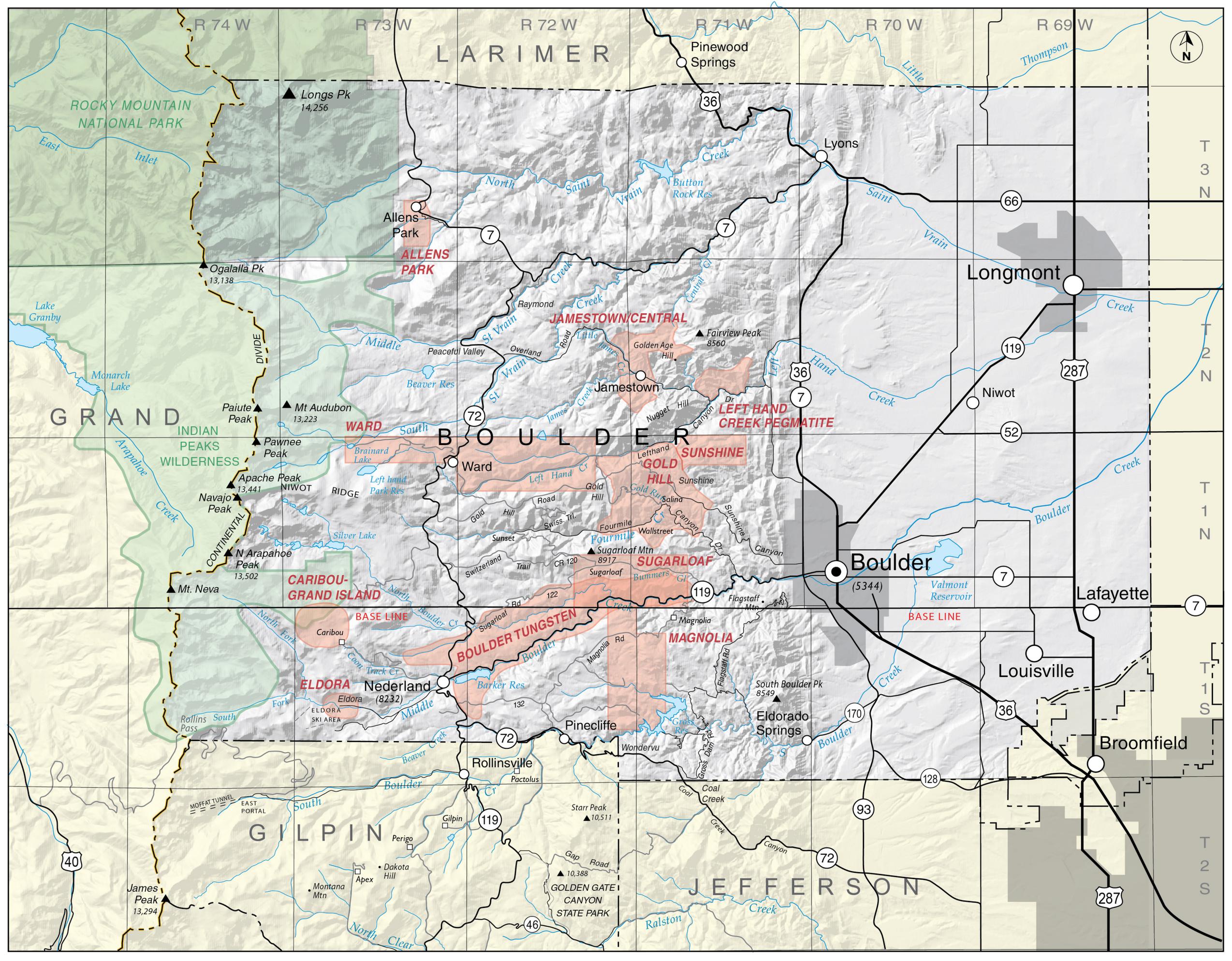
According to Soule (1956), the Independence Mine was first opened in 1889. The U.S. Bureau of Mines estimates total production of 407 ounces of silver and 33,500 pounds of copper. Other claims around the Independence include the Loclin No. 3, the Crazy No. 8, the United Claims. Calculations by Sunshine Mining Company (Sunshine Mining Company unpublished files) estimate over 36 million tons of ore with a total considerable resources of copper and silver. The mine(s) produced at least through 1915. Exploration was rejuvenated in 1968 at the Dunlap Mine and a small leaching plant was developed south of Uteville. No production was ever reported.

#### References:

Soule, 1956, Reconnaissance of the "red bed" copper deposits in southeastern Colorado and New Mexico; US BM Information Circular IC-7740, 74pp.

Vanderwilt, J.W., 1947, Mineral resources of Colorado. Denver CO: Colorado Mineral Resources Board.

Unpublished Sunshine Mining Company files; Colorado Geological Survey.



LARIMER

GRAND

BOULDER

GILPIN

JEFFERSON

R 74 W

R 73 W

R 72 W

R 71 W

R 70 W

R 69 W



T 3 N

T 2 N

T 1 N

T 1 S

T 2 S

Longs Pk  
14,256

Ogalalla Pk  
13,138

Paiute Peak

Mt Audubon  
13,223

Apache Peak  
13,441

N Arapahoe Peak  
13,502

Mt. Neva

Caribou

Eldora  
(8232)

James Peak  
13,294

Montana Mtn

Starr Peak  
10,511

10,388

Fairview Peak  
8560

South Boulder Pk  
8549

Allens Park

ALLENS PARK

JAMESTOWN/CENTRAL

LEFT HAND CREEK REGMATITE

SUNSHINE HILL

SUGARLOAF

BOULDER TUNGSTEN

MAGNOLIA

Boulder

Louisville

Broomfield

Longmont

Lafayette

GOLDEN GATE CANYON STATE PARK

ROCKY MOUNTAIN NATIONAL PARK

INDIAN PEAKS WILDERNESS

MOFFAT TUNNEL EAST PORTAL

Gap Road

CONTINENTAL DIVIDE

BASE LINE

BASE LINE

Rollins Pass

North Clear

South Fork

North Fork

CONTINENTAL DIVIDE

Pawnee Peak

Monarch Lake

Lake Granby

East Inlet

R 74 W

R 73 W

R 72 W

R 71 W

R 70 W

R 69 W



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## **Boulder County - Allens Park District**

This is a small district about eight miles north of Ward. Mines listed by Dunn (2003) are the Snowbank, Tiger and Vulcan. Lovering and Goddard (1950) describe low-grade gold and silver ore in hematitic silicified breccia reefs associated with the Silver Plume Granite. The ore value was enhanced in the oxidized zone. At one location, cobalt ore was reported, although none was ever recovered. No activity was reported after 1901.

### References:

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Arthur Lakes Library, Colorado School of Mines.

Lovering and Goddard, 1950, Geology and Ore Deposits of the Front Range, Colorado; USGS Professional Paper 223.

# Boulder County

## Boulder Tungsten District

The story of development of the Boulder Tungsten District is not unlike that of other areas where lesser-known commodities were mined. As prospectors combed the hills west of Boulder in search of gold and silver, they encountered rocks of a heavy black mineral they called "heavy iron," "barren silver," or "black iron." Again, as so often was the case, prospector after prospector had the rocks assayed, but it always showed to contain no silver or gold. (Mindat.org; accessed 11 July 2012.)

In 1899, a miner/pro prospector/developer with experience in Arizona, where he had encountered ferberite-bearing tungsten ore in the Dragoon Mountains. Some sources attribute this to W.H. Wanamaker, others to S.T. Conger. In either case, the two ultimately became partners and initiated the development of the Boulder Tungsten Belt. Wanamaker removed 40 tons of high-grade ore in 1900 (Lovering and Goddard, 1950). Conger discovered the most productive vein system in the belt - the Conger Vein.

These developments in Boulder coincided with the introduction of tungsten alloy for cutting tools. The value of the product of the district was greatly enhanced as World War I proceeded. The U.S. military recognized the superiority of German armor-plating and armor-piercing projectiles. The secret of their hardened steel turned out to be tungsten (Pittsburgh Press, 1 March 1914, accessed on news.google.com/newspapers, 11 July 2012). Boulder County soon became the leading tungsten producer in the country, and remained so until larger deposits were discovered in Nevada and California (Voynick, 1994). Peak production was in 1917.

The Tungsten Belt overlaps several other mining districts, including the Magnolia, Ward, Gold Hill and Jamestown Districts. The belt reaches from Arkansas Mountain (4 miles west of Boulder) to Sherwood Flats (1 mile northwest of Nederland.) George (1916) noted that promising prospects were being discovered in Gilpin County that would extend the Tungsten Belt to the southwest, but those apparently never developed.

The primary ore in Boulder was ferberite, an iron tungstate ( $\text{FeWO}_4$ ). Ferberite is the iron end-member of a solid solution series with hubnerite ( $\text{MnWO}_4$ ). The ferberite occurs in fissure veins with quartz; the ferberite is usually minute grains in fine-grained quartz. Tweto (1947) described the veins as Boulder Creek monzonite in the schist and quartzite of the Idaho Springs Formation. Some coarsely crystalline ferberite occurs in breccia. The occurrence is that of rich irregularly-shaped ore shoots (6 inches to 3 feet thick) separated by barren stretches. According to Sharps (1965) no ore has been found that exceeds 600 feet in depth.

Mineralogy of the ore includes in addition to the ferberite and quartz, hematite, magnetite, fluorite, dickite, ankerite, barite, siderite, adularia, scheelite, opal and various clays. According to Voynick (1994), more than a hundred tungsten mines were developed, with 30 considered significant producers. There were five active mills by the end of WWI (George, 1916). Some small production continued until the 1970s. The Eureka Mine had reopened in 1967 and continued some production until 1971 (Blake, 1971). The Tungsten, Marion, Good Friday and Eureka Mines remained active as tungsten mines through the 1970s (Blake 1979.)

Significant mines include the following:

Sharps Mines	Cross#1	Quaker
Wano	Dorothy & Katy	Quay
Longfellow	Elsie	Rake Off
Manion	Eureka	Rambler
April Fool	Hoosier	Rogers #3
Good Friday	Illinois	Smith
Beddig	Lone Tree	Tungsten
Conger	Luckie 2	Peewink
Cold Spring #1	Mammoth	Vasco Mines
Bonanza #2	Oregon	Western Star
Clyde	Phillip Extension	

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Boulder Tungsten District](#)

Blake, Norman R., 1971, A Summary of Mineral Industry Activities in Colorado 1971; Colorado Bureau of Mines, Denver CO.

Blake, Norman R., 1979, A Summary of Mineral Industry Activities in Colorado 1971; Colorado Bureau of Mines, Denver CO.

George, R.D., 1916, The Main Tungsten Area of Boulder CO; First Report of the Colorado Geological Survey.

Lovering, T.S., 1940, Tungsten Deposits of Boulder County CO; U.S.G.S. Bulletin 922-F.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range, Colorado; U.S.G.S. Professional Paper 223.

Sharps, Thomas I., 1965, Tungsten in Colorado; Colorado School of Mines Mineral Industries Bulletin, vol. 8 no. 5.

Tweto, Ogden, 1947, The Boulder Tungsten District, Boulder County, CO, in Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

Voynick, Stephen M. *Colorado Rockhounding: A Guide to Minerals, Gemstones, and Fossils*, Mountain Press Publishing Company, Missoula MT.

## Boulder County

### Caribou-Grand Island District

In the fall of 1858, prospectors swarmed into the Boulder County area. Placer gold was discovered in Gold Run, leading to the Caribou-Grand Island District becoming the first named district in Colorado on March 7, 1859. It started out as the Mountain District Number 1 of Nebraska. Samuel Conger is credited with the first lode gold discovery in July of 1864 on the south flank of Caribou Hill. Conger also discovered silver southeast of Arapahoe Peak in the early 1860s (Kemp, 1960).

Most of the mines were closed in 1893 after the silver crash of 1893. Even at its peak, the mines of the Caribou-Grand Island District were not prolific producers. Mine production decreased even further as they went deeper (Moore, et al, 1957).

Lovering and Goddard (1950) associated the mineralization to the Caribou Stock, a composite porphyry intrusive consisting of gabbro, monzonite, quartz monzonite. The deposits consisted of veins of galena, argentite, silver halides, native silver and chalcopyrite in a largely quartz gangue. Uraninite (pitchblende) was discovered in the Caribou Mine in 1948 and the mine reopened to access that resource. Eight bodies of titaniferous magnetite, presumably of magmatic origin, occur in the Caribou Hill area. Noted by Bastin and Hill (1917) and Lovering and Goddard (1950), Harrer and Tesch (1959) estimated that they are too titanium-rich for use as iron ore.

Minerals identified in the Caribou - Grand Island District, as listed in Mindat.org are the following:

<u>Acanthite</u>	<u>Gersdorffite</u>	<u>Quartz</u>
<u>Cerussite</u>	<u>Gold</u>	<u>Siderite</u>
<u>Chalcopyrite</u>	<u>Jalpaite</u>	<u>Silver</u>
<u>Chlorargyrite</u>	<u>Pearceite</u>	<u>Sphalerite</u>
<u>Chrysotile</u>	<u>Polybasite</u>	<u>Stephanite</u>
<u>Covellite</u>	<u>Proustite</u>	<u>Stromeyerite</u>
<u>Dolomite</u>	<u>Pyrargyrite</u>	<u>Tetrahedrite</u>
<u>Galena</u>	<u>Pyrite</u>	<u>Uraninite</u>

Mines in the district listed in Moore, et al, (1957) are

Silver Mines:

Caribou Group (Caribou, No Name, Poorman, Silver Dollar, Sherman, Columbia, Spencer & Socorro)

Comstock

Belcher

Native Silver

Isabel

Potosi

Cross

Seven Thirty

Wigwam

Great Northern.

Producing both gold and silver: Silver Point and Idaho.

Primarily gold: St Louis Mine.

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Grand Island-Caribou District](#)

Bastin, E.S. and Hill J.M., 1917, Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado ; U.S. Geological Survey Prof. Paper 94.

Harrer, C.M. and Tesch, W. J., 1959, Reconnaissance of Iron Occurrences in Colorado; U.S. Bureau of Mines Information Circular 7918.

Kemp, Donald C., 1960, *Silver, Gold and Black Iron: A Story of the Grand Island Mining District of Boulder County, Colorado*; Sage Books, Missoula MT.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range, Colorado; U.S.G.S. Professional Paper 223.

Mindat.org; accessed 14 July 2012.

Moore, F. B., Cavender, W.S., Kaiser, E.P., 1957, Geology and Uranium Deposits of the Caribou Area, Boulder County, Colorado; U.S. Geological Survey Bulletin 1030-N.

## **Boulder County**

### **Central District**

See Jamestown District

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Central District](#)

## **Boulder County**

### **Eldora District**

The Eldora District is a small district of roughly 3 square miles 3 miles West of Nederland. Gold was discovered in 1896 and the district was a minor producer of gold tellurides and some silver. A two-year boom began in the summer of 1897 with the discovery of the gold tellurides on Spencer Mountain. Talk was that the Eldora discovery would be "another Cripple Creek" (Kemp, 1960). The deposits turned out to be small telluride stringers and masses of gold-bearing sulfides and the boom was short-lived. Eldorado Camp became the town of Eldora.

The country rock is schist of the Idaho Springs formation with a hornblende monzonite porphyry, very similar to the nearby Caribou and Grand Island Districts.

Mineralogy is mainly sylvite and petzite with a gangue of quartz, roscoelite and barite. Molybdenite is ubiquitous but minor. The Mogul and Swathmore Tunnels are the main mines. The mines were developed in the Norway, Ma W, Revenge and Enterprise veins.

#### Refs:

Kemp, Donald C., 1960, *Silver, Gold and Black Iron: A Story of the Grand Island Mining District of Boulder County, Colorado*; Sage Books, Missoula MT.

Lindgren, Waldemar, 1907 Some gold and tungsten deposits of Boulder County Co; *Econ. Geology* v. 2 pp. 457-460.

Lovering, T.S. and Goddard, E.N., 1950, *Geology and Ore Deposits of the Front Range, Colorado*; U.S.G.S. Professional Paper 223.

Richard, 1903, The veins of Boulder County and Kalgoorlie: *Am. Insti. of Mining Engr Trans.* v. 33, pp. 567-568.

# Boulder County

## Gold Hill District

Mining in the Gold Hill District was set off by placer discoveries starting in December of 1859. Lode gold was discovered the following summer and the district grew as thousands of miners moved in. The rush didn't last long, and scaled back. Mining was rejuvenated by the discovery of gold tellurides in 1872. Later bursts of activity occurred in 1898 (when a railroad was completed between Boulder and Ward) and in 1934. Nearly all mining ended by 1942.

The district covers roughly 12 square miles west of Boulder. Included is the Sugarloaf District. The towns of Gold Hill, Rowena, Glendale, Sunshine, Wallstreet, Salina and Crisman populated the area. A hundred mines appear on plate 23 in Lovering and Goddard (1950), indicating the intense prospecting and mining that occurred in the district through the years.

The best figures for production include the Sugarloaf District (which mostly lies within the boundaries of the Gold Hill District), indicate ore production of 706,293 tons with about \$78 million at the time. Aggregated estimates from Vanderwilt (1947), Del Rio (1960) and Lovering and Goddard (1950), the combined Gold Hill/Sugarloaf Districts produced at least 690,000 ounces of gold from 1859 to 1980. From Vanderwilt (1947), during the period 1932 to 1945, the district produced 244,391 ounces of silver, 536,630 pounds of copper, 995,080 pounds of lead and 76,700 pounds of zinc.

The production has always been from fissure veins, mostly 5-feet in width, but up to 15-feet. Nearly all the important veins occur near breccia zones. Seracitic wallrock alteration is characteristic. Del Rio (1960) stated that exploration indicates that mineralization does not extend much beyond 1000 feet in depth. Few mines reached depths greater than 500 feet.

Ore grades ranged from 1 to 10 ounces of silver and 1/2 to 2 ounces of gold per ton. Gold tellurides have been the most important with petzite ( $\text{Ag}_3\text{AuTe}_3$ ), sylvanite ( $[\text{Au,Ag}]_2\text{Te}_4$ ), calaverite/krennerite ( $\text{AuTe}_2$ )/( $[\text{AuAg}]\text{Te}_2$ ), hessite ( $\text{Ag}_2\text{Te}$ ) and altaite ( $\text{PbTe}$ ) present along with native gold. Subordinate sphalerite, galena, auriferous pyrite, auriferous chalcopyrite, and tennantite (copper arsenic sulfide) also occurred.

While gold was the main focus, and silver very important, the Boulder Tungsten Belt runs through the Gold Hill District and tungsten was produced in the Logan vein (5 to 10%  $\text{WO}_3$ ). Another unusual occurrence is that of nickel-cobalt ore at the Copper King Mine. Of Precambrian age, the ores include pyrite and arsenopyrite, pyrrhotite, sphalerite, chalcopyrite and the nickel minerals pentlandite ( $\text{NiFeS}$ ), polydymite ( $\text{Ni}_3\text{S}_4$ ), Bravoite ( $\text{Fe,Ni}$ ) $\text{S}_2$ , Violarite ( $\text{Ni,Fe}$ ) $\text{S}_4$ , Cobaltite  $\text{CoAsS}$ , Nickeline  $\text{NiAs}$ , and Millerite  $\text{NiS}$ . Goddard and Lovering (1942) interpreted the deposit to occur in a metagabbro, intruded into the schists of the Idaho Springs Formation.

Minerals reported from the Gold Hill District (Mindat.org) include those below:

[Aikinite](#) -  $\text{PbCuBiS}_3$

[Altaite](#) -  $\text{PbTe}$

[Ankerite](#) -  $\text{Ca}(\text{Fe,Mg,Mn})(\text{CO}_3)_2$

[Antimony](#) -  $\text{Sb}$

[Arsenopyrite](#) -  $\text{FeAsS}$

[Beryl](#) -  $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$

[Biotite](#) -  $\text{K}(\text{Mg,Fe})_3(\text{Al,Fe})\text{Si}_3\text{O}_{10}(\text{OH,F})_2$

[Bismuth](#) -  $\text{Bi}$

[Bornite](#) -  $\text{Cu}_5\text{FeS}_4$

[Boulangerite](#) -  $\text{Pb}_5\text{Sb}_4\text{S}_{11}$

[Calaverite](#) -  $\text{AuTe}_2$

Calcite -  $\text{CaCO}_3$   
Chalcocite -  $\text{Cu}_2\text{S}$   
Chalcopyrite -  $\text{CuFeS}_2$   
Chlorargyrite -  $\text{AgCl}$   
'Chlorite Group' -  
Chrysocolla -  $(\text{Cu,Al})_2\text{H}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot n\text{H}_2\text{O}$   
Cobaltite -  $\text{CoAsS}$   
Coloradoite -  $\text{HgTe}$   
Covellite -  $\text{CuS}$   
Empressite -  $\text{AgTe}$   
Ferberite -  $\text{FeWO}_4$   
Fizélyite -  $\text{Pb}_{14}\text{Ag}_5\text{Sb}_{21}\text{S}_{48}$   
Fluorite -  $\text{CaF}_2$   
Freibergite -  $(\text{Ag,CuFe})_{12}(\text{Sb,As})_4\text{S}_{13}$   
Fülöppite -  $\text{Pb}_3\text{Sb}_8\text{S}_{15}$   
Galena -  $\text{PbS}$   
'Garnierite' - hydrous Ni silicates  
Gold -  $\text{Au}$   
var: Electrum  
Graphite -  $\text{C}$   
Hematite -  $\text{Fe}_2\text{O}_3$   
Hessite -  $\text{Ag}_2\text{Te}$   
Hübnerite -  $\text{MnWO}_4$   
Iodargyrite -  $\text{AgI}$   
Jamesonite -  $\text{Pb}_4\text{FeSb}_6\text{S}_{14}$   
'K Feldspar' -  $\text{KAlSi}_3\text{O}_8$   
Krennerite -  $(\text{Au,Ag})\text{Te}_2$   
Limonite - nonspecific iron oxides  
Magnetite -  $\text{Fe}_3\text{O}_4$   
Malachite -  $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$   
Marcasite -  $\text{FeS}_2$   
Melonite -  $\text{NiTe}_2$   
Mercury -  $\text{Hg}$   
Millerite -  $\text{NiS}$   
Molybdenite -  $\text{MoS}_2$   
Morenosite -  $\text{NiSiO}_4 \cdot 7\text{H}_2\text{O}$   
Muscovite -  $\text{KAl}_2(\text{Si}_3\text{Al})\text{O}_{10}(\text{OH,F})_2$   
var: Sericite  
Nagyágite -  $\text{Pb}_5\text{Au}(\text{Te,Sb})_4\text{S}_{5-8}$   
Nickeline -  $\text{NiAs}$   
Pentlandite -  $(\text{Fe,Ni})_9\text{S}_6$   
Petzite -  $\text{Ag}_3\text{AuTe}_2$   
Polydymite -  $\text{Ni}_2\text{S}_4$   
Pyrargyrite -  $\text{Ag}_3\text{SbS}_3$   
Pyrite -  $\text{FeS}_2$   
var: Bravoite (with Nickel)  
Pyrrhotite -  $\text{Fe}_{1-x}\text{S}_2$   
Quartz -  $\text{SiO}_2$   
var: Chalcedony  
Rhodochrosite -  $\text{MnCO}_3$   
Rickardite -  $\text{Cu}_7\text{Te}_5$   
Riebeckite -  $\text{Na}_2(\text{Fe,Mg})\text{Fe}_2\text{Si}_8\text{O}_{22}(\text{OH,F})_2$

Roscoelite -  $K(V,Al,Mg)_2AlSi_3O_{10}(OH)_2$   
 Scheelite -  $CaWO_4$   
 Schröckingerite -  $NaCa_3(UO_2)(CO_3)_3(SO_4)F \cdot 10H_2O$   
 Siderite -  $FeCO_3$   
 Silver - Ag  
 Sphalerite - ZnS  
 Stibnite -  $Sb_2S_3$   
 Stromeyerite - CuAgS  
 Stützite -  $Ag_7Te_4$   
 Sylvanite -  $(Ag,Au)_2Te_4$   
 Tellurantimony -  $Sb_2Te_3$   
 Tellurite -  $TeO_2$   
 Tellurium - Te  
 Tennantite -  $(Cu,Fe,Ag)_{12}(As,Sb)_4S_{13}$   
 Tetradymite -  $Bi_2Te_2S$   
 Tetrahedrite -  $(Cu,Fe,Ag)_{12}(Sb,As)_4S_{13}$   
 Torbernite -  $Cu(UO_2)_2(PO_4)_2 \cdot 8 - 12 H_2O$   
 Uraninite -  $UO_2$   
 Violarite -  $Ni_2FeS_4$

Some 185 mines and prospects are identified in the Gold Hill District (Mindat.org):

Alamakee	Leoch Occurrence (Big John; Dolly; Worlds Fair; Gillespie; United Empire Mines Group; American; Missing Link; Hawkeye)
Alaska Group	Little Princess
American	Little Ruby
Amzy; Great Sphinx Occurrence	Logan & Sunbeam Occurrence
Andesite Rock Quarry	Lost Boy (Lost Boy Lode)
Arapahoe Group of Claims	Loukonen Brothers Silica Mine
Archer	Lucky Star
Arrowhead	Mack
Atchison Mine (Atchison and Eldorado)	Macky
Atlanta	McCall Quarries (Landau)
Atlantic (Milwaukee; Emma Daniels; Pennsylvania Group; Black Diamond Occurrence)	McConnel
Bat Claim No. 1 (Corona Mine)	McKnight Placer
Bell Group	Melvina
Belle of Memphis (Blackhawk; Horseshoe; Victoria; Mountain Chief; Fairfax; Olympic; Bighorn; Silver Queen; Scotia; Gowanda)	Minnie Barrel Occurrence
Bellvue (Belview)	More
Big Five (Black Jack Occurrence)	Mountain Plains
Black Cloud	Myrtle Occurrence
Blue Eagle Occurrence	New California Occurrence (Baltimore; Gray Bird; Philadelphia; Nimbus; Gold Chief; Boston; Gold King; Village Bell; Baxter; High Line; Cross; U.P.; Cornicopia)
Brodies Saint Vrain	New York (New York Union; Pilot Occurrence)
Carol Gore	Noland
Centennial Tunnel Occurrence (Gov. Routt; Continental; Bismark; Bluebell Shaft & Tunnel; Canton; Mammoth; Scandia)	Ogalla
Central Gulch Placers	Ohio Tungsten Mine
Chivington Lode Occurrence	Ohline
Cobalt - Gold Mining Company (Emily; Francis B.; Acme Occurrence)	Osceola
Col. Dick Occurrence (Yellow Aster; Puzzler; Northwestern; Leviathan Group; Alaska; Four Tree; Palladium)	Parker Prospect (Rowena)
Cold Spring and Red Cloud	Peacock
Cold Springs Group (Times Tunnel; Hoodoo; Horsefai; Haddock; Crown; King; Wolf Tongue; Red Cloud)	Pfiefer
Colorado	Pilot Mine
Columbus	Plain View
Copper King (Gold Drop Occurrence)	Plough Boy
Corning Tunnel (Cold Spring; Alamakee; St. Joe; Blackhawk; Cash Occurrence)	Polar Star Occurrence (Moltke; Tarbox; Oklahoma; Brainard Tunnel; Bismark; Superior; Empire No. 3; Ward; Lulu B.)
Dale Taylor Lease Loukon	Poorman Group
Dam Waters Group	Poorman Hill
Denver City Occurrence (Contact; St. John; Skandia Group; Little Ida; Meadow Lark; Bald Mtn.; Old Hannah; Evening Star; New Prussian)	Ramey
	Rawley
	Ready Cash

Denver Post Occurrence  
 Dewey Rocky Mountain  
 Diamond K  
 Electronic  
 Emerson  
 Escanaba and Humboldt Occurrence  
 Evans (Grant; Great Britain Occurrence)  
 Evening Star  
 Fairfax  
 Fallow Tunnel  
 First National Bank Occurrence  
 Fisk  
 Five Brothers  
 Fools Paradise Number 1 and 2  
 Forest Mine  
 Fourmile Creek Placer  
 Franklin No. 5  
 Freiberg Mine  
 George Henry  
 Gillaspie and Big John  
 Gina No. 1 and 2  
 Gladys (Tamborine; Tamborine; Dime; Evening Star Dirigo Occurrence)  
 Gold Hill  
 Cash Mine  
 Copper King Mine (Yeager's Mine)  
 Little Johnny mine (Emancipation Group; Home Sweet Home Occurrence)  
 Nancy Wood mine (Sugar Loaf; Forest; Pittsburg; Gray Copper)  
 Gold Hill Occurrence (Rowena; Sunshine; Salina)  
 Gold Run Placer  
 Golden Bell Occurrence (Providence; Forget Me Not; Chamois; Last Chance; John Jay & MS; Kicking Horse; Cross; Cleveland; Surprise; Yates)  
 Golden Slipper Occurrence (Bloomer; Parole; Protection; Johannesburg; Red Lion Occurrence)  
 Goldsmith Maid Occurrence  
 Good Hope  
 Grace  
 Grand Lodge Mine  
 Grand Republic Occurrence  
 Grand View  
 Grant  
 Gray Copper  
 Great Britain  
 Hammons  
 Hawkeye  
 Henna  
 Henry No. 1 & No. 2  
 High Line  
 Holt (Sound Currency; Star Occurrence)  
 Homestake (Silent Friend; Cumberland; Morning Glory Occurrence)  
 Hoodoo  
 Howe  
 Ingram mine (Valley Forge Occurrence; Critic and Railroad Boy; Sunshine; Three Brothers; Atchison; Belle; Golden Eagle; Melvina; Baron; Richmond)  
 Interocean Mine  
 Iron King Tunnel (Jule Lode Tunnel)  
 Jacobson and Lyons  
 Jake Witter  
 Johnson  
 King Mountain  
 King Occurrence (Dana; Gold Lode; Gillard; Doss; Lucky Star; Sakhart; Morning Glory)  
 King Tunnel Occurrence  
 Kirts  
 Kline  
 Lands End  
 Last Chance (Gray Copper Emerson; Concord; Forest; Franklin Occurrence)  
 Red Cloud Mine (Chicago; Colorado Occurrence)  
 Redstone  
 Rex Mine  
 Richard Occurrence (Minnie Bell; Washburn; White Eagle; Dolly; Plough Boy; Oceola; Gillaspie)  
 Richmond Mine  
 Rose Mary Occurrence  
 Rough Rider (Monument; Gold Lode; Zuma; Lincoln Occurrence)  
 Ruski Quarry  
 Saklat  
 Silica Quarry (MRDS - 10117165)  
 Silver Harp  
 Silver Lode  
 Sisk Mine  
 Slide Mine  
 Smokey Hill Mine  
 St. Joe Mine  
 St James  
 Steamboat Valley  
 Summers  
 Summit Shaft  
 Sunrise (Yellow Jacket; Don D.; Shelton; McDermit Occurrence)  
 Sunshine Group  
 Tammany  
 Tennessee (American; White Crow; Golden Harp Occurrence)  
 Three Brothers  
 Times  
 Tom Lyle Group  
 Trombo  
 United Building Stone  
 United Empire  
 University of Colorado Quarry  
 Utica Occurrence  
 Victoria (Scotia Occurrence)  
 Viola Beatty Claim  
 Virginia (Golden Key)  
 Ward  
 Ward H. Lamon  
 Ward Rose Occurrence  
 White and Headley Gold Mine Property  
 White Crow  
 White Eagle (Archer)  
 White Rock  
 Who Do  
 Wild Dutchman  
 Wilson beryl prospect  
 Winona  
 Wood Chuck  
 Wood Mountain Group

## References

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Gold Hill District](#)

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# Boulder County

## Jamestown (Central) District

The most comprehensive information concerning the Jamestown or Central District comes from Goddard, 1947; Lovering and Goddard, 1950, Galbraith, 1960, and summaries on Mindat.org.

The Jamestown District occupies some 36 square miles in central Boulder County. Gold was discovered in the district in 1865 and 500 prospectors soon rushed in. The first mill was erected in 1867. In 1875, telluride ores were recognized and activity increased. A big boom came in 1883 with the discovery of lead carbonate ores. In 1903, the district began to produce fluorspar. The gold price increase in 1933 brought about renewed activity again and mining for uranium continued into the 1970s. Fluorspar production continued to the mid 1970s (Blake, 1973).

The geology of the Jamestown District consists of Precambrian rocks of the Idaho Springs Formation, along with Boulder Creek and Silver Plume granites. Tertiary intrusive rocks range from alaskites to basalt. The district is centered on a quartz monzonite porphyry stock of Porphyry Mountain. Three large faults cut through the district, creating three large breccia "reefs," dike-like breccia zones.

Mineralization Lovering and Goddard (1950) recognize four basic types of deposits. Additionally, the District hosts a pegmatite province, making five distinct deposit types. Most of the deposits appear to be related to small stocks of granodiorite to quartz monzonite. The pegmatites appears to be related to the Precambrian granitic rocks (Galbreath, 1960).

Lead-silver deposits occur in veins or pipes, most into the Silver Plume granite. Argentiferous galena along with tetrahedrite ("gray copper") predominates along with chalcopyrite and sphalerite in a gangue of quartz, feldspar. Some gold occurs in the chalcopyrite and pyrite.

Fluorspar occurs in veins and breccia zones, both as finely granular and coarsely crystalline aggregates. Accompanied by quartz, clays and sulfides, some of the veins also carry uraninite. The breccia zones range up to 70 feet wide and over 350 feet in length; veins occur as long as 1000 feet and from inches to 16 feet wide.

Pyritic gold veins are the third type of deposit. These fill later fissures. Quartz occurs with coarse pyrite and chalcopyrite with some galena. The fourth deposit type is the telluride veins. Up to 10 feet wide and a mile or more long, quartz predominates with some pyrite. Grades were excellent, ranging from 0.5 to 15 opt gold and 0.5 to 25 opt silver. Lovering noted in 1947 that none of the veins had bottomed.

The pegmatites of the Jamestown District are dominated by quartz, potash feldspar and plagioclase. According to Galbreath (1960), the main accessories are cerite, epidote, fluorite, allanite, muscovite, and black tourmaline.

The variety of deposit types in the Jamestown District makes it a bonanza for the variety of minerals found. Mindat.org lists 113 different minerals identified in the district. Of particular note are 17 different telluride minerals, eight rare earth-bearing minerals and three rare germanium-bearing minerals.

The telluride minerals are

- [altaite](#) - PbTe;
- [buckhornite](#) - AuPb<sub>2</sub>BiTe<sub>2</sub>S<sub>3</sub>,
- [calaverite](#) - AuTe<sub>2</sub>
- [coloradoite](#) - HgTe
- [hessite](#) - Ag<sub>2</sub>Te
- [krennerite](#) - (Au, Ag) Te<sub>2</sub>,

[melonite](#) - Ni Te<sub>2</sub>,  
[nagyagite](#) - Pb<sub>5</sub>Au(TeSb)<sub>4</sub>,  
[paratellurite](#) - TeO<sub>2</sub>,  
[petzite](#) - Ag<sub>3</sub>SbS<sub>3</sub>,  
[rickardite](#) - Cu<sub>7</sub>Te<sub>5</sub>,  
[stutzite](#) - Ag<sub>7</sub>Te<sub>4</sub>,  
[sylvanite](#) - (Ag, Au)<sub>2</sub>Te<sub>4</sub>,  
[tellurantimony](#) - Sb<sub>2</sub>Te<sub>3</sub>,  
[tellurite](#) - TeO<sub>2</sub>,  
[native tellurium](#) - Te  
[tetradymite](#) - Bi<sub>2</sub>Te<sub>2</sub>S

Rare earth minerals are the following: (REE in the formula indicates one or more of the rare earth elements)

[allanite](#) - (Ca,REE)<sub>2</sub>(Al,Fe<sup>2+</sup>, Fe<sup>3+</sup>)<sub>3</sub>(SiO<sub>4</sub>)<sub>3</sub>(OH)<sub>3</sub>  
[bastnaesite](#) - (REE)(CO<sub>3</sub>)F  
[britholite](#) - (Ree,Ca)<sub>5</sub>(SiO<sub>4</sub>,PO<sub>4</sub>)(OH,F)  
[cerite](#) - (Ce,Ca)<sub>10</sub>(SiO<sub>4</sub>)(OH,F)<sub>5</sub>  
[yttrofluorite](#) - (Ca,Y)F<sub>2</sub>  
[gadolinite](#) - (REE)<sub>2</sub>(Fe<sup>2+</sup>Be<sub>2</sub>Si<sub>2</sub>O<sub>10</sub>)  
[monazite](#) - (REE,Th)PO<sub>4</sub>  
[tornebohmite](#) - (REE)<sub>2</sub>Al(SiO<sub>4</sub>)<sub>2</sub>(OH)

The Germanium-bearing minerals are

[briartite](#) - Cu<sub>2</sub>(Fe,Zn)GeS<sub>4</sub>  
[germanite](#) - Cu<sub>3</sub>(Ge,Fe)(S,As)<sub>4</sub>  
[renierite](#) - (Cu, Zn)<sub>11</sub>(Ge,As)<sub>2</sub>Fe<sub>4</sub>S<sub>16</sub>

Mindat.org identifies over a hundred different mines/claims/prospects within the Jamestown District. The mines on the map of Goddard (1947) include the Fourth of July, Orofino, Pine Shade, Mayflower, Hercules, Princess, Longfellow, Copper Blush, December, Golden Age, Eureka, Sentinel, Grand Central, Earl, Grand Union, Lily, Standard, Gladiator, Rip Van Dam, Ellen, Durias, Vanadium, Black Diamond, Nugget, Little Don, Tippecanoe, Governor Group, Roman Eagle, Thunderbolt, Grouse, Greenback, Bondholder, New Brunswick, Kicking Horse, Last Chance, John Jay, Golden Bell, Ten-Forty, Buena, Yellow Girl, Invincible, Brown Spar, Chancellor, Nations Treasure, Emmett, Buckhorn, Burlington, Alice, Crackerjack, Bessie B., Golden Cross, Red Spruce, Goldfinch, McKinley, Stanley Gladstone, Argo, Mt Pleasant, Consolation, Overland, and Atlantic.

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## Boulder County

### Left Hand Creek Pegmatite District

The Left Hand Creek pegmatites occur in central Boulder County in the vicinity of Left Hand Creek, overlapping with the Gold Hill and Ward Districts. They are related to the Precambrian granites - the Boulder Creek and the Silver Plume Granites - occurring in the schists of the Idaho Springs Formation marginal to the granitic bodies (Galbraith, 1960.)

Zoning is not common and not well developed, although some of the weak zoning reveals beryl in the pegmatite cores. The dominant mineralogy consists of quartz, potassium feldspar and plagioclase; major accessories are beryl and muscovite; minor accessories include garnet, columbite, tourmaline, biotite and cleavelandite (Galbraith, 1960). Minerals of some economic interest are beryl, feldspar and scrap mica. Martin (1993) reports slightly anomalous tantalum and niobium in the district pegmatites.

The Beryl Lode Mine was the most extensive, producing small amounts of beryl and mica during the World War I period (Martin, 1993) but was determined by Baillie (1962) and Sharps (1962) to contain only small reserves of mica and feldspar. The New Girl Mine produced feldspar and mica in 1928 and 1945 (Galbraith, 1960) and also was determined to have little in the way of reserves (Baillie, 1962; Sharps, 1962). Other mines and prospects include the Elkhorn, the Cal-Wood and the Highline.

#### References:

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# Boulder County

## Magnolia District

The Magnolia District is a minor district located about five miles west of Boulder. It never was a major producer but received attention because of the high grade telluride ores found there. The geology of the Magnolia District is characterized by the Boulder Creek Granite and granitic gneiss.. The presence of several breccia reefs caught the attention of early prospectors. In addition to these breccia zones, the "iron dike" - a large diabase dike - crosses the area (Lovering and Goddard, 1950). Gold tellurides were discovered shortly after the discoveries at Gold Hill. The district mostly gold and some tungsten, as the district overlaps the Boulder Tungsten District in the north.

The mineralization consists of small veins that enjoyed rather modest production, although some high-grade zones were found. Normally, the production included gold, silver and a bit of tungsten (Vanderwilt, 1947). Most of the valuable ore came from the intersection of veins. The fissure veins contain telluride minerals, chalcedonic quartz, pyrite and small amounts of free gold, sphalerite, marcasite, fluorite, and calcite. Tellurides occur as small blades 2.5 mm or less in length. The tellurides occur in seams within the fissure veins, striking northwest. Only a few were traced more than 1000 feet. Tungsten veins were later, cutting the telluride-bearing veins. They strike east to northeast. Tungsten veins are also small, most only an inch or two wide and several hundred feet long.

Aggregated production shows about 40,000 ounces of gold from 1859 to 1980. Small production of silver and tungsten was reported also. As many as twenty-two mines were producing in 1936.

Ore mineralogy of the district according to Lovering and Goddard includes

native gold Au,	native tellurium Te,
tellurite $\text{TeO}_2$ ,	ferro-tellurite $\text{FeTeO}_4$ ,
melonite $\text{Ni Te}_2$ ,	sylvanite $(\text{Ag, Au})_2\text{Te}_4$ ,
coloradoite $\text{HgTe}$ ,	hessite $\text{Ag}_2\text{Te}$ ,
petzite $\text{Ag}_3\text{SbS}_3$ ,	altaite $\text{PbTe}$ ,
ferberite $\text{FeWO}_4$ ,	molybdenite $\text{MoS}_2$ ,
roscoelite $\text{K}(\text{V,Al,Mg})_2\text{AlSi}_3\text{O}_{10}(\text{OH})_2$ ,	galena $\text{PbS}$ .

Mindat.org adds to that the minerals

empressite $\text{AgTe}$	calavarite $\text{AuTe}_2$ , sz
hubnerite $\text{MnWO}_4$ ,	keystoneite $(\text{Na}_{0.07}\text{K}_{0.02}\text{Mg}_{0.78})[\text{Ni}_{1.26}\text{Fe}^{3+}_{0.47}\text{Mn}_{0.10}]_{\text{E}1.83}\text{Te}_{3.04}\text{O}_9] \cdot 4.5\text{H}_2\text{O}$ ,
paratellurite $\text{TeO}_2$	magnolite $\text{Hg}_2\text{TeO}_3$ .

Additionally, Mindat.org list these minerals:

allanite	acalcite	chalcopyrite	chlorite
epidote	feldspars	fluorite	garnet
ilmenite (picrotitanite)	limonite	marcasite	mercury
molybdenite	olivine	pyrite	pyrrhotite
quartz	chalcedony	roscoelite	serpentine
sphalerite	stibnite	various micas	

Midat.org lists these mines and prospects in the Magnolia District:

Magnolia District

American Eagle - Interocean Occurrence

Beggar

Belmont (Graphic; Holy Cross; Tungsten King Occurrence)

Cheyenne (Modoc; Tiger Nos. 1 & 2 Occurrence)

Dun Raven Mine

Fortune Occurrence

Golden Glow

Humbug

India Mine

Pandora No. 1 & 4 Lode Claims

Park Placer (Congo Chief; Apex; Dominion; American; Josie Mansfield Placer; Don; Rico; Deyling; Enterprise)

Pickwick

Poorman Mine (1)

Power Shaft

Recluse

Rusty Dime

Kansas City Tunnel  
Kekionga Mine  
Magnolia Vein  
Keystone Mine  
Lady Franklin Mine  
Little Maud  
Lord Byron  
Magnolia mine  
Missoula  
Molly Gibson  
Mountain Lion Mine - Keystone Vein  
New Year

Sac and Fox  
Santa Lasaria (Mtn. Mexico; Bravo Occurrence)  
Mill Sites  
Senator Hill and Ophir Veins  
Snow Flake  
Sylvanite Tunnel  
Valley View  
Zephyr Occurrence

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## **Boulder County**

### **Sunshine District**

The Sunshine District overlaps with the Gold Hill District and is included in that description.

# Boulder County

## Ward District

The Ward District lies about ten miles west of the city of Boulder. The area is underlain by the Precambrian Idaho Springs Formation, including quartz-mica schist, sillimanite schist, quartz-biotite schists and the Silver Plume Granite. These are intruded by the Laramide-age White Raven quartz monzonite porphyry. The contact of this quartz monzonite with country rock is commonly mineralized. Much of the ores are auriferous pyrite and argentiferous galena. The productive zones occur in tabular shoots and chimneys. While there are some gold tellurides locally, most of the gold ore was pyrite/chalcopyrite in quartz (Worcester, 1924). The silver-lead ores occur in a gangue of calcite and byrite. The pyritic ores ranged in grade from 0.1 to 0.5 ounces per ton, with up to 3 ounces per ton in the oxidized zone.

Aggregated production, according to Vanderwilt (1947) was approximately 80,000 ounces of gold, 20,420 ounces of silver, 170,380 pounds of copper and 25,755 pounds of lead. All the major mines were developed by 1871, and continued producing sporadically until 1945. While more than 200 mines produced in the Ward District, only thirty-four mines were producing in 1935.

Minerals listed by Mindat.org are the following:

Acanthite	Coloradoite	'K Feldspar'	Siderite
'Albite-Anorthite Series'	Columbite	Krennerite	Silver
Altaite	Copper	Malachite	Sphalerite
Azurite	Dawsonite	'Mica Group'	Stibnite
Baryte	Fizélyite	Molybdenite	Sylvanite
Beryl	Galena	Pearceite	Tantalite
Bornite	Gold	Petzite	Tennantite
Calcite	var: Electrum	Polybasite	<i>Weissite ?</i>
Cervelleite	Hessite	Pyrite	Wolframite
Chalcocite	Hübnerite	Quartz	
Chalcopyrite	Jalpaite	Samarskite-(Y)	

Significant mines included the following:

Celestial	Celestial Extension	Morningstar
B&M	Baxter	Boston
Columbia	Madelaine	Niwot
Sullivan No. 5	Utica	White Raven
Dew Drop	Orphan Boy	Free Coinage
Copper Glance	Ruby.	

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Ward District](#)

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## **Boulder County - Allens Park District**

This is a small district about eight miles north of Ward. Mines listed by Dunn (2003) are the Snowbank, Tiger and Vulcan. Lovering and Goddard (1950) describe low-grade gold and silver ore in hematitic silicified breccia reefs associated with the Silver Plume Granite. The ore value was enhanced in the oxidized zone. At one location, cobalt ore was reported, although none was ever recovered. No activity was reported after 1901.

### References:

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# Boulder County

## Boulder Tungsten District

The story of development of the Boulder Tungsten District is not unlike that of other areas where lesser-known commodities were mined. As prospectors combed the hills west of Boulder in search of gold and silver, they encountered rocks of a heavy black mineral they called "heavy iron," "barren silver," or "black iron." Again, as so often was the case, prospector after prospector had the rocks assayed, but it always showed to contain no silver or gold. (Mindat.org; accessed 11 July 2012.)

In 1899, a miner/pro prospector/developer with experience in Arizona, where he had encountered ferberite-bearing tungsten ore in the Dragoon Mountains. Some sources attribute this to W.H. Wanamaker, others to S.T. Conger. In either case, the two ultimately became partners and initiated the development of the Boulder Tungsten Belt. Wanamaker removed 40 tons of high-grade ore in 1900 (Lovering and Goddard, 1950). Conger discovered the most productive vein system in the belt - the Conger Vein.

These developments in Boulder coincided with the introduction of tungsten alloy for cutting tools. The value of the product of the district was greatly enhanced as World War I proceeded. The U.S. military recognized the superiority of German armor-plating and armor-piercing projectiles. The secret of their hardened steel turned out to be tungsten (Pittsburgh Press, 1 March 1914, accessed on news.google.com/newspapers, 11 July 2012). Boulder County soon became the leading tungsten producer in the country, and remained so until larger deposits were discovered in Nevada and California (Voynick, 1994). Peak production was in 1917.

The Tungsten Belt overlaps several other mining districts, including the Magnolia, Ward, Gold Hill and Jamestown Districts. The belt reaches from Arkansas Mountain (4 miles west of Boulder) to Sherwood Flats (1 mile northwest of Nederland.) George (1916) noted that promising prospects were being discovered in Gilpin County that would extend the Tungsten Belt to the southwest, but those apparently never developed.

The primary ore in Boulder was ferberite, an iron tungstate ( $\text{FeWO}_4$ ). Ferberite is the iron end-member of a solid solution series with hubnerite ( $\text{MnWO}_4$ ). The ferberite occurs in fissure veins with quartz; the ferberite is usually minute grains in fine-grained quartz. Tweto (1947) described the veins as Boulder Creek monzonite in the schist and quartzite of the Idaho Springs Formation. Some coarsely crystalline ferberite occurs in breccia. The occurrence is that of rich irregularly-shaped ore shoots (6 inches to 3 feet thick) separated by barren stretches. According to Sharps (1965) no ore has been found that exceeds 600 feet in depth.

Mineralogy of the ore includes in addition to the ferberite and quartz, hematite, magnetite, fluorite, dickite, ankerite, barite, siderite, adularia, scheelite, opal and various clays. According to Voynick (1994), more than a hundred tungsten mines were developed, with 30 considered significant producers. There were five active mills by the end of WWI (George, 1916). Some small production continued until the 1970s. The Eureka Mine had reopened in 1967 and continued some production until 1971 (Blake, 1971). The Tungsten, Marion, Good Friday and Eureka Mines remained active as tungsten mines through the 1970s (Blake 1979.)

Significant mines include the following:

Sharps Mines	Cross#1	Quaker
Wano	Dorothy & Katy	Quay
Longfellow	Elsie	Rake Off
Manion	Eureka	Rambler
April Fool	Hoosier	Rogers #3
Good Friday	Illinois	Smith
Beddig	Lone Tree	Tungsten
Conger	Luckie 2	Peewink
Cold Spring #1	Mammoth	Vasco Mines
Bonanza #2	Oregon	Western Star
Clyde	Phillip Extension	

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[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Boulder Tungsten District](#)

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## Boulder County

### Caribou-Grand Island District

In the fall of 1858, prospectors swarmed into the Boulder County area. Placer gold was discovered in Gold Run, leading to the Caribou-Grand Island District becoming the first named district in Colorado on March 7, 1859. It started out as the Mountain District Number 1 of Nebraska. Samuel Conger is credited with the first lode gold discovery in July of 1864 on the south flank of Caribou Hill. Conger also discovered silver southeast of Arapahoe Peak in the early 1860s (Kemp, 1960).

Most of the mines were closed in 1893 after the silver crash of 1893. Even at its peak, the mines of the Caribou-Grand Island District were not prolific producers. Mine production decreased even further as they went deeper (Moore, et al, 1957).

Lovering and Goddard (1950) associated the mineralization to the Caribou Stock, a composite porphyry intrusive consisting of gabbro, monzonite, quartz monzonite. The deposits consisted of veins of galena, argentite, silver halides, native silver and chalcopyrite in a largely quartz gangue. Uraninite (pitchblende) was discovered in the Caribou Mine in 1948 and the mine reopened to access that resource. Eight bodies of titaniferous magnetite, presumably of magmatic origin, occur in the Caribou Hill area. Noted by Bastin and Hill (1917) and Lovering and Goddard (1950), Harrer and Tesch (1959) estimated that they are too titanium-rich for use as iron ore.

Minerals identified in the Caribou - Grand Island District, as listed in Mindat.org are the following:

<u>Acanthite</u>	<u>Gersdorffite</u>	<u>Quartz</u>
<u>Cerussite</u>	<u>Gold</u>	<u>Siderite</u>
<u>Chalcopyrite</u>	<u>Jalpaite</u>	<u>Silver</u>
<u>Chlorargyrite</u>	<u>Pearceite</u>	<u>Sphalerite</u>
<u>Chrysotile</u>	<u>Polybasite</u>	<u>Stephanite</u>
<u>Covellite</u>	<u>Proustite</u>	<u>Stromeyerite</u>
<u>Dolomite</u>	<u>Pyrrargyrite</u>	<u>Tetrahedrite</u>
<u>Galena</u>	<u>Pyrite</u>	<u>Uraninite</u>

Mines in the district listed in Moore, et al, (1957) are

Silver Mines:

Caribou Group (Caribou, No Name, Poorman, Silver Dollar, Sherman, Columbia, Spencer & Socorro)

Comstock

Belcher

Native Silver

Isabel

Potosi

Cross

Seven Thirty

Wigwam

Great Northern.

Producing both gold and silver: Silver Point and Idaho.

Primarily gold: St Louis Mine.

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Grand Island-Caribou District](#)

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## **Boulder County**

### **Central District**

See Jamestown District

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Central District](#)

## **Boulder County**

### **Eldora District**

The Eldora District is a small district of roughly 3 square miles 3 miles West of Nederland. Gold was discovered in 1896 and the district was a minor producer of gold tellurides and some silver. A two-year boom began in the summer of 1897 with the discovery of the gold tellurides on Spencer Mountain. Talk was that the Eldora discovery would be "another Cripple Creek" (Kemp, 1960). The deposits turned out to be small telluride stringers and masses of gold-bearing sulfides and the boom was short-lived. Eldorado Camp became the town of Eldora.

The country rock is schist of the Idaho Springs formation with a hornblende monzonite porphyry, very similar to the nearby Caribou and Grand Island Districts.

Mineralogy is mainly sylvite and petzite with a gangue of quartz, roscoelite and barite. Molybdenite is ubiquitous but minor. The Mogul and Swathmore Tunnels are the main mines. The mines were developed in the Norway, Ma W, Revenge and Enterprise veins.

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# Boulder County

## Gold Hill District

Mining in the Gold Hill District was set off by placer discoveries starting in December of 1859. Lode gold was discovered the following summer and the district grew as thousands of miners moved in. The rush didn't last long, and scaled back. Mining was rejuvenated by the discovery of gold tellurides in 1872. Later bursts of activity occurred in 1898 (when a railroad was completed between Boulder and Ward) and in 1934. Nearly all mining ended by 1942.

The district covers roughly 12 square miles west of Boulder. Included is the Sugarloaf District. The towns of Gold Hill, Rowena, Glendale, Sunshine, Wallstreet, Salina and Crisman populated the area. A hundred mines appear on plate 23 in Lovering and Goddard (1950), indicating the intense prospecting and mining that occurred in the district through the years.

The best figures for production include the Sugarloaf District (which mostly lies within the boundaries of the Gold Hill District), indicate ore production of 706,293 tons with about \$78 million at the time. Aggregated estimates from Vanderwilt (1947), Del Rio (1960) and Lovering and Goddard (1950), the combined Gold Hill/Sugarloaf Districts produced at least 690,000 ounces of gold from 1859 to 1980. From Vanderwilt (1947), during the period 1932 to 1945, the district produced 244,391 ounces of silver, 536,630 pounds of copper, 995,080 pounds of lead and 76,700 pounds of zinc.

The production has always been from fissure veins, mostly 5-feet in width, but up to 15-feet. Nearly all the important veins occur near breccia zones. Seracitic wallrock alteration is characteristic. Del Rio (1960) stated that exploration indicates that mineralization does not extend much beyond 1000 feet in depth. Few mines reached depths greater than 500 feet.

Ore grades ranged from 1 to 10 ounces of silver and 1/2 to 2 ounces of gold per ton. Gold tellurides have been the most important with petzite ( $\text{Ag}_3\text{AuTe}_3$ ), sylvanite ( $[\text{Au,Ag}]_2\text{Te}_4$ ), calaverite/krennerite ( $\text{AuTe}_2$ )/( $[\text{AuAg}]\text{Te}_2$ ), hessite ( $\text{Ag}_2\text{Te}$ ) and altaite ( $\text{PbTe}$ ) present along with native gold. Subordinate sphalerite, galena, auriferous pyrite, auriferous chalcopyrite, and tennantite (copper arsenic sulfide) also occurred.

While gold was the main focus, and silver very important, the Boulder Tungsten Belt runs through the Gold Hill District and tungsten was produced in the Logan vein (5 to 10%  $\text{WO}_3$ ). Another unusual occurrence is that of nickel-cobalt ore at the Copper King Mine. Of Precambrian age, the ores include pyrite and arsenopyrite, pyrrhotite, sphalerite, chalcopyrite and the nickel minerals pentlandite ( $\text{NiFeS}$ ), polydymite ( $\text{Ni}_3\text{S}_4$ ), Bravoite ( $\text{Fe,NiS}_2$ ), Violarite ( $\text{Ni,Fe}_3\text{S}_4$ ), Cobaltite  $\text{CoAsS}$ , Nickeline  $\text{NiAs}$ , and Millerite  $\text{NiS}$ . Goddard and Lovering (1942) interpreted the deposit to occur in a metagabbro, intruded into the schists of the Idaho Springs Formation.

Minerals reported from the Gold Hill District (Mindat.org) include those below:

[Aikinite](#) -  $\text{PbCuBiS}_3$

[Altaite](#) -  $\text{PbTe}$

[Ankerite](#) -  $\text{Ca}(\text{Fe,Mg,Mn})(\text{CO}_3)_2$

[Antimony](#) -  $\text{Sb}$

[Arsenopyrite](#) -  $\text{FeAsS}$

[Beryl](#) -  $\text{Be}_3\text{Al}_2\text{Si}_6\text{O}_{18}$

[Biotite](#) -  $\text{K}(\text{Mg,Fe})_3(\text{Al,Fe})\text{Si}_3\text{O}_{10}(\text{OH,F})_2$

[Bismuth](#) -  $\text{Bi}$

[Bornite](#) -  $\text{Cu}_5\text{FeS}_4$

[Boulangerite](#) -  $\text{Pb}_5\text{Sb}_4\text{S}_{11}$

[Calaverite](#) -  $\text{AuTe}_2$

Calcite -  $\text{CaCO}_3$   
Chalcocite -  $\text{Cu}_2\text{S}$   
Chalcopyrite -  $\text{CuFeS}_2$   
Chlorargyrite -  $\text{AgCl}$   
'Chlorite Group' -  
Chrysocolla -  $(\text{Cu,Al})_2\text{H}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot n\text{H}_2\text{O}$   
Cobaltite -  $\text{CoAsS}$   
Coloradoite -  $\text{HgTe}$   
Covellite -  $\text{CuS}$   
Empressite -  $\text{AgTe}$   
Ferberite -  $\text{FeWO}_4$   
Fizélyite -  $\text{Pb}_{14}\text{Ag}_5\text{Sb}_{21}\text{S}_{48}$   
Fluorite -  $\text{CaF}_2$   
Freibergite -  $(\text{Ag,CuFe})_{12}(\text{Sb,As})_4\text{S}_{13}$   
Fülöppite -  $\text{Pb}_3\text{Sb}_8\text{S}_{15}$   
Galena -  $\text{PbS}$   
'Garnierite' - hydrous Ni silicates  
Gold -  $\text{Au}$   
var: Electrum  
Graphite -  $\text{C}$   
Hematite -  $\text{Fe}_2\text{O}_3$   
Hessite -  $\text{Ag}_2\text{Te}$   
Hübnerite -  $\text{MnWO}_4$   
Iodargyrite -  $\text{AgI}$   
Jamesonite -  $\text{Pb}_4\text{FeSb}_6\text{S}_{14}$   
'K Feldspar' -  $\text{KAlSi}_3\text{O}_8$   
Krennerite -  $(\text{Au,Ag})\text{Te}_2$   
Limonite - nonspecific iron oxides  
Magnetite -  $\text{Fe}_3\text{O}_4$   
Malachite -  $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$   
Marcasite -  $\text{FeS}_2$   
Melonite -  $\text{NiTe}_2$   
Mercury -  $\text{Hg}$   
Millerite -  $\text{NiS}$   
Molybdenite -  $\text{MoS}_2$   
Morenosite -  $\text{NiSiO}_4 \cdot 7\text{H}_2\text{O}$   
Muscovite -  $\text{KAl}_2(\text{Si}_3\text{Al})\text{O}_{10}(\text{OH,F})_2$   
var: Sericite  
Nagyágite -  $\text{Pb}_5\text{Au}(\text{Te,Sb})_4\text{S}_{5-8}$   
Nickeline -  $\text{NiAs}$   
Pentlandite -  $(\text{Fe,Ni})_9\text{S}_6$   
Petzite -  $\text{Ag}_3\text{AuTe}_2$   
Polydymite -  $\text{Ni}_2\text{S}_4$   
Pyrargyrite -  $\text{Ag}_3\text{SbS}_3$   
Pyrite -  $\text{FeS}_2$   
var: Bravoite (with Nickel)  
Pyrrhotite -  $\text{Fe}_{1-x}\text{S}_2$   
Quartz -  $\text{SiO}_2$   
var: Chalcedony  
Rhodochrosite -  $\text{MnCO}_3$   
Rickardite -  $\text{Cu}_7\text{Te}_5$   
Riebeckite -  $\text{Na}_2(\text{Fe,Mg})\text{Fe}_2\text{Si}_8\text{O}_{22}(\text{OH,F})_2$

Roscoelite -  $K(V,Al,Mg)_2AlSi_3O_{10}(OH)_2$   
 Scheelite -  $CaWO_4$   
 Schröckingerite -  $NaCa_3(UO_2)(CO_3)_3(SO_4)F \cdot 10H_2O$   
 Siderite -  $FeCO_3$   
 Silver - Ag  
 Sphalerite - ZnS  
 Stibnite -  $Sb_2S_3$   
 Stromeyerite - CuAgS  
 Stützite -  $Ag_7Te_4$   
 Sylvanite -  $(Ag,Au)_2Te_4$   
 Tellurantimony -  $Sb_2Te_3$   
 Tellurite -  $TeO_2$   
 Tellurium - Te  
 Tennantite -  $(Cu,Fe,Ag)_{12}(As,Sb)_4S_{13}$   
 Tetradymite -  $Bi_2Te_2S$   
 Tetrahedrite -  $(Cu,Fe,Ag)_{12}(Sb,As)_4S_{13}$   
 Torbernite -  $Cu(UO_2)_2(PO_4)_2 \cdot 8 - 12 H_2O$   
 Uraninite -  $UO_2$   
 Violarite -  $Ni_2FeS_4$

Some 185 mines and prospects are identified in the Gold Hill District (Mindat.org):

Alamakee	Leoch Occurrence (Big John; Dolly; Worlds Fair; Gillespie; United Empire Mines Group; American; Missing Link; Hawkeye)
Alaska Group	Little Princess
American	Little Ruby
Amzy; Great Sphinx Occurrence	Logan & Sunbeam Occurrence
Andesite Rock Quarry	Lost Boy (Lost Boy Lode)
Arapahoe Group of Claims	Loukonen Brothers Silica Mine
Archer	Lucky Star
Arrowhead	Mack
Atchison Mine (Atchison and Eldorado)	Macky
Atlanta	McCall Quarries (Landau)
Atlantic (Milwaukee; Emma Daniels; Pennsylvania Group; Black Diamond Occurrence)	McConnel
Bat Claim No. 1 (Corona Mine)	McKnight Placer
Bell Group	Melvina
Belle of Memphis (Blackhawk; Horseshoe; Victoria; Mountain Chief; Fairfax; Olympic; Bighorn; Silver Queen; Scotia; Gowanda)	Minnie Barrel Occurrence
Bellvue (Belview)	More
Big Five (Black Jack Occurrence)	Mountain Plains
Black Cloud	Myrtle Occurrence
Blue Eagle Occurrence	New California Occurrence (Baltimore; Gray Bird; Philadelphia; Nimbus; Gold Chief; Boston; Gold King; Village Bell; Baxter; High Line; Cross; U.P.; Cornicopia)
Brodies Saint Vrain	New York (New York Union; Pilot Occurrence)
Carol Gore	Noland
Centennial Tunnel Occurrence (Gov. Routt; Continental; Bismark; Bluebell Shaft & Tunnel; Canton; Mammoth; Scandia)	Ogalla
Central Gulch Placers	Ohio Tungsten Mine
Chivington Lode Occurrence	Ohline
Cobalt - Gold Mining Company (Emily; Francis B.; Acme Occurrence)	Osceola
Col. Dick Occurrence (Yellow Aster; Puzzler; Northwestern; Leviathan Group; Alaska; Four Tree; Palladium)	Parker Prospect (Rowena)
Cold Spring and Red Cloud	Peacock
Cold Springs Group (Times Tunnel; Hoodoo; Horsefai; Haddock; Crown; King; Wolf Tongue; Red Cloud)	Pfiefer
Colorado	Pilot Mine
Columbus	Plain View
Copper King (Gold Drop Occurrence)	Plough Boy
Corning Tunnel (Cold Spring; Alamakee; St. Joe; Blackhawk; Cash Occurrence)	Polar Star Occurrence (Moltke; Tarbox; Oklahoma; Brainard Tunnel; Bismark; Superior; Empire No. 3; Ward; Lulu B.)
Dale Taylor Lease Loukon	Poorman Group
Dam Waters Group	Poorman Hill
Denver City Occurrence (Contact; St. John; Skandia Group; Little Ida; Meadow Lark; Bald Mtn.; Old Hannah; Evening Star; New Prussian)	Ramey
	Rawley
	Ready Cash

Denver Post Occurrence  
 Dewey Rocky Mountain  
 Diamond K  
 Electronic  
 Emerson  
 Escanaba and Humboldt Occurrence  
 Evans (Grant; Great Britain Occurrence)  
 Evening Star  
 Fairfax  
 Fallow Tunnel  
 First National Bank Occurrence  
 Fisk  
 Five Brothers  
 Fools Paradise Number 1 and 2  
 Forest Mine  
 Fourmile Creek Placer  
 Franklin No. 5  
 Freiberg Mine  
 George Henry  
 Gillaspie and Big John  
 Gina No. 1 and 2  
 Gladys (Tamborine; Tamborine; Dime; Evening Star Dirigo Occurrence)  
 Gold Hill  
 Cash Mine  
 Copper King Mine (Yeager's Mine)  
 Little Johnny mine (Emancipation Group; Home Sweet Home Occurrence)  
 Nancy Wood mine (Sugar Loaf; Forest; Pittsburg; Gray Copper)  
 Gold Hill Occurrence (Rowena; Sunshine; Salina)  
 Gold Run Placer  
 Golden Bell Occurrence (Providence; Forget Me Not; Chamois; Last Chance; John Jay & MS; Kicking Horse; Cross; Cleveland; Surprise; Yates)  
 Golden Slipper Occurrence (Bloomer; Parole; Protection; Johannesburg; Red Lion Occurrence)  
 Goldsmith Maid Occurrence  
 Good Hope  
 Grace  
 Grand Lodge Mine  
 Grand Republic Occurrence  
 Grand View  
 Grant  
 Gray Copper  
 Great Britain  
 Hammons  
 Hawkeye  
 Henna  
 Henry No. 1 & No. 2  
 High Line  
 Holt (Sound Currency; Star Occurrence)  
 Homestake (Silent Friend; Cumberland; Morning Glory Occurrence)  
 Hoodoo  
 Howe  
 Ingram mine (Valley Forge Occurrence; Critic and Railroad Boy; Sunshine; Three Brothers; Atchison; Belle; Golden Eagle; Melvina; Baron; Richmond)  
 Interocean Mine  
 Iron King Tunnel (Jule Lode Tunnel)  
 Jacobson and Lyons  
 Jake Witter  
 Johnson  
 King Mountain  
 King Occurrence (Dana; Gold Lode; Gillard; Doss; Lucky Star; Sakhart; Morning Glory)  
 King Tunnel Occurrence  
 Kirts  
 Kline  
 Lands End  
 Last Chance (Gray Copper Emerson; Concord; Forest; Franklin Occurrence)  
 Red Cloud Mine (Chicago; Colorado Occurrence)  
 Redstone  
 Rex Mine  
 Richard Occurrence (Minnie Bell; Washburn; White Eagle; Dolly; Plough Boy; Oceola; Gillaspie)  
 Richmond Mine  
 Rose Mary Occurrence  
 Rough Rider (Monument; Gold Lode; Zuma; Lincoln Occurrence)  
 Ruski Quarry  
 Sakkrat  
 Silica Quarry (MRDS - 10117165)  
 Silver Harp  
 Silver Lode  
 Sisk Mine  
 Slide Mine  
 Smokey Hill Mine  
 St. Joe Mine  
 St James  
 Steamboat Valley  
 Summers  
 Summit Shaft  
 Sunrise (Yellow Jacket; Don D.; Shelton; McDermit Occurrence)  
 Sunshine Group  
 Tammany  
 Tennessee (American; White Crow; Golden Harp Occurrence)  
 Three Brothers  
 Times  
 Tom Lyle Group  
 Trombo  
 United Building Stone  
 United Empire  
 University of Colorado Quarry  
 Utica Occurrence  
 Victoria (Scotia Occurrence)  
 Viola Beatty Claim  
 Virginia (Golden Key)  
 Ward  
 Ward H. Lamon  
 Ward Rose Occurrence  
 White and Headley Gold Mine Property  
 White Crow  
 White Eagle (Archer)  
 White Rock  
 Who Do  
 Wild Dutchman  
 Wilson beryl prospect  
 Winona  
 Wood Chuck  
 Wood Mountain Group

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# Boulder County

## Jamestown (Central) District

The most comprehensive information concerning the Jamestown or Central District comes from Goddard, 1947; Lovering and Goddard, 1950, Galbraith, 1960, and summaries on Mindat.org.

The Jamestown District occupies some 36 square miles in central Boulder County. Gold was discovered in the district in 1865 and 500 prospectors soon rushed in. The first mill was erected in 1867. In 1875, telluride ores were recognized and activity increased. A big boom came in 1883 with the discovery of lead carbonate ores. In 1903, the district began to produce fluorspar. The gold price increase in 1933 brought about renewed activity again and mining for uranium continued into the 1970s. Fluorspar production continued to the mid 1970s (Blake, 1973).

The geology of the Jamestown District consists of Precambrian rocks of the Idaho Springs Formation, along with Boulder Creek and Silver Plume granites. Tertiary intrusive rocks range from alaskites to basalt. The district is centered on a quartz monzonite porphyry stock of Porphyry Mountain. Three large faults cut through the district, creating three large breccia "reefs," dike-like breccia zones.

Mineralization Lovering and Goddard (1950) recognize four basic types of deposits. Additionally, the District hosts a pegmatite province, making five distinct deposit types. Most of the deposits appear to be related to small stocks of granodiorite to quartz monzonite. The pegmatites appear to be related to the Precambrian granitic rocks (Galbreath, 1960).

Lead-silver deposits occur in veins or pipes, most into the Silver Plume granite. Argentiferous galena along with tetrahedrite ("gray copper") predominates along with chalcopyrite and sphalerite in a gangue of quartz, feldspar. Some gold occurs in the chalcopyrite and pyrite.

Fluorspar occurs in veins and breccia zones, both as finely granular and coarsely crystalline aggregates. Accompanied by quartz, clays and sulfides, some of the veins also carry uraninite. The breccia zones range up to 70 feet wide and over 350 feet in length; veins occur as long as 1000 feet and from inches to 16 feet wide.

Pyritic gold veins are the third type of deposit. These fill later fissures. Quartz occurs with coarse pyrite and chalcopyrite with some galena. The fourth deposit type is the telluride veins. Up to 10 feet wide and a mile or more long, quartz predominates with some pyrite. Grades were excellent, ranging from 0.5 to 15 opt gold and 0.5 to 25 opt silver. Lovering noted in 1947 that none of the veins had bottomed.

The pegmatites of the Jamestown District are dominated by quartz, potash feldspar and plagioclase. According to Galbreath (1960), the main accessories are cerite, epidote, fluorite, allanite, muscovite, and black tourmaline.

The variety of deposit types in the Jamestown District makes it a bonanza for the variety of minerals found. Mindat.org lists 113 different minerals identified in the district. Of particular note are 17 different telluride minerals, eight rare earth-bearing minerals and three rare germanium-bearing minerals.

The telluride minerals are

- [altaite](#) - PbTe;
- [buckhornite](#) - AuPb<sub>2</sub>BiTe<sub>2</sub>S<sub>3</sub>,
- [calaverite](#) - AuTe<sub>2</sub>
- [coloradoite](#) - HgTe
- [hessite](#) - Ag<sub>2</sub>Te
- [krennerite](#) - (Au, Ag) Te<sub>2</sub>,

[melonite](#) - Ni Te<sub>2</sub>,  
[nagyagite](#) - Pb<sub>5</sub>Au(TeSb)<sub>4</sub>,  
[paratellurite](#) - TeO<sub>2</sub>,  
[petzite](#) - Ag<sub>3</sub>SbS<sub>3</sub>,  
[rickardite](#) - Cu<sub>7</sub>Te<sub>5</sub>,  
[stutzite](#) - Ag<sub>7</sub>Te<sub>4</sub>,  
[sylvanite](#) - (Ag, Au)<sub>2</sub>Te<sub>4</sub>,  
[tellurantimony](#) - Sb<sub>2</sub>Te<sub>3</sub>,  
[tellurite](#) - TeO<sub>2</sub>,  
[native tellurium](#) - Te  
[tetradymite](#) - Bi<sub>2</sub>Te<sub>2</sub>S

Rare earth minerals are the following: (REE in the formula indicates one or more of the rare earth elements)

[allanite](#) - (Ca,REE)<sub>2</sub>(Al,Fe<sup>2+</sup>, Fe<sup>3+</sup>)<sub>3</sub>(SiO<sub>4</sub>)<sub>3</sub>(OH)<sub>3</sub>  
[bastnaesite](#) - (REE)(CO<sub>3</sub>)F  
[britholite](#) - (Ree,Ca)<sub>5</sub>(SiO<sub>4</sub>,PO<sub>4</sub>)(OH,F)  
[cerite](#) - (Ce,Ca)<sub>10</sub>(SiO<sub>4</sub>)(OH,F)<sub>5</sub>  
[yttrofluorite](#) - (Ca,Y)F<sub>2</sub>  
[gadolinite](#) - (REE)<sub>2</sub>(Fe<sup>2+</sup>Be<sub>2</sub>Si<sub>2</sub>O<sub>10</sub>)  
[monazite](#) - (REE,Th)PO<sub>4</sub>  
[tornebohmite](#) - (REE)<sub>2</sub>Al(SiO<sub>4</sub>)<sub>2</sub>(OH)

The Germanium-bearing minerals are

[briartite](#) - Cu<sub>2</sub>(Fe,Zn)GeS<sub>4</sub>  
[germanite](#) - Cu<sub>3</sub>(Ge,Fe)(S,As)<sub>4</sub>  
[renierite](#) - (Cu, Zn)<sub>11</sub>(Ge,As)<sub>2</sub>Fe<sub>4</sub>S<sub>16</sub>

Mindat.org identifies over a hundred different mines/claims/prospects within the Jamestown District. The mines on the map of Goddard (1947) include the Fourth of July, Orofino, Pine Shade, Mayflower, Hercules, Princess, Longfellow, Copper Blush, December, Golden Age, Eureka, Sentinel, Grand Central, Earl, Grand Union, Lily, Standard, Gladiator, Rip Van Dam, Ellen, Durias, Vanadium, Black Diamond, Nugget, Little Don, Tippecanoe, Governor Group, Roman Eagle, Thunderbolt, Grouse, Greenback, Bondholder, New Brunswick, Kicking Horse, Last Chance, John Jay, Golden Bell, Ten-Forty, Buena, Yellow Girl, Invincible, Brown Spar, Chancellor, Nations Treasure, Emmett, Buckhorn, Burlington, Alice, Crackerjack, Bessie B., Golden Cross, Red Spruce, Goldfinch, McKinley, Stanley Gladstone, Argo, Mt Pleasant, Consolation, Overland, and Atlantic.

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Mindat.org; Jamestown District CO; accessed 19 July 2012.

## Boulder County

### Left Hand Creek Pegmatite District

The Left Hand Creek pegmatites occur in central Boulder County in the vicinity of Left Hand Creek, overlapping with the Gold Hill and Ward Districts. They are related to the Precambrian granites - the Boulder Creek and the Silver Plume Granites - occurring in the schists of the Idaho Springs Formation marginal to the granitic bodies (Galbraith, 1960.)

Zoning is not common and not well developed, although some of the weak zoning reveals beryl in the pegmatite cores. The dominant mineralogy consists of quartz, potassium feldspar and plagioclase; major accessories are beryl and muscovite; minor accessories include garnet, columbite, tourmaline, biotite and cleavelandite (Galbraith, 1960). Minerals of some economic interest are beryl, feldspar and scrap mica. Martin (1993) reports slightly anomalous tantalum and niobium in the district pegmatites.

The Beryl Lode Mine was the most extensive, producing small amounts of beryl and mica during the World War I period (Martin, 1993) but was determined by Baillie (1962) and Sharps (1962) to contain only small reserves of mica and feldspar. The New Girl Mine produced feldspar and mica in 1928 and 1945 (Galbraith, 1960) and also was determined to have little in the way of reserves (Baillie, 1962; Sharps, 1962). Other mines and prospects include the Elkhorn, the Cal-Wood and the Highline.

#### References:

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Martin, Clay M., 1993, Reconnaissance Investigations of Selected Columbium and Tantalum Occurrences in Colorado; U.S. Bureau of Mines OFR 17-93.

Sharps, Thomas I., 1962, Colorado Mica; Colorado School of Mines Mineral Industries Bulletin, vol. 5, #1.

# Boulder County

## Magnolia District

The Magnolia District is a minor district located about five miles west of Boulder. It never was a major producer but received attention because of the high grade telluride ores found there. The geology of the Magnolia District is characterized by the Boulder Creek Granite and granitic gneiss.. The presence of several breccia reefs caught the attention of early prospectors. In addition to these breccia zones, the "iron dike" - a large diabase dike - crosses the area (Lovering and Goddard, 1950). Gold tellurides were discovered shortly after the discoveries at Gold Hill. The district mostly gold and some tungsten, as the district overlaps the Boulder Tungsten District in the north.

The mineralization consists of small veins that enjoyed rather modest production, although some high-grade zones were found. Normally, the production included gold, silver and a bit of tungsten (Vanderwilt, 1947). Most of the valuable ore came from the intersection of veins. The fissure veins contain telluride minerals, chalcedonic quartz, pyrite and small amounts of free gold, sphalerite, marcasite, fluorite, and calcite. Tellurides occur as small blades 2.5 mm or less in length. The tellurides occur in seams within the fissure veins, striking northwest. Only a few were traced more than 1000 feet. Tungsten veins were later, cutting the telluride-bearing veins. They strike east to northeast. Tungsten veins are also small, most only an inch or two wide and several hundred feet long.

Aggregated production shows about 40,000 ounces of gold from 1859 to 1980. Small production of silver and tungsten was reported also. As many as twenty-two mines were producing in 1936.

Ore mineralogy of the district according to Lovering and Goddard includes

native gold Au,	native tellurium Te,
tellurite $\text{TeO}_2$ ,	ferro-tellurite $\text{FeTeO}_4$ ,
melonite $\text{NiTe}_2$ ,	sylvanite $(\text{Ag}, \text{Au})_2\text{Te}_4$ ,
coloradoite $\text{HgTe}$ ,	hessite $\text{Ag}_2\text{Te}$ ,
petzite $\text{Ag}_3\text{SbS}_3$ ,	altaite $\text{PbTe}$ ,
ferberite $\text{FeWO}_4$ ,	molybdenite $\text{MoS}_2$ ,
roscoelite $\text{K}(\text{V}, \text{Al}, \text{Mg})_2\text{AlSi}_3\text{O}_{10}(\text{OH})_2$ ,	galena $\text{PbS}$ .

Mindat.org adds to that the minerals

empressite $\text{AgTe}$	calavarite $\text{AuTe}_2$ , sz
hubnerite $\text{MnWO}_4$ ,	keystoneite $(\text{Na}_{0.07}\text{K}_{0.02}\text{Mg}_{0.78})[\text{Ni}_{1.26}\text{Fe}^{3+}_{0.47}\text{Mn}_{0.10}]_{\text{E}1.83}\text{Te}_{3.04}\text{O}_9] \cdot 4.5\text{H}_2\text{O}$ ,
paratellurite $\text{TeO}_2$	magnolite $\text{Hg}_2\text{TeO}_3$ .

Additionally, Mindat.org list these minerals:

allanite	acalcite	chalcopyrite	chlorite
epidote	feldspars	fluorite	garnet
ilmenite (picrotitanite)	limonite	marcasite	mercury
molybdenite	olivine	pyrite	pyrrhotite
quartz	chalcedony	roscoelite	serpentine
sphalerite	stibnite	various micas	

Midat.org lists these mines and prospects in the Magnolia District:

Magnolia District

American Eagle - Interocean Occurrence

Beggar

Belmont (Graphic; Holy Cross; Tungsten King Occurrence)

Cheyenne (Modoc; Tiger Nos. 1 & 2 Occurrence)

Dun Raven Mine

Fortune Occurrence

Golden Glow

Humbug

India Mine

Pandora No. 1 & 4 Lode Claims

Park Placer (Congo Chief; Apex; Dominion; American; Josie Mansfield Placer; Don; Rico; Deyling; Enterprise)

Pickwick

Poorman Mine (1)

Power Shaft

Recluse

Rusty Dime

Kansas City Tunnel  
Kekionga Mine  
Magnolia Vein  
Keystone Mine  
Lady Franklin Mine  
Little Maud  
Lord Byron  
Magnolia mine  
Missoula  
Molly Gibson  
Mountain Lion Mine - Keystone Vein  
New Year

Sac and Fox  
Santa Lasaria (Mtn. Mexico; Bravo Occurrence)  
Mill Sites  
Senator Hill and Ophir Veins  
Snow Flake  
Sylvanite Tunnel  
Valley View  
Zephyr Occurrence

## References:

### [Mineral Resource Data System \(MRDS\) - Online Spatial Data – Magnolia District](#)

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Wilkerson, Albert S., 1939, Geology and ore deposits of the Magnolia Mining District and adjacent area, Boulder County, CO; Colorado Scientific Society Proceedings, vol. 14, pp. 81-101.

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## **Boulder County**

### **Sunshine District**

The Sunshine District overlaps with the Gold Hill District and is included in that description.

# Boulder County

## Ward District

The Ward District lies about ten miles west of the city of Boulder. The area is underlain by the Precambrian Idaho Springs Formation, including quartz-mica schist, sillimanite schist, quartz-biotite schists and the Silver Plume Granite. These are intruded by the Laramide-age White Raven quartz monzonite porphyry. The contact of this quartz monzonite with country rock is commonly mineralized. Much of the ores are auriferous pyrite and argentiferous galena. The productive zones occur in tabular shoots and chimneys. While there are some gold tellurides locally, most of the gold ore was pyrite/chalcopyrite in quartz (Worcester, 1924). The silver-lead ores occur in a gangue of calcite and byrite. The pyritic ores ranged in grade from 0.1 to 0.5 ounces per ton, with up to 3 ounces per ton in the oxidized zone.

Aggregated production, according to Vanderwilt (1947) was approximately 80,000 ounces of gold, 20,420 ounces of silver, 170,380 pounds of copper and 25,755 pounds of lead. All the major mines were developed by 1871, and continued producing sporadically until 1945. While more than 200 mines produced in the Ward District, only thirty-four mines were producing in 1935.

Minerals listed by Mindat.org are the following:

Acanthite	Coloradoite	'K Feldspar'	Siderite
'Albite-Anorthite Series'	Columbite	Krennerite	Silver
Altaite	Copper	Malachite	Sphalerite
Azurite	Dawsonite	'Mica Group'	Stibnite
Baryte	Fizélyite	Molybdenite	Sylvanite
Beryl	Galena	Pearceite	Tantalite
Bornite	Gold	Petzite	Tennantite
Calcite	var: Electrum	Polybasite	<i>Weissite ?</i>
Cervelleite	Hessite	Pyrite	Wolframite
Chalcocite	Hübnerite	Quartz	
Chalcopyrite	Jalpaite	Samarskite-(Y)	

Significant mines included the following:

Celestial	Celestial Extension	Morningstar
B&M	Baxter	Boston
Columbia	Madelaine	Niwot
Sullivan No. 5	Utica	White Raven
Dew Drop	Orphan Boy	Free Coinage
Copper Glance	Ruby.	

References:

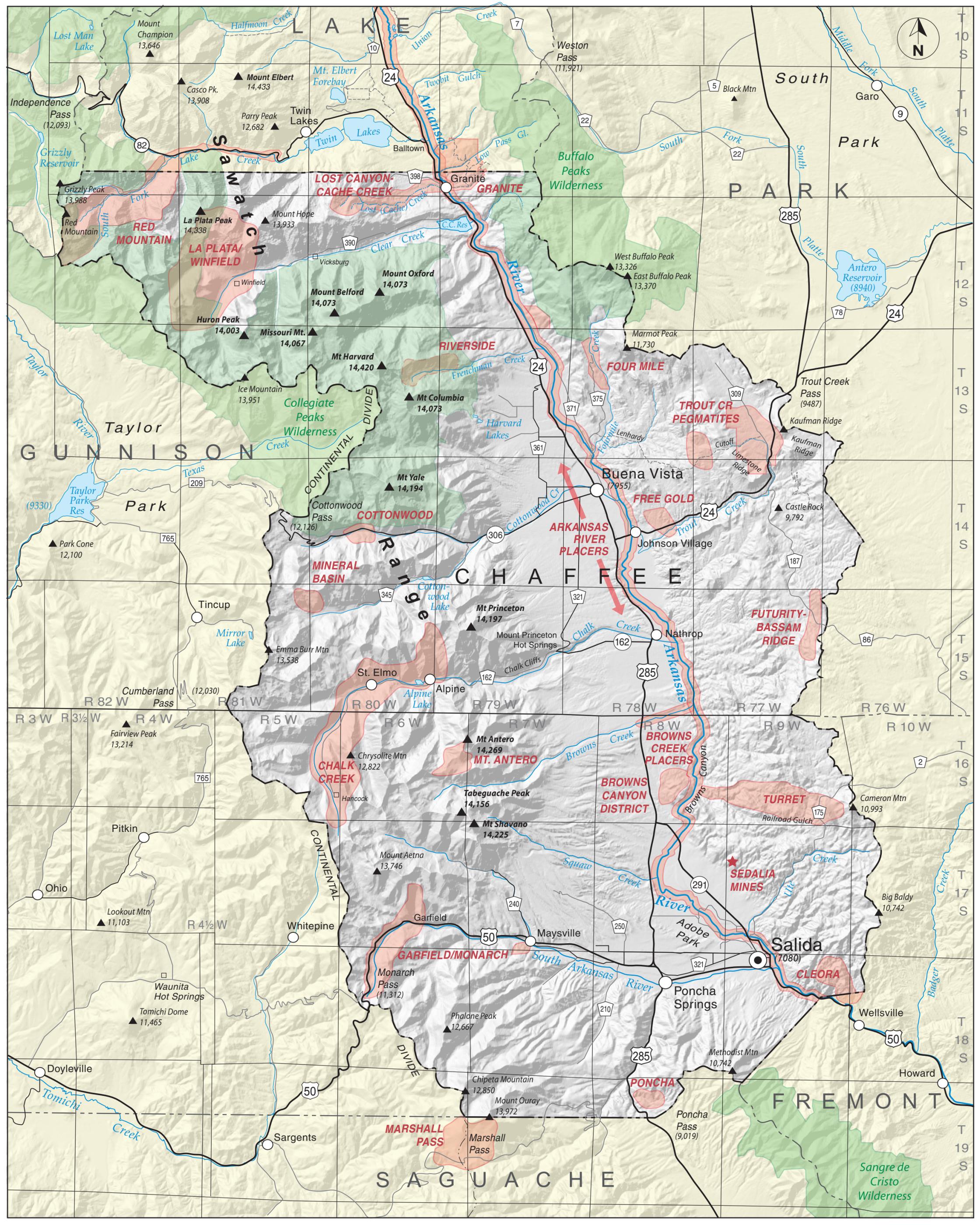
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Del Rio, S. M., 1960, *Mineral Resources of Colorado, First Sequel*, State of Colorado Mineral Resources Board, Denver, CO.

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Mindat.org. Accessed 19 July 2012.



**Arkansas River**

**Regions:** RED MOUNTAIN, LA PLATA/WINFIELD, COTTONWOOD, MINERAL BASIN, CHALK CREEK, GARFIELD/MONARCH, MARSHALL PASS, RIVERSIDE, FOUR MILE, TROUT CR PEGMATITES, FREE GOLD, ARKANSAS RIVER PLACERS, BROWNS CREEK PLACERS, TURRET, CLEORA, PONCHA, SAGUACHE

**Wilderness Areas:** Buffalo Peaks Wilderness, Collegiate Peaks Wilderness, Sangre de Cristo Wilderness

**Mountains and Peaks:** Mount Elbert (14,433), Mount Antero (14,269), Mount Princeton (14,197), Mount Shavano (14,225), Mount Aetna (13,746), Mount Oxford (14,073), Mount Belford (14,073), Mt. Columbia (14,073), Mt. Yale (14,194), Mt. Harvard (14,420), Ice Mountain (13,951), Huron Peak (14,003), Missouri Mt. (14,067), Grizzly Peak (13,988), Casco Pk. (13,908), Parry Peak (12,682), Twin Lakes, West Buffalo Peak (13,326), East Buffalo Peak (13,370), Marmot Peak (11,730), Castle Rock (9,792), Fairview Peak (13,214), Chrysolite Mtn (12,822), Tabeguache Peak (14,156), Lookout Mtn (11,103), Tomichi Dome (11,465), Phalane Peak (12,667), Chipeta Mountain (12,850), Mount Ouray (13,972), Methodist Mtn (10,742), Cameron Mtn (10,993), Big Baldy (10,742), Sedalia Mines

**Passes:** Independence Pass (12,093), Weston Pass (11,921), Cottonwood Pass (12,126), Cumberland Pass (12,030), Monarch Pass (11,312), Marshall Pass, Trout Creek Pass (9,487), Kaufman Ridge, Cutoff Limestone Ridge

**Reservoirs and Lakes:** Grizzly Reservoir, Taylor Park Res. (9,330), Mirror Lake, Cottonwood Lake, Harvard Lakes, Antero Reservoir (8,940)

**Towns and Cities:** Granite, Buena Vista (7,955), Johnson Village, Nathrop, St. Elmo, Alpine, Hancock, Whitepine, Maysville, Poncha Springs, Poncha, Salida (7,080), Wellsville, Howard, Sargents, Doyleville, Pitkin, Ohio, Tincup, Vicksburg, Balltown, Twin Lakes, Garo, Trout Creek

**Highways:** 24, 398, 390, 371, 375, 361, 306, 321, 162, 285, 78, 209, 765, 86, 175, 291, 250, 210, 50, 285, 5

**Geographic Features:** Continental Divide, Continental Divide, Continental Divide

**Other Labels:** Lost Canyon-Cache Creek, Lost (Cache) Creek, Clear Creek, Frenchman Creek, Fourmile Creek, Lenhardy, Chalk Creek, Browns Creek, Squawo Creek, Adobe Park, Badger Creek

# Chaffee County

## Browns Canyon District

The Browns Canyon District was one of the nation's largest producers of fluorspar from 1927 until 1949. The district covers about 9 square miles approximately 10 miles north of Poncha Springs. More than 260,000 tons of ore were mined, yielding 130,000 tons of fluorspar at an estimated value of more than \$5 million (Brady, 1975). The grade of the product ranged from 85% CaF<sub>2</sub> (metallurgical grade - 59% of shipments) to 92-97% CaF<sub>2</sub> (ceramic grade - 39% of shipments) and 98% CaF<sub>2</sub> (acid grade - 2% of shipments) (Van Alstine and Cox, 1969). Four mills operated in the district at the height of its production.

The fluorspar deposits occurred as filling in fractures and fault breccia zones. The faults occur in country rock of granite gneiss, schist and a porphyritic rhyolite flow (Del Rio, 1960). The shear zones trend NW-SE, dipping steeply. The zone is known to exceed 3.5 miles in length. Van Alstine and Cox (1969) estimate 2 million tons of ore and suggested that more probably exists along the unexplored trends of the fault zone.

Most of the fluorspar veins were 3 to 6 feet in width, but some reached 40 feet. Individual veins are traceable for 1000 feet or more (Cox, 1945). While there was some sulfides present, the fluorspar was accompanied mainly by chalcedonic silica. Other minerals reported include coarse quartz, opal, calcite, barite, pyrite, marcasite, clay minerals and oxides of iron and manganese.

Minerals reported in the districts are the following:

<a href="#">Barite</a>	Gangue
<a href="#">Calcite</a>	Gangue
<a href="#">Fluorite</a>	Ore
<a href="#">Goethite</a>	Gangue
<a href="#">Hematite</a>	Gangue
<a href="#">Kaolinite</a>	Gangue
<a href="#">Manganite</a>	Gangue
<a href="#">Montmorillonite</a>	Gangue
<a href="#">Opal</a>	Gangue
<a href="#">Psilomelane</a>	Gangue
<a href="#">Pyrite</a>	Gangue
<a href="#">Pyrolusite</a>	Gangue
<a href="#">Quartz</a>	Gangue

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Browns Canyon](#)

Brady, Bruce, 1975, Map Showing Fluorspar Deposits in Colorado, U.S. Geological Survey Minerals Investigations Resource Map MR-70.

Cox, Doak C., 1945, General features of Colorado fluorspar deposits; Colorado Scientific Society Proceedings V. 14, No. 6., pp. 263-285.

Del Rio, S. M., 1960, Mineral Resources of Colorado First Sequel, State of Colorado Mineral Resources Board, Denver, CO.

Van Alstine, R.E. and Cox, D.C., 1969, Fluorspar mines and psospects in Geology and Mineral Deposits of the Poncha Springs NE Quadrangle, Chaffee County, Colorado; USGS Professional Paper 626, P. 38-43

# Chaffee County

## Cache Creek Placers

The Cache Creek Placer District lies at the extreme north end of Chaffee County, adjacent to Lake County. The district is considered by Parker (1974) to extend from the Arkansas River at the town of Granite upstream to Lost Mountain. Vanderwilt (1947) included the district in the Granite District. This was the largest single placer in Colorado, and produced for nearly 60 years. The district is contiguous with the Lost Canyon placers on the upstream end.

According to Parker (1974) and Voynick (1992) gold was first discovered in Cache Creek in 1859. The Rocky Mountain News reported the placers there were producing a half ounce of gold per day per man. Early on, water was supplied by a 16-mile ditch from Lake Creek. Fairly quickly, larger companies consolidated claims and began large-scale mining. In fact, the state's only profitable large hydraulic mine operated on the terraces above Cache Creek. Finally, a lawsuit by the city of Pueblo and other downstream water users curtailed hydraulic mining (and its attendant siltation) in 1910 (Parker, 1974; Voynick, 1992).

Davis and Strufert (2011) show the placer as consisting of both fluvial and glaciofluvial elements (river gravels and older gravels deposited by and after glacial activity). Parker (1974) points out that the gravels contain very little clay or boulders and were thus very favorable for placering. The district was a prolific producer of gold and Parker (1992) points out that most of Chaffee County's gold production came from this district - more than \$1million at a gold price of \$20.57 (so more than 48,000 ounces.) He points out that the source of the gold was probably mostly from Lost Canyon Creek to the west and southwest and the glacial moraines of Lake Creek. Much of those source areas remain unmined.

### References:

Davis, Mark W. and Strufert, Randall K., 2011, Gold Occurrences of Colorado; Colorado Geological Survey, Denver, CO.

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Parker, Ben H., 1974, Gold Placers of Colorado; Colorado School of Mines Quarterly, vol. 69, no. 4., 2 volumes.

Parker, Ben H., 1992, Gold Panning and Placering in Colorado; Colorado Geological Survey Information Series 33.

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Voynick, Stephen M., 1992, Colorado Gold; Mountain Press Publishing Company, Missoula, MT.

## Chaffee County

### Chalk Creek District

The Chalk Creek District lies at the upper end of the Chalk Creek drainage above Mount Princeton Hot Springs. Dings and Robinson (1957) divide the district into three areas - the Browns Creek the the east, Baldwin Gulch, 3 miles southeast of St Elmo, and a 1/2 to 2-mile wide, 10-mile long belt in the northeast corner of the Garfield Quadrangle over Chrisolite Mountain. An excellent summary of the history of the Chalk Creek District is provided in Neubert and Wood (2001) A synopsis of that history will be given here. The first discoveries in the district were made in 1873. Inaccessibility plagued the district - the distance and difficult terrain made transport of ore to a smelter an expensive proposition. Once a smelter was built in 1880, the mines increased output and local towns grew prospered. Later, a new smelter in Buena Vista gave the district mines another boost. The removal of the railroad in 1926 closed many of the mines, although production continued through sporadically till 1954 (Colorado Bureau of Mines, 1954). Neubert and Wood (2001) document attempts to reopen some of the mines as late as the 1960s.

The towns of Alpine, Romley, Hancock and St Elmo grew up in the district. Alpine was incorporated in 1879 and soon boasted two hotels, three banks, a dance hall, 23 saloons and a population of 500 (Aldrich, 1992). Romley grew up around the Mary Murphy Mine, the districts largest. Hancock was founded on the site of a placer mine and grew as a construction camp for workers on the nearby Alpine Tunnel. But by 1904, the post office closed, the last train passed through the tunnel in 1910 and the last passenger train up the canyon ran in 1926 (Aldrich, 1992). St. Elmo is the one town remaining in any form. Incorporated as Forest City in 1880, the the 1890s, the town had a population between 1000 and 1500. The post office remained until 1952 and there are still a few permanent residents along with seasonal residents and some businesses.

Ore in the Chalk Creek District occurred in pyritic quartz veins mostly in the Mount Princeton quartz monzonite. The veins varied greatly in size from inch-wide stringers 50 feet long to some 50-foot thick veins that persist for more than a mile. The mines were considered to be mainly silver mines. The only mention as to the source of the gold is free gold in the oxidized zone (Dings and Robinson, 1957). Silver occurred mainly in argentiferous galena, but Neubert and Wood (2001) cite newspaper articles from the day that mention argentite, pyrrargite, proustite and tetrahedrite, particularly in the Little Bonanza vein.

Vanderwilt (1947) records production in the years 1932 to 1944 (well past the years of prime production) of 5323 ounces of gold, 45,280 ounces silver, 57,735 pounds of copper, 708,950 pounds of lead and 277,700 pounds of zinc. Most of this district's production came from the Mary Murphy (Dings & Robinson, 1975).

Minerals identified in the district are the following:

(Continued next page)

**Mineral list contains entries from the region specified including sub-localities**

<a href="#">Anglesite</a>	<a href="#">var: Argentiferous Galena</a>	<a href="#">Pyrrargite</a>
<a href="#">Argentite</a>	<a href="#">Gold</a>	<a href="#">Pyrite</a>
<a href="#">Azurite</a>	<a href="#">Gypsum</a>	<a href="#">Pyrolusite</a>
<a href="#">Baryte</a>	<a href="#">Halite</a>	<a href="#">Quartz</a>
<a href="#">Beryl</a>	<a href="#">Kogarkoite</a>	<a href="#">Rhodochrosite</a>
<a href="#">Burkeite</a>	<a href="#">Laumontite</a>	<a href="#">Rhodonite</a>
<a href="#">Calcite</a>	<a href="#">Limonite</a>	<a href="#">Silver</a>
<a href="#">Cerussite</a>	<a href="#">Malachite</a>	<a href="#">Smithsonite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Muscovite</a>	<a href="#">Sphalerite</a>
<a href="#">Chrysocolla</a>	<a href="#">var. Sericite</a>	<a href="#">Tetrahedrite</a>
<a href="#">'Clay'</a>	<a href="#">Opal</a>	<a href="#">Tennantite</a>
<a href="#">'Copper Stain'</a>	<a href="#">'Phillipsite'</a>	<a href="#">Trona</a>
<a href="#">Fluorite</a>	<a href="#">Proustite</a>	<a href="#">'Wad'</a>
<a href="#">Galena</a>	<a href="#">'Psilomelane'</a>	

Mines in the district include:

Allie Belle	California	Hancock	Iron Chest	Mary Murphy
Big Bonanza	Blackhawk	Chalk Cliffs	Flora Belle	Kentucky
Kickapoo	Little Bonanza	Little Jessie	Matilda	North Pole
Overland	Portland	St Elmo Queen	Stanley	Stonewall
Tilden	Tom Payne	Tressa C.		

Aldrich, John K., 1992, Ghosts of Chaffee County; Centennial Graphics, Lakewood CO.

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Dings, McClelland G. and Robinson, Charles S., 1957, Geology and Ore Deposits of the Garfield Quadrangle, CO; U.S. Geological Survey Professional Paper 289.

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## Chaffee County

### Cleora District

The Cleora District is a small district along the Arkansas River, 1-3 miles southeast of Salida. Named for the original railroad stop at the town of Cleora, the name remained after the main station was moved to Salida and the town disappeared (Aldrich, 1992).

While Cleora is a small district not much more than five square miles in area, its geology has drawn attention to a degree disproportionate to its size and production. The geologic interpretation of the Cleora District has evolved through the years. Belser (1956) simply discussed veins in "crushed quartz and schist." Tweto (1960) identified the host rocks as metasedimentary and metaigneous but made no assertion about the paragenesis of the mineralization. He noted possible association with nearby quartz monzonite intrusives.

Boardman in 1971 found the evidence ambiguous on the origin of the deposits but seems to lean toward the injection of veins carrying late sulfides. He did point out in Sheridan and Raymond (1977) first put forth the hypothesis that the deposits are Cleora (and other similar Precambrian deposits) are of exhalative origin. Heinrich (1981) didn't discuss origin specifically but described the Cleora deposits as consisting of fracture-controlled quartz veins in micaceous gneisses and amphibolites.

Sheridan and Raymond (1984) went into more detail on the Cleora and other similar Precambrian deposits (including the nearby Sedalia and Cotopaxi Mines) as metamorphosed seafloor exhalites, has studied extensively in Australia. Wallace et al (1997) mapped the host units at Cleora broadly as metagabbro.

Vanderwilt (1947) described the mineralization at Cleora succinctly as chalcopyrite in schist. Heinrich noted veins up to 3 feet wide and 200 feet long in gneisses and amphibolites.. Tweto's described scheelite at Cleora as disseminated in "dark schists and amphibolites," accompanied by copper. Belser (1956) was more specific, noting occurrences at each mine he visited. Sheridan and Raymond (1977) reported distinctive volcanic textures including flattened pumice fragments and clasts of porphyritic basalt in breccias. Clearly, reading the range of descriptions shows the great variety - and ambiguity - of rocks present in this suite of small mines.

Very little ore was produced in the district. Visits of Cleora show that none of the mines is large and most are, in fact, quite small. Belser's (1956) detailed descriptions document production at only the Stockton Mine (2 tons of ore ... unfortunately the Stockton Mine is now the site of a residence) and the Grand View Mine, which was worked for copper from 1890 to 1905.

The mines and prospects in the district are the Stockton, Cleora #2, Mute, Grand View, Hub Tunnel, Uncle Andy Prospects, North Star, Saddle, and Tiger Lode.

Minerals identified in the Cleora district are

<a href="#">actinolite</a>	<a href="#">cuprite</a>	<a href="#">scapolite</a>
<a href="#">biotite</a>	<a href="#">diopside</a>	<a href="#">scheelite</a>
<a href="#">bornite</a>	<a href="#">grossularite</a>	<a href="#">vesuvianite</a>
<a href="#">chalcopyrite</a>	<a href="#">hornblende</a>	
<a href="#">chlorite</a>	<a href="#">plagioclase</a>	
<a href="#">chrysocolla</a>	<a href="#">quartz</a>	

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Cleora District](#)

Belser, Carl (1956) Tungsten Potential in Chaffee, Fremont, Gunnison, Lake, Larimer, Park and Summit Counties, Colorado; USBM Information Circular 7748.

Boardman, S.J., 1971, Geology and Ore Deposits of the Salida Area, Chaffee County Colorado; Ph.D. Thesis, University of Michigan.

Boardman, S.J. 1976, Geology and Precambrian Metamorphic Rocks of the Salida Area, Chaffee County, Colorado; The Mountain Geologist, v. 13, no. 3, pp. 89-100.

Heinrich, E. W., 1981, Precambrian Tungsten and Copper-Zinc Skarn Deposits of South-Central Colorado; Colorado Geological Survey Resource Series 21.

Sheridan, Douglas M. and Raymond, William H., 1977, Preliminary data on some Precambrian deposits of zinc-copper-lead sulfides and zinc spinel (gahnite) in Colorado; U.S. Geological Survey Open-File Report 77-607 27 pp.

Sheridan, Douglas M. and Raymond, William H., 1984, Precambrian Deposits of Zinc-Copper-Lead Sulfides and Zinc Spinel (Gahnite) in Colorado; U.S. Geological Survey Bulletin 1550.

Tweto, Ogden, 1960, Scheelite in the Precambrian Gneisses of Colorado; Economic Geology, v. 55, pp. 1406-1428.

## Chaffee County

### Cottonwood Creek District

The Cottonwood Creek District in west-central Chaffee County is a small district that produced a small amount of gold in the past. Very little information is available about mines or deposits of the district. Henderson (1926) lists the "Cottonwood Creek" district as a placer gold district. Vanderwilt (1947) briefly noted the district was characterized by small veins of lead, silver and gold in Precambrian granite and schist. He had no recorded production. Heyl (1964) includes the "mines and prospects" of the Cottonwood Creek district on plate 1 in his discussion of oxidized zinc deposits. He quotes a personal communication with C.S. Robinson that oxidized lead and zinc ore are present on some dumps in the old district.

Heyl describes the district as characterized by schists intruded by Mount Princeton quartz monzonite. Structurally within the district lies a small syncline containing Paleozoic limestones and dolomites with bedded replacement deposits of silver-lead-zinc. He feels this area is worthy of further investigation since it shows favorable environment for bedded deposits by has never been explored in detail.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Cottonwood Creek Magnetite Deposit](#)

Henderson, Charles W., 1926, Mining in Colorado: A History of Discovery, Development and Production; U.S. Geological Survey Professional Paper 138.

Heyl, Allen V., 1964, Oxidized Zinc Deposits of the West; Part 3, Colorado; U.S. Geological Survey Bulletin 1135-C.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

# Chaffee County

## Fourmile District

The Fourmile District is a little known district in the area of Fourmile Creek, northeast of Buena Vista. Henderson (1926) lists the Fourmile in his table of Colorado mining districts. Vanderwilt (1947) places the district in T13S, R78W. but states its exact location is "unknown." The map of Wood (1983) implies the district extends into Park County, overlapping with the Buffalo Peaks District, but shows a concentration of mines and claims in sections 5, 6, 7, 8, 16, 17, and 18 of T13S, R78W. Those seven sections - all in Chaffee County - are what is used on our map.

Wood (1983) and Hedlund, et al (1983) describe gold-bearing quartz veins following northwest-trending faults in Precambrian granite along Fourmile Creek. They describe low to moderate potential for silver and gold in these veins for future development.

Production figures for 1935, 1936 and 1937 show that 78 tons of ore yielded 53.5 ounces of gold. In 1940, Vanderwilt reports that 67 tons of ore supplied 39 oz of gold, 336 oz of silver, 1000 pounds of copper, 1200 pounds of lead and 30,000 pounds of zinc.

### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Fourmile District](#)

Hedlund, D.C., Nolan, G.A. and Wood, R.H. II, 1983, Mineral Resource Potential of the Buffalo Peaks Wilderness Study Area, Lake, Park, and Chaffee Counties, Colorado; U.S. Geological Survey Misc. Field Studies Map MF 1628-A.

Henderson, Charles W. (1926) Mining in Colorado; U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

Wood, Robert H. II, 1983, Mineral Investigation of the Buffalo Peaks Wilderness Study Area, Lake, Park, and Chaffee Counties, Colorado; U.S. Bureau of Mines Open File Report 98-83.

## Chaffee County

### Free Gold District

The Free Gold District lies just east of the Arkansas River. Based on reports by Keller, et al (2004) deposits typical of the district extend from Hop Gulch and McGee Gulch (sec. 3, T 14S, R. 78W and sec 6, T. 14S, R77W respectively), around the present-day Collegiate Peaks scenic overlook, to several small mines near Trout Creek, south of Highway 285. The terrain there is Proterozoic Granodiorite of the Mosquito Range. On-site investigation shows that the target of mining activity appears to have been small veins, possibly pegmatitic judging by the material in the mine dumps. The size of the dumps indicates the excavations were not deep - perhaps 30 to 40 feet - probably the extent of the oxidized zone. Discussions with personnel involved in mine closures and clean-ups with the Abandoned Mines Group of the Colorado Division of Minerals and Geology indicate that only one mine - the Nellie Bly Mine - showed evidence of some copper mineralization.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Free Gold District](#)

Vanderwilt (1947) comments that the Free Gold District was characterized by silver in small veins in Precambrian granite. Production records indicate some placer gold in 1932 and a few tons of low-grade gold ore in 1933.

Aldrich (1992) points out that a small camp and stamp mill existed near the Nellie Bly Mine called the Free Gold Camp, with a post office, general store, saloon and about 150 residents.

Aldrich, John K., 1992, *Ghosts of Chaffee County*; Centennial Graphics, Lakewood CO.

Keller, John W., McCalpin, James P., and Lowry, Benjamin W, 2004, *Geologic Map of the Buena Vista East Quadrangle, Chaffee County, CO*; Colorado Geological Survey Open File Report 04-4.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.



Overview of the terrain in the Free Gold District, Chaffee County.

## **Chaffee County**

### **Futurity - Bassam Ridge District**

The Futurity - Bassam Ridge District is an informal name applied for this publication by the authors. Several mines were investigated at the site of Futurity. These consist of small veins in black to gray calcareous and carbonaceous siltstone and fine sandstone, interpreted as a black shale environment near the contact of the Belden and Minturn Formations by Wallace and Lawson (1998). Their analyses show anomalous gold, copper and silver.

Additional prospects occur to the north along Bassam Ridge, mapped by Wallace and Keller as Leadville Limestone and Kerber Formation. The prospects appear to concentrate in an intraformational breccia. Nearby are some piles of dump material of black shale at the location appropriately known as Black Dumps, on the Park-Chaffee County line.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Futurity District](#)

Wallace, C.A. and Lawson, Allison D., 1998, Geologic Map of the Cameron Mountain Quadrangle, Chaffee, Park, Fremont Counties, Colorado: Colorado Geological Survey Open File Report 98-4.

Wallace, C.A. and Keller, John W., 2003, Geologic Map of the Castle Rock Gulch Quadrangle, Chaffee and Park Counties, Colorado; Colorado Geological Survey Open File Report 01-1.

# Chaffee County

## Garfield-Monarch District

Placer gold was discovered in the streams of the Monarch district in the 1860s, but major activity did not follow for many years. In 1878 the Boone brothers staked the Great Monarch claim. That opened the flood gates to thousands of hopeful prospectors. Very quickly claims were staked including the Fairplay, the Silent Friend, Pay Master, Ben Bolt, Eclipse and Madonna Mines (Crawford, 1913).

The towns of Garfield, Maysville and Monarch were soon founded and grew rapidly, aided by the arrival of the railroad in 1883 (Aldrich, 1992). Monarch grew around the claim of Nicholas Creede, becoming the most important of the towns, with more than twenty mines within a half mile of the town. The Madonna Mine was soon producing 30 carloads of ore a day. Ultimately the silver crash of 1893 killed the towns and much of the mining activity.

The geology of the district is characterized by Precambrian schists and gneisses overlain by Paleozoic sedimentary rocks that include rocks up to the Cretaceous Mancos Shale. These sedimentary units dip steeply. Three significant NW-trending faults cut the rocks - the Madonna, the Lake and the Mayflower faults (Crawford, 1913). Later Tertiary intrusives are found throughout the area, including a gneissic quartz monzonite, two other quartz monzonites - the Mount Pomeroy and the Mount Princeton, along with dikes of monzonite, latite, rhyolite and lamprophyre (Dings and Robinson, 1957).

Ore deposits of the Garfield-Monarch District include replacement deposits, veins, and apparently unrelated metamorphosed Precambrian deposits. The replacement deposits are the most important. They occur as both bedded replacements and along faults. The Paleozoic carbonates are the most commonly replaced units. Bedded replacement deposits are found in all the carbonate units in the District but the Manitou Dolomite is the most important, especially in contact with the Precambrian basement.

The principal type of vein deposits is pyritic quartz. The pyrite is commonly auriferous.

Oxidation of the deposits is common. Typical oxidized ore consists of soft, porous limonite containing cerussite, hemimorphite, smithsonite and some galena (Dings and Robinson, 1957). Not much zinc was produced because the district had no zinc smelter.

Of the district mines, the Madonna was the largest producer (Henderson, 1926; Vanderwilt, 1947). The mine lies on Monarch Ridge, the richest area of the district. According to the description of Dings and Robinson (1957), the Madonna ore occurs mainly in the dolomitic limestones of the Manitou and Fremont Formations, especially near the underlying Precambrian granite. The ore consisted of cerussite, native gold, smithsonite, hemimorphite, cerargyrite, argentite, some silver-bearing galena and malachite in a gangue of limonite with some dolomite, limestone and quartz. Significant production came from bodies of lead carbonate, commonly surrounded by lower-grade zinc carbonate (Hazen, 1956).

Mines south of Maysville are not contiguous with the rest of the district and are distinct geologically and mineralogically (Sheridan and Raymond, 1984). In this outlier, the mines are metamorphosed seafloor exhalites, characterized by the zinc spinel gahnite. In this way, the Maysville "sub-district" is akin to the Sedalia Mine and the mines of the Turret District to the east. The Bon Ton and Cinderella No. 7 mines are in this area.

Also, another area deserves special mention as differing from the main part of the Garfield-Monarch District. In the Huffman Park area, the Nest Egg and Royal Purple "occurrences" are characterized by abundant molybdenite with only a small amount of pyrite as the accompanying sulfide. These molybdenum-rich prospects occur within the Mount Princeton Quartz Monzonite (Worcester, 1919).

The Garfield-Monarch District has continued to sustain interest. Shannon and McCalpin (2006) noted abundant evidence of recent exploration activities in the Maysville area. Del Rio (1960) delineated several areas of potential for future exploration. He suggested the region where the Lake, Mayflower and Madonna faults converge, the areas high in the Creek Creek Valley and in Taylor Gulch - all areas covered with significant glacial till. There has been no serious exploration in these areas to the knowledge of personnel at the Colorado Geological Survey.

**Mineral list contains entries from the region specified including sub-localities (Mindat.org)**

Acanthite	Chrysocolla	Gypsum	Pyrrhotite
Actinolite	Copper	Hematite	Quartz
Almandine	'Copper Stain'	var: Specularite	var: Chert
Andradite	Cordierite	Hemimorphite	Scheelite
Anglesite	Cuprite	'Hornblende'	'Serpentine Group'
Ankerite	Diopside	Hübnerite	Siderite
Anthophyllite	Dolomite	Limonite	Sillimanite
'Asbestos'	var: Ferroan Dolomite	Lizardite	Silver
Azurite	Epidote	Magnetite	Smithsonite
Beryl	'Feldspar Group'	Malachite	Sphalerite
var: Aquamarine	Fluorite	Mimetite	Stephanite
Biotite	Gahnite	Molybdenite	<i>Sylvanite ?</i>
Bornite	Galena	Muscovite	Tenorite
Brochantite	var: Argentiferous Galena	'Olivine'	Tremolite
Calcite	'Garnet'	Phenakite	'Wad'
Cerussite	Gedrite	Phlogopite	Wollastonite
Chalcocite	Goethite	Plumbojarosite	Wulfenite
Chalcopyrite	Gold	'Psilomelane'	
Chlorargyrite	Graphite	Pyrite	
'Chlorite Group'	Grossular	Pyrolusite	

## Garfield-Monarch mines

Asterisk \* indicates mines with extended written descriptions in Dings and Robinson (1957);

mines marked with @ are located in the Maysville area sub-district, described in Sheridan and Raymond (1984);

# notes the mine is described by Worcester (1919);

Mines marked with ^ are specifically mentioned in Heyl's publication on oxidized zinc deposits of Colorado (1964);

+ denotes mines detailed in Crawford (1913);

Unmarked mines are from Mindat.org alone.

### Colorado

Chaffee Co.  
 Monarch District  
 +^\*Alaska Mine  
 Alie Belle  
 +\*Alpha and Beta  
 Alpine No. One  
 Anna Huffman Claims  
 +April Fool Mine  
 Atlas Group  
 Baal Beck  
 +Bay State  
 Ben Bolts Paymaster  
 +\*Ben Hill  
 +\*Black Tiger Mine  
 +@Bon Ton Mine

### USA

Lachaw Mine  
 +\*Last Chance Mine  
 Lehigh  
 +^\*Lilly Mine  
 ^Little Claim  
 +Little Charm Mine  
 ^Little Giant  
 +\*Little Orphan Annie Mine  
 +Little Wonder Mine  
 Longfellow Claim  
 +Lost Basin Group  
 Lucky Mine  
 +\*Macedonian Mine  
 +\*Madonna Mine  
 +\*Major Mine

+\*Bonnie Belle Mine  
+Boss Lake  
+\*Brighton Mine  
Buckhorn Tun  
Burton  
@Cindarella No. 7 claim  
Cinderella South Mine  
+\*Clinton Mine  
Colorado Gold Mining  
+\*Columbus Mine  
+Condor  
Copper King  
Cree Camp  
D. A. Moore Mason Occurrence  
+\*D'Byron mine  
+\*Darling Mine  
+\*Delaware  
+\*Desdemona  
DMD Occurrence  
Dumpite  
+^\*Eclipse  
Elkington Mine  
Elmer McMurray  
+Emma Stradley  
+\*Evening Star  
Evergreen  
+\*Exchequer  
+^Fairplay Mine  
Fairview  
^Flossie D  
Forward Gold Mining  
+Fraction Mine  
French  
+^\*Garfield  
Columbus Gulch  
Hercules Mine  
Ingersoll Mine  
Hematite prospect  
Indianapolis Mine  
Garfield Quarry  
Geneva Claim (1)  
Geneva Claim (2)  
Giant Eclipse  
Gladstone Mine  
+\*Golden Age Mine  
Grand Duke  
+Great Monarch Mine  
Greens Gulch  
+\*Gulch Mine  
+\*^Hawkeye Mine (incl. 1,2,3)  
+\*Hercules  
+Highland Claim  
Holy Water Mine  
Huffman Copper Deposit  
Irishwood Esther  
+\*Indianapolis  
\*Ingersoll  
\*Iron Duke  
Jasper Mine  
+\*Jewel Tunnel & Mining Company Occurrence  
Josephine No. 1

Maple Leaf  
+\*Marshall tunnel  
+\*Mason Mine  
\*Maverick tunnel  
\*May Queen Mine  
+\*Michigan Group  
+\*Missouri Boy Mine  
Missouri Hill  
+Mocking Bird  
+\*Mohammed Mine  
Monarch  
Monarch Hill  
Monarch Mine  
+\*Monarch Contact  
^Monarch Pool  
Monarch Lime Quarry  
Monongahela and Fraction  
+Moose Mine  
Moss Flower (Silver King Occurrence; Half Moon Occurrence)  
Mound Mine (Atlantic)  
Mount Aetna Molybdenum Prospect (Monarch Molybdenum Property; D & G Mining Property)  
Mount Stella  
+\*Mountain Chief Mine  
\*Neglected Mine  
#Nest Egg Occurrence  
+^\*New York Mine  
Ohio and Morningstar  
Ole Bull  
Oshkosh Mine  
+\*Page  
+^\*Paymaster Mine  
Pilgrim Group  
+Pinyon Mine  
+\*Pride of the West  
+\*Rainbow - Eagle Bird Mine  
Rarus Warrior Mine  
Rolla  
#Royal Purple Occurrence  
+Series Junction Group  
+\*Shamrock Mine  
Shannon Last Chance  
+^\*Silent Friend  
Sitting Bull  
+\*Song Bird Mine  
Southside South Cinderella Occurrence  
\*Stemwinder Mine  
Taylor Gulch  
Taylor Mining Syndicate  
Ten Broek  
\*Thirty-Six-Thirty  
\*Tom Cat mine  
+Tom Payne  
+\*Tweed mine  
+\*Uncle Sam Mine (Cyclone Creek)  
\*Uncle Sam Mine (Hoffman Park)  
Victor Mine  
White Marble Quarry  
+^Wilson Mine

## References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Garfield Quarry](#)

Aldrich, John K., 1992, Ghosts of Chaffee County; Centennial Graphics, Lakewood CO.

Crawford, R.D., 1913, Geology and Ore Deposits of the Monarch and Tomichi Districts, Colorado; Colorado Geological Survey Bulletin 4.

Del Rio, S. M., 1960, *Mineral Resources of Colorado, First Sequel*, State of Colorado Mineral Resources Board, Denver, CO.

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Hazen, , Scott W. Jr, 1956, Exploration for lead and zinc at the Madonna Mine, Monarch Mining District, Chaffee County, Colorado; U.S. Bureau of Mines Report of Investigations 5218.

Henderson, Charles W., 1926, Mining In Colorado: A History of Discovery, Development and Production; U.S. Geological Survey Professional Paper 138.

Mindat.org; accessed 22 August 2012.

Shannon, James R. and McCalpin, James P., 2006, Geologic Map of the Maysville Quadrangle, Chaffee County, Colorado; Colorado Geological Survey Open-File Report 06-10.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

Worcester, P.G., 1919, Molybdenum Deposits of Colorado; Colorado Geological Survey Bulletin 14.

## Chaffee County

### La Plata - Winfield District

The La Plata or Winfield District derives its name from La Plata Peak on the north edge of the district. It is also referred to as the Winfield District for the ghost town of Winfield, once the main supply town of the area. The latter name avoids confusion with the La Plata District of Southwest Colorado. The district also abuts (or overlaps) several other named districts - the Red Mountain to the North and West, the Twin Lakes to the North and East, and mines that may be associated with Mount Harvard or the Riverside District to the South.

The District has seen mining and exploration since 1867. The location of several lodes led to the establishment of the towns of Winfield and Vicksburg in 1880. These towns grew rapidly as new mines opened. Winfield reached a population of 1500 by 1890 and Vicksburg boasted its own smelter. The Silver Crash of 1893 nearly closed the towns. The opening of the Tasmania Mine in 1900 rejuvenated Winfield, but the last ore shipped toward the end of World War I and the area gradually cleared of people (Aldrich, 1992).

Ranta (1974) defined the district as the drainage basin of Clear Creek. He identified the most important unit as the Twin Lakes Pluton, first defined by Howell (1919). Fridrich et al (1998) show the area underlain by three intrusive units. In addition to the Tertiary Twin Lakes Granodiorite (which contains most of the mineralization), Precambrian intrusive rocks also underlie much of the district - the Kroenke Granodiorite and the Denny Creek Granodiorite.

Historic production was small, consisting of lead-silver-zinc veins. Mineralization at the Banker Mine consisted of silver-bearing galena, sphalerite, pyrite, molybdenite, bismuthenite in quartz veins. Molybdenum mineralization has long been recognized. Worcester (1919) discussed mines of the Winfield District in his paper on molybdenum in Colorado. In the 1960s and 1970s, molybdenum, beryllium, bismuth attracted attention. According to Ranta (1974), several mining companies drilled targets in the area. Ranta concluded that the Middle Mountain area is a deeply-eroded weak Climax-type molybdenum deposit and the Winfield Peak area represents an attractive exploration target for a molybdenum ore body.

The website [www.coloradoghosttowns.com](http://www.coloradoghosttowns.com) contains information on some of the old mine sites in the Winfield District, along with photos and directions. The Clear Creek Historical Society has done a great job of restoring and preserving parts of the old towns of Vicksburg and Winfield. They are available to visitors.



Banker Mine Site, Winfield/ LaPlata District.

**Mineral list contains entries from the region specified including sub-localities (Mindat.org)**

Acanthite	Chalcopyrite	Ilmenite	Rhodochrosite
Aikinite	'Chlorite Group'	Leucoxene	Rutile
Anglesite	Columbite	Molybdenite	var: Ilmenorutile
Beryl	Columbite-(Mn)	Monazite-(Ce)	Sphalerite
var: Aquamarine	Emplectite	Muscovite	Titanite
Biotite	Ferrimolybdite	Polybasite	Topaz
Bismuth	Fluorapatite	Pyrite	Wolframite
Bismuthinite	Fluorite	Pyrophanite	Xenotime-(Y)
Bornite	Galena	Quartz	Zircon
Chalcocite	Hematite	var: Smoky Quartz	

**LaPlata - Winfield District Mines (Mindat.org)**

Ady and Mathews Claims  
 Banker Mine  
 Baracouta Mine  
 Clear Creek Occurrence  
 Clohesy Lake Prospects  
 Crescent Mine  
 Douglas Platt Prospect  
 Fortune Mine  
 Hamilton Mine  
 Last Dollar Prospect  
 Middle Mountain Complex

Mike Rabbit Prospect  
 North Point  
 Rockdale Mine  
 Swiss Boy (Silver Crop)  
 Tasmania  
 Uintah Lode  
 Uranus Mine  
 Winfield Peak Prospect

## Middle Mountain Prospect

### References:

Aldrich, John K., 1992, Ghosts of Chaffee County; Centennial Graphics, Lakewood CO.

Fridrich, C.J.; DeWitt, Ed; Bryant, Bruce; Richard, Steve; and Smith, R.P., 1998, Geologic Map of the Collegiate Peaks Wilderness Area and the Grizzly Peak Caldera, Sawatch Range, Colorado; U.S. Geological Survey Misc. Inv. Series I-2565.

Howell, J.V., 1919, Twin Lakes District of Colorado; Colorado Geological Survey Bulletin 17.

Worcester, P.G., 1919, Molybdenum Deposits of Colorado; Colorado Geological Survey Bulletin 14.

[www.coloradoghosttowns.com](http://www.coloradoghosttowns.com) accessed 10 August 2012.

[www.mindat.org](http://www.mindat.org) accessed 28 August 2012.

# Chaffee County

## Mount Antero District

The Mount Antero District is high and rugged with difficult access on the slopes of Mount Antero , roughly ten miles southwest of Buena Vista and ten miles northwest of Poncha Springs. While no commercial production has been done by mining companies, the area has long produced mineral specimens prized by collectors, including the Colorado State gemstone - aquamarine, the clear, sky-blue form of the mineral beryl.

Switzer (1939), Adams (1953), Dings and Robinson (1957), Del Rio (1960) and Sharp (1976) have described the geology and mineralogy of the Mount Antero deposits. The minerals occur in pegmatites within the Mount Antero Granite, the youngest of the igneous bodies on Mount Antero. The specimen minerals occur in pegmatites and mirialitic cavities that cut mainly the Mount Antero Granite itself. The granite is a very light to white granite of mainly quartz and feldspar with very minor biotite and accessories of apatite, zircon, sphene and sparse beryl. The pegmatites have a very thin gradational contact and are zones. The pegmatites are zoned, with cores of smoky quartz, microcline perthite, muscovite, albite , and fluorite with beryl, phenacite and bertrandite. Dings and Robinson (1957) associate the miaralitic cavities with beryl, phenacite fluorite and topaz. They report other minerals recognized as calcite, garnet, rutile, ilmenorutile, columbite and cyrtolite (zircon). Sharp (1976) noted the additional minerals pyrite, spessartine (whereas Dings and Robinson did not specify the species of garnet), and monazite. He discussed greisenized veins at the California Mine as containing quartz, muscovite, beryl, molybdenite with accessories bismuthinite, tourmaline, ferberite, brannerite and pyrite. He describes massive jarosite filling some cavities and ferrimolybdate as another secondary mineral.

Voynick (1994) relates some excellent stories about mineral collecting on Mount Antero.

### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Mount Antero Claims](#)

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Dings, McClelland G. and Robinson, Charles S., 1957, Geology and Ore Deposits of the Garfield Quadrangle, CO; U.S. Geological Survey Professional Paper 289.

Sharp, William N., 1976, Geologic Map and Details of Beryllium and Molybdenum Occurrences, Mount Antero, Chaffee County, CO; US Geological Survey Map MF-810.

Switzer, George, 1939, Granite Pegmatites of the Mount Antero Region, Colorado; American Mineralogist, vol. 24, pp. 791-809.

Voynick, Stephen M., 1994, Colorado Rockhounding; Mountain Press Publishing, Missoula MT.

# Chaffee County

## Red Mountain District

The Red Mountain District was of minor significance in the history of Colorado mining and in production. Henderson (1926) shows the locations of some unnamed lode mines in the Red Mountain District, although he may have included them in the Twin Lakes District. Later, Vanderwilt (1947) combines the Red Mountain and Twin Lakes Districts. Writing of that combined district, he notes small gold veins in altered rhyolite and diorite and in Precambrian schist. Only a few tons of ore yielding one ounce of gold and 1 1/2 ounces of silver per ton.

The District as outlined here extends from Twin Lakes in Lake County, along Lake Creek to (and across) the continental divide. It includes Sayres, Peekaboo and McNasser Gulches, Red Mountain (including East Red, West Red, and Middle Mountain of Cruson, 1972). Most of the district lies within the Grizzly Creek Caldera which in turn is included within the Collegiate Peaks Wilderness Area.

The first mining in the area was probably in the 1860s. The Enterprise Mine produced in the 1920s and 1930s, the Eureka Mines as recently as the 1940s (Cruson, 1973). The Colorado Bureau of Mines (1969) reports summer season production at the Stewart Mine as recently as 1969 (CBOM, 1969). Cruson (1973) reported that exploration studies were conducted in the 1960s by AMAX, Union Carbide, Union Pacific and Bear Creek Mining Company. Bastin (1987) includes a table of known mines and activity and notes that Amoco Minerals conducted exploration (including drilling) for gold in the Peekaboo Gulch and Middle Mountain areas.

The geology of the Red Mountain District consists mainly of rocks of the aforementioned Grizzly Peak Caldera complex, including ash flow tuffs of andesite to rhyolite composition, latite tuff and breccias of several types. Fridrich and Mahood (1984) recognized a resurgent dome in the complex.

Mineralization occurs in a variety of environments (from Cruson, 1973, and Bastin, 1987). Veins are common, with sphalerite, chalcopyrite, galena (with exsolved altaite). Stockworks are reported at both East Red Mountain and West Red Mountain. Mineralized breccias are also found in the district. Details of each type and locations can be found in those two references.

Minerals reported from the Red Mountain District include:

### Mineral list contains entries from the region specified including sub-localities (Mindat.org)

<a href="#">Altaite</a>	Ore
<a href="#">Arsenopyrite</a>	Ore
<a href="#">Chalcopyrite</a>	Ore
<a href="#">Galena</a>	Ore
<a href="#">Gold</a>	Ore
<a href="#">Pyrite</a>	Ore
<a href="#">Pyrrhotite</a>	Ore
<a href="#">Sphalerite</a>	Ore
<a href="#">Calcite</a>	Gangue
<a href="#">Quartz</a>	Gangue

Named mines in the Red Mountain District include the following:

Stewart

Enterprise (Gunnison County)

Bwlchgoch (yes, that spelling is correct)

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## Chaffee County

### Riverside (Mount Harvard) District

The Riverside District lies on the eastern slopes of Mount Harvard 5-6 miles east of the old town of Riverside on Highway 24. Wood (1983) and Hedlund, et al. (1983) describe the area near the river as the Riverside District.

According to Vanderwilt (1947) the district had some production from 1933 to 1939. He reports the maximum production in 1936 of 95 oz gold, 1756 oz silver, 1820 lb copper and 24000 lb lead. The only specific information available on the District concerns the Lienhart Mine. Bastin (1987) reports the Lienhart was active from 1906 to 1918 and again from 1935 to 1938. Plans were formulated to reopen the mine in the 1980s, but never culminated. Final reclamation was accomplished and the mine closed (Wood and Neubart, 2003).

The geology of the Lienhart Mine consists of veins in Tertiary intrusive rocks (Brock and Barker, 1972). The Tertiary granodiorite is intruded into the Precambrian Kroenke Granodiorite (Brock and Barker, 1972). The main adit at the Lienhart mine contained quartz, pyrite, sphalerite, galena, chalcopyrite and limonite (Wood and Neubart, 2003). The portion of the district farther east consists of quartz veins in Precambrian rock, the same as the Fourmile District. The area does display anomalous radioactivity and peridotite dikes (Hedlund, et al, 1983).

#### References:

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# Chaffee County

## Sedalia Mine

The Sedalia Mine is not a district but a single mine. The geology at the Sedalia deposit is very much like that at the Turret District to the North and the Cleora District to the East. Because the distance between the Sedalia and these districts is significant and the Sedalia is by itself such an iconic Colorado mine, we have chosen to treat it by itself.

The deposit was discovered in 1882 (according to Lindgren, 1907) or 1881 (according to Van Alstine, 1974), and worked intermittently until 1923. The Sedalia was the largest copper mine in Colorado, producing zinc and a bit of gold and silver in addition to the copper. By 1907, 60000 to 75000 tons of ore had been shipped, with grades of 5% copper and 10% zinc (Lindgren, 1907).

Lindgren (1907) first described the deposit as a series of schists intruded by gabbro and pegmatite, the rocks metamorphosed to sillimanite grade. Boardman (1971) described the rocks similarly but added that the rocks constituted a skarn, formed by recrystallization and metasomatism of amphibolites and micaceous schists and gneisses. He described a number of rock types, dominated by a quartz-biotite rock with varying amounts of sillimanite, garnet, andalusite and cordierite. Less volumes of rocks included the assemblages actinolite-talc-chlorite; gedrite-garnet-cordierite; anthophyllite-cordierite-quartz-biotite; tremolite-thulite; hornblende-epidote-plagioclase-garnet.

Sheridan and Raymond (1978, 1984), with the benefit of evolving understanding of mineral deposits in various environments, reassessed the Sedalia Mine and similar deposits of Precambrian age. Carefully mapping the diverse geologic units in the area of the Sedalia Mine, they interpreted the geology as a sequence of submarine volcanic, volcanoclastic and sedimentary beds, intruded by magmas ranging from basalt to granitic pegmatite. The deposit itself was interpreted as an exhalative volcanogenic body, a type well known in Precambrian terrains in Canada and Australia. Strongly folded and metamorphosed to the amphibolite facies, the strataform deposit has developed a complex mineralogy (see list below).

Heyl (1963) described a thick bed of actinolite schist containing lead and zinc minerals. The primary target ore contains mainly limonite, malachite, cuprite, chalcocite with lesser sphalerite, cerussite and galena. Other zones contain up to 10% magnetite and 20% sphalerite. The zinc spinel gahnite is common. Gahnite is recognized as an indicator mineral for metamorphosed exhalative deposits elsewhere in the world. Voynick (1994) recommends the Sedalia Mine (now inaccessible) as a source for specimen minerals, particularly the large, euhedral almandine garnets weighing up to fifteen pounds.

Sheridan and Raymond (1984) estimate a million tons of remaining ore (mainly lead-zinc) with possibly more at depth.

### Mineral list (Mindat.org)

Actinolite	Chrysocolla	'Hornblende'	Scheelite
Almandine	'Chrysoprase' ?	Hydrozincite	Serpierite
'Amphibole Group'	Clinohumite	Ilmenite	Sillimanite
Andalusite	'Clinoptilolite'	Kyanite	Silver
Anglesite	Clinozoisite	Limonite	Smithsonite
Anorthite	Cordierite	Linarite	Sphalerite

var: Bytownite	<i>Corundum ?</i>	Magnetite	Spinel
var: Labradorite	Covellite	Malachite	Staurolite
Anthophyllite	Cumingtonite	Marcasite	'Stilbite'
Antlerite	Cuprite	Melanterite	Talc
'Apatite'	Diopside	Microcline	Tenorite
'Asbestos'	Epidote	Muscovite	Titanite
Aurichalcite	Fluorapatite	var: Sericite	'Tourmaline'
Azurite	Gahnite	Opal	Tremolite
Baryte	Galena	Phlogopite	Vesuvianite
Beryl	Gedrite	'Psilomelane'	Wavellite
Biotite	<i>Glaucothane ?</i>	Pyrite	Willemite
Brochantite	Gold	Pyrophyllite	Wulfenite
Calcite	Goslarite	Pyrrhotite	Zircon
Cerussite	Gypsum	Quartz	Zoisite
Chalcanthite	Hematite	Rosasite	
Chalcocite	Hemimorphite	Rutile	
Chalcopyrite	Hercynite	'Scapolite'	
'Chlorite Group'			

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Sedalia Mine](#)

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# Chaffee County

## Trout Creek District

The Trout Creek Pass District encompasses a series of pegmatites near highway 285 south of Trout Creek Pass between Park and Chaffee Counties. Vanderwilt (1947) shows production of very small amounts of gold, silver, copper and lead from 1932 to 1939 from as many as 3 mines. The district is best known as containing the most rare earth minerals in Colorado.

The pegmatites are generally small, ranging from a few meters long dimension to 85 meters. They appear to be related to small stocks of granite intruded into older granite of early Proterozoic age (Wallace and Keller, 2003). The most notable pegmatites are zoned with cores composed mainly of coarse quartz-microcline-plagioclase and thin border zones of the same assemblage plus garnet (Hanley, et al, 1950). The rare earth minerals occur within the core. These authors describe three of the most important mines - the Clora May, the Yard and the Crystal No. 8.

In a detailed study, Hanson, et al (1992) describe four of the pegmatites as classic zoned bodies - the Clora May, Yard, Crystal No. 8 and the Tie Gulch. In this mineralogical study, they describe specific LREE (light rare earth) phases allanite and monazite and HREE (heavy rare earth) phases polychrase and aeschynite.

Minerals listed as occurring within the Trout Creek District are the following (Mindat.org; 19 Sep 2012). (Note: minerals marked with asterisk (\*) are not "confirmed" as occurring within the district in Eckel, 1997.)

Albite	Calcite	Kasolite	Rhodonite*
'Albite-Anorthite Series'	Cerussite*	'K Feldspar'	Samarskite-(Y)
'Allanite'	Chalcopyrite*	Limonite	Schorl
Allanite-(Ce)	'Chlorite Group'	Magnetite	Scorodite
Almandine	Chrysocolla*	Malachite*	Silver
Anglesite	Descloizite*	Microcline	Smithsonite*
'Apatite'	Euxenite-(Y)	'Monazite'	Sphalerite
Arseniosiderite	Fluorite	Monazite-(Ce)	Thorogummite
Arsenolite	<i>Fourmarierite</i> ?	Muscovite	Uraninite
Arsenopyrite	'Gadolinite'	var: Sericite	Vermiculite
Azurite	Gadolinite-(Y)	Polycrase-(Y)	Wulfenite*
Bariopharmacosiderite	Galena*	'Psilomelane'	Xenotime-(Y)
Beryl	'Garnet'	Pyrite	Yukonite
β-Uranophane	Gold	Pyrolusite*	Zircon
Biotite	Hematite	Pyromorphite*	var: Cyrtolite
Bismuthinite	Hemimorphite*	Quartz	
Bismutite	'Hornblende'	var: Rose Quartz	
	Hydrozincite*	Rhodochrosite*	

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Trout Creek Pass Area](#)

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**Figure: a pegmatite mine in the Trout Creek District. Identity unknown.**

# Chaffee County

## Turret District

The Turret District, also known as the Turret Creek District, lies in southeastern Chaffee County, about ten miles north of Salida. The District is centered on Turret Gulch stretching from just west of Cameron Mountain near the Park County line, east down Railroad Gulch to the Arkansas River. The terrain is rugged and largely inaccessible, except for a few good gravel roads. The settlement of Turret sits in the middle of the district, founded in 1897 as Camp Austin (Aldrich, 1992).

Gold was the main attraction in the Turret District and production lasted until 1939. Vanderwilt (1947) reported minor production from the district of gold, silver and copper from one or two mines in the years 1932 to 1941. Albite (soda feldspar) was extracted at the Homestake Mine from 1934 until 1949, and began major production in 1953 (Bhutta, 1954). Albite production continued until 1963, along with some minor mica production (Franz, 1963).

Mineral deposits of several different types occur within the Turret District, reflecting the diversity and complexity of the geology. Gold occurs in quartz veins throughout the district (Bhutta, 1954; Wallace, et al, 1997; Wallace & Lawson, 1998). Boardman (1971) recognized that these veins occurred in the Paleozoic rocks. The Gold Bug and Golden Wonder Mines fall into that classification (Bhutta, 1954).

Pegmatites are a notable feature of the Turret District, occurring sporadically through its length. Largest was the Homestake Mine (or "Albite Mine" of Bhutta), but Hanley, et al, 1950, named also the Combination, the Last Chance, the Riegel, the Mica-Beryl and the Rock King.

Just like the Cleora, the Maysville segment of the Garfield-Monarch District, and the Sedalia Mine, the Turret District contains metamorphosed sulfide deposits in Precambrian rocks. Bhutta recognized the Independence Mine as occurring in the local augen gneiss and the Copper King in a gneiss. Heinrich (1981) described the Independence Mine, the Ace High - Jackpot Prospect in Railroad Gulch, and the Copper King mines in his review of skarn deposits in Colorado. As in those other named locations in Colorado of similar deposits, these display a complex mineralogy. Assemblages of -biotite-quartz-actinolite and cordierite with chalcopyrite, pyrite, molybdenite, gahnite and magnetite are described at the Independence. The Ace High - Jackpot contains amphibolite and a skarn of actinolite, anthophyllite, apatite, biotite, calcite, chlorite, cummingtonite, gahnite, phlogopite, quartz, phene, talc, tremolite, zoisite, magnetite and chalcopyrite. Supergene alteration of the copper-rich amphibolite contains malachite, chalcocite, azurite, chrysocolla, brochantite, chalcantite, calcite, barite, opal and psilomelane.

<a href="#">Amphibole</a>	<a href="#">calcite</a>	<a href="#">gahnite</a>	<a href="#">psilomelane</a>
<a href="#">actinolite</a>	<a href="#">chalcantite</a>	<a href="#">garnet</a>	<a href="#">pyrite</a>
<a href="#">anthophyllite</a>	<a href="#">chalcocite</a>	<a href="#">magnetite</a>	<a href="#">quartz</a>
<a href="#">apatite</a>	<a href="#">chalcopyrite</a>	<a href="#">malachite</a>	<a href="#">talc</a>
<a href="#">azurite</a>	<a href="#">chlorite</a>	<a href="#">molybdenite</a>	<a href="#">tremolite</a>
<a href="#">barite</a>	<a href="#">chrysocolla</a>	<a href="#">opal</a>	<a href="#">zoisite</a>
<a href="#">biotite</a>	<a href="#">cordierite</a>	<a href="#">phene</a>	
<a href="#">brochantite</a>	<a href="#">cummingtonite</a>	<a href="#">phlogopite</a>	

Boardman (1971) recognized the possibility that the protoliths of the Precambrian deposits were volcanic-sedimentary rocks. Sheridan and Raymond (1984) finally hypothesized the connection that these Precambrian deposits are actually metamorphosed seafloor exhalative deposits, which were being studied intensively in Canada and Australia at about that time.

Del Rio (1960) describes in addition to these types of deposits, a graphite deposit two miles north of Turret, a vermiculite deposit, and marble northeast of Turret. The Calumet Iron Mine has been considered to occur within the Turret District, and may well, although that mine will be treated individually. Likewise, the Sedalia Mine has been considered a part of the Turret District. While it does occur in Precambrian rocks like those in the Turret District, so do the mines of the Cleora District. Rather than combine them all because of similar geology, this description maintains the geographic distinction and will treat them all separately.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Turret District](#)

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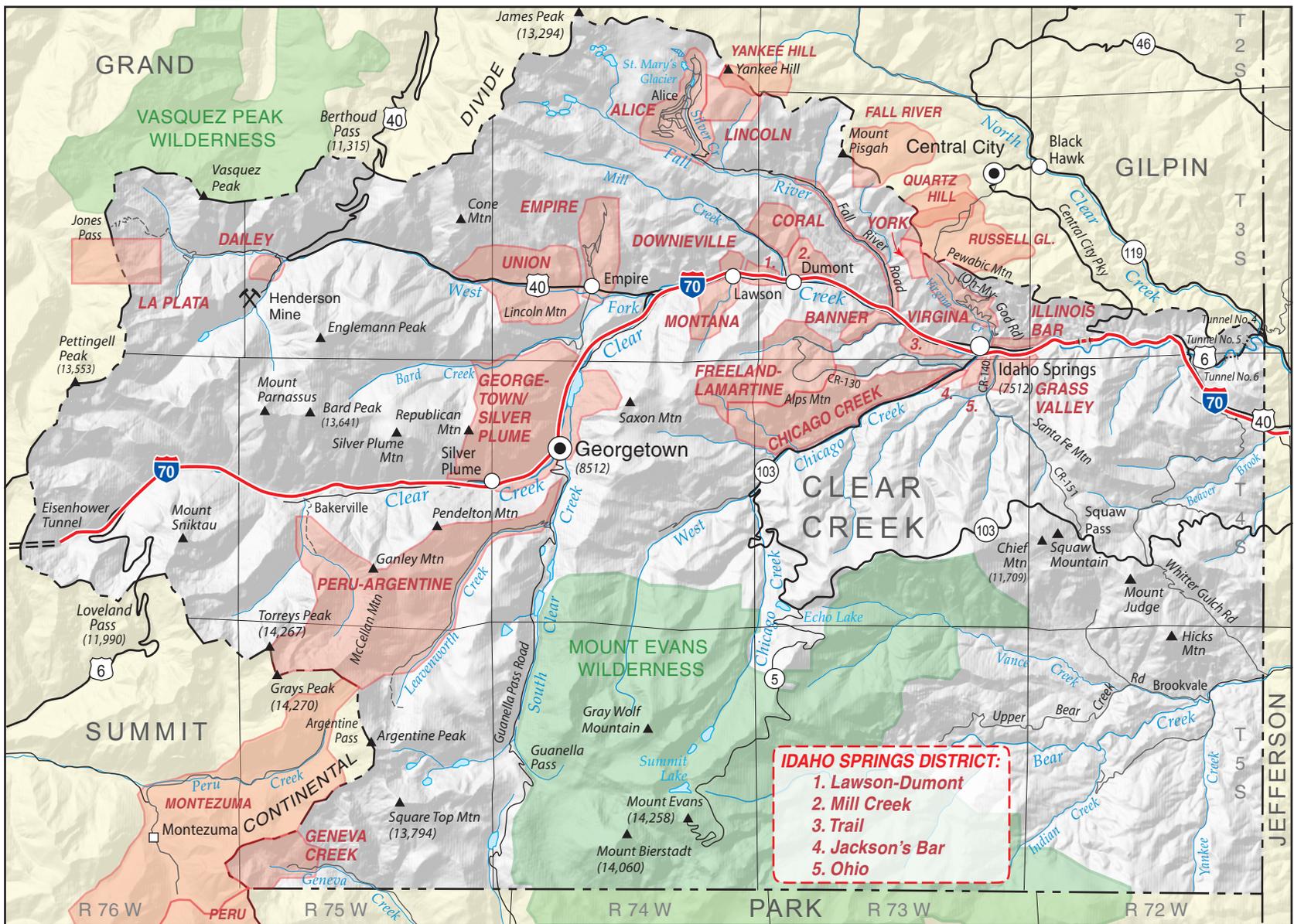
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- [Turret District Mines](#)
  - [Ace High - Jackpot Prospect](#)
  - [American Flag Mine \(Anaconda Mine; Ethel Consolidation Mine; Crete Mine; Holdredge Mine\)](#)
  - [Azurite No. 1 claim](#)
  - [Blackjack Group](#)
  - [Blue Brute and Sevilla Queen claims](#)
  - [Buckley Hill](#)
  - [Calumet Mine \(Calumet; Calumet No. 2; Hecla; Hecla No. 2; Calumet Iron Mine; Calumet-Hecla-Smithville Magnetite Deposit; Patented Placer Claims: Calumet; Hecla-Williamson; Smithville No. 2; CF&I Company Mine\)](#)
  - [Coffey Pot Claims](#)
  - [Combination Prospect \(Allard Beryllium Prospect\)](#)
  - [Copper King Mine \(E.W.; Turret Deposit\)](#)
  - [Corundum Knob](#)
  - [Dangerfield](#)
  - [Doyle Quarry](#)
  - [Friend Claims](#)
  - [Glenn Lamberg Feldspar Deposit](#)
  - [Gold Bug mine](#)
  - [Golden Island](#)
  - [Golden Wonder Mine](#)
  - [Herskberger Tunnel](#)
  - [Homestake Mine](#)
  - [Independence Mine](#)
  - [Iron King Hematite Deposit \(Hawkins Hematite Bank; Lucky Break; Iron King Gold Mine; Iron King Mine\)](#)
  - [Liberty Hill Mine \(Walter Higham's Mine\)](#)
  - [Lucky John No. 2 Mine](#)
  - [M and W](#)
  - [Mascot](#)
  - [Mica-Beryl Mine \(MRDS - 10013705\)](#)
  - [Midwest](#)
  - [Nutmeg](#)
  - [Old Glory claim \(Last Chance prospect; Last Chance Spar-Mica Dyke prospect\)](#)
  - [Riegel Feldspar prospect](#)





- IDAHO SPRINGS DISTRICT:**
1. Lawson-Dumont
  2. Mill Creek
  3. Trail
  4. Jackson's Bar
  5. Ohio

## Clear Creek County

### Alice-Yankee Hill District

The **Alice District**, on the northern border of Clear Creek County, extends into Gilpin County as the **Alice-Yankee Hill District**. (The **Lincoln District** is included here). This is a high-altitude district, elevation ranging from about 10,000 to 11,000 feet.

The Alice Mine was the first development, where free gold was captured using hydraulic methods in 1880. The gold came from a relatively low-grade auriferous pyrite body in a quartz monzonite stock (Vanderwilt, 1947; Parker, 1974). The Alice Mine reopened as a large open pit in 1933 with some underground workings.

Idaho Springs Formation schists are intruded by Precambrian Boulder Creek Granodiorite and later by a Tertiary stock of quartz monzonite. Gold-bearing stockworks in the quartz monzonite were the most valuable, along with quartz-pyrite veins in the Precambrian rocks (Lovering & Goddard, 1950). Lovering and Goddard also point out that significant promise remains for a large volume of sulfide ore south of the Alice Mine beneath glacial debris. An additional reference is Bastin and Hill (1917).

Mines located in the district (mindat.org) include:

- [Alice Mine/Princess Alice](#)<sup>1</sup>
  - [Alice Glory Hole](#)
- [Ames Load](#)
- [Charcoal Charlie](#)
- [Clara](#)
- [Faust \(Lombard Mill; Cumberland; Lombard Occurrence\)](#)
- [Gold Anchor Occurrence](#)
- [Gold Dollar](#)
- [Harlem](#)
- [Log Cabin](#)
- [Lombard Placer Mine](#)
- [Meteor](#)
- [Miss Dividends](#)
- [Nettie B.](#)
- [Ninety-Four Tunnel](#)<sup>1</sup>
- [North Star](#)<sup>1</sup>
- [Old Stone Wall](#)
- [Ottawa](#)
- [Puritan](#)
- [Sheridan Hill](#)
  - [Colo - York](#)
  - [Manhattan Occurrence](#)

Note: <sup>1</sup> Discussed in Bastin and Hill (1917).

Mineral listed in the district (mindat.org) include:

[Aikinite](#)  $\text{PbCuBiS}_3$

['Allanite'](#)

[Arsenopyrite](#)  $\text{FeAsS}$

[Baryte](#)

[Benjaminite](#)

$(\text{Ag,Cu})_3(\text{Bi,Pb})_7\text{S}_{12}$

[Bornite](#)  $\text{Cu}_5\text{FeS}_4$

[Chalcanthite](#)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$

[Chalcocite](#)  $\text{Cu}_2\text{S}$

[Chalcopyrite](#)  $\text{CuFeS}_2$

['Chlorite Group'](#)

[Covellite](#)  $\text{CuS}$

[Cupropavonite](#)

$\text{AgCu}_2\text{PbBi}_5\text{S}_{10}$

[Emplectite](#)  $\text{CuBiS}_2$

[Friedrichite](#)  $\text{Pb}_5\text{Cu}_5\text{Bi}_7\text{S}_{18}$

[Galena](#)  $\text{PbS}$

[Gold](#)

[Hammarite](#)  $\text{Pb}_2\text{Cu}_2\text{Bi}_4\text{S}_9$

[Heyrovskýite](#)  $\text{Pb}_{10}\text{AgBi}_5\text{S}_{18}$

[Hodrušite](#)  $\text{Cu}_8\text{Bi}_{12}\text{S}_{22}$

Krupkaite  $\text{Pb/CuBi}_3\text{S}_6$

Limonite

Matildite  $\text{AgBiS}_2$

Muscovite

Pavonite  $(\text{Ag,Cu})(\text{Bi,Pb})_3\text{S}_5$

Pyrite

Quartz

var: Amethyst

var: Sceptre Quartz

Siderite

Silver

Sphalerite

Uraninite

#### References:

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## Clear Creek County

### Argentine District

The **Argentine District** (a.k.a. **Peru-Argentine District**) crosses the Continental Divide in southwest Clear Creek County into adjacent Summit County, mostly on Kelso and McClellan Mountains (Lovering & Goddard, 1950). The Belmont Lode was discovered in 1864, and contained less gold than silver. A number of mines developed and the district was organized. After 1888, activity became intermittent. Additional references are Eberhart (1969), Ellis and Ellis (1983), Goddard (1947), Lovering (1935) and Spurr (1908).

The geology is characterized by Silver Plume Granite and Tertiary quartz monzonite, rhyolite and dacite intrusions in the Idaho Springs Formation. Gold occurs in polymetallic veins of sphalerite-galena-pyrite-chalcopyrite + silver minerals (Lovering & Goddard, Ibid).

Famous lead-silver veins included the Argentine, the Kirtley (or Curtly) and the Colorado Central (Vanderwilt, 1947).

Mines listed in the district (mindat.org and others) include:

- [Argentine \(Wilcox; Montezuma\)](#)
- [Baker](#)<sup>1</sup>
- [Big Stevens \(or Stevens\)](#)<sup>1</sup>
- [Big Chief Mine](#)
- [Broken Handle](#)
- [Colorado Central](#)
- [Curtly](#)
- [Eagles Nest Occurrence](#)
- [Equator](#)
- [Independence \(Belmont; Santiago; Waldorf; Commonwealth; Centennial\)](#)
- [Josephine Mine \(Stevens Mine\)](#)<sup>1</sup>
- [Levenworth Mountain](#)
- [Marshall](#)
- [McClellan Mountain](#)
- [Paymaster](#)
- [Pennsylvania](#)<sup>1</sup>
- [Robinson](#)
- [Santiago-Commonwealth-Centennial](#)<sup>1</sup>
- [Sidney Occurrence](#)
- [Sterling Silver Group](#)
- [Tilden](#)
- [Vidler Occurrence](#)
- [Waldorf](#)

Note: <sup>1</sup> Mines described in more detail in Lovering and Goddard, 1950.

Minerals listed in this district (mindat.org) include:

<a href="#">Ankerite</a>	<a href="#">Hessite</a>	<a href="#">Quartz</a>
<a href="#">Cerussite</a> PbCO <sub>3</sub>	<a href="#">Limonite'</a>	<a href="#">Siderite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Magnetite</a>	<a href="#">Silver</a>
<a href="#">Fluorite</a>	<a href="#">Malachite</a>	<a href="#">Sphalerite</a>
<a href="#">Galena</a>	<a href="#">Petzite</a>	<a href="#">Stephanite</a> Ag <sub>5</sub> SbS <sub>4</sub>
<a href="#">Gold</a>	<a href="#">Pyrite</a>	<a href="#">Stromeyerite</a> AgCuS

References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Ellis, E.H. and Ellis, C.S. 1983. *The Saga of Upper Clear Creek: A detailed History of an Old Mining Area, Its Past and Present*. Jende-Hagan Book Corp., Frederick, Colorado.

Goddard, E.N. 1947. The Front Range Mineral Belt, in Vanderwilt, J.W., ed. Mineral Resources of Colorado; Colorado Mineral Resources Board, Denver, Colorado. pp. 294-321.

Lovering, T.S. 1935. Geology and Ore Deposits of the Montezuma Quadrangle, Colorado. U.S. Geological Survey Professional Paper 178.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Spurr, J.E., Garrey, G.H. and Ball, S.H. 1908. Economic Geology of the Georgetown Quadrangle (Together with the Empire District), Colorado. With General Geology. U.S. Geological Survey Professional Paper 63.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Clear Creek County**

### **Banner District**

Described by Henderson (1926) as occupying section 38 [sic], T3S, R73W, Dunn (2003) places the Banner District "between South Clear Creek and Trail Creek, including the area around Turkey Creek". On our map, the district is placed in the area of approximately sections 28-29, 32-33. This is a district that was active in the very early years of mining in the Idaho Springs area and pin-pointing its exact location is impossible.

Dunn (2003) indicates that this was one of the original 29 districts organized in Clear Creek County and that gold placers were worked by mechanized operations as late as 1941.

Mines listed in the district (Dunn, 2003) include:

- Black Prince (placer claim)
- Stevens (placer claim)

Minerals in the district include gold.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

## Clear Creek County

### Chicago Creek District (aka Jackson District or Jackson Bar District, aka Corral District)

The Chicago Creek District produced placer gold with silver, lead, gold, copper, and zinc. The District, in the watershed of Chicago Creek upstream (southwest) of Idaho Springs, shows polymetallic fissure veins. Harrison and Wells (1959) detail five separate types of veins: (1) pyrite (auriferous) + quartz; (2) auriferous pyrite + copper sulfides; (3) pyrite-galena-sphalerite with copper sulfides; (4) galena-sphalerite with subordinate copper and silver sulfosalts (the most common type); and (5) quartz-carbonates-galena-sphalerite. They occur in fissure veins and faults with the same general geology as the other districts nearby. Additional references include: Eberhart (1969) and Spurr et al. (1908).

Mines listed in the district (mindat.org and others) include:

- [Algot \(Bobtail; Grace M.\)](#)
- [American Boy](#)
- [American Queen](#)
- [Anglo American](#)
- [Annamosa](#)
- [Argentite](#)
- [Bellevue-Rochester](#)
- [Big Flat](#)
- [Big Forty](#)
- [Black Lion](#)
- [Blackstone](#)
- [Brunswick](#)
- [Burns Moore](#)
- [C. Tyrol](#)
- [Cape Brenton](#)
- [Cascade](#)
  - [Humboldt et al Claims](#)
- [Charter Oak Prospect \(Tyone\)](#)
- [Chemung County](#)
- [Commonwealth Tunnel](#)
- [Eclipse](#)
- [Elizabeth M Lode \(Daisey\)](#)
- [Ella McKenney](#)
- [Emma Jane](#)
- [Evergreen](#)
- [Germantown](#)
- [Gold Dust](#)
- [Gold Flint](#)
- [Goldval](#)
- [Golden Light Tunnel](#)
- [Herbert](#)
- [Humboldt](#)
- [Indigo B](#)
- [Katie Emmett - Upper](#)
- [King Williams](#)
- [Kittie Clyde](#)
- [Little Annie](#)
- [Little Florence](#)
- [Little Mattie](#)
- [Lizzie S](#)
- [Louise](#)
- [Lucky Guess](#)
- [M & M Shaft](#)
- [M & M Tunnel \(Sweet Marie\)](#)
- [Mable](#)
- [Magna](#)
- [Marble](#)
- [Martha E. Adit](#)
- [Mary Foster](#)
- [Maximillian](#)
- [Mohawk](#)
- [Murry Mine](#)
- [New York](#)
- [Newton](#)
- [Ophir Claims](#)
- [Pacific; Blackstone; Dont; Arthur; King Solomon; I](#)
- [Parker Placers](#)
- [Q Shaft](#)
- [Rachel](#)

- Rocky & Stoney
- S Shaft
- Shakespeare
- Silver Cliff
- Silver Horn
- Silver Ring
- South American
- Stover
- Sweden
- Thirty Second
- Tyrone Tunnel - Lower
- Union
- Viking
- West Griffith Mine
- White Rose
- Wire Gold

Minerals listed in the district (mindat.org) include:

Autunite	Linarite	Sphalerite
'Biotite'	Pyrite	Torbernite
Galena	Quartz	Uraninite var: Pitchblende

References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Harrison, J.E. and Wells, J.D. 1959. Geology and Ore Deposits of the Chicago Creek Area, Clear Creek County, Colorado. U.S. Geological Survey Professional Paper 319.

Spurr, J.E., Garrey, G.H. and Ball, S.H. 1908. Economic Geology of the Georgetown Quadrangle (Together with the Empire District), Colorado. With General Geology. U.S. Geological Survey Professional Paper 63.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Dailey District (aka Jones Pass District)

The Dailey District lies at the western end of Clear Creek County near the head of the West Fork of Clear Creek at Jones Pass. Vanderwilt (1947) also refers to it as the **Atlantic District** and Lovering and Goddard (1950) as the **Jones Pass District**. An additional reference is Dunn (2003).

Vanderwilt (Ibid) describes it as characterized by small veins with lead, zinc and some silver in Precambrian granite. Lovering and Goddard (Ibid) note that the Urad Mine on Red Mountain had produced some molybdenum, but the overall output of the district was small. Veins outside the Urad Mine gave a hint to something, with sphalerite, galena, pyrite, and silver minerals.

About fifteen years after the classic publication by Lovering and Goddard, AMAX Inc. discovered the huge Henderson ore body which has been producing molybdenum since 1976. This porphyry molybdenum deposit is a world class resource, with over a billion pounds of molybdenum mined.

Mines listed in the district (mindat.org; Lovering and Goddard, 1950) include:

- [Bobtail mine](#)
- [Doctor Mine](#)<sup>1</sup>
- [Henderson Mine](#)
- [Jean Mine](#)
- [Jury](#)
- [Puzzler Vein](#)<sup>1</sup>
- [Ready Cash mine](#)<sup>1</sup>
- [Red Mountain Deposit](#)
- [Scotia Vein](#)<sup>1</sup>
- [Scott Tunnel](#)<sup>1</sup>
- [Urad mine](#)<sup>1</sup>
- [Wyoming](#)

Note: <sup>1</sup>Indicates the mine is discussed in detail in Lovering and Goddard (Ibid).

Minerals listed in the district (mindat.org) include:

<a href="#">Aeschnite-(Ce)</a>	<a href="#">Fluocerite-(Ce)</a>	<a href="#">'Monazite'</a>
<a href="#">Aeschnite-(Y)</a>	<a href="#">Fluorannite</a>	<a href="#">Muscovite var: Sericite</a>
<a href="#">Andradite</a>	<a href="#">Fluorapatite</a>	<a href="#">Pyrite</a>
<a href="#">Baryte</a>	<a href="#">Fluorite</a>	<a href="#">Pyrrhotite</a>
<a href="#">'Biotite'</a>	<a href="#">Fluorophlogopite</a>	<a href="#">Quartz</a>
<a href="#">Brannerite</a>	<a href="#">Galena</a>	<a href="#">Rhodochrosite</a>
<a href="#">Calcite</a>	<a href="#">'Garnet'</a>	<a href="#">Rutile var: Ilmenorutile</a>
<a href="#">Cassiterite</a>	<a href="#">Gypsum</a>	<a href="#">Spessartine</a>
<a href="#">Chalcopyrite</a>	<a href="#">Hematite</a>	<a href="#">Sphalerite</a>
<a href="#">Chrysoberyl</a>	<a href="#">Hübnerite</a>	<a href="#">Thorite</a>
<a href="#">'Columbite'</a>	<a href="#">Ixiolite</a>	<a href="#">Topaz</a>
<a href="#">Columbite-(Fe)</a>	<a href="#">Jarosite</a>	<a href="#">Uraninite</a>
<a href="#">Columbite-(Mn)</a>	<a href="#">'K Feldspar'</a>	<a href="#">'Wolframite'</a>
<a href="#">Creedite</a>	<a href="#">Magnetite</a>	<a href="#">Xenotime-(Y)</a>
<a href="#">Ferrimolybdate</a>	<a href="#">Molybdenite</a>	<a href="#">Zircon</a>

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Downieville and Montana Districts (and associated York District)

The Downieville District is listed in Henderson (1926), but he notes it is synonymous with the **Lawson District** (adjacent) and also called the **Morris District**. In Henderson (Ibid), the **Montana District** is said to overlap the aforementioned Morris District. Dunn (2003) states that the York District was also referred to as the **Virginia District**, and includes an area of York Gulch west of Virginia Canyon. Additional references for this district include Bastin and Hill (1917) and Vanderwilt (1947).

Mining gradually moved up Clear Creek after the big discoveries and development in the Idaho Springs area, and developed around the town of Downieville, which became a stage stop on the route from Denver (Eberhart, 1969).

Mines in the district include:

- [Clifford Mine](#)
- Millionaire
- Sultan
- Waterloo

Minerals in the district (mindat.org) include:

[Galena](#)

[Molybdenite](#)

[Sphalerite](#)

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94, 379 p.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Empire District (aka Upper Union District)

Ore was discovered in 1862 on the southeast slopes of Silver Mountain, a little over a mile north of Empire. The Silver Mountain ore zone was some 3,500 feet long and several hundred feet wide (Lovering and Goddard, 1950) with several feet of gossan. The depletion of these free-milling ores in the oxidized zone signaled the end of the rush in the district. Lode mining proceeded with some success and lasted until 1943. An additional reference is Vanderwilt (1947).

The geology is essentially the same as the other nearby districts where Tertiary stocks of quartz monzonite and dikes of bostonite and alaskite intrude into a terrain of Idaho Springs Formation with Boulder Creek and Silver Plume Granites (Braddock, 1969). Gold was the primary product in the district, although there was some copper. Lead and zinc were scarce.

Mines listed in the district (mindat.org) include:

- A. C. A.
- A. P. T. Tunnel
- Addition
- Albion
- Alexander
- Alhambra (Morning Star; Doc Name; Evertt; Lebanon)
- Alpha (Keith; Iowa; Black)
- American
- Anamosa
- Angeline (Wild Wagoner; Gold Pot; Chicago Belle; Pioneer; Elmira; Great Britan; Ben Harrison)
- Aorta
- Archibell
- Bay State Tunnel
- Black Prince
- Blooming Thistle
- Bonanza
- Boulder West (Boulder Nest)
- Butler
- Cashier Mine<sup>1</sup>
- Challenge
- Cleopatra (Apex - Surprise; Three Friends)
- Combination
- Conqueror Mine<sup>1</sup>
- Copenhagen (Cincinnati; Stella; N & H; Sunshine; Rexall; Happy Thought; Europe; Alexander; Golden Queen; West End; Equinox; Bonanza; Columbine; Monster; Dundee; Albro)
- Cuba
- De Caprivi Mine
- Dead Jack
- Double Eagle
- Drummond
- Duluth
- Dundee
- Elky Tunnel
- Elmira
- Empire City Mine<sup>1</sup>
- Empire Stock
- Empire Tunnel
- Eureka
- Europe
- Fireman and Conductors
- Food Cliff
- Four-C Tunnel
- Franklin D. Tunnel
- Fred Rogers mine
- Free American
- Gold Bug<sup>1</sup>
- Gold Chloride
- Gold Dirt<sup>1</sup>
- Gold Fissure<sup>1</sup>
- Gold Queen
- Gold Valley

- Golden Chariot Mine<sup>1</sup>
- Golden Cycle
- Golden Eagle Mine
- Golden Empire
- Golden Hope
- Golden Queen
- Grace Mine
- Happy Thought
- Harrison Mine<sup>1</sup>
- Hedla Mine
- Hidden Treasure
- Howard
- Imperial Chief
- Independence Tunnel
- Iowa
- Jackpot Mine
- Kanawha
- Kaverne
- Keith
- La Munyon (Silver Bell; Elm City Occurrence; Great Northern)
- Lady Adelaide
- Legion
- Liberty
- Little Superior
- Mattie Jack Tunnel
- Maud S.
- Mick Mack
- Milton
- Minnesota Mine
  - Atlantic (Rosecrans; Union; Conqueror; Badger Occurrence)
  - Crown Prince Occurrence (Benton; Gold Fissure; Mac Gregor; Silver Mountain; Comet; B.B.)
- Mint Mine
- Monster
- Morning Star Tunnel (Arizona)
- N & H
- Neath
- New Tunnel
- North Fork
- North Star - Mann
- O. S. Storrs
- Omaha Mine
- Ontario
- Oro Cash Mine<sup>1</sup>
- Panama Teddy Bear
- Paragon
- Paymaster
- Pegmatite (MRDS - 10142706)
- Pioneer; Happy Thought; Sunshine Occurrence
- Pittsburg
- Platts (Big Chance)
- Primos
- Princess of India Tunnel
- Princeton
- Pumpkin
- Randolph
- Recompense
- Red Elephant (Commodore Tunnel)
- Regina
- Rexall
- Reynolds
- Rifle Group
- Right Tunnel
- Saums
- Silver Bell
- Silver Mountain
  - Gold Dirt
  - Gold Fissure
  - Silver Mountain Occurrence<sup>1</sup>
- Silver Wing
- Skidoo
- Stella - Independence Shaft
- Sutro Comstock
- Teddy Bear
- Tenth Legion
- Third Bellevue
- Tom Moore
- Trenton and Jefferson City Lodes
- Twin Ports
- Virginia City
- Walt Stembel
- West Fork
- Wilson Tunnel

Note: \* indicates detailed description and discussion in Lovering and Goddard (1950).

Minerals listed in the district (mindat.org, under "Upper Union District") include:

Almandine	Copper	Malachite
Azurite	Cordierite	Muscovite var: Sericite
Baryte	Enargite	Pyrite
Bismuthinite	'Feldspar Group'	Quartz var: Amethyst
Calcite	Galena	Siderite
Caledonite	Gold	Silver
Cerussite	'Hornblende'	Sodalite
Chalcopyrite	'Limonite'	Sphalerite
'Clay'	Magnetite	Zeolite Group

#### References:

Braddock, William A. 1969. Geology of the Empire quadrangle, Grand, Gilpin, and Clear Creek Counties, Colorado. U.S. Geological Survey Professional Paper 616.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Freeland-Lamartine District

Spurr et al. (1908) and Harrison and Wells (1959) contributed significantly to our knowledge of the Freeland-Lamartine District of central Clear Creek County. Mineralized veins were first discovered in 1861 and mining ramped up with the addition of smelting capability in Blackhawk in 1868 and the introduction of a railroad in 1870. Mining was intermittent from 1910 to 1933, but revived for a 10-year period until 1944. (Note: Vanderwilt (1947) refers to this district as synonymous with the **Trail District**.)

The geology includes Idaho Springs Formation intruded by Precambrian quartz diorite, pegmatites and granite. Tertiary intrusions - dikes and plugs of quartz monzonite, alaskite and bostonite characterize the district and are associated with the gold and sulfides. Mineralization is in fissure veins near porphyritic intrusives, consisting of both pyrite-gold and galena-sphalerite veins.

Lovering and Goddard (1950) discuss in detail the Freeland vein system. The ore averaged one ounce-per-ton gold and 4 to 20 ounces-per-ton silver in veins that were mainly pyrite and chalcopyrite with minor tetrahedrite and sphalerite with occasional galena. The Freeland Mine quoted a value of total output as \$4,655,000.

Mines listed in this district (mindat.org; Eberhart, 1969) include:

- 76 (Ouida; Evergreen Humbolt; S; Brunswick; Exchange; Kearsarge; Wallace; Bald Eagle; Mary Foster; Emma Jane; Mohawk; Argosy; Argentite; Gold and Silver Coin; American Boy)
- A Tunnel (MRDS - 10264209)
- Accidental
- Alabama Shaft
- Albany
- Alexander Tunnel
- Alley May
- Alpine
- American Eagle
- Anchor Extension
- Apex Shaft
- Arden
- Argo Shaft
- Argo Tunnel (Newhouse)
- Argosy
- Ariadne Extension
- Ariadne Mine
- Arthur
- B Shaft
- B Tunnel
- Baby Eddie Tunnel
- Baehr
- Baltic Tunnel
- Baltimore Mine
- Banty
- Bear Creek & Little Boss
- Beaver Incline
- Bell of the West (Martha E; Billie; Ariadne; Little Topsy; Bruce; Alabama; Yankee Girl; Mammoth; Le Roi; Black; Emily; Crazy Girl; Baby Eddy)
- Belle Creole<sup>1</sup>
- Ben Dare
- Ben Harrison
- Bertha
- Big Chief Shaft
- Big Fifty-One
- Billie
- Birtley Tunnel
- Black Eagle Group
  - Bismarck

- Black Eagle Mine
- Chicago
- Black Swan Tunnel
- Blackwood
- Brazil Tunnel - Lower and Shaft
- Brazil Tunnel - Upper
- Brown Quartz
- Brownell
- Bruce (Dierks; Orinoco)
- Bulgine
- C. M. Welch
- C Shaft
- Calumett
- Camp Valley
- Carlin
- Cascade Mine (Hall Tunnel)
- Cecil
- Century
- Champion Lode
- Chloride Occurrence
- Clear Creek Shaft
- Collie
- Columbia
- Crazy Girl Mine and Mill
- Crown Shaft
- D Shaft
- Decator
- Democrat
- Democrat Hill
- Dixie Mine
- Dorit - King Solomon Tunnel (King Solomon)
- Dove
- Dunbarton (Dumbordin)
- E Tunnel
- East
- Eclipse
- Emily
- Exchange
- F Tunnel
- Falcon
- Financier
- First National mine
- Fog Storm
- Fraction
- Free Gold
- Freeland Mine & Extension Mine (Extension Line Shaft; Minnie Tunnel; Diamond Tunnel; Platt Tunnel; Freeland Shaft)
- French Girl
- G Shaft
- General Thomas
- Gold & Silver Coin Shaft
- Gold Dust Tunnel
- Gold Eclipse
- Golden Hammer
- Gomer Mine (Heddensburg)
- Greenback
- Guy Irving
- H. G. Alma (Daisy; F; Dem)
- Harrisburg
- Harrison
- Hawkeye Shaft
- Hedensburg Mine
- Henry Wilson
- Highland Group
- I Shaft
- International
- Invincible (Baltimore; Brighton; Silver Link; Blackwood; Alpine; Roca; Brownell; Frelland; Lance; Mint; Mammoth; Belle Creole; Ariadne; Diamond Mt.; Miller; Cecil; Falcon; Harrisburg; C. M. Welch)
- Irene
- Iron Hat
- Jewelry Shop Mine (West Gold Mine; Sylvania Mine)
- K P
- K Shaft
- Kearsarge
- Kelley Mine
- Kitty Clyde
- Lamartine Mine
  - Brighton vein
  - Harrisburg vein
- Lance
- Le Roi
- Liberator

- Little Cub
- Little Jacket
- Little Johnny (Sherman; Shakespeare; Toledo; Sunnyside; Ethel; Etruria; Turner; Giant Warrior; Minnie; Stevens; Freeland; Oregon; Old Settler; Falu; Gum Tree; Morgan; Anchor)<sup>1</sup>
- Little Mattie Mine (Newton Tunnel)
- Little Richard
- Little Topsy
- Little Warrior (April Fool)
- Lone Tree (Old Stag; Laratine; New Era; Avalanche; Mendick; Golden Rod; Mary Ann; Teller; West London; Trembath)<sup>1</sup>
  - Avalanche mine<sup>1</sup>
  - Mendick mine<sup>1</sup>
- Lone Tree Extension Shaft
- Lone Tree Extension Tunnel
- Lord Byron
- M & E
- Mammoth Shaft
- Mammoth Tunnel
- Martha E. Mine
- Miller Tunnel<sup>1</sup>
- Mint Shaft
- Mirage
- Mollie Fisher
- Money Musk
- Muscovite
- Myra
- N Tunnel
- Nathan mine
- Niagara
- O Shaft
- October
- Orinoco
- Oriole
- Ovida
- P T Shaft
- P Tunnel
- Paynes Bar Occurrence
- Perkins
- Peter
- Poor Man; Brazil
- Quito Mine
- R Tunnel
- Red Lyon
- Resolute Lode
- Rhoda
- Roca
- Rocky Cliff - Lower
- Sampson
- Santa Fe Tunnel
- Sappho
- Seeroy Claims
- Seventy-Six
- Silver Bell
- Silver Leaf
- Silver Link
- Silver Queen
- Silver Ring (Silverine)
- Silverine
- Skyrocket
- Solid Muldoon
- Sulitelma
- T Shaft
- Tannel Mine
- U. S. Tunnel
- Unknown No. 419 (MRDS - 10141566)
- Unknown No. 428 (MRDS - 10165855)
- Unknown Silver - Gold Occurrence (MRDS - 10017200)
- Veteran
- Wallace Shaft
- Wallace Tunnel
- Waltham
- Washington Mine
- West Alabama Tunnel
- West Gold Tunnel - Lower
- West Gold Tunnel - Upper
- Wild Rose
- Yankee Girl Shaft

Note: <sup>1</sup> indicates mindat.org lists under the Freeland District; all others are in the Lamartine District.

Minerals listed in the district (mindat.org) include:

Acanthite	Dolomite	Pyrite
Altaite	<i>Dumontite ?</i>	Pyromorphite
Anglesite	Enargite	Quartz
Arsenopyrite	Galena	var: Amethyst
Autunite	Gold var: Electrum	var: Chalcedony
Azurite	Goslarite	var: Smoky Quartz
Baryte	Hematite	Rhodochrosite
'Biotite'	Kaolinite	Semseyite
Bornite	'K Feldspar var: Adularia'	Siderite
Bournonite	Krennerite	Silver
Caledonite	'Limonite'	Sphalerite
Cerussite	Malachite	Sylvanite
Chalcanthite	Marcasite	Tennantite
Chalcocite	Minium	Tenorite
Chalcopyrite	Muscovite	Tetrahedrite
Chrysocolla	var: Fuchsite	Torbernite
Coloradoite	var: Sericite	Uraninite
'Copper Stain'	Opal	var: Pitchblende
Covellite	Pearceite	Uranophane
Cuprite	Petzite	'Uvite'
Cyanotrichite	Polybasite	'Wolframite'
Dawsonite	Pyrargyrite	

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Harrison, J.E. and Wells, J.D. 1959. Geology and Ore Deposits of the Chicago Creek Area, Clear Creek County, Colorado. U.S. Geological Survey Professional Paper 319.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Spurr, J.E., Garrey, G.H. and Ball, S.H. 1908. Economic Geology of the Georgetown Quadrangle (Together with the Empire District), Colorado. With General Geology. U.S. Geological Survey Professional Paper 63.

Vanderwilt, J.W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Geneva Creek District (aka Geneva District)

The Geneva Creek District, in the extreme southwest corner of Clear Creek County, is contiguous across the Continental Divide with the **Montezuma District** of Summit County and is often considered along with the **Hall's Gulch District** of Park County. The district is located at the head of the West Geneva Creek at altitudes above 10,250 feet (Vanderwilt, 1947). Vanderwilt (1947) also refers to the Geneva Creek District as **Collier Mountain**.

Several Clear Creek County mines occur in the area of West Geneva Creek: the Britannic (Britannica), Baltic and Revenue Mines all contained barite with chalcopyrite, galena, sphalerite, quartz and "grey copper" (i.e., tennantite). The Baltic and Revenue veins, which were discovered in 1872, became the most important producers in the district (Dunn, 2003).

The geology is identical to that of the **Argentine District**. Additional references include: Henderson, (1926) and Patton (1909).

Mines listed in the district (Dunn, 2003; Lovering, 1935; mindat.org) include:

- Baltic (Sill)
- Britannic (Britannica)
- Iron Clad Placer
- Revenue

Minerals listed in the district (Lovering, 1935; mindat.org) include:

Barite	Felsőbányaite	<i>Jurbanite ?</i>
Beegerite	Ferrihydrite	Pyrite
<i>Böhmite ?</i>	Galena	Quartz
Chalcopyrite	Galenobismutite	Sphalerite
'Clay'	Goethite	Tennantite

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Lovering, T.S. 1935. Geology and Ore Deposits of the Montezuma Quadrangle, Colorado. U.S. Geological Survey Professional Paper 178.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Patton, H.B. 1909. The Montezuma Mining District of Summit County, Colorado. Colorado Geological Survey 1st Report 1908.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Clear Creek County

### Georgetown-Silver Plume District

Lode gold was discovered in the **Georgetown-Silver Plume District** in 1859, but the district reached its zenith when silver was discovered in 1864. The oxidized ore near the surface was rich in gold, but more silver was found at depth. Production peaked in 1894 (Spurr et al., 1908). Later, zinc production became important during World Wars I and II (Lovering and Goddard, 1950). An additional reference is Eberhart (1969).

The geology is similar to that of the other Clear Creek County districts, except that most of the intrusive rocks are Silver Plume Granite with the Idaho Springs Precambrian metamorphic rocks. Tertiary stocks and dikes of various compositions are abundant. Mineralization occurs in two types of silver-lead-zinc veins and veins of pyritic gold. Silver-rich veins are galena-sphalerite-pyrite with very little gold; the pyritic gold veins are composed of pyrite-chalcopyrite and gold with some silver-bearing minerals and some galena and sphalerite. The most abundant silver-bearing minerals in the district are polybasite, tetrahedrite and proustite (Eckel, 1997), with several other uncommon silver and lead minerals.

Detailed discussions are available of the Pelican-Bismarck Vein, the Dives-Dunkirk Vein, the Colorado Central Vein, and the Griffith Lode in Lovering and Goddard (1950) and in Spurr et al. (1908).

Mines listed in the district (mindat.org and others) include:

- [Aetna](#)
- [Alaska Upper & Lower Tunnels \(Alaska-Occidental\)](#)
- [Albert \(Japanese Group\)](#)
- [Aldrich](#)
- [Amy \(Amy C\)](#)
- [Anglo Saxon Extension Mine](#)
- [Anglo Saxon Mine](#)
- [Annette Mine](#)
- [Annie May](#)
- [Antelope](#)
- [Ap Tunnel](#)
- [Atlas](#)
- [Azeda](#)
- [B & W \(Buster Occurrence\)](#)
- [Back Bone Upper & Lower](#)
- [Banner](#)
- [Bantala](#)
- [Barber - Elliott](#)
- [Bard Creek Occurrence](#)
- [Bismark Pelican \(Pelican - Dives Mine\)](#)
- [Brown Lode](#)
- [Brown Mountain Tunnel](#)
- [Brown Reindeer](#)
- [Buxton](#)
- [Capitol Prize](#)
- [Centennial Group \(Barrel; Big I.\)](#)
- [Central Equator](#)
- [City](#)
- [Climax](#)
- [Colorado Central mine](#)
- [Consolidated Hercules](#)
- [Cora](#)
- [Croesus](#)
- [Democrat Mountain](#)
  - [Bonanza Tunnel](#)
  - [Buckeye Tunnel](#)
  - [Cliff Mine](#)
  - [Edgar Tunnel](#)
  - [La Plata Tunnel](#)
  - [Lathrop Level](#)
  - [Lower Junction adit](#)

- Matthews Tunnel (Rogers)
- Nyanza Tunnel
- Queen of the West Tunnel
- Ramshorn Tunnel
- Silver Glance Tunnel (Great Eastern Occurrence)
- Upper Junction adit
- White Pine Tunnel
- Denver Granite and Marble Company Quarry
- Diamond Mill (Ashby tunnel; Baxter lode)
- Diamond mine
- Dives Seven Thirty
- Douglas Tunnel
- Dropner
- Duncan
- Dunderberg mine
- Dunkirk
- East Butte
- East Griffith
- Eleanor Jane & Capital
- Equator mine
- Esperanza
- Eva Mine Complex
- Everett & Lebanon
- Fulton
- Gabanta (Ashby; Colorado Central; Everett; Snow Drift; Silver Plume; Hall; Iris; Scott; Peru; Lebanon)
  - Lebanon Group
- Georgetown Loop Mine
- Georgetown Occurrence
- Glasgow
- Golden Belt
- Golden Gate
- Griffith (Kelly; Moline; New Boston; Doric)
- Hamill Tunnel (Philadelphia)
- Headlight (Ramsdale Occurrence)
- Helmick (Aliunde)
- High Five
- Humboldt mine pegmatite
- Illinois (Mammoth; Up; Frostberg; Diamond; Denver; Bush; Wisconsin; Corry City; Seven-Thirty; Pelican; Dunderbay; Pay Rock; Burleigh; Mendota; Maine; Dunkirk; Zero)
- Illinois Mine
  - Burleigh Mine
  - Corry City Mine (Wisconsin Mine)
  - Diamond Mine
  - Maine Mine
  - Mendota Mine
  - Payrock Mine
  - Seven-Thirty Mine
- Juanita
- Junction mine
- Kantinka
- Kitty Owsley
- Last Chance Mine
- Lawson
  - Jo Reynolds Mine
- Mark One Ventures (Michell; 10000 - 1; Moline; Mineral Chief; Kelly Tunnel; Eva Mine; New Boston)
- Marshall (Ocean Wave; Welch; Dunaway; Kirtley; Argentine; Wide West; Equator)
  - Kirtley vein
  - Wide West
- Maximilian Gulch
- Mendota - Apex Shaft
- Mendota - Frostberg (Wasatch)
- Mendota Mine - Victoria Tunnel & Shaft
- Mid-Colorado
- Mine Dumps (MRDS - 10166250)
- Mineral Chief Mine
- Onondaga
- Oriental Tunnel
- Pay Streak
- Pelican - Bismark; Mendota; Smuggler Occurrence
- Portland
- Producer (MRDS - 10117333)
- Prudential Tunnel

- Pulaski - Upper & Lower
- Raymond
- Reindeer
- Republican Mountain Occurrence
- Ricci Winze
- Rio Grande Occurrence
- S P
- Saxon
- Sceptre (Queen City; Mineral Chief; Muscovite; Spartan)
- Seven Metals
- Sherman Mountain
- Silver Cloud
- Smuggler
- Snowdrift
- Star of the West
- Summit (Magnet; Woodley; Mascotte; Comet)
  - Magnet
- Sunburst - Astor
- Sunburst - Sceptre Group
- Sunkist
- Terrible; Silver Ore; Baltimore; Johnny Bull; Silver Cloud (Pelican Vein)
- Tishamingo
- Virginia City
  - Lincoln (Allen)
- War Baby Mine
- Winter Set
- Zeda & Weda
- Zero Mine

(Note: detailed descriptions of most of these mines is presented in either Spurr et al. (1908) or Lovering and Goddard (1950) or both.)

Minerals listed in the district (mindat.org) include:

Acanthite $\text{Ag}_2\text{S}$	Coloradoite* $\text{HgTe}$	$\text{Zn}_5(\text{CO}_3)_2(\text{OH})_8$
Allanite-(Ce)	Copper	Iridium
Anglesite $\text{PbSO}_4$	Covellite $\text{CuS}$	Jalpaite $\text{Ag}_3\text{CuS}_2$
Ankerite	Dawsonite $\text{NaAlCO}_3(\text{OH})_2$	Kaolinite
'Apatite'	Dolomite	'K Feldspar var: Adularia'
Aragonite var: Flos Ferri	Enargite $\text{Cu}_2\text{AsS}_4$	Limonite
Arsenopyrite	Epsomite	Linarite $\text{PbCu}(\text{SO}_4)((\text{OH})_2)$
Augite	Fizélyite* $\text{Ag}_2\text{Pb}_{14}\text{Sb}_{21}\text{S}_{48}$	Magnesite var: Ferroan
Azurite* $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$	Fluorite	Magnesite
Baryte	Freibergite*	Magnetite
Bianchite $(\text{Zn,Fe})\text{SO}_4 \cdot 6\text{H}_2\text{O}$	$(\text{Ag}_{4+2x})[(\text{Cu,Ag})_4(\text{Fe,Zn})_2]\text{Sb}_4\text{S}_{12}\text{S}_{1-x}$	Malachite $\text{Cu}_2(\text{CO}_3)(\text{OH})_2$
Bismuthinite* $\text{Bi}_2\text{S}_3$	Galena var: Argentiferous	Matildite* $\text{AgBiS}_2$
Bornite $\text{Cu}_5\text{FeS}_4$	Galena	Mckinstryite $\text{Ag}_{5-x}\text{Cu}_{3+x}\text{S}_4$
Bournonite $\text{PbCuSbS}_3$	Goethite	Minium $\text{Pb}_3\text{O}_4$
Calcite	Gold	Molybdenite
Cerussite	Goslarite $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$	Muscovite
Chalcanthite	Gypsum	var: Sericite
Chalcocite $\text{Cu}_2\text{S}$	Hematite	Nagyágite*
Chalcopyrite $\text{CuFeS}_2$	Hessite $\text{Ag}_2\text{Te}$	$\text{Pb}_5\text{Au}(\text{Te,Sb})_4\text{S}_{5-8}$
'Chert'	Hydromagnesite	Orthoclase
Chlorargyrite $\text{AgCl}$	Hydrozincite	Pearceite
		$[(\text{Ag,Cu})_6(\text{As,Sb})_2][\text{Ag}_9\text{CuS}_4]$

Petzite* $\text{Ag}_3\text{AuTe}_2$	Pyromorphite $\text{Pb}_5(\text{PO}_4)\text{Cl}$	Stephanite $\text{Ag}_5\text{SbS}_4$
Platinum	Pyrostilpnite $\text{Ag}_3\text{SbS}_3$	Sulphur
Plattnerite $\text{PbO}_2$	Quartz var: Chalcedony	Tetrahedrite var: Mercurian
Polybasite	Rhodochrosite	Tetrahedrite
$[(\text{Ag,Cu})_6(\text{Sb,As})_2\text{S}_7][\text{Ag}_9\text{CuS}_4]$	'Scapolite' ?	Torbernite* $\text{Cu}(\text{UO}_2)_2(\text{PO}_4)_2 \cdot 12\text{H}_2\text{O}$
Polybasite-Tac	Scheelite	Uraninite
Proustite $\text{Ag}_3\text{AsS}_3$	Siderite	Uvite Tourmaline
Pyrargyrite $\text{Ag}_3\text{SbS}_3$	Silver	
Pyrite	Smithsonite $\text{ZnCO}_3$	
	Sphalerite	

Note: \* denotes not confirmed in Eckel (1997).

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Eckel, Edwin B. 1997. *Minerals of Colorado*. Fulcrum Publishing, Golden, Colorado.

Lovering, T.S. and Goddard, E.N. 1950. *Geology and Ore Deposits of the Front Range, Colorado*. U.S. Geological Survey Professional Paper 223.

Spurr, J.E., Garrey, G.H. and Ball, S.H. 1908. *Economic Geology of the Georgetown Quadrangle (Together with the Empire District), Colorado. With General Geology*. U.S. Geological Survey Professional Paper 63.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Clear Creek County**

### **Grass Valley District**

The Grass Valley District is listed in Henderson's (1926) compilation of Colorado Mining Districts. Parker (1974) places the Grass Valley District along the south bank of South Clear Creek from Soda Creek to the center of Section 31, just east of Idaho Springs. It was solely a placer district with gold as its product.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

## Clear Creek County

### Idaho Springs District

The Idaho Springs District is in the southeast part of the Central City quadrangle and the northeast part of the Georgetown quadrangle; it includes parts of Clear Creek and Gilpin Counties. The district has an area of about 10 square miles (Moench & Drake, 1966). Lovering and Goddard (1950) combined the Idaho Springs District with the adjacent **Central City District** and included the **Freeland-Lamartine District** (southwest of Idaho Springs) into a 25 square mile district based on the similarity and characteristics of the rock type and ore deposits.

Schist of Precambrian age predominates in the Idaho Springs region, but includes numerous lenses of granite gneiss and pegmatite (Lovering and Goddard, Ibid). The schist has a predominant northeast strike and dips 45°~75° NW. Scattered through the district are numerous Tertiary-aged dikes, sills, and irregular bodies of pegmatite, a few small masses of Silver Plume granite and hornblende gneiss, and lenses of lime-silicate rocks of the Idaho Springs formation.

The Idaho Springs District is the site of the first major gold discoveries in Colorado. The district is on the southern end of a belt of gold deposits that extends from Idaho Springs north to Central City and Blackhawk. The Idaho Springs district itself can be considered to be made up of five smaller named districts: the **Mill Creek, Lawson-Dumont, Trail, Jackson's Bar, and Ohio Districts**. Several of these are mainly placer districts, and others either lode districts or both lode and placer. The lode mines were largely deserted after the oxidized ore was mined-out, but were rejuvenated with the opening of a mill in Blackhawk that could process the more complex ores. Production generally decreased until about 1932, was active again, but then declined again after 1942.

The district was mined primarily for gold and silver, but also for copper, lead, zinc and uranium. In value of the total ore output of the district, gold accounts for 59 percent, silver 18 percent, lead 15 percent, copper 7 percent, and zinc about 1 percent. Although sphalerite is almost as abundant as galena in most ores, zinc was not reported for many years (Moench & Drake, 1966). The ores are of two main types-one consisting mainly of pyrite, chalcopyrite, and quartz and the other of galena, sphalerite, chalcopyrite and subordinate pyrite (Lovering and Goddard, Ibid). The bulk of the ore of the district occurs in veins that follow zones of minor faulting, but a few important ore bodies occur in chimney-like zones of brecciation better classed as stockworks (Lovering and Goddard, Ibid).

Mines listed in the district (mindat.org) include:

- [Ace of Diamonds Shaft](#)
- [Ada](#)
- [Addule Shaft](#)
- [Alacoque Shaft](#)
- [Albro Group - Hiawatha; Porphyry; Sept \(Old Chief; Morn; Caledonia; Grandview; Helitrode\)](#)
- [Allen Shaft](#)
- [Alma Lincoln Mine](#)
- [American - Standard Tunnel](#)
- [Annie Lode](#)
- [Ashland Shaft](#)
- [Aurum shaft](#)

- Austerlitz Tunnel
- Aztec Tunnel
- Bald Eagle Extension
- Bald Eagle Mine (Two Brothers Mine)
- Bell adit
- Bellevue Shaft
- Bellman
- Berry Tunnel
- Big Five - Belman
- Borealis
- Boston Run Tunnel
- Bourbon Tunnel
- Bridge Tunnel
- Brighton No. 2 Claim
- Bronaber
- Brooklyn Shaft
- Bryant Shaft (Bryan)
- Bullion mine
- California Tunnel
- Calvin
- Camp Bird
- Castleton Shaft
- Central Shaft
- Champion Mine (Bellvue-Trio Mine)
- Clarissa Tunnel Upper
- Colorado School of Mines Experimental
- Columbine
- Coming Nation mine
- Comstock
- Cornucopia adit
- Crescent City Tunnel
- Crocett Mine
- Crocket shaft
- Crown Point & Virginia Shaft
- Danube Mine
- De Lesseps
- Denbigh
- Donna Juanita
- Doves Nest Shaft - West
- Dubuque
- Earl of Kent
- East Lake Occurrence
- Edgar Extension Tunnel
- Edgar Leeper
- Edgar Miami Tunnel Entrance
- Edgar Shaft
- Edgarine mine
- Edna Fannie Tunnel
- Elkhorn Shaft
- Essex
- Etna adit
- Eulalie Tunnel
- Eureka Swansea
- Eussel Shaft
- Fall River
  - Unknown Uranium (MRDS - 10190137)
- Fanny Shaft
- Forge Hill Tunnel
- Fourth of July et al. Occurrence
- Franklin Shaft No. 73
- Franklin Shaft No. 87
- Franks
- Freeman Shaft
- Frontenac Shaft
- G and M adit (Centennial)
- Galatea adit (Hudson-Burr)
- Garden
- Gatatea
- Gem (Freighter's Friend)
- German Shaft
- Gertrude
- Gilson Gulch
- Gladstone Tunnel
- Glenalla
- Gold Dust Shaft
- Gold Vault Mine
- Golden Cloud
- Golden Edge Shaft
- Golden Treasure Tunnel
- Gondola Tunnel
- Good Luck
- Gray Copper
- Great American (Big Chief)

- Great East Shaft
- Great West Shaft
- Grisley Shaft
- Grover Cleveland
- H (Free Gold; U.S.; Baker; Beaver; Alma)
- Happy Easter (Queen Elizabeth)
- Hayes Tunnel
- Helen Tunnel
- Helenslea
- Hiawatha Tunnel
- Homestake Shaft
- Hope
- Hot Pot Shaft
- Hudson Tunnel
- Hughes Shaft
- Hukill
- Hyland
- J. Warner
- Jackson
- John L. Emerson Shaft
- John L. Frannie (Clarissa; Belman; Forge Hill; Fairmont; Frontenac Occurrence)
- John Paul Jones
- Kangaroo
- Katie S.
- Kentucky Tunnel
- Kinda - Upper Shaft
- Kinda Tunnel (UPR)
- Knickerbocker
- Kokomo Shaft
- Lady Bell
- Lafayette adit
- Lake Central Project
- Lake Tunnel - Lower
- Lake Tunnel Lower East
- Lake Tunnel Upper
- Lake Tunnel Upper East
- Lawrence L mine (Philadelphia)
- Lead Belt Tunnel
- Lee Shaft
- Lexington (Little Richard)
- Little Annie Tunnel
- Little Ella
- Little Emma Tunnel
- Little Harry
- Little Six
- Loeber
- Lorroway
- Lost Vein adit
- Lucania Tunnel
- Lynch Shaft
- M. K. Shaft
- Main Trunk Shaft
- Mandolina Tunnel
- Mary C.
- Mary Matilda Mine
- Mary Philips
- Mastedon
- Maude Monroe
- May
- May Day
- Mayflower
- Metropolitan
- Millington
- Minnie Shaft
- Minott
- Mona Tunnel
- Monte Cristo
- Moose Shaft
- Morning Star
- Mystery Shaft
- Nabab Occurrence (Torrey; Summit; Great West; Fairfield; Berry; Ella; Dubuque; Lucania; Great East)
- New Europe
- Nonpareil Mine
- Olive
- Ophir; Argo
- Oregon Shaft
- Oro Fino Tunnel
- Owatonna Occurrence
- P.T. Mine

- Pennsylvania
- Pine Shade mine
- Pine Tree Shaft
- Plutus Mine
- President Hayes Shaft
- Pride of the West
- Protection
- Providence
- Puzzler; Alkire (Lincoln Tunnel)
- Quartermaster Shaft
- Queen Bee Shaft
- Richmond Shaft
- Rio Grande Shaft
- Rob Roy lode
- Rockford (Lucania; Berry)
- Ruby Tunnel
- Saginaw Shaft
- Salisbury
- Santa Fe Shaft West
- Searle Shaft
- Seaton Mine
- September Tunnel
- Ship Ahoy
- Silver Age Mine
- Silver King - Upper
- Silver King Tunnel - Lower
- Silver King Tunnel Extension
- Smith Mine
- Sound Shaft
- Spear Tunnel
- Specht Tunnel
- Specie Payment Tunnel
- St. Joseph
- Stanley Mine (Gehrmann; Cooper; York; Whale; Golden Link)
- Star Mine
- Summit
- Sun & Moon
- Telephone Tunnel
- Tim Tarsney
- Tom Boy (Treasure Vault; John Paul Jones; Edna Fannie; Golden Treasure)
- Tomahawk
- Torrey 2 Tunnel
- Transvaal
- Two Brothers Tunnel
- Two Kings
- United Freeland
- United Gold
- Veto Shaft
- Victor Shaft No. 3
- Vida Shaft
- Vigilant; Banta Hill; Gold; Bunkhouse Occurrence
- Washington (Pennsylvania; Madeline; Dakota)
- West Chester Shaft
- West End Tunnel - Lower
- West End Tunnel - Upper
- White Cloud mine
- Williams Shaft
- Willis Gulch Occurrence (Carcasonne; Adudell; Colfax; Elkhorn; Bertha; Druid; Moose)
- Windsor Castle Shaft
- Wolverine Tunnel
- Wyandotte

Note: Additional shafts and adits are listed in Moench and Drake (1966).

Minerals listed in the district (mindat.org) include:

Acanthite	Galena	var: Thucholite'
Anglesite	Goethite	Quartz
Ankerite	Gold	var: Amethyst
Aragonite	Goslarite	var: Chert
Argentite*	<i>Haiiyne ?</i>	Rhodochrosite
Autunite	Hematite	'Ruby Silver Ore'
Azurite	Ilsemanite	Schröckingerite
Baryte	Kaolinite	Siderite
Bayleyite	'K Feldspar	Sillimanite
Betazippeite*	var: Adularia'	Silver
Biotite	Limonite	Sphalerite
Bismuthinite	Magnetite	Stromeyerite
Bornite	Malachite	Svanbergite
Bourbonite	Marcasite	Sylvanite
Calcite	Meta-autunite	Tennantite
Cerussite	Metatorbernite	Tenorite
Chalcanthite	Molybdenite	Tetrahedrite
Chalcocite	Muscovite	Torbernite
Chalcopyrite	var: Sericite	Uraninite
Chlorargyrite	Nagyágite	var: Pitchblende
'Chlorite Group'	Opal	Uranophane
Coffinite	Pearceite	'Wad'-hydrous manganese oxides
Copper	Polybasite	Wolframite
Covellite	Proustite	Zippeite
Enargite	Pyrargyrite	
'Feldspar Group'	Pyrite	
Fluorite	'Pyrobitumen	

\* Additionally listed in Moench & Drake (1966).

#### References:

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Moench, R.H. and Drake, A.A. Jr. 1966. Economic geology of the Idaho Springs district, Clear Creek and Gilpin Counties, Colorado. U.S. Geological Survey Bulletin 1208.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Clear Creek County**

### **Illinois Bar District**

The Illinois Bar District is not listed by Henderson in his comprehensive 1926 list. It is delineated by Parker (1974) as located on the north bank of South Clear Creek from Virginia Canyon to the centerline of section 31 (against the Grass Valley District). It is included within the **Idaho Springs District**.

The Illinois Bar District was solely a placer district and produced gold.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

## Clear Creek County

### **Jackson's Bar District (aka Jackson District)**

The Jackson's Bar District is listed by Henderson in his comprehensive 1926 list. It is delineated by Parker (1974) as located along Chicago Creek. It is included within the **Idaho Springs District**.

The Jackson's Bar District was solely a placer district and produced gold.

Note that mindat.org lists a Jackson District as another name for the **Corral District** (or **Coral District**). The number of districts in the small area around Idaho Springs and the Clear Creek area, along with the proliferation of district names makes this area confusing and difficult to sort out.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

## **Clear Creek County**

### **LaPlata District**

The LaPlata District lies mainly in Grand County and is discussed there.

## Clear Creek County

### **Lawson-Dumont-Fall River District** (includes **Montana District**, **Coral District**, & **Mill Creek District**)

The **Lawson-Dumont-Fall River District**, mentioned above with the **Idaho Springs District**, is considered together by Hawley and Moore (1967). Surrounding present-day Interstate 70 about 5 miles west of the town of Idaho Springs, this area also includes the districts of **Coral** and **Mill Creek**.

Placer deposits at the junction of Fall River and Clear Creek initiated the activity in the area in 1859, followed shortly by the discovery of oxidized veins near Dumont. Although little history was recorded, production was limited until the Blackhawk smelter was built in 1868. Silver was also discovered in the 1870's at Lawson; however, little production has occurred since 1900. The geology and mineralization of the district is similar to others in the county. The basic units were defined by Hawley and Moore from the earlier work of Spurr et al. (1908) and Lovering and Goddard (1950). Two types of veins occur: polymetallic veins of sphalerite-pyrite-chalcopyrite-galena and tennantite, and quartz-pyrite-gold veins occupy fissures and fractures in the Precambrian metasediments of the Idaho Springs Formation. Both Boulder Creek Granite and Silver Plume Granite intrude the metasediments. Less abundant than in other districts nearby, the Tertiary dikes and small stocks of porphyries occur across the area. These range in composition from hornblende granodiorite to biotite granodiorite, quartz monzonite, latite, trachyte and bostonite. An additional reference is Bastin and Hill (1917).

Mines listed in the district (Hawley and Moore, 1967; mindat.org) include:

- Accord
- Alfred Whitney
- Alma-Lincoln
- American Sisters Mine
- Andrew Lowe
- Anna B.
- Annamosa (Alamosa)
- Anoka County
- Anon Mines
- Avalanche Shaft
- B & I No. 1
- Becky Sharp
- Belgian Hare
- Bellview - Hudson
- Big Dipper
- Black Earth Shaft
- Black Squirrel
- Blind
- Blue Bird
- Blue Ridge Tunnel
- Boat
- Boreas
- Braun
- Bullion King (Mayflower)
- Caddo
- Capitol Shaft - Senator Vein
- Cardigan Group
- Cardwell
- Cash
- Casino Shaft
- Chance
- Christina
- Clear Creek & Gilpen (Specht; Monarch; Silver King; Hiawatha; Syndicate; Sound; Mackay; Freeland; California; Torry; Ruby)
- Clear Creek Gold
- Cleveland Tunnel - Silverwing
- Collom
- Colomin

- Commonwealth Shaft
- Cooper
- Corbett
- Crystal
- Daniel Peters
- Design
- Dexter (Dexter Tunnel)
- Dierks
- Donaldson Group
  - Centurion
  - Champion Dirt
  - Kelly Tunnel No. 4
  - Little Albert Tunnel No. 5
  - Little Champion (Megalona)
- Dover
- Dumont Placer
- Eagen
- Eclipse
- Edgar Extension
- Edward Shaft
- Edward Tunnel
- Elida (American Eagle; Lincoln; Ohio Bell; Climax; Capitol; Senator; Blue Ridge; Mayflower; Cymric; Hamilton; Andrew Lowe; East Murray Crosscut; 4-C)
- Ella Tunnel
- Elliott & Barber 1 & 2
- England
- Equinox Shaft
- Esmeralda
- Estrella Tunnel
- European
- Extension No. 2
- F & C
- Fairfield Tunnel
- Fairmount (Shafter)
- Fairview
- Falu Shaft
- Florence
- Ford Hill
- Fortune
- Foxhall
- Freeland Tunnel (McClelland Tunnel)
- French Flag
- Gem Consolidated
- German Tunnel
- Geysler
- Giant Warrior Shaft
- Gillespie Group
- Gilt Edge
- Golconda Mine
- Gold Bullion Shaft
- Gold Glen (Golden Glen Tunnel)
- Gold Medal
- Gold Pit
- Golden Calf Shaft
- Golden Rule
- Grass Valley
- Gum Tree Mine - Shaft & Tunnel
- Harpoon
- Heliotrope Tunnel
- Hidden Diamond
- Highlander
- Honest John
- Hoosac
- Horn Lode
- Houston
- Idaho Bride
- Ingram
- Iron King
- J.A.M.
- Jessica
- Joe Reynolds (Elida)
- Jones Placer
- Joseph A. Horn
- Josephine Shaft & Tunnel
- Jumbo Tunnel
- K.K.K.
- Keast Tunnel
- Kennedy Group
- King Cyrus
- Kobold
- La Clide
- Lake West
- Lalla
- Lawrence L.
- Legal Tender
- Lena

- Lily
- Lincoln
- Little Boss
- Little Giant Mine
- Little Ute
- London Tunnel West
- Lone Star
- Lucky Find
- Lucky Gold
- Lucky Strike Group
- M. and E. adit
- MAB
- Mackay Tunnel
- Madison
- Major C. and Little Colonial
- Manhattan Shaft
- Marguerite B
- Martha Parks
- Mary D. Raymond
- Mary Mine
- Mattie
- May Queen
- McMickle
- Mendic
- Mendick Tunnel
- Merrimac Tunnel
- Metals Tunnel
- Mix Prospect
- Monarch
- Monitor Shaft
- Morgan Shaft & Tunnel
- Mount Etna Tunnel
- Mount Vesuvius Tunnel
- Murray mine
- Murry Mine
- Nabob Mine (Silver Belt; Baltic; Last Chance; Walt Stemple)
- Neglected
- Neptune
- New Bedford
- New Century
- New Era Placer
- New Hope
- North America
- Ocean Queen
- Ohio
- Ohio Belle
- Old Settler Mine & Tunnel
- Old Stag Tunnel
- Oneida Tunnel
- Orphan
- Orvetta and Little Ruby Tunnel
- Park Group
- Parker Placer
- Patton
- Peabody (Robineau Occurrence)
- Phillips Occurrence (Silver King; Lee; Fireman and Conductors; Fanny; Golden Eagle; Albro)
- Phoenix Shaft
- Potosi
- Pride of the Rock
- Queen Elizabeth
- Rainbow
- Range Line Tunnel
- Raymond P. Heon
- Red Elephant group (Boulder Nest Mine; Free American Mine; St. James Mine; Tabor Mine; White Mine)
- Red Lion
- Refuge
- Refugee Group
- Remington
- Renshaw - Miller
- Renshaw - Mosher
- Rising Sun
- Roote Ranch
- Royal Ann
- Schley
- Senator Tunnel
- Shakespeare
- Sherman Shaft
- Silent Friend
- Silver Cycle
- Silver Gem
- Silver Jim
- Silver King Tunnel
- Silver Spruce

- Squaw
- St. George
- Startle Tunnel
- Stephens Placer
- Sunshine Tunnel
- Sweet Home
- Syndicate Tunnel Eastern
- Syndicate Tunnel Western
- Syracuse
- Tamasoa
- Teller Tunnel
- Theobald Placer
- Tigris
- Toledo Mine - Toledo Tunnel (Henaley Shaft; Schneider Shaft; Oliver Shaft; Schenk Shaft; Cork Shaft)
- Tolland County
- Torpedo
- Trisha Lee Tunnel
- Tropic Shaft
- Tunnel Lode No. 3
- Two Sisters Mine
- Tyson
- Union Tunnel
- Virginia Canyon area
  - Diamond Joe Tunnel
  - Jennie Lind Tunnel No. 1
  - Red Jacket
  - Schaftner Mine
- Ward
- Whale Mine
- Wilbur
- Wyoming Valley Tunnel
- Yellow Metals & Fortune
- Yukon Girl

Minerals listed in the district (Hawley and Moore, 1967; mindat.org) include:

Acanthite	Dolomite	Polybasite-Pearceite
Aikinite	Dumontite	Posnjakite
'Allanite'	Enargite	Proustite
Anglesite	Epsomite	Pyrrargyrite
Ankerite	'Feldspar Group'	Pyrite
Aragonite	Ferberite	Pyrolusite
Argentite	Fluorite	Quartz var: Amethyst,
Autunite	Galena	Chalcedony, Rose Quartz
Azurite	Gold	Rhodochrosite
Baryte	Hematite	Schröckingerite
Bayleyite	Hessite	Serpierite
'Biotite'	'Hornblende'	Siderite
Bornite	Kasolite	Sillimanite
Calcite	'Limonite'	Silver
Cerargite	Magnetite	Sphalerite
Cerussite	Malachite	Stromeyerite
Chalcanthite	Marcasite	Tennantite
Chalcocite	Metatorbernite	Tetrahedrite
Chalcophanite	Molybdenite	Torbernite
Chalcopyrite	Muscovite var: Sericite	Uraninite var: Pitchblende
Chlorargyrite	Niccolite	Uranophane
Chrysocolla	Pararammsbergite	'Uvite'
Covellite	Pearceite	Zippeite

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## Clear Creek County

### Trail District (possibly Trail Creek District)

The delineated districts around Idaho Springs were the first mining districts in the state of Colorado. Their exact meanings and locations have been lost to history. The descriptions that remain are often confusing and contradict one another.

According to Dunn (2003), the Trail District was approximately 2.5 miles from Idaho Springs along Trail Creek. By the descriptions in Parker (1974), the Trail District may include the **Spanish Bar District**. According to mindat.org, the Trail District contains the Lamartine Mine, source of the name of the nearby **Lamartine District**. The district produced gold, silver lead, zinc.

Mines listed in the district include:

- [Empress Mine](#)
- [Lamertine Mine](#) (?)
- [New Era Mine](#)

Minerals listed in the district include:

[Chalcopyrite](#)  
[Galena](#)

[Pyrite](#)  
[Quartz var: Amethyst](#)

[Sphalerite](#)  
[Tetrahedrite](#)

References:

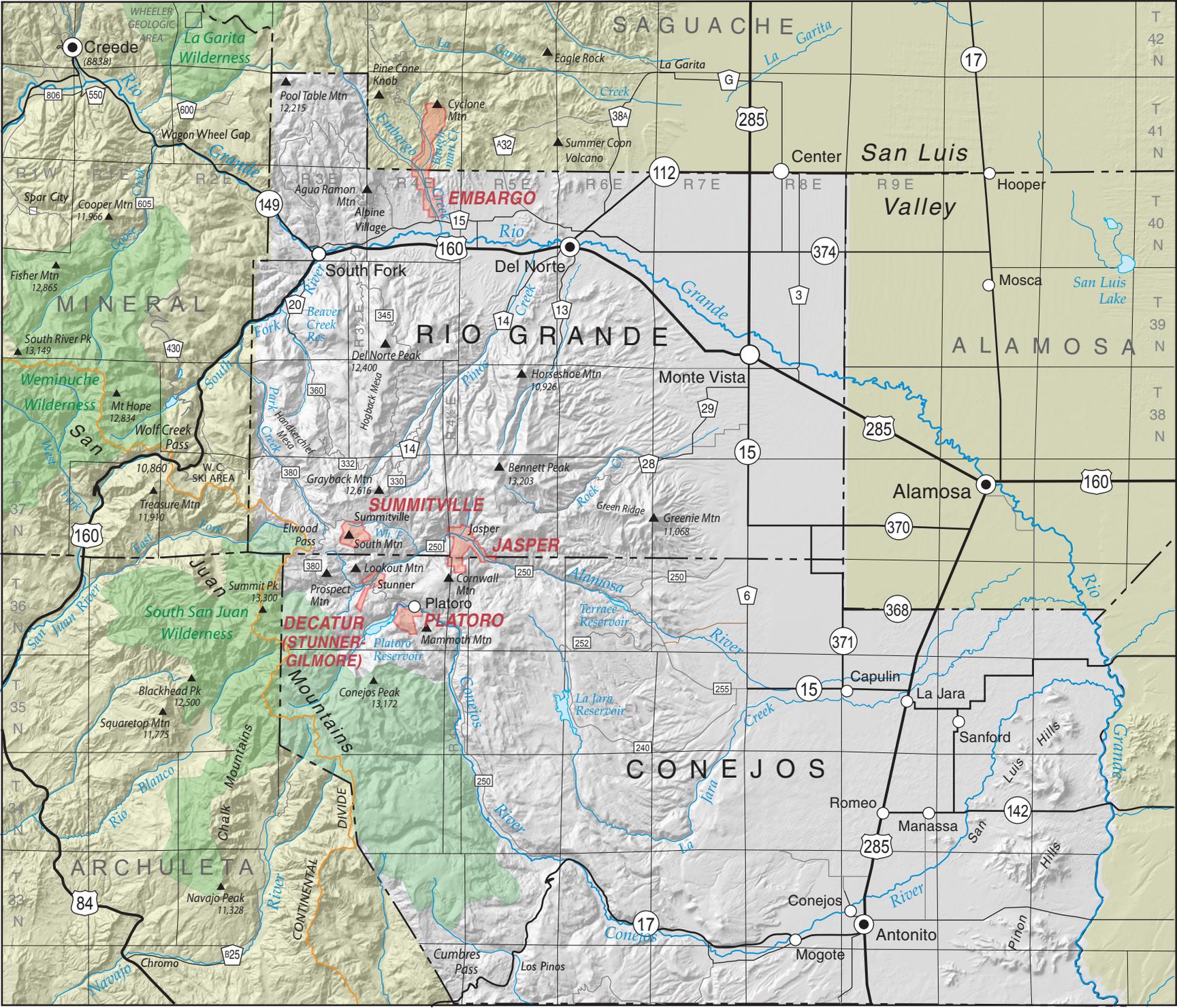
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SAGUACHE

La Garita Wilderness

Creede (8838)

Spar City

Fisher Mtn 12,865

MINERAL

South River Pk 13,149

Weminuche Wilderness

Mt Hope 12,834

Treasure Mtn 11,910

Summit Pk 13,300

Blackhead Pk 12,500

Squaretop Mtn 11,775

Navajo Peak 11,328

Chalk Mountains

Continental Divide

Archuleta

Chromo

Cumbres Pass

Los Pinos

Mogote

Antonito

Pinon Hills

San Luis Hills

San Luis Valley

Pine Cone Knob

Pool Table Mtn 12,215

Agua Ramon Mtn

Alpine Village

South Fork

Del Norte Peak 12,400

Hoagback Mesa

Grayback Mtn 12,616

Summitville

Elwood Pass

Prospect Mtn

Stunner

Platoro

Mammoth Mtn

Conejos Peak 13,172

Platoro Reservoir

Platoro

Cyclone Mtn

Summer Coon Volcano

Del Norte

Monte Vista

Horseshoe Mtn 10,926

Bennett Peak 13,203

Green Ridge

Greenie Mtn 11,068

Alamosa

Capulin

La Jara

Sanford

Manassa

Romeo

Marassa

Conejos

Mogote

Antonito

Pinon Hills

San Luis Hills

San Luis Valley

Eagle Rock

Center

Hooper

Mosca

San Luis Lake

Alamosa

Capulin

La Jara

Sanford

Manassa

Romeo

Marassa

Conejos

Mogote

Antonito

Pinon Hills

San Luis Hills

San Luis Valley

Embargo

T 42 N  
T 41 N  
T 40 N  
T 39 N  
T 38 N  
T 37 N  
T 36 N  
T 35 N  
T 34 N  
T 33 N

R 1 W  
R 2 E  
R 3 E  
R 4 E  
R 5 E  
R 6 E  
R 7 E  
R 8 E  
R 9 E

## Conejos County

### **Decatur District (aka Decatur West District, aka Stunner District, aka Gilmore District)**

The Decatur District is also known as the Stunner District, and was located along the Alamosa River. Mindat.org refers to the Decatur District as the Decatur West District (Stunner District). The district also included the Gilmore District located just south of the Stunner District (Patton, 1917). Henderson (1926) referred to the Decatur District as also being known as the **Summit District** and as occupying both Conejos and Rio Grande Counties. Here we have separated the Summit (Summitville) District due to being located in a separate county and having ores of different genesis and age (Steven and Ratte, 1960).

The camp of Stunner was said to have been opened in the early 1880's, some ten years after ore was first discovered at Summitville, and grew rapidly until in 1890 it contained a population of about 300 (Patton, 1917). The Stunner camp was originally named Conejos Camp, then Loynton, before becoming Stunner in 1887 (Eberhart, 1969). One or two very promising mines were developed and a large number of claims staked out, and worked to a greater or less extent. Extremely rich silver ore seems to have been shipped from several of the properties, but the rich ore soon gave out, and the low-grade ores could not be worked with profit owing to the remoteness of the camp (Patton, 1917).

In October 1912, gold telluride was discovered on the west slope of Klondyke Mountain on a claim owned by Mr. Gilmore. The Gilmore claim was located about three and a half miles almost directly west of Platoro on the very steep northwestern slope of Klondyke Mountain, overlooking the Alamosa valley. It was two miles from the town of Stunner, located in this same valley. The gold telluride was reportedly much darker in color than is the case with the Cripple Creek tellurides. The crystals were usually invisible although they occurred disseminated through the quartz gangue and gave the ore a characteristic dark color. The rich gold telluride ore was worked by means of an open cut and found to continue for 10 or more feet. However, the ground became broken below this point and the ore ceased entirely and could not be found again because only barren quartz veins were encountered (Patton, 1917).

The geology of the area is igneous in origin. This district lies in the eastern part of the San Juan volcanic field and the late Oligocene-aged Platoro and nested Summitville calderas constitute a composite collapse structure of about 20 kilometers in diameter (Lipman, 1974; Steven & Lipman, 1976). Ore was found in mineralized epithermal quartz-latite veins that extended over long distances. Major commodities in this district were silver and gold, with minor to trace antimony, copper, iron, lead, molybdenum, and zinc.

The rock formation on the Alamosa slope of Klondyke Mountain consists entirely of monzonite with a very small area of monzonite porphyry. Andesite appears on the summit of the ridge above the Gilmore claim and from there extends eastward over the whole flat-topped summit of the mountain (Patton, 1917). The ore veins lie mainly in the Treasure Mountain latite and in part apparently in the overlying andesite.

The mines were primarily developed in quartz fissure veins. At the Eurydice Mine the quartz fissure vein contained streaks of pyrite and chalcopyrite, which carried sulfides and tellurides of gold and silver. The outcrop of the vein could readily be traced for several hundred yards up the gulch and was from two to four feet wide. It was stained brown by the oxidation of the iron sulfides. This mine had the distinction of producing shipping ore, but was not worked after 1893 (Patton, 1917).

The town of Stunner in the summer of 1913 had a half dozen or more houses in good condition and supported a store and U.S. Post Office (Patton, 1917). Gilmore was a brief camp founded in 1913 (Eberhart, 1969).

Mines listed in the district (mindat.org) include:

- Alum Creek Occurrence
- Apex Tunnel Occurrence (Watrous Claims)
- Asiatic Mine (Brooklyn; Alabama; Kearsarge; Merrimac; Oregon; Montgomery; Olimpia)
- Emma Mine (Patented Claim: Emma)
- Eurydice Mine (No. 10; Orpheus; Louisa; Patented Claims: Eurydice)
- Globe Occurrence
- Pass Me By Mine (Upper Ten; Cleora; Homestake; Vivian; Arla)
- Trill Bird Deposit

Minerals listed in the district (mindat.org):

Alunite	Goethite	Pyrite
Calcite	Gold	Quartz
Chalcopyrite	Molybdenite	Stibnite
Galena	Petzite	Tetrahedrite

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## Conejos County

### **Platoro District** (aka **Axell District**, aka **Lake Fork District**, aka **Ute District**)

The Platoro District is situated on the Conejos River and includes the former mining camps of Platoro, Lake Fork (adjoining to the south of Platoro) and Axell (two to three miles east of Platoro) (Patton, 1917). Patton (1917) and Henderson (1926) show that the Platoro District was also known as the **Ute District**. Vanderwilt (1947) used the Platoro District as the primary name. Dunn (2003) indicates that the Platoro District was also referred to as the Axell, Lake Fork, **Gilmore** or **Stunner Districts**. However, Patton (1917) shows the Stunner District as being part of the Decatur District situated along the Alamosa River; refer to the **Decatur District** for more information.

The geology of the area is predominately igneous in origin. This district lies in the eastern part of the San Juan volcanic field and the late Oligocene-aged Platoro and nested Summitville calderas constitute a composite collapse structure of about 20 kilometers in diameter (Steven & Lipman, 1976). Ore was found in mineralized epithermal quartz-latite veins that extended over long distances. Major commodities in this district were silver and gold, with minor to trace zinc, copper, molybdenum, lead and antimony.

The Mammoth group consisted of fifteen patented claims having a total area of 126 acres, and lying upon the northern slope of Mammoth Mountain. The Mammoth Mine, was known for silver ore, but also contained gold and telluride, and the ore was sourced from the Mammoth vein (Patton, 1917). This consisted of a quartz fissure vein with associated marcasite and Arsenopyrite and complex sulpho-telluride ore. The principal workings were on the Mammoth and Revenue claims that join each other end to end, with a main tunnel 1,600 feet long.

Patton (1917) reports that the Congress Mine consisted of seven claims with an area of 61.4 acres. It was located along the Mammoth vein, just south of the Mammoth Mine. Just north of the Mammoth Mine was the Parole Mine consisting of 2 claims with an area of 20.6 acres along the Mammoth vein. Also on the Mammoth vein was the Valley Queen Mine to the north of the Parole Mine. At this mine the mineralized quartz vein was reported to be 34 feet wide and contained a streak of 12 to 18 inch ore. The Merrimac Mine was located along 6000 feet of a separate vein roughly paralleling the Mammoth vein. The Forest King Mine, located on the western slope of Mammoth Mountain, was about one mile west of the Mammoth vein. Specimens of free gold were obtained from this vein.

A little molybdenite was found at the Merrimac Claim in a two-inch wide quartz vein, but was too small to be of commercial value. The host rock for this was granite and granitic gneiss (Worcester, 1919).

The town of Platoro was stated as being located at an elevation of 9,900 feet, in the midst of a flat, open expanse of the Conejos River valley that measures some half to three-quarters of a mile wide and three miles long (Patton, 1917). Platoro was one of the oldest towns in the area and had a population of 300 by 1890. However, as the ores were depleted, so was the town. There was a slight resurgence in the early 1900s and again just before World War 1, but these did not last. Currently, Platoro has become a tourist attraction (Eberhart, 1969). The Axell District and camp may have been named for Charles O. Axell, who prepared geologic maps of the area (such as Axell (1934)) and also the mining claim map included in Patton (1917).

Mines listed in the district (mindat.org) include:

- Congress
- Dee Stock Occurrence
- Forest King Mine (Forest King Group; Ophir; Bonanza King)
- Gilmore
- Glacier Mine
- Lake View Claim (April Queen; Claims: Lake View; Queen Bee)
- Mammoth - Revenue Mine
- Mammoth Revenue Mine (Mammoth Mine)
- Merrimac Mine
- Parole Mine (Parole Group; Patented Claims: Parole; Parole No. 2)
- Siskiyou
- Valley Queen Mine (Platoro Tunnel; Ajax Nos. 1-10; Texas; Snowstorm; Platoro Tunnel Site; Valley King; Valley Queen Group; Patented Claims: Valley Queen; Shasta)
- Vera Breccia Pipe Occurrence

Minerals listed in the district (mindat.org) include:

Acanthite	Digenite	Polybasite
Alunite	Galena	Proustite <sup>1</sup>
'Andorite'	Gold <sup>1</sup> var: Electrum	Pyrargyrite <sup>1</sup>
Argentite <sup>1</sup>	Hematite	Pyrite
Anhydrite	Kaolinite	Pyrrhotite
Arsenopyrite <sup>1</sup>	Marcasite <sup>1</sup>	Quartz var: Chalcedony
Barite	Miargyrite	Silver
Calcite	Molybdenite	Sphalerite
Chalcocite	Montmorillonite	Sulphur
Chalcopyrite	Muscovite var: Illite, var:	Zinkenite
'Chlorite Group'	Sericite	
Covellite	Petzite	

Note: <sup>1</sup>Associated with the Mammoth Mine (Patton, 1917).

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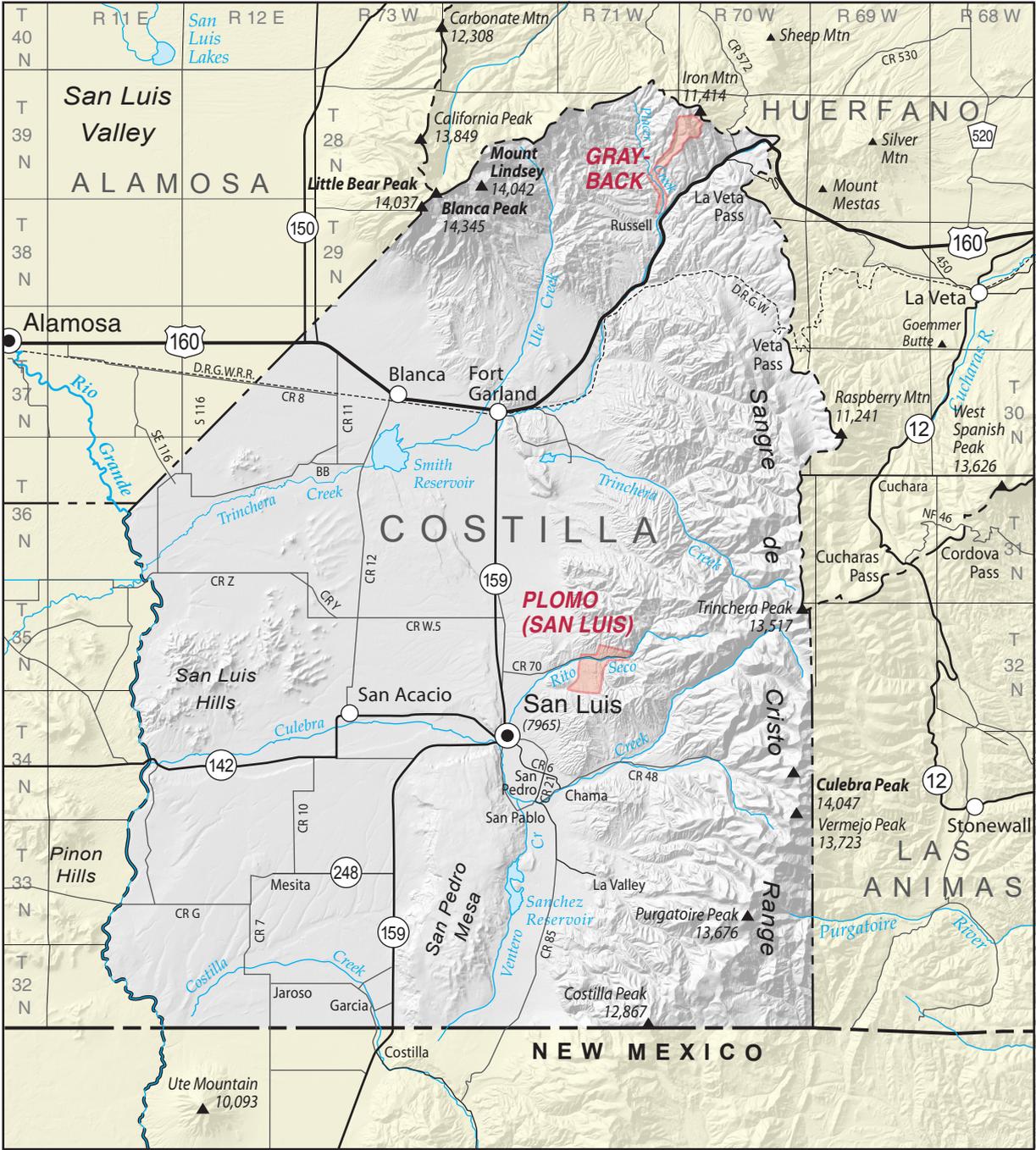
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[www.mindat.org](http://www.mindat.org), access August 2015.



## Costilla County

### Grayback District (aka Russell District)

The Grayback District lies due east of Blanca Peak in northern Costilla County and has produced gold and iron. It is named for Grayback Mountain, which also called Iron Mountain because of the iron deposits on its western slope. The District sits within the Trinchera Estate of nearly 1/2 million acres - a land grant from the Mexican government in 1843. The Trinchera grant and the larger Sangre de Cristo land grant to the south came into the possession of Colorado Governor Gilpin.

The Grayback District is probably the location of the first mining activity in the State. Discussed in Parker (1974), soldiers from Fort Massachusetts appear to have been the first miners. The fort was established in 1852 on Ute Creek, approximately 6 miles north of the present-day site of Fort Garland. Soldiers worked the gravels of what has since been called Officers Bar in Placer Creek. Later, Chinese miners reportedly had success at the site.

The Trinchera Estate (on which the District occurs), received no income from the mining, so they closed the estate to all activity in 1877. Later, with procedures in place to permit mining on the land grant, mining resumed in 1896 and a company brought in a large steam shovel in 1898, but with little success. In 1910 the Colorado Gold Dredging Company introduced a steam dredge for Placer Creek capable of 2000+ tons per day. According to US Mine records reported in Parker (ibid), the dredge produced \$21,454 in gold at the prevailing price, recovering 25 cents per yard.

Not much activity occurred from 1911 until the 1930s. In 1939 the district produced 19 oz of gold and 1 oz. of silver. Additional references are Dunn (2003) and Vanderwilt (1947).

The rocks of the Grayback District are Precambrian, mostly granitic gneiss. A steeply-dipping contact, roughly parallel to Placer Creek, is overlain by sedimentary rocks to the west. These are intruded by sills and dikes of porphyritic monzonite and felsite. Some contact-metamorphic iron ores have been mined in the district. The iron ores contain low-grade gold. Evidence indicates the presence of additional iron deposits in the area (Patton et al., 1910). Thin veins contain auriferous pyrite and chalcopyrite.

One of the more interesting aspects of the District is that the gold telluride *calaverite* (AuTe<sub>2</sub>) has been found in the gravels of upper Grayback Gulch (Patton et al., 1910). Did most of the abundant gold in the Grayback placers come from the low-grade iron ores or is there a yet-undiscovered source of richer gold-bearing telluride ore?

Mines listed in the district (mindat.org) include:

- [Badger State Placers 1-5](#)
- [Climax 1 and 2 Claims](#)
- [Copper King Claim](#)
- [Copper Queen Mine \(Russell No. 1\)](#)
- [Denver Placers 6-8](#)
- [Excelsior Tunnel Occurrence](#)
- [Giant Gulch Placer](#)
- [Hidden Treasure Claim](#)
- [Homestake Tunnel Occurrence](#)
- [Hub Hall Claim](#)

- John Moore and Lucky Claims
- Last Chance Mine
- Last Chance Placer (Last Chance No. 3)
- Lizzie G. Group (Claims: Lizzie G.; Lizzie G. No. 1; Lizzie G. No. 2)
- Lone Star of the West Mine
- Lower Star of the West Mine (Stoddard Mine)
- Magnolia Group
- Mamarth Claim
- Merrimac Claim
- Midnight Group (Pride; Red Bird)
- Millie G. Claim
- Mineral Ridge
- Monte Christo Mine (Snow Flake)
- Mountain View Tunnel
- Otero Placers 1 and 2
- Paul H. and Daisy Claims
- Placer (MRDS - 10142028)
- Rico Claims (Rico and Rico No. 1)
- Rock and Rye Claim
- Silver Tip Mine
- Spanish Basin Placer Company Claims (Claims: Alpha No. 1; Beta No. 2; Beta No. 1; Omega No. 1; Omega No. 2; Alpha No. 2)
- Star of the West Mine (Ainsworth; Upper Star of the West Mine)
- Sunnyside Tunnel
- Willow Gulch Placer
- XTC Claim (Rico; Blue Jay; Blue Bird Mine)

Also, the website "geozone.com" discusses a legendary lost mine - the Veta Mine - as possibly occurring in or near the Grayback District.

Minerals listed in the district (mindat.org; Patton et al., 1910) include:

Andradite	'Chlorite Group'/Chlorite*	Kaolinite*
Anthophyllite	Epidote*	Limonite*
Apatite*	Feldspar (Microcline,	Magnetite*
Augite*	Orthoclase, and Plagioclase)*	Malachite*
Biotite*	Galena*	Pyrite*
Calaverite*	'Garnet'*	Quartz*
Calcite*	Gold*	Silver*
Chalcocite	Hematite (specular)*	Sphene*
Chalcopyrite*	Hornblende*	

\*Listed in Patton et al., 1910.

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Costillo County

### Plomo District (aka El Plomo District aka Rito Seco District)

The Plomo District is on Rito Seco Creek and the area to the south (Dunn, 2003). Vanderwilt (1947) referred to it as the Plomo District, but it was also identified as the El Plomo District or Rito Seco District by Henderson (1926).

An ore body was located in 1896 to 1897 which has some small gold production. A series of tunnels and shafts were known as the El Plomo Mine, which was owned by the Trinchera Estate Company (Dunn, 2003). The San Luis Mine was worked in the 1990s by the Battle Mountain Gold Company (Dunn, *Ibid*).

Additional references include: Benson and Jones (1990) and Widman and Kirkham (1999).

Mines listed in the district (mindat.org; Dunn, 2003) include:

- [Blackmore Tract](#)
- [East Blackmore Tract](#)
- [Plomo Mine \(San Luis Project; Rito Seco Mine\)](#)
- [San Luis Mine](#)

Minerals listed in this district (mindat.org) include:

[Anglesite](#)  
[Fluorite](#)

[Galena](#)  
[Hematite](#)

[Pyrite](#)  
[Quartz](#)

#### References:

Benson, Robert G. and Jones, David M. 1990. Geology of the San Luis Gold Deposit, Costilla County, Colorado: an Example of Low-Angle Normal Fault and Rift-related Mineralization in the Sangre de Cristo Range of Colorado. *Gold '90 symposium*, Society for Mining, Metallurgy, and Exploration, Salt Lake City, Utah, February 26 to March 1, 1990.

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Widman, Beth L. and Kirkham, Robert M. 1999. Geologic Hazards and Mineral Resource Potential of Southwestern Costilla County, Colorado. Colorado Geological Survey Open-File Report 99-14.

[www.mindat.org](http://www.mindat.org), accessed July 2015.



## **Custer County**

### **Antelope Creek District**

The only information available on the Antelope Creek District comes from Cox (1945) who lists the district as a producer of fluorspar.

Reference:

Cox, Doak C., 1945, General Features of Colorado Fluorspar Deposits; Colorado Scientific Society Proceedings 14 (6), pp 263-285.

## Custer County

### Central Custer County Mining Districts - Hardscrabble, Silver Cliff, Querida, Rosita Hills

Mining around the towns of Westcliffe and Silver Cliff occurred in mining districts variously called the *Hardscrabble*, the *Silver Cliff* or the *Westcliffe Districts*. Nearby - less than three miles to the southeast - mines were developed in the *Rosita Hills* or *Querida District* around the town of Rosita.

Deposits in both these areas occur in the same general geologic environment, originating from volcanic activity during the Oligocene Epoch, 32 to 26 million years before present (Steven, 1975). Mineralizing fluids were generated in a volcanic center - possibly beneath a single modest-sized volcano - during that time. Lava flows and tuffs were erupted onto the surface while super-heated fluids originating in the magma chamber below circulated through the rocks, depositing gold, silver, lead, zinc and copper. The feature is referred to as the Silver Cliff volcanic center.

The volcanic system formed several different types of deposits. Early fluids deposited silver ores rich in manganese in vugs and open spaces in rhyolite lava flows, probably on or near the surface at the time of the deposition. Later, fluids and superheated vapors permeated the rocks to deposit silver and base metals (predominantly lead, along with zinc and copper) in faults, fissures and other cracks in the rocks. During the late stages of the volcanic activity an explosive eruption blasted through the overlying rock, creating a pipe or chimney of rubble, providing a pathway for mineral-rich fluids to deposit gold, silver and other metals in the resulting breccia chimney.

After the main period of volcanism, the upper elevations of the volcano collapsed to create a caldera. More magma pushed up from below, leaving bodies of magma to slowly solidify beneath the now-quiet volcano as plutons.

The original discovery of silver was made in 1870. That brought on a wave of exploration and numerous mines were developed in the succeeding 20 years. The largest was the Bassick Mine, developed in the brecciated chimney at the northern edge of the old caldera. From 1872 to 1923, the two districts produced an estimated \$7 million worth of silver, lead, zinc, copper and gold. Most of the mines were exhausted in a few years, although the Bassick and several other smaller ones continued producing, some through the Korean War years. (Feldman & Crowley, 1980).

Geologists have recognized that the center remains a promising area for further exploration. Although much silver and other metals were recovered from the area but volcanic centers of this type with caldera are some of the most prolific silver producers known. (The Creede Caldera in Mineral County is a prime example.) Of particular interest at Silver Cliff is the recognition that metallurgical recovery from extremely rich silver ores left a lot of silver behind. Hildebrand, et al (1974), refer to individual samples reported to assay at several thousand ounces of silver per ton. Emmons, on his visit to the area in 1895, commented that ore of 20 to 30 ounces per ton Ag was being discarded as "lower grade" and "un-economic" (Emmons, 1896). Hildebrand's team found that much of the silver was contained in a complex ore with manganese that the processes of the day could not effectively treat.

The richest mines in the districts were the Bassick and the Bull Domingo. As noted, the Bassick tapped a breccia chimney at the edge of the caldera. The Bull Domingo tapped a second chimney a few miles north of the main volcanic complex. Both pipes were formed the Silver Cliff volcanic activity. Neither of these mines explored the full depth of the breccia chimneys. The extremely rich ore was mine to about 1400 feet at the Bassick and to only 550 feet at the Bull Domingo.

Several U.S. mining companies developed drilling programs in the area of the Silver Cliff volcanic complex in the 1960s and 70s. We have no record of their findings. They based their program on the fact that historically, only shallow ores were mined. Many geologists feel that mineral-rich veins continue to much greater depths than were explored in earlier years. Deeper veins, continuation of the chimneys, and the potential existence of underlying plutons (former magma chambers) are viewed as potential deposits of copper and molybdenum, in addition to silver (Sunshine Mining Company files.)

The multiple ownership of land parcels in the Westcliffe-Silver Cliff-Rosita area has been recognized as a potential problem. Consolidating land positions can present a deal-breaker for exploration and mining. Nonetheless, the old districts are believed to contain lots of silver still.

### **Production**

Estimated production of gold from 1872 to 1980 from the Westcliffe/Silver Cliff District is 100,000 ounces; from the Rosita Hills District, 25,000 ounces. Custer County as a whole has produced 4,744,339 ounces of silver, 626,825 pounds of copper, 41,916,696 pounds of lead and 1,907,627 pounds of zinc. (Figures for the 1960s are combined with other counties, so the number above is a minimum production.) Data specific to the districts is limited to a small period of time in the 20th century, but it is certain that nearly all the totals for Custer County come from the two districts.

As for number of mines operating, in the twentieth century, the Westcliffe/Silver Cliff District saw a peak of ten producing mines in 1940; the Rosita Hills District showed 4 producing mines in 1936.

### **Mines/Prospects/Claims**

The Colorado Geological Survey has identified the following properties and added them to the Mineral Resources Data System, operated by the U.S. Geological Survey.

**Westcliffe/Silver Cliff/Hardscrabble District**

Belfast Claim	Hoza Ranch	Plata Verde Mine
Ben West Hill Prospect	Immortal Mine	Pocahontas Mine
Boulder-Buffalo	Jay Gould Mine	Preston Gold Mine
Bull Domingo Mine	Jit Prospect	Racine Boy Mine
Carbonate Prospect	Kate Mine	Round Mountain Prospect
Dakota Maid	Keystone Mine	Songbird Mine
Deceiver	King of Carbonates Mine	Stephen Prospect
Defender	King of the Valley Mine	Vanderbilt Mine
Dolly Varden		Wild Cat Mine
Geyser	Lady Franklin Mine	
Green Mountain Deposit	New Hope	
Herman Passiflora Mine	New Pit Prospect	

**Rosita Hills/Querida****District**

Alexander Shaft	Good Hope Mine	Peerless Mine
Barite Lode	Gray Eagle Mine	Pioneer Mine
Bassick Mine	Hard Cash Deposit	Polonia Shaft
Belcher Prospect	Hector Prospect	Poorman Shaft
Ben Franklin Prospect	Harton Mine	Powhatan Prospect
Big Stake Nickel Deposit	Humboldt Mine	Quaker City Mine
Bonanza Mine	Indiana Prospect	Racer Mine
Broad Axe Prospect	Invincible Shaft	Rappahannock Prospect
Bullion Prospect	Iron Mountain Mine	Red Spring Tunnel
California Shaft	Julianna Mine	San Francisco Mine
Caroline Tunnel	Keepsake Mine	Sedgwick Shaft
Del Monte Prospect	King Prospect	Seneca Tunnel
Delaware Mine	Lizzie Mae Prospect	Silver Horn Mine
Democrat Hill Prospect	Lucille Mine	Silver King Shaft
Dinero Prospect	Mapleton Shaft	Star Mine
Dirigo Prospect	Matchless Prospect	Summit Mine
East Leviathan	Maverick Mine	Sunset Shaft
Elizabeth Prospect	Michigan Prospect	Transylvania Tunnel
Empire State Shaft	Mountain Boy Mine	Twenty-Six Shaft
Eureka Shaft	Mountain View Mine	Victoria Tunnel
Fiskdale Prospect	Nebraska Shaft	Virginia Mine
G.W. & Antrim Claims	Nellie Mine	West Leviathan Mine
Game Ridge Mine	New Pit Prospect	Zebra Project
Globe Prospect	New Shaft	
Golden Age Prospect	New Year Prospect	
Golden Gate Mine	Ophir Mine	
Golden King Shaft	P & O Mine	

## References

Emmons, S.F., 1896, The mines of Custer County, Colorado: U.S.G.S. 17th Ann. Report, pt. 2, pp. 405-472.

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Hildebrand, Fred A., and Mosier, Elwin L., 1974, Argentinian Cryptomelane and Bromargyrite in Volcanic Rocks near Silver Cliff, Colorado: USGS Bulletin 1382-C.

Krutak, Paul R. and Barwin, John R., 2004, Geology of the Rosita Hills/Silver Cliff Mining District and Spanish Peaks Plutons, Colorado: Field Trip Guidebook, 2004 Annual Meeting, Geological Society of America.

McEwan, C.J.A., Fallick, A.E., Rice, C.M., 1996, The Rosita Hills epithermal Ag-base metal deposits, Colorado, USA: Mineralium Deposita, vol. 31, pp. 41-51.

Steven, T.A., 1975, Middle Tertiary Volcanic Fields in the Southern Rocky Mountains, in Curtis, B.F. (ed) Cenozoic History of the Southern Rocky Mountains: GSA Memoir 144, pp. 75-94.

Sunshine Mining Co. Colorado exploration files, unpublished data, Colorado Geological Survey.

## **Gem Mining District and the Wet Mountains Alkalic Province, Custer and Fremont Counties**

### **(Gem, Hardscrabble, Rosita Hills, Querida, and Silver Cliff Districts)**

The Gem District is a small area that lies within the extensive Wet Mountain Alkalic Province in southern Fremont and adjacent Custer Counties. For that reason, it will be included in a discussion of that larger area. As a mining district, the Gem District has never been successful. The Wet Mountain Alkalic Province, however, has attracted considerable interest in recent years, however, because of its unusual geologic characteristics and its mining potential. The rare rock types intruded in the area contain anomalously high concentrations of critical and strategic commodities including thorium, niobium and the rare earth elements (Lanthanide elements.)

The Wet Mountain Alkalic Province is composed of three spatially separated, slightly different, igneous complexes containing an abundance of alkalic igneous rocks. The McClure Mountain Complex consists of mafic and ultramafic (pyroxenite and gabbro) and syenitic intrusions in turn intruded by carbonatite, lamprophyre and syenite dikes and thorium-bearing veins. The Gem Park Complex contains similar mafic and ultramafic cumulates intruded by carbonatite, lamprophyre and nepheline-syenite pegmatites. The third - the Democrat Creek Complex - contains subordinate mafic and ultramafic rocks and quartz syenite bordered by significant breccia zones likewise intruded by syenite dikes and quartz-barite-thorite veins (Armbrustmacher, 1984). All these Cambrian-age intrusions are contained within rocks of the Precambrian Idaho Springs Formation. (Armbrustmacher, 1979, 1984). Throughout the terrain around the three main complexes are dikes of varying composition, including carbonatites.

The rare earth element resource (REE) in the Wet Mountains Province has caught the attention of geologists. The minerals baestnesite, synchisite, ancylite, monazite and thorite have been identified within the carbonatites and contain the REE (Armbrustmacher, 1979). The minerals are known to occur over a large area - a 10 x 25-mile province containing at least 37 documented claims or prospects. Haynes (1961) stated that more than 300 prospects were known in 1958 for thorium, and it is likely that REE occur in most of those.

Several investigators noted an enrichment of the heavy rare earths (HREE) within the province. Armbrustmacher (1988) pointed out that thorite veins on the Lepley Ranch specifically are HREE-enriched. Haynes (1961) commented that the deposits across the entire province are HREE-enriched. That is important because the heavy rare earths (including dysprosium, terbium and ytterbium) are much less abundant than the LREE and command a premium in the market. Enrichment of HREE came make a marginal deposit economic.

Niobium (also known as columbium) is another critical metal for which the US is 100% dependent on imports. The metal is used as an alloying agent in specialty steels, especially for the defense and aerospace industries and such specialized applications as superconducting magnets. Niobium is distributed with the REE in the Wet Mountains area, occurring in the minerals pyrochlore, leuschite, fersmite and natroncolite (Parker and Sharp, 1970).

Armbrustmacher (1988) made some resource estimates for the REE, niobium and thorium in the Wet Mountains Complex. He estimated 161,000 short tons of ThO<sub>2</sub>; 136,000 short tons of REE (including 48,850 tons of the heavy rare earths); and over 4000 short tons of Nb<sub>2</sub>O<sub>5</sub>. These estimates are based on the known thorite veins and carbonatite dikes. Parker and Sharp (1970), in one of the earliest detailed studies of the unique deposits, postulated the presence of a large buried carbonatite body in the area that served as a source of the carbonatite dikes. (This is a typical occurrence.) Their guess was that the most

likely location of this buried body is beneath the area of the large Vermiculite Mine in the area of sections 33 and 34, T20S, R72W (in the Gem District), on the Fremont-Custer County line. The CGS knows of no detailed exploration for ore bodies that do not occur on the surface.

In summary, the Wet Mountains Alkalic Province is known to contain highly desired minerals. Exploration has been only cursory and it remains a promising target for the future.

Minerals occurring in the district (Mindat.org).

**Mineral list contains entries from the region specified including sub-localities**

<a href="#">Actinolite</a>	<a href="#">Celestine</a>	<a href="#">Magnesioriebeckite</a>	<a href="#">Ralstonite</a>
<a href="#">Aegirine</a>	<a href="#">Chalcocite</a>	<a href="#">Magnesioriebeckite-Riebeckite</a>	<a href="#">Richterite</a>
<a href="#">Aegirine-augite</a>	<a href="#">Chalcopyrite</a>	<a href="#">Series</a>	<a href="#">Riebeckite</a>
<a href="#">Albite</a>	<a href="#">'Chlorite Group'</a>	<a href="#">var: Crocidolite'</a>	<a href="#">Rutile</a>
<a href="#">Analcime</a>	<a href="#">'Clinopyroxene Subgroup'</a>	<a href="#">Magnetite</a>	<a href="#">'Serpentine Group'</a>
<a href="#">Anatase</a>	<a href="#">Columbite</a>	<a href="#">Marcasite</a>	<a href="#">Siderite</a>
<a href="#">'Ancylite'</a>	<a href="#">Cryolite</a>	<a href="#">Maucherite</a>	<a href="#">Sodalite</a>
<a href="#">Ancylite-(Ce)</a>	<a href="#">Dolomite</a>	<a href="#">Microcline</a>	<a href="#">Sphalerite</a>
<a href="#">Ankerite</a>	<a href="#">Edenite</a>	<a href="#">'Monazite'</a>	<a href="#">Strontianite</a>
<a href="#">Annabergite</a>	<a href="#">Elpasolite</a>	<a href="#">Monazite-(Ce)</a>	<a href="#">Thorianite</a>
<a href="#">Anorthite</a>	<a href="#">Fersmite</a>	<a href="#">Muscovite</a>	<a href="#">Thorite</a>
<a href="#">var: Labradorite</a>	<a href="#">Fluorapatite</a>	<a href="#">var: Sericite</a>	<a href="#">Titanite</a>
<a href="#">'Apatite'</a>	<a href="#">Fluorite</a>	<a href="#">Natrolite</a>	<a href="#">Tremolite</a>
<a href="#">Augite</a>	<a href="#">Galena</a>	<a href="#">Natroniobite</a>	<a href="#">Vermiculite</a>
<a href="#">Baryte</a>	<a href="#">Goethite</a>	<a href="#">Nepheline</a>	<a href="#">'Wad'</a>
<a href="#">'Bastnäsité'</a>	<a href="#">Hematite</a>	<a href="#">Nickeline</a>	<a href="#">Weberite</a>
<a href="#">Biotite</a>	<a href="#">Ilmenite</a>	<a href="#">'Olivine'</a>	<a href="#">Winchite</a>
<a href="#">Bornite</a>	<a href="#">Kaersutite ?</a>	<a href="#">Pachnolite</a>	<a href="#">'Xenotime'</a>
<a href="#">Brockite</a>	<a href="#">'K Feldspar'</a>	<a href="#">Perovskite</a>	<a href="#">Zircon</a>
<a href="#">Brookite</a>	<a href="#">Lamprophyllite</a>	<a href="#">Phlogopite</a>	
<a href="#">Calcite</a>	<a href="#">Lepidocrocite</a>	<a href="#">Prosopite</a>	
	<a href="#">Lueshite</a>	<a href="#">Pyrite</a>	
		<a href="#">Pyrochlore Group</a>	
		<a href="#">Pyrrhotite</a>	
		<a href="#">Quartz</a>	

A large number of references exist for the area. Many of them are included in this list, although not necessarily referenced in the text.

References:

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Parker, R.L., Adams, T.W., Hildebrand, F.A., 1962, A Rare Sodium Niobate Mineral from CO; U.S. Geological Survey Professional Paper 450-C, pp. C4-C6.

Pharr, George and Fisher, Frances, G., 1961, Potassic Feldspathization and Thorium Deposition in the West Mountains, CO; U.S. Geological Survey Professional Paper 424-D, pp. D1-D2.

Shawe, Daniel R. and Parker, Raymond L., 1967, Mafic-Ultramafic Layered Intrusion at the Iron Mountain, Fremont County CO; U.S. Geological Survey Bulletin 1251-A.

**Custer County**

**Hard Scrabble District**

Refer to Custer County **Central District**.

## Custer County

### Oak Creek District

The Oak Creek District lies, appropriately, along Oak Creek in northern Custer County, twelve miles northeast of Silver Cliff, on the slopes of the Wet Mountains. The mineralization was discovered in 1879 (Hunter, 1914). It has also been called the Ilse and the Spaulding District, for the nearby town known by both those names. The geology of the area is complex, with alaskite, quartz syenite, mafic syenite, charnockite, quartz-plagioclase gneiss, diabase, and other small igneous and metamorphic bodies (Brock and Singewald, 1968).

The mineralization of the District consists is the lead carbonate cerussite ( $\text{PbCO}_3$ ). The cerussite occurs within fault zones in the District. The most significant production was from the Terrible Mine, with lesser production from the Wild Girl and High Kicker Mines. The deposits are characterized by significant alteration in the fault zones. Iron oxides, chert and chaledony and calcite are common. Cerussite is the only ore mineral of any significance (Hunter, 1914).

#### References:

Brock, M.R. and Singewald, Q.D., 1968, Geologic Map of the Mount Tyndall Quadrangle, Custer County, Colorado; U.S. Geological Survey Map GQ 596.

Hunter, J.F., 1914, Some Cerussite Deposits in Custer County Colorado; U.S. Geological Survey Bulletin 580.

Vanderwilt, J.W., 1947, Mineral resources of Colorado. Denver CO: Colorado Mineral Resources Board.

**Custer County**

**Querida District**

Refer to Custer County **Central District**.

**Custer County**

**Rosita Hills District**

Refer to Custer County **Central District**.

**Custer County**

**Silver Cliff District**

Refer to Custer County **Central District**.

## **Custer County**

### **Spruce Creek District**

The Spruce Creek District is listed in Henderson (1926). There is no specific information on the District. The Rita Alta Mine appears on the Electric Peak Quadrangle geologic map (Lindsey, et al, 1985). The geology of the area around the mine is the Sangre de Cristo Formation of Pennsylvanian-Permian age. The Formation is a sequence of arkosic sandstones and conglomerates.

#### Reference:

Henderson, Charles W., 1926, Mining in Colorado; US Geological Survey Professional Paper 138.

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# Custer County

## Verde District

The Verde District is located by Dunn (2003) in the northeastern part of Custer County on the eastern slopes of the Sangre de Cristo Range. There is very little information available on the District. The District lies along Verde Creek, in the southeastern edge of the Beckwith Peak quadrangle. That quadrangle has not been mapped. The adjacent quadrangle to the south, however - Horn Peak - has been mapped. The mapped area is less than 500 feet from the southernmost mapped mine disturbance of the Verde District.

Based on the Horn Peak Quadrangle, the bedrock geology of the District appears to be a thick sequence of red arkose, arkosic sandstone, and conglomerate of the Sangre de Cristo Formation.

Dunn (2003) notes that the Verde District "may" contain the Arkansas No. 1, the New York, and the Grand View Mines. The Mineral Resource Data System (MRDS) shows the Verde Strip Mine lying in that area, but in the Electric Peak Quadrangle, two sections to the west. It is listed as a past producer, containing galena, chalcopyrite, molybdenite and pyrite in epithermal veins in the Sangre de Cristo Formation. This may represent the mineralogy present in the Verde District, although that can't be confirmed.

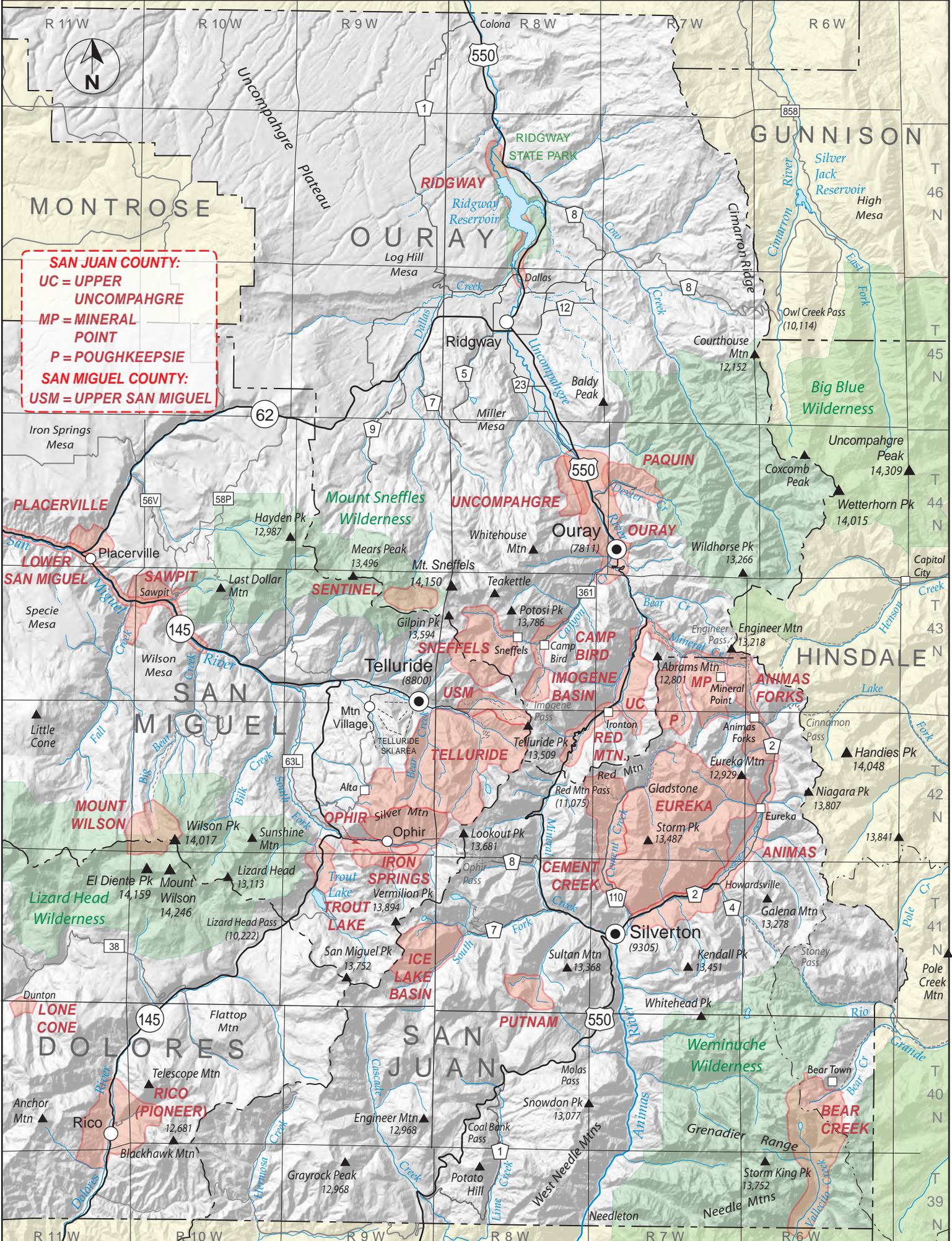
Eckel (1997) lists annabergite, chalcopyrite, pyrite and tetrahedrite at the Verde Mine.

### References:

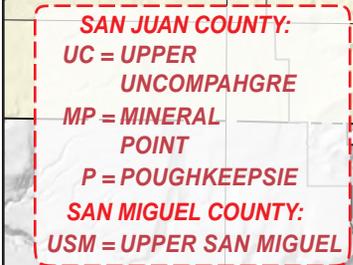
Dunn, Lisa, 2003; Colorado Mining Districts: A Reference; Colorado School of Mines, Golden CO.

Eckel, Edwin B., 1997, Minerals of Colorado; Friends of Mineralogy, Colorado Chapter, Denver CO.

Lindsey, David A., Scott, Glenn R., Soulliere, Sandra J., DeAngelis, Barbara L., 1984, Geologic Map of the Horn Peak Quadrangle, Custer and Saguache Counties, Colorado; U.S. Geological Survey Map MF-1623.



**SAN JUAN COUNTY:**  
UC = UPPER UNCOMPAHGRE  
MP = MINERAL POINT  
P = POUGHKEEPSIE  
**SAN MIGUEL COUNTY:**  
USM = UPPER SAN MIGUEL



## **Dolores County**

### **Lone Cone District**

The Lone Cone District is a small district that is commonly considered part of the larger **Rico District**. Henderson (1926) noted the district by name. Vanderwilt (1947) also separates the district and provides some production numbers. Both Dunn (2003) and mindat.org note the district, locating it 16 miles northwest of the town of Rico. They note the name **Dunton District** had occasionally been used.

For this report, the Lone Cone is considered part of the Rico District. Refer to the Rico District for more information.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, J.W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed January 2016.

## **Dolores County**

### **Pioneer District (aka Rico District)**

Refer to Rico District for discussion.

## Dolores County

### Rico District (aka Pioneer District)

The Rico District is the only major district in Dolores County, occurring on the southwest flank of the San Juan Mountains in the far eastern part of that county. Henderson (1926) used the term Pioneer District, which was also recognized by Vanderwilt (1947) and Dunn (2003). The most complete (and recent) report on the district - McKnight (1974) does not mention the term Pioneer District at all.

Early reports on the geology and some specific mines were produced by Farish (1892), Cross and Spencer (1900), Cross and Ransome (1905), and Ransome (1901).

Varnes (1947) provided a special section in Vanderwilt (Ibid). Summarizing Varnes and McKnight, the Rico Mountains are carved from a low, elliptical, structural dome comprised of a central igneous core draped with sedimentary rocks. The sedimentary sequence ranges from Precambrian to Jurassic. Successively, the units consist of Precambrian schist, quartzite and diorite, Devonian Ouray limestone and Mississippian Leadville limestone, Pennsylvanian Larsen quartzite and Heermosa formation (shale, sandstone and thin limestones), Permian Rico formation (sandstone and sandy shales) and Cutler formation (Varnes, Ibid; McKnight, Ibid).

Igneous rocks from the core of the uplift - primarily a monzonite stock and dikes and sills of a hornblende latite porphyry. Subsidiary alaskite porphyry and a single lamprophyre dike can be found. The igneous activity is Laramide in age (except for one small Pliocene body, Cunningham et al., 1994.)

McKnight (Ibid) described four main types of deposits in the district. First is massive sulfide replacement of limestones (primarily in the Hermosa Formation); second is contact-metamorphic deposits in limestone; third are veins on fracture and faults in the Hermosa Formation; and fourth are replacement deposits in residual debris where gypsum had dissolved from the Hermosa Formation. The Rico District exhibited a diverse mineralogy.

Engel (1968) relates a very readable history of the Rico area. According to his account, galena lodes were located as early as 1860. Exploration from Santa Fe pushed into the area and located the Pioneer lode in 1869, later to become the Shamrock and Potter Mines, and the district took on the name Pioneer District. A major rush of prospectors began in 1879 and the town of Rico was established as the second town in Ouray County. The boom was accelerated by the arrival of the railroad in 1891. In the succeeding years, 59 mines operated in the district, employing up to 2000 miners. Fourteen hotels graced the boomtown of Rico. Several periods of boom and bust have followed, although mines operated as late as the 1960s. Currently, at least one company is interested in pursuing development of a porphyry molybdenum deposit that has been known for quite some time ([www.outlookres.com](http://www.outlookres.com)).

Mines listed in the district ([mindat.org](http://mindat.org) and others) include:

- [Albion \(Victoria\)](#)
- [Alleghany \(San Juan National Forest\)](#)
- [Alma Mater Prospect \(San Juan National Forest\)](#)
- [Argentine \(San Juan National Forest\)](#)

- [Argonaut Mine](#)
- [Aztec Mine<sup>1</sup>](#)
- [Badger No. 7 claim](#)
- [Badger Tunnel](#)
- [Baer Tunnel](#)
- [Belzora](#)
- [Ben Group](#)
- [Black Wonder Prospect \(San Juan National Forest\)](#)
- [Blackhawk Mine \(Black Hawk Mine\)](#)
- [Blaine Tunnel \(Rico Argentine; San Juan National Forest\)](#)
- [Blue Bell](#)
- [Boyles Brothers Drilling Prospect \(San Juan National Forest\)](#)
- [Buckhorn Tunnel](#)
- [Burns Group](#)
- [Butler Group](#)
- [C. H. C. Group \(Princeton Mine; Ethlena; Princeton; Limestone; Crebec; Patented Claims: C. H. C.\)](#)
- [C.H.C. Hill](#)
  - [Lily D. Mine \(Carrie; Silver Belt\)](#)
  - [Mountain Springs Mine \(Rico Argentine\)](#)
  - [Pigeon Mine](#)
  - [Wellington Mine<sup>1</sup>](#)
- [Caledonia \(Rico\)](#)
- [California Mine \(Nevada; Unpatented Claims: California; Green Mountain; P. B. King; Burlesque Queen\)](#)
- [Calumet](#)
- [Christina Prospect \(Christine\)](#)
- [Clan Campbell](#)
- [Copper Claims](#)
- [Dolly \(Dolly Tunnel\)](#)
- [Dolores River Placers \(Gold Nugget Placer; Snyder Placer; B. & S. Placer\)](#)
- [Double Cross](#)
- [Eagle Prospect](#)
- [Eagle Tunnel](#)
- [Eighty-Eight Tunnel](#)
- [Eureka Occurrence](#)
- [Expectation Mine \(Edna; Babe; Thirteenth; Engel Mine; Mae No. 1; Rosemary; Aviator; Johnny Miller; Alf; Victor; Hornet; C. M. E.; Unpatented Claims: Expectation; V. J. K.\)](#)
- [Expectation Mountain](#)
  - [Aztec Mine](#)
  - [Bancroft Mine](#)
  - [Iron Clad Mine<sup>1</sup>](#)
  - [Jones Mine \(St. Louis claim\)<sup>1</sup>](#)
  - [Sambo Mine](#)
  - [Shamrock Mine](#)
- [Fickle Goddess Tunnel](#)
- [Flying Fish Prospect](#)
- [Forest Payroll Mine<sup>1</sup>](#)
- [Futura Prospect](#)
- [Futurity Tunnel](#)
- [Golden 1900 Prospect \(Sunnyside\)](#)
- [Golden Fleece Prospect \(New Year Mine\)](#)
- [Great Western Prospect](#)
- [Group Tunnel \(San Juan National Forest; Enterprize\)](#)
- [Hand-Out Occurrence \(Hand Out\)](#)
- [Hess and Garren](#)
- [Hicks Prospect](#)
- [Hope and Cross Prospect](#)
- [Horse Creek](#)
  - [Gold Anchor Mine](#)
  - [Iron Draw Mine](#)
  - [Johnney Bull Mine](#)
  - [Puzzle Mine \(Puzzler Mine\)](#)
- [Humboldt Tunnel \(Rico Argentine\)](#)
- [Iron Dollar Prospect](#)
- [Iron Giant Prospect \(San Juan National Forest\)](#)
- [Iron Mine \(Patented Claim: Iron Mine\)](#)
- [Iron Rod Mine](#)
- [Isabella Shaft Prospect \(Wakeman Tunnel\)](#)
- [Jack Wech Prospect](#)
- [Jumbo No. 3 \(Rico Argentine\)](#)
- [Key Group](#)
- [Kite Tunnel Occurrence](#)
- [Lackawanna Prospect](#)
- [Larson](#)

- [Last Chance Prospect](#)
- [Laxey Prospect](#)
- [Leila Davis](#)
- [Lexington Tunnel](#)
- [Logan Mine \(Logan Group; Goliath; General O. O. Howard; General Sherman; General Sheridan; Patented Claims: General Logan; Little Casper\)](#)
- [Lower Bridal Veil Canyon Prospect](#)
- [Lucky Boy](#)
- [Lucky Pine](#)
- [M.A.C. Prospect \(Hoosier Girl\)](#)
- [Magnet Prospect](#)
- [Marriage Stake](#)
- [Mediterranean \(Premier\)](#)
- [Mohawk](#)
- [Montezuma Mine](#)
- [Mountain Springs - Wellington Group<sup>1</sup>](#)
- [N. A. Cowdrey Mine \(Patented Claim: N.A. Cowdrey\)](#)
- [Nellie Bly \(San Juan National Forest\)](#)
- [New Dawn Group](#)
- [Newman Hill](#)
  - [Enterprise Mine](#)
  - [Forest Payrole Mine](#)
  - [Hibernia Mine](#)
  - [Newman Hill Prospect](#)
  - [Pro Patria Mine\(Scout's Tunnel; Rico Argentine\)<sup>1</sup>](#)
  - [Revenue Mine<sup>1</sup>](#)
  - [Rico Aspen Mine](#)
  - [Swansea Mine](#)
  - [Union Carbonate Mine](#)
- [Newman Mines \(Patented Claims: Swansea; Swansea; Klingender; and Chestnut Tunnels; Newman; Chestnut\)](#)
- [Nigger Baby](#)
- [Nutmeg Occurrence \(Nut Meg\)](#)
- [Onamo Tunnel](#)
- [Oro](#)
- [Palmetto Group](#)
- [Parson mine](#)
- [Pigeon tunnel<sup>1</sup>](#)
- [Potter Tunnel](#)
- [Princeton](#)
- [Ramco Claims](#)
- [Rancroft](#)
- [Rand](#)
- [Resolute Mine \(Unpatented Claims: Newman Group; Shehocton Group; New York Group\)](#)
- [Richmond](#)
- [Rico<sup>1</sup>](#)
  - [Atlantic Cable Mine](#)
  - [Rico Boy Mine](#)
  - [Uncle Remus Mine](#)
- [Rico Con Middle Tunnel \(Rico Argentine; San Juan National Forest\)](#)
- [Rico Townsite](#)
- [Roderick Dhu Prospect](#)
- [San Juan Prospect](#)
- [Sawyer Shaft](#)
- [Silver Clad Mine](#)
- [Silver Creek](#)
  - [Fortuna and Duncan Prospect](#)
  - [Little Maggie Mine](#)
  - [Rico Argentine Mine \(includes Argentine Tunnel, Log Cabin, Blacksmith Tunnel, Rico Consolidated Tunnels, James G. Blaine Tunnel\)<sup>1</sup>](#)
  - [Silver Creek Molybdenum deposit](#)
  - [Uncle Ned Mine](#)
- [Silver Gance \(San Juan National Forest\)](#)
- [Silver Gulch](#)
- [Silver Swan Mine \(Wamba; Tango; Frances; Panama\)](#)
- [Skeptical](#)
- [Song Bird Tunnel \(Rico Argentine\)](#)
- [South Park Mine \(Patented Claim: South Park\)](#)
- [St. Louis Tunnel \(Rico Argentine\)<sup>1</sup>](#)
- [Stephanite](#)
- [Sunflower](#)
- [Swickheimer Group](#)
- [Telegraph](#)
- [Telescope Mountain](#)
  - [Falcon Mine](#)

- [Grand View Mine](#)
- [Nora Lily Mine](#)<sup>1</sup>
- [Phoenix Mine](#)<sup>1</sup>
- [Yellow Jacket Mine](#)<sup>1</sup>
- [Tomale](#)
- [Union-Carbonate](#)
- [Utah Claim](#)
- [Van Winkle \(San Juan National Forest\)](#)
- [What Cheer mine](#)
- [Whim](#)
- [World's Fair \(San Juan National Forest\)](#)
- [Zulu Chief Occurrence](#)

Note: <sup>1</sup> Details can be found in McKnight (1974).

Minerals listed in the district (mindat.org) include:

<a href="#">Acanthite</a>	<a href="#">Dolomite</a>	<a href="#">Prehnite</a>
<a href="#">Actinolite</a>	var: <a href="#">Ferroan Dolomite</a>	<a href="#">Proustite</a>
<a href="#">Alabandite</a>	<a href="#">Enargite</a>	<a href="#">Pyrargyrite</a>
<a href="#">Albite</a>	<a href="#">Epidote</a> var: <a href="#">Withamite</a>	<a href="#">Pyrite</a>
<a href="#">Allanite Group</a>	<a href="#">Fluorite</a>	<a href="#">Pyrolusite</a>
<a href="#">Allophane</a>	<a href="#">Freibergite</a>	' <a href="#">Pyroxene Group</a> '
<a href="#">Andalusite</a>	<a href="#">Galena</a>	<a href="#">Pyrrhotite</a>
<a href="#">Andradite</a>	var: <a href="#">Argentiferous Galena</a>	<a href="#">Quartz</a>
<a href="#">Anglesite</a>	' <a href="#">Garnet</a> '	<a href="#">Rhodochrosite</a>
<a href="#">Argyrodite</a>	<a href="#">Gold</a>	<a href="#">Rhodonite</a>
<a href="#">Aurichalcite</a>	<a href="#">Grossular</a>	<a href="#">Roscoelite</a>
<a href="#">Baryte</a>	<a href="#">Gypsum</a>	<a href="#">Rutile</a>
<a href="#">Bismuthinite</a>	' <a href="#">Halloysite</a> '	<a href="#">Sellaite</a>
<a href="#">Bornite</a>	<a href="#">Helvine</a>	' <a href="#">Serpentine Subgroup</a> '
<a href="#">Bromargyrite</a>	<a href="#">Hematite</a>	<a href="#">Serpierite</a>
<a href="#">Calcite</a>	' <a href="#">Hornblende</a> '	<a href="#">Siderite</a>
var: <a href="#">Manganoan Calcite</a>	<a href="#">Hübnerite</a>	<a href="#">Silver</a>
<a href="#">Carnotite</a>	<a href="#">Hydrozincite</a>	<a href="#">Smithsonite</a>
<a href="#">Celestine</a>	<a href="#">Jarosite</a>	<a href="#">Sphalerite</a>
<a href="#">Cerussite</a>	<a href="#">Kaolinite</a>	<a href="#">Stephanite</a>
<a href="#">Chalcanthite</a>	' <a href="#">K Feldspar</a> var: <a href="#">Adularia</a> '	<a href="#">Sulphur</a>
<a href="#">Chalcocite</a>	' <a href="#">Limonite</a> '	<a href="#">Tennantite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Linarite</a>	<a href="#">Tetradymite</a>
' <a href="#">Chert</a> '	<a href="#">Magnetite</a>	<a href="#">Tetrahedrite</a>
<a href="#">Chlorargyrite</a>	<a href="#">Malachite</a>	<a href="#">Topaz</a>
var: <a href="#">Bromian Chlorargyrite</a>	<a href="#">Massicot</a>	<a href="#">Tremolite</a>
' <a href="#">Chlorite Group</a> '	<a href="#">Melanterite</a>	<a href="#">Uranophane-β</a>
<a href="#">Clinzoisite</a>	var: <a href="#">Cuprian Melanterite</a>	<a href="#">Vesuvianite</a>
<a href="#">Copper</a>	<a href="#">Molybdenite</a>	' <a href="#">Wad</a> '
<a href="#">Cordierite</a>	<a href="#">Muscovite</a>	<a href="#">Wilcoxite</a>
<a href="#">Cosalite</a>	var: <a href="#">Illite</a>	<a href="#">Wollastonite</a>
<a href="#">Covellite</a>	var: <a href="#">Sericite</a>	<a href="#">Wulfenite</a>
<a href="#">Diaspore</a>	<a href="#">Pearceite</a>	
<a href="#">Diopside</a>	<a href="#">Polybasite</a>	

## References:

Cross, Whitman and Spencer, A.C. 1900. Geology of the Rico Mountains, Colorado. U.S. Governments Twenty-first Annual Report of the U.S. Geological Survey to the Secretary of the Interior 1899-1900, Part II, pp. 7-165, plates i-xxii.

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Ransome, F.L. 1901. The Ore Deposits of the Rico Mountains, Colorado. U.S. Geological Survey 22nd Annual Report 1900-1901, Part II - Ore Deposits, pp. 229-397.

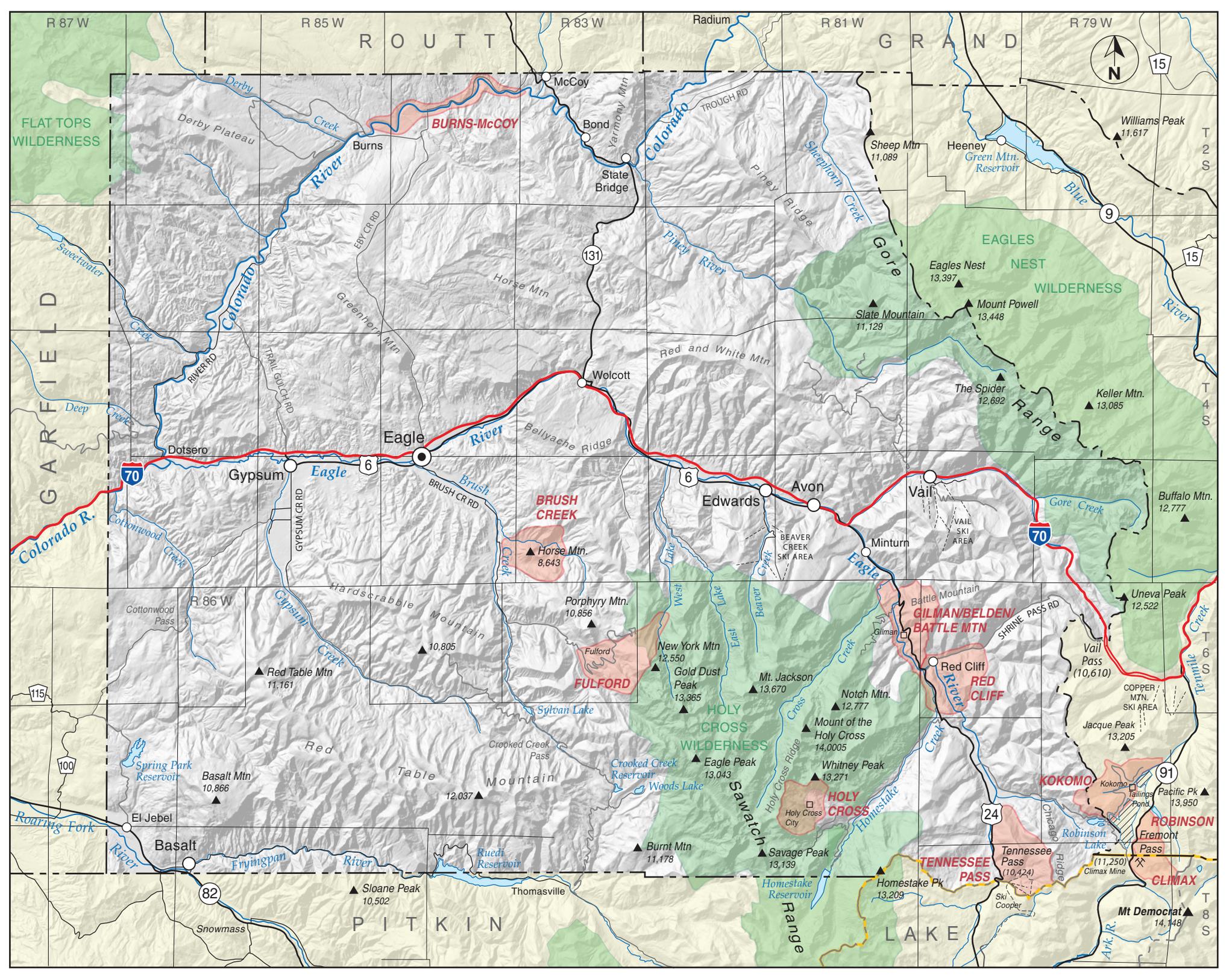
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Varnes, D.J. 1947. Rico Mining District, Dolores County, *in* Vanderwilt, J.W. ed., 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed January 2016.

[www.outlookres.com](http://www.outlookres.com), accessed January 2016.



## Eagle County

### **Battle Mountain District** (aka **Gilman District**, aka **Red Cliff District**, aka **Belden District**)

The Battle Mountain District has been referred to as the Gilman District, the Red Cliff District and the Belden District. The ore deposits there are classic examples of replacement-type deposits.

On the northeast flank of the Sawatch Range in southeastern Eagle County, rich lead-silver ore was discovered in 1879 as prospectors spilled over the pass from nearby Leadville. Some \$8 million of silver, gold and lead ore had been recovered from oxidized ore by 1900 (Tweto and Lovering, 1947). Below the oxidized zone, sulfide ore was discovered that was mainly zinc ore. The mines were eventually consolidated into one major operation that was a primary producer of zinc for many years.

Several types of ore deposits are found in the complex. Veins in Precambrian rocks contain pyritic gold and complex sulfide ores. Small veins in the Sawatch quartzite contain gold and silver telluride ores. Replacement deposits of pyritic gold and auriferous sideritic sulfide bodies and mantos (called also a blanket deposit) occur along bedding planes in quartzite. Chimneys of pyritic silver-copper ore occur in limestone and zinc sulfide ores are found as mantos in limestone. Although zinc was the main product in later years, enough gold was still recovered to cover the mining expenses.

Several towns grew up in this thriving area (Eberhart, 1979). The town of Gilman was founded in 1886 and Redcliff developed during the early boom times. Belden was described as the miners' answer to Indian cliff dwellings with cabins high up and on the tops of cliffs with mining along the cliff walls. Cleveland also developed between Gilman and Redcliff.

Mines listed in the district (mindat.org) include:

- Battle Mountain
  - Ground Hog Mine
- Eagle Occurrence
- Foster Combination Mine
- Gilman
  - Alpine Mine
  - Belden Mine
  - Ben Butler Mine
  - Black Iron Mine (Eagle No. 2 Mine; Iron Mask)
  - Bleak House Mine
  - Body Mine
  - Champion Mine
  - Eagle Mine (New Jersey Zinc Eagle Mine; Gilman Mine; Wilkesbarre shaft; Newhouse tunnel; Little Chief Mine; Iron Mask Mine; Belden Mine; Black Iron Mine)
  - Evening Star Mine
  - F. C. Garbutt Mine
  - Fourth of July Mine
  - Spirit Mine
  - Star of the West Mine
  - Tip Top Mine
- Golden Wedge
- Homestake Creek
- Homestake Creek (2)
- Homestake Creek (3)
- Hornsilver Mine
- Iron Dyke
- Liberty Mine
- Mabel Mine
- New Jersey Zinc Pit
- Ovee - Silurian Mine
- Pando porphyry sill

- Percy Chester Mine
- Pine Martin Mine

- Wyoming Mine

Minerals listed in the district (mindat.org; Warren & Peterson, 2003) include:

Acanthite	Fibroferrite	Proustite
'Alaskaite'	Fluorapatite	'Psilomelane'
Albite var: Andesine	Freibergite	Pyrrargyrite
Allophane	Freieslebenite	Pyrite
Alunite	Galena	Pyrolusite
Anglesite	var: Argentiferous Galena	Pyrrhotite
Ankerite	Goethite	Quartz var: Amethyst
Arsenopyrite	Gold var: Electrum	Rhodochrosite
Barite	Goslarite	Römerite
'Beegerite'	Gunningite	'Schalenblende'
'Biotite'	Gypsum	Siderite
Bornite	Halotrichite	Sillimanite
Bournonite	Hematite	Silver
Braunite	Hemimorphite	Smithsonite
Calcite	Hessite	Sphalerite
Cerussite	Hydroxylapatite	var: Marmatite
Chalcanthite	Hydrozincite	Stephanite
Chalcocite	Jarosite	Stibnite
Chalcopyrite	Kaolinite	Stromeyerite
Chlorargyrite	Ktenasite	Sulphur
Copiapite	Kutnohorite	Sylvanite
Copper	'Limonite'	Szomolnokite
Coquimbite	Magnetite	Tennantite
Covellite	Marcasite	Tetradymite
Dickite	Matildite	Tetrahdrite
Digenite	Melanterite	var: Argentic Tetrahedrite
Dolomite	Mendozite	'Turgite'
Dyscrasite	Pearceite	'Wad'
Epsomite	Petzite	Wollastonite
Ferberite	Polybasite	

#### References:

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Eagle County

### Brush Creek District

The Brush Creek District covers an area around that creek in east central Eagle County centered about Horse Mountain. Henderson (1926) listed 200,000 ounces of silver produced from 1913 to 1918 from steeply-dipping sedimentary beds. Vanderwilt (1947) describes the mineralization as northwest-trending veins with steep northerly dips in sandstone (probably Dakota). Silver occurred as cerargyrite (chloride) or horn silver. Additionally, uranium and vanadium occur unrelated to the silver mineralization.

Mines listed in the district (mindat.org and others) include:

- [Horse Mountain Uranium Mines](#)
- [Lady Bell \(Lady Belle; Blue-Bell; Eagled\)](#)
- [North Dakota Mine Kleckner & Mack](#)

Minerals listed in the district (mindat.org; Vanderwilt, 1947) include:

<a href="#">Acanthite</a>	<a href="#">Chlorargyrite</a>	<a href="#">Roscoelite</a>
<a href="#">'Asphaltum'</a>	<a href="#">'Copper Stain'</a>	<a href="#">Silver - as cerargyrite</a>
<a href="#">Azurite</a>	<a href="#">Covellite</a>	<a href="#">(chloride)</a>
<a href="#">Bromargyrite</a>	<a href="#">Gold</a>	<a href="#">Vanadium</a>
<a href="#">Carnotite</a>	<a href="#">Malachite</a>	<a href="#">Uranium</a>
<a href="#">Chalcocite</a>	<a href="#">Muscovite var: Mariposite ?</a>	
<a href="#">Chalcopyrite</a>	<a href="#">Pyrite</a>	

References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Eagle County**

### **Burns and McCoy District**

The Burns and McCoy District consists of gold placers in gravels on benches above the Colorado River generally between those two towns. Parker (1974) states that the gold in these placers is very fine and difficult to recover due to the abundance of black sands. Although placer activity dates back to the 1890s, it peaked in the 1930s when 71.5 and 59 oz. of gold were recovered in 1934 and 1935 respectively from seven to eight larger operations.

An additional reference is Vanderwilt (1947).

#### References:

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

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## **Eagle County**

### **Eagle River District**

The Eagle River District was listed in Hill (1912). Henderson (1926) provides a large area for the Eagle River District, names it as including the **Fairview Hill District** (not listed in this compilation), but provides a location for the Fairview Hill District overlapping with the **Tennessee Pass District** (Lake County.) So here, we use a very large area of T7S, R 80-81S, for the location of the Eagle River District, encompassing identified mining activity along the drainage of Homestake Creek.

Vanderwilt (1947) describes the Eagle River District as synonymous with the **Holy Cross District**. In this compilation, we show it as adjacent to that district.

Mindat.org only lists the mineral Allantite for this district.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Hill, J.M. 1912. The Mining Districts of the Western United States. U.S. Geological Survey Bulletin 507.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Eagle County

### Fulford District

The Fulford District is listed in Hill (1912) and Henderson (1926), who notes that it overlaps the **Mount Egley District**. The Mount Egley District is not listed in this compilation because locations could not be found.

Vanderwilt (1947) briefly describes lead-silver mineralization in Paleozoic dolomites. Mindat.org also lists some pegmatite occurrences. The District occurs within the Sawatch Range where the Fulford stock and other smaller bodies intrude Proterozoic and Paleozoic rocks (Gabelman, 1949; Wallace et al., 1989). Areas around New York Mountain were found by USGS and U.S. Bureau of Mines surveys to contain anomalous metal contents (Wallace, Ibid.)

Eberhart (1969) effectively summarizes the mining history in his description of the town of Fulford. Beginning in 1890, two adjacent towns sprung up in an area of some 500 mining claims. The most successful was the Polar Star Mine. Some mines opened onto natural cliffs, the miners accessing the opening by being lowered down the cliff from above. Successive discoveries kept the area active until 1918.

Mines listed in this district (mindat.org) include:

- [At Last](#)
- [Crystal Lode pegmatite](#)
- [Devils Den Cave](#)
- [Discovery Tunnel](#)
- [Fulford](#)
- [Fulford \(2\)](#)
- [Fulford Cave](#)
- [Johnson Mine](#)
- [Ohio Tunnel](#)
- [Polar Star Mine](#)
- [Triangle Park](#)
- [Wildflower Group](#)

Minerals listed in this district (mindat.org) include:

<a href="#">'Allanite'</a>	<a href="#">Fluorapatite</a>	<a href="#">Quartz</a>
<a href="#">Aragonite</a>	<a href="#">Galena</a>	<a href="#">Rutile var: Strüverite</a>
<a href="#">'Biotite'</a>	<a href="#">Hematite</a>	<a href="#">Silver</a>
<a href="#">Calcite</a>	<a href="#">Ice</a>	<a href="#">Tetrahedrite</a>
<a href="#">'Chlorite Group'</a>	<a href="#">'Perthite'</a>	<a href="#">Titanite</a>

References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gabelman, J.W. 1949. *Geology and Ore Deposits of the Fulford Mining District, Eagle County, Colorado*. Colorado School of Mines PhD dissertation, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Hill, J.M. 1912. The Mining Districts of the Western United States. U.S. Geological Survey Bulletin 507.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

Wallace, Alan R., Lee, G.K., Campbell, D.L., Lundby, W., and Brown, S.D. 1989. Mineral Resources of the Holy Cross Wilderness Area, Eagle, Pitkin and Lake Counties, Colorado. U.S. Geological Survey Bulletin 1879.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

**Eagle County**

**Gilman District**

Refer to the **Battle Mountain District**.

## Eagle County

### Holy Cross District

The Holy Cross District was identified by Henderson (1926). Vanderwilt (1947) notes small veins with some high-grade gold, silver and some lead in Precambrian granite and schist. Lovering et al. (1978) attributes as much as \$300K worth of gold to the Holy Cross District from 1880 to 1910.

The settlements of Holy Cross City and Gold Park developed about the same time (1880), but died by 1883 (Eberhart, 1969). The main producer was the Gold Park Company.

Mines listed in the district (mindat.org) include:

- Cross Creek #1
- [Cross City Occurrence](#)
- [Glengarry Mine](#)
- [Morning](#)
- [Newman Mine](#)
- [Popovich Occurrence \(McKay's\)](#)

Minerals listed in the district (mindat.org) include:

[Gold](#)

[Pyrite](#)

[Silver](#)

[Molybdenite](#)

[Quartz](#)

[Turquoise](#)

References:

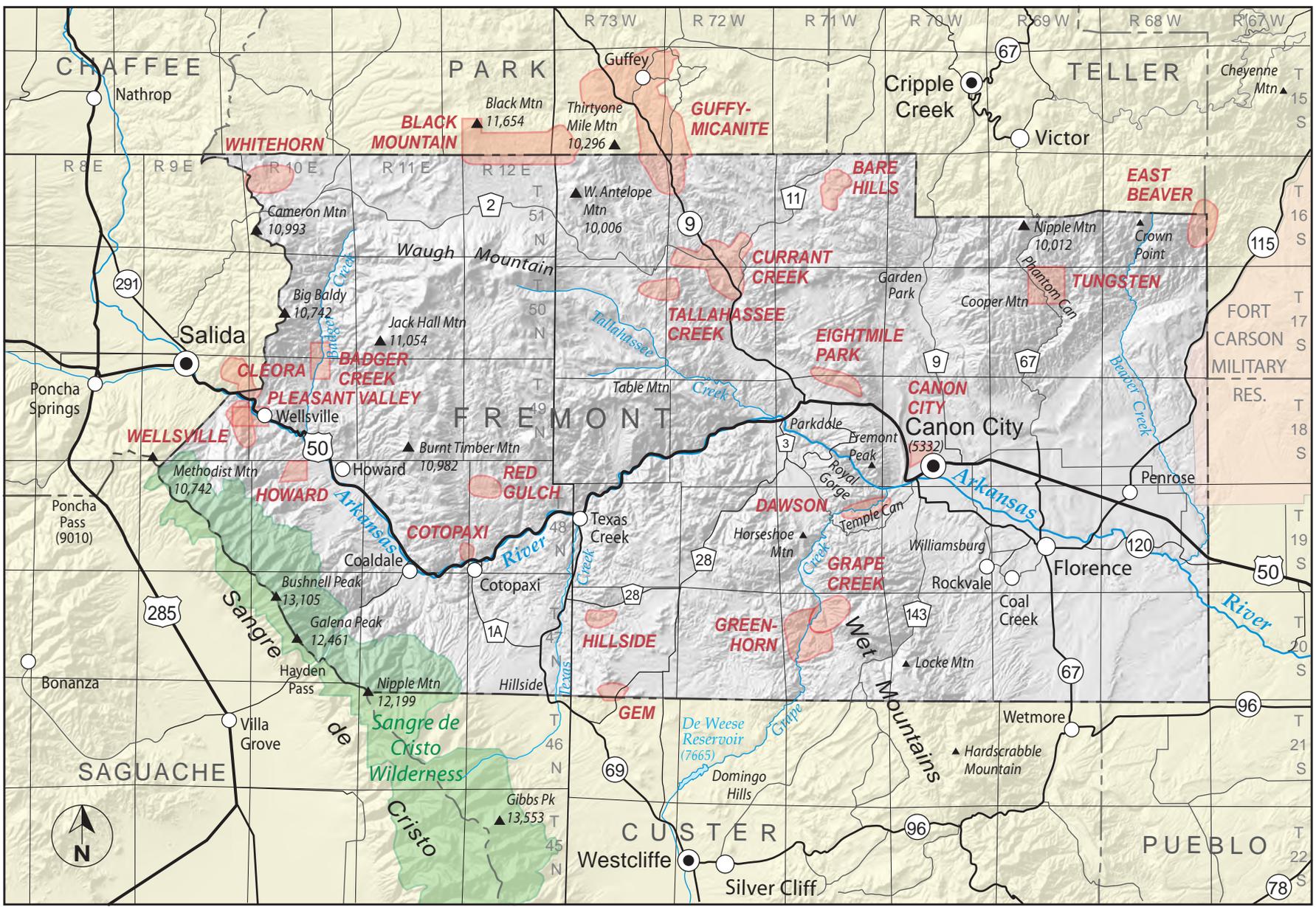
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Vanderwilt, John W. 1947. *Mineral Resources of Colorado*. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.



## **Fremont County**

### **Alhambra District**

The Alhambra District crosses from Fremont into Park County. Dunn (2003) indicates it is also referred to as the Freshwater District. It also overlaps with the Guffey District, although Alhambra is listed here because the name appeared in Henderson (1926). See the [Guffey District \(Park County\)](#) for additional data.

#### References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Henderson, Charles W. 1926, Mining in Colorado: A History of Discovery, Development, and Production; U.S. Geological Survey Professional Paper 138.

## **Fremont County**

### **Arkansas River Placers**

Vanderwilt (1947) notes that placer mining occurred on the Arkansas River in Fremont County from the Chaffee County line downstream to Florence. Small amounts of placer gold were produced before 1945. Diggings can still be seen in terrace deposits above the river. The physical description is the same as that for Chaffee County.

#### References:

Dunn, Lisa (2003) *Colorado Mining Districts: A Reference*; Colorado School of Mines, Golden, CO.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

## **Fremont County**

### **Badger Creek District**

Vanderwilt (1947) notes that deposits of the district are found four miles up Badger Creek from the Arkansas River. No other references have been found.

#### References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

## **Fremont County**

### **Bare Hills District**

Dunn (2003) notes that the district overlaps the South Cripple Creek District. For the map, this project has placed the district in the area called Bare Hills. The name appears in Henderson (1926).

#### References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Henderson, Charles W. 1926, Mining in Colorado: A History of Discovery, Development, and Production; U.S. Geological Survey Professional Paper 138.

## **Fremont County**

### **Black Mountain (Carbonate) District**

Dunn (2003) notes that the district possibly overlaps the Carbonate District. We have included them together on this map because of the lack of defining information. We have also made the district contiguous with the Black Mountain District in Park County. The name appears in Henderson (1926). No further information has been found.

#### References:

Dunn, Lisa (2003) *Colorado Mining Districts: A Reference*; Colorado School of Mines, Golden, CO.

Henderson, Charles W. 1926, *Mining in Colorado: A History of Discovery, Development, and Production*; U.S. Geological Survey Professional Paper 138.

## **Fremont County**

### **Canon City District**

Dunn refers to Hill (1912) and Vanderwilt (1947). The latter briefly describes the district as veins of copper and tungsten in Precambrian granite. The geologic map of the Canon City Quadrangle, however, shows no Precambrian rocks in the township noted. Harrer and Tesch (1959) describe a limonite-rich bed above the Arkansas River. Clay has been mined in the area historically. The Canon City District is described by Del Rio (1960) as "all the clay-bearing strata between Sixmile Creek on the East to Parkdale on the west." Del Rio cites the Purgatoire Formation and the Graneros Shale as sources of the clay.

#### References:

Del Rio, S.M., 1960, Mineral Resources of Colorado, First Sequel; State of Colorado Mineral Resources Board, Denver CO.

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Harrer, C.M. and Tesch, W.J., Jr., 1959, Reconnaissance of Iron Occurrences in Colorado; U.S. Bureau of Mines Information Circular 7918.

Hill, J.M., 1912, The Mining Districts of the Western United States; U.S. Geological Survey Bulletin 507.

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Canon City Deposit](#)

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.

**Fremont County**

**Cleora District**

See the Cleora District in Chaffee County.

# Fremont County

## Cotopaxi District

The Cotopaxi District surrounds the iconic Cotopaxi Mine, near the Arkansas River outside the small town of Cotopaxi. Lindgren (1908) visited the mine site and noted that the Cotopaxi, while inactive at his visit, had been "a considerable shipper of copper ore." Activity resumed off and on in the years since, the most recent documented being drilling and experimental copper leaching in the late 1960s (Blake, 1969).

Heinrich (1981) and Salotti (1965) detailed the geology and rock types present. They are listed as biotite gneiss, nodular sillimanite gneiss, amphibolite and lime-silicate rocks. The mineral assemblage is typical of Precambrian deposits that have been interpreted as metamorphosed seafloor assemblages of sediments and volcanics, including volcanic exhalative ores (Sheridan and Raymond, 1984) characterized by the zinc spinel *gahnite*. In the Fremont-Chaffee County area, other similar deposits are found in the Turret, Cleora, Grape Creek, Currant Creek and Guffey Districts and, most notably, at the Sedalia Mine.

The ores consist predominantly of sphalerite with subordinate chalcopyrite, although numerous ore minerals occur (see minerals list below) (Salotti, 1964).

Cotopaxi District  
Carson Mining Company Prospect  
Coaldale Gypsum Quarry and Plant  
Colorado Barry Quarry  
Colorado Feldspar Pegmatite  
Cotopaxi feldspar mine (Henry pegmatite)  
Cotopaxi Mine (Cotopaxi Lode; Gumaer Mine; Fannie Lode; Fannie Mill)  
Cotopaxi Prospect (Sand Gulch Prospect)  
Howard Prospect  
Indian Mountain  
Iron Dollar Gulch Deposit

Knob Hill Occurrence  
McCoy Prospects  
Mine Gulch  
Ogden Prospect  
Pine Ridge pegmatite  
Quarry (MRDS - 10239328)  
Quarry (MRDS - 10263665)  
Red Gulch  
Sand Gulch Prospect No. 2  
Schaaf Prospect  
Sturbaum - Fister Mine  
Texas Creek Stone Quarry  
Unknown Feldspar Occurrence (MRDS - 10017722)  
Unknown Marble - Dimension Occurrence (MRDS - 10018678)  
Unnamed No. 2 Pegmatite Occurrence (MRDS - 10010898)  
West McCoy Gulch Property  
Zabresky pegmatite

### Mineral list contains entries from the region specified including sub-localities (Mindat.org and MRDS)

Actinolite	Columbite	Kainosite-(Y)	Samarskite-(Y)
Albite	Copper	Kaolinite	'Scapolite'
var: Oligoclase	Cordierite	'K Feldspar'	Scheelite
'Albite-Anorthite Series'	Covellite	Leucoxene	Schorl
'Allanite'	Cuprite	Limonite	'Serpentine Group'
Allanite-(Ce)	Diopside	Linarite	Siderite
Almandine	Epidote	Magnetite	Sillimanite
Amesite	Euxenite-(Y)	Malachite	Silver
Anglesite	Fluorite	Marcasite	Sphalerite
Anorthite	Franklinite	Muscovite	Strengite

Calcite Chalcopyrite 'Chlorite Group' Chrysocolla Clinohumite Clinozoisite	Gypsum Hematite 'Hornblende' Ilmenite	Pyrite Pyrrhotite Quartz Rutile	Zircon var: Cyrtolite Zoisite var: Thulite
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References:

Blake, Norman R. (1969); A Summary of Mineral Industry Activities in Colorado, 1969; Colorado Bureau of Mines, Denver, CO.

Heinrich, E. W., 1981, Precambrian Tungsten and Copper-Zinc Skarn Deposits of South-Central Colorado; Colorado Geological Survey Resource Series 21.

Lindgren, Waldemar, 1908, Notes on Copper Deposits in Chaffee, Fremont and Jefferson Counties, Colorado; in U.S. Geological Survey Bulletin 340, pp. 157-175.

Mindat.org. accessed over a period of months, November 2012 - January 2013.

[Mineral Resources Data System \(MRDS\) - Online Spatial Data – Cotopaxi District](#)

Mineral Resources Data System. accessed over a period of months, November 2012 - January 2013.

Salotti, Charles A., 1965, Mineralogy and Paragenesis of the Cotopaxi, Colorado, Copper-Zinc Skarn Deposit; American Mineralogist, v. 50, pp. 1179-1212.

Sheridan, Douglas M. and Raymond, William H., 1984, Precambrian Deposits of Zinc-Copper-Lead Sulfides and Zinc Spinel (Gahnite) in Colorado; U.S. Geological Survey Bulletin 1550.

# Fremont County

## Currant Creek District

Dunn (2003) notes that the Currant Creek District is listed in the original references - Hill (1912) and Henderson (1926). Vanderwilt lists occurrence of zinc, copper, lead, gold and silver in Precambrian granite. No production was reported (Vanderwilt (1947), although the district is listed as a "past producer" on the Minerals Resource Data System, presumably from U.S. Bureau of Mines records.

The geology of the Currant Creek District is similar to that of other nearby districts that form a group extending northwest from the Wet Mountains into Park County. The districts include the Greenhorn and Grape Creek and the Black Mountain and Guffey Districts of Fremont and southern Park County. They occur in Precambrian gneisses and schists, with some younger intrusives.

Heinrich (1981) discussed many of the recorded claims through that area. He cites the Fremont County occurrences as tungsten-bearing skarns of the Guffey - Tallahassee Creek areas. He lists the Four Claim Group and Venture No. 1 Claim and also the Isabel Mine. The deposits are lenticular, tabular or podiform. Scheelite occurs in calc-silicate or cordierite-anthophyllite gneisses or amphibolites. Since then, these rocks have been interpreted as metamorphosed marine sequences that include mineralized volcanic exhalatives and associated shallow intrusives (e.g. Sheridan and Raymond, 1984).

The Venture and Four Claim Group are described by Heinrich as skarns with a complex mineralogy. Minerals identified by Heinrich include the following:

[quartz](#)      [grossular garnet](#)      [scheelite](#)      [diopside](#)      [epidote](#)      [tremolite](#)  
[calcite](#)      [apatite](#)      [sphene](#)      [chlorite](#)      [clinozoisite](#)      [zoisite](#)  
[thulite](#)

This Isabel is characterized as a copper-zinc skarn with the additional minerals sphalerite, galena, chalcopyrite, actinolite and gahnite, typical of other Precambrian deposits (such as those in the Cleora, Grape Creek, Pearl, Turret, Cotopaxi Districts, among others.) The Isabel was described as a significant producer of zinc in the early part of the 20th century (Lovering and Goddard, 1950).

## Mindat.org

- Currant Creek Area
  - [Charlene No. 1 Claim \(Charlene Nos 2\)](#)
  - [Dicks Creek](#)
  - [Four Claim Group](#)
  - Isabel Mine
  - [Venture No. 1 Claim](#)

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Currant Creek](#)

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Heinrich, E. W., 1981, Precambrian Tungsten and Copper-Zinc Skarn Deposits of South-Central Colorado; Colorado Geological Survey Resource Series 21.

Henderson, Charles W. 1926, Mining in Colorado: A History of Discovery, Development, and Production; U.S. Geological Survey Professional Paper 138.

Hill, J.M., 1912, The Mining Districts of the Western United States; U.S. Geological Survey Bulletin 507.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range, Colorado; U.S.G.S. Professional Paper 223.

## **Fremont County**

### **Dawson District**

The Dawson District lies in the lower reaches of Grape Creek, about five miles southwest of Canon City. The town of Dawson City sprung up in 1898 and lasted only several months. The discovery of a rich lode that became the Copper King Mine. That discovery precipitated a rush of claim-staking that culminated in a population of 500 people in tents and makeshift cabins in the area. It was soon recognized that the discovery was apparently minor and the rush died (Eberhart, 1959).

The Copper King contained copper, gold and silver in a stratabound deposit in metamorphic rocks. In the 1980s, considerable exploration efforts were expended in the Dawson District. The investigations defined stratiform gold-bearing zones with overlying massive sulfides. The interpretation is a metamorphosed polymetallic deposit originating as a submarine volcanic exhalative system (Sunshine Mining files, Colorado Geological Survey). The gold and sulfide zones have been traced over a strike length of several miles in a northeast-southwest direction, probably contiguous with similar zones in the Greenhorn and Grape Creek Districts to the southwest. Massive sulfide horizons are stretched and distorted, ranging in thickness from a few inches to twenty feet. Sulfides are dominantly pyrite with chalcopyrite, pyrrhotite, sphalerite and galena, occurring in a matrix of chlorite-biotite or, locally, quartz-anthophyllite.

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Dawson Gold Project](#)

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Dawson Mountain-Surprise Group](#)

Eberhart, Perry, 1959, Guide to the Colorado Ghost Towns and Mining Camps; Swallow Press, Athens OH.

Sunshine Mining Company files; archived at Colorado Geological Survey, Denver, CO.

## **Fremont County**

### **East Beaver District**

There is very little information about the East Beaver District. A mention appears in Henderson (1926) and that is referenced in Dunn (2003). Shared with Teller County.

#### References:

Dunn, Lisa, 2003, Colorado Mining Districts : A Reference; Colorado School of Mines, Golden CO.

Henderson, Charles W., 1926, Mining In Colorado: A History of Discovery, Development and Production; U.S. Geological Survey Professional Paper 138.

# Fremont County

## Eight Mile Park District

The Eight Mile Park District is a classic pegmatite district covering about ten square miles adjoining the Royal Gorge west of Canon City. Mining began as early as 1900 and continued sporadically through the 1960s (Martin, 1993; Colorado Bureau of Mines annual reports.) Precambrian rocks in the area are granites, schists and gneisses. These are intruded by dikes of pegmatite, aplite and basalt. The larger pegmatites occur north of the Arkansas River. They can be as large as 1000 feet long and 650 feet wide. South of the river, the bodies are much smaller.

The pegmatites were mined mostly for feldspar and quartz, but beryl, columbite-tantalite and some other commodities were produced. Activity as recent as the 1960s saw quartz, beryl and mica at the Devils Hole Mine, quartz at the Zingheim Mine and mica at the Mica Lode (Colorado Dept of Mines annual reports). Several of the mines are specifically discussed in Baillie (1962) and Sharpes (1962).

The Mica Lode was the largest producer of feldspar in Colorado and one of the largest producers of beryl and mica. Hanley, et al (1950) describe mica blades up to ten feet long at that mine. According to their investigation, the mine produced 169,000 tons of feldspar, 34,700 tons of scrap mica, 57 tons of beryl and 615 pounds of columbite-tantalite.

The Meyers Quarry, on the other hand, contains almost no beryl, but rather pods of cleavelandite and lepidolite. It is principally a microcline-muscovite pegmatite (Hanley, 1950). Hanley, et al, also described the School Section Pegmatite as containing quartz-microcline-muscovite-biotite-black tourmaline-apatite-beryl-garnet-thorite-triplite-bismutite. Additional entries for uncommon minerals are listed below from Mindat.org.

**Eight Mile Park pegmatite District** ( Meeves, et al, 1966)  
 Border Feldspar Prospect No. 1 and No. 2  
 Colfelco No. 12 Pegmatite Occurrence  
 Consolidated Feldspar Corporation Mine (Feldspar Corporation Mine)  
 Dell Prospect (C. B. Dell Prospect)  
 Devil's Hole  
 Eight Mile Park  
 Hoyt Adkins Ranch Anomaly 3 Occurrence  
 Lorain Pegmatite  
 Magnussen Crosscut  
 McMullin Lease No. 2 Occurrence

Meyers - McMullin Pegmatite Occurrence  
 Meyers quarry (Meyers Quarry; Meyers-Halstead Quarry; Suzana Claims; Suzanna Claims; Royal Gorge No. 2)  
 Mica Lode mine (Mica Hill Mine)  
 R. H. Magnuson Mine (Magnusson Crosscut)  
 Rim Pegmatite Occurrence (Rim Prospect)  
 School Section mine (Shipleigh Cut; Meyers Cut)  
 Suzanna Mine  
 Twin Mountain  
 Bumback Gulch  
 Van Buskirk mine  
 Zingheim Deposit

Mineral list contains entries from the region specified including sub-localities (Mindat.org)

Actinolite	Chalcocite	Magnetite	Schumacherite
Albite	'Chlorite Group'	Malachite	Silver
var: Cleavelandite	Chrysocolla	Meta-autunite	Spessartine
var: Oligoclase-Albite	Columbite	Microcline	Tantalite
'Albite-Anorthite Series'	Columbite-(Mn)	Microlite Group	Thorite
'Allanite'	Cordierite	Monazite-(Ce)	Torbernite
Almandine	Covellite	Montebrasite	'Tourmaline'
Amblygonite	Djurleite	Muscovite	'var: Rubellite'
Andradite	Elbaite	var: Sericite	'var: Watermelon Tourmaline'
'Apatite'	Fluorapatite	Namibite	Triplite
Autunite	Gahnite	Natromontebrasite	Upalite
Azurite	'Garnet'	Parsonsite	Uraninite
Beryl	Goethite	'Psilomelane'	Uranpyrochlore
Beyerite	Goyazite	Pyrolusite	
Biotite	Hematite	Quartz	
Bismutite	'Hornblende'	var: Rose Quartz	
Calcite	'K Feldspar'	Samarskite-(Y)	
Cerussite	Lepidolite	Schorl	

References:

Baillie, William N., 1962, Feldspar Occurrences in Colorado; Colorado School of Mines Mineral Industries Bulletin, Vol, 52, No. 4.

Hanley, J.B., Heinrich, E.W., and Page, L.R., 1950, Pegmatite Investigations in Colorado, Wyoming, and Utah; U.S. Geological Survey Professional Paper 227.

Martin, Clay M., 1993, Reconnaissance Investigations of Selected Columbium and Tantalum Occurrences in Colorado; U.S. Bureau of Mines Open File Report 17-93.

Meeves, Henry C., Harrer, Clarence M., Salsbury, Melford H., Konselman, Albert S., Shannon, Spencer S. Jr., 1966, Reconnaissance of Beryllium-Bearing Pegmatite Deposits in Six Western States: Arizona, Colorado, New Mexico, South Dakota, Utah, and Wyoming; U.S. Bureau of Mines Information Circular 8298.

Mindat.org; accessed 8 Nov 2012.

Sharps, Thomas I., 1962, Colorado Mica; Colorado School of Mines Mineral Industries Bulletin, Vol. 5 #1.

# Fremont County

## Grape Creek District

With geology very similar to the Dawson District to the northeast, the Grape Creek may be considered along with the Greenhorn District, as a continuous geologic terrain.

Mineralized layers of schist and gneiss have been subjected to numerous periods of deformation. The protolith of the rocks is probably a seafloor sequence of sediments, volcanics, volcanoclastics and exhalative deposits. Vanderwilt (1947) indicates that lead and zinc ore was produced at some point.

### Mineral list contains entries from the region specified including sub-localities (Mindat.org)

<a href="#">Actinolite</a>	<a href="#">'Clay'</a>	<a href="#">'Hornblende'</a>	<a href="#">Quartz</a>
<a href="#">'Albite-Anorthite Series'</a>	<a href="#">Cordierite</a>	<a href="#">Hydrozincite</a>	<a href="#">var: Amethyst</a>
<a href="#">Anthophyllite</a>	<a href="#">Covellite</a>	<a href="#">Ilmenite</a>	<a href="#">Rutile</a>
<a href="#">Baryte</a>	<a href="#">Cuprite</a>	<a href="#">Kaolinite</a>	<a href="#">Schorl</a>
<a href="#">Biotite</a>	<a href="#">Epidote</a>	<a href="#">'K Feldspar'</a>	<a href="#">Sillimanite</a>
<a href="#">Bismuthinite</a>	<a href="#">Gahnite</a>	<a href="#">Limonite</a>	<a href="#">Silver</a>
<a href="#">Bornite</a>	<a href="#">Galena</a>	<a href="#">Magnetite</a>	<a href="#">Sphalerite</a>
<a href="#">Calcite</a>	<a href="#">'Garnet'</a>	<a href="#">Malachite</a>	<a href="#">Thorite</a>
<a href="#">Carnotite</a>	<a href="#">Gold</a>	<a href="#">Molybdenite</a>	<a href="#">Uraninite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Hematite</a>	<a href="#">Pyrite</a>	
<a href="#">Chrysocolla</a>	<a href="#">Hercynite</a>	<a href="#">Pyrrhotite</a>	

### Mines from Mindat.org and the Minerals Resource Data System:

- East Pierce Gulch Area
- [Bear Claims Nos. 1 and 2 1977 \(Old Cunac Property; Wagner-Grape Creek Lode\)](#)
- [Grape Creek area](#)
- [Grape Creek District \(Greenhorn District\)](#)
- [Adamic Cow Camp Workings Occurrence \(Apollo Claim; Apollo No. 1 Claim 1977\)](#)
- [Columbine Mine](#)
- Copper Gulch Area
- [Copper Girl \(Copper Girl 1906; Patented Claims: Valley View\)](#)
- [Copper King Mine \(Copper King Claims Patented; Unpatented Claims: Sam 1-15 1977 Part; Dawson Mtn Workings\)](#)
- [Cunac Occurrence](#)
- [Deer Ridge Claim](#)
- [El Plomo Mine](#)
- [Good News No. 1 Property \(Goat Park; Good News Complex\)](#)
- [Good News No. 2 Claims \(Goat Park\)](#)
- [Grape Creek Area \(Wagner-Grape Creek Lode; See: Hellgate Claims; Bear Claims Old Conac Property\)](#)
- [Green Mountain Mine \(Copper Boy Mine\)](#)
- [Horse Shoe & El Ploma](#)
- [Horseshoe Mine \(School Section Deposit\)](#)
- [Joker Mine \(Rocky Mountain Boy Claims Patented Claims\)](#)
- [Tanner Boy Group \(Red Hills Group\)](#)
- Southern Grape Creek District
- [Hellgate Claims Nos. 1-12 \(Hellgate Gulch Open Pit\)](#)
- [Liberty Bond Claim](#)
- [South Fremont County Prospects](#)
- [Yorkville Area Prospects](#)

### References:

Mindat.org (accessed 12 December 2012)

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Grape Creek-Greenhorn District](#)

Vanderwilt, John W., 1947, *Mineral Resources of Colorado*, State of Colorado Mineral Resources Board, Denver, CO.



# Fremont County

## Guffey-Micanite District

The Guffey-Micanite Districts overlap in the area around Highway 9 in southern Park and northern Fremont Counties. In his discussion of Park County districts, Scarborough (2001) points out that the Guffey District (also known as the Freshwater District) contains lode deposits of nine different types. This diversity of mineralization, the nomenclature in this area and the overlapping of the historic Guffey and Micanite Districts along with the existence of several other district names (such as Fourmile in Scarborough), creates potential confusion. In this report, we attempt to simplify that. The Micanite District will be used to refer to pegmatite deposits. The Guffey will be used to refer to all the other deposits.

In the Guffey District, the deposit types that Scarborough lists are tungsten and copper-zinc skarns, vein deposits in Proterozoic crystalline rocks, stratiform deposits in metasedimentary sequences, stratabound uranium-vanadium deposits and volcanic-hosted pumice and manganese deposits.

According to Eberhart (1959), the town of Guffey has also been known as Freshwater and Idaville. It reached its peak in 1895, so it is assumed that was also the height of mining activity in the area.

The Isabel Mine is a copper-zinc skarn deposit with sphalerite, galena, chalcopyrite in a recrystallized amphibolite. The gangue includes quartz, actinolite, zoisite, garnet, and some gahnite and pyrite. This assemblage demonstrates its affinity for the metamorphosed Precambrian exhalites, as are found in the Sedalia and Cotopaxi mines and others. Described by Heinrich (1981), the Isabel could probably be considered in the Currant Creek or Grape Creek Districts. For this report, it is included in the Guffey.

The Micanite District gets its name from the old Micanite post office two miles south of the Park County line. The pegmatites have been reviewed by a number of authors. Sterrett (1923) pointed out that the pegmatites are intruded into Precambrian gneisses and schists. Characterized by pink orthoclase, white albite, the pegmatites carry large beryl and apatite crystals in some locations along with "50-pound blocks of mica." He describes a number of the deposits in detail.

Baillie (1962) describes a number of the mines, as does Sharps (1962). They determine that only small reserves of mica and feldspar remain. Heinrich and Bever (1957) also describe individual pegmatite bodies. They singled out the Baumer Pegmatite (in Park County) for its radioactive minerals euxenite, monazite and allanite, along with radio active ilmenite. (They determined that the ilmenite contains radioactive inclusions - probably euxenite and monazite.) Notable occurrences of sillimanite are listed at Meyers Ranch, the Betty Mine, Dicks Creek, the Whopper Pegmatite, with kyanite at the Dicks Creek location.

Mines of the Guffey-Micanite District, Fremont and Park Counties (Mindat.org)

### **Micanite District** - Fremont County:

- Lower South Mine
- Rosemont Mine
- Rowe's Number 2 Mine
- Rowe's North Mine
- Rowe's South Prospect
- Tickon Prospect
- Upper South Mine
- Whopper Mine and Prospect

### **Micanite District** - Park County:

- Beryllium Lode Prospect
- Caylor
- Colorado Feldspar Company Mine

East-West Pegmatite Occurrence  
 Famous Lode Mica Prospect (includes Little Joe From Kokomo)  
 Rose Dawn Mine/North Mine  
 Star Girl Mine  
 Climax Mine (Mine No. 8; Climax Mica Mine)  
 Lower South Mine (? Whisper Mine?)  
 Meyers Ranch  
 Rosemont Ridge (East Mine)  
 Rowe's No. 2 Mine  
 Rowe's North Mine  
 Rowe's Prospects

**Guffey District** - Fremont County:

Charlene Mine  
 Four  
 Venture No. 1  
 Isabel Mine

**Guffey District** - Park County:

Annie Laurie Mine  
 Badger Mountain  
 Bessie Mine  
 Betty Mine (Lone Chimney, Betty Lowe)  
 Black Diamond Mine  
 Carbonate King Mine  
 Charity Mine  
 Chumway Park occurrence  
 Copper King Mine (Copper Queen Mine)  
 Cover Mountain  
 Crescent Mine  
 Goermer Lease  
 West Occurrence  
 Hass 1-12 Prospects  
 Isabell Mine  
 Johnson Ranch Prospect  
 Lues gulch  
 Marble Grace Mine  
 Margaritte Mine  
 Mill Gulch Mine  
 Nash Ranch Prospect  
 School Section Prospect (B&G Claim)  
 Skinney Claim (Lues Gulch Prospect)  
 Townsend Ranch Prospect  
 West Ranch Deposit (West Deposit)  
 Wilcher Mountain  
 Willow Claims (Bell Property)

**Mineral list contains entries from the region specified including sub-localities**

<a href="#">Albite</a>	<a href="#">Covellite</a>	<a href="#">'Pinite'</a>
<a href="#">'Albite-Anorthite Series'</a>	<a href="#">Euxenite-(Y)</a>	<a href="#">Pyrite</a>
<a href="#">'Amphibole Group'</a>	<a href="#">Fluorapatite</a>	<a href="#">Quartz</a>
<a href="#">'Apatite'</a>	<a href="#">'Garnet'</a>	<a href="#">Sillimanite</a>
<a href="#">Beryl</a>	<a href="#">Hematite</a>	<a href="#">Sphalerite</a>
<a href="#">Biotite</a>	<a href="#">'Hornblende'</a>	<a href="#">Spinel</a>
<a href="#">Bismutite</a>	<a href="#">Magnetite</a>	<a href="#">Tourmaline</a>

<a href="#">Bornite</a>	<a href="#">Malachite</a>	<a href="#">Triplite</a>
<a href="#">Calcite</a>	<a href="#">Microcline</a>	<a href="#">Vesuvianite</a>
<a href="#">'Chlorite Group'</a>	<a href="#">'Monazite'</a>	<a href="#">Zircon</a>
<a href="#">Cordierite</a>	<a href="#">Muscovite</a>	<a href="#">Zoisite</a>

References:

Baillie, William N., 1962, Feldspar Occurrences in Colorado; Colorado School of Mines Mineral Industries Bulletin, Vol, 52, No. 4.

Martin, Clay M., 1993, Reconnaissance Investigations of Selected Columbium and Tantalum Occurrences in Colorado; U.S. Bureau of Mines Open File Report 17-93.

Hanley, J.B., Heinrich, E.W., and Page, L.R., 1950, Pegmatite investigations in Colorado, Wyoming, and Utah, 1942-1944: U.S. Geological Survey Professional Paper 227.

Heinrich, E. William and Bever, James E., 1957, Selected Studies of Colorado Pegmatites and Sillimanite Deposits; Colorado School of Mines Quarterly, V. 52, No. 4.

Heinrich, E. W., 1981, Precambrian Tungsten and Copper-Zinc Skarn Deposits of South-Central Colorado; Colorado Geological Survey Resource Series 21.

Scarborough, L. Alex, 2001, Geology and Mineral Resources of Park County, Colorado; Colorado Geological Survey Resource Series 40.

Sharps, Thomas I., 1962, Colorado Mica; Colorado School of Mines Mineral Industries Bulletin, Vol. 5 #1.

Sterret, Douglas B., 1923, Mica Deposits of the United States; U.S. Geological Survey Bulletin 740.

## **Fremont County**

### **Hillside District**

Very little data. Considered part of Gem/Gem Park District. Listed in Dunn (2003) and Vanderwilt (1947) as shipping gold ore in 1947.

#### References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Gem Park District](#)

Vanderwilt, J.W., 1947, Mineral resources of Colorado. Denver CO: Colorado Mineral Resources Board.

# Fremont County

## Howard District

The Howard District is listed both under the Cotopaxi District and as Howard in Mindat.org. On the Mineral Resources Data System, the Howard prospect is listed as a pegmatite, with potential mica and feldspar resources. Other sites attributed to the Howard District list the minerals below, characteristic of metamorphosed sedimentary - volcanic sequences, such as occur at the Cotopaxi Mine.

The District is listed in Dunn (2003) and referenced in Henderson (1926).

Mindat.org - minerals

Mitchell Gulch, east of Howard - in schist

Albite-Anorthite	Clinozoisite	Muscovite	'Tourmaline'
Andalusite	Dickite	Quartz	
Anthophyllite	Fluorite	Topaz	

Howard Cemetery

Actinolite	Epidote	'Scapolite'
Diopside	'Garnet'	

Howard Prospect ("Cotopaxi District") - ref Hanley pegmatite paper

Biotite	Microcline	Quartz
Magnetite	Muscovite	

References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Henderson, Charles W., 1926, Mining in Colorado; US Geological Survey Professional Paper 138.

Mindat.org. accessed over a period of months, November 2012 - January 2013.

Mineral Resources Data System. accessed over a period of months, November 2012 - January 2013.

## Fremont County

### Red Gulch District

The Red Gulch District is an occurrence of sediment-hosted copper approximately 8 to 9 miles north of the town of Cotopaxi. The area was described by Lindgren in 1908. The details below are all from Lindgren's report.

Exploration in the district began in 1907 and "several cars of ore" were shipped, most from the Copper Prince Mine. The copper occurs in sedimentary red bed deposits, in the sequence of Minturn Formation, Belden Formation, Harding Sandstone and Manitou Limestone (MRDS). The primary ore minerals are chalcocite, malachite and azurite. Ore follows a thin (4-foot) black shale and commonly occurs with thin layers of coal.

The Minerals Resource Data System reports silver and vanadium along with the copper.

[Acme Property](#)  
[Colorado Copper Company Mine](#)  
[Copper Prince Mine](#)

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[Red Gulch District](#)  
[Dirty Gulch Mine \(Copper Prince Mine?\)](#)  
[Indian Springs Gulch Prospect](#)  
[Queen Princess Property](#)  
[Red Gulch Mine](#)  
[Unknown Quartz \(MRDS - 10264153\)](#)

#### Mineral list contains entries from the region specified including sub-localities

<a href="#">Azurite</a> <a href="#">Baryte</a>	<a href="#">Chalcocite</a> <a href="#">'Coal</a> <a href="#">var: Lignite'</a>	<a href="#">Hematite</a> <a href="#">Malachite</a>	<a href="#">Silver</a>
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#### References:

Lindgren, Waldemar, 1908, Notes on Copper Deposits in Chaffee, Fremont and Jefferson Counties, Colorado; in U.S. Geological Survey Bulletin 340, pp. 157-175.

Mindat.org. accessed November 2012 - January 2013.

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Red Gulch District](#)

Mineral Resources Data System. accessed over a period of months, November 2012 - January 2013.

# Fremont County

## Whitehorn District

The Whitehorn District lies in northwest Fremont County, adjacent to the Calumet Iron Mine in Chaffee County. There is very little information published concerning the district. Eberhart (1959) reports that the camp of Whitehorn was established in 1897 where a railroad worker found gold while cutting timber. By 1900, a town was thriving. The mines survived into the 20th century, but the Whitehorn Post office closed in 1918. Eberhart also lists the Cameron, Golden Eagle and Independence as mines in the district that supported much of the population, but no other sources were found to corroborate that. Eberhart also indicates that a railroad served the town of Calumet nearby across the county line.

Boardman (1976) points out the presence of gold and copper in the area and Vanderwilt (1947) describes the district as characterized by small deposits of gold and silver. The Mineral Resources Data System (<http://tin.er.usgs.gov/mrds/find-mrds.php>) lists gypsum as a resource in the district.

Discussion with personnel from the Colorado Division of Reclamation, Mining and Safety Abandoned Mines program reveal that the mines there are mostly shafts to exploit quartz veins, much like the Free Gold District in Chaffee County.

(Mindat.org)

[Whitehorn District - Mines \(Mindat.org\)](#)

[Bona & Free Town Lode](#)

[Marrs Memorial Blue](#)

[Cameron \(Eberhart, 1959\)](#)

[GoldenEagle \(Eberhart, 1959\)](#)

[Independence \(Eberhart, 1959\)](#)

○

[Minerals \(Mindat.org\)](#)

[Chalcopyrite](#)

[Gold](#)

[Gypsum](#)

[Quartz](#)

[Silver](#)

[Tellurobismuthite](#)

References:

Boardman, S.J. 1976, Geology and Precambrian Metamorphic Rocks of the Salida Area, Chaffee County, Colorado; The Mountain Geologist, v. 13, no. 3, pp. 89-100.

Eberhart, Perry, 1959, Guide to the Colorado Ghost Towns and Mining Camps; Swallow Press, Athens OH.

[www.mindat.org](http://www.mindat.org)

Minerals Resource Data System (<http://tin.er.usgs.gov/mrds/find-mrds.php>)



## Gilpin County

### Apex District

Vanderwilt (1947) consolidated the Apex District into the **Pine-Kingston-Apex District**. The Apex District is located within the **Northern Gilpin District**, which is a large area composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, the district also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the **Rollinsville Placers**. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. Dunn (2003) describes the Apex District as being located in the area of T2S R73W. Eberhart (1969) described the town of Apex (also known as Pine Creek) as being in the center of the **Pine Creek District**. Gold and silver production with some copper, lead and zinc is reported, with production up to 1945.

The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that where unweathered is rather low grade, but has been enhanced by oxidation. The most remarkable ore deposit in the district is in the Evergreen Mine near Apex, which was worked chiefly for copper (Vanderwilt, 1947). Chalcopyrite and bornite were the copper ore minerals and were found in and adjacent to monzonite porphyry dikes. The shipped ore averaged about 3% copper (Vanderwilt, Ibid).

The Apex Stock is the location of the Nye (or Nye-Mathews) molybdenum prospect. Additional references include Lovering and Goddard (1950) and Bastin and Hill (1917). Bastin and Hill have detailed write-ups of several of the mines and tunnels in this district (noted in the list of mines below).

Mines listed in the district (mindat.org; Dunn, 2003) include:

- [Alice](#)
- [Apex](#)<sup>1</sup>
- [Aurelia](#)
- [Belfast & Shamrock \(Belfast\)](#)

- Bennett
- Black Hills Vein Occurrence
- Blaternick; Hill & Gold Tunnel Occurrence
- Buckeye; Golden Sun; Fairhaven; Mellet; Lone Star; Moon Gulch; Pionee Occurrence
- Caledonia Lode
- Chahuahua
- Charcoal Charlie Vein Occurrence
- Columbia
- Early Bird Occurrence
- Elliot Mine (Wealthy Lode Claim)
- Evergreen Mine (Gold Standard; Nancy Lee)<sup>2</sup>
- Fish
- Geiger Vein Occurrence
- Gold Chief Mine
- Gold Reserve<sup>2</sup>; Montana Hill<sup>2</sup>
- Golden Flint
- Grant No. 10; 11; 12
- Haywood
- Huberknocker<sup>1</sup>
- Ingram<sup>2</sup>
- Jess Lode
- Little Johnny; Little Mary
- Little Melvin Lode
- Lode Star Occurrence
- Mackey<sup>2, 3</sup>; Annie<sup>2</sup>; Fish<sup>2</sup>
- Melett
- Melrose Tunnel Occurrence
- Melvin Tungsten Mine
- Michigan Hill
  - Big Bertha
- Mountain Chief
- Nye - Mathews (Wilma Mine)
- Old Kentucky
- Pettibone
- Plateau<sup>2</sup>; Bullion
- Quincy Bart Altantic
- Reliance Lode
- Rooks County Occurrence
- Schultz Wonder Mine<sup>1,2</sup>
- Snowden; Golden Rod Occurrence
- Stewart
- Tacoma Tunnel
- Velvet Valley Occurrence
- Yellow Medicine Mine<sup>1</sup>

Notes: <sup>1</sup> Listed in Dunn (2003).

<sup>2</sup> Mines discussed in Bastin and Hill (1917).

<sup>3</sup> Discussed in Eberhart (1969).

Minerals listed in the district (mindat.org) include:

Almandine	Enargite	Pyrite
Andradite	Ferrimolybdite	Quartz
Augite	Galena	Silver
'Biotite'	Gold	Sphalerite
Bornite	Hematite	Tetrahedrite
Calcite	var: Specularite	Titanite
Chalcocite	'K Feldspar	Uraninite
Chalcopyrite	var: Adularia'	var: Pitchblende
Chrysocolla	Magnetite	Wollastonite
Copper	Malachite	Zircon
Covellite	Molybdenite	

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio, p. 63-64.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Bay State District**

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The basic geology includes interlayered Precambrian gneisses and schists, intruded by Precambrian granites of the Boulder Creek and Silver Plume family, with later Tertiary intrusions associated with mineralization.

Minor lode gold producers include the **Bay State District** (consisting mainly of the Bay State Tunnel in the far southeast corner of Gilpin County), and the **Hawkeye** and **Wisconsin Districts** contiguous with the North Gilpin District. The geology of these districts is the same as those adjacent.

Records exist of the organization of the Bay State District on July 19, 1859 (Marshall, 1920), with the district delineated as occupying the area from the mouth of the North Fork of Clear Creek to the mouth of Russell Gulch, including the creek's tributaries. The district appears in Henderson (1926), but little information is available.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) *The University of Colorado Historical Collections Volume II*, Boulder, Colorado.

# Gilpin County

## Central City and Idaho Springs Districts

The Central City and Idaho Springs Districts are geologically the northern end of a continuous belt of mineralization extending from the Rollinsville Placers to Idaho Springs on the south. It is commonly considered to contain the following smaller districts: **Bay State, Central City, Enterprise, Eureka, Gregory, Nevada, Pleasant Valley, Quartz Hill, and Russell Gulch.**

After the early discovery of gold in Clear Creek County, placer districts were developed in the Central City District in Nevada and Illinois Gulches. Lode deposits were shortly discovered but lasted only as long as the oxidized ore. Sulfide ores made accessible by the construction of the Blackhawk smelter in 1868, which treated unoxidized ores from all the nearby districts. Koschmann and Bergendahl quote a number of 4,200,000 ounces produced through 1959 in the district, including 30,000 ounces from placer deposits.

The geology was described by Moench, et al (1962) and Lovering and Goddard (1950). Precambrian gneisses and schists of the Idaho Springs Formation are injected with granodiorite also of Precambrian age. Later Tertiary porphyry intrusions of a range of compositions appear to have introduced the mineralization. Sims (1956) recognized four types of veins - pyrite-quartz; quartz-pyrite-chalcopyrite, tennantite (with some galena and sphalerite); pyritic lead-zinc veins of quartz, pyrite, galena, sphalerite with minor chalcopyrite and tennantite; and lead-zinc veins of quartz, galena, sphalerite, carbonate, and minor chalcopyrite, tennantite, and pyrite. Gold is present both in sulfides and as small native particles.

### Mines Reported ([www.mindat.org](http://www.mindat.org))

- Air Line
- Eagle
- Gold Crown Shaft
- Great Britain
- H. B. Shaft
- Ida May Occurrence (Seven Forty; Barney; Polar Star; Almaden; Standard; Lida; ; Fall River; Thomas; Golconda)
- Idaho Tunnel
- Bride Vein
- Ingham
- Lower Almaden Mine
- Blazing Star Tunnel
- Lyons
- Magdalena
- Mahany
- Standard
- Sub Treasury
- University
- Venice
- Western Occurrence (Bald Mtn.; University; H. B.; Venice; Millionaire; Jumbo; Eagle; Magdalena; Gold Crown)
- Yellow Jacket

### Minerals Reported ([www.mindat.org](http://www.mindat.org))

Acanthite  
Chalcopyrite  
Freibergite  
Galena  
Gold  
Nickeline  
Pearceite  
Proustite  
Pyrite

Quartz  
Silver  
Sphalerite  
Tennantite  
Uraninite

References:

Koschmann, A.H. and Bergendahl, M.H., 1968, Principal Gold-Producing Districts of the United States; U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range, Colorado; U.S.G.S. Professional Paper 223.

Moench, R.H., Harrison, J.E., and Sims, P.K., 1962; Precambrian Folding in the Idaho Springs-Central City Area, Front Range, Colorado; Geological Society of American Bulletin, vol. 73, pp. 35-58.

## Gilpin County

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Mines listed in the district (mindat.org) include:

Minerals listed in the district (mindat.org) include:

- [Ada Group of Mines](#)
- [Amazon](#)
- [American Flag Mine](#)
- [American Girl](#)
- [Anchor Occurrence](#)
- [Ashtabula](#)
- [Aurora](#)
- [Ayres Shaft](#)
- [Bangur Shaft](#)
- [Banta Hill Mine](#)
- [Barnes](#)
- [Beecher](#)
- [Bellman \(White Metal Group\)](#)
- [Belmont](#)
- [Bezant](#)
- [Big Six](#)
- [Blackhawk Placer \(Black Hawk Lode No. 2 Claim\)](#)
- [Bonanza](#)
- [Boodle Mine](#)
- [Boss Mine](#)
- [Bow Ton](#)
- [Briggs Mine](#)
- [Brookfield](#)
- [Brooklyn](#)
- [Buckley mine](#)
- [Bullion](#)
- [Burlington - Iowa Group](#)
- [Burroughs](#)
- [Calhoun - Wood \(Jefferson\)](#)
  - [West Calhoun Mine](#)
- [California \(Gardener; Hidden Treasure\)](#)

- Camp Grove
- Carr Mine
- Carrol Mine
- Casto
- Center Tunnel
- Chase
- Chemung - Belmont
- Cherub Lode
- Chihuahua Tungsten Mine
- Cincinnati mine
- Claire Marie Mine
- Clay County Mine
- Clifton Lode
- Climax
- Clinkenbeard
- Coeur D'Alene
- Coeur d'Alene Mine
- Colfax Mine
- Congress Lode
- Cook
- Corydon
- Couch
- Crawford Shaft
- Cuckoo Shaft
- Curtis Lode
- Cyclops Mine
- Delmonico - Alps
- Denango County
- Diamond Joe
- Diamond Lil Tunnel (Vanderbilt)
- Dolores Occurrence
- Downie
- Druid Mine (Druid Mine)
- Dyke
- E & H Jelly Roll Mine
- East Calhoun Mine
- East Pewabic
- East Williams
- Edith; Mollie; Claudia Lodes
- Egyptian
- Eldorado
- English America Lode
- Essex
- F F F Mine
- Fannie Mine
- Federal
- Fisk
- Forfar Mine
- Forks Mine
- Fourmile Gulch; Baltimore Occurrence
- Francis
- Freedom
- Freiburg Mine
- Frontenac Mine
- Gallup
- Gasten Mine
- Gem Vein
  - Argo lateral
- Gladstone
- Gold Bug
- Gold Cup
- Gold Medal
- Golden Opportunity
- Gray Eagle Claim
- Grinnell Mine
- Hard Money mine
- Harker Shaft
- Hazeline
- Hidee Mine
- Hill; Bunkhouse Occurrence
- Hillhouse (Columbus)
- Hope
- Hubert (Prize)
- Huckleberry
- Hunter
- Illinois
- Illinois Gulch Area Occurrence
- Incidental
- Indiana
- J. P. Whitney Mine
- Jasper Cut Area
- Jones Mine
- Justice
- Kansas
- Kent County and Rolls County
- Keystone
- King Mine
- Kokomo Mine

- La Cross
- Leavitt Mine
- Linda No. 1 & No. 2
- Little Annie
- Little Eola
- Little Rebel
- Lost Lode
- Lotus
- Macky Burroughs Shaft
- Main
- Mammoth Mine
- Mary Miller
- Mattie May
- McAllister
- McKay Mine
- Meeker
- Minnesota
- Missori
- Moose Mine
- Moscow; Essling
- Mountain House
  - Atlantic - No. 691
- Narragansett Mine
- Nation
- Nemeha - Cotton
- Nevada Gulch Placer
- Newhouse
- Newkirk
- Ninety-One
- OK Mine
- Old Town Shaft
- Ontario
- Ophir Mine
- Orandake
- Otte
- Patch Mine (Glory Hole Mine)
- Paxter
- Pease
- Perseverance
- Pewabic Occurrence
- Phoenix
- Pittsburgh (Notaway East; Notaway Shaft; Notaway West)
- Pleasant View Mine
- Pocahontas (Rotechield; Gold Rock; Springdale; Denbeigh vein)
- Polk county mine
- Powets mine
- Powhatan tunnel
- Pozo
- Pricilla Group Claim (Pricilla; Dorothy & Sunshine; Pricillia; Dorothy & Sunshine)
- Prize Mine
- Prompt Pay Mine
- Pyrenees mine
- Quartz Hill
  - East Flack Mine
  - Flack Mine
  - German and Belcher
  - Kirk Mine
  - Mercer County Mine
  - West Flack Mine
  - Willis Gulch
    - Powers Mine
    - Wood Mine (E. Calhoun)
- Quartz Hill Tunnel
- Queen (Spread Eagle)
- Queen Bee Mine
- R. H. D. Mine (St. Anthony mine)
- R. P. Ranney
- Rara Avis
- Reider Mine
- Rhoderick
- Richardson
- Rickards Mine
- Rio Dolores Mine
- Robert Emmett
- Root Ranch
- Royal Keith Lode
- Russell
- San Juan
- Sans Souci
- Santa Fe
- Sap Mine
- Saratoga Mine
- Scandia
- Seaton

- Shafer
- Silver Age
- Sixteen-To-One
- Specie Payment
- Strayer Corner Occurrence
- Summit Occurrence
- Taylor-Leavenworth Mine
- Telegraph Mine
- Topeka Mine
- Toronto Mine
- Treasure Key Tunnel Williams Vein Occurrence
- Tucker No. 1
- Two Forty Group
- Ute Gold Properties
- Virginia Canyon
  - Crystal Mine
- Wain Mine
- War Dance
- Waterloo Mine
- Wautauga Shaft
- Whiting
- Wolverine
- Wyandotte

Minerals listed in the district (mindat.org) include:

Acanthite	Dumontite	Molybdenite
Allophane	Enargite	Molybdite
Almandine	Epsomite	'Monazite'
Aluminocopiapite	'Feldspar Group'	Montmorillonite
Anglesite	Fluorite	Muscovite
'Apatite'	Franklinite	var: Illite
Arsenopyrite	Gahnite	var: Sericite
Aurichalcite	Galena	<i>Natrozippeite ?</i>
Autunite	Gold	Pearceite
Azurite	Goslarite	Petzite
Baryte	Greenockite	Polybasite
'Biotite'	Gypsum	Proustite
Bismuth	Hawleyite	Pyrrargyrite
Bismuthinite	Hematite	Pyrite
Bornite	Hercynite	Pyrrhotite
Calcite	'Högbomite'	Quartz
Cerussite	'Hornblende'	var: Chalcedony
Chalcanthite	Jarosite	var: Rose Quartz
Chalcocite	Johannite	Rhodochrosite
Chalcopyrite	Kaolinite	'Ruby Silver Ore'
Chalcostibite	Kasolite	Siderite
'Chert'	'Limonite'	Sillimanite
Chlorargyrite	Magnetite	Silver
Copiapite	Malachite	Smithsonite
Copper	Marcasite	Sphalerite
'Copper Stain'	Melanterite	Sulphur
Coquimbite	Meta-autunite	Svanbergite
Cordierite	Metatorbernite	Sylvanite
Covellite	Minium	Tennantite

'Tennantite-Tetrahedrite  
Series'  
Tenorite  
Tetrahedrite  
Torbernite

Uraninite var: Pitchblende  
'Wad'  
Willemite  
'Wolframite'  
Xenotime-(Y)

'Zincobotryogen'  
Zippeite  
Zircon

#### References:

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and Ore Deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Moench, R.H., Harrison, J.E., and Sims, P.K. 1962. Precambrian Folding in the Idaho Springs-Central City Area, Front Range, Colorado. Geological Society of American Bulletin, Vol. 73, pp. 35-58.

Sims, P.K. 1956. Paragenesis and structure of pitchblende-bearing veins, Central City district, Gilpin County, Colorado. U.S. Geological Survey Trace Elements Investigations 433.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## **Gilpin County**

### **Enterprise District**

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

Most of the historic mining areas in this small county are considered either part of the **Central City** or **North Gilpin Districts** by various reporters. The **Enterprise District**, lying east of the town of Blackhawk, is within the larger Central City District. It is separate from the Enterprise District in Boulder County listed by Henderson (1926). Claims for this district were being recorded by 1860 (Dunn, 2003).

Mines listed in the district (Dunn, 2003) include:

- Michigan Central
- Wilson
- Swift
- Greenhorn

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

## **Gilpin County**

### **Fairfield District**

The Fairfield District is listed by Henderson (1926). It is described by Dunn (2003) as including the mouth of Missouri Gulch and the area around the North Fork of Clear Creek. The District was officially formed on May 28, 1860 and included, by a metes and bounds description, an area commencing at the Discovery claim and then running west, or up the reek one mile, and from the Discovery claim down the creek to the west line of **Enterprise District** or to the mouth of the Missouri Gulch, and to the summit of the mountains north and south (Marshall, 1920). Production included zinc, copper, lead, and gold (mindat.org).

Located in the Fairfield District were the Agra Mine (mindat.org) and a large placer operation in 1860 by the Boston Hydraulic Mining Corporation (Dunn, 2003).

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Gamble Gulch District** (included in **Independent District**)

The Gamble Gulch District is located within the **North Gilpin District**, which described in Bastin and Hill (1917), and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, along with areas that have been called the **Illinois**, Gamble Gulch, **Union** (or **Gold Dirt**), **South Boulder** and the **Rollinsville Placers**. The **Wisconsin**, **Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first gold discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade, but has been enhanced by oxidation.

In the South Boulder Creek drainage, placer mining was carried out in Lump, Moon and Gamble Gulches. The latter was significant enough to warrant recognition as the **Gamble Gulch District**. Also at the north end of Gilpin County, the **Pactolus** and **Rollinsville Placers** are underlain by outwash gravels and according to Parker (1974), the most productive gravels were rather fine and lying on Precambrian bedrock. The principal placer area in Gamble Gulch was about 1.5 miles long and 500 feet wide at the widest point. The Rollinsville Placer was slightly larger (Parker, Ibid). Placer activity occurred in nearly all the gulches within the existing districts of Gilpin County. Additional references include: Eberhart (1969) and Henderson (1926).

This district contained the small settlement of Gilpin.

Mines listed in the district (Dunn, 2003) include:

- Colorado Tunnel
- Happy Hollow
- Gold Basin

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

## **Gilpin County**

### **Gold Dirt District** (aka **Union District**), part of **Independent District**

The Gold Dirt District is located within the **North Gilpin District**, described in Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, along with areas that have been called the **Illinois**, **Gamble Gulch**, Union (or Gold Dirt), **South Boulder** and the **Rollinsville Placers**. The **Wisconsin**, **Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics. Henderson (1926) lists a Gold Dirt District in Clear Creek County, but he listed the Union District in Gilpin County.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The settlement of Gold Dirt was established in the winter of 1860-1861 by John Q. Rollins. Rollins erected a stamp mill for the local production and bought out most of the miners. The town was a mile down the gulch from the town of Perigo and actually produced more gold although the town was not as successful (Eberhart, 1969).

Bastin and Hill (1917) describe the Gold Dirt Mine as one of the first mines discovered in the area in 1860. The mine supported six mills at one point in its early years.

Mines listed in the district Bastin and Hill (1917) include:

- Gold Dirt Mine

#### References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Parker, Ben H. Jr, 1974, Gold Placers of Colorado; Colorado School of Mines Quarterly 69 (3).

## **Gilpin County**

### **Gregory District (aka Lake District; aka Lake Gulch District; aka Gregory Diggings District)**

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40 to 100 feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The Gregory District is located within the **Central City District**, which is contiguous with, and so the same as, the **Idaho Springs District** in Clear Creek County. The basic geology includes interlayered Precambrian gneisses and schists, intruded by Precambrian granites of the Boulder Creek and Silver Plume family, with later Tertiary intrusions associated with mineralization.

John Gregory is credited with the first discovery in the area with the Gregory lode in Gregory Gulch between Blackhawk and Central city. Formation of the district involved the first mass meeting in Colorado according to Marshall (1920) when workers at the "Gregory Diggings" met on June 8, 1859. Among the speakers at that meeting was Hon. Horace Greeley. There were 2000 to 3000 miners present. As the meeting progressed, the participants outlined the district to include much of southeastern Gilpin County. The town of Mountain City was established near the site of the original Gregory discovery (Eberhart, 1969).

According to Dunn (2003), the definition of the Gregory District has evolved through time. At one time, it included what is now the entire Central City District. The district was shortly thereafter divided into smaller districts. The gold placer activity was mostly completed by 1863 although some activity continued after that (Parker, 1974).

The district produced gold and silver, with lesser copper, lead and zinc until 1945. Additional references include Bastin and Hill (1917) and Vanderwilt (1947).

Mines listed in the district (mindat.org; Sims et al., 1963) include:

- [Atlantic & Brighton](#)
- [Bachus Group](#)
- [Bedford County](#)
- Buell<sup>1</sup>
- O'Neil<sup>1</sup>
- Rialto<sup>1</sup>

Note: <sup>1</sup> Indicates detailed description in Sims et al. (1963).

Mindat.org lists the Buell Mine in the Eureka district, an illustration of the confusion brought about the complexity of small interconnected and overlapping districts in the oldest mining areas.

Minerals listed in the district (Sims et al., 1963) include:

Gold	Chalcopyrite	Sphalerite
Fluorite	Galena	
Pyrite	Silver	

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

Sims, P.K., Drake, A.A. Jr, and Tooker, E.W. 1963. Economic Geology of the Central City District, Gilpin County, Colorado; U.S. Geological Survey Professional Paper 359.

Vanderwilt, J.W. ed. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## Gilpin County

### Hawkeye District

The Hawkeye District is within the area defined as the **North Gilpin District**, which is a large area (approximately 35 square miles) described in Bastin and Hill (1917) and Lovering and Goddard (1950) as stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex, Hawkeye** and **Perigo**, along with areas that have been called the **Illinois, Gamble Gulch, Union (or Gold Dirt), South Boulder** and the **Rollinsville Placers**. The **Wisconsin, Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

A district called the Hawk Eye District was formed on July 31, 1860, which by the metes and bounds description places it south of the **Central District** (Marshall, 1920). The map in Marshall (1920) shows it bounded on the north by both the **Independent District** and the Central District, on the east by the **Mountain House District**, on the southwest by the **Fairfield District** and on the west by the **Silver Lake District**.

The Hawkeye District is listed in Henderson (1926), but is not found in mindat.org. An additional reference is Eberhart (1969).

#### References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Illinois District (aka Illinois Central District)**

The Illinois District overlaps the **Independent** and **Nevada Districts**. Marshall (1920) lists the Illinois Central District being created on June 30, 1860 and shows it on a map in the area south of the **Central City District**, east of the Nevada District and north of the **Russell District**. Henderson (1926) lists the Illinois Central District (aka Illinois District) in Gilpin County. Generally a number of smaller districts in the southern part of Gilpin County are considered as part of the larger **Central City District**, including the Illinois or Illinois Central District.

Mines listed in the district (Dunn, 2003) include:

- Illinois<sup>1,2</sup>
- Illinois Gulch<sup>2</sup>
- Egyptian<sup>1,2</sup>
- Pikes Peak

Notes: <sup>1</sup> Indicates that a detailed description of the mine is contained in both Bastin and Hill (1917) and Simms et al., 1963.

<sup>2</sup> Indicates mindat.org lists the mine as part of the Central City District.

Minerals listed in the district (mindat.org) include:

[Arsenopyrite](#)  
[Chalcopyrite](#)  
[Feldspar Group'](#)  
[Pyrite](#)  
[Quartz](#)  
[Sphalerite](#)

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) *The University of Colorado Historical Collections Volume II*, Boulder, Colorado.

Sims, P.K., Drake, A.A. Jr, and Tooker, E.W. 1963. *Economic Geology of the Central City District, Gilpin County, Colorado*; U.S. Geological Survey Professional Paper 359.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Kansas District**

The Kansas District was listed and located in Henderson (1926) and Dunn (2003). Marshall (1920) shows it on a map in the northwest corner of Gilpin County. Very little information is available on the District and its mines.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

## Gilpin County

### Kingston District

Vanderwilt (1947) consolidated the Kingston District into the **Pine-Kingston-Apex District**. The Kingston District is located within the **Northern Gilpin District**, which is a large area composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of Pine-Kingston-Apex and **Perigo**, the district also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the **Rollinsville Placers**. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville.

The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that where unweathered is rather low grade, but has been enhanced by oxidation.

Mines listed in the Kingston District (mindat.org) include:

- [Andrew Lode](#)
- [J. W. Prospect](#)
- [Jack Rabbit \(Dorothy\)](#)
- [London](#)
- [Margret Olive](#)

Minerals listed in the district are the same as the Apex District. Additional references include: Dunn (2003) and Lovering and Goddard (1950).

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Lake District**

Marshall (1920) shows that the Lake District was created on March 1, 1861 by uniting the Lake Gulch District with the Quincy District. A map provided in Marshall (1920) shows the district as being located just south of **Gregory District**. Refer to the Gregory District for a more detailed discussion.

#### Reference:

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) *The University of Colorado Historical Collections Volume II*, Boulder, Colorado.

## **Gilpin County**

### **Mountain House District**

Gilpin is the second smallest county in Colorado but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The Mountain House District is listed in Henderson (1926) and Dunn (2003). It is shown on a map in Marshall (1920) as being a large district in the northeast corner of the County. Not much is known about the District. Commodities included: zinc, silver, gold, cadmium, copper, and lead.

Mines listed in the district (mindat.org) include:

- Atlantic - No. 691 (silver)
- Babe of the Woods
- Dory Hill (pegmatite with niobium, mica, quartz, feldspar, and iron)

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Marshall, Thomas H. (ed.). 1920. Early Records of Gilpin County, Colorado, 1859 - 1861. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## Gilpin County

### Nevada District

Gilpin is the second smallest county in Colorado but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909. Vanderwilt (1947) notes that lode veins are much more numerous and persistent in this southern area than in the northern Gilpin districts. An additional reference is Parker (1974).

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade, but has been enhanced by oxidation.

The Nevada District is now located within the larger **Central City District**. The Central City District is contiguous with, and so the same as, the Idaho Springs District in Clear Creek County. The basic geology includes interlayered Precambrian gneisses and schists, intruded by Precambrian granites of the Boulder Creek and Silver Plume family, with later Tertiary intrusions associated with mineralization.

The Nevada District, which was also called the New Nevada District, was one of the earliest districts organized in Gilpin County, with papers drawn up on September 28, 1860 (Marshall, 1920). The district was centered on Nevada Gulch, a tributary of North Clear Creek (Dunn, 2003).

The town of Nevada was formed several miles from Central City and named for the area in California. It was renamed Nevada City, but finally the name of the post office was changed to Nevadaville to avoid confusion with that other location (Eberhart, 1969). According to Eberhart (Ibid) the town flourished in the 1860s, again in the 1870s, nearly emptied during the "panic of 1883," but was rejuvenated in the 1890s, reaching a population of 1200 residents. The California Mine had the deepest shaft in the area - 2230 feet.

Mines listed in the district (mindat.org and others) include:

- [Barker](#)
- [Belcher](#)<sup>3</sup>
- California
- Glory Hill
- Hubert<sup>1,3</sup>
- King<sup>1</sup>

- [Nevadaville](#)
- Newfoundland<sup>1,2</sup>
- Post Hole<sup>1</sup>
- Prize<sup>1,2</sup>

Notes: <sup>1</sup> denotes mines described in detail in Sims et al. (1953).

<sup>2</sup> denotes mines described in detail in Bastin and Hill (1917).

<sup>3</sup> denotes mines described in detail in Lovering and Goddard (1950).

Minerals listed in the district (mindat.org) include:

Gold	Johannite	Zippeite
Gypsum	Quartz var: Amethyst	
Jarosite	Zincocopiapite	

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

Sims, P.K., Drake, A.A. Jr, and Tooker, E.W. 1963. Economic Geology of the Central City District, Gilpin County, Colorado; U.S. Geological Survey Professional Paper 359.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## Gilpin County

### North Clear Creek Placers

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the gold placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40- to 100-feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation. Placer gold along North Clear Creek is derived from low-grade pyritic gold veins in the gulches (Parker, 1974).

Most of the historic mining areas in this small county are considered either part of the Central City or North Gilpin Districts by various reporters.

The North Clear Creek placers were upstream from the town of Blackhawk. Parker (1974) notes particularly heavy activity at Pickle Gulch and Missouri Gulch and upstream from the mouths of these gulches. The district at some point overlaps with the **Fairfield District** to the north. The creeks and flood plains were worked by a variety of methods: surface bar mining, drifting, hydraulicking, dredging, and dragline operations. Originally they were dry operations and then hydraulicking by the 1900s to 1941 (Dunn, 2003). Lovering and Goddard (1950) comment that a dry-land dredge was operated in North Clear Creek near Blackhawk from 1937 to 1941 that was, for a time, the largest gold-producer in the county.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

# Gilpin County

## Northern Gilpin District

The Northern Gilpin District is a large area composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of **Pine-Kingston-Apex**, and **Perigo**, the area also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the **Rollinsville Placers**. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, Ibid.) Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville.

The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that where unweathered is rather low grade but has been enhanced by oxidation.

## Northern Gilpin Districts (Mindat.org - except as noted)

Alice	Gold Chief Mine	Ninety-Four
Aurelia	Gold Reserve; Montana Hill	North Star - Mann
Belfast & Shamrock	Golden Flint	Nye-Mathews (Wilma Mine)
Bennett	Grant No. 10, 11, 12	Old Kentucky
Black Hills Vein	Haywood	Pettibone
Blaternick Hill; Gold Tunnel Occurrence	Huberknocker (Dunn, 2003)	Plateau, Bullion
Buckeye, Golden Sun, Fairhave, Mellet, Lone Star, Moon Gulch, Pioneer	Ingram	Princess Alice
Caledonia Lode	Jess Lode	Quincy Bart Atlantic
Chahuahua	Little Johnny; Little Mary	Reliance Lode
Charcoal Charlie Vein	Lode Star Occurrence	
Columbia (location shown on MRDS is in CC County)	Mackey; Annie	Rooks County Occurrence
Early Bird	Melett	Schultz Wonder Mine
Elliot Mine (Wealthy Lode Claim) (MRDS lists pitchblende as primary)	Melrose Tunnel	Snowden, Golden Rod Occurrence
Evergreen Mine (Gold Standard, Nancy Lee)	Melvin Tungsten Mine	Stewart
Fish	Michigan Hill, Big Bertha	Tacoma Tunnel
Geiger Vein Occurrence	Mountain Chief	Velvet Valley Occurrence

## Pine District Mines (Dunn, 2003)

Ingram

Side Issue

Grand Union

Nancy Lee

## Minerals (from Mindat.org)

Almandine	Covellite	Pyrite
Andradite	Enargite	Quartz
Augite	Ferrimolybdate	Silver
Biotite	Galena	<a href="#">Sphalerite</a>
Bornite	Gold	Tetrahedrite
Calcite	<a href="#">Hematite var: specularite</a>	Titanite
Chalcocite	'K Feldspar var: Adularia'	Uraninite
<a href="#">Chalcopyrite</a>	Magnetite	Wollastonite
Chrysocolla	Malachite	Zircon
Copper	Molybdenite	

## References:

Dunn, Lisa (2003) Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Koschmann, A.H. and Bergendahl, M.H., 1968, Principal Gold-Producing Districts of the United States; U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range, Colorado; U.S. Geological Survey Professional Paper 223.

Mindat.org.

## **Gilpin County**

### **Pactolus Placers**

The Pactolus Placer District is located within the **North Gilpin District**, which is described in Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, along with areas that have been called the **Illinois, Gamble Gulch, Union** (or **Gold Dirt**), **South Boulder** and the **Rollinsville Placers**. The **Wisconsin, Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade, but has been enhanced by oxidation.

In the South Boulder Creek drainage, placer mining was carried out in Lump, Moon and Gamble Gulches. The latter was significant enough to warrant recognition as the Gamble Gulch District. Also at the north end of Gilpin County, the Pactolus and Rollinsville Placers are underlain by outwash gravels and, according to Parker (1974), the most productive gravels were rather fine and lying on Precambrian bedrock. The principal placer area in Gamble Gulch was about 1.5 miles long and 500 feet wide at the widest point. The Rollinsville Placer was slightly larger (Parker, *Ibid*). Placer activity occurred in nearly all the gulches within the existing districts of Gilpin County.

The Pactolus Placer District lay along South Boulder Creek from around the town of Pactolus to the Boulder County line. According to Parker (1974), one of the earliest placer discoveries in the state was made at the "Deadwood Diggings," near the mouth of Beaver Creek, which would be within the Pactolus Placer District. The deposits lie in outwash gravels, with an average depth of 16 feet. The gold was coarse, with nuggets up to a quarter ounce. Placer activity began in about the 1870s and lasted into the 1940s, but was intermittent in the 1930s (Dunn, 2003). Lovering and Goddard (1950) state that "a floating dredge recovered 7,796 ounces of gold from the Pactolus Placer on South Boulder Creek during 1937 to 1941" so the district was a prolific producer, averaging .0073 ounces per yard.

#### References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Parker, Ben H. Jr, 1974, Gold Placers of Colorado; Colorado School of Mines Quarterly 69 (3).

## **Gilpin County**

### **Pactolus and Rollinsville Placers**

The "Deadwood diggings" near Pactolus were discovered in 1859 (Henderson, 1926, Spurr, et al, 1908) above the confluence of Beaver Creek with South Boulder Creek. The Pactolus area is south from Pactolus and the Rollinsville is upstream from Rollinsville. Outwash gravels carry gold, especially from the mouth of Moon Gulch to the Boulder County line. The gravels are medium to fine-grained (Parker, 1974). The gold is generally coarse, with nuggets up to 1/4 ounce found near Pactolus.

Lovering and Goddard (1950) state that "a floating dredge recovered 7,796 ounces of gold from the Pactolus Placer on South Boulder Creek during 1937 to 1941" so the district was a prolific producer, averaging .0073 ounces per yard.

The Rollinsville placer district is nearly 2 miles long and up to 650 feet wide at its widest. The best values have been found in fine-grained gravel immediately overlying bedrock.

Presumably the source of the gold is the rather low-grade veins that criss-cross the gulches upstream of the placers.

#### References:

Henderson, Charles W., 1926, *Mining in Colorado - A History of Discovery, Development and Production*; U.S. Geological Survey Professional Paper 138.

Lovering, T.S. and Goddard, E.N., 1950, *Geology and Ore Deposits of the Front Range, Colorado*; U.S. Geological Survey Professional Paper 223.

Parker, Ben H., 1974, *Gold Placers of Colorado*; Colorado School of Mines Quarterly, vol. 69, no. 4., 2 volumes.

Spurr, J.E., Garrey, G.H., and Ball, S.H., 1908, *Economic Geology of the Georgetown Quadrangle*; U.S. Geological Survey Professional Paper 63.

## Gilpin County

### Perigo District (aka Independent District aka Independence District)

The Perigo District is located within the **North Gilpin District**, which is described in Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex** and Perigo, along with areas that have been called the **Illinois, Gamble Gulch, Union** (or **Gold Dirt**), **South Boulder** and the **Rollinsville Placers**. The **Wisconsin, Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

Using the Perigo and Smuggler Mines as an example, the district was characterized by multiple heavily mineralized east to northeast-trending veins. Commodities produced were lead, zinc, copper, silver (Lovering and Goddard, Ibid). Production was reported until 1945.

The Independent District was created on May 19, 1860 (Marshall, 1920). It was surrounded by the **Union, Central, Hawk Eye, Silver Lake** and **Pine Districts**, as shown on a map in Marshall (1920). The town of Perigo which was settled in about 1860 by prospectors at Gamble Gulch (Dunn, 2003) and was a thriving place, boasting a 30-stamp mill and an opera.

Additional references are Eberhart (1969), Henderson (1926) and Vanderwilt (1947).

Mines listed in the district (mindat.org) include:

- [Big Moon](#)
- [Blue Grouse](#)
- [Copper King Occurrence](#)
- [Dew Drop<sup>2</sup>](#)
- [Diamond Bill Group Occurrence<sup>1</sup>](#)
- [E.H.P. Lode](#)
- [Ellis Lode](#)
- [Fairheaven](#)
- [Free Gold; Mareau<sup>1</sup>](#)
- [Gettysberg/Gettysburgh<sup>1</sup>](#)
- [Gold Basin](#)
- [Gold Dirt<sup>1,2</sup>](#)
- [Gold Dust](#)
- [Golden Cycle Mine](#)
- [Golden Sun](#)
- [Grace](#)
- [Grand Union](#)
- [Iowa Girl Lode](#)
- [Johnson Prospect](#)
- [Julia Lode Occurrence](#)
- [Kelleher](#)
- [Kerry Cheif](#)
- [Mareau<sup>1</sup>](#)
- [Moon Gulch Occurrence](#)
- [Mountain Chief<sup>1</sup>](#)
- [Mountain Monarch<sup>1</sup>](#)
- [Newport \(Iowa Bird\)](#)
- [Penobscot<sup>1</sup>](#)
- [Penobscot Tunnel<sup>1</sup>](#)
- [Perigo; Golden Flint<sup>1,2</sup>](#)
- [Petunia](#)
- [Philadelphia](#)

- Pine Cone
- Quaker
- Quindaro & Claims<sup>1</sup>
- Smuggler; Bonanza<sup>1,2</sup>
- Swiss Tunnel; Officer & Sea Bird Occurrence (Amanda; Garden)<sup>1</sup>
- Tip Top
- Twin Sisters
- Victoria<sup>1</sup>
- War Eagle<sup>1,2</sup>
- Wolfstone

Notes: <sup>1</sup> Denotes mine with a detailed discussion in Bastian and Hill (1917).

<sup>2</sup> Denotes mine mentioned specifically in Lovering and Goddard (1950).

Minerals listed in the district (mindat.org) include:

Chalcopyrite	Gold	Siderite
'Chert'	Hematite var: Specularite	Silver
Copper	Pyrite	Tetrahedrite
Galena	Quartz	

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## Gilpin County

### Phoenix District

Henderson (1926) describes the Phoenix District as overlapping with the **Pine District** included in the larger **North Gilpin District**. The Pine District is discussed by Dunn (2003). The North Gilpin District is described in Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. The North Gilpin District is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. It is made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, along with areas that have been called the **Illinois**, **Gamble Gulch**, **Union** (or **Gold Dirt**), **South Boulder** and the **Rollinsville Placers**. The **Wisconsin**, Phoenix and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade, but has been enhanced by oxidation.

Minerals listed in the district (mindat.org) include:

- Champion
- Star (or Lone Star)

Minerals listed in the district (mindat.org) include:

[Copper](#)

[Gold](#)

[Silver](#)

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## Gilpin County

### Pine District

Vanderwilt (1947) consolidated the Pine District into the **Pine-Kingston-Apex District**. The Pine District is located within the **Northern Gilpin District**, which is a large area composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of Pine-Kingston-Apex and **Perigo**, the district also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the **Rollinsville Placers**. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville.

The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that where unweathered is rather low grade but has been enhanced by oxidation.

The Pine District is also referred to as the Pine Creek District. It may refer to an indistinctly defined area around Pine Creek, a tributary of North Clear Creek (Dunn, 2003). The small mining camps of Twelve Mile, Pine Creek and Elk Park near Apex are considered to be within this district according to Eberhart (1969).

Mines listed in the district (Dunn, 2003) include:

- Grand Union
- Ingram
- Nancy Lee
- Side Issue

Lovering and Goddard (1950) discuss the Ingram Mine and indicate the shaft was 270 feet deep. The ore was chiefly chalcopyrite and pyrite, some galena and gold.

Minerals listed in the district are the same as the Apex District.

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## **Gilpin County**

### **Pleasant Valley District**

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40 to 100 feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first gold discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville.

The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The Pleasant Valley District was one of the earliest districts in the state, formed on September 3, 1859 (Marshall, 1920). Although it is shown on the map in Marshall (1920) as Pleasant Valley District, the text section refers to it as Pleasant Valley No. 10 District. It is commonly considered a part of the larger Central City District. The **Central City District** is contiguous with, and so the same as, the **Idaho Springs District** in Clear Creek County. Henderson (1926) does not list a Pleasant Valley District in Gilpin County, only one in Fremont County. According to Dunn (2003), the district overlaps with the **Russell Gulch** and **Lake (Gregory) Districts**. There is very little information on this early-formed district.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Marshall, Thomas H. (ed.). 1920. *Early Records of Gilpin County, Colorado, 1859 - 1861*. W. F. Robinson Printing Company, Denver, Colorado. 313 p. in J.F. Willard (ed.) The University of Colorado Historical Collections Volume II, Boulder, Colorado.

## Gilpin County

### Rollinsville Placers

The Rollinsville Placers District is located within the **North Gilpin District**. The North Gilpin District was described by Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. It is composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of Pine-Kingston-Apex and Perigo, the district also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the Rollinsville Placers. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

In the South Boulder Creek drainage, placer mining was carried out in Lump, Moon and Gamble Gulches. The latter was significant enough to warrant recognition as the Gamble Gulch District. Also at the north end of Gilpin County, the Pactolus and Rollinsville Placers are underlain by outwash gravels and, according to Parker (1974), the most productive gravels were rather fine and lying on Precambrian bedrock. Dunn (2003) indicates that the source of the Rollinsville Placer was the nearby Gamble and Moon Gulches. The principal placer area in Gamble Gulch was about 1.5 miles long and 500 feet wide at the widest point. The Rollinsville Placer was slightly larger (Parker, Ibid). Placer activity occurred in nearly all the gulches within the existing districts of Gilpin County.

The Rollinsville District lies along South Boulder Creek upstream of the town of Rollinsville. Parker (1974) places the district upstream from Rollinsville to the mouth of Moon Gulch - 1 3/4 miles long and 650 feet wide at its widest. Presumably the source of the gold is the rather low-grade veins that criss-cross the gulches upstream of the placers.

Mindat.org includes the Manchester Mine in the Rollinsville District. This mine is characterized by ferberite - a tungsten ore, and so the Rollinsville District would be considered to be the southern end of the Boulder Tungsten District - obviously a lode mine rather than placer.

Mines listed in the district (mindat.org) include:

- [Manchester Mine \(Nugget\)](#)
- [Portland-Dow Mining Company Mine](#)

References:

Bastin, E.S. and Hill, J.M. 1917. Economic Geology of Gilpin County and Adjacent Parts of Clear Creek and Boulder Counties, Colorado. U.S. Geological Survey Professional Paper 94.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Koschmann, A.H. and Bergendahl, M.H. 1968. Principal Gold-Producing Districts of the United States. U.S. Geological Survey Professional Paper 610.

Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

[www.mindat.org](http://www.mindat.org), accessed May 2015.

## **Gilpin County**

### **Gregory and Russell Gulches**

Placers in Gregory and Russell Gulches were among the earliest in Colorado. Little has been done in these areas since the 1880s. The placers occur on the typical Gilpin County bedrock of gneisses and schists of the Precambrian Idaho Springs Formation. The area is characterized by veins containing gold as both small, native particles or in sulfides. Oxidation of these veins produced abundant free gold on the surface.

In general, three types of deposits characterize the districts - alluvial placers on the valley floor, colluvial placers (mined by drifting), and outcrops of oxidized bedrock that could be worked by sluicing (Parker, 1974). Parker comments that there are probably remaining colluvial "drift sheets" that could be profitably recovered by small-scale hand working.

#### Reference:

Parker, Ben H., 1974, Gold Placers of Colorado; Colorado School of Mines Quarterly, vol. 69, no. 4., 2 volumes.

## **Gilpin County**

### **Russell Gulch District (or Russell District)**

Gilpin is the second smallest county in Colorado, but has the second highest gold production. Several months after the big discovery on Clear Creek, gold was discovered by John Gregory near Blackhawk in 1859. A few months later, the placers and veins in Russell Gulch initiated a major rush into this mountainous area. Early lode mining was restricted to oxidized ore, which normally reached 40 to 100 feet below the surface. The construction of the Hill smelter in Blackhawk in 1868 enabled extraction of metals from the unoxidized sulfide ores. Later, the completion of the railroad from Denver to Blackhawk spurred production again. Mining diminished early in the 20<sup>th</sup> century and has proceeded only sporadically since 1909.

The first discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The Russell Gulch District is located within the **Central City District**, which is contiguous with, and so the same as, the Idaho Springs District in Clear Creek County. The basic geology includes interlayered Precambrian gneisses and schists, intruded by Precambrian granites of the Boulder Creek and Silver Plume family, with later Tertiary intrusions associated with mineralization.

William Green Russell made a discovery in the spring of 1859 in present-day Russell Gulch and the Russell District was officially formed on June 18th of that year (Marshall, 1920). According to Eberhart (1969), some of the first mining laws in the state were drawn up here. By the next spring, Russell Gulch had over 2,500 residents. The Consolidated Ditch was built in 1860 to bring water from the Fall River to Russell Gulch and other nearby gulches for placer operations (Dunn, 2003). Russell Gulch was the site of much bootlegging activity during prohibition, as bootleggers used the old mines to hide their products.

Placers were important early in Russell Gulch, but petered out and were operated on sporadically after the turn of the century. In general, there are three types of placer deposits - alluvial placers on the valley floor, colluvial placers (mined by drifting), and outcrops of oxidized bedrock that could be worked by sluicing (Parker, 1974).

Commodities in the district included gold, silver, copper, lead, and zinc (Dunn, 2003).

Mines located in the district (mindat.org and others) include:

- [Aduddell Mine](#)<sup>1</sup>
- [Air Line](#)<sup>1</sup>
- [Alpha](#)<sup>1,2</sup>
- [Bangor](#)<sup>3</sup>
- [Becky Sharp](#)<sup>1,3</sup>
- [Columbia](#)<sup>2</sup>
- [East Notaway](#)<sup>2</sup>
- [Federal](#)<sup>2,3</sup>
- [Forfar](#)<sup>3</sup>
- [Gladstone Vein](#)<sup>2</sup>
- [Gold Collar](#)<sup>3</sup>
- [Golden Cloud](#)<sup>2</sup>
- [Gold Rock](#)<sup>4</sup>
- [Gulch](#)<sup>2</sup>
- [Gunnell](#)<sup>3</sup>
- [Hillhouse](#)<sup>2</sup>
- [Hubert](#)<sup>3</sup>
- [Hull](#)<sup>2</sup>
- [Iron Duke](#)<sup>2</sup>
- [Justice](#)<sup>2</sup>
- [King](#)<sup>3</sup>
- [Lamberson/Warren](#)<sup>3</sup>
- [Livingston](#)<sup>2</sup>
- [Lotus](#)<sup>2</sup>
- [Lutz](#)<sup>2</sup>
- [Missouri](#)<sup>2</sup>
- [Nashville](#)<sup>2</sup>
- [Newfoundland](#)<sup>3</sup>
- [Old Town](#)<sup>4</sup>
- [Oranoake](#)<sup>3</sup>
- [Pearce](#)<sup>2</sup>
- [Pewabic - Iron](#)<sup>1,2,3,4</sup>
- [Pittsburgh](#)<sup>4</sup>
- [Post Hole](#)<sup>3</sup>
- [Prize](#)<sup>3</sup>
- [Ready Cash/Independence](#)<sup>3</sup>
- [Rocky Mountain Terror](#)<sup>2</sup>
- [Russell Vein](#)<sup>2</sup>
- [Saratoga](#)<sup>4</sup>
- [Slide](#)<sup>2</sup>
- [Springdale](#)<sup>4</sup>
- [Waterloo Mine](#)<sup>1</sup>
- [West Notaway](#)<sup>2</sup>
- [Whiting Vein](#)<sup>3</sup>

Notes: <sup>1</sup> Indicates mindat.org.

<sup>2</sup> Indicates detailed discussion in Bastin and Hill (1917).

<sup>3</sup> Indicates detail in Sims et al. (1963).

<sup>4</sup> Indicates Dunn (2003).

Minerals listed in the district (mindat.org; Bastin and Hill, 1917) include:

[Chalcopyrite](#)

[Enargite](#)

[Galena](#)

[Gold](#)

[Iron](#)

[Pitchblende](#)

[Pyrite](#)

[Rhodochrosite](#)

[Sphalerite](#)

[Tennantite](#)

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## **Gilpin County**

### **South Boulder Creek Placers**

The South Boulder Creek Placer District is located within the **North Gilpin District**. The North Gilpin District is described in Bastin and Hill (1917) and Lovering and Goddard (1950) as a large area (approximately 35 square miles) stretching from North Clear Creek to the Boulder County line, east from Mammoth Gulch and Kingston Peak to the Eastern border of the Central City Quadrangle. It is composed of a number of smaller mining districts that grew out of the 19<sup>th</sup> century gold boom. Made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, along with areas that have been called the **Illinois**, **Gamble Gulch**, **Union** (or **Gold Dirt**), South Boulder and the **Rollinsville Placers**. The **Wisconsin**, **Phoenix** and **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

The first gold discoveries in the area occurred in Gamble Gulch in 1859 (Koschmann and Bergendahl, 1968). Stamp mills processed the oxidized ore and the level mining activity followed the same pattern as in Clear Creek County. Much placer activity occurred in the various gulches, especially near Rollinsville. The geology is much the same as in Clear Creek County, with Precambrian bedrock of the Idaho Springs Formation cut by Boulder Creek Granite with Tertiary intrusions of quartz monzonite and bostonite porphyries. Fissure fillings include pyritic gold that, where unweathered, is rather low grade but has been enhanced by oxidation.

The South Boulder Creek Placer district is often considered to include both the Rollinsville District and the **Pactolus District** (Dunn, 2003). Marshall (1920) indicates that although it existed in August 1860, the district was legally created on March 30, 1861. Dunn, 2003 indicated that the district was located at the border with Boulder County along South Boulder Creek (from the mouth of Moon Gulch through Rollinsville and Pactolus North to the County border). An additional reference is Parker (1974),

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## **Gilpin County**

### **Wisconsin District**

The Wisconsin District is located within the **North Gilpin District**, which is a large area composed of a number of smaller mining districts that grew out of the 19th century gold boom. Made up of the significant gold-producing districts of **Pine-Kingston-Apex** and **Perigo**, the district also includes areas that have been called the **Illinois**, the **Gamble Gulch**, and the **Union** (or **Gold Dirt**), the **Independent**, the **South Boulder Districts** and the **Rollinsville Placers**. The **Phoenix** and the **Kansas Districts** are contiguous with the other North Gilpin districts and display the same geologic characteristics.

Henderson (1926) and Dunn (2003) showed it as being located at Sections 1-5, 8-17, and 21-25, inclusive, T2S R74W; Sections 7, 18-19 T2S R73W. Marshall (1920) shows in on a map abutting Summit County and being bounded by the Kansas District to the north, Phoenix and Pine Districts to the east, and **Vermilion District** to the south. The district was formed on February 13, 1860 and the **White Quail District** became part of the District on May 19, 1860 (Marshall, 1920). Little information is available about the district.

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## **Gilpin County**

### **Yankee Hill District**

The Yankee Hill District is also in Clear Creek County. Refer there to the Alice-Yankee Hill District.



JACKSON

GRAND

EAGLE

SUMMIT

CLEAR CREEK

CAMPBELL

BUFFALO MTN.

WILLOW CREEK

RED DIRT PLACERS

INDIAN PEAKS

MONARCH

HIGH LONESOME

BYERS PEAK W.

VASQUEZ PEAK W.

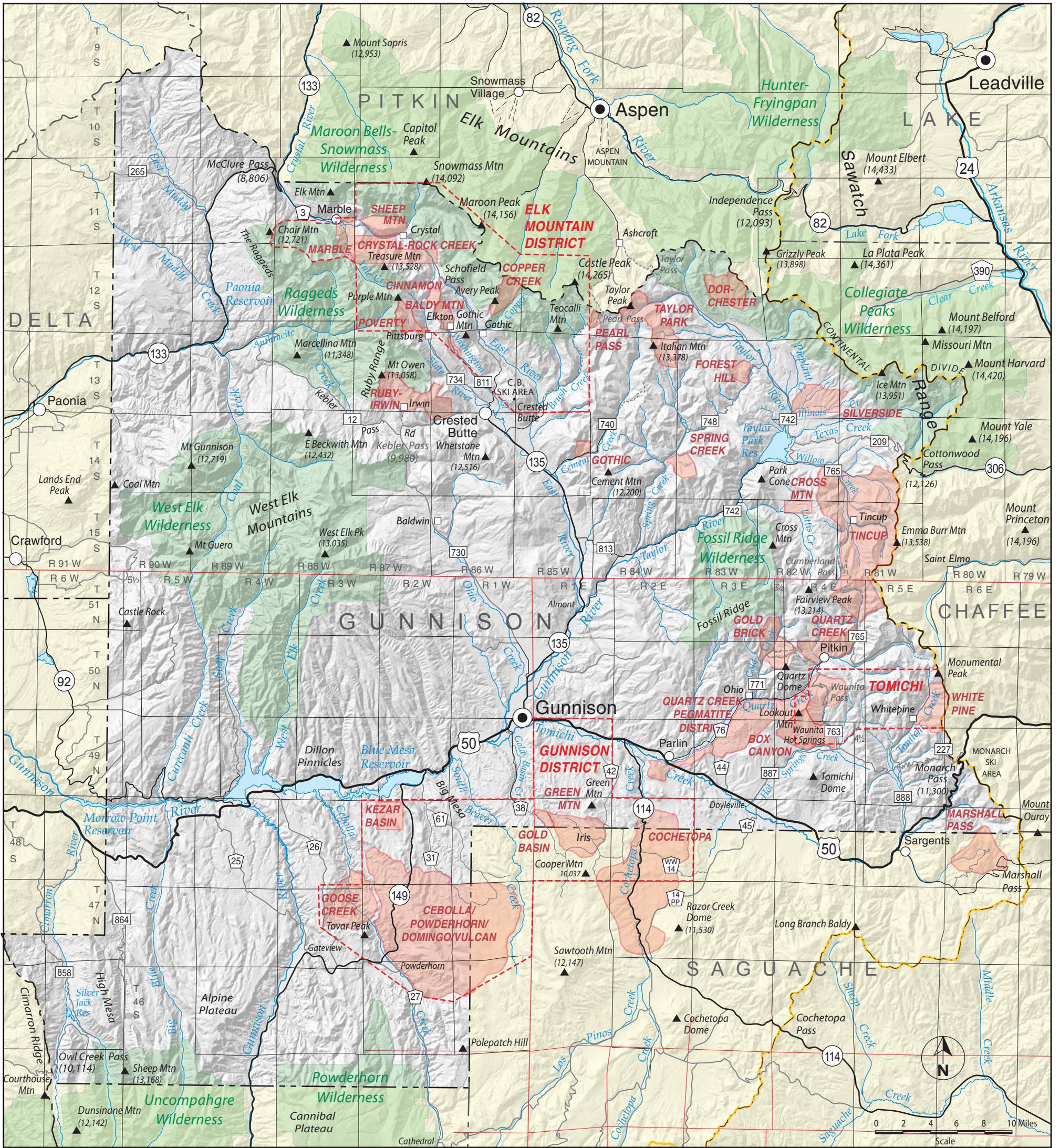
PTARMIGAN PEAK WILDERNESS

LA PLATA

LEAD MTN. (LULU)



**Editor's Note:** *Detailed descriptions of the historical mining districts in Grand County are not available as of the online publication date  
11 November 2020*



## **Gunnison County**

### **Baldy Mountain District**

The slopes of Mount Bald and the head of Washington Gulch to the town of Elkton comprise the Baldy Mountain District according to Dunn (2003). It is included within the **Elk Mountain District** on our map. Very little production is reported. Refer to Elk Mountain District for more detail.

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[www.mindat.org](http://www.mindat.org), accessed August 2015.

## Gunnison County

### Cebolla District (grouped with Domingo, Powderhorn, Vulcan, and White Earth Districts)

The Cebolla District lies in southern Gunnison County, extending across the border into Saguache County. The districts of this area have been variously combined or considered separately. Henderson (1926) named the Cebolla District specifically, calling it synonymous with the White Earth District. Vanderwilt (1947) uses the Cebolla District as a major heading, but names it as synonymous with the Vulcan, Domingo, and Powderhorn Districts in addition to the White Earth District. Streufert (1999) also provides alternative district names of Vulcan, Domingo, White Earth and **Goose Creek**. Mindat.org, reflecting the confusing situation, presents a complex listing for the Cebolla District, naming it separately, but also as synonymous with the Vulcan and the Goose Creek Districts.

The district as defined lies mostly in the Rudolph Hill Quadrangle south of the Gunnison Gold Belt (south of the **Gunnison District**). The geology consists largely of granitic and mafic intrusives of Proterozoic age overlain by Jurassic Morrison Formation and Oligocene ash-flow tuffs (Olson, 1974). Ore deposits are vein deposits associated with the felsic intrusives.

Mines listed in being in the Cebolla District (mindat.org) include:

- [Cebolla District Occurrence \(Patented Claims: Cashier; Rainbow\)](#)
- [Lot mine](#)
  - [Anatase locality](#)

Minerals listed in the district (mindat.org) include:

<a href="#">Epidote</a>	<a href="#">'Limonite'</a>	<a href="#">Pyrolusite</a>
<a href="#">Hematite</a>	<a href="#">Magnetite</a>	<a href="#">Siderite</a>
<a href="#">'Hornblende'</a>	<a href="#">'Psilomelane'</a>	<a href="#">Zoisite</a>

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## **Gunnison County**

### **Cinnamon District**

Dunn (2003) places the Cinnamon District around Paradise Flat and the upper Slate River valley opposite Cinnamon Mountain. We have enclosed it within the area of the **Elk Mountain District**. There is no production reported. The district is not listed in mindat.org. An additional reference is Eberhart (1969).

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[www.mindat.org](http://www.mindat.org), accessed August 2015

## Gunnison County

### Cochetopa District (aka Cochetopa Creek District; aka Green Mountain District; aka Gold Basin District)

The Cochetopa District lies mainly in Saguache County, but extends into southern Gunnison County along Cochetopa Creek. Henderson (1926) listed the Cochetopa District; later, Vanderwilt also named the district and considered it synonymous with the Gold Basin and Green Mountain Districts. Streufert (1999) in his compilation of data on Gunnison County, also groups those three districts. Afifi (1981) writes about the "**Iris District**," but it's not clear that he is referring to a mining district, per se, or just the area of the Iris Quadrangle. Mindat.org notes that it is synonymous with the Cochetopa Creek District.

Mines in the district (Sheridan and Raymond, 1984; Afifi, 1981; Drobek, 1981; mindat.org) include:

- Lucky Strike
- [Maple Leaf Mine \(Royal; Little Nellie; Maple Leaf No. 2; Lubricator; Claims: Maple Leaf\)](#)<sup>1</sup>
- Denver City Mine<sup>2</sup>
- Gold Basin District Occurrence (Patented Claim: Belle Flora)<sup>2</sup>
- Graflin Mine (Robert H.; E. S.; Hill Top 1-3; Indiana; Amazon; Capital Prize; Morning Star; Dalore; Carrie G.; Baltimore Boy)<sup>2</sup>
- Lubricator
- Lucky Strike Mine (Modoc; Horse Shoe; Belle Valaisane; Only Chance; Mammoth; Patented Claims: Lucky Strike)<sup>2</sup>
- [Lula Mine](#)<sup>2</sup> (Lulu)
- Mineral Hill
- Hathaway
- Black Cat
- Denver City
- Yukon
- Graflin
- Shaunee #33

Notes: <sup>1</sup> Listed by mindat.org in the Cochetopa/Cochetopa Creek District.

<sup>2</sup> Listed by mindat.org in the Green Mountain/Gold Basin District.

Minerals listed in the district (mindat.org) include:

Actinolite	Galena	Muscovite
'Biotite'	Gold	var: Sericite
Calcite	Hematite	Pyrrhotite
Chalcopyrite	'Hornblende'	Quartz
'Chlorite Group'	'Limonite'	Sphalerite
Fluorite		'Tourmaline'

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## **Gunnison County**

### **Cross Mountain District**

The Cross Mountain District was recognized by Henderson (1926) in his lexicon of mining districts in Colorado. It is described by Dunn (2003) as encompassing the area of and to the east of Cross Mountain, west of the **Tincup District** in eastern Gunnison County. Streufert (1999) indicates that the district includes the east side of Cross Mountain and upper Lottis Creek. The district was also discussed by Hill (1909).

Hill states that the mines of the Cross Mountain District are mainly on the east side of the ridge running north from Fairview Peak, and some prospects lie east of Lottis Creek. The geology of the mineralized area is composed of sedimentary rocks dipping steeply east. The north-south ridge between Broncho Mountain and Cross Mountain is capped by Lower Paleozoic sediments as erosional remnants in Precambrian granite. These are interpreted by Zech (1988) to represent the remnants of a thrust plate.

Vein and replacement deposits in the Paleozoic rocks appear to be associated with small sills and stocks of Laramide-age andesite porphyry. Hill (Ibid) describes the ore as primarily argentiferous galena.

Goddard (1936), in his paper on the Tincup District, describes the Wahl Mine, on the summit of Cross Mountain, as a replacement in the Ordovician Fremont Limestone. Small, flat lenticular zones of Fe and Cu-Fe sulfides in a quartz-calcite gangue occur as zones 3-6 feet wide and 10-15 feet long. Gold, copper, and manganese were produced from the Wahl Lode (DeWitt et al., 1985). (The Wahl Mine is listed on mindat.org as occurring in the Tincup District.)

Goddard (Ibid) also describes the Gold Bug Mine as a fissure vein cutting lower Paleozoic sediments with irregular masses of chalcopyrite in quartz. Gold, silver and lead have been produced from this mine (DeWitt et al., 1985) and copper (Streufert, 1999). (The Gold Bug Mine is also listed in mindat.org as being in the Tincup District.)

Mines listed in the district (mindat.org; Goddard, 1936; DeWitt et al., 1985; Streufert, 1999) include:

- [Gold Bug](#)
- [Wahl](#)

#### References:

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## **Gunnison County**

### **Crystal River District (aka Rock Creek District; aka Crystal District)**

The Crystal River District was listed by Henderson (1926) as synonymous with the Rock Creek District. The original name was the Rock Creek District and was established by 1883, but the Crystal River District name was established by the late 1940's (Dunn, 2003). Dunn (Ibid) describes the district as the area around Eureka, Meadow and Galena mountains and Crystal Basin. The district is contiguous with and overlaps the **Sheep Mountain District** and will be considered in the same discussion.

Vanderwilt (1937) attributes the first discoveries in the area to the early 1870s. The first ore shipments came from the Eureka Mine on Treasury Mountain prior to 1876, then the Black Queen, followed by the North Pole and Lead King in 1900. The greatest production came from the Lead King (lead-zinc with some silver), followed by the Black Queen (silver) and the North Pole (copper-gold).

Ore deposits in the area are concentrated on the northeast side of the Treasury Mountain Dome in a zone of faulting from Sheep Mountain on the northwest to Galena Mountain on the Southeast - a zone eight miles long and one to three miles wide. Deposits include both mineralized veins and bedded replacements. Vanderwilt (Ibid) interpreted them as being associated with the granite porphyry of Treasury Mountain, a Miocene intrusion (Mutschler et al., 1981).

Vanderwilt (Ibid) related an interesting story. While early prospectors concentrated on conspicuous quartz veins, the best deposits ended up coming from the replacement deposits which were connected to their sources by small, inconspicuous conduits.

Streufert (1999) enumerated mineralization in several environments. One was upper Paleozoic to Cretaceous rocks in the Treasury Mountain Dome. A second is from Cretaceous quartzites on the flank of the Dome near Mineral Point. To the north are metamorphosed Cretaceous rocks at the edge of the Middle Tertiary granodiorite stock (Snowmass Pluton).

The 1937 Vanderwilt paper contains many excellent descriptions of individual mines (as noted in the mine list below.)

The short lived camp/town of Holland was established west of Marble when low grade ores were discovered in the 1880's (Dunn, 2003). The camp of Crystal City was established in the early 1880's and housed the Crystal Mill. Residents of Crystal City worked the Black Queen and Lead Queen Mines, and the Sheep Mountain Tunnel (Dunn, Ibid). The district also included Marble (incorporated in 1899) and the Marble railroad station. The camps of Rock Creek and Galena are probably included in the district (Dunn, Ibid). Marble is named for the Yule Marble, Colorado's state stone, used in creation of the Tomb of the Unknown Soldier and the Lincoln Memorial, as well as other buildings.

Mines listed in the district (mindat.org; Dunn, 2003; Vanderwilt, 1937)

- Ajax<sup>3</sup>
- Bear Mountain Tunnel<sup>1</sup>
- Belle of Titusville<sup>1</sup> (Lead King Basin)
- Black Eagle<sup>1</sup> (Sheep Mountain area)
- Black Queen<sup>1,3</sup> (Sheep Mountain area)
- Blue Jay Tunnel<sup>1</sup>
- Brooklyn Tunnel<sup>1</sup>
- Burnett Tunnel (Treasure Mountain area)
- Burt<sup>1</sup> (Lead King Basin)
- Carbonate<sup>2,3</sup>
- [Chair Creek Tunnel](#)<sup>2</sup>
- [City of Detroit](#)<sup>2</sup>
- Contact<sup>2,3</sup>
- Crystal Mountain Tunnel<sup>1</sup> (Crystal Mountain area)
- Daisy<sup>1</sup> (Lead King Basin)
- Evening Star<sup>1</sup> (Sheep Mountain area)
- Eureka (Treasure Mountain area)<sup>2,3</sup>
- [Genter Mine](#)<sup>2</sup>
- Gold Pan vein<sup>1</sup> (Sheep Mountain area)
- Harris-Farlong Tunnel<sup>1</sup> (Crystal Mountain area )
- Hercules-Ajax<sup>1</sup> (Scofield Park)
- High Tide Vein Group<sup>1</sup> (Crystal Mountain area)
- Homestake Tunnel<sup>1</sup>
- John Baroni Tunnel<sup>1</sup> (Scofield Park)
- Lizard Lake<sup>1</sup> (Sheep Mountain area)
- Inez Tunnel<sup>1</sup> (Sheep Mountain area)
- [Lacy Placer](#)<sup>2</sup>
- Lead Bullet<sup>1</sup> (Lead King Basin)
- Lead King<sup>1,2,3</sup>
- Lucky Boy<sup>1</sup> (Sheep Mountain area)
- [Mammoth Occurrence \(2\)](#)<sup>2</sup>
- [Milwaukee](#)<sup>2</sup>
- Milwaukee-Undine Group<sup>1</sup> (Sheep Mountain area)
- Mexican Cut<sup>1</sup>
- North Pole<sup>1</sup>
- Pioneer (Warrior) tunnel<sup>1</sup> (Sheep Mountain area)
- [Rapid Creek Mine](#)<sup>2</sup>
- Rockett Tunnel<sup>1</sup>
- Shakespeare Tunnel<sup>1</sup>
- Sheep Mountain tunnel<sup>1,3</sup> (Sheep Mountain area)
- Skyline<sup>1</sup> (Lead King Basin)
- [Tuscarora](#)<sup>2</sup>
- Whopper Lode<sup>1</sup> (Scofield Park)
- Yule Creek<sup>1</sup> (Lead King Basin)

Notes: <sup>1</sup> denotes mines with detailed descriptions in Vanderwilt (1937).

<sup>2</sup> denotes listing on mindat.org.

<sup>3</sup> denotes listing in Dunn (2003).

Mineral listed in the district (Vanderwilt, 1937; mindat.org) include:

Adularia	<a href="#">Copper</a>	Pyrrhotite
Aragonite	Fluorite	Quartz
Argentite	Galena	<a href="#">Silver</a>
Barite	<a href="#">Gold</a>	Specular Hematite
Calcite	Hedenbergite	Sphalerite
Cerussite	<a href="#">Magnetite</a>	Tetrahedrite
Chalcocite	Malachite	
Chalcopyrite	Molybdenite	
Chrysocolla	Pyrite	

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[www.mindat.org](http://www.mindat.org), accessed in August 2015.

## Gunnison County

### Dorchester District (aka Taylor River District; aka Taylor Peak District)

The Dorchester District lies in northern Gunnison County near the Pitkin (and Chaffee) County lines (Dunn, 2003). Vanderwilt (1947) discussed the district, but considered it to be synonymous with the Taylor River District (and the **Tincup District**.) Henderson (1926) did not recognize the Dorchester District, but did list the Taylor River District, which he considered synonymous with the Tincup, **Taylor Park** and **Forest Hill Districts**, further complicating the nomenclature and location of all these districts. Streufert (1999) referred to it as the Taylor Park District. Harder (1908) discussed iron ore deposits in the Taylor Peak District, which appears to cover the same territory as the Taylor River District. The Taylor Peak District is also enumerated on the website [www.mindat.org](http://www.mindat.org). It appears to be largely placer mines. Eberhart (1969), discussing the early mining camps, considered this area a part of the Forest Hill District. The reader must recognize the confusion accompanying their location and nomenclature.

Regarding Dorchester, Dunn (Ibid) recounts that mining went on early, but not much is known other than that deserted cabins were found already in 1873, obviously indicating earlier habitation. Some significant deposits appear to have been part of this polymetallic mineralized district, including the Clara, the Ender, the Bull Domingo, the Hope, and the Star.

Geologically, Paleozoic sediments overlie Precambrian granitic rocks, which are intruded by the Middle Tertiary White Rock Pluton, a tonalite body (Streufert, 1999). Not much geologic detail is known about this area.

Mines listed in the district ([mindat.org](http://mindat.org); Eberhart, 1969; Dunn, 2003) include:

- Black Warrior Occurrence (Silver Lake; Bull Domingo; Falls)
- Bull Domingo Shaft
- Cement Creek
- Clara L. Occurrence
- Climax Mine (Climax Mines No. 1 2 3)
- Colorado Mine
- Creek Camp
- Ender
- Good Hope; Iron Mt. Occurrence
- Hope Shaft Occurrence
- Independent Shaft
- Last Hope Mine
- Missouri Hill
- Mt. Tilton Occurrence
- Mt. Vernon; Silver Tip; Charles H.; Climax; Mascot Occurrence
- North Cement Creek
- Sylvanite
- Taylor Park
  - Italian Mountain
    - Blue Wrinkle Mine (Anderson claim)
    - Star Mine
    - Stewart Mine
    - Truebe Prospect
  - North Italian Mountain
  - Star Mine Lambertson
- Taylor Peak
  - Star Claim Group
  - Twenty Percent Creek Occurrence
- Taylor Peak Occurrence (Taylor River)
- Tunnel Proposition

Minerals listed in the district (mindat.org) include:

Acanthite	Dolomite	Piemontite
Actinolite	Dravite	Prehnite
Alabandite	Edenite	Proustite
Albite	Epidote	Pyrrhotite
'Allanite'	Fluorapatite	Pyrite
Amphibole Supergroup	Fluorite	Pyrrhotite
Analcime	Forsterite	Quartz
Andradite	Galena	Sanidine
Anglesite	Glaucosite	Saponite
Anhydrite	Graphite	'Scapolite'
Ankerite	Grossular	Schorl
Anorthite	Halite	Scolecite
Anthophyllite	Häüyne var: Lazurite	Siderite
'Apophyllite'	Hematite	Silver
Azurite	Hemimorphite	Smithsonite
Barite	'Heulandite'	Sphalerite
'Biotite'	Hisingerite	Spinel
Brucite	'Hornblende'	'Stilbite'
Calcite	Hydrozincite	Sylvite
Cerussite	'K Feldspar var: Adularia'	Talc
'Chabazite'	Laumontite	Tetrahedrite
'Chlorite Group'	Magnetite	'Thomsonite'
Clinocllore var: Pennine	Malachite	Titanite
Clinzoisite	Massicot	Tremolite
Cordierite	'Mica Group'	'Uvite'
Cyanotrichite	Monticellite	Vesuvianite
Diopside	Orthoclase	
	Phlogopite	

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## Gunnison County

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Regarding Dorchester, Dunn (Ibid) recounts that mining went on early, but not much is known other than that deserted cabins were found already in 1873, obviously indicating earlier habitation. Some significant deposits appear to have been part of this polymetallic mineralized district, including the Clara, the Ender, the Bull Domingo, the Hope, and the Star.

Geologically, Paleozoic sediments overlie Precambrian granitic rocks, which are intruded by the Middle Tertiary White Rock Pluton, a tonalite body (Streufert, 1999). Not much geologic detail is known about this area.

Mines listed in the district ([mindat.org](http://mindat.org); Eberhart, 1969; Dunn, 2003) include:

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- Bull Domingo Shaft
- Cement Creek
- Clara L. Occurrence
- Climax Mine (Climax Mines No. 1 2 3)
- Colorado Mine
- Creek Camp
- Ender
- Good Hope; Iron Mt. Occurrence
- Hope Shaft Occurrence
- Independent Shaft
- Last Hope Mine
- Missouri Hill
- Mt. Tilton Occurrence
- Mt. Vernon; Silver Tip; Charles H.; Climax; Mascot Occurrence
- North Cement Creek
- Sylvanite
- Taylor Park
  - Italian Mountain
    - Blue Wrinkle Mine (Anderson claim)
    - Star Mine
    - Stewart Mine
    - Truebe Prospect
  - North Italian Mountain
  - Star Mine Lambertson
- Taylor Peak
  - Star Claim Group
  - Twenty Percent Creek Occurrence
- Taylor Peak Occurrence (Taylor River)
- Tunnel Proposition

Minerals listed in the district (mindat.org) include:

Acanthite	Dolomite	Piemontite
Actinolite	Dravite	Prehnite
Alabandite	Edenite	Proustite
Albite	Epidote	Pyrargyrite
'Allanite'	Fluorapatite	Pyrite
Amphibole Supergroup	Fluorite	Pyrrhotite
Analcime	Forsterite	Quartz
Andradite	Galena	Sanidine
Anglesite	Glauconite	Saponite
Anhydrite	Graphite	'Scapolite'
Ankerite	Grossular	Schorl
Anorthite	Halite	Scolecite
Anthophyllite	Haüyne var: Lazurite	Siderite
'Apophyllite'	Hematite	Silver
Azurite	Hemimorphite	Smithsonite
Barite	'Heulandite'	Sphalerite
'Biotite'	Hisingerite	Spinel
Brucite	'Hornblende'	'Stilbite'
Calcite	Hydrozincite	Sylvite
Cerussite	'K Feldspar var: Adularia'	Talc
'Chabazite'	Laumontite	Tetrahedrite
'Chlorite Group'	Magnetite	'Thomsonite'
Clinocllore	Malachite	Titanite
var: Pennine	Massicot	Tremolite
Clinozoisite	'Mica Group'	'Uvite'
Cordierite	Monticellite	Vesuvianite
Cyanotrichite	Orthoclase	
Diopside	Phlogopite	

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## **Gunnison County**

### **Elk Mountain District (includes Sheep Mountain, Gothic, Crystal River/Rock Creek, Marble, Cinnamon, Copper Creek, Baldy Mountain, and Poverty Districts)**

The Elk Mountain District was included by Henderson (1926) in his comprehensive list of Colorado mining districts. Dunn (2003) describes the district as comprising "much of the area near the border of Gunnison and Pitkin Counties." Hill (1912) called this the **Ruby District**, but we exclude that district south of the Elk Mountain. On our map, we enclose the Sheep Mountain, Crystal River (or Crystal)/Rock Creek, Marble, Cinnamon, Copper Creek Baldy Mountain, and Poverty Districts within the Elk Mountain. The Elk Mountain District also includes mineral resource locations that fall outside of these individual smaller districts. As a result, this description will summarize those smaller districts, but some information can be found in most of those individually.

Dunn (Ibid) states that the district existed and was active by 1880 and gradually expanded its boundaries to include the neighboring districts.

In the mineralized areas, Paleozoic and Cretaceous sediments are intruded by Tertiary igneous bodies - notably the Oligocene-age White Rock Pluton. Most of the production came from the upper Paleozoic clastics and carbonates.

Vanderwilt's (1947) general description notes veins with sphalerite, galena and chalcopyrite with some silver and gold content. Mineralization is widespread, but veins are generally small and irregular. Streufert (1999) and Gaskill et al. (1991) delineate three types of deposits within the Elk Mountain district: 1) Ag-Au -Pb-Cu-Zn veins in metasediments (with some skarn zones); 2) Ag ores in masses of pyritized rock in metasediments and rhyolite porphyry dikes; 3) contact metamorphic deposits of massive magnetite and iron sulfide, Fe-Cu sulfide and gold. Significant molybdenum mineralization occurs within the area.

Most famous within the district is the Yule Marble quarry at the west end of the district near the town of Marble. There, the Leadville Limestone has been metamorphosed into a beautiful marble, including some of the most pure white product known. Through the years, Yule Marble has been used for the Lincoln Memorial, the Tomb of the Unknowns, municipal buildings in New York, San Francisco and Denver and numerous other structures around the country (Eberhart, 1979).

Vanderwilt (1947) reported production during the period 1932-1945 coming from four lode mines and three placer mines at 188 oz. gold, 15,000 oz. silver, 18,700 lb. copper (in 1939), 36,000 lb. lead, and 10,000 lb. zinc.

A number of small towns grew up, their history chronicling the history of mining in District. Marble developed after the pure white marble was discovered in 1882, with some small gold and silver prospects also in the area. Crystal was the site of rich silver strikes in the 1880s in the Crystal/Rock Creek District. Elko was a short-lived town at the foot of Galena Mountain and Schofield grew up at the base of Schofield Pass - the earliest access road to the region.

The biggest and most famous town was Gothic. Rich gold and silver strikes at Gothic Mountain in June 1879 gave rise to a town that reached a population of 8,000 citizens at its peak. Eberhart (Ibid) describes the most significant mine in the Gothic area as the Silver Night Mine on Copper Creek, where rich pockets of silver (native and wire) assayed as much as 6,000 to 15,000 ounces per ton silver. The largest producer in the area of Gothic was the Sylvanite Mine, described by Gaskill et al. (1991) as containing 2,200 feet of tunnels, 1200 feet of vertical workings and extensively stoped areas.

Mines listed in the district (mindat.org; Dunn, 2003; Streufert, 1999; Gaskill et al., 1991\*; Eberhart, 1969) include: (\*Gaskill et al. (1991) contains an extensive list of mines with significant details in the Gothic Quadrangle.)

- Aburdix Occurrence<sup>1</sup>
- American Eagle; Luona Occurrence<sup>1</sup>
- Arrowhead Mine<sup>1</sup>
- Aspen - Riverside Group<sup>1</sup>
- Baltimore; Grandview; Mineral King; Virginia; W. Virginia<sup>1</sup>
- Baroni Mine (John Baroni Mine)<sup>1</sup>
- Belle of Titusville<sup>2</sup>
- Bennet Tunnel<sup>2</sup>
- Black Eagle<sup>2,3</sup>
- Black Queen Shaft (McVey Tunnel; Fargo Claim; Black Queen Mine)<sup>2,3</sup>
- Bonton<sup>2</sup>
- Brooklyn<sup>2</sup>
- Brush Creek Group<sup>1</sup>
- Catalpa Mine<sup>2,3</sup>
- Colorado Yule Marble Company quarries<sup>2</sup>
- Copper Queen<sup>4</sup>
- Crystal Peak<sup>1</sup>
- Crystal Tunnel<sup>2</sup>
- Daisy
- Disc Shaft<sup>2</sup>
- Don No. 2<sup>2</sup>
- Ella; Ella C; Crown; Justice Occurrence
- Evening Star Occurrence<sup>2</sup>
- Garfield Mine (King Cole Mine)<sup>1</sup>
- Gold Pan Vein Occurrence<sup>2</sup>
- Harris - Farley Tunnel<sup>2</sup>
- Hercules - Ajax<sup>1</sup>
- High & Mighty Occurrence<sup>1</sup>
- High Tide Tunnel<sup>2</sup>
- Horace Porter Mine<sup>1</sup>
- Howard; Mysterious; Emma; Rustler; Spirit of the Times Occurrence<sup>1</sup>
- Inez<sup>2</sup>
- Iron Dune; Copper Queen; Silver Bell; Copper Glance; Copper Extension Occurrence<sup>1</sup>
- Iron King<sup>4</sup>
- Iron Swamp Occurrence (Old Iron Bog; Jerry No. 1)<sup>1</sup>
- John Baroni Tunnel Occurrence<sup>2</sup>
- Lakeview
- Lead Bullet Prospect<sup>2</sup>
- Lead King Mine<sup>2</sup>
- Lead Queen<sup>3</sup>
- Lizard Lake<sup>2</sup>
- Low Tide<sup>2</sup>
- Lucky Boy<sup>2</sup>
- McVey Tunnel<sup>2</sup>
- M.S.; Cumberland; Silver King Occurrence<sup>1</sup>
- Micawber<sup>1</sup>
- Mt. Emmons/Crested Butte<sup>1</sup> (Chautauqua; Daisey; Daisey Mine; Mt. Emmons; Crested Butte)<sup>1</sup>
- North Pole Mine<sup>1</sup>
- North Star claims<sup>1</sup>
- O. F. Lode Occurrence<sup>1</sup>
- Out West Placer; Galena Park; Cleveland; Ajax; Hercules<sup>1</sup>
- Patricia Lee Occurrence<sup>2</sup>
- Projects A B C D<sup>1</sup>
- Puritan Group<sup>1</sup>
- Schofield (Schofield)<sup>2</sup>
- Sheep Mountain Tunnel<sup>2</sup>

- Silver Bell; A. J. Warner; Jupiter; Iron King<sup>1</sup>
- Silver Jewel; Gunnison Placer; McLoud Placer<sup>1</sup>
- Silver Night<sup>3</sup>
- Silver Nugget Occurrence (Gothic Belle; Cleopatra; Kershaw; Monarch; Big Indian; Silver Crop; Leviathan; Catalpa-Tennessee)<sup>2</sup>
- Silver Queen
- Silver Spruce Mine<sup>1</sup>
- Skyline Mine (Little Darling Mine; Wacker; Lead Bullet Occurrence)<sup>2</sup>
- Spotted Fawn Occurrence (Bonnie Bray; Bonanza; Izetta; Baltimore; Urzilla; James Blain)<sup>1</sup>
- Strauss; Yule<sup>2</sup>
- Strauss Occurrence<sup>2</sup>
- Sylvaniaite<sup>4</sup>
- Tennessee<sup>2</sup>
- Treasure Mountain Dome<sup>1</sup>
- Treasury Mountain<sup>1</sup>
- Treasury Mountain granite<sup>1</sup>
- Two Brothers Tunnel
- Virginia<sup>1,2</sup>; Ophir<sup>1</sup>; Ellas Wood<sup>1</sup>; Virginia Basin<sup>1</sup>; Frank<sup>1</sup>; Mineral King<sup>1</sup>; Valley; May Pioneer Occurrence<sup>2</sup>
- Whopper Lode<sup>2</sup>
- Washington Gulch<sup>1</sup>
- Yule Creek Occurrence<sup>1</sup>
- Yule Marble Quarry Various<sup>1</sup>

Notes: <sup>1</sup> indicates included by mind.org as part of the Elk Mountain District.

<sup>2</sup> indicates included by mind.org as part of the Marble District.

<sup>3</sup> indicates included in Eberhart (1969).

<sup>4</sup> indicates included in Gaskill (1991).

Mineral listed in the district (mindat.org) include:

Acanthite	Erythrite	Owyheeite
Actinolite	Ferrimolybdate	Proustite
Anglesite	Fluorite	Pyrrargyrite
Aragonite	Freieslebenite	Pyrite
Arsenic	Galena	Pyrochlore Group
Arsenolite	Gold	Pyrrhotite
Azurite	Hedenbergite	Quartz var: Amethyst
Barite	Hematite	Rutile
'Biotite'	Hübnerite	Safflorite
Brochantite	Ilmenite	Siderite
Calcite	'K Feldspar'	Silver
Chalcopyrite	'Limonite'	Skutterudite var: Smaltite
'Chlorite Group'	Löllingite	Sphalerite
Chrysocolla	Magnetite	Stibarsen
Clinosafflorite	Marcasite	Ullmannite
Copper	Meta-autunite	Uraninite
Dolomite	Molybdenite	
Epidote	Muscovite var: Sericite	

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[www.mindat.org](http://www.mindat.org), accessed August 2015.

## **Gunnison County**

### **Forest Hill District**

The Forest Hill District is probably best considered part of the **Taylor Park District**. Henderson (1926) listed the Forest Hill District. Dunn (2003) notes that it may overlap with the **Dorchester District** to the North, but we show them separated by the Taylor River, several miles apart. Lying in the Italian Creek Quadrangle, the Forest Hill has only one notable mine - the Forest Hill Mine.

Fridrich et al. (1998) show the area underlain by Oligocene-age andesitic tuffs, flows, and breccias. The Forest Hill mine apparently lies at the contact of the volcanic rocks with Proterozoic rocks south of the Grizzly Peak Caldera.

Mines listed in the district include:

- Forest Hill Mine (Paymaster Mine?)

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Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## **Gunnison County**

### **Gold Basin District (aka Iris District)**

The Gold Basin District lies at the northeast end of the **Gunnison Gold Belt** (refer to the **Gunnison District**). The district is located in the Iris and Iris NW 7.5-minute quadrangles, either within or adjacent to four other mining districts on the border of Gunnison and Saguache Counties: the Gunnison, the **Green Mountain**, the **Iris** and the **Cochetopa**. To further confuse the situation, the term **Cochetopa Creek District** has also been used (mindat.org, July 2015). Here we attempt to make some distinctions on the identity and location of these districts.

Henderson (1926) stated that the Gold Basin District adjoined the Green Mountain District and then stated that the Green Mountain was synonymous with Cochetopa District in both Gunnison and Saguache Counties. Dunn (2003) followed that example. Mindat.org equates the Green Mountain and the Gold Basin Districts in Gunnison County. Vanderwilt (1947) considered the Green Mountain, the Gold Basin and the Cochetopa the same, and does not mention the latter in his Saguache County section.

Afifi (1981), Drobeck (1981), and Sheridan et al. (1981) wrote about the general area of the Gunnison Gold Belt, but only Afifi mentioned any specific mining district, and he called this area the Iris District in the Iris and Iris NW quadrangles. Streufert (1999), in grouping districts by dominant deposit type, includes the Green Mountain District and the Gold Basin District as "mining areas" within the Cochetopa District, characterized by stratabound sulfide mineralization. Cappa and Wallace (2007) also use the name Iris District in northern Saguache County within the Gunnison Gold Belt.

The most informative description comes from Hill (1908). He described the districts this way: "There are two districts south of Tomichi Creek, the Gold Basin and the Cochetopa, within which a small area around Iris and Chance has been set aside as a separate mining district called Green Mountain." Because Hill provides this specific description originating at the time the districts were active, we have used this.

The geology and mineralization of the Green Mountain District is typical of the Gunnison Gold Belt (refer to the Gunnison District.) The mines in the area that have been specifically discussed include the Denver City and the Yukon (or Yukon-Alaska). Mindat.org lists the Denver City in the Green Mountain/Gold Basin District (it is located at the townsite of Iris) and the Alaska-Yukon in the Cochetopa District (this mine is located east of Cochetopa Creek at the far eastern boundary of the Gunnison Gold Belt). Hill (Ibid) provides detail on the Lucky Strike Mine (in Gunnison County near the town site of Chance).

Eberhart (1969) discussed the twin mining towns of Chance and Iris on opposite sides of the Gunnison - Saguache County line. Both founded in 1894, both towns saw a population of around 1,000 in their short heyday. Also, both towns faded in 1897, enjoyed a brief revival in 1901-1902, but died out again.

Mines listed in the district (mindat.org) include:

- Denver City Mine
- Gold Basin District Occurrence (Patented Claim: Belle Flora)
- Graflin Mine (Robert H.; E. S.; Hill Top 1-3; Indiana; Amazon; Capital Prize; Morning Star; Dalore; Carrie G.; Baltimore Boy)
- Lucky Strike Mine (Modoc; Horse Shoe; Belle Valaisane; Only Chance; Mammoth; Patented Claims: Lucky Strike)
- Lula Mine

Minerals listed in the district include:

Actinolite	Galena	Pyrrhotite
'Biotite'	Gold	Quartz
Calcite	Hematite	Sphalerite
Chalcopyrite	'Hornblende'	'Tourmaline'
'Chlorite Group'	'Limonite'	
Fluorite	Muscovite var: Sericite	

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Gunnison County**

### **Gold Brick District**

Henderson (1926) recognized the Gold Brick District in his compilation of Colorado mining districts. Hill (1908) had visited the district twenty years earlier and listed also the district in his 1912 compilation. Vanderwilt (1947) described the district as being characterized by small, but rich, veins that result in small tonnages of relatively rich ore. Most of the deposits are shallow. Zech (1988) possibly provided an explanation for the shallow deposits when he interpreted the district as sitting on a thrust plate transported from the east.

Streufert (1999) described the district as sitting along Gold Creek north of the confluence of Quartz Creek at Ohio City. He summarizes the numerous earlier works, providing a good description of the geology of the area. Most of the deposits occur in veins in Proterozoic rocks - both metavolcanics and granitic rocks. Some contact metamorphic deposits of iron and iron-sulfide occur.

The northwest part of the district has somewhat of a different geology. Fossil Ridge contains a sequence of Paleozoic sediments. There are some smaller replacement type deposits in Paleozoic carbonates. Heyl (1964) found oxidized zinc deposits in the northwest part of the district. Also, Worcester (1919) describes a number of molybdenum prospects in the area of Lamphier Lakes, on the edge of the district to the north. DeWitt et al. (1985) summarize the more recent geologic studies and interpretations in their study of the mineral resource potential of the proposed Fossil Ridge Wilderness Area, which now includes the northern end of the Gold Brick District. They point out that there are areas in and around the Gold Brick District that have high potential for gold and silver in veins and shear zones.

Crawford and Worcester (1916) and Parker (1974) have brief mention of gold placers in the Gold Brick District including Jones Gulch, Dutch Flats, and Spring Gulch.

Eberhart (1969), in his description of the town of Ohio City, relates that gold was first discovered in the 1860s but the area didn't grow until silver was discovered in the 1880s (1879 by Dunn, 2003) The Carter and the Raymond were the biggest mines in the district, while the Calumet, the Eagle, and the Roller were right within the "city."

The district became inactive by 1900, but produced again in the period 1934-42. Vanderwilt (Ibid) reported the following production in those years of 16,395 oz. gold; 45,650 oz. silver; 219,000 lb. lead, and 2,350 lb. copper.

Mines listed in the district (Crawford and Worcester, 1916; Eberhart, 1969; Hill, 1909; mindat.org) include:

- [Bassick](#)<sup>1</sup>
- [Belzora Basic Occurrence](#)<sup>2</sup>
- [Bertha](#)<sup>1</sup>
- [Bornite Occurrence](#)<sup>1</sup>
- [Boulder Creek](#)
- [Boulder Lake](#)
- [Buckeye Chief Mine](#)<sup>1</sup>
- [Calumet](#)<sup>1</sup>

- Carbonate King<sup>1</sup>
- Carter - Raymond Mines (Carter Mine; Chloride Mine)<sup>1,2</sup>
- Chicago<sup>1</sup>
- Chloride Mine<sup>1</sup>
- Chronicle<sup>1</sup>
- Climax<sup>1</sup>
- Cortland Mine<sup>1</sup>
- Dodson<sup>1</sup>
- Double Header<sup>1</sup>
- Dutch Flat Gulch
- Dutch Flats; Jones Gulch
- Eagle<sup>1</sup>
- Gold Links (Gold Link Mine)<sup>1,2</sup>
- Gold Monument<sup>1</sup>
- Golden Currie<sup>1</sup>
- Golden Eagle<sup>1</sup>
- Golden Fleece<sup>1</sup>
- Golden Islet Mine<sup>1</sup>
- Grand Prize Mine<sup>1</sup>
- Granite Mt.<sup>1</sup>
- Gray Eagle<sup>1</sup>
- Hilltop<sup>1</sup>
- Ida May<sup>1</sup>
- Idoline<sup>1</sup>
- Jones Gulch; Dutch Flat; Spring Gulch Placers
- Kansas City<sup>1</sup>
- Lamphier Lakes
- Last Delusion<sup>1</sup>
- Leona<sup>1</sup>
- Lillie Dell<sup>1</sup>
- Little Dora<sup>1</sup>
- Lookout Mountain
- Lucille Mine<sup>1</sup>
- Maggie Mitchell<sup>1</sup>
- Manitou<sup>1</sup>
- Montreal<sup>1</sup>
- Ohio City
- Ontario<sup>1</sup>
- Raymond claims<sup>1,2</sup>
- Revenue<sup>1</sup>
- Roller
- Roosevelt Occurrence<sup>1</sup>
- Sacramento<sup>1</sup>
- Sandy Hook Occurrence<sup>1,2</sup>
- Sequin
- Seventy-Six Mine
- Sheol<sup>1</sup>
- Siver Islet<sup>1</sup>
- Soft Snap<sup>1</sup>
- Teller<sup>1</sup>
- Tidal Wave<sup>1</sup>
- Toronto<sup>1</sup>
- Tucson
- Upper Dome
- Volunteer Mine
- Wall Street<sup>1</sup>
- West Point<sup>1</sup>
- Whig<sup>1</sup>

Notes: <sup>1</sup> Mines discussed in detail or listed in Crawford and Worcester (1916).

<sup>2</sup> Mines discussed in detail or listed in Hill (1908).

Minerals listed in the district (mindat.org) include:

Acanthite	Arsenopyrite	'Chlorite Group'
'Albite-Anorthite Series'	Augite	Chrysocolla
Almandine	Azurite	Cordierite
Amphibole Supergroup	'Biotite'	Cumingtonite
Andalusite	Bornite	Epidote
Andradite	'Calamine'	Ferrimolybdite
Ankerite	Calcite	Fluorite
Anthophyllite	Cerussite	Gahnite
'Apatite'	Chalcopyrite	Galena

'Garnet'	'Mica Group'	Quartz
Gedrite	Microcline	Silver
Gold	Molybdenite	Sphalerite
Hemimorphite	Muscovite	Staurolite
Ilmenite	Proustite	Stephanite
'Limonite'	Pyrrargyrite	Tetrahedrite
Magnetite	Pyrite	
Malachite	Pyromorphite	

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## Gunnison County

### Goose Creek District

The Goose Creek District is in the Gateview quadrangle on the western end of the Gunnison Gold Belt (the **Gunnison District** of this compilation). The district was recognized by Henderson (1926) and Vanderwilt (1947). Vanderwilt referred to it also as the **Madera District** for the town of Madera on the Lake Fork of the Gunnison River. Mindat.org (2015) includes much of the area to the east within the Goose Creek District.

The Goose Creek District is therefore considered to be a subdistrict of the Gunnison District, with deposits typical of that geology. For details of the Gunnison District mineralization and geology, refer to Drobek (1981), Hedlund and Olson (1975, 1981), Olson and Hedlund (1973) and Sheridan et al. (1981). Here, we consider the thorium deposits to constitute the Powderhorn District, so the Powderhorn and the Goose Creek Districts overlap.

Mines listed in the district (mindat.org; Dunn, 2003) include:

- [Adair Group](#)
- [American Flag Shaft](#)
- [Anaconda Mine](#)
- [Carpenter](#)
- [Champion Shaft Occurrence](#)
- [Copper King Mine](#)
- [Dubois Mine](#)
- [Goose Creek](#)
- [Gunnison Mine](#)
- [Headlight Mine](#)
- [Ironcap Mine](#)
- [Jeanie No. 2 Claim](#)
- [Jeanie No. 6 Claim](#)
- [Lady in Red No. 5 Claim](#)
- [Lady in Red Shaft Occurrence](#)
- [Little Johnnie Mine](#)
- [Lucretia Mine](#)
- [May Queen Mine](#)
- [Midland Mine](#)
- [Mrs. Roberts Deeded Land Occurrence](#)
- [Rare Earth Mining Company](#)
- [Red Rock Claim](#)
- [White Iron Mine](#)
- [Whitney Prospect](#)
- [Yukon Mine](#)

Minerals listed in the district (mindat.org) include:

<a href="#">Actinolite</a>	<a href="#">'Bastnäsité'</a>	<a href="#">Gahnite</a>
<a href="#">Aegirine</a>	<a href="#">Brookite</a>	<a href="#">Galena</a>
<a href="#">Albite</a>	<a href="#">Calcite</a>	<a href="#">'Garnet'</a>
<a href="#">Allophane</a>	<a href="#">Chalcopyrite</a>	<a href="#">Goethite</a>
<a href="#">Almandine</a>	<a href="#">'Chlorite Group'</a>	<a href="#">Gold</a>
<a href="#">Ankerite</a>	<a href="#">Clinzoisite</a>	<a href="#">Hematite var: Specularite</a>
<a href="#">'Apatite'</a>	<a href="#">Cordierite</a>	<a href="#">Hydroxylapatite</a>
<a href="#">Arsenopyrite</a>	<a href="#">Dolomite</a>	<a href="#">var: Carbonate-rich</a>
<a href="#">Augite</a>	<a href="#">Epidote</a>	<a href="#">Hydroxylapatite</a>
<a href="#">Barite</a>	<a href="#">Fluorite</a>	<a href="#">'K Feldspar'</a>

'Limonite'	Pyrite	Tetrahedrite
Magnetite	Pyrolusite	Thorite
Malachite	Quartz var: Jasper	'Tourmaline'
'Monazite'	Rutile	Tremolite
Muscovite var: Sericite	'Serpentine Group'	Vanadinite
'Olivine'	Siderite	Xenotime-(Y)
Orthoclase	Sphalerite	
'Psilomelane'	'Synchysite'	

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## Gunnison County

### Gothic District

One of numerous small districts within the **Elk Mountain District** of northern Gunnison County, the Gothic was placed by Henderson (1926) and Dunn (2003) in sections 13, 14, 23 and 24 of T14S, R85W. Streufert (1999) also includes the area of the Gothic District within his description of the Elk Mountain District. Mindat.org does not list the Gothic District, but does list the Elk Mountain District.

Information on the Sylvanite Mine (Silver Knight?) in Gaskill et al. (1991) provides some insight into the mineralization in the district. Near-vertical fissure veins cut metasedimentary rocks and granodiorite. The veins contain native (wire) silver, ruby silver (proustite/pyrargyite), argentiferous tetrahedrite, chalcopyrite, arsenopyrite, barite, massive sulfides, minor gold, and galena. They quote the estimated production of 100,000 to 300,000 ounces of silver.

Eberhart (1969) provides a significant description of the town of Gothic and its history. The biggest and most famous town in the district and area was Gothic. Rich gold and silver strikes at Gothic Mountain in June 1879 gave rise to a town that reached a population of 8,000 citizens at its peak. Eberhart (Ibid) describes the most significant mine in the Gothic area as the Silver Night Mine on Copper Creek, where rich pockets of silver (native and wire) assayed as much as 6,000 to 15,000 ounces per ton silver. The largest producer in the area of Gothic was the Sylvanite Mine, described by Gaskill et al. (Ibid) as containing 2,200 feet of tunnels, 1200 feet of vertical workings and extensively stoped areas.

Mines listed in the district (Dunn, 2003; Eberhart, 1969) include:

- Buckeye (also listed in Gaskill et al., 1991)
- East Wing (also listed in Gaskill et al., 1991)
- Eureka
- Ho
- Hoyt
- Independent
- Jenny Ling
- Keno
- Native Silver (also listed in Gaskill et al., 1991)
- Rensselaer
- Silver Night
- Silver Spruce (in mindat.org)
- Sylvanite (aka "Silver Knight", Gaskill et al., 1991.... could be "Silver Night"?)
- Terror
- Triumph
- Vermont
- Wolverine

Notes: Gaskill et al. (1991) contains an extensive list of mines and claims in the larger Gothic Quadrangle. These have not all been included in our list.

An additional reference for the Sylvanite Mine is *Engineering and Mining Journal* (1888).

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## **Gunnison County**

### **Green Mountain District**

The Green Mountain District lies at the northeast end of the **Gunnison Gold Belt (Gunnison District)**. The district is located in the Iris and Iris NW 7.5-minute quadrangles, either within or adjacent to four other mining districts lies on the border of Gunnison and Saguache Counties: the Gunnison, the **Gold Basin**, the **Iris** and the **Cochetopa**. To further confuse the situation, the term **Cochetopa Creek District** has also been used (mindat.org, July 2015). Here we attempt to make some distinctions on the identity and location of these districts.

Henderson (1926) and Dunn (2003) have considered the Green Mountain District synonymous with Cochetopa District in both Gunnison and Saguache Counties. Mindat.org equates the Green Mountain and the Gold Basin Districts in Gunnison County. Vanderwilt (1947) considered the Green Mountain, the Gold Basin and the Cochetopa the same, and does not mention the latter in his Saguache County section.

Afifi (1981), Drobeck (1981), and Sheridan et al. (1981) wrote about the general area of the Gunnison Gold Belt, but only Afifi mentioned any specific mining district, and he called this area the Iris District in the Iris and Iris NW quadrangles. Streufert (1999), in grouping districts by dominant deposit type, includes the Green Mountain District and the Gold Basin District as "mining areas" within the Cochetopa District, characterized by stratabound sulfide mineralization. Cappa and Wallace (2007) also use the name Iris District in northern Saguache County within the Gunnison Gold Belt. An additional reference is Hedlund (1981).

The most informative description comes from Hill (1908). He described the districts this way: "There are two districts south of Tomichi Creek, the Gold Basin and the Cochetopa, within which a small area around Iris and Chance has been set aside as a separate mining district called Green Mountain." Because Hill provides this specific description originating at the time the districts were active, we have used this.

The geology and mineralization of the Green Mountain District is typical of the Gunnison Gold Belt (Gunnison District). The mines in the area that have been specifically discussed include the Denver City and the Yukon (or Yukon-Alaska). Mindat.org lists the Denver City in the Green Mountain/Gold Basin District (it is located at the townsite of Iris) and the Alaska-Yukon in the Cochetopa District (this mine is located east of Cochetopa Creek at the far eastern boundary of the Gunnison Gold Belt). Hill (Ibid) provides detail on the Lucky Strike Mine (in Gunnison County near the townsite of Chance).

Mines listed in the district (mindat.org) include:

- [Denver City Mine](#)<sup>1</sup>
- [Gold Basin District Occurrence \(Patented Claim: Belle Flora\)](#)
- [Graflin Mine \(Robert H.; E. S.; Hill Top 1-3; Indiana; Amazon; Capital Prize; Morning Star; Dalore; Carrie G.; Baltimore Boy\)](#)<sup>1</sup>
- [Lucky Strike Mine \(Modoc; Horse Shoe; Belle Valaisane; Only Chance; Mammoth\)](#)<sup>1</sup>
- [Lula Mine](#)<sup>1</sup>

Note: <sup>1</sup> indicates mentioned in Afifi (1981); Afifi also uses Shaunee #33, Mineral Hill.

Minerals listed in the district (mindat.org) include:

Actinolite	Galena	Pyrrhotite
'Biotite'	Gold	Quartz
Calcite	Hematite	Sphalerite
Chalcopyrite	'Hornblende'	'Tourmaline'
'Chlorite Group'	'Limonite'	
Fluorite	Muscovite var: Sericite	

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Gunnison County**

### **Gunnison District**

A profusion of historic districts render southern Gunnison County a confusing area to decipher. The following is a list of fourteen districts associated with this part of the county:

- **Gunnison**
- **Gold Basin**
- **Green Mountain**
- **Iris**
- **Cochetopa**
- **Cochetopa Creek**
- **Cebolla**
- **Domingo**
- **Vulcan**
- **White Earth**
- **Powderhorn**
- **Kezar Basin**
- **Goose Creek**
- **Willow Creek**

Very little consistency is found in the use and description of these districts, so we will try to define them in a way that will be useful to students of mining in Colorado. We will try to point out the various definitions and descriptions used by earlier writers, but recognize there is no right or wrong, either with this report or any of the others that preceded it. Because of this, the assignment of specific mines to one district or another is different from one source to another.

For our purposes, most of the area of southern Gunnison County is considered the **Gunnison District**. These other districts all within the geographical boundaries of the Gunnison District and, in that way, can be considered "sub-districts."

Of those 14 districts, most occur within the metavolcanic-metasedimentary terrain characteristic of the Gunnison Gold Belt. The Powderhorn District is selected out to include the later (Late Precambrian - Cambrian) alkaline intrusions associated with the Powderhorn Carbonatite. The Vulcan District is listed separately because it is a famous and somewhat iconic district in a unique geologic setting even within the Dubois Greenstone.

The Gunnison District is defined to outline the area underlain by the Precambrian terrain known as the Dubois Greenstone Belt (Drobek, 1981; Sheridan et al., 1981; Hedlund and Olson, 1981). As a mining area, this terrain has been referred to as the Gunnison Gold Belt as long ago as 1896 (Lakes, 1896.) The Dubois Belt trends northeast from the Lake Fork of the Gunnison River for some 50 km and is 10 km or more wide, southeast of the town of Gunnison.

The rocks are attributed to submarine fumarolic activity by Drobek (Ibid) who described four major rock types "of interest":

- 1) metamorphosed arkose, siltite and graywacke;
- 2) metamorphosed water-lain volcanic flows of basalt to andesite in composition;
- 3) metamorphosed felsic tuffs, pyroturbidites and flows of dacite to rhyolite in composition; and
- 4) syn-to late-tectonic granite, granodiorite and diorite.

Sheridan et al. (Ibid) also point out abundant magnetite-bearing quartzite, probably representing seafloor chert beds.

Hedlund and Olson (Ibid) describe the zone as bounded by the Cimarron Fault on the south, where upper Cretaceous Mancos Shale is displaced against the Precambrian rocks. On the north, the Precambrian rocks dip under the Jurassic and upper Cretaceous sediments.

The style of mineralization is predominantly low-sulfide gold with subsidiary silver. Some lead, zinc, and copper were mined. Specific descriptions of mines and mineralization will be found under the individual districts.

Mines included in the district (mindat.org):

- Aberdeen Quarry (dimension stone)
- Gunnison District Occurrence (vein - Ag, Au, Pb, Zn, Cu)
- Rooftop No. 1 Occurrence (fld, qtz)

(Note: these occurrences are listed by mindat.org; all other mines described under the fourteen districts will, of course, be included within the Gunnison District.)

Additional references include: Afifi (1981); Hedlund (1974); Hedlund and Olson (1973, 1974, & 1975); Olson (1974, 1976a, & 1976b); Olson and Hedlund (1973); and Olson et al. (1975).

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[www.mindat.org](http://www.mindat.org), accessed August 2015.

## **Gunnison County**

### **Iris District**

The Iris District is an alternate name used for a mining area at the northeast end of the Gunnison Gold Belt. Refer to the **Gold Basin District**, **Green Mountain District**, and **Gunnison District**.

## **Gunnison County**

### **Kezar Basin District**

Henderson (1926) and Dunn (2003) list the Kezar Basin District as occupying four sections in southern Gunnison County near the Blue Mesa Reservoir (sections 4, 5, 8, and 9 of T49N, R2W). This area appears to be very close to what Streufert (1999) calls the "White Earth Tungsten Area." No details are available except that Streufert describes scheelite at the Lily Belle Mine.

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## **Gunnison County**

### **Poverty District**

Dunn (2003) assigns the Poverty District to the area of Poverty Gulch between the towns of Ruby and Gothic. We have included it within the **Elk Mountain District**. The district spawned the town of Pittsburg, for which Eberhart (1969) has provided a significant narrative. The Augusta Mine was the major producer, with (according to [mindat.org](http://mindat.org)) ruby silver ore and tetrahedrite.

Refer to the Elk Mountain District.

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[www.mindat.org](http://www.mindat.org), accessed August 2015.

## **Gunnison County**

### **Powderhorn District (aka White Earth District)**

The Powderhorn District is a unique area in southern Gunnison County. The mining district has variously been considered to be synonymous with the White Earth, **Cebolla**, **Vulcan**, and **Domingo Districts** (Vanderwilt, 1947). Henderson (1926) did not list the Powderhorn, but considered the White Earth District the same as the Cebolla District. Mindat.org also lists the White Earth and the Powderhorn as the same district. Dunn (2003) considers the Powderhorn to be part of the larger Cebolla District.

Streufert (1999), in his survey of Gunnison County mining districts, considered the Powderhorn District to cover "a large area in the southern portion of Gunnison County," much larger than we have considered it here. The central geologic and topographic feature of the Powderhorn District is Iron Hill. Iron Hill consists of a carbonatite stock with numerous carbonatite dikes, pyroxenite and syenite intrusions in the surrounding area. For this reason, we are considering the Powderhorn District to encompass the area in which these uncommon rocks occur. The best geographic definition of the Powderhorn District is found in Olson and Hedlund (1981), who outline the area that includes the thorium-bearing veins in the Powderhorn, Rudolph Hill, and Gateview Quadrangles, compiled from the geologic maps of those quadrangles (Hedlund and Olson, 1975; Olson, 1974; and Olson and Hedlund, 1973 respectively). Thus, the Powderhorn District overlaps other districts, but is defined exclusively on the thorium-bearing rocks.

Hunter (1925) first noted in southern Gunnison County "an area of highly sodic and nephelinitoid rock, ranging from soda to cancrinite syenite, ijolite and nepheline gabbro to pyroxenite with many curious apatite, analcite and melilite rocks." He also described the carbonate rocks, calling it as many early workers, *limestone* and postulating a sedimentary origin. He considered the entire complex as Precambrian.

Larsen (1942) revisited the complex and described in detail the unusual rocks. He suggested the possibility that the *marble* was of igneous origin. He also was not certain of the age, pointing out that the rocks of the complex clearly intruded known Precambrian rocks and were overlain by known Jurassic-age strata.

Following up on a survey by Burbank and Pierson (1953), Olson and Wallace (1956) referred to "pre-Jurassic metamorphic and igneous rocks" of the district. They took special note of the thorium-bearing rocks, which had been the object of prospecting for a number of years - mostly contained, they said, in thorite and thorumite. They also mentioned the rare earth-bearing apatite and provided a detailed description and discussion of the Little Johnnie Claims.

In a brief description, Hedlund and Olson (1961) were the first to refer to the rocks as *carbonatite*. They distinguished four rock types with higher radioactivity signatures: carbonatite dikes, magnetite-ilmenite-perovskite bodies, thorite veins and trachyte porphyry dikes. The thorium in the richest areas - the carbonatite dikes - was contained in monazite. Rare earths were described as occurring in baestnesite and synchisite.

Staatz et al. (1979) considered the thorium-rich dikes as a potential thorium resource as well as the major Iron Hill stock, although the latter is also rich in niobium and rare earth elements (REE). In a follow-up report, Staatz et al. (1980) and Armbrustmacher (1980) calculated the resource for ThO<sub>2</sub>, RE oxides, Nb<sub>2</sub>O<sub>5</sub> and U<sub>3</sub>O<sub>8</sub> from the stock itself.

Olson and Hedlund (1981) summarized the geographic distribution of rocks enriched in thorium and thus provided a good outline of the Powderhorn District as this report defines it, compiled from the quadrangle mapping noted above.

In the twenty-first century, considerable interest in "strategic minerals," led to more investigations of the Powderhorn District and the Iron Hill complex for information on REE, thorium, niobium, and titanium. Van Gosen (2009) provided a history of exploration at Iron Mountain, and reported an estimate of reserves from Teck Corporation suggesting their White Earth property along (within the Powderhorn District) contains 41.8 million metric tons of mineable reserves grading 13.2% TiO<sub>2</sub>. The titanium is present in perovskite, lucoxene, ilmenite, and titanite. This was noted by Thompson (1987) as the largest known titanium resource in the United States. Van Gosen et al. (2009) and Long et al. (2010) also summarized the resource estimates for those commodities in the Powderhorn District. An additional reference is Del Rio (1960).

Mines listed in the district (mindat.org) include:

- Aaberlite Mines
- Alexite Manganese Mine
- Alexite Vermiculite Mine (Novel)
- Beaver Creek (2)
- Beaver Creek basin
- Boyd Roberts property
- Cebolla Creek Titaniferous Iron Deposit
- Hone-Nielson property
- Huntsman Gulch
- Iron Hill (Iron Hill carbonatite complex)
- Iron Hill Area (Big Iron Hill; Du Pont Adit)
- Powderhorn No. 1 Mine
- Powderhorn No. 2 Mine
- Powderhorn Prospect (Cebolla Creek)
- Titan Mine (Patented Claims: Iowa; Horseshoe; Centre; Aaberite Mines)
- Vermiculite Mining Company Mine

Minerals in the district (mindat.org) include:

Aegirine	Bastnäsite-(Ce)	Chalcopyrite
Åkermanite	'Biotite'	'Chlorite Group'
Albite	Britholite-(Ce)	'Columbite'
Analcime	Britholite-(Y)	Diopside
Anatase	Brookite	Dolomite
Andradite var: Melanite	'Brugnatellite'	Epidote
'Apatite'	Calcite	Fluorapatite
Augite	Cancrinite	Fluorite
Baryte	'Cebollite' (FRL)	Galena
'Bastnäsite'	Cerite-(Ce)	'Garnet'

Gehlenite	'Monazite'	Rutile
Goethite	Monazite-(Ce)	Schorlomite
Grayite	Monticellite	Siderite
'Gunnisonite'	Muscovite	Siegenite
Hastingsite	Natrolite	Sphalerite
Hematite	Nepheline	Spinel
var: Martite	Norsethite	Staurolite
var: Specularite	'Olivine'	Strontianite
'Hornblende'	Opal	'Synchysite'
Hydroxylapatite	Orthoclase	Synchysite-(Ce)
var: Carbonate-rich	'Parisite'	Tainiolite
Hydroxylapatite	Parisite-(Ce)	Thorite
Ilmenite	Perovskite	Titanite
'Juanite' (FRL)	Phlogopite	Tremolite
Kyanite	Piemontite	Vanadinite
'Leucoxene'	Pyrite	Vermiculite
'Limonite'	'Pyrochlore'	Vesuvianite
Magnesio-arfvedsonite	Pyrochlore Group	'Wad'
Magnesio-hornblende	Pyrophanite	Winchite
Magnesite	'Pyroxene Group'	Wollastonite
Magnetite	Quartz var: Jasper	Xenotime-(Y)
var: Titaniferous Magnetite	Rhabdophane-(Ce)	Zircon
'Melilite'	Richterite	Zoisite
Microcline	Riebeckite	

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## Gunnison County

### Quartz Creek Pegmatite District

In this compilation, we treat the Quartz Creek Pegmatite District as separate from the adjacent districts known for their metallic minerals (**Box Canyon, Gold Brick, Tomichi, and Quartz Creek**) because of the unique geology. Dunn (2003) described the Quartz Creek Pegmatite District as lying in Townships 49 to 51N and Ranges 3-5 East along the west slope of the Sawatch Range.

Sources differ in their estimate of the size of the district. Del Rio (1960) followed Hanley et al. (1950) in describing the district as occupying ten square miles. Staatz and Trites (1955) claimed 29 square miles, a figure we find more accurate.

Staatz and Trites (Ibid) describe in detail the geology of the district. Rocks range from Precambrian (quartzites, hornblende gneiss, tonalite and dacitic pillow lavas), overlain by Jurassic Morrison formation and Cretaceous Dakota formation. At the north end of the district is a quartz monzonite porphyry. Intruded into the older rocks are a coarse-grained granite and fine-grained granite dikes and pegmatites.

Martin (1993) describes two general forms of pegmatite - long, narrow NE-trending dikes and large irregular masses with no apparent linear orientation. Both types intrude the host rocks unconformably. He describes them as "typical granite pegmatites" but varying from other Colorado pegmatites in that they carry relatively low muscovite, biotite, and tourmaline and relatively high accessories lepidolite, topaz, and microlite.

Del Rio (Ibid) reports that, of the 1803 pegmatites investigated in the district, 232 contain beryl, 14% are zoned and many are lithium-rich (hence the lepidolite). The pegmatite bodies are dominated by albite, perthite, and quartz. Economic minerals include beryl, lepidolite, microlite, topaz, and feldspar; major accessories include beryl, muscovite, garnet, magnetite and biotite. Columbite-tantalite occurs in 29 different pegmatite bodies (with the Brown Derby containing 1.4%); lepidolite in 17% but ranges up to 95% by volume. Monazite occurs in 24 of the pegmatites.

Martin investigated several of the pegmatites for the Bureau of Mines specifically for columbium-tantalum potential. He reported the major producers in the district were the Brown Derby (lepidolite, beryl, microlite - Ta bearing); the White Spar (feldspar and lepidolite) and the Bucky (mica, beryl, monazite and columbite-tantalite).

The mineralization was not discovered until 1930, with the Brown Derby pegmatite. Production did not begin until the war years, specifically 1943, with lepidolite and beryl.

Mines listed in the district (mindat.org) include:

- [Bazooka](#)<sup>2,3</sup>
- [Beryl and Rare Minerals Lode](#)<sup>1</sup>
- [Beryl claim](#)
- [Black Canyon Beryl Prospect](#)<sup>2</sup>
- [Black Wonder Occurrence](#)<sup>1</sup>
- [Brown Derby Mine](#)

- Brown Derby No. 1<sup>1,2,3</sup>
- Brown Derby No. 2<sup>3</sup>
- Brown Derby No. 3<sup>3</sup>
- Brown Derby No. 4<sup>2</sup>
- Brown Derby No. 5<sup>1,2,3</sup>
- Brown Derby Ridge (Ventura claim)<sup>2</sup>
- Buck Horn Mine (Buckhorn)<sup>1,2</sup>
- Bucky pegmatite (New Anniversary; Willow Creek)<sup>1,3</sup>
- Comet<sup>2</sup>
- Last Chance<sup>2</sup>
- Mine X
- Monazite claims
- O C Group
- Opportunity Mine<sup>1,3</sup>
- Pegmatite 417 Occurrence
- Pegmatite No. 537 Occurrence<sup>1</sup>
- Pegmatite No. 538 Occurrence<sup>1</sup>
- Pegmatite No. 560 Occurrence<sup>1</sup>
- Trio No. 1 Occurrence<sup>1</sup>
- Unnamed pegmatite
- White Spar No. 1 Mine<sup>1,2,3</sup>
- White Spar No. 2 Mine<sup>1,2,3</sup>
- Willow Creek Occurrence

Notes: <sup>1</sup>Mine described in detail in Staatz and Trites (1955).

<sup>2</sup>Mine described in detail in Hanley et al. (1950).

<sup>3</sup>Mine investigated and described in Martin (1993).

Minerals listed in the district (mindat.org) include:

Albite var: Cleavelandite	Fergusonite-(Y)	Pyrochlore Group
'Albite-Anorthite Series'	Fluorite	Quartz var: Smoky Quartz
'Allanite'	Gahnite	Rutile var: Strüverite
Allanite-(Ce)	'Garnet'	Rynersonite
Almandine	Grayite	Samarskite-(Y)
Amblygonite	Helvine	Schorl
'Apatite'	Hematite var: Martite	Spessartine
Autunite	Kaolinite	Spodumene
Beryl	'K Feldspar' var: 'Adularia'	'Stibiconite'
var: Aquamarine	'Lepidolite'	Stibiotantalite
var: Morganite	'Lithiophilite-Triphylite Series'	'Tantalite'
var: Vorobyevite	Magnetite	Topaz
'Biotite'	'Manganese Oxides'	'Tourmaline'
Brockite	'Mica Group'	'var: Indicolite'
Chrysocolla	Microcline var: Amazonite	'var: Rubellite'
Clinochlore	Microlite Group	'var: Verdelite'
'Columbite'	'Monazite'	Trilithionite
Columbite-(Fe)	Monazite-(Ce)	'Uranpyrochlore (of Hogarth
Columbite-(Mn)	Monazite-(Sm)	1977)'
'Columbite-Tantalite'	Muscovite var: Sericite	'Uvite'
Cookeite	'Perthite'	'Zinnwaldite'
Elbaite	Pollucite	Zircon var: Cyrtolite
Euxenite-(Y)	'Prochlorite'	

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## Gunnison County

### Quartz Creek District (aka Quartz District)

The Quartz Creek District was recognized by Henderson (1926), who described the area as overlapping both the **Tin Cup** and the **Gold Brick Districts**. Vanderwilt (1947) describes the district as 1-4 miles northeast of Pitkin near the road to Tincup. Dunn (2003) provides a more specific location description: bounded on the north by the ridge between Fairview Peak and the Continental Divide, on the east by the main range, on the south by Quartz Creek and on the west by the divide between Armstrong Gulch and Ohio Creek. She notes it has also been called the **Quartz District**.

Vanderwilt (Ibid) describes the district as the southern extension of the mineralized district that includes the Tincup District. Geology is Proterozoic granite and schist in a wide faulted zone extending north to Aspen. Paleozoic sediments and Tertiary intrusives (quartz monzonite porphyry) characterize the area. Veins of silver, lead and gold and replacement deposits with argentiferous galena, tetrahedrite-tennantite in carbonate beds comprise the mineralization along with some molybdenum-bearing quartz veins. Hill (1909) described the mineralization in Armstrong Gulch north of Pitkin. Streufert (1999) describes in detail the Fairview Mine on the divide between Armstrong and Hall Gulches.

Heyl (1964) notes that smithsonite is a common constituent in oxidized ores in the Leadville Limestone in the Maid of Athens Mine. Dings and Robinson (1957) discuss a number of mines in the district, as noted on the list below. They also describe graphite production from Graphite Basin as occurring in the Quartz Creek District. Worcester (1919) discusses molybdenite occurrences in the "Quartz District."

Mines listed in the district (mindat.org) include:

- Ben Franklin<sup>1</sup>
- Citizen<sup>1</sup>
- Cleopatra
- Complex group<sup>1</sup>
- Emma H<sup>1</sup>
- Fairview
- Fluorspar Lode Occurrence<sup>1</sup>
- Gold Hill Cumberland Pass
  - Bon Ton<sup>1</sup>
  - Hubnerite Lode<sup>1</sup>
  - Ida May mine<sup>1</sup>
  - Mammoth mine<sup>1</sup>
- Graphite Basin
- J. B. W. claim
- Lady Franklin<sup>1</sup>
- Lamphere Lakes Occurrence
- Maid of Athens<sup>1</sup>
- Molybdenite<sup>1</sup>
- Morning Glory<sup>1</sup>
- Morning Glory Lower Adit
- Nesbitt Mine
- North Quartz Creek Placer
- Occident Occurrence<sup>1</sup>
- Pearson Property
- Pitkin
- Porcupine<sup>1</sup>
- Red Jacket
- Robinson & Ferry; Eldorado Occurrence
- Silent Friend<sup>1</sup>
- Silver Basin Shaft Occurrence
- Swiss Bell
- Terrible
- Tungsten Shaft
- Wolfram No. 2 Occurrence

Notes: <sup>1</sup>Specifically discussed in Dings and Robinson (1957).

Minerals listed in the district (mindat.org) include:

Andradite	Cuprite	Powellite
Anglesite	Fluorite	Pyrite
'Apatite'	Galena	Quartz
Azurite	Gold	Samarskite-(Y)
Barite	Graphite	Scheelite
Bornite	Gypsum	Silver
Calcite	Hübnerite	Smithsonite
Cerussite	'Ilsemanite'	Sphalerite
Chalcocite	Kyanite	var: Marmatite
Chalcopyrite	'Limonite'	Spodumene
Chlorargyrite	Malachite	Tetrahedrite
Chrysocolla	Microlite Group	'Uvite'
Copper	Molybdenite	
'Copper Stain'	Molybdite	
Covellite	Montebrasite	

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## Gunnison County

### Ruby (Irwin) District

The Ruby District is listed in Henderson (1926). Dunn (2003) describes the district as occurring in the west part of the Elk Range near Crested Butte. The **Irwin District** has been used as an alternate name and the name **Ruby Camp District** has been used.

Streufert (1999) describes the district as including deposits in the Ruby Range near Lake Irwin. Mindat.org (2015) extends the district to the east nearly to Crested Butte where it includes the large Mount Emmons molybdenum deposit (Dowsett et al., 1981), a definition that we use here. Vanderwilt (1947) describes the Ruby Mine, 10 miles northwest of Crested Butte, as the signature mine of the district.

The detailed geology has been described by Gaskill et al. (1967, 1987), Gaskill (1986), and Mutschler et al. (1981). Cretaceous and Tertiary sedimentary and igneous rocks are intruded by Middle and Late Tertiary igneous bodies, mostly granites and granodiorites. Veins containing zinc, lead, silver, copper, molybdenum and gold - mostly disseminated - are distributed through the rocks. Ruby silver deposits (proustite/pyrargite), from which the district and the mountains derived their name, were mined for a short period, mainly around 1880 and 1890.

Several towns and mining camps prospered for a short time in the area of the Ruby District. Crested Butte started as a gold camp but prospered later as a coal-mining town, starting in the late 1870s. The railroad and the Pearl Pass road to Aspen solidified the town's standing by 1882 (Eberhart, 1969). Colorado Fuel and Iron (CF&I) ran several of the coal mines (three bituminous coal and three anthracite coal mines), constructing some 150 coke ovens. The mines operated until 1952, at which time work started on a facility to refine lead and zinc ore.

The nearby town of Irwin reached its zenith in 1882 with a mile-long Main Street. Among visitors were General Ulysses S. Grant, Theodore Roosevelt, Wild Bill Hickock and the Vaudeville King of the day Bill Nuttal (Eberhart, Ibid.). The town of Ruby prospered for a few years, as did Haverly and Silver Gate, which were probably just absorbed by Irwin (Eberhart, Ibid.)

Mines listed in the district (mindat.org; Eberhart, 1969) include:

- [Belcher Occurrence](#)
- [Bullion King](#)
- [Crested Butte \(Daisy Mine; Chautauqua; Daisy\)](#)
- [Crested Butte Limonite](#)
- [Crested Butte Mines](#)
- [Crested Butte Mining & Milling Company Group](#)
- [Daisy](#)
- [Emmon Mountain Mining & Milling](#)
- [Eureka; Fairview; Yellow Jacket; General Moltke Occurrence](#)
- [Forest Queen Mine](#)
- [Germania; Crested Butte Extension; Furniture Boy; Berrien; My Boys; Union Occurrence](#)

- Gunnison County Mines Rpr
- Jimmy; Keystone; Contact; Eclipse; My Boys; Union Occurrence
- Lead Chief
- Lead King
- Mountain Gem
- North Star; Free American; Bonny Kate; Oh Be Joyful; Little Daisey Occurrence
- Park City Consolidated Mines Company
- Peanut Mine
- Redwell Basin
- Waterfall Mine
- Redwell Basin Occurrence
- Ruby Anthracite Mine
- Ruby Chief Occurrence (Bird; Little Bonnie; Perhaps; Staten Island; Monte Cristo; No. 7; Bullion King; Crystal; Hopewell; Alfreda)
- Ruby Floresta
- Ruby King
- Smith Hill Mine
- Standard Mine

Minerals listed in the district (mindat.org) include:

Acanthite	Fluorapatite	Phlogopite
Andradite	Fluorite	Proustite
Anglesite	Galena	Pyrargyrite
Arsenopyrite	Glauconite	Pyrite
'Biotite'	Goethite	Quartz
Bournonite	Hematite	Rhodochrosite
Calcite	Jarosite	'Ruby Silver Ore'
Chalcopyrite	Kaolinite	Silver
'Chlorite Group'	'Limonite'	Sphalerite
'Coal'	Minium	Stephanite
'var: Anthracite'	Molybdenite	Tetrahedrite
Copper	Muscovite	Xanthoconite
Enargite	var: Illite	
'Ferro-tschermakite'	var: Sericite	

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**Gunnison County**

**Sheep Mountain District**

Refer to **Rock Creek District**.

## **Gunnison County**

### **Silverside District**

The distribution of districts in the northeast is confusing at best. Various writers through time have used many names, often interchangeably, for the region stretching from Tincup on the east to Pearl Pass, some twenty miles to the northwest. (Refer to explanations in the **Taylor Park, Taylor Peak, Taylor River, Dorchester District** descriptions.) The Silverside District seems to occupy an area not claimed by any of the other districts, and it does encompass, among other things, some known gold placer terrain. Therefore, we have chosen to include the district even though the name has not been widely used.

Henderson (1926) first recognized the Silverside District, and it was included in Dunn (2003), encompassing four sections to the northeast of the present-day Taylor Park Reservoir. Parker (1974) listed placer sites of local importance on Texas, Illinois, and Pieplant Creeks. Davis and Streufert (1990) included these placer areas within the Taylor Park District, but here we consider them the Silverside District.

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## Gunnison County

### Spring Creek District (aka Spring Gulch District)

Henderson recognized the Spring Creek District in his 1926 compilation and placed it in sections 23-26 of T14S, R83W. Vanderwilt (1947) notes it occurs in a narrow canyon adjoining the Taylor River. Eberhart (1969) mentions Petersburg, the main town in the Spring Creek District. Streufert (1999) describes the area as being characterized by highly-faulted Paleozoic sedimentary rocks (most important of which are the carbonates) and Proterozoic granitic rocks. Mineralization is deeply-oxidized replacement deposits in the Mississippian Leadville limestone.

Heyl (1964) describes the Doctor Mine as the only significant mine in the district. The Doctor consisted of extensive underground workings, beginning in 1881. He estimated production (from records and personal communication with the owner) as 12,025,262 lb zinc from 1914 to 1920 and 1937 to 1938. Later sampling showed 0-10 oz/ton Ag, 0.5 to 6% Pb and 0 - 20% Zn. He reports that "large quantities of oxidized lead-zinc ore still exists in the district." The Doctor Mine is a well-known site for mineral collectors, particularly for smithsonite.

Eberhart (Ibid) briefly discusses Petersburg, the town that serviced the Spring Creek District. More detailed geologic information is available in a 1954 Colorado School of Mines thesis by Meissner.

Mines listed in the district (mindat.org) include:

- Barium - Maggie Mn.
- Beason Occurrence
- Big Deer; Winnebec; Scooper Occurrence
- Boiler Shaft
- Doctor
- Doctor Mine
- Jack Shaft
- Nash Shaft
- Nash Tunnel
- Old Shaft
- Springtime; Boston No. 4; Scooper; Commonwealth Occurrence
- Whip Shaft

Minerals listed in the district (mindat.org) include:

Anglesite

Aurichalcite

Azurite

Calcite

Cerussite

Chalcocite

'Clay'

Dolomite

Galena

Goethite

Hemimorphite

Jarosite

'Limonite'

Malachite

*Massicot?*

Plumbojarosite

'Psilomelane'

Pyrolusite

Quartz var: Jasper

Silver

Smithsonite

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## Gunnison County

### Taylor Park District

The Taylor Park District lies in northeast Gunnison County, in northern Taylor Park near the Pitkin County line. According to Dunn (2003) the district includes mines on the northeast and southeast slopes of North Italian Mountain and areas west and southeast of the old town of Dorchester. Vanderwilt (1947) states that the district is "not well defined"; he includes the Forest Hill Mine, which we consider within the **Forest Hill District**. Henderson (1926) considered the Taylor Park district as synonymous with **Taylor River District**, **Tincup District**, and Forest Hill District. The Taylor Park District appears within the **Dorchester District** on the website [www.mindat.org](http://www.mindat.org), where it also includes the iconic mineral-collecting area of Italian Mountain. Eberhart (1969), discussing the early mining camps, considered this area a part of the **Forest Hill District**. All these districts are discussed in the Gunnison County section of this report, but the reader must recognize the confusion accompanying their location and nomenclature.

Vanderwilt (Ibid) notes complex geology, with veins in the valley in granite. North Italian Mountain has a core of Tertiary intrusive flanked by dolomite with lead-zinc veins and replacement deposits. Fridrich et al. (1998) describe the Italian Mountain intrusive complex as ranging from quartz diorite porphyry to porphyritic dacite intruding Paleozoic rocks as young as the Belden Formation. Cunningham et al. (1994) detail the age to 33.9 Ma, using the work of Cunningham (1976). Cunningham (Ibid) interprets that the deposits in the Italian Mountain Complex are zones, with zinc-copper richer in the center and lead-silver farther away. An additional reference is Harder (1909).

Mines listed in the district ([mindat.org](http://mindat.org)) include:

- [Italian Mountain](#)
  - [Blue Wrinkle Mine \(Anderson claim\)](#)
  - [Star Mine](#)
  - [Stewart Mine](#)
  - [Truebe Prospect](#)
- [North Italian Mountain](#)
- [Star Mine Lambertson](#)

Minerals listed in the district ([mindat.org](http://mindat.org)) include:

<a href="#">Actinolite</a>	<a href="#">Ankerite</a>	<a href="#">Cerussite</a>
<a href="#">Alabandite</a>	<a href="#">Anorthite</a>	<a href="#">'Chabazite'</a>
<a href="#">Albite</a>	<a href="#">Anthophyllite</a>	<a href="#">'Chlorite Group'</a>
<a href="#">'Allanite'</a>	<a href="#">'Apophyllite'</a>	<a href="#">Clinocllore</a>
<a href="#">Amphibole Supergroup</a>	<a href="#">Azurite</a>	<a href="#">var: Pennine</a>
<a href="#">Analcime</a>	<a href="#">Barite</a>	<a href="#">Clinozoisite</a>
<a href="#">Andradite</a>	<a href="#">'Biotite'</a>	<a href="#">Cordierite</a>
<a href="#">Anglesite</a>	<a href="#">Brucite</a>	<a href="#">Cyanotrichite</a>
<a href="#">Anhydrite</a>	<a href="#">Calcite</a>	<a href="#">Diopside</a>

Dolomite	Hydrozincite	'Scapolite'
Dravite	'K Feldspar var: Adularia'	Schorl
Edenite	Laumontite	Scolecite
Epidote	Magnetite	Siderite
Fluorapatite	Malachite	Smithsonite
Fluorite	Massicot	Sphalerite
Forsterite	'Mica Group'	Spinel
Galena	Monticellite	'Stilbite'
Graphite	Orthoclase	Sylvite
Grossular	Phlogopite	Talc
Halite	Piemontite	Tetrahedrite
Haüyne var: Lazurite	Prehnite	'Thomsonite'
Hematite	Pyrite	Titanite
Hemimorphite	Pyrrhotite	Tremolite
'Heulandite'	Quartz	'Uvite'
Hisingerite	Sanidine	Vesuvianite
'Hornblende'	Saponite	

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## Gunnison County

### Taylor Peak District

The Taylor Peak District has not been widely recognized. It appears in Dunn (2003), locating it in the Elk Mountains on the county line between Gunnison and Pitkin Counties, (obviously) near Taylor Peak. The district appears on the website [www.mindat.org](http://www.mindat.org) where it is associated with several gold placers, a uranium occurrence and a lead-zinc mine (the Thunderbird Mine). Placers of the Upper Taylor River in Parker (1974) appear to be more closely associated geographically with what we have called the **Silverside District** (areas of Pieplant and Illinois Creeks).

The clearest use of the name is found in Harder (1909) in his USGS publication on iron ore deposits of Gunnison County. He locates the iron ore deposits of the district along the east margins of an intrusive body northeast, east, and southeast of Taylor Peak. These deposits occur at the contact of the diorite intrusive with sediments and are named the Cooper Creek (northernmost), Twenty Percent Creek, and Taylor River (southernmost) deposits. He describes the deposits as dark blue, glossy magnetite with calcite, quartz, pyrite, kaolin, siderite, barite and chlorite as replacement bodies in limestone.

Mines listed in the district ([mindat.org](http://mindat.org)) include:

- [Gold Field No. 2 Placer](#)
- [Gold Gulches No. 1 & 2; Homestake Occurrence](#)
- [Hyde Park; Kensington Placers](#)
- [Illinois Creek Placers](#)
- [Matchless Group Occurrence](#)
- [Northwestern; Idalia Placers](#)
- [River Placer No. 1 and No. 2](#)
- [Taylor River Placers](#)
- [Texas Creek Placer](#)
- [Thunderbird Mine](#)

Minerals listed in the district ([mindat.org](http://mindat.org)) include:

'Chlorite Group'  
Gold  
'Limonite'

Magnetite  
Pyrite  
'Pyroxene Group'

'Serpentine Group'  
Siderite  
'Wad'

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## **Gunnison County**

### **Taylor River District**

The Taylor River District lies in northeastern Gunnison and is described by Dunn (2003) as including or overlapping several other districts. Henderson (1926) listed the Taylor River District in his comprehensive compilation of Colorado Districts, but named it as synonymous with the **Tincup, Taylor Park and Forest Hill Districts**. Vanderwilt (1947) listed the Taylor River District as equivalent to the **Dorchester District**. Harder (1909) discussed iron ore deposits in the **Taylor Peak District**, which appears to cover the same territory as the **Taylor River District**. The website [www.mindat.org](http://www.mindat.org) lists the Taylor River District as containing the Forest Hill Vein, and includes the **Taylor River Placers** with the Taylor Peak District. It's obvious that much confusion exists and none of these districts are well defined.

We have shown the Taylor River District as occupying the basin of the Taylor River between the Taylor Park and Dorchester Districts, extending east to the **Silverside District**. Please note that this has been done without overwhelming evidence and with less confidence.

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## **Gunnison County**

### **Tin Cup District (aka Pieplant District)**

The Tin Cup (or Tincup) District lies at the head of Willow Creek at the far southeast end of Taylor Park, extending east to the Continental Divide. Henderson (1926) considered the Tincup synonymous with the **Taylor River District** (which he in turn says is synonymous with the **Taylor Park** and **Forest Hill Districts**.) Hill (1912) also used the alternative name Pieplant District, but also included in the district mines around Taylor Park and Italian Mountain, which is inconsistent with other writers (and this compilation.) Vanderwilt (1947) used no alternative names. Dunn (2003) points out that two spellings are used: Tin Cup and Tincup. The district adjoins the **Quartz Creek District** on the south with an undefined boundary. The district is on the west margin of the Mount Aetna volcanic center at the south end of the Mount Princeton batholith (Toulmin and Hammerstrom, 1990).

Numerous studies have been published on the Tin Cup District and the area directly around it. Crawford (1913) looked at the nearby **Monarch** and **Tomichi Districts** and Crawford and Worcester (1916) addressed the **Gold Brick District**; Goddard (1936) studied the Tin Cup District specifically. Dings and Robinson (1957) reviewed the Garfield Quadrangle, including much of the Tin Cup District. Other workers have discussed specific aspects of the area. Toulmin and Hammerstrom (1990) studied the Mount Aetna volcanic center, in which the Tin Cup lies; Belser (1956) and Sharps (1965) looked at tungsten potential and Worcester (1919) at molybdenum, all including examples in the Tin Cup District. Heyl (1964) noted examples of oxidized zinc ore in the district.

The geology is similar to other nearby districts such as **Aspen** and **Dorchester**. Proterozoic crystalline and Paleozoic sedimentary rocks are intruded by Tertiary dikes and sills. On the east side of the district is the Tincup Fault - a shallow thrust fault (Vanderwilt, 1947). Deposits of Ag-Pb-Au mantos and veins with some molybdenite and hubnerite veins characterize the district.

Economic deposits in the Tin Cup District were both bedded replacement deposits and veins (Goddard, 1936). Overall, the replacement deposits were the most important. They occurred as stratabound zones typically 8 to 10 feet thick (a few as much as 59 feet) and 30 to several hundred feet long in carbonate-rich zones at the intersection of steeply-dipping faults. They are exposed in a broad anticline trending N25W in a belt past Tincup to upper Willow Creek. Most commonly the ore occurs in the Fremont Limestone (referred to as the Fairview Ore Horizon), but also in carbonate horizons in the Devonian Dyer Dolomite and the Mississippian Leadville Limestone. The ore contains argentiferous galena and pyrite and some sphalerite and chalcopyrite. Some "gray copper" (tetrahedrite-tennantite) is present containing silver. Silver-lead-gold veins have mineralogy similar to the replacement zones.

Total production from 1901 to 1935 was 298 oz. gold, 26,446 oz. silver, 177 lb. copper and 153,820 lb. lead (Vanderwilt, Ibid.) Heyl (Ibid) points out that while much of the ore in the district was rich in zinc, zinc was never recovered.

Mines listed in the district (mindat.org; Dings and Robinson, 1967) include:

- Anna; Union Gulch; Grubstake; Homestake; Monometalist Occurrence
- Anna Dedrika
- Bertha Gulch Placers
- Blistered Horn Tunnel<sup>1</sup>
- Consolidated; Nellie Placers
- Copper King Occurrence
- Cumberland; Sinbad; York; Deadlock; Michigan Occurrence
- Cumberland Mine<sup>1</sup>
- Deacon<sup>1</sup>
- Drew
- El Capitan<sup>1</sup>
- Gold Bug
- Gold Hill
- Goodale Placer
- Hotrocks Mine
- Indiana<sup>1</sup>
- Iron; Copper King; Little Copper King; Kalamazoo; Little Giant Placer
- Iron Cup Claim
- Iron Ore Lode Occurrence
- Jimmie Mack<sup>1</sup>
- Little Anna
- Little Giant; Willow Creek; What Is It; Vanadium; Hillerton Placers
- M.C.R.R.
- Madeline No. 2
- Magnetite Occurrence (MRDS - 10091069)
- Matchless; Boss; Peerless; Champion Occurrence
- McCormick Group
- Monitor Claim
- Mono Metalist Lode
- Napoleon Occurrence<sup>1</sup>
- National<sup>1</sup>
- Nellie Union Gulch Occurrence
- New Discovery Claims
- Orient Occurrence (Mammoth; Emma H.; Hubnerite; Occident; Bon Ton; Morning Glory; Molybdenite; Porcupine; Ida May)
- Oro; Nellie Placers
- Robert E. Lee<sup>1</sup>
- Robert E. Lee #2<sup>1</sup>
- Sections Lode
- Silver Cup<sup>1</sup>
- Sylvan Dell Occurrence<sup>1</sup>
- Tincup
  - Gold Cup Mine (Gold Cup Republic Mine)<sup>1</sup>
- Tincup Gulch Placers
- Tincup Mine<sup>1</sup>
- Tincup Pass
- Vanadium; Little Giant Placers
- Wahl
- West Gold Hill<sup>1</sup>
- Willow Creek Placers

Note: <sup>1</sup>Detailed description in Dings and Robinson (1967).

Minerals listed in the district (mindat.org) include:

Acanthite	Chalcopyrite	Galena
Anglesite	Chlorargyrite	'Garnet'
Azurite	Chrysocolla	Gold
Bornite	Copper	Hematite
Bromargyrite	Covellite	Hemimorphite
'Calamine'	Cuprite	Hübnerite
Calcite	Diopside	'Limonite'
Cerussite	Dolomite	Magnetite
Chalcocite	Ferrimolybdite	Malachite

Molybdenite  
Powellite  
Pyrite  
Pyrophyllite  
Quartz

'Serpentine Group'  
Silver  
Smithsonite  
Sphalerite  
*Stephanite ?*

Tetrahedrite  
Tremolite  
Wulfenite

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## **Gunnison County**

### **Tomichi District (aka Whitepine District)**

The Tomichi District was first described by Hill (1909) as bounded by the divide between Tomichi and Hot Springs Creeks on the west, the divide between Tomichi and Quartz Creeks on the north and by the continental divide on the east. He notes the town of Whitepine, but does not identify a **Whitepine District**. Crawford presented an exhaustive, detailed description of the Tomichi District in his 1913 bulletin for the Colorado Geological Survey. He does not mention Whitepine at all.

Harder (1908), following the lead of Leith (1906) named a Whitepine District. When describing the iron deposits of Gunnison County, calls out the Whitepine District as lying on the west slope of the Sawatch Range, ten miles north of Marshall Pass.

Henderson (1926) includes the Tomichi District in his compilation, specifying the location of the district as "sections 13-16, 21-29, 32-36 of T50N, R4E and somewhat southward into T49N, R4 and 5 E."

Vanderwilt (1947) places the Tomichi District ten miles north of Sargents around the old mining camp of Tomichi, "on the east slope of Tomichi Creek." He lists the Whitepine District as synonymous with the Tomichi.

Dunn (2003) states that the district overlaps or includes the Whitepine District, while Streufert (1999) follows Vanderwilt's (Ibid) lead as indicating they are the same district.

The geology and mineralization in the Tomichi District is virtually the same as in the adjoining districts of Tincup, Quartz Creek and Monarch (in Chaffee County). Lower Paleozoic sedimentary rocks overlie and are faulted against Precambrian granitic rocks. These are all affected by the Tertiary-age intrusion of the Mount Princeton Batholith and associated smaller dikes and sills.

Streufert (Ibid) presents excellent summaries of the mineralization drawn from the earlier works. Replacement deposits occur in carbonates with (mainly) lead-silver with minor gold, copper and zinc. They range from massive sulfide to sulfide-dominated mantos 30 to 40 feet thick and up to 200 feet long (Crawford, 1913; Streufert, 1999). Ores of chalcopyrite, galena, tennantite-tetrahedrite, sphalerite with minor gold occur in a gangue of limestone, dolomite, quartz, calcite, and barite. The Morning Star Mine is an example of that type of mineralization and is described in several of the references (Hill, 1908; Crawford, 1913; Dings and Robinson, 1967; Streufert, 1999).

A second type of mineralization are fissure veins. These occur mostly west of Tomichi Creek in quartz monzonite of the Mount Princeton intrusion. Some are found in Precambrian rocks but always near the Tertiary quartz monzonite bodies (Streufert, 1999). Veins range from several inches to five feet in width, and contain native gold and silver, tetrahedrite, chalcopyrite, galena and sphalerite in a pyritic quartz gangue (Crawford, 1913).

Iron ore occurs in the district both as contact metamorphic and as bog iron replacing organics. Crawford (Ibid) describes magnetite associated with serpentine and tremolite in the contact metamorphic deposits.

Heyl (1964) notes oxidized zinc ores at the Morning Star and Victor mines and a few other mines in the district. Vanderwilt (Ibid) lists total production as 75,700 oz silver; 180 oz gold; 2,480,000 lb lead; 2,640,000 lb copper.

An additional reference is Eberhart (1969).

Mines listed in the district (mindat.org and others as noted) include:

- Akron Victor Morning Star Mines<sup>1,2</sup>
- Alice Tunnel<sup>2,3</sup>
- Alpine Tunnell Old
- Alwilda<sup>1,2,3</sup>
- Annie Hudson<sup>1,2</sup>
- Ben Bolt<sup>1,2</sup>
- Big Red No. 22
- Big Red No. 39
- Bill Short<sup>1,2</sup>
- Breadwinner Occurrence<sup>1,2</sup>
- Brittle Basin
- Brittle Silver Occurrence
- Chicago tunnel<sup>2</sup>
- Congress Tunnel Occurrence<sup>1,2</sup>
- Copper Hill Occurrence (Clover Mtn.)
- David H Shaft<sup>1,2</sup>
- Day Star Occurrence<sup>1</sup>
- Defiance<sup>1,2</sup>
- Denver City Tunnel<sup>1,2</sup>
- Ensign Tunnel
- Erie Mine (Eureka)<sup>1,2</sup>
- Erie Tunnel
- Eureka - Nest Egg<sup>2,3</sup>
- Fort Scott (Oddie; Moore; D. A. Mason Occurrence)<sup>1,2</sup>
- Hiawatha Occurrence<sup>1,2</sup>
- High Mucka Muck; Jas. G. Blaine
- Hot Springs Valley Placers (MRDS - 10016372)
- Iron King<sup>1,2</sup>
- Isabel Occurrence<sup>1,2</sup>
- Kentucky Belle - Baby Gerald Mine
- Legal Tender Occurrence<sup>1,2</sup>
- Lewiston - Pet<sup>1,2</sup>
- Lilly<sup>1,2,3</sup>
- Little Maud; Clinton; Silver Gem; Eastman; San Juan; Uncle Sam Occurrence
- Magna Charta Tunnel Occurrence<sup>1,2</sup>
- Maid of Erin (Silver Pick)<sup>1</sup>
- Mann Tunnel<sup>2</sup>
- Margo claim group (Vickie-Lee; Delores-Marie)
- Mazeppa; May (Akron)<sup>1,2</sup>
- Morning Glim
- Morning Star Occurrence<sup>1,2,3</sup>
- Mount Stella
- N.B.C. Occurrence
- North Star<sup>1,2</sup>
- Parole Tunnel (Spar Copper Mine; Contact Mountain)<sup>3</sup>
- Potosi<sup>2</sup>
- Princeton and Blackhawk Mine
- Princeton Tunnel Occurrence<sup>1,2</sup>
- Silver Cord<sup>1,2,3</sup>
- Silver Dollar (Alice)<sup>1</sup>
- Silver Trowel Tunnel<sup>3</sup>
- South Quartz Creek
- Spar Copper<sup>1,2,3</sup>
- Tenderfoot<sup>1</sup>
- Tokio<sup>2</sup>
- Tomichi
- Tomichi Dome
- Victor; Morning Star; David H.<sup>2</sup>
- Wand A Incline
- West Point<sup>1,2</sup>
- White Pine

Notes: <sup>1</sup>Specific description in Dings and Robinson (1967)

<sup>2</sup>Specific description in Crawford (1913)

<sup>3</sup>Brief description by Hill (1908)

Minerals listed in the district (mindat.org) include:

Acanthite	Diopside	Parsonsite
Actinolite	Dolomite	Phlogopite
Amphibole Supergroup	Enargite	Polycrase-(Y)
Anglesite	Epidote	Pyrite
Aragonite	Euxenite-(Y)	Quartz
var: Zincian Aragonite	Fluorite	'Serpentine Group'
Arsenopyrite	Gahnite	Siderite
Autunite	Galena	Silver
Azurite	var: Argentiferous Galena	Smithsonite
Baryte	'Garnet'	Sphalerite
'Calamine'	Gold	Stephanite
Calcite	Greenockite	Tennantite
Cerussite	Hematite var: Specularite	Tetrahedrite
Chalcocite	Hemimorphite	Topaz
Chalcopyrite	Kaolinite	Torbernite
Chlorargyrite	'Limonite'	Tremolite
'Chlorite Group'	Magnetite	Uraninite
Chrysocolla	Malachite	'Wad'
Copper	Molybdenite	Xenotime-(Y)
'Copper Stain'	Muscovite var: Sericite	Zircon
Cuprite	'Olivine'	

#### References:

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Hill, J.M. 1909. Notes on the Economic Geology of Southeastern Gunnison County, Colorado *in* Hayes, C.W. and Lindgren, W. 1909. Contributions to Economic Geology, 1908: Part I - Metals and Nonmetals, except fuels. U.S. Geological Survey Bulletin 380, pp. 21-40.

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Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed August 2015.

## Gunnison County

### Vulcan District (aka White Earth District)

The Vulcan District has been described as synonymous with the **Cebolla District** (Henderson, 1926; Dunn, 2003; Vanderwilt, 1947; Streufert, 1999; mindat.org, 2015). Other names associated with the Vulcan in the literature have been the White Earth, the **Domingo** and the **Powderhorn** (Vanderwilt, Ibid; mindat.org).

In the series of papers in 1981 from the New Mexico Geological Society, Drobeck, Sheridan et al., and Hedlund and Olson discussed the Vulcan Mine (the defining property of the district) simply as lying within the Gunnison Gold Belt (Dubois Greenstone Belt.)

In Drobeck (Ibid) describes the Vulcan Mine (and adjacent Good Hope Mine) as the largest producer of gold in the entire Gunnison Gold Belt, with more than 25,000 ounces gold equivalent from 1898 to 1902, with more in 1919 and some production continuing into the 1930s. He describes the deposit as a lens of massive sulfide within bleached sericite schists. It is generally acknowledged to represent volcanogenic (specifically fumarolic) activity on the seabed during Precambrian times.

The Vulcan Mine is known for its suite of rare minerals, particularly tellurium and selenium-bearing minerals. The sulfur layer in the mine was enriched with selenium.

Mines listed in the district (mindat.org) include:

- Augusta Mountain
  - Domingo Mine
- Mammoth Chimney Mine
- Sunset Claims
- Ute Trail Mine (Ute Buck; Ute Warrior; Ute Chief; Ouray; Medicine Man; Ute Squaw; Ute Trail; Wigwam)
- Vulcan
  - Good Hope Mine (Mammoth Good Hope Mine; Mammoth-Good Hope Mine; Mammoth Chimney Mine)
- Vulcan Mine

Minerals listed in the district (mindat.org) include:

Arsenopyrite  
Berthierite  
Bornite  
Boulangerite  
Cameronite (TL)  
Chalcopyrite  
'Chlorite Group'

Coloradoite  
Copper  
Covellite  
Frohbergite  
Galena  
Gold  
Goldfieldite

Hematite  
Idaite  
Jamesonite  
Kostovite  
'Limonite'  
Melanterite  
Melonite

Muscovite var: Sericite	Quartz	Sylvanite
Opal	var: Chalcedony	Tellurite
var: Fire Opal	var: Jasper	Tellurium
var: Geyserite	Rhodochrosite	Tellurobismuthite
Orthoclase	Rickardite (TL)	Tetradymite
Owyheeite	Roscoelite	Tetrahedrite
Petzite	Scorodite	Thorite
Poughite	Selenium	Uraninite
Pyrite	Silver	Vulcanite (TL)
Pyrrhotite	Sonoraite	Weissite (TL)
	Sphalerite	Zincmelanterite (TL)
	Sulphur	

#### References:

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Hedlund, D.C. and Olson, J.C. 1981. Precambrian Geology Along Parts of the Gunnison Uplift of Southwestern Colorado *in* Epis, R.C. and Callendar, J.F. Western Slope of Colorado. New Mexico Geological Society 32nd Annual Conference Guidebook, University of New Mexico, Albuquerque, New Mexico.

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[www.mindat.org](http://www.mindat.org), accessed august 2015.

## **Gunnison County**

### **Washington Gulch Placers**

The Washington Gulch Placers are mentioned specifically by Dunn (2003). The area is small, stretching about 1.5 miles from below the old town of Elkton downstream on this tributary gulch of the Slate River. The area is a sub-area of the **Elk Mountain District**.

The gold placers were first mentioned by Emmons (1894) who noted their productivity. Parker (1974) describes the area in detail, and notes the historic presence of coarse gold and significant yields. Parker (Ibid) noted signs of placer activity into the 1950s.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Emmons, S.F., Cross, W., and Eldridge, G.H. 1894. Anthracite-Crested Butte folio, Colorado. U.S. Geologic Survey Geologic Atlas of the United States Folio GF-9. Map Scale 1:62,500.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado, Colorado School of Mines Quarterly 69 (4).

## **Gunnison County**

### **White Earth District (aka Vulcan District)**

Dunn (2003) describes the White Earth District as being "broadly defined" to include many of the districts near the Gunnison - Saguache County border. Henderson (1926) says it includes the **Cebolla, Hotchkiss, McDonough, and Goose Creek Districts**. In mindat.org (2015), the White Earth is presented as synonymous with the **Powderhorn District**, while Vanderwilt (1947) lumps it with the Cebolla, Powderhorn, Vulcan and **Domingo Districts**. Streufert (1999) shows the White Earth as lying north of the Powderhorn District ("between Wildcat Gulch and Wolf Creek") and calls it the White Earth Tungsten Area. This appears to be equivalent (or nearly equivalent) to the **Kezar Basin District** of Henderson and Dunn.

It's apparent that the district is not well-defined. Here we will consider the White Earth to be the same as the Vulcan District, but no defining characteristics are presented that make the district unique.

Refer to Vulcan District discussion.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Streufert, Randall K. 1999. Geology and Mineral Resources of Gunnison County, Colorado. Colorado Geological Survey Resource Series 37.

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[www.mindat.org](http://www.mindat.org), accessed August 2015.

**Gunnison County**

**White Pine (or Whitepine) District**

Refer to the Tomichi District in Gunnison County.

## **Gunnison County**

### **Willow Creek District**

The Willow Creek District was recognized by Henderson (1926) and Dunn (2003), who described it as comprising sections 11, 12, 13 and 14 of T47N, R2W. This is a small area just west of Vulcan, which includes the Midway Mine. It lies within the larger **Gunnison District**.

The geology of the area is described by Hedlund and Olson (1975). Ore included gold, lead, and silver.

Mines listed in the district include:

- Seventy-six Shaft (mindat.org)
- Sugar Creek (mindat.org)
- Midway Mine (by Henderson's description)

Minerals listed in the district (mindat.org) include:

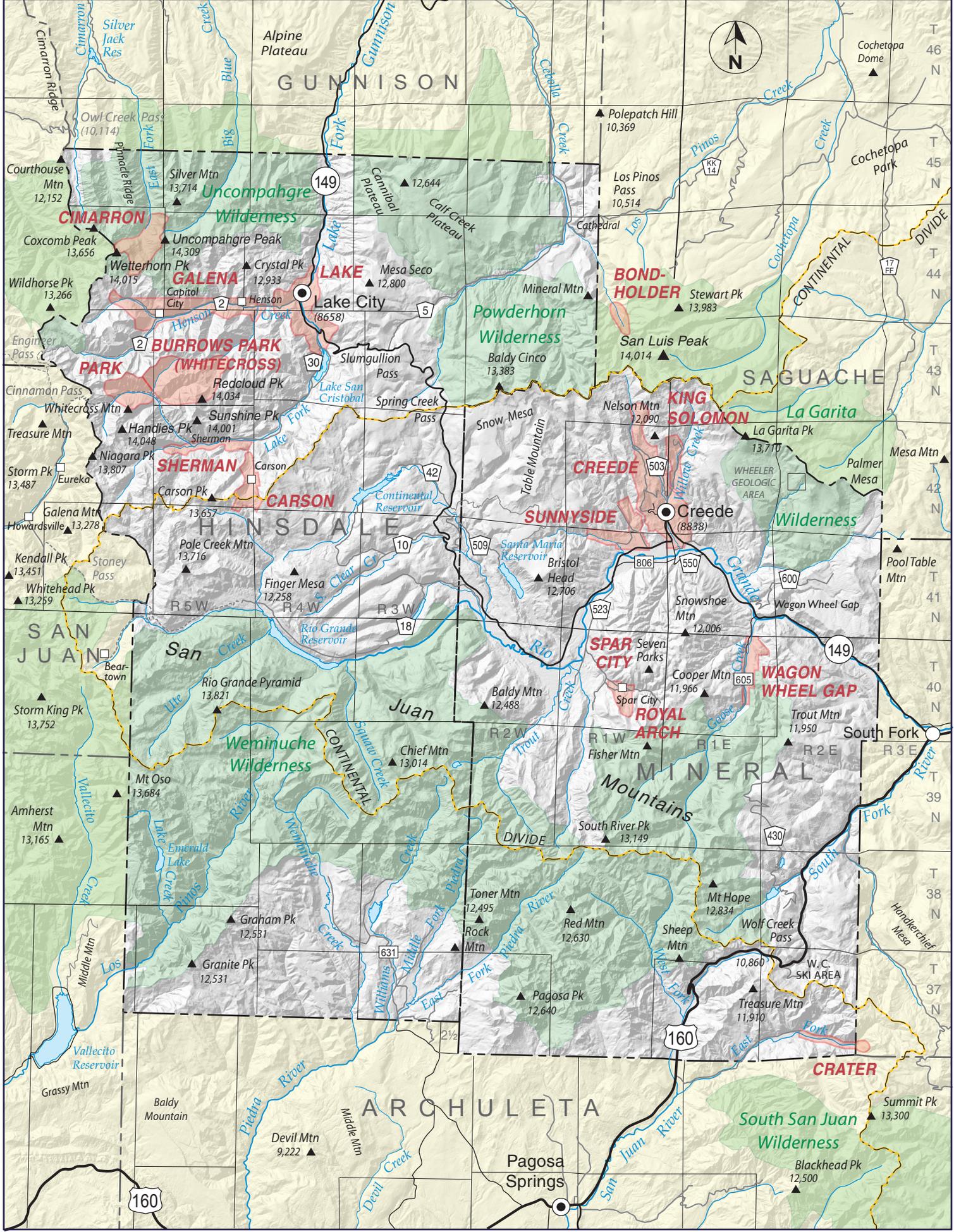
Albite var: Cleavelandite	Crocoite	'Olivine'
Anorthite var: Labradorite	Galena	Pyrite
Augite	Goethite	Rhodonite
'Biotite'	'Hypersthene'	Thorite
Chalcopyrite	Magnetite	'Thorogummite'

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Hedlund, D.C. and Olson, J.C. 1975. Geologic map of the Powderhorn quadrangle, Gunnison and Saguache Counties, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-1178. Map Scale 1:24,000.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.



# GUNNISON

# LAKE

# SAGUACHE

# SAN JUAN

# HINSDALE

# MINERAL

# ARCHULETA

## CIMARRON

## BURROWS PARK (WHITECROSS)

## SHERMAN

## CARSON

## BOND-HOLDER

## KING SOLOMON

## SUNNYSIDE

## SPAR CITY

## ROYAL ARCH

## WAGON WHEEL GAP

## CRATER

### Uncompahgre Wilderness

### Powderhorn Wilderness

### La Garita

### Weminuche Wilderness

### Wilderness

### South San Juan Wilderness

149

5

30

10

18

503

509

523

550

605

160

600

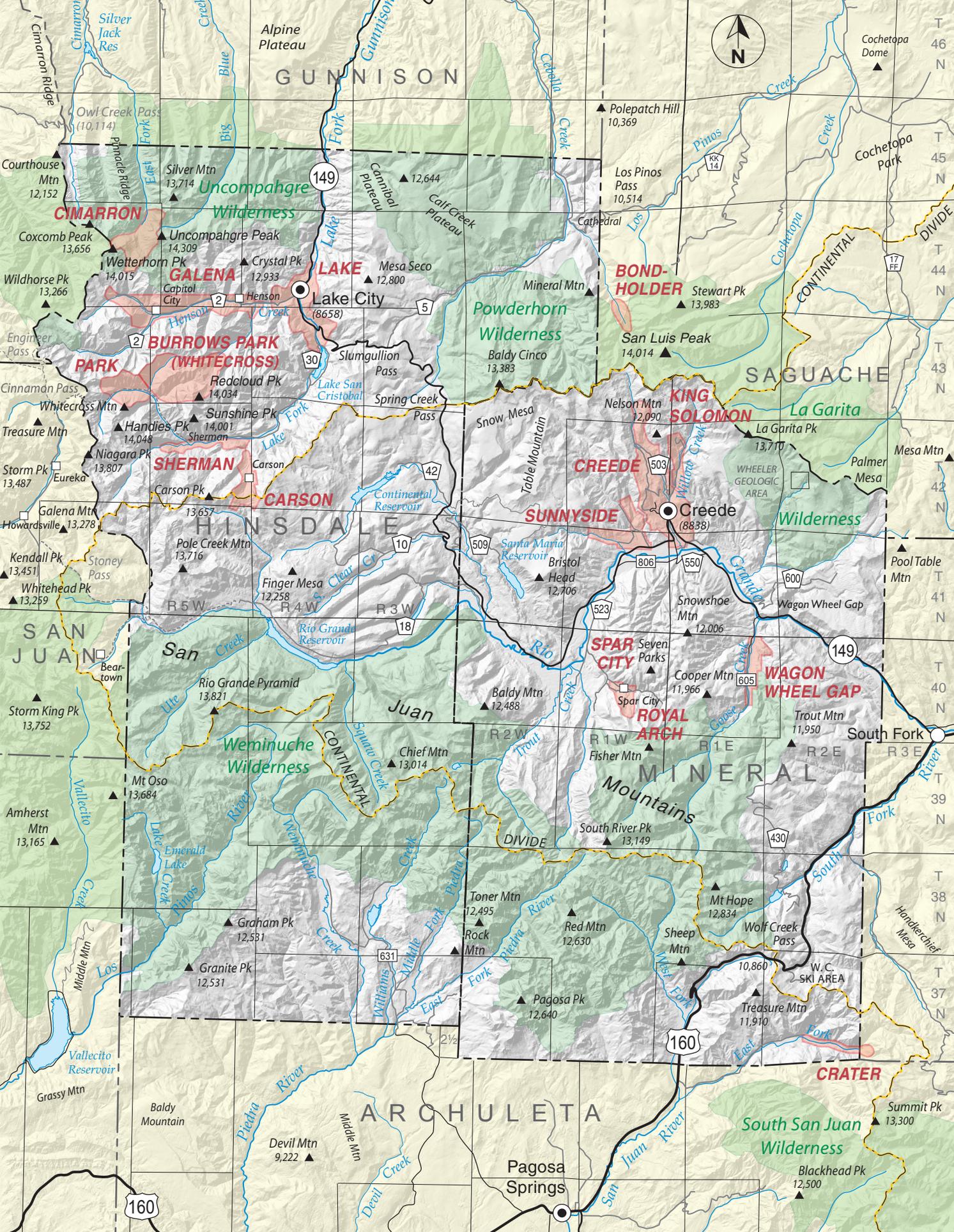
149

430

631

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T 38 N  
T 37 N



## Hinsdale County

### Burrows Park District (aka Whitecross District; aka Park District)

This district is possibly an amalgamation of several districts, but at least has several names. Henderson provides very a very specific location for the Park District, listing 16 sections in three different townships that appear to be the same as other descriptions of the Whitecross/Burrows Park District. Dunn (2003) indicates that the Burrows Park District may have originally been known as the Park District, which seems to fit with Henderson's description. She notes that Hinsdale County was divided into six districts by the state legislature in 1893, of which the Park District was one, along with the **Carson, Cimarron, Galena, Lake, and Sherman Districts**. Mindat.org (Sep 2015) considers the Burrows Park, the Park and the Whitecross to be the same district, a convention we follow here.

Vanderwilt (1947) considered the Burrows Park District, which he described as sitting at the head of the Lake Fork of the Gunnison River, to be a continuation of the mineralization of the Silverton area. Wilson and Spanski (2004) aggregated the Burrows Park District in with eight other districts as the "San Juan Mineralized Area." The connection is that they appear to lie within the San Juan caldera of Steven and Lipman (1976). (The other districts in this grouping are the **Galena/Henson Creek, the Sneffels, South Ouray, Eureka, Telluride, Ophir, Red Mountain and Lower San Miguel**, of which the Galena is in Hinsdale County.)

The geology consists of tuffs and flows associated with the Oligocene San Juan caldera complex, with an outlier of Precambrian granites in the middle (Vanderwilt, 1947). Mineralization consists of "filled fissures grading into replacement types" of chalcopyrite ore, sphalerite-galena ore or gold-silver ore with small amounts of lead and zinc (Vanderwilt, Ibid).

Eberhart (1969) discusses the three settlements that arose around Cinnamon Pass - Whitecross, Tellurium and Sterling. He indicates that the harsh winters and associated transportation problems inhibited both the mines and the towns.

Mines listed in the district (mindat.org; Eberhart, 1969; Dunn, 2003) include:

- Allen Dale<sup>2</sup>
- Bon Homme Tunnel<sup>1,2</sup>
- Burrows Park Group<sup>1</sup>
- Champion<sup>2</sup>
- Cleveland Group (Hilluron Millsite; Ida; Lock Lommond)<sup>1</sup>
- Cracker Jack<sup>2</sup>
- Dewey<sup>1</sup>
- Gavin Pipe Occurrence<sup>1</sup>
- Gnome Mine (Bull Run; Bull Run No. 1; Unpatented Claims: Sydney Nos. 1-3; Gnome Nos. 1-26; Patented Claim: Gnome)<sup>1</sup>
- Goodwin<sup>1</sup>
- Goodwin's Creek<sup>1</sup>
- Illinois Boy Mine (Patented Claim: Illinois Boy)<sup>1</sup>
- Isolde Mine (Belcher; Baltimore; Isolde)<sup>1</sup>
- Little Sarah<sup>2</sup>
- Monticello Mine<sup>1</sup>
- Mountain King<sup>2</sup>

- Napoleon Mine (Patented Claim: Napoleon)<sup>3</sup>
- Ohio Mine<sup>1</sup>
- Onida<sup>3</sup>
- Park View Mine (View of the Park Mine; D & N Lead Mining Company Nos. 1-4)<sup>1</sup>
- Providence<sup>2</sup>
- Seward County Mine (Patented Claim: Seward County)<sup>1</sup>
- Silver Star Mine (Patented Claim: Silver Star)<sup>1</sup>
- Tobasco<sup>2</sup>
- Troy<sup>2</sup>
- Undine<sup>3</sup>
- Whitecross Mountain<sup>1</sup>

Notes: <sup>1</sup>Mines listed in mindat.org, September 2015.

<sup>2</sup>Mines listed by Eberhart (1969), as located near the settlements around Cinnamon Pass.

<sup>3</sup>Mines listed by Dunn (2003).

Minerals listed in the district (mindat.org) include:

Brochantite	Lillianite	Pyrite
Calaverite	Molybdenite	Quartz
Calcite	Opal	Sphalerite
Chalcopyrite	var: Opal-AN	Tetrahedrite
Galena	Platinum	

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

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Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

Wilson, A.B. and Spanski, G.T. 2004. Distribution of Mines and Mineralized Areas *in* Bankey, V., ed. Resource Potential and Geology of the Grand Mesa, Uncompahgre, Gunnison National Forest and Vicinity, Colorado. U.S. Geological Survey Bulletin 2213.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Hinsdale County

### Carson District

There are not many districts in Hinsdale County, but there are numerous names and potential confusion. The Carson District appears in Henderson (1926) and is described by Vanderwilt (1947 as sitting at the head of Wager Gulch (a tributary of the Lake Fork of the Gunnison River), approximately 18 miles southwest of Lake City. The area of the district crosses the continental divide into the headwaters of Lost Trail Creek.

Older geologic descriptions of the area can be found in Irving and Bancroft (1911). Based on more recent interpretations, Wilson and Spanski (2004) describe the area as the Carson volcanic center, a 29 Ma plug of monzonite to quartz monzonite composition, intruding intermediate lavas and breccias, and andesites and rhyolites of the Henson and Burns formations.

The rocks contain polymetallic veins in irregular fissures and fractures up to 18 inches wide (Larson, 1911). Ores contain silver and lead with some copper. Enargite, chalcopyrite and galena occur with some gold in a barite gangue. Some bog iron is also known to occur (Harrer and Tesch, 1959).

Eberhart (Ibid) describes the mining camp of Carson, established in 1882, the year after the district. The town sat directly on the continental divide, with water falling on one side of town heading toward the Lake Fork of the Pacific drainage, and water on the other side of town flowing into the Lost Trail Creek, of the Rio Grande system, headed toward the Atlantic Basin. With such a snow-bound location, the town didn't last long.

Mines listed in the district (mindat.org; Dunn, 2003; Eberhart, 1969) include:

- Bachelor Mine
- Bonanza King
- Carson
- Chandler
- Cresco
- Dunderberg
- George the Third Mine (Hattie; Marian; St. Peter; Vermont)
- Iron Mask
- Kit Carson
- Legal Tender
- Lost Trail mine
- Maid of Carson
- Mayflower
- St. Jacob Mine (Griggs; Patented Claims: Hamilton; St. Jacob Group; St. Johns; St. Jacobs)
- Thor
- Wager Gulch Limonite Deposit

Minerals listed in the district (mindat.org)

Baryte  
Chalcopyrite  
Enargite  
Famatinite

Galena  
'Limonite'  
Marcasite  
Pyrite

Quartz  
Sphalerite  
Tetrahedrite

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Harrer, C.M. and Tesch, W.J., Jr. 1959. Reconnaissance of Iron Occurrences in Colorado. U.S. Bureau of Mines Information Circular 7918, p. 44.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Irving, J.D. and Bancroft, H. 1911. Geology and Ore Deposits near Lake City, Colorado. U.S. Geological Survey Bulletin 478.

Larsen, E.S., 1911. The Economic Geology of Carson Camp, Hinsdale County, Colorado in Hayes, C.W. and Lindgren, W., eds., Contributions to economic geology (short papers and preliminary reports) 1910: Part I - metals and nonmetals except fuels. U.S. Geological Survey Bulletin 470-B. p. 30-38.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

Wilson, A.B. and Spanski, G.T. 2004. Distribution of Mines and Mineralized Areas in Bankey, Viki, ed. Resource Potential and Geology of the Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forests and Vicinity, Colorado. U.S. Geological Survey Bulletin 2213-E, p. 67-86.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## **Hinsdale County**

### **Cimarron District**

The Cimarron District was one of the six districts into which the Colorado legislature divided Hinsdale County in 1893. (The others were the Galena, Sherman, Lake, Whitecross and Carson Districts.) The Cimarron is a small district with little development occupying the far northwestern corner of Hinsdale County. It includes areas from the Ouray County line at Wetterhorn Peak east to Uncompahgre Peak (Luedke, 1972). It was identified by Henderson (1926). Dunn (2003) also mentions the district, and assigned the Silver Jack and Conkling Lode to it. Mindat.org adds the Golden Eagle and Government Stamp lodes.

Wilson and Spanski (2004) have some information on the areas. The geology shows some small intrusions of 30 to 35 Ma age of monzonite to quartz monzonite (Lipman et al., 1976). The only verified production came from the Silver Jack Mine, which produced small amounts of silver and lead ore. There are some 240 unpatented claims (the Dix and Cimarron Chief claims) on molybdenum prospects on the south edge of the Matterhorn Peak stock.

Mines listed in the district (mindat.org; Dunn, 2003) include:

- Silver Jack
- Conkling Lode
- Golden Eagle
- Government Stamp Lode

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Lipman, P.W., Fisher, F.S., Mehnert, H.H., Naeser, C.W., Luedke, R.G., and Steven, T.A. 1976. Multiple Ages of Mid-Tertiary Mineralization and Alteration in the Western San Juan Mountains, Colorado. *Economic Geology*, vol. 71, no. 3, pp. 571-588.

Luedke, R.G. 1972. Geologic Map of the Wetterhorn Peak Quadrangle, Colorado; U.S. Geologic Survey Geologic Quadrangle Map GQ-1011. Map Scale: 1:24,000.

Steven, T.A., Lipman, P.W., Fisher, F.S., Bieniewski, C.L., and Meeves H.C. 1977. Mineral Resources of Study Areas Contiguous to the Uncompahgre Primitive Area, San Juan Mountains, Southwestern Colorado. U.S. Geological Survey Bulletin 1391-E.

Wilson, A.B. and Spanski, G.T. 2004. Distribution of Mines and Mineralized Areas *in* Bankey, Viki, ed. Resource Potential and Geology of the Grand Mesa, Uncompahgre, and Gunnison (GMUG) National Forests and Vicinity, Colorado. U.S. Geological Survey Bulletin 2213-E, p. 67-86.

## Hinsdale County

### Galena District (aka Henson Creek District)

The Galena District was one of the six districts into which the Colorado legislature divided Hinsdale County in 1893. (The others were the **Carson, Cimarron, Lake, Whitecross** and **Sherman Districts**.) The district occupies the Lake City, Uncompahgre Peak and Redcloud Peak quadrangles.

Henderson (1926) recognized the Galena District in his compilation for Colorado, and Vanderwilt (1947) placed it along Henson Creek, west of Lake City and considered the Henson Creek District an alternate name. He noted that all the productive mines were located near the creek.

The Galena District overlaps (or blends into) the major district to the east, known variously as the **Lake, Lake City**, and/or **Lake Fork District**. Mindat.org separates these into two districts. The seminal work on the area - Irving and Bancroft (1911) does not distinguish the different districts, but rather discusses mines in the vicinity of Lake City.

Further confusing the situation, the Galena/Henson Creek District is described by the name of the creek. Irving and Bancroft list the group of mines among the most famous and productive in the area (the Hidden Treasure, Ute and Ulay) among the "Henson Creek Mines" which implies Henson Creek (Galena) District; mindat.org lists these in the Lake City District, as does Dunn (Ibid). Vanderwilt (Ibid) places these mines in the Galena (Henson Creek) District also, and provides a structural distinction between the two districts, noting that a down-faulted block lies between Henson Creek and Lake Fork. We have chosen to make the distinction as mindat.org does, so that referencing the mines will be easier for the reader.

The geology and mineralization of the district is typical of the western San Juan Mountains. The district sits within the caldera fill on the northeast margin of the Lake City Caldera (Steven and Lipman, 1976; Wilson and Spanski, 2004). Units include Oligocene quartz latite and andesitic flows and breccias of significant lateral extent, plus more localized flows; the Bachelor Mountain and Carpenter Ridge tuffs, the Fish Canyon tuff, the La Garita tuff, the Henson and Burns formations, the Sapinero Mesa, Eureka and Dillion Mesa tuffs along with silicic lavas (Day et al., 1999). Generalized descriptions are also available in Sanford et al. (1987).

Mineralization was described generally by Vanderwilt (Ibid) as vein mineralization continuous with that of the Silverton area. Bove et al. (2000) distinguish 23 Ma precious metal-bearing barite veins and older base-metal veins. Irving (1905) and Irving and Bancroft (1911) provide a detailed descriptions of the rocks and mineralization.

The town of Henson was the main settlement in the district. It was the site of a major miners strike in 1899 centered on the Ute-Ulay and Hidden Treasure Mines (mines which we have placed in the Lake City District, further demonstrating the overlapping of the districts in this area). The Colorado governor sent six companies of troops to keep order and the strike was finally settled with the involvement of the Italian consul. (Eberhart, 1969).

Mines listed in the district (mindat.org; Irving and Bancroft) include:

- Ajax No. 2
- Bess
- Big Casino Mine (Big Casino No. 2 Mill Site; Big Casino No. 2; Patented Claims: Big Casino No. 2)<sup>1</sup>
- California mine
- Capitol City Mine (Panhandle; Old Glory; Laddie Boy; Sunny Chief)<sup>1</sup>
- Chord
- Copper Mountain
  - Big Horn prospect
  - John J. Croke prospect
- Czar Mine (Broker; Czarina; Czar)<sup>1</sup>
- Czarina Mine<sup>1</sup>
- Dolly Varden Mine (Varden Belle Mine; Patented Claim: Dolly Varden)
- Eagle and Mary Alice Claims
- Excelsior Mine (Patented Claim: Excelsior)<sup>1</sup>
- Frank Hough Mine (Hough Mine; Patented Claim: Frank Hough)
- Gallic - Vulcan Group (Weatherhorn)<sup>1</sup>
- Golconda Mine
- Henderson Gold Mine<sup>1</sup>
- Henson Creek-Ute Creek
- Highland Chief Mine (Wall Street Empire Chief Mine; Mathison)
- Hoosier Boy Mine (Unpatented Claims: Isabel R.; Little Joe; Red Bird; Patented Claim: Adelia; Blue Bird)
- Lellie Mine (Red Rover)<sup>1</sup>
- Lilly Mine<sup>1</sup>
- Mohawk
- Moro Mine (Moro Extension; Moro Tunnel Site; Ajax Limited; Moro-Ajax Mine; Moro Mill Site; Patented Claims: Moro Limited; Unpatented Claims: Ajax No. 2)<sup>1</sup>
- Oro - Fino Tunnels
- Palmetto Mine (Chimney Corner)
- Pearl and Ruby Groups (Ruby; Patented Claim: Pearl)
- Pride of America Mine<sup>1</sup>
- Silver Chord Mine (Patented Claim: Silver Chord)
- St Louis
- Treasure Hill Spar Claim (Patented Claims: Treasure Hill Spar)
- Vermont<sup>1</sup>
- Woodstock Prospect
- Yellow Medicine Mine (Mountain Bell; Patented Claims: Yellow Medicine)<sup>1</sup>

Note: <sup>1</sup>Detailed description of mine contained in Irving and Bancroft (1911).

Minerals listed in the district (mindat.org) include:

Acanthite	Copper	Gypsum
Anglesite	'Copper Stain'	Hessite
'Apatite'	Covellite	Jarosite
Azurite	Emplectite	Kaolinite
Baryte	Enargite	'Limonite'
Bornite	Fluorapatite	Malachite
Calcite	Fluorite	Muscovite var: Sericite
Cerussite	Freibergite	'Obsidian'
Chalcocite	Galena	Opal
Chalcopyrite	var: Argentiferous Galena	Petzite
'Chlorite Group'	Gold	Pyrrargyrite

Pyrite  
Quartz  
var: Amethyst  
var: Chalcedony  
Rhodochrosite  
'Ruby Silver Ore'

Silver  
Smithsonite  
Sphalerite  
Stephanite  
Stromeyerite  
Sylvanite

Tennantite  
Tetrahedrite  
Uraninite  
Uranophane  
Wulfenite

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[www.mindat.org](http://www.mindat.org), accessed September 2015.

## **Hinsdale County**

### **Lake City District (aka Lake District; aka Lake Fork District)**

The Lake City District has been identified as the Lake, the Lake City and the Lake Fork District. These districts are occasionally differentiated, but here we include all as the same district, extending south to Lake San Cristobal.

The Lake District was one of the six districts into which the Colorado legislature divided Hinsdale County in 1893. (The others were the Carson, Cimarron, Galena, Whitecross and Sherman Districts.) The district occupies the Lake City, Uncompahgre Peak and Redcloud Peak quadrangles.

Lake overlaps (or blends into) the major district to the west, the **Galena or Henson Creek District**. Mindat.org separates the Lake and the Galena into two districts. The seminal work on the area - Irving and Bancroft (1911) does not distinguish the different districts, but rather discusses mines in the vicinity of Lake City.

Mindat.org and Dunn (2003) list the group of mines (the Hidden Treasure, Ute and Ulay) among the most famous and productive in the Lake City District. However, Irving and Bancroft (Ibid) lists them among the "Henson Creek Mines," which implies Henson Creek (Galena) District. Vanderwilt (1947) places these mines in the Galena (Henson Creek) District also, and provides a structural distinction between the two districts, noting that a down-faulted block lies between Henson Creek and Lake Fork. We have chosen to make the distinction as mindat.org does to make referencing the mines easier for the reader.

Irving and Bancroft (Ibid) distinguish a group of mines as the San Cristobal Group, south of Lake City - a geographic distinction that we believe places those mines in the Lake City district.

The geology of the Lake City District is typical of the San Juan Mountains. The district sits within the caldera fill on the northeast margin of the Lake City Caldera (Steven and Lipman, 1976; Wilson and Spanski, 2004). Units include Oligocene quartz latite and andesitic flows and breccias of significant lateral extent, plus more localized flows; the Bachelor Mountain and Carpenter Ridge tuffs, the Fish Canyon tuff, the La Garita tuff, the Henson and Burns formations, the Sapinero Mesa, Eureka and Dillion Mesa tuffs along with silicic lavas (Day et al., 1999). Generalized descriptions are also available in Sanford et al. (1987).

Mineralization was described generally by Vanderwilt (Ibid) as vein mineralization continuous with that of the Silverton area. Bove et al. (2000) distinguish 23 Ma precious metal-bearing barite veins and older base-metal veins. Irving (1905) and Irving and Bancroft (1911) provide a detailed descriptions of the rocks and mineralization.

Some top-producing mines include the Golden Fleece (nee Hotchkiss) mine, discovered in 1874, which produced \$1.4M in metals (Henderson, 1926). The Pelican Mine produced off and on from 1891 to 1960; Irving and Bancroft (Ibid) report freibergite, pyrrargyrite and galena as the main minerals. The Fanny Fern Mine produced silver from tetrahedrite, reporting 74,000 ounces of silver and 65 ounces of gold.

The Black Crook Mine operated off and on until 1953. The Contention Mine was another major producer.

The Ute and Ulay veins are names that always appear in relation to the mines and deposits of the Lake City area. The Ute was the most productive and important of all the mineral veins in the district (Irving and Bancroft, Ibid). The vein was traced for 2,700 feet along outcrop. The vein described an arc, concave to the northwest, averaging four feet in width, but pinching and swelling and occasionally splitting. The vein sequentially filled first with quartz, then rhodochrosite/tetrahedrite/galena and then more quartz. Later movement shattered the vein material and deposited more quartz and barite. The ore mineralization was (presumably, because it was mostly gone even before Irving and Bancroft visited) argentiferous galena with subsidiary tetrahedrite, sphalerite, pyrite and enrichments of ruby silver (proustite/pyrargyrite -  $\text{Ag}_3\text{AsS}_3$ -  $\text{Ag}_3\text{SbS}_3$ ). Further details are available in Irving and Bancroft (Ibid).

A unique situation has been identified at the Golden Wonder Mine. Irving and Bancroft (Ibid) recognized it as the "only true replacement deposit" in the Lake City area. It was recognized as a hot spring deposit in the 1980's (Billings, 1983; Billings and Kallowkoski, 1982; Kalliokoski and Rehn, 1987), described as a small epithermal alunitic gold and base metal deposit within flow-foliated rhyolite. The deposit contains considerable gold (often microscopic native gold) and maintains an active permit with the State of Colorado as of 2015 for LKA Gold Incorporated.

Early activity did not develop until the Brunot Treaty of 1873 with the Ute tribe allowed worry-free entry into the territory. The Ute-Ulay discovery had been made in 1871, but not developed until the treaty was in place (Eberhart, 1969). Lake City was the first settlement, named for Lake San Cristobal. Many colorful characters passed through the town, including Alfred Packer, the famous Colorado cannibal.

Mines listed in the district (mindat.org and others) include:

- Belle of the West Mine (Malter Placer; Western Belle; Delphos; Trenton; Extension; Patented Claims: Belle of The West)
- Black Crook Mine (Ilma-Hiwassee group; Ilma Mine; New Year)<sup>1</sup>
- Cleveland Mine
- Contention Mine (Patented Claims: Contention; Mayflower)<sup>1</sup>
- Dauphin<sup>1</sup>
- Dawn of Hope
- Eckman Manganese Deposit
- Evangeline claim
- Fanny Fern Mine (Mayday Lode; J. C. Lode; Springfield; Unpatented Claims: Fanny Fern No. 2; Patented Claim: Fanny Fern; B. R. Lode)
- Ferrara Ranch
- Galena
- Garlock mine
- Gladiator Mine (Ore House; Gladiator; Montana Nos. 1-9)
- Gold Quartz Mine (Wells Mine; Patented Claim: Red Cloud; Gold Quartz Nos. 1-6; Unpatented Claim: Gold Quartz)
- Golden Wonder Mine<sup>1,2</sup>
- Happy Day
- I.D.A. Occurrence
- Ilma Mine
- L-C Property (Lake City Property)

- Lake City
  - Belle of the East Mine
  - Golden Fleece Mine<sup>1</sup>
  - Governor Pitkin Mine
  - Hidden Treasure Mine<sup>1</sup>
  - Hotchkiss lode
  - Ocean Wave Mine
  - Oulay Mine (Ulay Mine; **Ute-Ulay Mine**)<sup>1</sup>
- Lake Fork River
  - Monte Queen Mine
- Lode Star<sup>1</sup>
- Louise Morrell Lode Nos.1 & 2
- Mable
- Matterhorn Peak Area
  - Dix and Cimarron Chief Groups
- Missouri Favorite Mine<sup>1</sup>
- Monte Queen<sup>1</sup>
- Nellie M. Mine (Patented Claim: Nellie M.)<sup>1</sup>
- Ottawa Mine<sup>1</sup>
- Pelican Mine<sup>1</sup>
- Red Mountain Alunite Deposit
- Risorgimento Mine (Patented Claim: Risorgimento)
- Rodney No. 1
- Silver Creek
- St. Mary's Mining Company Property (V.C.)
- Sulphuret Mine (Cora; Patented Claims: Sulphuret; Sulphuret-Cora Mine)<sup>1</sup>
- Sunshine Peak tuff
- Uncompahgre Peak
- Uncompahgre Peak Prospect (Maurell Claim)
- Ulay<sup>1</sup>
- Ute<sup>1</sup>

Notes: <sup>1</sup>Detailed description of mine contained in Irving and Bancroft (1911).

<sup>2</sup>Considerable information on mine (refer to bibliography).

Minerals listed in the district (mindat.org) include:

Acanthite	Colusite	Lead
Aikinite	Copper	'Limonite'
Altaite	Covellite	Luzonite
Alunite	Dickite	Magnetite
Ankerite	Emplectite	Malachite
'Apatite'	Enargite	Marcasite
Arsenopyrite	Epidote	Matildite
Azurite	Fluorite	Mawsonite
Baryte	Freibergite	Melanterite
Bismuthinite	Galena	Melonite
Bornite	var: Argentiferous Galena	Molybdenite
Boulangerite	Gold var: Electrum	Molybdite
Bournonite	Gypsum var: Selenite	Muscovite var: Sericite
Calaverite	Hematite	Natrolite
Calcite	Hessite	Pearceite
Chalcopyrite	Hinsdalite (TL)	Petzite
Chalcostibite	Jamesonite	Pilsenite
'Chevkinite'	Kaolinite	Polybasite
Coloradoite	Krennerite	Proustite

Pyrargyrite	Smithsonite	Tennantite
Pyrite	Sphalerite	Tetrahedrite
Pyroxmangite	Stephanite	var: Argentinian Tetrahedrite
Quartz	Stibnite	var: Zincian Tetrahedrite
var: Chalcedony	Stützite	Uraninite var: Pitchblende
var: Jasper	Svanbergite	Volynskite
Rhodochrosite	Sylvanite	Wurtzite
'Schirmerite'	Tellurium	
Silver	Tellurobismuthite	

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[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Hinsdale County

### Sherman District (aka Park District)

The Sherman District was one of the six districts into which the Colorado legislature divided Hinsdale County in 1893. (The others were the **Galena, Cimarron, Lake, Whitecross** and **Carson Districts**.) The location of the Sherman District is not well defined. Henderson (1926) indicates that the Park District overlaps the Sherman District. He provided a specific location for the Park District that appears to include the area we have enclosed in the **Burrows Park District**. He does indicate that it overlaps the Sherman District. Dunn (2003) distinguishes the two districts, with the Park District on the Lake Fork of the Gunnison River and the Sherman in the vicinity of the ghost town of Sherman. Mindat.org calls the two districts the same and places both south of the Cinnamon Pass area, which we have placed in the Burrows Park District. In general, we place the Sherman District (aka Park District) south of Handies Peak, to the area around Cottonwood Creek.

Dunn (Ibid) assigns the Black Wonder, Washington and Vermont mines to the Sherman District and the Illinois Boy, Champion and Grand Republic to the Park District. We have placed the Illinois Boy and Champion in the Burrows Park District.

The geology is generally described in Lipman (1976) and Lipman et al. (1976), summarized in Sanford et al. (1987) as lying in the area of the San Juan and Lake City calderas. Rocks included are Sapinero Mesa tuff and megabreccia, Precambrian granite representing the terrain in which the calderas formed, along with post-breccia lava flows and fill.

Mineralization is similar to the other Hinsdale County districts, with predominately veins carrying gold and silver, and some base metals. Sanford et al. (Ibid) found potential for precious and base metals, and porphyry molybdenum.

Mines listed in the district (mindat.org) include:

- [Black Wonder Mine \(Black Wonder Extension; Black Wonder No. 2; Patented Claims: Black Wonder\)](#)
- [George Washington Group \(Patented Claims: George Washington; No. 2 Ruby\)](#)
- [Minnie Lee Mine \(Patented Claims: Minnie Lee; Minnie Lee Mill Site; Morning Star\)](#)
- [Sterling Group](#)

Minerals listed in the district (mindat.org) include:

[Acanthite](#)

['Apatite'](#)

[Chalcopyrite](#)

[Colusite](#)

[Covellite](#)

[Galena](#)

['Monazite'](#)

[Pyrite](#)

[Quartz](#)

[Rhodochrosite](#)

[Sphalerite](#)

[Tennantite](#)

[Tetrahedrite](#)

[Thorite](#)

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[www.mindat.org](http://www.mindat.org), accessed October 2015.

# **Huerfano County**

## **Huerfano District**

Dunn (2003) lists two Huerfano Districts, designated A and B. The District she terms "Huerfano B," while shown using her coordinates on the accompanying map, is considered to be part of the Malachite District, as indicated in Vanderwilt (1947).

The "Huerfano A District" is at the southern end of the county in the vicinity of the Spanish Peaks. Vanderwilt (1947) reports 168 ounces of gold, 1176 ounces of silver, 92 pounds of copper and 1067 pounds of lead were recovered from the area.

Several old mines are found in the vicinity of the West Spanish Peak. Budding and Kluender (1983) found mineralization there in veins along a shear zone and in the contact metamorphic aureole around the Spanish Peak intrusive. They report samples from an adit of the Bulls Eye Mine of 0.026 ounces per ton of gold, 2.2 ounces per ton of silver, 2.7 per cent lead and 4.4 per cent zinc.

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# Huerfano County

## La Veta District

Vanderwilt (1947) reports a small amount of placer gold production from Wahatoya Creek and small tributaries to the Apishapa River. The source of the gold has not been identified. Lode deposits with silver, copper, zinc and tetrahedrite are reported. The geology consists of metasediments in contact with the intrusive rocks with some veins in the augite diorite of the intrusive rocks themselves. To the north, in the LaVeta Pass area, copper, uranium and vanadium have been reported in redbed sequences along the east flank of the Sangre de Cristo Range. In the files of the Colorado Geological Survey, Atomic Energy Commission Preliminary Reconnaissance Reports document elevated concentrations of those three commodities. Up to 3.6 per cent  $V_2O_5$ , 3.5 per cent copper and 0.3 to 0.36 per cent  $U_3O_8$  are reported in some of the documents.

Mines in the District (Mindat.org)

- [Black Jack No. 2 Claim](#)
- [Bullseye Mine](#)
- [Dallas Dottie Prospect](#)
- [Independent Claim](#)
- [Occidental Claim](#)
- [Unnamed Silver Prospects \(MRDS - 10011627\)](#)
- [Unnamed Silver Prospects \(MRDS - 10087404\)](#)
- [Washout Claim \(Price Ranch\)](#)
- [Wayatoya Creek Placer](#)

Minerals cited (Mindat.org)

<a href="#">Bornite</a>	<a href="#">Copper</a>	<a href="#">Gold</a>	<a href="#">Tetrahedrite</a>
<a href="#">Calcite</a>	<a href="#">Covellite</a>	<a href="#">Metazeunerite</a>	<a href="#">Uraninite</a>
<a href="#">Carnotite</a>	<a href="#">Cuprite</a>	<a href="#">Quartz</a>	
<a href="#">Chalcocite</a>	<a href="#">Digenite</a>	<a href="#">Siderite</a>	
<a href="#">Chalcopyrite</a>	<a href="#">Galena</a>	<a href="#">Sphalerite</a>	

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# Huerfano County

## Malachite District

The Malachite District is described by Vanderwilt (1947) as lying 5 miles southwest of the town of Gardner. This is probably contiguous with the Huerfano "B" District of Dunn (2003). In the area, uranium, vanadium, and copper with some minor silver in arkosic red sandstones and associated rocks appear similar to those described in the LaVeta Pass Area in the same units - Farasita Formation and Sangre de Cristo Formation (Baskin, 1983).

Mines (Mindat.org) - (listed by mindat.org as the Gardner area)

Anal No. 1 Mine (aka Mitzy, Buckhorn, M.P. Nos. 1-9, Security Exploration Company Claim)

Bell Air Claims

Deitz Ranch Occurrence

Isabell Group

Little Joe Claims

Little Joe No. 1

Maes Creek Prospects

Polvo Blanco Occurrence

South Apache Creek prospects

Stumbling Stud Mine (Badito Cone Mine)

Tom Branch Prospects

Virginia - Verna 1 - 6 claims

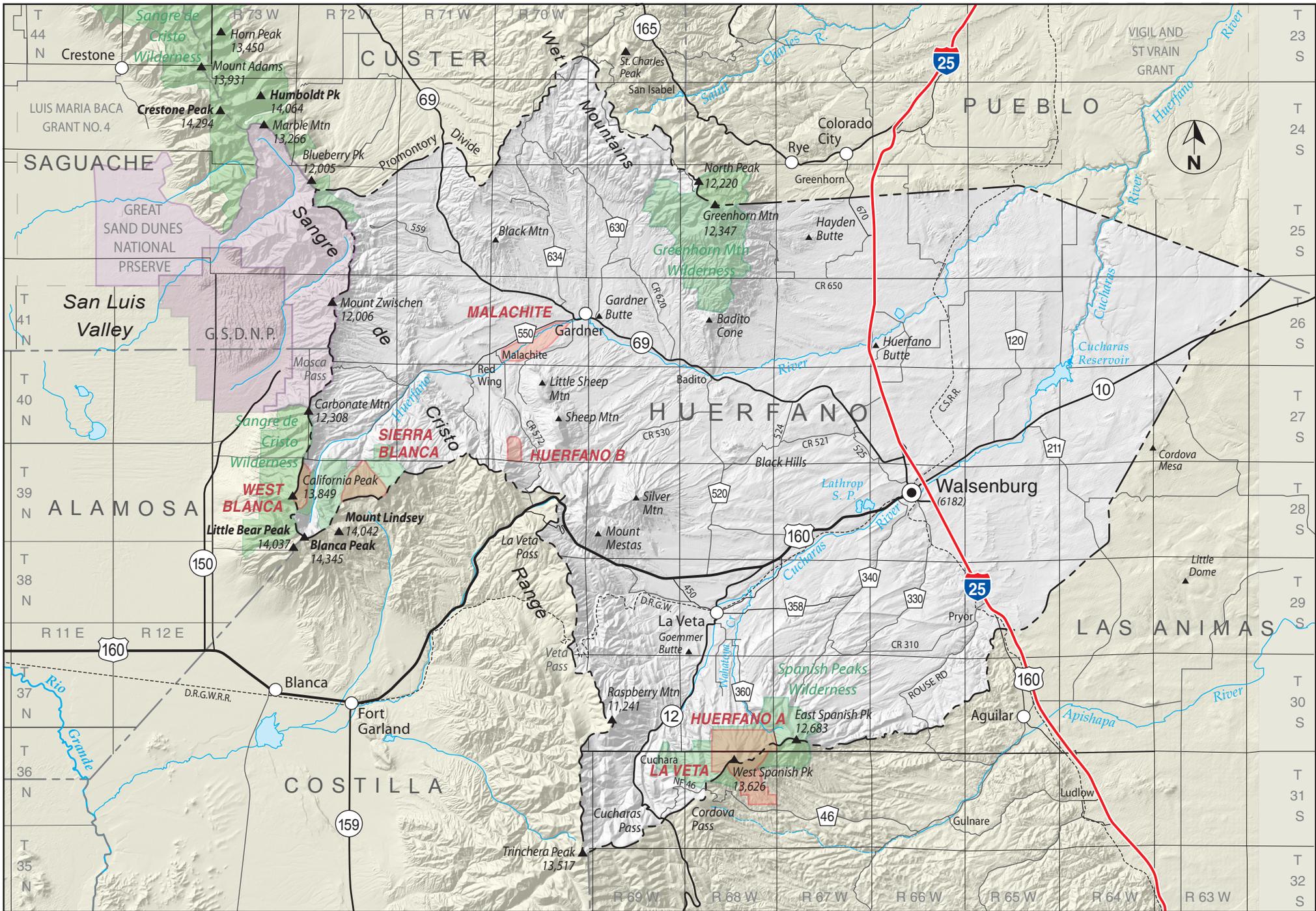
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# Huerfano County

## Sierra Blanca and West Blanca Districts

The area referred to as the **Sierra Blanca** and the **West Blanca Districts** are also referred to simply as the **Blanca District** at times. These all refer to the area in Western Huerfano County (and contiguous Alamosa County) along and, in places, over the crest of the Sangre de Cristo Range, between Blanca Peak on the south and Carbonate Mountain on the north.

The area was covered in reports of studies of the potential Sangre de Cristo Wilderness Area. Johnson, et al (1984) considered the area around Carbonate Mountain, crossing the crest of the Sangre de Cristo Range, southeast of Great Sand Dunes National Park. The host rocks were interpreted to be highly deformed and metamorphosed Minturn Formation, containing gold, silver, and copper. The area was assessed to have a moderated potential for mineral development.

Several miles south of Carbonate Mountain an area spanning the boundary of Huerfano and Costilla Counties near Blanca Peak roughly corresponds to Dunn's (2003) Sierra Blanca District. There a gneissic tonalite and metadiorite contains veins with gold, silver, tungsten and copper. This area was considered by the authors as an area of high potential.

Scott (1986) looked at this area later for the U.S. Bureau of Mines. The area contains a system of several large veins called the Courthouse Vein System. He points out that 40 ounces of gold are reported to have been removed from the system, but this is probably only a fraction of the actual amount. He interpreted the area to be of high potential also, for gold, silver and tungsten with the possibility of tellurium and platinum resources. His estimates were 4 million tons with an average grade of 0.4 ounces gold, 8 ounces of silver and 0.01 per cent  $WO_3$ . in these large quartz veins. His estimate at the time was a value of \$500 million at prices of \$300 per ounce for gold, \$6 per ounce for silver and \$0.04 per pound for tungsten.

In the Mineral Resources Data System (MRDS), additional commodities are listed for these districts. They are molybdenum, antimony, and tellurium.

### Mines (Mindat.org and MRDS)

Hamilton Mine

Little Gerard Mine

Blanca Mine

Swab Mine

Coronado Group (includes Eagle Plume, Keystone, Jessie Mae, Divide End, and unpatented claims)

### Minerals noted (MRDS)

Pyrite

Scheelite

Galena

Sphalerite

Tetrahedrite

Wolframite

Sylvanite

Calaverite

Hessite

Pearceite

Quartz

Calcite  
Ankerite  
Barite  
Adularia

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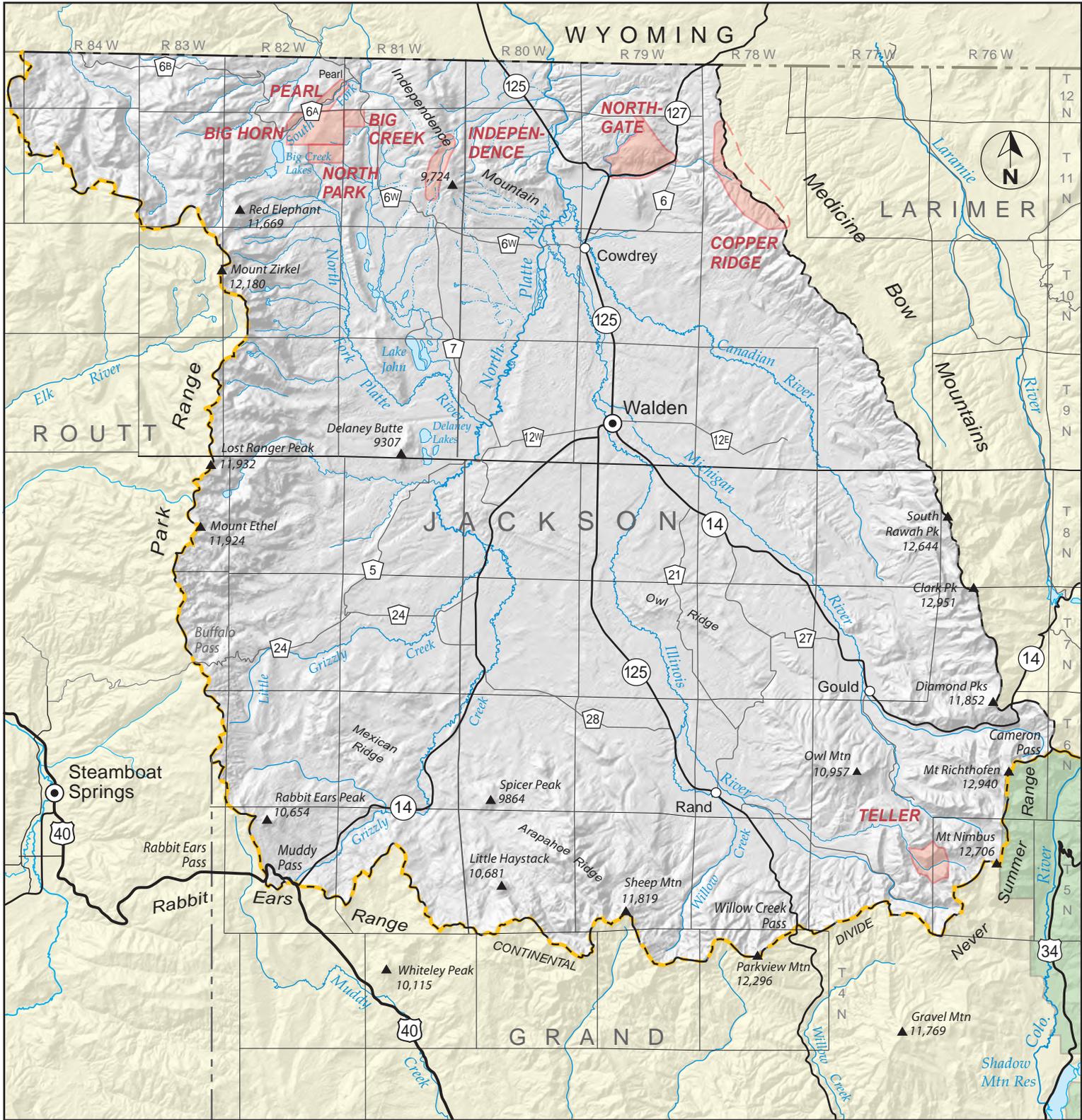
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WYOMING

LARIMER

JACKSON

GRAND

ROUTT

MEDICINE BOW

TELLER

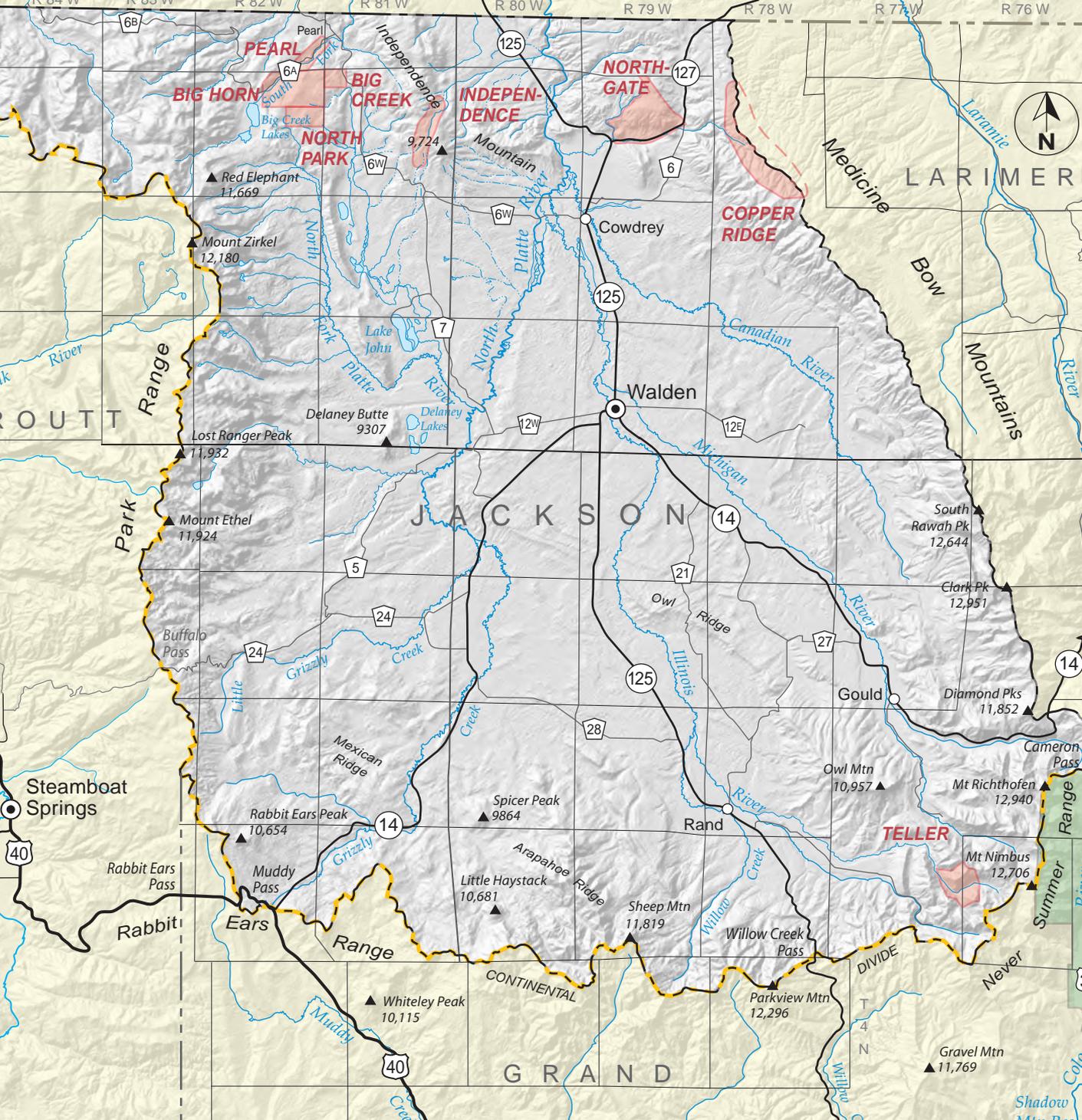
Park Range

Summer Range

Rabbit Ears Range

Never

CONTINENTAL DIVIDE



Steamboat Springs

Walden

Gould

Rand

North Gate

Walden

Walden

Parkview Mtn

Pearl

North Park

Big Creek

Independence

North Gate

Copper Ridge

Walden

South Rawah Pk

Clark Pk

Diamond Pks

Camaron Pass

Mt Nimbus

Gravel Mtn

Big Horn

North Park

Independence

North Gate

Copper Ridge

Walden

South Rawah Pk

Clark Pk

Diamond Pks

Camaron Pass

Mt Nimbus

Gravel Mtn

Big Horn

North Park

Independence

North Gate

Copper Ridge

Walden

South Rawah Pk

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South Rawah Pk

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Diamond Pks

Camaron Pass

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Gravel Mtn

Big Horn

North Park

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Gravel Mtn

Big Horn

North Park

Independence

North Gate

Copper Ridge

Walden

South Rawah Pk

Clark Pk

Diamond Pks

Camaron Pass

Mt Nimbus

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Big Horn

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North Gate

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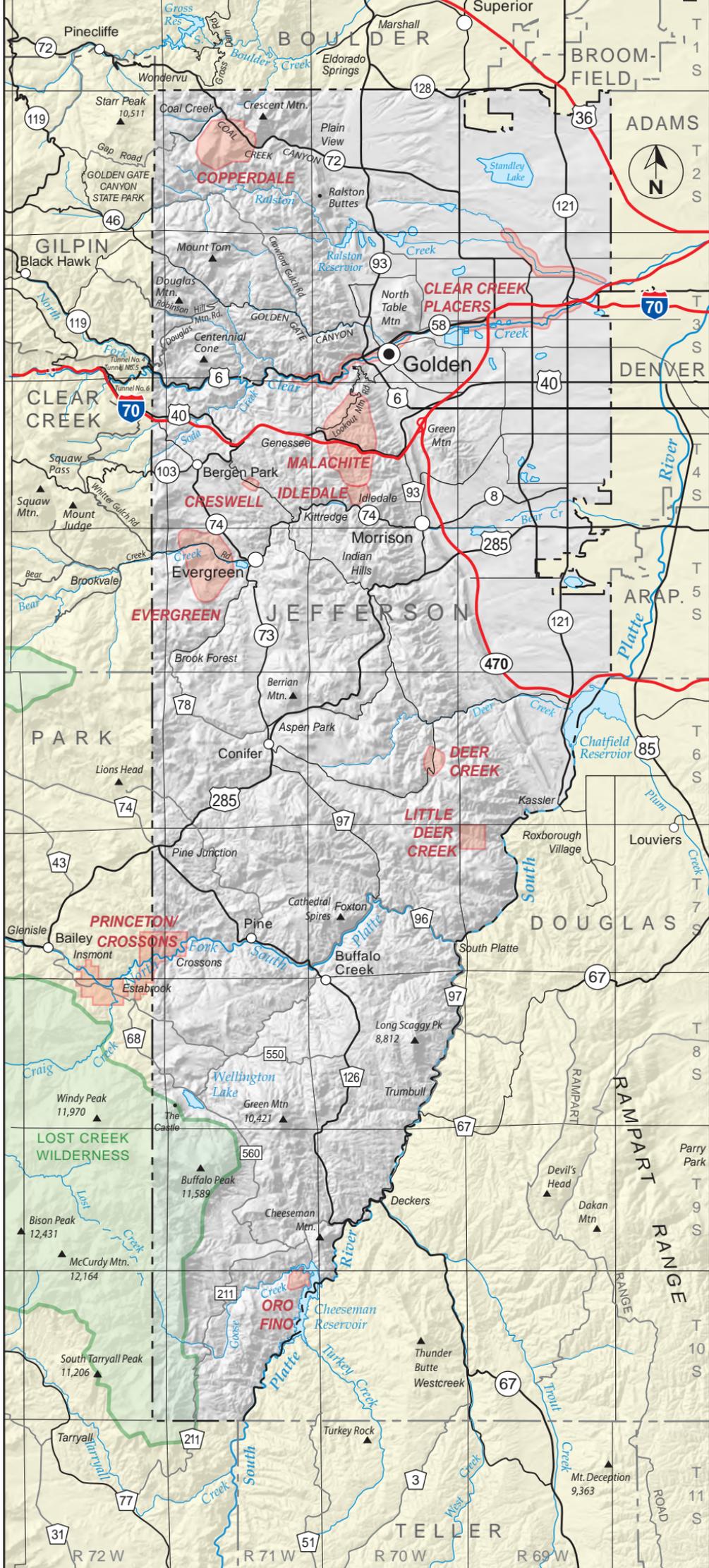
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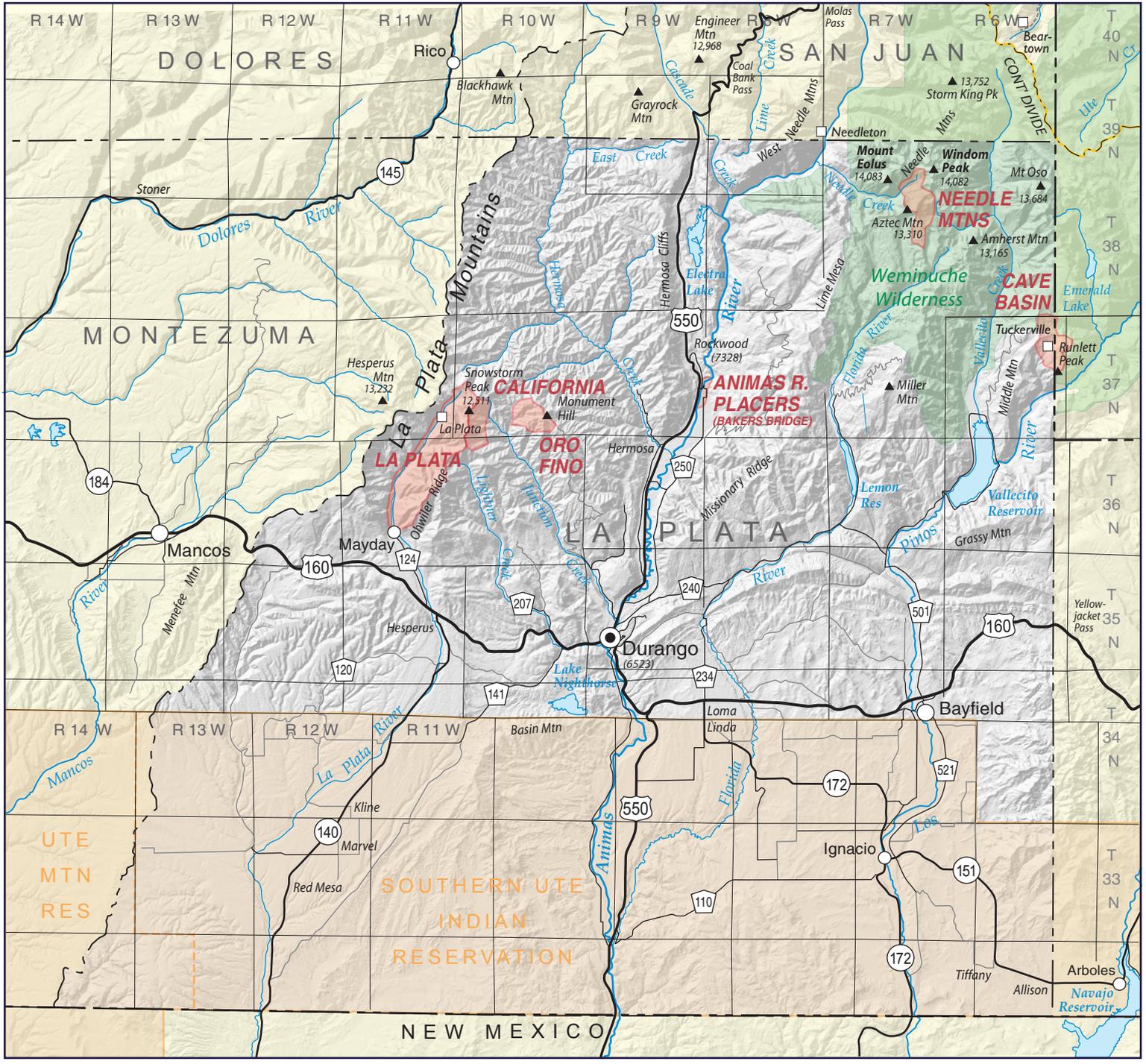
**Editor's Note:** *Detailed descriptions of the historical mining districts in Jackson County are not available as of the online publication date  
11 November 2020*



T 1 S  
T 2 S  
T 3 S  
T 4 S  
T 5 S  
T 6 S  
T 7 S  
T 8 S  
T 9 S  
T 10 S  
T 11 S

R 72 W R 71 W R 70 W R 69 W

**Editor's Note:** *Detailed descriptions of the historical mining districts in Jefferson County are not available as of the online publication date 11 November 2020*



R 14 W

R 13 W

R 12 W

R 11 W

R 10 W

R 9 W

R 8 W

R 7 W

R 6 W

DOLORES

SAN JUAN

Rico

Engineer Mtn  
12,968

Molas Pass

▲ 13,752  
Storm King Pk

CONT. DIVIDE

T 40 N

T 39 N

Stoner

145

La Plata Mountains

East Creek

550

▲ 14,083  
Mount Eolus

▲ 14,082  
Windom Peak

▲ 13,684  
Mt Oso

Weminuche Wilderness

▲ 13,165  
Amherst Mtn

MONTEZUMA

▲ 13,232  
Hesperus Mtn

CALIFORNIA Monument Hill

ANIMAS R. PLACERS (BAKERS BRIDGE)

▲ 13,684  
Cave Basin

▲ 13,684  
Mt Oso

184

Mancos

Mayday

124

LA PLATA

HERMOSA

Rockwood (7328)

▲ 13,165  
Miller Mtn

▲ 13,684  
Runlett Peak

Mancos

160

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HERMOSA

Rockwood (7328)

**LaPlata County**

**California District**

Refer to the La Plata District.

## La Plata County

### Cave Basin District

The Cave Basin District is a minor, poorly-defined and little known district at the head of Cave Basin Creek, a tributary of the Los Pinos River, near the La Plata - Hinsdale County line (Dunn, 2003). Vanderwilt (1947) states that reports place deposits on the slopes of Mount Runlett, which he could not locate; Runlett Peak does appear on maps now on that county line.

Mindat.org does include the basin with several named mines, as shown below. Steven et al. (1969) include a short description of the Cave Basin area. Replacement deposits in lower Paleozoic sedimentary rocks near the base of the section contain base and precious metals. They quote total production from the Holbrook, Mary Murphy and Silver Reef veins (sporadically from 1913 through 1928) of 12 ounces gold, 237 ounces silver, 2900 pounds copper and 1700 pounds lead.

Mines listed in the Cave Basin District and Runlett Peak-Cave Basin Area include:

#### [Holbrook](#)

Runlett Peak-Cave Basin Area

- [Silver Reef Group \(Shy Claims; Silver Reef Mine; Three Jacks Group; Mary Murphy Mine; Chance Group; Red Bird Group\)](#)

Minerals listed in the Cave Basin District and Runlett Peak-Cave Basin Area (mindat.org) include:

Azurite

Calcite

Chalcocite

Galena

Hematite

'Limonite'

Malachite

Siderite

Smithsonite

Sphalerite

References:

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## La Plata District (aka California District)

The La Plata District lies in the La Plata Mountains of southwestern Colorado, northwest of the city of Durango, between the San Juan Mountains and the Colorado Plateau. Most sources recognize it is synonymous with the **California District**; Vanderwilt (1947) also notes the names of the **Oro Fino** and **May Day Districts** are associated with (or included in) the La Plata District. Dunn (2003) states that several "regional districts" are included, such as the **McQuiety District**.

The La Plata Mountains consist of a complex laccolithic terrain, 15 miles in diameter, with sedimentary rocks uplifted by numerous intrusions of dikes, sills, and stocks and subsequently eroded. The exposed sedimentary sequence ranges from the Pennsylvanian Hermosa Formation to the Cretaceous Mancos shale. All the igneous rocks are tertiary, characterized by Eckel (1947) as either porphyritic or non-porphyritic. The porphyritic rocks are nearly all monzonites and diorites, with syenites being added to the mix in the non-porphyritic portion.

Ore was first discovered in 1873, but only minor production occurred until 1900. From then until the 1930s, there was significant production, with the May Day and Idaho mines being the largest producers. Gold was the leading product, but silver and some lead and copper were also recovered.

The area is noted for its telluride minerals and for the large variety of minerals found in the deposits. Mineralization styles are predominantly veins and replacements of gold and silver-bearing telluride ores. However, a large variety of deposit types are present. Described by Eckel (1947), they are "disseminated deposits of platinum-bearing chalcopyrite; gold-bearing contact-metamorphic bodies; veins, replacements and breccia bodies of pyritic gold ore; veins of mixed base-metal sulfides with silver or native gold; chalcocite veins; and veins of ruby silver ore."

More detail of the geology and the deposits can be found in Cross et al. (1899), Eckel (1936a; 1936b), and Emmons (1905). Eberhart (1969) relates information on the mining camps of Parrot City, La Plata City, and May Day. Detailed descriptions of many of the mines listed below are contained in Eckel (1949).

Mines listed in the district (mindat.org and others) include:

- [Allard Tunnel Occurrence \(Audrey Nos. 1-2; Protection; Ruby Nos. 1-95; Shorty Nos. 1-4; Jane Nos. 1-4; Minnie\)](#)
- [Ashland - Ten Broeck Mines \(Parole Extension; Brawner; Patented Claims: Ashland; Ten Broeck\)](#)
- [Aurora Mine \(Patented Claims: Jim Smith; Jewel; Aurora\)](#)
- [Babcock Peak Magnetite Deposit](#)
- [Bay City Mine](#)
- [Bessie G Mine](#)
- [Bessie Jr; Oroverde Occurrence](#)
- [Black Diamond Mine](#)
- [Blackhawk](#)
- [Bonnie Girl Mine \(Baker Contact\)](#)
- [Boren Creek Shaft Occurrence](#)
- [Boren Gulch Group](#)
- [Brawner Tunnel & Mill](#)
- [Buffalo - Bristol Claims](#)
- [Bull - Dover et al Claims](#)
- [Camp Bird Prospect](#)
- [Century](#)

- Champion
- Charlene Prospect (Twin Canyon)
- Checkmaker
- Cherry Creek Occurrence
- Columbus Mine (Last Chance; Maverick; Columbus; Moonlight; Little Mack; Gold Cup)
- Copper Age Mine
- Cumberland Mine (Patented Claims: Cumberland; Judge Lamb)
- Cunningham (Cunningham Tunnel)
- Daisy - Hibernia Mine
- Durango Girl Mine (Patented Claims: Durango Boy; Durango Girl; New Hope)
- Eagle Pass Mine (Unpatented Claims: Bodie; Patented Claim: Eagle Pass; Roosevelt)
- East Mancos River Placers
- Escalante
- Esmerelda (Esmerelda Tunnel)
- Eureka - Bulldozer Mine (Patented Claim: Eureka; Unpatented Claim: Bulldozer)
- Farmer Boy (Former Bay on Topo Sheet; Lucky Four in Prof. Paper 219)
- Fraction
- George A. Greenwood Group
- Goff claim
- Gold Bar Placer
- Gold King - Swamp Angel Group (Patented Claims: Gold King; Swamp Angel)
- Gold King Mine
- Gold Nugget Group
- Gold Wedge
- Golden Girl
- Golden Rose
- Gracie I. Fox
- Grand View Prospect
- Grassy Hills (Grassy Hill Tunnel)
- Graves
- Greenhorn Prospect
- Ground Hog Tunnel
- Gustas Brothers
- Hamilton
- Hidden Treasure (Heck Mine)
- Honeydew Prospect (Del Rey)
- Idaho Mine
- Incas Mine
- Iridos Mine (Irodas Mine)
- Iron King
- J. L. Russell - Jim Smith
- Jennie Lind Mine (Patented Claim: Jennie Lind)
- Jewell Group
- John Graves Manganese Prospect
- Jumbo - Morovoratz Mine (Jumbo; Patented Claims: Morovoratz; Morovoratz)
- Junction Creek Claims
- Kennebec
- Klondyke
- La Plata
  - Copper Hill Mine (Gold Eagle; Delaware Claims)
  - Tippecanoe Mine (Laura A. Mill Site; Laura A.; Monitor; Cora G.; Patented Claims: Tippecanoe)
  - Unnamed Swamp
- La Plata River Headwaters
- La Plata River Placers
- Lady Eleanora Mine (Butterfly)
- Last Chance
- Lewis Creek Adit Occurrence
- Little Kate Mine (Patented Claim: Little Kate)
- Little Nona Mine (Unpatented Claim: Little Nona)
- Lost Mine (Unpatented Claim: Lost)
- Lucky Discovery Mine
- Lucky Four Mine (Delphic)
- Lucky Strike
- Mammoth Prospect
- Mark Thomas Occurrence
- Mary S.
- Mason Mine (Poverty Hill; Golden Eagle; Red Rock; Poverty Hill Group)

- May Day Mine
- May Rose Mine (Yuletide)
- Mineral Wonder Mine (Butterfly; September; Mineral Wonder; Stamboul and Butterfly Mines; Ruby Queen; Patented Claims: Stamboul)
- Monarch Mine (Eclipse; Jupiter; Sunshine; Monitor; Tip Top Mine; Platora; Happy)
- Montezuma Gold Reef Group
- Moonlight Prospect
- Mountain Lily Mine (Camp Bird; Timberline; Ramona)
- Muldoon Mine (Unpatented Claims: Independence; Cumberland; Patented Claim: Muldoon)
- Neglected Mine
- Omaha - Grant Smelter (?slag locality)
- Oro Fino
- Oro Negro Group
- P. W. Pittman Group
- Painter Placer Claims
- Parrott City
  - Comstock Mine
- Pat Lode
- Puzzle Mine (Unpatented Claims: Puzzle Nos. 4-9; Jennie Lind)
- R. M. Campbell Group
- Red Arrow
- Rosenite (Mars No. 0080670197)
- Ruby King Mine (Patented Claim: Ruby King)
- Sadie Mine
- Sarah S.
- Semanda Mining Property
- Shoo Fly Prospect
- Shorty Lode
- Silver Nugget; Lions Den Occurrence
- Small Hope Mine (Patented Claim: Small Hope)
- Snowstrom Mine (Patented Claim: Martha)
- Southern Boy Mine
- Suene De Oro
- Suprise Tunnel
- Swamp Copper Deposit
- Texarado Oil; Uranium Company
- Texas Chief Mine (Texas Chief and Mountain Meadow Groups; Mountain Meadow Mine)
- Timbrock
- Tippecanoe
- Tomahawk Mine
- Tripp Gulch Mine
- Uncle Sam
- Victor Prospect
- Western Belle Mine (Patented Claims: Western Belle; Golden Rose; Western Belle and Golden Rose Mines)
- Western View Mining Group
- Wheel of Fortune Occurrence (Bonaparte)
- White Diamond Tunnel
- Wyatt Myers Group
- Yellow Eye

Minerals listed in the district (mindat.org) include:

Acanthite	Argentotennantite	Bromargyrite
Aikinite	Arsenopyrite	Calaverite
Altaite	Augite	Calcite
Andradite	Azurite	Cattierite
Anglesite	Baryte	Cerussite
Ankerite	Betekhtinite	Chalcanthite
'Apatite'	Bobjonesite	Chalcocite
Aragonite	Bornite	Chalcopyrite

Chlorargyrite	Hessite	Pyrrhotite
'Chlorite Group'	'Hornblende'	Quartz var: Chalcedony
Chrysocolla	Kaolinite	Realgar
Cinnabar	Krennerite	Roscoelite
Coloradoite	'Limonite'	Sanidine
Copper	Luzonite	Siderite
Covellite	Magnetite	Silver var: Amalgam
Cuprite	Magnolite	Sphalerite
Dickite	Malachite	Stephanite
Domeykite	Marcasite	Stützite
Enargite	Melanterite	Sylvanite
Epidote	Mercury	Szomolnokite
Fluorite	Miargyrite	Tellurium
Freibergite	Muscovite var: Sericite	Tennantite
Galena	Ourayite	Tetrahedrite
'Garnet'	Pearceite	Torbernite
Gold	Petzite	'Tourmaline'
'Halloysite'	Pickeringite	Tremolite
Hematite	Polybasite	Uraninite
var: Martite	Proustite	Uranophane
var: Specularite	Pyrargyrite	Volborthite
Hemimorphite	Pyrite	Xenotime-(Y)

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## La Plata County

### Needle Mountain District

The Needle Mountain District lies in the northeast corner of LaPlata County, in and around Chicago Basin, 6 miles east of the Needleton station stop. Vanderwilt (1947) points out that mineralization extends to the south to the headwaters of the Florida River and to the southeast to the headwaters of Vallacito Creek. Dunn (2003) notes that the district includes other smaller districts such as the Chicago District of Irving and Emmons (1905).

The Needle Mountains lie within a domal uplift of Precambrian rocks in the southwest part of the San Juan Mountains. On the south, southeast and west the dome is flanked by Paleozoic and Mesozoic sedimentary rocks, and to the north and northeast, the Tertiary volcanic rocks of the San Juans proper (Barker, 1969). Schmitt and Raymond (1977) found that mineralization in the district is associated with a highly altered upper Tertiary stock and numerous nearby quartz-sulfide fissure veins.

Veins in the Precambrian crystalline rocks contained gold, silver and copper. Pyrite, chalcopyrite and galena were commonly present in a gangue of quartz, rhodochrosite, fluorite, chalcedony with occasional barite and calcite. Detailed descriptions of much of the mineralization can be found in Steven et al. (1969).

Mining began in 1881 and lasted until roughly 1917 (Steven et al., Ibid). In early years, the only material that could be transported economically from the remote district was hand-sorted gold and silver ore. Gold was present only in local oxidized portions of the mineralized veins. In fact, vehicle access was not achieved until 1968. Vanderwilt listed production for 1934 of 80 ounces of gold with the Vallacito sub-district producing 29 ounces of gold and 4 ounces of silver in 1935-36.

Mines listed in the district (mindat.org) include:

- [Aetna Mine \(Patented Claim: Aetna\)](#)
- [Apache Mine \(Iron Valley; Patented Claim: Apache\)](#)
- [Aztec Mine \(Republic; Patented Claims: Aztec\)](#)
- [Black Giant Mine \(Patented Claims: Black Giant; Jr.; Baby Giant; Black Monster; Black Giant\)](#)
- [Black Horse Mine \(Patented Claim: Black Horse\)](#)
- [Brooklyn Group](#)
- [Cason Manganese Prospect](#)
- [Chicago Basin](#)
- [Chicago Basin Disseminated Molybdenum Deposit](#)
- [Emerald Lake Mine \(Emerald Lake Mill Site; Patented Claims: Emerald Lake Nos. 1-5\)](#)
- [Eureka Mine \(Patented Claim: Eureka\)](#)
- [Homestake Tunnel](#)
- [Irving Formation](#)
- [Jennie Hayes Mine \(Patented Claim: Jennie Hayes\)](#)
- [Little Jim Mine \(Southern Cross; E.A.K.; Patented Claims: Little Jim\)](#)
- [Mastadon Mine \(Golden Needle\)](#)
- [Mt. Eolus Mine](#)
- [Oregon Claims \(Unpatented Claims: Oregon No. 1; Oregon No. 2\)](#)
- [Pittsburg Mine](#)
- [Sheridan Mine \(Patented Claim: Sheridan\)](#)
- [Silver Star \(Shaaf; Silver Star Extension\)](#)
- [Slipper Tunnel](#)
- [Thunder Mountain](#)
  - [Cornucopia Vein](#)
  - [Johnson Vein](#)
- [Vallecito Group](#)
- [Waterfall Mine \(Bluff - Waterfall Mine\)](#)

Minerals listed in the district (mindat.org) include:

Acanthite	Freibergite	Polybasite
Anglesite	Galena	Pyrite
Arsenopyrite	Gold	Pyrophyllite
Autunite	'Gummitite'	Quartz
Azurite	Hematite	Rhodochrosite
Baryte	Hydrozincite	Silver
Bornite	Kaolinite	Sphalerite
Calcite	'Limonite'	Stephanite
Chalcopyrite	Magnetite	Tetradymite
<i>Colusite ?</i>	Malachite	Tetrahedrite
Covellite	Metatorbernite	Uraninite
Dickite	Molybdenite	'Wad'
Enargite	Muscovite var: Sericite	
Fluorite	Petzite	

#### References:

Barker, Fred. 1969. Precambrian Geology of the Needle Mountains, Southwestern Colorado. U.S. Geological Survey Professional Paper 644-A.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Irving, J.D. and Emmons, W.H. 1905. Economic Geology of the Needle Mountains Quadrangle of Colorado. U.S. Geological Survey Geologic Atlas, Needle Mountains Folio No. GF-131. Map Scale 1:62,500.

Schmitt, L.J. and Raymond, W.H. 1977. Geology and Mineral Deposits of the Needle Mountains District, Southwestern Colorado. U.S. Geological Survey Bulletin 1434.

Steven, T.A., Schmitt, L.J. Jr., Sheridan, M.J. and Williams, F.E. 1969. Mineral Resources of the San Juan Primitive Area, Colorado. U.S. Geological Survey Bulletin 1261-F.

Vanderwilt, J.W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed January 2015.

## **La Plata County**

### **Oro Fino District**

The Oro Fino District is listed by Dunn (2003), Vanderwilt (1947) and mindat.org as being part of the La Plata District. It is included with that district.

Of the identified mines within the sub-district (Dunn, 2003), the Durango Girl and Jenny Lind are listed in mindat.org in the La Plata District. The Durango Girl Mine is described in detail in Eckel (1949).

Mines listed in the district (Dunn, 2003) include:

- Durango Girl
- Jenny Lind
- Ruby

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eckel, E.B. 1949. Geology and Ore Deposits of the La Plata District. U.S. Geological Survey Professional Paper 219.

Vanderwilt, J.W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed January 2016.



Holy Cross Wilderness

EAGLE

SUMMIT

- LEADVILLE DISTRICT:**
1. Carbonate Hill
  2. Iron Hill
  3. Breece Hill
  4. California Gulch



Fryingpan River  
PITKIN

Hunter-Fryingpan Wilderness

Independence Pass (12,093)

Collegiate Peaks Wilderness

Savage Peak  
Homestake Reservoir

Hagerman Pass  
Sugarloaf Mtn

Deer Mtn  
Mount Champion 13,646

Casco Peak 13,908  
Twin Lakes

Grizzly Peak 13,988  
La Plata Peak 14,338

Gold Park  
Homestake Peak  
Galena Mountain

Tennessee Cr  
Turquoise Lake

Mount Massive 14,421  
Halfmoon

Mount Elbert 14,433  
Twin Lakes

La Plata Peak 14,338

HOMESTAKE  
West Tennessee Cr

ST. KEVIN  
Turquoise Lake

CHAMPION  
Halfmoon

TWIN LAKES  
Parry Peak

CHAFFEE

East Tennessee Cr  
Tenn. Park

LEADVILLE DIST.  
Matta

DERRY RANCH  
Box Creek

BOX CREEK  
Twin Lakes

CHAFFEE

Tennessee Pass (11,312)  
Ski Cooper

MT. ZION  
Tenn. Park

EMPIRE  
Empire Hill

TWO BIT  
Balltown

CHAFFEE

Buckeye Peak  
BUCKEYE PEAK

LEADVILLE  
Stringtown

EMPIRE  
Empire Hill

GRANITE  
Balltown

CHAFFEE

ALICANTE  
Mount Arkansas 13,795

ENGLISH GULCH  
Prospect Mountain

UNION GULCH  
Empire Hill

GRANITE  
Balltown

CHAFFEE

Climax  
Fremont Pass  
CLIMAX

MOSQUITO RANGE  
Dyer Mountain

WESTON PASS  
Weston Pass

GRANITE  
Balltown

CHAFFEE

Mount Democrat 14,148

Mount Sherman 14,036

Mount Sheridan  
Horseshoe Mountain

WESTON PASS  
Weston Pass

Buffalo Peaks Wilderness

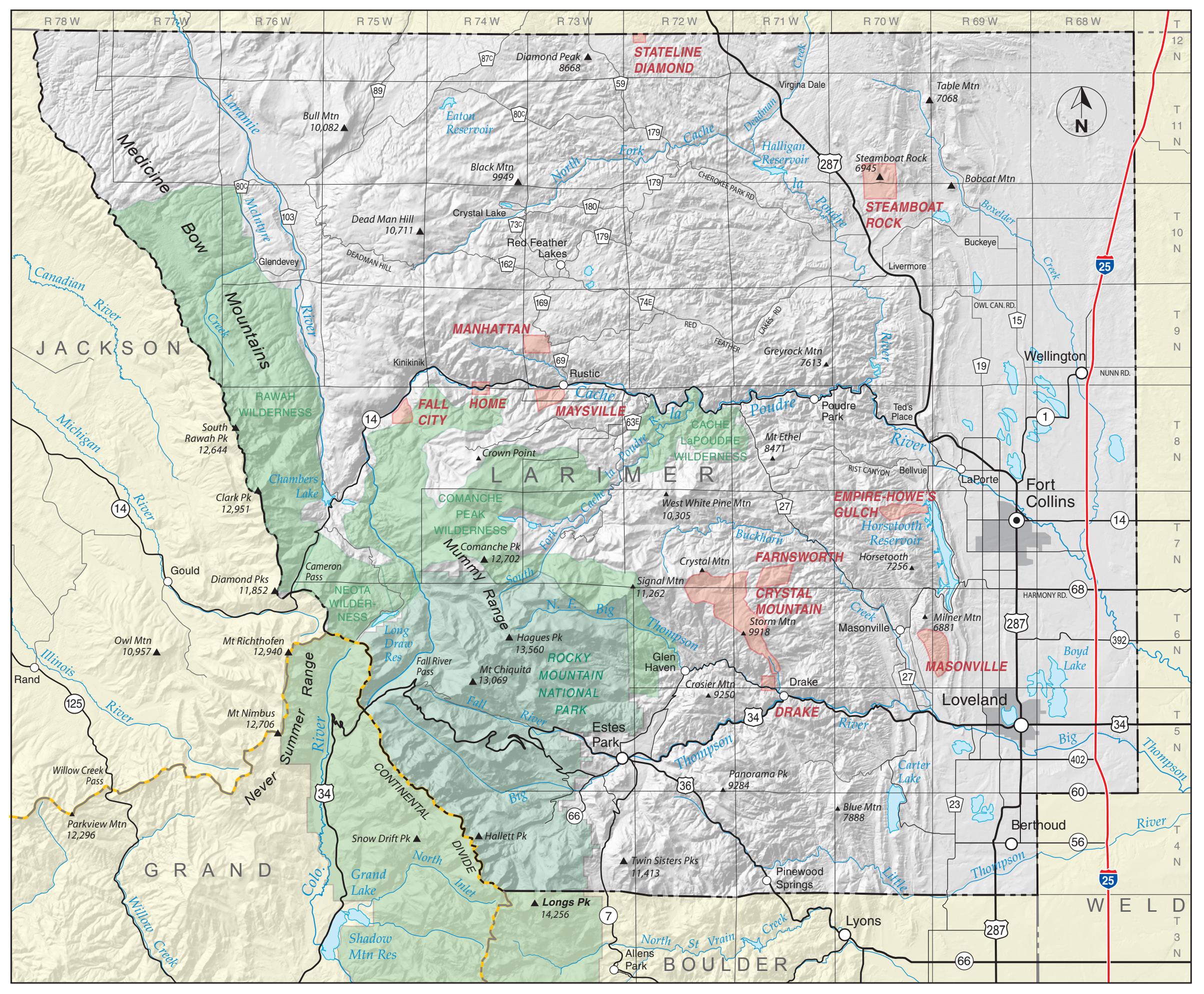
R 82 W

R 81 W

R 80 W

R 79 W

**Editor's Note:** *Detailed descriptions of the historical mining districts in Lake County are not available as of the online publication date  
11 November 2020*



STATELINE  
DIAMOND

STEAMBOAT  
ROCK

MANHATTAN

FALL CITY

HOME

MAYSVILLE

EMPIRE-HOWE'S  
GULCH

FARNSWORTH

CRYSTAL  
MOUNTAIN

MASONVILLE

DRAKE

Medicine  
Bow  
Mountains

LARIMER

GRAND

BOULDER

WELD



R 78 W  
R 77 W  
R 76 W  
R 75 W  
R 74 W  
R 73 W  
R 72 W  
R 71 W  
R 70 W  
R 69 W  
R 68 W

T 12 N  
T 11 N  
T 10 N  
T 9 N  
T 8 N  
T 7 N  
T 6 N  
T 5 N  
T 4 N  
T 3 N

# Larimer County

## Crystal Mountain District

The Crystal Mountain District stretches across three townships in Larimer County. Mining began as early as 1884 at the Buckhorn Mine; the Crystal Silica Mine began producing prior to 1910 (Thurston, 1955). Production occurred sporadically during the period 1935 to 1945 and 1955 through 1965. Beryl production was listed last in 1965 (Colorado Bureau of Mines, 1965). The Colorado Bureau of Mines report for 1964 notes that beryl and mica were being mined at the Yo-Jo, Big Boulder, Corral Pole and Langstone properties and that the Jolex Mica Plant operated during the year (Franz, 1964).

Martin (1993) describes the main country rock as schists of the Idaho Springs Formation. The pegmatites themselves are related to Silver Plume granites. Most of the pegmatites are unzoned feldspar (perthite) and quartz-rich with a good bit of black tourmaline. A few zone bodies are particularly rich in beryl.

Baillie (1962) describes specifically the Double Opening, Big Boulder and Hyatt Beryl Mines. Sharps (1962) assesses possible remaining mica reserves at the Buckhorn, Hyatt Beryl and Langston Pit. The Bureau of Mines surveyed specifically the Crystal Silica, Buckhorn, Tourmaline Prospect, Bull Elk Prospect and Beryl No. 5, along with an unidentified quarry (Langston Pit?) (Martin, 1993).

Minerals present (Mindat.org)

Albite (var: Cleavelandite)	Columbite-(Mn)	Magnetite	Sicklerite
'Albite-Anorthite Series'	'Dravite-Schorl Series'	Meta-autunite	Sillimanite
Allanite-(Ce)	'Feldspar Group'	'Mica Group'	Spessartine
Alluaudite	Ferrisicklerite	Microcline	Spodumene
Almandine	Fersmite	Molybdenite	Tantalite
Amblygonite	Fluorapatite	'Monazite'	Tantalite-(Fe)
Andalusite	var: Mn-bearing Fluorapatite	Muscovite	Thorianite
'Apatite'	Fluorite	var: Sericite	Topaz
Autunite	'Garnet'	'Perthite'	Torbernite
Bertrandite	Graftonite	Phosphosiderite	'Tourmaline'
Beryl	'Gummite'	Phosphuranylite	Triphylite
Beusite	Hematite	Purpurite	Triplite
Biotite	Heterosite	Pyrite	Uraninite
Bismuthinite	'Heterosite-Purpurite Series'	Quartz	Uranophane
Bismutite	Hydroxylapatite	var: Rose Quartz	Vandendriesscheite
Chrysoberyl	'K Feldspar'	var: Smoky Quartz	Vivianite
Clinocllore	Lepidolite	Samarskite-(Y)	'Wad'
var: Pennine	Leucophosphite	Scheelite	Zircon
Columbite	Lithiophilite	Schorl	Zwieselite

## **District Mines** (Mindat.org)

Abandon Mine  
Beryl Dike claims  
Beryl No. 1 claim  
Beryl No. 2 claim  
Beryl No. 3 claim  
Beryl No. 5 prospect  
Big Boulder Mine  
Black Beauty Prospect  
Buckhorn Mica Mine  
Bull Elk Bery Mine (Thodab Mine)  
Calypso Beryl Mine  
Carpit prospect  
Clipper No. 1  
(Jay Dee Bee; Keystone claims)  
Cojade Mine  
Corral Pole Mine  
Crystal Mountain  
Crystal Silica Mine  
Crystal Snow Mine  
Debbie Doll Mine  
Double Opening Prospect  
Eureka Group  
Garnet & Beryl Mine  
Giant Crystal Mine  
Glen O. Barrett  
Green Crystal Mine  
Green Quartz Beryl Claims 1-9  
HE&M No. 9  
HG & J No. 15 & 23 claims  
Hanks Hole Mine  
Heline property  
HG&S No. 3 Mine  
Hide-A-Way Claim  
Hideabove (Big Diggings) pegmatite  
Hilltop No. 23 Mine  
Hilltop No. 3 claims  
Huckleberry Mine  
Humphrey Beryl Prospect  
Hyatt Ranch Mine  
Jay Dee Dee claims  
Kings Canyon Mine  
Langston Mine  
Lewis Beryl Prospect  
Lodge Pole Mine  
Lookout and Challenger Deposits  
Mica-Beryl Prospect  
Mica Dike Claim  
Mona No. 4  
Mount Ethel Mine  
New Hope Claims  
Pan Claims  
Primorose Beryl Lode  
Rattlesnake Park Mine  
Rita Beryl Mine  
Sherwood Place Prospect  
Storm Mountain Mine  
Tantalum Prospect  
Tourmaline Prospect  
Valley View Claims No. 142  
Vona Mae Mine  
Wisdom Ranch Prospect

References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Crystal Mountain Pegmatite](#)

Baillie, William N., 1962, Feldspar Occurrences in Colorado; Colorado School of Mines Mineral Industries Bulletin, vol. 5, no. 4.

Del Rio, S. M., 1960, Mineral Resources of Colorado First Sequel, State of Colorado Mineral Resources Board, Denver, CO.

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Franz, G.A. Jr, 1964, Colorado Bureau of Mines Annual Report for the year 1964; Colorado Bureau of Mines, Denver.

Franz, G.A. Jr, 1965, Colorado Bureau of Mines Annual Report for the year 1965; Colorado Bureau of Mines, Denver.

Martin, Clay M., 1993, Reconnaissance Investigations of Selected Columbium and Tantalum Occurrences in Colorado: U.S. Bureau of Mines Open File Report 17-93.

Mindat.org (accessed 1-2 Nov 2012).

Sharps, Thomas I., 1962, Colorado Mica; Colorado School of Mines Mineral Industries Bulletin, vol. 5, no. 1.

Thurston, William R., 1955, Pegmatites of the Crystal Mountain District, Larimer County CO: U.S. Geological Survey Bulletin 1011.

## **Larimer County**

### **Drake District**

Dunn (2003) describes the Drake District based on accounts in Vanderwilt (1947).

Vanderwilt states that the district, lying at an altitude of 7000 to 7500 feet, contains copper and gold ore. No production is reported and no other data are available.

According to the geologic map (Braddock, et al, 1970), the rocks in the area of the Drake District consist of metasedimentary rocks with Precambrian tonalite intrusives and abundant pegmatites.

#### References:

Braddock, William A.; Nutalaya, Prinya; Gawarecki, Stephen J., Curtin, Gary C., 1970, Geologic Map of the Drake Quadrangle, Larimer County, Colorado; U.S. Geological Survey GQ 829.

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.

# Larimer County

## Empire District

The Empire District is also known as the Howe's Gulch District. The district lies near the Horsetooth Reservoir southwest of the town of Bellevue. According to the Mineral Resource Data System (MRDS), activity in the district started in about 1873 and was sporadic. Very little ore was produced. Claims were patented in the time period from 1889 to 1900, the main one being the Empire Claim.

Vanderwilt attributes the mineralization to poorly-defined veins with cupriferous pyrite, along with chalcopyrite and some gold in Precambrian granitic schist. The geologic map of the area (Braddock, 1989) shows various metasedimentary and metavolcanic rocks in the sequence.

Claims and mines in the district included the following (MRDS):

**Snow Drift, MS 13435;**

**Bonita;**

**Copper District;**

**Claims: Empire, MS 5721;**

**Eli 1-3, MS 13435;**

**Grand View, MS 13435;**

**Mona, MS 13435;**

**Pilot, MS 13452;**

**Columbia, MS 13452;**

**Copper Blossom, MS 13452;**

**Unpatented Claims: Little Empire; Copper Boy 1-2; Copper King; Savannah; Elk; London; Maria; Merry Christmas; Moose.**

## References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data - Empire \(Howes Gulch\)](#)

Braddock, William A.; Calvert, Ronald H.; O'Connor, Joseph T., Swann, Gordon A., 1989, Geologic Map of the Horsetooth Reservoir Quadrangle, Larimer County, Colorado; U.S. Geological Survey GQ 1625.

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.

## **Larimer County**

### **Home District**

Dunn (2003) lists the Home District based on its reference in Vanderwilt (1947). Vanderwilt places the district along State Route 14 on the Poudre River west of Rustic. Lovering and Goddard report mineralization occurs in small veins with gold and copper in Precambrian granite gneiss near a Silver Plume granitic intrusion. They describe intense wallrock alteration around veins containing pyritic copper. There has been no apparent commercial development.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Home District](#)

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range Colorado: U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.

## **Larimer County**

### **Manhattan District**

The Manhattan District lies on the Cache la Poudre River at about 8500 feet elevation. Vanderwilt (1947) documents minor production from 1932 through 1941, totaling 16 tons of ore with 27 ounces of gold and 9 ounces of silver.

The mineralization occurs in nearly vertical veins - the Gold King, the Emma, the Prodigal, Monte Cristo and Colorado veins. The Gold King vein crosses a hornblende porphyry stock and granite; the Emma and Prodigal veins occur in the granite; the Colorado and Monte Cristo follow a dike of monzonite porphyry. The unoxidized ore is coarse white quartz with disseminated pyrite and chalcopyrite assaying at 0.25 to 0.35 ounces per ton. The oxidized ore is reported to have assayed up to 15 ounces per ton.

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Manhattan District](#)

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range Colorado: U.S. Geological Survey Professional Paper 223.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.

## **Larimer County**

### **Masonville District**

The Masonville District lies west of the town of Masonville in Larimer County (Dunn, 2003). According to Vanderwilt (1947) the district produced some gold and silver ore from 1935 to 1943, totaling 93 ounces of gold and 83 ounces of silver.

The district apparently lies in Precambrian rocks bounded by faults adjacent to Paleozoic sediments (Braddock, et al, 1970).

#### References:

[Mineral Resource Data System \(MRDS\) - Online Spatial Data – Masonville Historic Mining District](#)

Braddock, William A., Calvert, Ronald H., Gawarecki, Stephen J., and Nutalaya, Prinya, 1970, Geologic Map of the Masonville Quadrangle, Larimer County, Colorado: US Geological Survey GQ 832.

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.

## **Larimer County**

### **Maysville District**

The Maysville District is a small area in the Cache la Poudre canyon. There is no documented commercial production, but the Crown Point vein was reportedly worked in the 1880s (Lovering & Goddard, 1950).

Gold ore occurs in veins in hornblende gneiss. The oxidized ore assayed at 0.9 ounces per ton and the unoxidized or less than half that (Lovering & Goddard, 1950).

#### References:

Dunn, Lisa, 2003, Colorado Mining Districts: A Reference; Colorado School of Mines, Golden, CO.

Lovering, T.S. and Goddard, E.N., 1950, Geology and Ore Deposits of the Front Range Colorado: U.S. Geological Survey Professional Paper 223.

## **Larimer County**

### **Steamboat Rock District**

Also known as the Gray's Rock District.

The Steamboat Rock District is listed by Hill (1912) as containing copper and gold northwest of Fort Collins. Vanderwilt (1947) repeats the citation and notes copper and gold in small veins in Precambrian rock. Vanderwilt says that the district is "probably in the same general area as the Home District." For this publication, we've chosen to place the district in the area of Steamboat Rock, north of Fort Collins. Geologic maps of the area (Braddock, et al, 1988; Braddock et al, 1989) show the presence of Precambrian crystalline rocks in the area, although no evidence of mining appears on maps.

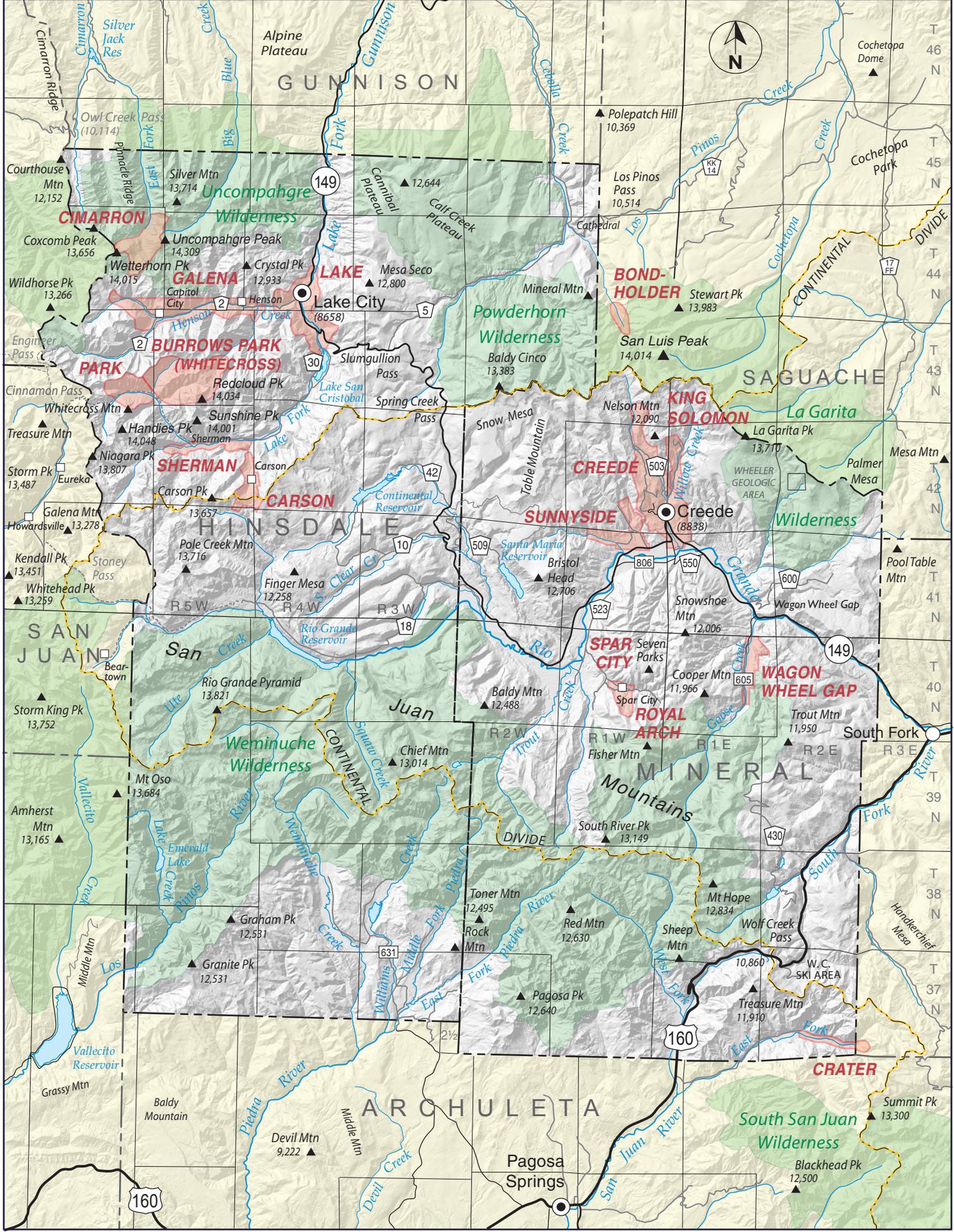
#### References:

Braddock, William A., Wohlford, Duane D. Connor, Jon J., 1988, Geologic Map of the Livermore Quadrangle, Larimer County, Colorado; U.S. Geological Survey GQ 1618.

Braddock, William A., Egger, David H., and Courtright, Terry R., 1989, Geologic Map of the Virginia Dale Quadrangle, Larimer County Colorado, and Albany and Laramie Counties, Wyoming; U.S. Geological Survey GQ 1616.

Hill, James M., 1912, The Mining Districts of the Western United States; U.S. Geological Survey Bulletin 507.

Vanderwilt, John W., 1947, Mineral Resources of Colorado; State of Colorado Mineral Resources Board, Denver CO.



GUNNISON

149

Lake City (8658)

Polepatch Hill 10,369

BOND-HOLDER

SAGUACHE

KING SOLOMON

SUNNYSIDE

Creede (8838)

SPAR CITY

ROYAL ARCH

WAGON WHEEL GAP

MINERAL

Mountains

ARCHULETA

Pagosa Springs

CRATER

South San Juan Wilderness

T 46 N  
T 45 N  
T 44 N  
T 43 N  
T 42 N  
T 41 N  
T 40 N  
T 39 N  
T 38 N  
T 37 N

Cimarron Ridge  
Owl Creek Pass (10,114)  
Silver Mtn 13,714  
Coxcomb Peak 13,656  
Wildhorse Pk 13,266  
Engineer Pass  
Cinnamon Pass  
Treasure Mtn  
Storm Pk 13,487  
Eureka  
Galena Mtn  
Howardsville 13,278  
Kendall Pk 13,451  
Whitehead Pk 13,259  
Amherst Mtn 13,165  
Grassy Mtn  
Baldy Mountain  
Devil Mtn 9,222

Alpine Plateau  
Uncompahgre Wilderness  
GALENA  
Lake City  
BURROWS PARK (WHITECROSS)  
SHERMAN  
CARSON  
HINSDALE  
Finger Mesa 12,258  
Pole Creek Mtn 13,716  
Rio Grande Pyramid 13,821  
Weminuche Wilderness  
Mt Oso 13,684  
Graham Pk 12,531  
Granite Pk 12,531

Capitol Plateau 12,644  
Calf Creek Plateau  
Mesa Seco 12,800  
Mineral Mtn  
Baldy Cinco 13,383  
Slumgullion Pass  
Spring Creek  
Snow-Mesa  
Table Mountain  
Santa Maria Reservoir  
Bristol Head 12,706  
Baldy Mtn 12,488  
Chief Mtn 13,014  
Toner Mtn 12,495  
Rock Mtn  
Red Mtn 12,630  
Pagosa Pk 12,640

Cathedral Los  
Los Pinos Pass 10,514  
San Luis Peak 14,014  
Nelson Mtn 12,090  
Creede  
Snowshoe Mtn 12,006  
Seven Parks  
Cooper Mtn 11,966  
Fisher Mtn  
South River Pk 13,149  
Mt Hope 12,834  
Wolf Creek Pass 10,860  
Treasure Mtn 11,910

Los Pinos  
Cochetopa Creek  
CONTINENTAL DIVIDE  
La Garita  
WHEELER GEOLOGIC AREA  
Palmer Mesa  
Mesa Mtn  
Pool Table Mtn  
Wagon Wheel Gap  
Trout Mtn 11,950  
W.C. SKI AREA  
Summit Pk 13,300  
Blackhead Pk 12,500

Cochetopa Dome  
Cochetopa Park  
Cochetopa Creek  
La Garita Pk 13,770  
Mesa Mtn  
Palmer Mesa  
Pool Table Mtn  
Wagon Wheel Gap  
Trout Mtn 11,950  
W.C. SKI AREA  
Summit Pk 13,300  
Blackhead Pk 12,500

## Mineral County

### Creede District (aka Sunnyside District; King Solomon District)

The Creede District is named for the dominant town in the area, which was named for an early mine owner, N.C. Creede. He was a prospector and co-owner of the Holy Moses and Amethyst claims. Hill (1912) referred to the area as the Sunnyside District, as did Henderson (1926), who also used the term King Solomon District. The district's dimensions are about 4.5 miles wide by 5.75 miles long.

Miners and prospectors traversing the region made the first discovery in 1882, starting with the Bachelor claim (Henderson, 1926). More discoveries followed and a rush ensued. Nearby camps of Weaver, Willow and Sunnyside grew up during the boom (Eberhart, 1969).

This district produced silver, lead, gold, and zinc and was one of Mineral County's most important mining districts. The district was also one of the most productive in the United States (Dunn, 2003), producing nearly 5 million ounces of silver in 1892 alone. In total, Barton et al. (2000) reported a production of 2,400 metric tons of silver (79 million ounces) along with 4.7 metric tons (0.15 million ounces) of gold, 139,000 metric tons (305 million lbs) of lead, 2500 metric tons (5.5 million lbs) of copper, and 40,000 metric tons (90.3 million lbs.) of zinc.

The Creede district occurs within the Creede caldera of the San Juan Mountains volcanic complex. The Creede District and the general area of the western San Juans has been studied extensively. In fact the area was the subject of fourteen papers in a classic volume edited by Bethke and Hay in 2000. The volcanism is Oligocene in age, beginning with an andesitic base, followed by voluminous eruptions of silicic tuffs (Lipman, et al, 1978; Lipman, 1980; Steven and Lipman, 1976).

The Creede volcano erupted late in the history of the region and the caldera was formed by collapse after eruption of the Snowshoe Mountain tuff (Steven and Lipman, Ibid) at about 26.5 ma. The collapse was followed by the formation of a caldera lake and a complex sequence of sediment deposition, hydrothermal circulation, dome resurgence, complex mixing of waters that form the basis of the aforementioned GSA special paper (Bethke and Hay, Ibid.) The sequence of events developed a complex mineralogy (listed below) that is truly incredible (Rosemyer, 2010).

In general, the mineralization can be described as silver-lead veins in faults, fissures and fractured zones in rhyolite. Sphalerite, argentiferous galena, gold, pyrite and chalcopyrite occur in a gangue of quartz (often, and famously, amethyst), chlorite, barite and fluorite. Secondary enrichment contributed to the complex mineralogy.

Mines listed in the district (mindat.org; Emmons and Larsen, 1923) include:

- [Alpha Mine](#)<sup>1</sup>
- [Amethyst Vein](#)
  - [Amethyst Mine](#)<sup>1,2</sup>
  - [Bachelor Mine](#)<sup>1,2</sup>
  - [Commodore Mine](#)<sup>1,2</sup>
    - [Commodore No. 5 Mine](#)
- [OH Vein](#)
- [P Vein](#)
  - [Happy Thoughts Mine](#)
  - [Last Chance Mine \(Del Monte Mine; New York Nine\)](#)<sup>1,2</sup>
  - [Nelson Tunnel](#)

- Park Regent Mine<sup>1</sup>
- Annabelle
- April Fool
- Bachelor Mountain rhyolite
- Berkshire Shaft
- Bethel Claim<sup>1</sup>
- Bulldog Mountain Mine<sup>1</sup>
- Captive Inca Mine<sup>1</sup>
- Carbonate Vein Occurrence (Ada Claims)<sup>1</sup>
- Casino Lease
- Chama
- Chance No. 2
- Cliff Shaft
- Colewood Tunnel Occurrence<sup>2</sup>
- Conejos No. 2 Claim<sup>1</sup>
- Copper Lode<sup>1</sup>
- Corsair Mine<sup>1</sup>
- Cowboy Johnson Adit Occurrence
- Creede
- Creede Formation
- Delaware Shaft<sup>1</sup>
- Diamond King Claim<sup>1</sup>
- Dolgooth Claims<sup>1</sup>
- Dora Belle Tunnels<sup>1</sup>
- Eclat Shaft Occurrence
- Emperius Mine (Emperious Mining Company; Del Monte Mining Company; Chance Mining Co; Bachelor Mine; Amethyst Mine; Commodore Mining Company; Last Chance and Pittsburg Mine Co; New York Mine; Creede Mines)<sup>1</sup>
- Equinox
- Equity Mine<sup>1,2</sup>
- Ethel Shaft
- Eunice Mine<sup>1</sup>
- Exchequer Tunnel Occurrence<sup>1</sup>
- Frazee
- Freeport Tunnel Prospect
- Gormax Mine (Gormax Mine No. 1; Gormax Tunnel)
- Grande Army Nos. 1-4
- Granite
- Holy Moses Mine<sup>1</sup>
- Homestake claim<sup>1</sup>
- Homestead No. 1
- Humphreys Tunnel
- Jack Pot Lode Occurrence<sup>1</sup>
- Jo Jo Tunnel Occurrence<sup>1</sup>
- Kanawha No. 1-4
- Kansas City Star Claim<sup>1</sup>
- King Solomon
  - Unknown Clay Occurrence (MRDS - 10016860)
- Kreutzer Mine (Kreutzer Sonata Mine)<sup>1</sup>
- Little Gold Dust Claim<sup>1</sup>
- Mallisa
- Mammoth Mine<sup>1</sup>
- Manhattan
- Manitoba<sup>2</sup>
- Mary Anderson
- Mexico
- Midwest Mine (Gateway Mine)
- Mollie S. Mine<sup>1</sup>
- Monon Mine (Monon Hill Mine)<sup>1,2</sup>
- Monte Carlo Mine<sup>1</sup>
- Mustang Tunnel<sup>1</sup>
- New York & Chance Mining Company<sup>1</sup>
- North Amethyst Vein
- North Star Claim<sup>1</sup>
- Oro Y Plata
- Outlet Tunnel<sup>1</sup>
- Overholt Lode<sup>1</sup>
- Oxford tunnel<sup>2</sup>
- Oxide Claims<sup>1</sup>
- P. & E. Tunnel
- Palo Alto Tunnel
- Paris Tunnel Occurrence<sup>1</sup>
- Phoenix Mine<sup>1</sup>
- Pipe Dream Claim<sup>1</sup>
- Pittsburgh Shaft
- Porphyry
- Puzzle Vein
- Reno Prospect<sup>1</sup>
- Resurrection Tunnel<sup>2</sup>
- Revenue Tunnel
- Ridge Mine<sup>1</sup>
- Rio Grande No. 2 Lode Occurrence<sup>1</sup>
- River View Tunnel
- Robinson
- Runaround

- Silver King
- Sloan Tunnel
- Solomon
  - Creede Formation (Bachelor Mountain)
- Solomon Mine (King Solomon)<sup>1</sup>
- Sulphur Beds (Sulphur Tunnel)
- Sunnyside tunnel<sup>1</sup>
- Syble R
- Tahrahathea claim<sup>1</sup>
- Teresa
- Texas Girl
- United Mines Shaft
- Volunteer
- Wedge
- White Star Mine<sup>1</sup>
- Windsor - Governor
- Windy Gulch
- Wooster Tunnel

Notes: <sup>1</sup>Details contained in Emmons and Larsen (1923).

<sup>2</sup>Details contained in Larsen (1929).

Minerals listed in the district (mindat.org) include:

Acanthite	Cristobalite	Melanterite
Alabandite ?	Cuprite var: Chalcotrichite	Miargyrite
Alunite	Cyanotrichite	Mimetite
Analcime	'Erionite'	Montmorillonite
Anglesite	Famatinite	Mordenite
Ankerite	Fluorite	Muscovite
Apjohnite	Galena	var: Illite
Aragonite	Gold var: Electrum	var: Sericite
Baryte	Goslarite	Nontronite
Beidellite	Greenockite	Opal var: Opal-CT
'Bentonite'	Gunningite	Orthoclase
Beudantite	Gypsum	Plumbojarosite
'Biotite'	Halotrichite	Polybasite
Bornite	Hematite	Proustite
Bournonite	Hemimorphite	'Psilomelane'
Brochantite	'Heulandite'	Pyrargyrite
Bromargyrite	Inesite	Pyrite
Calcite	Jalpaite	Pyrolusite
Caryopillite	Jarosite	Pyromorphite
Cerussite	Kaolinite	Pyrostilpnite
Chalcanthite	'K Feldspar var: Adularia'	Pyroxmangite
Chalcocite	Ktenasite	Quartz
Chalcopyrite	Kutnohorite	var: Agate
Chamosite var: Thuringite	Langite	var: Amethyst
Chlorargyrite	Lepidocrocite	var: Jasper
'Chlorite Group'	'Limonite'	var: Rose Quartz
Chrysocolla	Magnetite	Rhodochrosite
'Chrysoprase'	Malachite	Rhodonite
'Clinoptilolite'	Manganite	Rosasite
Copper	Marcasite	Rozenite
Covellite	Mckinstryite	Serpierite

Siderite var: Manganoan  
Silver  
'Smectite Group'  
Smithsonite  
Sphalerite

Stephanite  
Stibnite  
Talc  
Tennantite  
Tetrahedrite

Turquoise  
Uytenbogaardtite  
'Wad'  
Wulfenite  
Xanthoconite

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## Mineral County

### Spar City District (aka Royal Arch District)

The Spar City District is a small district on the southern edge of the Creede Caldera (Steven and Lipman, 1973). It is described by Steven (1964) as a small mineralized area along the south flank of the caldera, prospected sporadically since the early 1900's. Remnants of galena, sphalerite, barite, manganese oxides and jaspery to amethystine quartz occur in old dump. Commodities included Silver, Lead, and Zinc.

Mines listed in the district (Dunn, 2003; Eberhart, 1969; Heyl, 1964; mindat.org) include:

- Big Spar
- Bird Creek
- [Bird Creek Mine \(Per Cent No. 15; Claims: Per Cent No. 12\)](#)
- [Denver Tunnel Occurrence](#)
- [Emma Mine \(Claim: Emma\)](#)
- Headlight
- [Royal Arch District Occurrence \(Little Per Cent; Humboldt; World\)](#)
- [Spar City](#)

Minerals listed in the district (mindat.org) include:

[Baryte](#)

[Galena](#)

[Manganese oxides](#)

[Quartz](#)

[Sphalerite](#)

### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

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Heyl, A.V. 1964. Oxidized Zinc Deposits of the United States - Part 3, Colorado. U.S. Geological Survey Bulletin 1135-C.

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Steven, T.A. 1964. Geologic Setting of the Spar City District, San Juan Mountains, Colorado. U.S. Geological Survey Professional Paper 475-D, pp. D123-127.

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## Mineral County

### Wagon Wheel Gap District

The Wagon Wheel Gap District is a small district near Creede that comprised one of the four major fluorspar districts of Colorado (Dunn, 2003). Aurand (1920) described the deposits as a vein within Tertiary rhyolite tuff. The one mine was the American Fluorspar Company Mine. Descriptions of the minerals can be found on mindat.org, in Lunt (1915), Larsen and Wells (1916), and Korzeb (1992).

Production began in 1911 and the American Fluorspar Company Mine was worked intermittently until 1950 (Dunn, Ibis). The mill remains adjacent to the hot springs resort.

Minerals listed in the district (mindat.org; Korzeb, 1992) include:

Baryte	Creedite (TL)	'Halloysite'
Beidellite	Fluorite	Hematite
Calcite	Gearsutite	Pyrite
Covellite	Gypsum	Quartz var: Chalcedony

#### References:

Aurand, H.A. 1920. Fluorspar Deposits of Colorado. Colorado Geological Survey Bulletin 18.

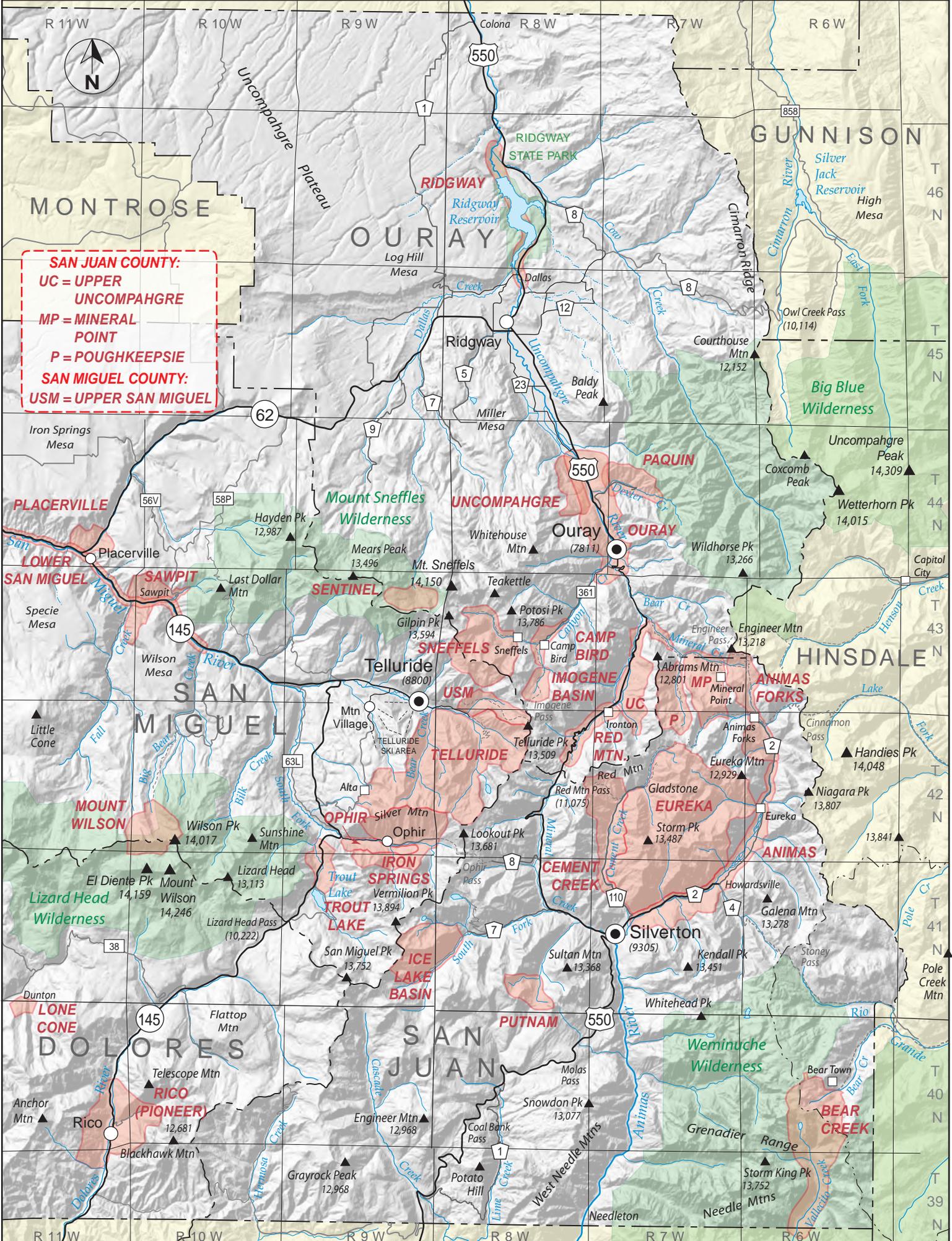
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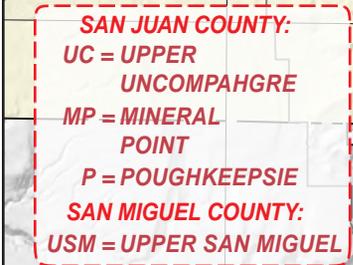
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**SAN JUAN COUNTY:**  
UC = UPPER UNCOMPAHGRE  
MP = MINERAL POINT  
P = POUGHKEEPSIE  
**SAN MIGUEL COUNTY:**  
USM = UPPER SAN MIGUEL



## Ouray County

### Camp Bird District (aka Imogene Basin District)

The Camp Bird Mine is considered by some as its own district. Hill (1912) used this name for the Imogene Basin District. Vanderwilt (1947) named the Camp Bird the most famous mine of the **Sneffels District**. He pointed out that, while the main feature of the Camp Bird Mine was its gold, the mill was redesigned in 1942 to recover zinc for the war effort. An additional reference is Dunn (2003).

Ransome (1901) discussed the Camp Bird Mine in his section on the lodes of Canyon Creek. He described the large Camp Bird vein as crossing the head of the Imogene Basin at N80W, with a dip averaging 70° S. It was traced into the Marshall Basin to the west and possibly is equivalent to the Pandora lode in the Telluride Quadrangle.

Eberhart (1969) relates a tale of Thomas Walsh, who made his fortune on the Camp Bird Mine. It was discovered, maybe by Walsh himself or by a prospector Walsh hired, in 1896 by recognizing rich ore on the dumps of the Ura and Gertrude Claims. Walsh subsequently purchased most of the claims in the basin and ended up making the Camp Bird the largest producer of gold outside Cripple Creek.

The mine itself is truly famous. Rosemeyer (1990) featured the history and minerals of the mine in *Rocks and Minerals Magazine*.

Ransome (1901) describes the vein as occurring in an andesite breccia of the San Juan Formation. It is mostly massive quartz (Moore, 2004), ranging from 5 to 10 feet thick with numerous ore shoots in and around it. The richest gold-bearing zone averaged 1.4 oz. gold and 2 oz. silver per ton.

Mines listed in the district (mindat.org and others) include:

- Camp Bird

Minerals listed in the district (mindat.org) include:

Altaite	Dickite	Hessite
Anglesite	Digenite	Hübnerite
Anhydrite	Dolomite	Kaolinite
Ankerite	Epidote	'K Feldspar var: Adularia'
Baryte	Ferrimolybdite	Kutnohorite
Bornite	Fluorapatite	Magnetite
Calcite	Fluorite	Matildite
Cerussite	Galena	Muscovite
Chalcopyrite	Gold	var: Illite
'Chlorite Group'	Greenockite	var: Sericite
Clinocllore	Grossular	Orthoclase
Clinzoisite	Gypsum	Petzite
Covellite	Hematite	Piemontite

Powellite  
Pyrite  
Pyroxmangite  
Pyrrhotite  
Quartz var: Milky Quartz

Rhodo-chrosite  
Rhodonite  
Scheelite  
Siderite  
Sphalerite

Tetrahedrite  
Uraninite  
'Wad'  
Zoisite

#### References:

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## Ouray County

### Engineer Mountain District

The Engineer Mountain District lies where Ouray, San Juan and Hinsdale Counties meet and is surrounded by several other districts - the **Poughkeepsie**, the **Mineral Point**, the **Galena**, and the **Eureka**. It was recognized as a separate district by Moore (2004). Mindat.org includes the Engineer Mountain area in the Ouray District. Burbank and Luedke (1969) appear to include the Engineer Mountain area in the Eureka District while King and Allsman (1950) include the area within the Mineral Point District.

Moore (Ibid) defines the area as bounded by Mineral Creek on the south, extending north of Engineer Mountain "about a mile" and as far east as Henson Creek in Hinsdale County. Thus, he defines it as including mines in all three counties in the headwaters of the Animas, Uncompahgre, and Lake Fork Rivers.

Mindat.org includes the Bismuth and Uncle Sam Mines, but they appear in no other sources. The Bismuth Mine was a former Au-Ag mine located 1.7 km (1.0 mile) northwest of Engineer Mountain. The Uncle Sam Mine was a former Au-Zn-Ag-Pb-Cu mine located 0.5 km (0.3 mile) southeast of Engineer Mountain, on National Forest land. Hon et al. (1986) list the Frank Hough, Polar Star, Palmetto, Engineer and Wyoming mines.

The geology and mineralization are the same as in the other districts listed above, as part of the vein complex of the Silverton Caldera.

Mines listed in the district (mindat.org; Hon et al., 1986) include:

- Engineer Mountain
  - [Bismuth Mine](#)
  - [Uncle Sam Mine](#)
- Frank Hough
- Polar Star
- Palmetto
- Engineer
- Wyoming

Minerals listed in mindat.org include:

[Baryte](#)

[Quartz](#)

References:

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Hon, K., Bove, D.J., and Grauch, V.J. 1986. Geology and mineral deposits of the region surrounding the American Flats Wilderness Study Area, western San Juan Mountains, Colorado. U.S. Geological Survey Open-File Report 86-431.

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## Ouray County

### Poughkeepsie District

Another of the several historical districts grouped together around the Silverton Caldera is the Poughkeepsie (or **Poughkeepsie Gulch**) District. The Poughkeepsie District spans the county line and actually much of its area is in San Juan County. Mindat.org (2015) lists the Poughkeepsie Gulch District as being in the Red Mountain District in San Juan County.

Henderson (1926) does not mention the district in his list, but describes development in Poughkeepsie Gulch in his narrative. Vanderwilt (1947) includes the district in a descriptive section by Burbank and appears to account the district in San Juan County. Therein, Burbank describes the district as adjoining the **Mineral Point** and **Upper Uncompahgre District** at the headwaters of the Uncompahgre and Animas Rivers, thus surrounding the main stem of the Uncompahgre River, extending into San Juan County nearly to Hurricane Peak.

Moore (2004) describes the extent of the district from the confluence of the Uncompahgre River with Red Mountain Creek, up the main branch of Poughkeepsie Gulch south to Hurricane Peak in San Juan County to include the area around Lake Como.

The geology of the area is characterized by a basement of tightly-folded Precambrian quartzite and slate seen in the canyon of the Uncompahgre River. West of the river some Paleozoic and Mesozoic sedimentary rocks occur between the Precambrian and the overlying Tertiary volcanics. In Poughkeepsie Gulch most of those volcanics are latite and rhyolite flows, tuffs and breccias of the Silverton volcanic series underlain with varying thicknesses of the San Juan tuff.

Mineralization occurs in swarms of veins extending out of the Silverton Caldera. Burbank (1947) describes three types of deposits: fissure and cavity fillings, breccia chimneys and dikes, and replacement deposits. Most of the productive veins are in rocks of the Silverton series, although some occur in the San Juan Tuff and the Precambrian quartzite beneath.

Output described by Vanderwilt and Burbank (1947) and Hazen (1949) occurring from 1874 to 1941 is estimated at \$2M of silver, gold, lead, copper and zinc. Most of that came before 1900 and from 12-15 of the largest mines. Of note is the Old Lout Mine, described in some detail by Burbank and Luedke (1969). Most of the mines went inactive after 1900. The exception is the Mountain Monarch which continued producing as late as 1946. All the authors feel that much ore remains. Because of the difficult mining conditions, most activity ceased after the high-grade material was depleted.

Eberhart (1969) talks of the town of Poughkeepsie, 76 miles south of Ouray and twelve miles up Cement Creek from Silverton. At one time, the town boasted 250 residents (summer residents, at least) along with stores, restaurants, saloons and a post office. Henderson (Ibid) describes the completion of a road up Cement Creek from Silverton in 1879 to the head of the Poughkeepsie Gulch. Activity was already on-going in the Gulch at claims including the Old Lout, the Poughkeepsie, Alabama, Red Roger, Saxon, Alaska, Bonanza, and others.

Mines listed in the district (Burbank and Luedke, 1969; Eberhart, 1969; Kelley, 1946; mindat.org; Moore, 2004; Ransome, 1901) include:

- [Acapulco \(Acapulca\) occurrence](#)<sup>1</sup>
- [Alabama Mine](#)<sup>2, 5</sup>
- [Alaska Mine](#)<sup>2, 5</sup>
- [Adelpha Mine](#)<sup>4</sup>
- [Alpha Mine](#)<sup>4</sup>
- [Amador Mine](#)<sup>2, 5</sup>
- [Bonanza Mine](#)<sup>2, 5</sup>
- [Brazillian Mine](#)<sup>2</sup>
- [Brooklyn](#)<sup>1</sup>
- [Forest Mine \(Forrest Mine?\)](#)<sup>1, 5</sup>
- [Forest Queen Mine](#)<sup>1</sup>
- [Gladiator Mine](#)<sup>1</sup>
- [Grand View Mine \(Grandview\)](#)<sup>2</sup>
- [Guadeloupe Mine](#)<sup>2</sup>
- [Lucky Twenty tunnel](#)<sup>2</sup>
- [Maid of the Mist Mine](#)<sup>2, 5</sup>
- [Mickey Breen Mine](#)<sup>2</sup>
- [Mountain Monarch Mine](#)<sup>2</sup>
- [Old Lout Mine](#)<sup>1, 3, 5</sup>
- [Picket Mine](#)<sup>2</sup>
- [Poughkeepsie](#)<sup>2, 5</sup>
- [Red Roger Mine](#)<sup>2, 5</sup>
- [Republican Tunnel](#)<sup>2</sup>
- [Rollo Mine](#)<sup>2</sup>
- [Saxon Mine](#)<sup>1, 5</sup>
- [Seven Thirty Mine](#)<sup>2</sup>
- [Silver Chord Mine](#)
- [Sunset Mine](#)<sup>2</sup>
- [Tempest Mine](#)<sup>2</sup>
- [Upper Benack Mine](#)<sup>2</sup>
- [Vermillion Mine](#)<sup>2</sup>
- [Victory](#)<sup>2</sup>
- [Wewissa Mine](#)<sup>2</sup>
- [White Crow](#)<sup>2</sup>
- [Yankee Girl Mine](#)<sup>1</sup>

Notes: <sup>1</sup> Details on mindat.org.

<sup>2</sup> From Moore (2004); Kelley (1946).

<sup>3</sup> Discussed in Burbank and Luedke (1969).

<sup>4</sup> Named only in Eberhart (1969).

<sup>5</sup> Discussed in Ransome (1901).

Minerals listed in the district (mindat.org) include:

<a href="#">Aikinite</a>	<a href="#">Dyscrasite</a>	<a href="#">Proustite</a>
<a href="#">'Alaskaite'</a>	<a href="#">Enargite</a>	<a href="#">Pyrite</a>
<a href="#">Baryte</a>	<a href="#">Freibergite</a>	<a href="#">Quartz</a>
<a href="#">'Beegerite'</a>	<a href="#">Galena</a>	<a href="#">Rhodochrosite</a>
<a href="#">Benjaminite</a>	<a href="#">Gustavite</a>	<a href="#">'Schirmerite'</a>
<a href="#">Bismuthinite</a>	<a href="#">Kaolinite</a>	<a href="#">Sphalerite</a>
<a href="#">Bismutite</a>	<a href="#">Marcasite</a>	<a href="#">Stephanite</a>
<a href="#">Bornite</a>	<a href="#">Matildite</a>	<a href="#">Stromeyerite</a>
<a href="#">Bournonite</a>	<a href="#">Miargyrite</a>	<a href="#">Tennantite</a>
<a href="#">Chalcocite</a>	<a href="#">Mummeite</a>	<a href="#">Tetrahedrite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Muscovite var: Sericite</a>	<a href="#">Wittichenite</a>
<a href="#">Cosalite</a>	<a href="#">Ourayite (TL)</a>	
<a href="#">Covellite</a>	<a href="#">Pavonite</a>	

## References:

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[www.mindat.org](http://www.mindat.org), accessed October 2015.

## Ouray County

### Red Mountain District

The Red Mountain District was recognized by Henderson (1926), who noted that the district overlapped the **Sneffels and Uncompahgre (Ouray) Districts**. Vanderwilt (1947) also recognized the district and Burbank included a description in the classic 1947 volume on Mineral Resources of Colorado. Dunn (2003) points out that the Red Mountain was one of the original six districts defined in 1882 for Ouray County, of which the Mount Sneffels (Sneffels) and Uncompahgre (Ouray) are still in Ouray County (while the other three lie in later-established counties.)

Moore (2004) defines the geography of the district. He says it extends across the county line to the headwaters of Mineral Creek in San Juan County (over Red Mountain Pass). It extends from the northern end of Ironton Park south to the three Red Mountains (#1, #2, and #3) and Mount Abram and west to the divide above Red Mountain Creek. The mineralization is the same as - and continuous with - those of the **Telluride** and Sneffels Districts.

The area lies on the northwest rim of the Silverton caldera in a marginal zone of ring faults. Some older rocks of the Ouray and Leadville limestones and the Hermosa Formation crop out in the Ironton Basin, but further south they are mainly the Silverton volcanic series with the San Juan tuff on the west side of the district. The most productive mines lie in a zone about a mile wide and four miles long.

Most of the district's production came from chimney-like ore bodies in or near breccia pipes and volcanic plugs, filling open spaces and caves or replacing altered wall rock (Burbank, 1941; 1947). Burbank describes some nearly solid copper-silver sulfide bodies. Copper is more abundant than is typical in the area (and in fact in Colorado), and many veins contained massive bodies of lead and zinc sulfides.

The district was being thoroughly explored by the 1870s. The earliest discovery in the area was in San Juan County in 1881. Production declined significantly by 1900, with later bursts of activity during the two world wars. During the district's heyday some of the large mines spawned development of vibrant (but short-lived) settlements such as Red Mountain Town, Guston, Old Congress Town and Ironton. Eberhart's classic book on Colorado Mining Camps (1969) contains some stories about those early towns.

Additional references include: Burbank and Luedke (1968), Collins (1931), Emmons (1888), Schwartz (1888) and Smith (1994).

Mines listed in the district (mindat.org and others) include:

- [Alexandra](#)<sup>1</sup>
- [Bailey Shaft](#)
- [Baltic Group](#)<sup>1</sup>
- [Barstow](#)<sup>1</sup>
- [Brobdignag claim](#)<sup>1</sup>
- [Carbonate King](#)<sup>1</sup>
- [Charter Oak Mine](#)
- [Congress](#)<sup>1</sup>
- [Copper King](#)
- [Genesee-Vanderbilt Mine \(Genesee-Vanderbilt Mine\)](#)<sup>1</sup>
- [Gertrude mine](#)

- Grand Prize<sup>1</sup>
- Guston Mine<sup>1</sup>
- Guston No. 5
- Hero Mine
- Hoffs
- Idarado Mine
- Jay Eye See<sup>1</sup>
- Knox Shaft
- Lucky Twenty Mine
- Magnet<sup>1</sup>
- Magnolia Shaft
- Meldrum and Hammond Tunnels<sup>1</sup>
- Midnight<sup>1</sup>
- National Belle<sup>1</sup>
- Old Kentucky
- Orphan Boy
- Patsie Helen and Marion Occurrence
- Paymaster<sup>1</sup>
- Pittsburgh
- R. E. Lee Claim; Atlantic C
- Rainbow Tunnel
- Red Creek Mine
- Red Mountain
  - National Belle Mine (National Bell Mine)
- Red Mountain Deposits
- Red Mountain No. 3 Deposit
- Robinson Mine<sup>1</sup>
- Rouville
- Saint Paul<sup>1</sup>
- San Antonio (Kohler)
- Saratoga<sup>1</sup>
- Silver Belle<sup>1</sup>
- Silver Ledge<sup>1</sup>
- St Lawerance
- Tennessee Tunnel
- Treasure Trove Occurrence
- Vanderbilt
- White Cloud<sup>1</sup>
- Yankee Girl Shaft<sup>1</sup>
- Zuni Mine<sup>1</sup>

Note:<sup>1</sup> Details in Ransome (1901).

Minerals listed in the district (mindat.org) include:

Alunite	Dolomite	Nacrite
Anglesite	var: Ferroan Dolomite	Natroalunite (TL)
Baryte	Enargite	'Pitticite'
Bornite	Epidote	Proustite
Calcite	Famatinite	Pyrrargyrite
var: Manganoan Calcite	Fluorite	Pyrite
Cerussite	Galena	Quartz var: Amethyst
Chalcocite	Gold var: Electrum	Scorodite
Chalcopyrite	Hydrozincite	Sphalerite
'Chlorite Group'	Kaolinite	Stromeyerite
Colusite	'K Feldspar var: Adularia'	Sulphur
Copper	'Limonite'	Tennantite
Covellite	Malachite	Tetrahedrite
Cristobalite	Molybdenite	Uraninite
Diaspore	Muscovite	Wurtzite
Dickite	var: Illite	Zoisite
	var: Sericite	Zunyite

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## Ouray County

### **Sneffels District** (aka **Mount Sneffels District**; includes **Imogene Basin District**, **Camp Bird District**)

The area of the Sneffels District is on the northwest edge of the Silverton caldera. The geology and geographic location of the district generates confusion with district names. The districts of Imogene Basin, Camp Bird and **Telluride** are often associated with Sneffels District, not to mention the alternate name of Mount Sneffels District.

Burbank (1947) points out that the general San Miguel "mining area" (quotes mine) encompasses some 250 square miles in Ouray, San Miguel and San Juan counties around the headwaters of the San Miguel, Uncompahgre and Animas Rivers. Within that area is the Sneffels District.

Henderson (1926) called the Sneffels District Mount Sneffels and located it in T43N, R8W, but extending south into sections 1 and 2 of T42N R8W. (That southern extension would project into the Red Mountain District of our map.) Vanderwilt (1947) refers to it as the Imogene Basin District. In that same volume, Burbank points out that the Sneffels and the Telluride Districts are one and the same, with the name changing at the Continental Divide.

Burbank, in his 1943 report on the Uncompahgre District, speaks of the Sneffels with the Telluride District as one, as does Moore (2003). Fisher (1990) breaks out the Camp Bird as sort of a sub-district, but also combines the Sneffels-Telluride into one.

Mindat.org is less definitive. The website lists the Mount Sneffels District, but also lists the Sneffels as the Red Mountain District (inconsistent with this report) and Mount Sneffels, but includes the Camp Bird Mine within that district (as we do.) Both Sneffels and Camp Bird are listed under the Ouray District.

The stratigraphic section of the area contains rocks as old as the Pennsylvanian Hermosa Formation, deposited prior to the Uncompahgre uplift, lying on Middle and Late Proterozoic quartzites (Fisher, Ibid). Unconformable above that Paleozoic-Mesozoic sequence is the Tertiary Telluride conglomerate and some 1000 meters of flows, tuffs, breccias and mudflows. At the base of the volcanic-related sequence is the San Juan tuff - 700 meters of intermediate-composition volcanics and volcaniclastic sediments, mudflows, lava flows and flow breccias of 30-35Ma age. Structure is dominated by northwest-trending dikes, fissures, and veins radiating from the Silverton Caldera.

Moore (Ibid) recognized several stages of mineralization - early quartz veins with base-metal sulfides, quartz or quartz-carbonate veins with gold and silver, and late barren veins. Most of the mines occur in the San Juan tuff, although a few are found in the units directly above or below that unit.

Burbank (1947) discussed the Liberty Bell Mine (in the Telluride District) and the Camp Bird. The latter was operated from 1896 to 1916 for gold and silver, then again from 1926 with the recovery of lead. Zinc recovery began in 1942. He points out the interesting situation with the Treasury Tunnel. That structure extended beneath the continental divide from Ouray County to the Black Bear Mine in San Miguel County. Production was attributed to San Miguel County, although the portal and the mill were

both in Ouray County. Lead, copper and zinc were recovered primarily from veins in the tuff. Bastin (1923) adds considerable information on mineralization in the combined Sneffels-Telluride Districts.

The Camp Bird is commonly treated as a special case (e.g. Moore, Ibid), and is discussed in detail in Spurr (1925). The entry on mindat.org for the Camp Bird Mine is notable for an extensive list of references, which will not all be included here. The mine has produced intermittently since 1896 and was reportedly under further development in 2015. The story of the mine's discovery and the development of the settlement is found in Eberhart (1969).

Mines listed in the district (mindat.org) include:

- Bankers Tunnel
- Bi-Metallist
- Camp Bird Mine (considered by some as its own sub-district)
- Francis Mining Tract
- Hawkeye Claims
- Hidden Treasure
- Mountain Queen
- North Star & Conny
- Ocean Wave
- San Pedro
- Sunrise Tunnel
- Sweepstakes
- Terrible
- Tip Top
- Torpedo Eclipse Mine
- Wheel of Fortune
- Yellow Rose Mine

Minerals listed in the district include:

Acanthite	Fluorite	Pyrolusite
Actinolite	Freibergite	Quartz
Albite	Galena (argentiferous)	Selenium
Andradite var: Topazolite	Gold	Silver
Beidellite	Prehnite	Sphalerite
Chalcopyrite	Pyrargyrite	Stephanite
Epidote	Pyrite	Tetrahedrite

Minerals associated with the Camp Bird Mine (subdistrict) by mindat.org are listed in the separate Camp Bird Mine District write up.

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## Ouray County

### Upper Uncompahgre District

The Upper Uncompahgre District is not listed in Henderson (1926), but is considered by Vanderwilt (1947) to be synonymous with the **Uncompahgre District**. Within Vanderwilt's volume is a description by Burbank of the Uncompahgre and **Ouray Districts**. Dunn (2003) lists the district separately as adjoining the **Mineral Point** and **Poughkeepsie Districts**, including the headwaters of both the Uncompahgre and Animas Rivers in Ouray and San Juan Counties. Mindat.org (2015) does not list the Upper Uncompahgre, but puts it in the Eureka District (of San Juan County).

Moore (2004) provides a significant amount of information, as provided here. First, he describes the district's location in detail as "the area around Bear Creek Falls to the north end of Ironton Park, including the canyon of the Uncompahgre to the junction of Red Mountain Creek and continuing up the canyon along Red Mountain Creek. The western flank of Mt Abram and the drainages into Red Mountain Creek from Hayden Mountain north of Ironton Park form the southern part of the district."

Summarized by Moore (2004), the geology of the district consists of tightly-folded Precambrian quartzite and slate in the canyon of the Uncompahgre with a wedge of Paleozoic and Mesozoic sediments on top below volcanics. The mountain slopes are primarily San Juan Tuff (up to 2,500 feet thick), thinning toward Poughkeepsie Gulch. In that tuff lie the most productive veins, according to Burbank (1947). Ore deposits occur as fissure and cavity fillings, breccia-chimney and breccia-dike deposits and some replacement deposits.

Kelley (1946) points out that the radial faults of the Silverton Caldera do not occur here. The ore veins of the Dunmore, Columbus, Thistledown, Chapman and Ores&Metals are fissure veins in tension fractures. Additional references include: Hazen (1949), Irving (1905), and King and Allsman (1950).

Mines listed in the district (Dunn, 2003) include:

- Guadeloupe
- Sutton
- Daniel Bonanza
- Natalia
- Dunmore
- Crysolite
- North Star
- Silver Link<sup>1</sup>
- Michael (Mickey) Breen<sup>1</sup>

Note: <sup>1</sup>Discussed in detail in Ransome (1901).

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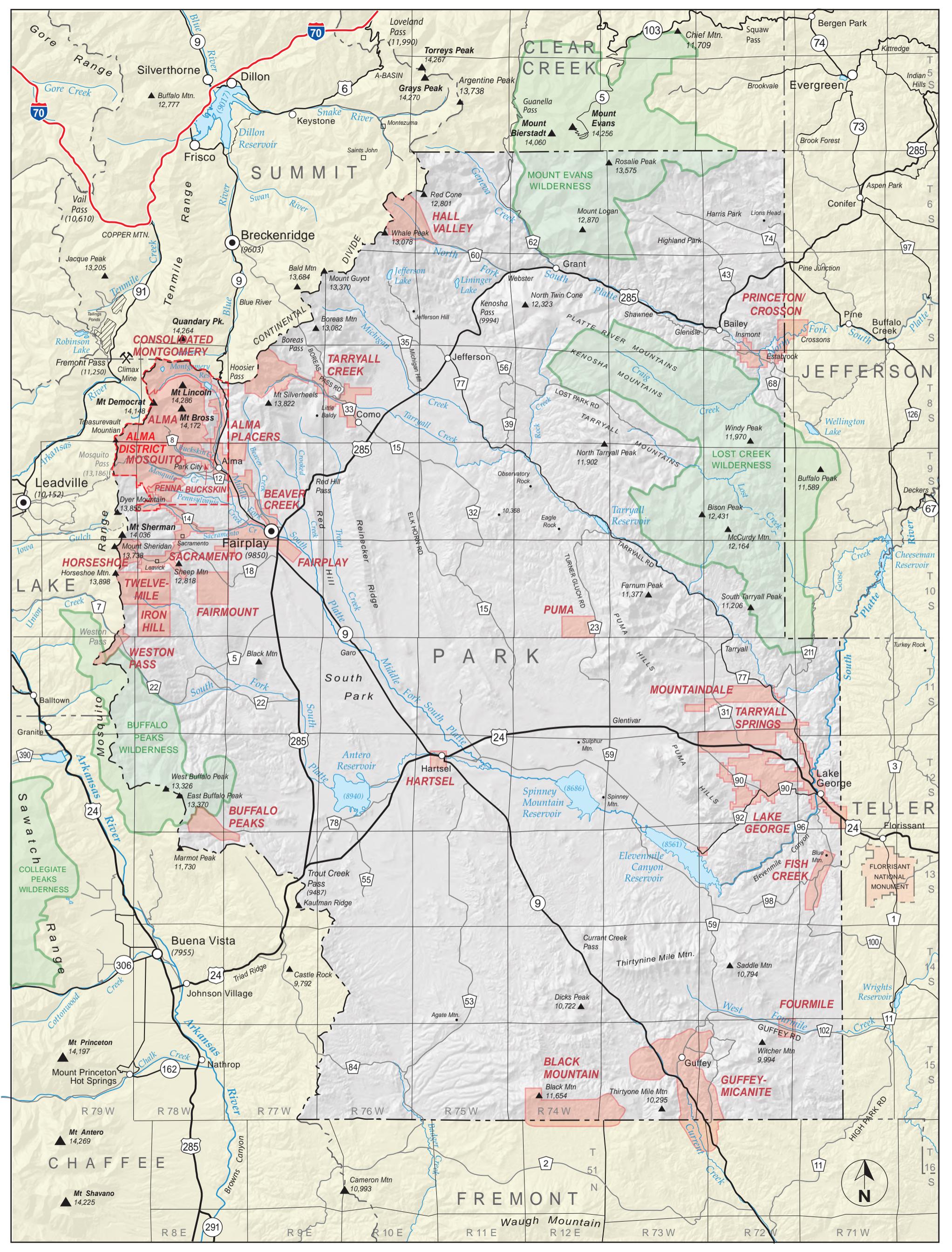
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SUMMIT

CLEAR CREEK

JEFFERSON

PARK

TELLER

CHAFFEE

FREMONT

CONSOLIDATED MONTGOMERY

TARRYALL CREEK

PRINCETON/CROSSON

ALMA

ALMA PLACERS

DISTRICT MOSQUITO

BEAVER CREEK

PENNA. BUCKSKIN

FAIRPLAY

MT SHERMAN

SACRAMENTO

HORSESHOE

FAIRMOUNT

TWELVE-MILE

IRON HILL

WESTON PASS

BLACK Mtn

BUFFALO PEAKS WILDERNESS

ANTERO RESERVOIR

WESTON PASS

BUFFALO PEAKS

COLLEGIATE PEAKS WILDERNESS

TROUT CREEK PASS

BUENA VISTA

JOHNSON VILLAGE

MT PRINCETON

NATHROP

MT ANTERO

AGATE Mtn

MT SHAVANO

CAMERON Mtn

WAGHA MOUNTAIN

THIRTYONE MILE Mtn

BLACK MOUNTAIN

GUFFEY-MICANITE

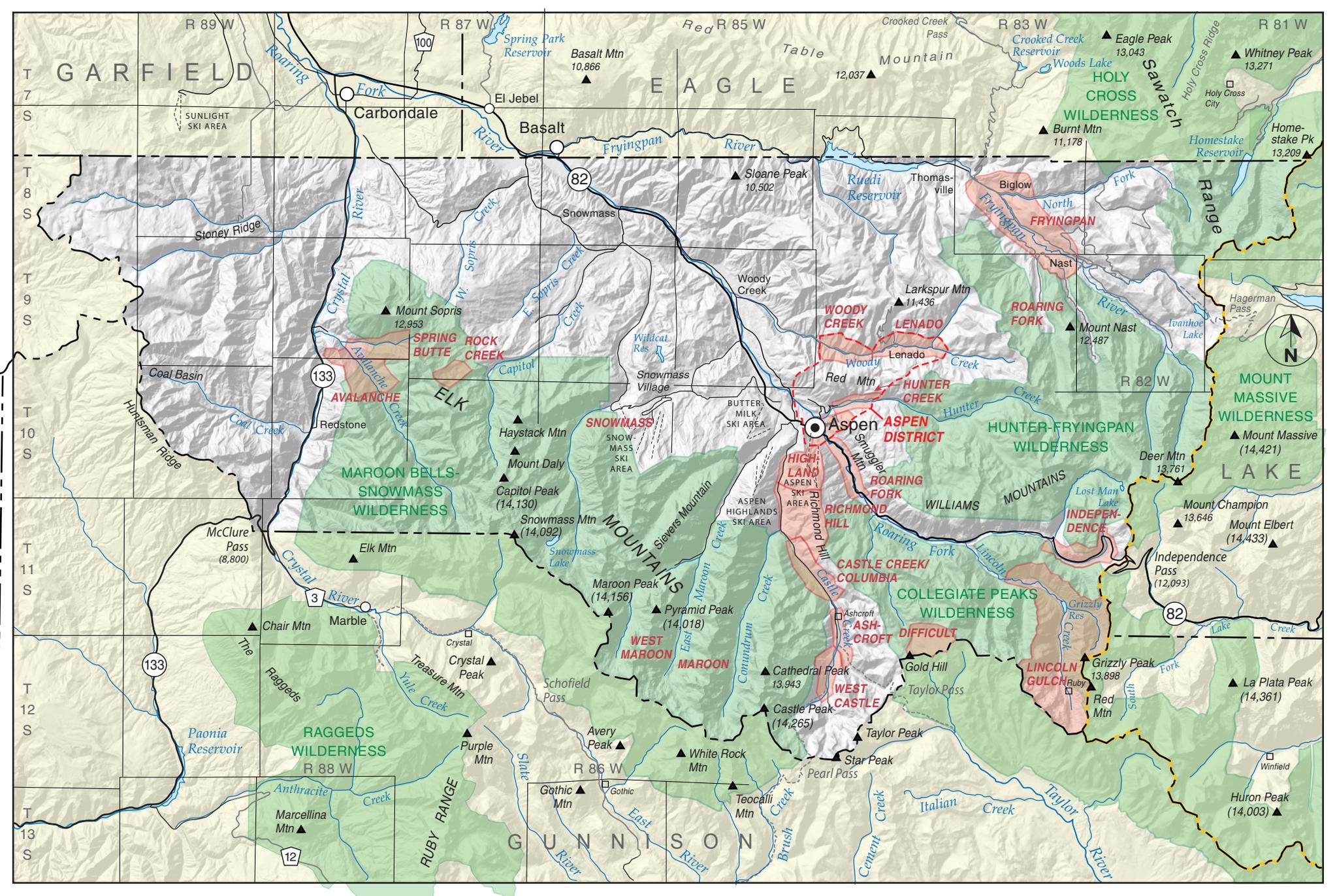
WILCHER Mtn

SADDLE Mtn

THIRTYONE MILE Mtn

WILCHER Mtn

**Editor's Note:** *Detailed descriptions of the historical mining districts in Park County are not available as of the online publication date  
11 November 2020*



## **Pitkin County**

### **Ashcroft District**

The Ashcroft District was recognized by Vanderwilt (1947) on Castle Creek in the Elk Mountains. The terrain is severe, with the Montezuma Mine standing at 13,000 feet. A large quartz diorite stock intrudes into Paleozoic sediments in the area. There was a lot of interest in magnetite ores in the district, and the Ashcroft is adjacent to the Taylor Peak District of Gunnison County (Harder, 1909). Some gold was found with exploration into lead-silver occurrences, but the district was not much of a producer.

The town of Ashcroft was founded about the same time as Aspen and outpaced its rival for a while (Eberhart, 1969). The Railroad - and richer ore - provided the impetus to make Aspen the more successful town.

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## Pitkin County

### Aspen District (aka Roaring Fork District)

The Aspen District was considered by Vanderwilt (1947) to contain - or to be synonymous with - the **Roaring Fork, Richmond Hill, and Lenado Districts**. In any case, the principle mines of the district lie within a mile of the town of Aspen. The District was a leading producer of silver, along with some lead and zinc, and minor gold. There was not much pyrite present in the ore, the major gangue minerals being barite and dolomite. Most production occurred from stratabound ores in the Leadville Limestone and Dolomite and the overlying Weber Shale.

The first prospectors arrived in the area in the 1870s, but the fear of Indian attack drove them back to the comparative civilization of Leadville. Finally in 1880, rich ore was struck and mining progressed, inhibited somewhat by poor access. A road over Independence Pass spurred growth, but the coming of the railroad in 1887 was the big event. Aspen was considered in 1893 the richest silver town in the world and was second only to Leadville in production (estimated by Vanderwilt at over \$105M by 1947).

The biggest producer in the Aspen District was the Smuggler Mine. To highlight its status, the mine produced the largest silver nugget in history - a 2054 pound beauty with 93% purity.

Additional references for this District include: Bryant (1971, 1979), Emmons (1888), Freeman (1972), Rohlfling (1938), Spurr (1898, 1909), and Vanderwilt (1935).

Mines listed in the district (mindat.org) include:

- [A-J Tunnel](#)
- [A M & S Group](#)
- [Alta Argent](#)
- [Argentum - Juniata Mine \(Juniata; Argenta Tunnel; Claims: M. & Y.; Golden Fleece; Lost Smuggler; Jesse C.; Amazon; Oriental; Cameron\)](#)
- [Arkansas Tunnel](#)
- [Aspen](#)
  - [Mollie Gibson Mine \(Molly Gibson Mine\)](#)
  - [Smuggler Mine \(I. X. L.; Leadville; Trueworthy; Glendale; Arkansaw; Ground Hog; Accident; Williams Ranch; General Jackson; Claims: Smuggler; Emma; Smuggler - Durant; Silver Brick\)](#)
- [Aspen Contact Mine \(Claims: Tenderfoot; Last Chance; Eureka; River; Lamokin; Annex; Last Chance No. 2; Mollie\)](#)
- [Aspen Mine \(Claim: Aspen\)](#)
- [Aspen Mining and Drainage Tunnel \(Copperopolis; A. M. & D. Tunnel; Copperopolis; Claims: Aspen Mountain Tunnel Lode No. 1\)](#)
- [Aspen Mining and Smelting Company Mine \(Robert Emmett; King Bee\)](#)
- [Aspen placers](#)
- [Aspen Wince](#)
- [Baltic](#)
- [Baystate](#)
- [Benedict Pit](#)
- [Best Friend Mine \(Claim: Best Friend\)](#)
- [Bi-Metallic Tunnel](#)
- [Birmingham](#)
- [Bonnybel Mine \(Claims: Bonnybel; Chloride\)](#)

- Broadway Shaft
- Broadway Tunnel
- Brownlime Tunnel
- Bushwhacker Mine (Claims: Bushwhacker; Alpine)
- Camp Bird Mine (Claims: Camp Bird; Camp Bird M. S.)
- Celeste Mine (Claim: Celeste)
- Champion Shaft
- Clark Tunnel
- Compromise Mining Company
- Conomara Shaft New
- Copperopolis Mine
- Cowenhoven Tunnel
- D. P. Rohlphing Company
- Deep Shaft
- Della S. Mine (Ballarat; Fossil Fraction; Della S.; J. C. Johnson; Alpine; Last Chance; General Jackson; Bushwhacker; Claims: Alma M.; Chatfield)
- Denver Shaft
- Dubuque Tunnel Occurrence
- Durant Mine
- Durgen Tunnel
- Edison Incline
- Emma Shaft
- Enterprise
- Franklin
- Free Silver
- Golcanda
- Good Thunder Shaft
- Gravel Pit (MRDS - 10118053)
- Great Western
- Harkins Tunnel
- Harrisburg
- Highland Tunnel
- Holden
- Homestake
- Homestead
- Hope Mine (Claims: Hope Nos. 1-4; Hope M. S.)
- Igneous Tunnel
- Iowa Chief Mine (Claim: Iowa Chief)
- Iowa Shaft
- Jenny Lind
- Johnson Tunnel
- Justice Mine (Claim: Justice)
- Lasalle
- Last Dollar Mine (O.K.; Minnie Moore; Claims: Last Dollar)
- Late Acquisition Mine (Monarch; Claims: Late Acquisition; Traynor; Hoskins; Iron)
- Leadville Mine (Claim: Leadville)
- Lease
- Lenado
- Lenado Exploration
- Lime Gulch & Hurricane
- Little Annie Mine (Claim: Little Annie)
- Little Cloud Tunnel
- Little May
- Little Nell Shaft
- Little Percy Mine (Claim: Little Percy)
- Martha Washington
- Mary B. Mine (Claim: Mary B. No. 2)
- Mayflower Tunnel
- Middle Tunnel
- Midnight Mine
- Millinee
- Mineral Farm
- Mt Ranger Group
- New York Tunnel
- Newman Tunnel (Bijou; Keystone; St. Paul; Denver; Claims: La Salle; Harrisburg)
- North Tunnel
- Old Pioneer Tunnel
- Old Shaft
- Oriental Gravel Pit
- Park Regent Mine (Cascade; Alaska; Tiger; Lizzie; Iowa No. 2; Regent; Siberia; Claims: Park; Joplin No. 2)

- Park Tunnel (Mayflower; Claims: Jenny Lind; San Jacinto; Bob Ingersoll; Libbie Bell; Celeste)
- Pelland
- Percy Lasalle M & Power Company
- Pioneer Tunnel
- Pride of Aspen Mine (Claim: Pride of Aspen)
- Pride of the Hills
- Princess Louise Shaft
- Red Spruce
- Roaring Fork
- Robert Emmet
- Saint Joe
- Saint Paul Shaft
- Sam Houston
- San Jacinto
- Schiller Mine (Schiller Incline; Claim: Schiller)
- Section of Aspen Mining Belt
- Silver Bell
- Silver Star
- Single Jack Group
- South Tunnel
- Spar Consolidated
- Spar Disc
- Spar No. 2
- Statesman Tunnel
- Stillwell Shaft
- Teaser
- Tilly Shaft (Claim: Tillie)
- Tom Gilmore
- Tower Durant Tunnel and Dump
- Traynor
- Vallejo
- Varney Tunnel
- Veteran
- Visine
- Woody Creek
  - Lenado
- Yankee Tunnel
- Yopsie Tunnel
- Young Shaft

Minerals listed in the district ([mindat.org](http://mindat.org)) include:

Acanthite	Glauconite	Siderite
Anglesite	Goslarite	Silver
Anhydrite	'Limonite'	Smithsonite
Baryte	Malachite	Sphalerite
Bornite	Minium	Stromeyerite
Calcite	Muscovite var: Sericite	Tennantite
Cerussite	Palygorskite	Tenorite
Chalcopyrite	Pearceite (TL)	Tetrahedrite
'Chert'	Platinum	'Tourmaline'
Cuprite	Polybasite	Uraninite
Dolomite	Pyrargyrite	Willemite
'Flint'	Pyrite	Wurtzite
Galena	Quartz	

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## Pitkin County

### Avalanche District

Discussed in Vanderwilt (1947), the Avalanche District lies around Avalanche Creek several miles upstream from the Crystal River. Argentiferous galena and some gold is found in limestone beds near the Mount Sopris intrusion. Vanderwilt points out that production was minor.

According to Eberhart (1969), gold was found in 1880 and a number of claims were staked on Avalanche Creek. The town of Janeway at the mouth of Avalanche Creek supported the area and about 100 residents.

Mines listed in this district (Dunn, 2003; mindat.org) include:

- Silver Queen
- [M & J Claim](#)
- [Spring Butte Mine \(Claims: Ground Hog; Ground Hog-Gypsum Mine; Mary Mac 1-4; Double Decker\)](#)

Minerals listed in this district (mindat.org) include:

[Acanthite](#)

[Cerussite](#)

[Galena](#)

[Bornite](#)

[Covellite](#)

[Stromeyerite](#)

References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

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## **Pitkin County**

### **Castle Creek District (aka Columbia District)**

The location of the Castle Creek District is confusing. Henderson (1926) considers it synonymous with the Columbia District. Dunn (2003) describes the district as lying in two parts separated by the Columbia District. Refer to the Columbia District for lists of minerals and mines.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

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## Pitkin County

### Columbia District

Henderson (1926) identifies the Columbia District as synonymous with the **Castle District**, the **West Castle District**, and the **Roaring Fork District**. Dunn (2003) considered the Columbia District to overlap or include the Castle and West Castle Districts. On mindat.org, the district is considered synonymous with the Ashcroft District.

Despite the mineral list below (mindat.org), the district was mainly an iron producer. Eberhart (1969) describes the small settlement of Cooper's Camp that rose to serve the small mining community.

Mines listed in Columbia District (mindat.org) include:

- [Ainer](#)
- [Alpine Mine](#)
- [Ashcroft Occurrence](#)
- [Borealis](#)
- [Eclipse Mine \(Tunnel Lode; Claims: Wyoming; MS 4190; Eclipse No. 2; Eclipse No. 1\)](#)
- [Gem Mine](#)
- [Hurricane Mine](#)
- [Independence](#)
- [Independence \(Independence Pass\)](#)
  - [Grottos pegmatite](#)
- [Pitkin Mine](#)
- [Tin Cup Mine](#)
- [Iron Hills Properties](#)
- [Iron Mtn.](#)
  - [Puzzler Lode Occurrence](#)
- [Larson](#)
- [McDonalds](#)
- [Montezuma Mine \(Yellow Boy; MS 2177; Emma; MS 6976\)](#)
- [Porphyry Bell](#)
- [Tam O'Shanter](#)

Minerals listed in the district (mindat.org) include:

<a href="#">Allanite-(Ce)</a>	<a href="#">Galena</a>	<a href="#">'Psilomelane'</a>
<a href="#">Arsenopyrite</a>	<a href="#">var: Argentiferous Galena</a>	<a href="#">Pyrite</a>
<a href="#">Baryte</a>	<a href="#">'Garnet'</a>	<a href="#">Pyrolusite</a>
<a href="#">'Biotite'</a>	<a href="#">Goethite</a>	<a href="#">Quartz var: Amethyst</a>
<a href="#">Calcite</a>	<a href="#">Halotrichite</a>	<a href="#">Siderite</a>
<a href="#">Cerussite</a>	<a href="#">Hematite</a>	<a href="#">Sphalerite</a>
<a href="#">Chalcopyrite</a>	<a href="#">'Limonite'</a>	<a href="#">Uraninite</a>
<a href="#">Chlorargyrite</a>	<a href="#">Magnetite</a>	<a href="#">Uranopolycrase</a>
<a href="#">'Chlorite Group'</a>	<a href="#">Microcline</a>	<a href="#">Zircon var: Cyrtolite</a>
<a href="#">'Clinopyroxene Subgroup'</a>	<a href="#">Monazite-(Ce)</a>	
<a href="#">Cuprite</a>	<a href="#">Polycrase-(Y)</a>	

References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Difficult District (aka Difficult Creek District)**

The Difficult District was identified by Henderson (1926) as lying in the southeast corner of Pitkin County near the Gunnison County line. Ore deposition is probably associated with the Difficult Creek Quartz Monzonite (Bryant, 1979). BLM mineral surveys of the area identified gold and copper with minor silver in vein deposits. The district now lies within the Collegiate Peaks Wilderness Area.

Minerals in this district include:

Chalcopyrite

Malachite

Pyrite

References:

Bryant, Bruce. 1979. Geology of the Aspen 15-minute Quadrangle, Pitkin and Gunnison Counties, Colorado. U.S. Geological Survey Professional Paper 1073.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## **Pitkin County**

### **Frying Pan District (aka Dry Pine District)**

The Frying Pan District was noted by Henderson (1926) and again by Vanderwilt (1947). Vanderwilt describes small scattered veins throughout a large area around Nast, a station on the Colorado Midland Railroad. Vanderwilt defines the district as stretching from the head of Homestake Creek in Eagle County, along Frying Pan Creek and to the head of the Lake Fork of the Arkansas River in Lake County. He notes that gold and silver occur in these veins in Precambrian granite.

Several of the mines listed on mindat.org (and the associated minerals) are uranium minerals, associated with small uranium deposits (Nelson-Moore et al., 1978).

Mines in the district (mindat.org) include:

- Frying Pan Claims (uranium and vanadium)
- Meredith
- Porphyry Mountain Mines

Mineral listed in this district (mindat.org) include:

[Autunite](#)

[Torbernite](#)

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Nelson-Moore, J.L., Collins, D.B., and Hornbaker, A.L. 1978. Radioactive Mineral Occurrences of Colorado and Bibliography. Colorado Geological Survey Bulletin 40.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Pitkin County

### Highland District

Just south of the town of Aspen, the Highland District lies between the **Aspen District** and the **Ashcroft District** (Henderson, 1926). Prospectors made some finds in 1879 and established the town of Highland, but the boom didn't last long (Eberhart, 1969). Activity peaked in about 1881, and continued intermittently to 1890 (Dunn, 2003). Another reference for this district is Spurr (1898).

Mines in the district (Dunn, 2003) include:

- Calumet
- Mountain Elk
- Baltimore

Mineral listed in this district include:

Anhydrite  
Chalcopyrite  
Pyrite

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Spurr, J.E. 1898. Geology of the Aspen Mining District, Colorado, with Atlas. U.S. Geological Survey Monograph No. 31.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Hunter Creek District**

Henderson (1926) listed the Hunter Creek District in his compilation of Colorado mining districts, and named it as synonymous with the **Woody District**. It is enclosed in the larger **Aspen District**, lying along Hunter Creek, which flows into Aspen from the East. No specific information is available on the Hunter Creek district. Refer to Aspen District.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## Pitkin County

### Independence District

The Independence District is a minor district of large extent in the area of Independence Pass south of Aspen. Mindat.org includes the Independence District with the **Columbia District**, which seems quite a stretch. Including the headwaters of the Roaring Fork River, the district produced some very rich gold ore. Vanderwilt (1947) quotes stopes yielding 2.3 ounces per ton of gold in 1932, but production diminishing to 2 tons in 1940. In fact Dunn (2003) indicates that most of Pitkin County's gold production probably came from this district. Silver was also present.

Mindat.org lists several other mines in the area of Independence Pass. One is the Grotto Pegmatite Mine; another is the Pitkin Mine, apparently a producer of iron ore. The Independence Mine - included by Dunn (2003) in the Independence District and by mindat.org in the **Lincoln District**, contained chalcopyrite, gold, and silver.

The town of Independence was the first settlement in the Aspen area, lying below the summit of the pass on the west side. It was also known, from time to time, as Chipeta, Sparkill, or Farwell (Eberhart, 1969).

The Independence District now lies largely within the Collegiate Peaks and the Hunter-Frying Pan Wilderness Areas.

Mines in the district (Dunn, 2003; mindat.org) include:

- Independence Mine
- Farwell Mine
- [Pitkin Mine](#)
- [Tin Cup Mine](#)

Mineral listed in this district (mindat.org) include:

Allanite - Ce	Cuprite	Polycrase-(Y)
Baryte	'Garnet'	Pyrite
'Biotite'	Goethite	Quartz var: Amethyst
Calcite	Hematite	Siderite
Cerussite	'Limonite'	Uraninite
Chalcopyrite	Magnetite	Uranopolycrase
Chlorargyrite	Microcline	Zircon var: Cyrtolite
'Chlorite Group'	Monazite-(Ce)	

References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Vanderwilt, J.W. 1947. *Mineral Resources of Colorado*. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Lenado District (within Aspen District)**

Lenado has been generally considered as part of the larger **Aspen District** or **Roaring Fork District** (Dunn, 2003; Vanderwilt, 1947). Bryant (1978) mentions the Lenado District as a "satellite" district of the Aspen District.

The geology of the Lenado District is basically the same as the Aspen District. The Lenado Project discussed by Bryant (Ibid) provided some 1370 feet of diamond drilling in the Woody Creek valley with an accompanying geochemical study by McCarthy and Gott (1966). The drill core (albeit with poor recovery) revealed numerous faults and breccias that Bryant and other investigators interpret to a paleokarst origin - collapse of the active erosion surface by dissolution of underlying carbonates.

Spurr's landmark paper (1898) contains a small section on the Lenado Canyon area (pages 117-125.) Spurr delineates the stratigraphy as a shale overlying a carbonate overlying a Cambrian quartzite. At the Aspen Contact Mine, Spurr reports that the dolomite is "much broken up" with blocks of limestone and ore. He describes a breccia between the dolomite and the underlying quartzite referred to by the miners as "talc," where the richest ores occur. Those zones are significant - up to 40 feet thick stretching up to 300 feet laterally. (This description can certainly fit with Bryant's paleokarst explanation.)

The Leadville Mine shows the same geology as the Aspen Contact Mine. The ore is mainly lead and zinc sulfide with some carbonate (Spurr, Ibid).

Eberhart (1969) describes the town of Lenado as a small settlement in the midst of the best mines in the canyon. It became the home of the area's largest employer - the Varney Tunnel Company. A large lead mill opened in the town in the early 1890s and closed and opened several times. The last production was in 1917 to provide zinc to the war effort (Eberhart, Ibid).

Mines in the district (Dunn, 2003; mindat.org; Spurr, 1898) include:

- [Downunder Mine](#)
- [Lenado Tunnel](#)
- [Aspen Contact Mine\\*](#)
- [Leadville Mine\\*](#)
- [Bimetallic Tunnel\\*](#)
- [Tilly Shaft\\*](#)

Note: \*Mines described in detail in Spurr (1898).

Minerals listed in the district (mindat.org) include:

[Galena](#)

[Greenockite](#)

[Hemimorphite](#)

References:

Bryant, Bruce. 1979. Geology of the Aspen 15-minute Quadrangle, Pitkin and Gunnison Counties, Colorado. U.S. Geological Survey Professional Paper 1073.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

McCarthy, J.H. Jr. and Gott, G.B. 1966. The Distribution of Ag, Pb, Zn, Sb, As, and Hg in Soils at Lenado, Aspen Quadrangle, Colorado. U.S. Geological Survey Open-File Report 66-83.

Spurr, J.E. 1898. Geology of the Aspen Mining District, Colorado, with Atlas. U.S. Geological Survey Monograph No. 31.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Lincoln Gulch District (aka Lincoln District; aka Ruby District)**

Vanderwilt (1947) describes the Lincoln Gulch District as lying 15 miles southeast of Aspen, where Lincoln Gulch runs into the Roaring Fork River. The district abuts the **Red Mountain District** of Chaffee County on the south, with Red Mountain dividing the two.

Vanderwilt (Ibid) describes the northern part of the District as containing pyritized iron-stained rock with stringers of galena and sphalerite and scattered molybdenite flakes. The southern part of the area consists of granite and schist with small veins containing lead and silver and small rich lenses of auriferous chalcopyrite. He notes that in 1938 and 1939 six tons of ore were shipped averaging 15 percent lead, 8 ounces per ton silver, and 0.7 ounces per ton gold.

Worcester (1919) mentions the Greenhorn Occurrence in his compilation of molybdenum occurrences in Colorado.

The town of Ruby was founded in Lincoln Gulch in the 1890s. The mines were not big producers and have not operated since World War I (Eberhart, 1969).

Much of the District now lies within the Collegiate Peaks Wilderness area. The geology and resources of the wilderness area is covered in detail by Bastin (1987) and additional information can be obtained from a thesis by Cruson (1973).

Mines listed in the district (Dunn, 2003; mindat.org) include:

- Boston Claim
- [Greenhorn Occurrence](#)
- [Grizzly Gulch](#)
- Hillside Claim
- Highland Claim
- [Independence Mine \(Gatton; Claims: Independence; Mammoth; Dolly Varden\)](#)
- [Lincoln Gulch](#)
- Mammoth Claim
- [Mt. Hope Mine \(Golden Champion Mill Site; Golden Champion; Claims: Mount Hope; Mount Hope Mill Site\)](#)
- [Ruby Mine \(Claims: Ruby 1-4\)](#)
- [Sphalerite Mine](#)

Minerals listed in the district (mindat.org) include:

Anglesite	Epidote	Montmorillonite
Barite	Galena	Muscovite var: Illite
Calcite	Gold	Polybasite
Chalcopyrite	Kaolinite	Pyrargyrite
'Chlorite Group'	Laumontite	Pyrite
Copper	'Limonite'	Quartz
Covellite	Malachite	Silver
Cuprite	Molybdenite	Sphalerite

#### References:

Bastin, G. David. 1987. Mineral Resources of the Collegiate Peaks Wilderness Area, Chaffee, Gunnison, Lake, and Pitkin Counties, Colorado. U.S. Bureau of Mines Open File Report MLA 45-87.

Cruson, M. G. 1973. Geology and Ore Deposits of the Grizzly Peak Cauldron Complex, Sawatch Range, Colorado. Colorado School of Mines, unpublished PhD dissertation.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

Worcester, P.G. 1919. Molybdenum Deposits of Colorado. Colorado Geological Survey Bulletin 14, p.77.

[www.mindat.org](http://www.mindat.org), organized July 2015.

## **Pitkin County**

### **Maroon District**

The Maroon District was listed by Henderson (1926). Not much information is available, except for Bryant (1969) who lists a placer gold occurrence (the Continental Placer). Includes the **West Maroon District**, for which no information is available.

#### References:

Bryant, Bruce. 1969. Geologic Map of the Maroon Bells Quadrangle, Pitkin and Gunnison Counties, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-788, Scale 1:24,000.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## **Pitkin County**

### **Woody Creek District (aka Woody District)**

The Woody Creek District, named by Henderson (1926), lies along Woody Creek north of the town of Aspen, adjacent to the Lenado District. It is included within the **Aspen District**. According to Dunn (2003), the Woody Creek District adjoins and may overlap the **Hunter Creek District**. Additional references include Bryant (1972) and Freeman (1972).

Mines/Prospects listed in the district (Dunn, 2003) include:

- Silver City
- Last Chance
- Tenderfoot
- Daisy
- River

#### References:

Bryant, Bruce. 1972. Geologic Map of the Highland Peak Quadrangle, Pitkin County, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-932, map scale 1:24,000.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Freeman, V.L. 1972. Geologic Map of the Woody Creek Quadrangle, Pitkin and Eagle Counties, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-967, map scale 1:24,000.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## **Pitkin County**

### **Richmond Hill District**

Nestled in among the **Highland, Castle Creek, and Columbia Districts**, the Richmond Hill District lies just south of the town of Aspen and the Aspen ski area. Considered by Vanderwilt (1947) as synonymous with the **Aspen District**, a more detailed description can be found under that district.

Mines listed in the district (Dunn, 2003) include:

- Debeque Mine
- Little Annie Mine
- Midnight Mine

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Pitkin County

### Roaring Fork District

Generally considered synonymous with the **Aspen District** (Dunn, 2003; Vanderwilt, 1947), the Roaring Fork District is named for the river of that name. Nearly all the significant mines were within a mile of the town of Aspen. The Roaring Fork/Aspen District was famous for its silver production, with over \$100M attributed by Vanderwilt (Ibid).

The geology of the area consists of Paleozoic sedimentary rocks (striking North to Northeast, dipping west) lying on Precambrian granite and schist with intrusions of Laramide age bringing ore-bearing solutions. The Castle Creek Fault, west of the town of Aspen, is the major structural feature of the district, bisecting the Aspen area. Spurr (1898) accounted 5000 feet of displacement west of the town, while Bryant (1979), attributing a better knowledge of the Maroon Formation, calculated some 14000 feet of displacement at Aspen Mountain, bringing the Precambrian rocks against the upper portion of the Maroon Formation. Spurr (Ibid) and Freeman (1972) had somewhat different interpretations.

As in so many Colorado mining districts, the Leadville Formation is the focus of the mineralization. Spurr (Ibid) defined the Leadville as containing the Dyer Dolomite, the Gilman Sandstone and the Leadville Limestone. Above the Leadville, the Weber Shale (of Spurr) - the Belden Shale (of Bryant) - was deposited and is the focus of ore deposition. Disagreement has existed about whether the mineralization at the Leadville - Belden contact and the limestone-dolomite contact was along bedding plane faults or if the zone was just a depositional contact. Bryant took particular note of features that imply cavities and brecciation were present as a result of karst development during a period of erosion between deposition of the Leadville and the overlying Belden and that some ore deposition occurred in the breccias and in cavities. Bryant (1979 - page 106) presents an extensive list of references about these competing interpretations.

Mines listed in the district (mindat.org) include:

- A-J Tunnel
- A M & S Group
- Alta Argent
- Argentum - Juniata Mine (Juniata; Argenta Tunnel; Claims: M. & Y.; Golden Fleece; Lost Smuggler; Jesse C.; Amazon; Oriental; Cameron)
- Arkansas Tunnel
- Aspen
  - Mollie Gibson Mine (Molly Gibson Mine)
  - Smuggler Mine (I. X. L.; Leadville; Trueworthy; Glendale; Arkansaw; Ground Hog; Accident; Williams Ranch; General Jackson; Claims: Smuggler; Emma; Smuggler - Durant; Silver Brick)
- Aspen Contact Mine (Claims: Tenderfoot; Last Chance; Eureka; River; Lamokin; Annex; Last Chance No. 2; Mollie)
- Aspen Mine (Claim: Aspen)
- Aspen Mining and Drainage Tunnel (Copperopolis; A. M. & D. Tunnel; Copperopolis; Claims: Aspen Mountain Tunnel Lode No. 1)
- Aspen Mining and Smelting Company Mine (Robert Emmett; King Bee)
- Aspen placers
- Aspen Wince

- Baltic
- Baystate
- Benedict Pit
- Best Friend Mine (Claim: Best Friend)
- Bi-Metallic Tunnel
- Birmingham
- Bonnybel Mine (Claims: Bonnybel; Chloride)
- Broadway Shaft
- Broadway Tunnel
- Brownlime Tunnel
- Bushwhacker Mine (Claims: Bushwhacker; Alpine)
- Camp Bird Mine (Claims: Camp Bird; Camp Bird M. S.)
- Celeste Mine (Claim: Celeste)
- Champion Shaft
- Clark Tunnel
- Compromise Mining Company
- Conomara Shaft New
- Copperopolis Mine
- Cowenhoven Tunnel
- D. P. Rohlphing Company
- Deep Shaft
- Della S. Mine (Ballarat; Fossil Fraction; Della S.; J. C. Johnson; Alpine; Last Chance; General Jackson; Bushwhacker; Claims: Alma M.; Chatfield)
- Denver Shaft
- Dubuque Tunnel Occurrence
- Durant Mine
- Durgen Tunnel
- Edison Incline
- Emma Shaft
- Enterprise
- Franklin
- Free Silver
- Golcanda
- Good Thunder Shaft
- Gravel Pit (MRDS - 10118053)
- Great Western
- Harkins Tunnel
- Harrisburg
- Highland Tunnel
- Holden
- Homestake
- Homestead
- Hope Mine (Claims: Hope Nos. 1-4; Hope M. S.)
- Igneous Tunnel
- Iowa Chief Mine (Claim: Iowa Chief)
- Iowa Shaft
- Jenny Lind
- Johnson Tunnel
- Justice Mine (Claim: Justice)
- Lasalle
- Last Dollar Mine (O.K.; Minnie Moore; Claims: Last Dollar)
- Late Acquisition Mine (Monarch; Claims: Late Acquisition; Traynor; Hoskins; Iron)
- Leadville Mine (Claim: Leadville)
- Lease
- Lenado
- Lenado Exploration
- Lime Gulch & Hurricane
- Little Annie Mine (Claim: Little Annie)
- Little Cloud Tunnel
- Little May
- Little Nell Shaft
- Little Percy Mine (Claim: Little Percy)
- Martha Washington
- Mary B. Mine (Claim: Mary B. No. 2)
- Mayflower Tunnel
- Middle Tunnel
- Midnight Mine
- Millinee
- Mineral Farm
- Mt Ranger Group
- New York Tunnel
- Newman Tunnel (Bijou; Keystone; St. Paul; Denver; Claims: La Salle; Harrisburg)
- North Tunnel
- Old Pioneer Tunnel
- Old Shaft

- Oriental Gravel Pit
- Park Regent Mine (Cascade; Alaska; Tiger; Lizzie; Iowa No. 2; Regent; Siberia; Claims: Park; Joplin No. 2)
- Park Tunnel (Mayflower; Claims: Jenny Lind; San Jacinto; Bob Ingersoll; Libbie Bell; Celeste)
- Pelland
- Percy Lasalle M & Power Company
- Pioneer Tunnel
- Pride of Aspen Mine (Claim: Pride of Aspen)
- Pride of the Hills
- Princess Louise Shaft
- Red Spruce
- Roaring Fork
- Robert Emmet
- Saint Joe
- Saint Paul Shaft
- Sam Houston
- San Jacinto
- Schiller Mine (Schiller Incline; Claim: Schiller)
- Section of Aspen Mining Belt
- Silver Bell
- Silver Star
- Single Jack Group
- South Tunnel
- Spar Consolidated
- Spar Disc
- Spar No. 2
- Statesman Tunnel
- Stillwell Shaft
- Teaser
- Tilly Shaft (Claim: Tillie)
- Tom Gilmore
- Tower Durant Tunnel and Dump
- Traynor
- Unknown Lead (MRDS - 10118664)
- Unnamed Zinc - Lead - Silver Prospects (See Last Page; MRDS - 10094583)
- Vallejo
- Varney Tunnel
- Veteran
- Visine
- Woody Creek
  - Lenado
- Yankee Tunnel
- Yopsie Tunnel
- Young Shaft

Minerals listed in the district ([mindat.org](http://mindat.org)) include:

Acanthite	'Limonite'	Silver
Anglesite	Malachite	Smithsonite
Anhydrite	Minium	Sphalerite
Baryte	Muscovite	Stromeyerite
Bornite	var: Sericite	Tennantite
Calcite	Palygorskite	Tenorite
Cerussite	Pearceite	Tetrahedrite
Chalcopyrite	Platinum	'Tourmaline'
Cuprite	Polybasite	Uraninite
Dolomite	Pyrargyrite	Willemite
Galena	Pyrite	Wurtzite
Glauconite	Quartz	
Goslarite	Siderite	

References:

Bryant, Bruce. 1979. Geology of the Aspen 15-minute Quadrangle, Pitkin and Gunnison Counties, Colorado. U.S. Geological Survey Professional Paper 1073.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Freeman, V.L. 1972. Geologic Map of the Woody Creek Quadrangle, Pitkin and Eagle Counties, Colorado. U.S. Geological Survey Geologic Quadrangle 967. Scale 1:24,000.

Spurr, J.E. 1898. Geology of the Aspen Mining District, Colorado, with Atlas. U.S. Geological Survey Monograph No. 31.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Rock Creek District**

The Rock Creek District was listed by Henderson (1926). He placed it in far western Pitkin County, currently within the Maroon Bells Wilderness Area. No information could be located about this district.

#### Reference:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## Pitkin County

### Snowmass District

The location of the Snowmass District is not well defined. Henderson (1926) describes it as four sections in T10S, R85W, placing it on the lower reaches of Snowmass Creek near the present location of the Buttermilk ski area and Snowmass Village. Vanderwilt (1947), on the other hand, describes the district as consisting of prospects near the head of Snowmass Creek, a location more than six miles southwest of Henderson's. Further, there are old prospects on the west side of Snowmass Village that don't fit either location.

Prospects and mines also appear within the Highland Peak Quadrangle (Bryant, 1972) and the Woody Creek Quadrangle (Freeman, 1972). For these reasons, the map associated with this description shows the tentative Snowmass District as including a very large area, encompassing all those above. While the lower reaches of Snowmass Creek lie around the developed areas noted above, the headwaters are within the Maroon Bells - Snowmass Wilderness Area.

Vanderwilt (1947) described the deposits as associated with a quartz monzonite stock that makes up Hagerman Peak and Capital Peak. Small veins occur with lead, zinc and copper. He reports no production, although some production is indicated on mindat.org for the district.

Mines listed in the Snowmass and Snowmass Creek Areas (mindat.org) include:

- [Snowmass Area](#)
  - [Big Buck Mine](#)
  - [Bionaz Group](#)
  - [Lucky Boy Tunnel](#)
  - [Panco Manganese Deposit](#)
  - [Snowmass Mountain](#)
- [Snowmass Creek Area](#)
  - [Munn Tunnel](#)
  - [Snowmass Creek Mine](#)

Minerals listed (mindat.org) include:

Alabandite	Calcite	Microcline
'Albite-Anorthite Series'	Fluorite	Muscovite
Barite	Galena	Quartz
'Biotite var: Manganophyllite'	Grossular	Sphalerite
Braunite	'K Feldspar var: Adularia'	

References:

Bryant, Bruce. 1972. Geologic Map of the Highland Peak Quadrangle, Pitkin County, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-932, map scale 1:24,000.

Freeman, V.L. 1972. Geologic Map of the Woody Creek Quadrangle, Pitkin and Eagle Counties, Colorado. U.S. Geological Survey Geologic Quadrangle Map GQ-967, map scale 1:24,000.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **Spring Butte District**

The Spring Butte District is listed by Henderson (1926) as a small (three sections) district in the northwestern part of Pitkin County. It may abut the **Avalanche District** and is considered the same as the Avalanche District on mindat.org. Refer to the Avalanche District for more information.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Pitkin County**

### **West Castle Creek District (aka West Castle District)**

The West Castle Creek District appears in Henderson (1926), but no further information is available.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

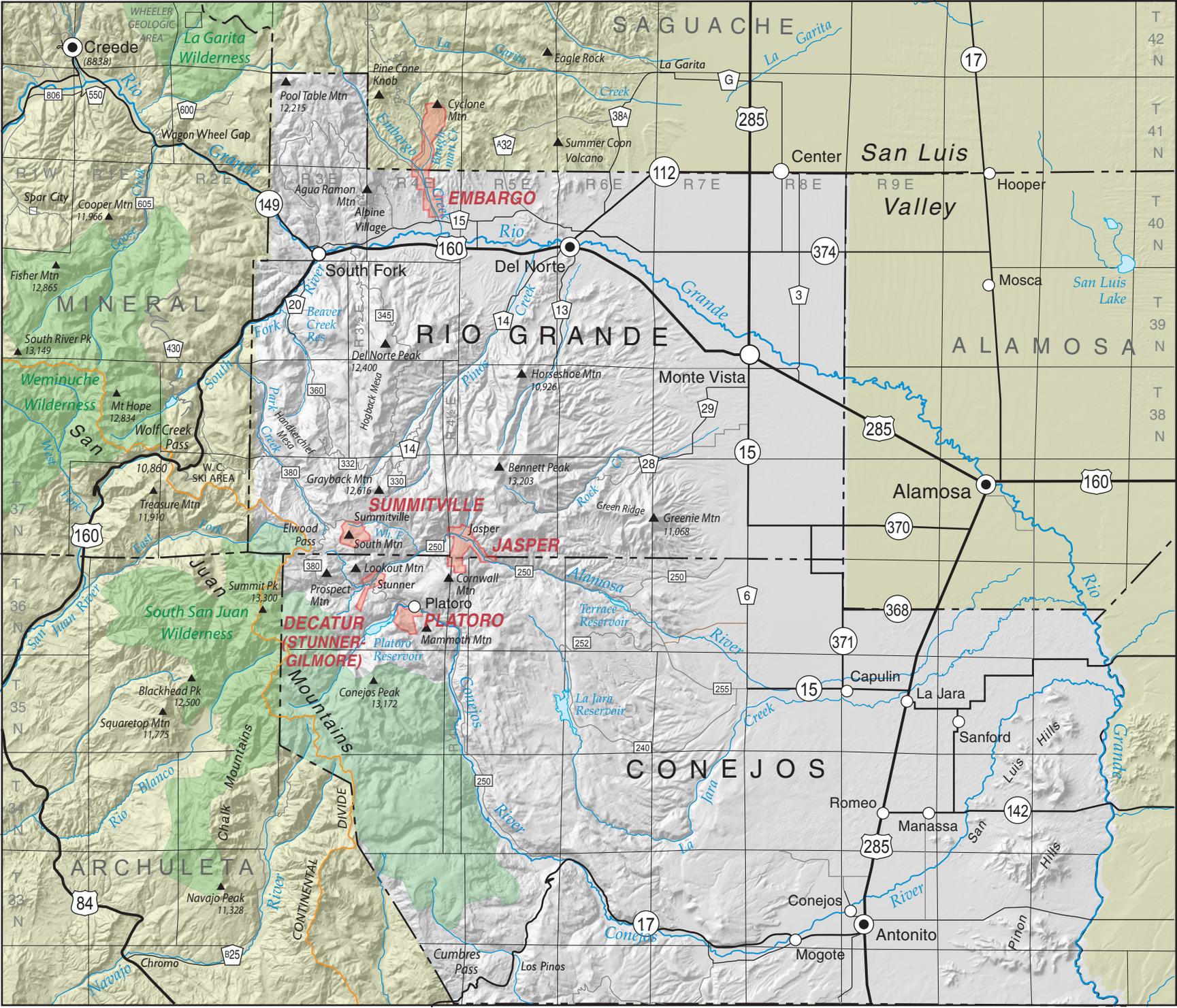
## **Pitkin County**

### **West Maroon District**

The West Maroon District is included in Henderson (1926) as encompassing eight sections in the southern part of T11S, R86W, in the area of Maroon Pass and Maroon Peak. The district lies within the Maroon Bells - Snowmass Wilderness area.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.



SAGUACHE

La Garita Wilderness

Creede (8838)

Wagon Wheel Gap

Spar City

Cooper Mtn 11,966

Fisher Mtn 12,865

South River Pk 13,149

Weminuche Wilderness

Mt Hope 12,834

Wolf Creek Pass

Treasure Mtn 11,910

Summit Pk 13,300

Blackhead Pk 12,500

Squaretop Mtn 11,775

W.C. SKI AREA

Grayback Mtn 12,616

Elwood Pass

Prospect Mtn

Summit Pk 13,300

Blackhead Pk 12,500

Squaretop Mtn 11,775

Navajo Peak 11,328

Chromo

Chromo

Pool Table Mtn 12,215

Pine Cone Knob

Agua Ramon Mtn

Alpine Village

Del Norte Peak 12,400

Hoagback Mesa

Summitville

Lookout Mtn

Stunner

Conejos Peak 13,172

Platoro

Mammoth Mtn

Cumbres Pass

Los Pinos

Cyclone Mtn

Summer Coon Volcano

Del Norte Peak 12,400

Hoagback Mesa

Summitville

Lookout Mtn

Stunner

Conejos Peak 13,172

Platoro

Mammoth Mtn

Cumbres Pass

Los Pinos

Cumbres Pass

Los Pinos

Eagle Rock

Summer Coon Volcano

Del Norte Peak 12,400

Hoagback Mesa

Summitville

Lookout Mtn

Stunner

Conejos Peak 13,172

Platoro

Mammoth Mtn

Cumbres Pass

Los Pinos

Cumbres Pass

Los Pinos

Embargo Creek

Summer Coon Volcano

Del Norte Peak 12,400

Hoagback Mesa

Summitville

Lookout Mtn

Stunner

Conejos Peak 13,172

Platoro

Mammoth Mtn

Cumbres Pass

Los Pinos

Cumbres Pass

Los Pinos

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Lookout Mtn

Stunner

Conejos Peak 13,172

Platoro

Mammoth Mtn

Cumbres Pass

Los Pinos

Cumbres Pass

Los Pinos

San Luis Valley

Center

Hooper

Mosca

Alamosa

Alamosa

Capulin

La Jara

Sanford

San Luis Hills

San Luis Hills

Pinon Hills

Pinon Hills

MINERAL

RIO GRANDE

ALAMOSA

SUMMITVILLE

JASPER

DECATUR (STUNNER-GILMORE)

PLATORO

CONEJOS

ARCHULETA

T 42 N

T 41 N

T 40 N

T 39 N

T 38 N

T 37 N

T 36 N

T 35 N

T 34 N

T 33 N

84

B25

DIVIDE

CONTINENTAL

DIVIDE

160

430

20

149

15

160

15

13

14

112

285

374

285

160

370

368

371

6

15

29

28

14

345

360

605

600

806

17

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6

28

14

332

330

380

430

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806

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250

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250

84

142

285

15

6

250

250

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250

250

84

T 42 N

T 41 N

T 40 N

T 39 N

T 38 N

T 37 N

T 36 N

T 35 N

T 34 N

T 33 N

84

B25

DIVIDE

CONTINENTAL

DIVIDE

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**Rio Grande County**

**Embargo District**

(Refer to Saguache County)

## Rio Grande County

### Jasper District (aka Decatur Northeast District)

The prospects and mines are about one-half mile west of Jasper generally in the vicinity of the Animas River and its tributaries. The general geology is the same as the **Platoro** (aka **Lake Fork**) **District** and the **Stunner** (aka **Decatur**) **District** (Vanderwilt, 1947). The district did not produce significant amounts of gold or silver.

The geology of the area is predominately igneous in origin. This district lies in the eastern part of the San Juan volcanic field and the late Oligocene-aged Platoro and nested Summitville calderas constitute a composite collapse structure of about 20 kilometers in diameter (Steven & Lipman, 1976). Ore was found in mineralized epithermal quartz-latitude veins that extended over long distances. Gold, silver-lead and lead-zinc ores are reported (Dunn, 2003).

The town of Jasper died before it learned that the ore sent to Denver was good, because the smelter in Denver burned before the 10 tons of ore sent there in 1887 could be assayed (Eberhart, 1969). The town of Jasper was originally called Cornwall for John Cornwall, the first postmaster (Eberhart, *Ibid*). The site is now a haven for fisherman and tourists.

Mines listed in the district (mindat.org and others) include:

- [Guadaloupe Mine \(Patented Claim: Guadaloupe; Guadaloupe Crosscut\)](#)
- [Jasper Occurrence](#)
- [Miser Mine \(Plutarch; Ballantine; Clara\)](#)
- [Perry Mine \(Patented Claim: Perry\)](#)
- [Pumice Deposit \(MRDS - 10167798\)](#)
- [Sanger<sup>1</sup>](#)

Note: <sup>1</sup>Listed in Eberhart (1969).

Minerals listed in this district (mindat.org) include:

<a href="#">Galena</a>	<a href="#">Pyrite</a>	<a href="#">Silver</a>
<a href="#">Gold</a>	<a href="#">Quartz</a>	<a href="#">Sphalerite</a>

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Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Steven, T.A. and Lipman, P.W. 1976. Calderas of the San Juan Volcanic Field, Southwestern Colorado. U.S. Geological Survey Professional Paper 958.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed August 2015.

## **Rio Grande County**

### **Summitville District (aka Summit District)**

The Summitville District, which went by an earlier name of Summit District, was being worked beginning in the 1870's, and was the first district in the area (Patton, 1917). Its location is at the north foot of South Mountain nearly at the head of Wightman's Fork, a branch of the Alamosa River. The elevation of the town is approximately 11,300 feet.

Henderson (1926) included the Decatur District in Conejos County into the Summit District. Here we have separated the Summit (Summitville) District due to being located in a separate county and having ores of different genesis and age (Steven and Ratte, 1960).

The geology of the area is igneous in origin. This district lies in the eastern part of the San Juan volcanic field and the late Oligocene-aged Platoro and nested Summitville calderas constitute a composite collapse structure of about 20 kilometers in diameter (Lipman, 1974; Steven & Lipman, 1976). The Summitville Au–Ag–Cu deposit is a classic volcanic dome-hosted high-sulfidation deposit. It occurs in the Quartz Latite of South Mountain, a composite volcanic dome that was emplaced along the coincident margins of the Platoro and Summitville calderas at  $22.5\pm 0.5$  Ma, penecontemporaneous with alteration and mineralization. A penecontemporaneous quartz monzonite porphyry intrusion underlies the district and is cut and overlain by pyrite–quartz stockwork veins with traces of chalcopyrite and molybdenite (Bethke et al., 2005). The mines of this district are located on a series of parallel running veins that have a general northwest and southeast strike (Patton, 1917).

Stoffregen (1987), Gray et al. (1993), and Gray and Coolbaugh (1994) provided detailed descriptions of the geology and mineralization of the Summitville mine site. The Summitville Mine has been the focus of attention because of environmental problems resulting from open-pit mining activities that occurred from 1984 to 1992. The environmental problems included leakage of cyanide solutions from a heap leach pad and drainage of acid- and metal-rich waters into the Wightman Fork of the Alamosa River, which drains into agricultural lands of the southwest San Luis Valley (Flohr et al., 1995). Multiple USGS environmentally-related studies have been performed, which are not discussed here.

Discussions of other mines in the district are included in Patton (1917). In 1883 there were nine stamp mills with a total of 155 stamps. The San Juan, Odin, Little Annie and Golconda mines had gravitation tramways for transporting the ore from mines to mills. The Iowa and Colorado Company had a wire tramway of the Halliday patent for like purposes.

Gold placering was also performed from 1870 to about 1880 and yielded considerable gold, the largest being a 1-inch nugget (Patton, 1917). Placer claims in the district included the Peterson, Brant, and San Juan (Patton, 1917).

Summitville was the largest and richest camp in the 1880's with a population as large as 600, and besides the nine mills had 14 saloons and a newspaper, The Summitville Nugget. Summitville began fading in the late 1880s, and was deserted by 1893. It was revived and grew to a population of 700 when the mines reopened in 1935 under Consolidated Mines Inc. It produced much copper during World War II (Eberhart, 1960).

Mines listed in the district (mindat.org and others) include:

- Alum Creek Property
- Annie
- Beverly Shaft Mine
- Bob Tail Mine (Claim: Bob Tail)<sup>1</sup>
- Bobcat
- Bowen Placer
- Chandler Tunnel (Claim: Little Ida)<sup>1</sup>
- Copper Hill Mine
- Del Norte
- Dexter Tunnel (Claim: Dexter)
- Esmond Mine (Claim: Esmond)<sup>1</sup>
- French Tunnel<sup>1</sup>
- Highland Mary Mine<sup>1</sup> (Highland Mary No. 2. All Lower Highland Mary; Upper Highland Mary; Claims: Highland Mary)
- Hugh Bly Mine
- Ida Tunnel (Claim: Little Ida)<sup>1</sup>
- Iowa Mine (Patented Claim: Iowa)<sup>1</sup>
- Lookout Mountain
- Missionary Tunnel (Claim: Missionary)
- Montroy Tunnel<sup>1</sup>
- Narrow Gauge Mine
- Odin Mine
- Pickens Cut (Claim: Little Annie)
- San Juan Mine
- Science Tunnel Occurrence
- South Mountain
  - Aztec Mine (Summit Lode Mine; Fairview Mine; Aztec No. 1; Aztec No. 2; Claim: Aztec)<sup>1</sup>
  - Del Norte Mine
  - Golconda Mine<sup>1</sup>
  - Little Annie Mine
  - Margaretta Mine
  - Wightmans Fork
- South Mountain Occurrence
- Summitville Mine (Reynolds Tunnel; Golconda Tunnel<sup>1</sup>)
  - Cropsey Wall
  - Galactic Open Pit
  - Little Nellie Pit
  - Reynolds Mine
- Tunnel No. 2 claim
- Winchester Tunnel<sup>1</sup>

Note: <sup>1</sup>Discussed in Patton (1917).

Minerals listed in the district (mindat.org) include:

Albite	Cristobalite	Kaolinite
Alunite	Dickite	'Limonite'
Anorthite	Digenite	Luzonite
'Apatite'	Diopside	Magnetite
Aragonite	Enargite	Marcasite
Barite	Epidote	Molybdenite
'Biotite'	Epsomite	Montmorillonite
Bournonite	Famatinite	Muscovite
Brochantite	Galena	var: Illite
Calcite	Goethite	var: Sericite
Chalcanthite	Gold var: Electrum	Natroalunite
Chalcocite	Hematite	'Olivine'
Chalcopyrite	Hinsdalite	Orthoclase
'Chlorite Group'	'Hypersthene'	Polybasite
Clinocllore var: Pennine	'Iddingsite'	Posnjakite
Copiapite	Ilmenite	Pyrite
Covellite	Jarosite	Pyrophyllite

Quartz  
var: Agate  
var: Amethyst  
var: Chalcedony  
Rutile

Sanidine  
Silver  
Sphalerite  
Sulphur  
Svanbergite

Tennantite  
Turquoise  
Woodhouseite  
'Zincobotryogen'  
Zircon

#### References:

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Steven, T.A. and Lipman, P.W. 1976. *Calderas of the San Juan Volcanic Field, Southwestern Colorado*. U.S. Geological Survey Professional Paper 958.

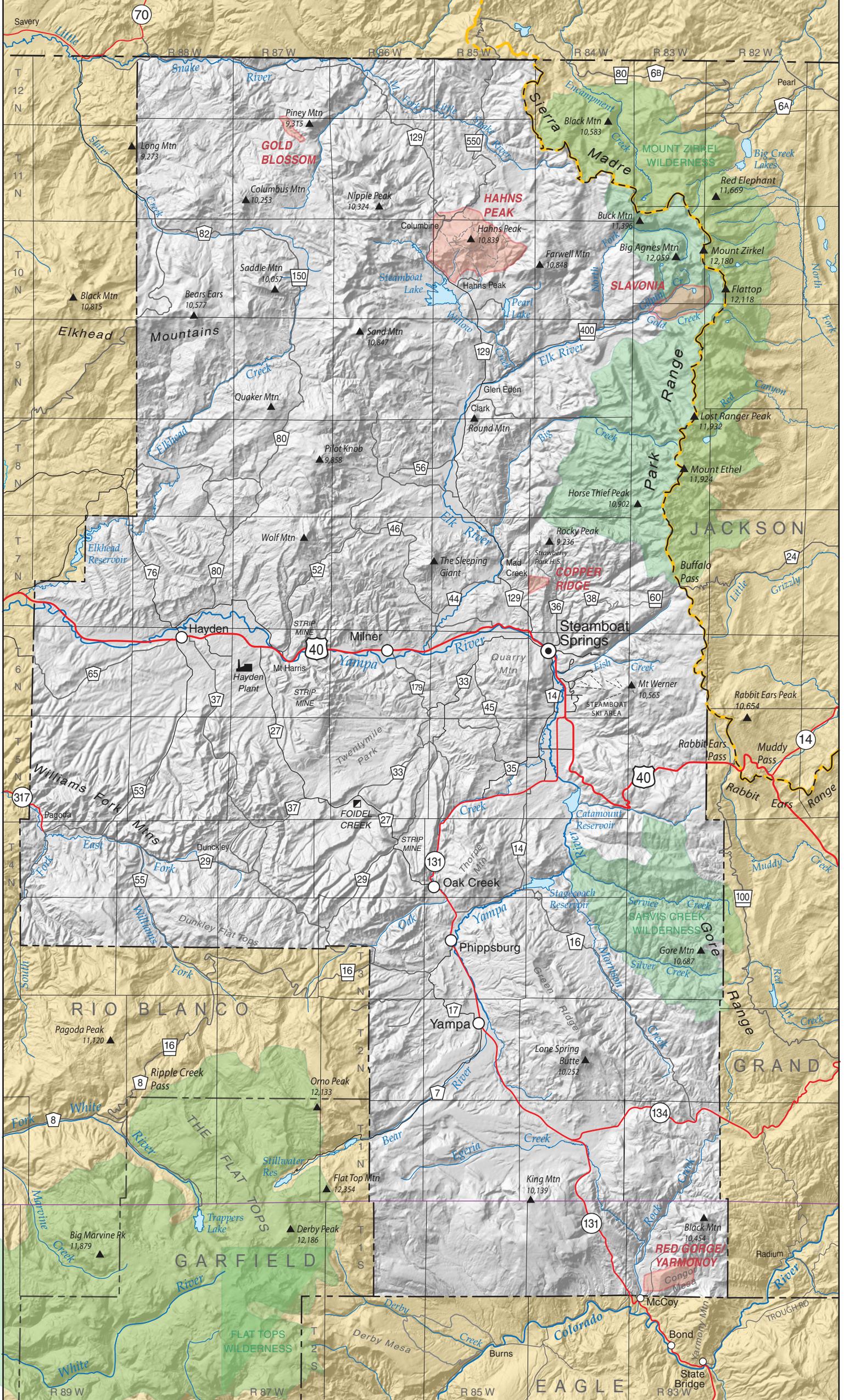
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**GOLD BLOSSOM**

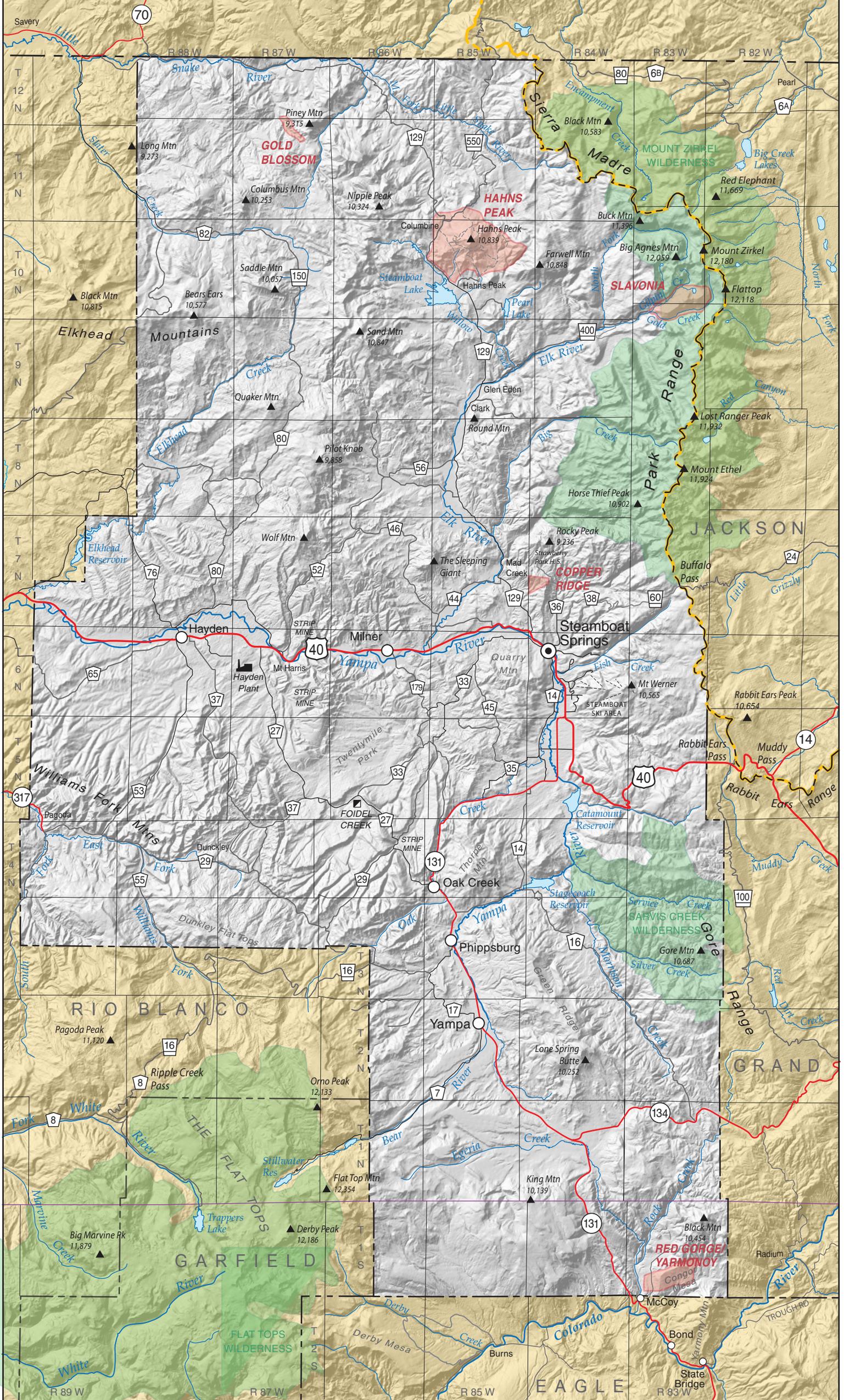
**HAHNS PEAK**

**SLAVONIA**

**COPPER RIDGE**

**SARVIS CREEK WILDERNESS**

**RED GORGE YARMONY**



**GOLD BLOSSOM**

**HAHNS PEAK**

**SLAVONIA**

**COPPER RIDGE**

**SARVIS CREEK WILDERNESS**

**RED GORGE YARMONY**

## **Routt County**

### **Copper Ridge District**

Small district with copper and gold. According to Vanderwilt, 1947, the ore occurs in Dakota Sandstone on a north-trending ridge. No production has been reported.

Sites reported in the district (mindat.org) include:

- [Steamboat Springs](#)
  - [Copper Ridge occurrence](#)
  - [Slate Creek occurrence](#)
  - [Sunset claims](#)

Minerals listed in the district (mindat.org) include:

[Calcite](#)

References:

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Routt County**

### **Gold Blossom District**

The Gold Blossom District is enumerated by Henderson (1926) in his compilation of Colorado mining districts. The District occurs along Gold Blossom Creek in the northwest part of Routt County. The name is suggestive of placer activity, although even Parker (1974) does not mention the creek or the location in his classic work on Colorado placers. Another reference is Vanderwilt (1947).

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado. p. 189.

## Routt County

### Hahns Peak District (aka Columbine District)

The Hahns Peak District lies mostly within a horst on the western edge of the Park Range uplift (Segerstrom and Young, 1972). Intrusive rocks discussed in Wood (2003) include latite porphyry within breccia zones in sedimentary rocks. Mineralization occurs within the breccia zones with minerals of lead, zinc, silver, gold and copper. Mineralization consists of galena with silver and gold and some copper (Vanderwilt, 1947).

The earliest activity in the district was probably 1864 when placers were found in the gravels of Willow Creek. Placers were worked until 1910 and again in the 1930s. Small placers were mined in several locations, but the main ones were Ways Gulch east of Hahns Peak Village and Poverty Bar on Deep Creek northwest of the village (Parker, 1992). Lode deposits were found resulting in the opening of the Royal Flush and Tom Thumb mines, the latter being the largest in the district. According to Casaceli (1984) (as reported in Wood, 2003) exploration was carried out in the district as late as 1971 by Anaconda Mining, including geophysical surveys and drilling.

Mines listed in the district (mindat.org) include:

- Acme Placer
- Barnum; Hornet; Lamm Placers
- Bell Placer
- Blackburn; El Capitan; Ben Harrison Placers
- Blue Jay Mine
- Colorado Mining Company Occurrence (Marion E; Old Ben; Copper Field; Copper Mask; Foch)
- Columbine Placer
- Concord; Belmont; Nettie Marrin Placers
- Dead Horse Claims
- Elkhorn Mine
- Emancipation Group (Vindicator; Camp Bird Mining Property)
- Farwell Mine
- Farwell Mtn. Occurrence
- Gate; JGB; Grover Cleveland; Ben Harrison; El Capitan Placers
- Gold Bond; Keystone Placers
- Hahns Peak Central Occurrence
- Hahns Peak NE Occurrence
- Hahns Peak NW Occurrence
- Hahns Peak Saddle
- Homestake Mine
- Hornet Occurrence (Columbine; Condelin; Simpson; Concord Placers; Herald; Nettie Marrin)
- Iron Mountain Occurrence
- Iron Springs Mine
- Keystone; Marrin Placers
- King Lode Claims
- Master Key Mine (Prize shaft)
- Minnie D.
- Poverty Bar Occurrence
- Royal Flush Mine
- Snowbird Mine
- Southern Cross Mine
- Success Occurrence
- Tom Thumb Mine
  - 7D Tunnel Occurrence
  - Beryl Mountain Occurrence
  - Campbell Tunnel and Shaft Occurrence
  - Cap Smith Hill Occurrence
  - Farwell Mountain Northwest Occurrence
  - King Solomon Creek Occurrence
  - Little Mountain Occurrence
  - Oro Cache Occurrence
  - Price Tunnel
- Twin Mountain Occurrence
- Ways Gulch Occurrence
- Willow Creek Claim

Minerals found in this district (mindat.org) include:

Anatase	Fluorapatite	Pyrite
'Apatite'	var: Carbonate-rich	Quartz
Arsenopyrite	Fluorapatite	'Ruby Silver Ore'
Autunite	Galena	Saléite
Azurite	'Garnet'	Sillimanite
Baryte	Gold	Silver
Bornite	Hastingsite	Sphalerite
Cerussite	Jarosite	Staurolite
Chalcocite	Marcasite	Stibnite
Chalcopyrite	Meta-autunite	Tetrahedrite
'Chlorite Group'	Molybdenite	'Tourmaline'
Copper	Montmorillonite	Uraninite
Corundum	Muscovite var: Fuchsite	Variscite
Covellite	Orthoclase	Wavellite
Dickite	Plumbogummite	Zircon
Enargite	Proustite	

#### References:

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Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Routt County**

### **Red Gorge and Yarmony Districts**

Vanderwilt (1947) actually says a great deal about the Yarmony District in his section on Routt County. He relates that considerable prospecting has been done in the area with malachite, azurite, and chalcopyrite in redbed sandstones in the area.

According to the 1919 report of the Colorado Bureau of Mines, a 30-ton leaching plant was installed at what is known as the Copper Spur of the Denver and Rio Grande Railroad to process the ores in 1916, with 30 tons of electrolytic copper produced. The plant closed in 1917.

A Red Gorge District is listed by mindat.org in Grand County and a Yarmony District in Eagle County and these are undoubtedly related geologically to the Yarmony occurrences listed here in Routt County.

#### References:

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## Routt County

### Slavonia District

Vanderwilt (1947) lists the Slavonia District at the head of the Elk River in the Park Range east of Hahns Peak. The District features Precambrian gneiss, granite, and schist with younger dikes. Some chalcopyrite, galena, and sphalerite, with gold and silver, are found in quartz lenses and stringers. Small shipments were generated, mainly as samples. Bankley et al. (2000) reports stream sediment samples with anomalous concentrations of copper, lead, and zinc.

Eberhart (1969) notes a few remnants of a settlement around the Slavonia Mine. The area lies within the Mount Zirkel Wilderness Area.

Mines/prospects listed in this district (mindat.org) include:

- [Ace High Claims \(Fall River Group; Dennis D. Claims\)](#)
- [Dennis D. Claims](#)
- [E. C. Ellis property](#)
- [Martha Vranesich Mine \(Gilpin Falls Nos. 1 and 2\)](#)
- [Slavonia District Mine \(Mica Basin\)](#)
- [Temple Prospect](#)
- [Tom Thumb Mine](#)
  - [Lower Slavonia District Occurrence](#)
  - [Zinc Mountain Occurrence](#)

Minerals listed in this district (mindat.org) contain entries from the region specified including sub-localities:

<a href="#">Bornite</a>	<a href="#">Galena</a>	<a href="#">Muscovite</a>
<a href="#">Chalcocite</a>	<a href="#">'Gummite'</a>	<a href="#">Pyrite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Hematite</a>	<a href="#">Pyrrhotite</a>
<a href="#">Euxenite-(Y)</a>	<a href="#">Molybdenite</a>	<a href="#">Sphalerite</a>
<a href="#">Fourmarierite</a>	<a href="#">'Monazite'</a>	<a href="#">Uraninite</a>

#### References:

Bankley, Viki, Soulliere, S.J., and Toth, M.I. 2000. Mineral Resources Potential and Geology of the Routt National Forest and Middle Park Ranger District of the Arapahoe National Forest. U.S. Geological Survey Professional Paper 1610.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.



## Saguache County

### Beaver Creek District (with Gunnison County)

The Beaver Creek District is a small, poorly-defined district in northwestern Saguache County. It was mentioned by Henderson (1926) as synonymous with the **Midland District**. The website *mindat.org* does not list either district in Saguache County, but lists mines named Beaver Creek in the **White Earth/Powderhorn District**. Mindat.org does list the Midland Mine, in the Spring Hill Creek quadrangle (Olson et al., 1975), as part of the **Domingo District (Vulcan District)** in Saguache County and as part of the **Goose Creek District** in Gunnison County.

In Sheridan et al. (1981) the Midland Mine is described as a high-gold, low base metal mine in metachert within an amphibolite schist. This is typical of rocks of the Gunnison Gold Belt (Gunnison District.) Refer to the **Gunnison District** in Gunnison County, for more detailed information.

Mines listed in the district (mindat.org) include:

- [Beaver Creek \(2\)](#)<sup>1</sup>
- [Beaver Creek basin](#)<sup>1</sup>
- [Midland Mine \(Lone Star; Boston; Fairview; Little Hope; Noah; S. Beaver Mill Site; Golden Ark; Mascot; Pueblo\)](#)

Note: <sup>1</sup> Listed in Gunnison County.

Minerals listed in the district (mindat.org) include:

<a href="#">Epidote</a>	<a href="#">Gold</a>	<a href="#">Zoisite</a>
<a href="#">Gahnite</a>	<a href="#">'Hornblende'</a>	<a href="#">Zeolites</a>

References:

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## Saguache County

### Blake District (aka Mirage District, aka Cotton Creek District)

The Blake District is described by Dunn (2003) as lying at the head of Cotton Creek, 10 miles northeast of Mirage and the area of Mirage Creek. The district is listed by Henderson (1926) and by Vanderwilt (1947), and the latter lists the district with synonyms Mirage and Cotton Creek.

Cappa and Wallace (2007) discusses the Blake District along with the **Steel Canyon** and **Hayden Pass Districts** as all being similar. The Steel Canyon and Hayden Pass areas lie north along the west slope of the Sangre de Cristo Range on the opposite (north) side of the Orient Mine iron ore district (**Orient District**) from the Blake. These districts appear to be very similar, as part of a belt of Precambrian rocks.

According to Ellis and others (1983), production from these districts was 5 oz. of gold, 7,000 oz. of silver, 70,000 pounds of lead, and 8,000 pounds of copper. Mineralized structures in the Copper King and Victor mines in Steel Canyon consist of veins in fractured carbonate rock (possibly the Leadville Limestone). The veins pinch and swell to 3 feet in thickness; they consist of silver-bearing galena and minor chalcopyrite in a gangue of quartz, calcite, and minor fluorite and barite (Lindsey et al., 1985). Samples taken from the Copper King Mine during a wilderness assessment assayed from 0.006 to 0.043 oz. per ton gold and 0.3 to 34.2 oz. per ton silver and contained anomalous amounts of copper and lead (Lindsey et al., Ibid). Samples taken from the Victor Mine during the same wilderness assessment assayed from 0.3 to 10.3 oz. per ton silver and contained anomalous amounts of copper and lead (Lindsey et al., Ibid).

The listing of the district on mindat.org is interesting in the wide variety of minerals and range of mineralization it includes. Of the list of mines, claims and prospects below, eight contain base and/or precious metals, two contain manganese, three contain uranium and/or vanadium, one contains fluorspar, and one some rare earth element bearing minerals.

Clearly the district was never a big producer and is not well understood.

Mines listed in the district (mindat.org) include:

- [Adelaide Claim](#)
- [Beginner's Luck Claim](#)
- [Beryl Deposit](#)
- [Copper Head Claim](#)
- [Copper King Mine<sup>1</sup>](#)
- [Iron King Prospect](#)
- [Millie Luna Prospect \(Iron\)](#)
- [Mountain Lion Mining; Milling and Power Company Claims \(Side Line 1 and 2; Cascade; Home Mill Site; Mountain Lion; Hallie; Little Rule; Cora; Lioness\)](#)
- [North Star Claim](#)
- [Old Bennett Ore Body Occurrence \(Major Creek Limonite Mine; Moffat Iron Mine No. 1\)](#)
- [Ram Lode and Pam Lode \(Ramdohrite lode\)](#)

- [Rio Oro Mine](#)
- [San Isabel Mining and Milling Company Claims](#)
- [Steele Canyon Mining; Milling; and Investment Company Claims \(Independence; Victor; Princess\)](#)
- [Triple T. Mine](#)
- [Victor Mine<sup>1</sup>](#)

Note: <sup>1</sup> indicates from Lindsey et al. (1985).

Minerals listed in the district (mindat.org) include:

<a href="#">Autunite</a>	<a href="#">'Garnet'</a>	<a href="#">Pyrite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Gold</a>	<a href="#">Quartz</a>
<a href="#">Coffinite</a>	<a href="#">Hausmannite</a>	<a href="#">Samarskite-(Y)</a>
<a href="#">Euxenite-(Y)</a>	<a href="#">'Limonite'</a>	<a href="#">Uraninite</a>
<a href="#">Fluorite</a>	<a href="#">Monazite-(Ce)</a>	<a href="#">Xenotime-(Y)</a>
<a href="#">Galena</a>	<a href="#">'Psilomelane'</a>	

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## Saguache County

### Bonanza District (aka Kerber Creek District)

Dunn (2003) follows the example of Henderson (1926) in identifying the Bonanza District with the Kerber Creek District. She describes it as occupying 17-18 square miles, overlapping with the **Clover Creek** and **Silver Creek Districts** (which we do not discuss). Vanderwilt's (1947) preferred name is the Kerber Creek District, occupying the area surrounding Kerber Creek in the Cochetopa Hills at the northwest end of the San Luis Valley.

Burbank (1947) provided a detailed description of the district in Vanderwilt's volume (Ibid), and both Patton (1915) and Burbank (1932) discussed the district in detail. Cappa and Wallace (2007) provided a summary and maps. These are synthesized in the following description of the district. Additional references include: Hill (1909) and Steven and Lipman (1976).

Rocks of the district include Tertiary volcanics upon Precambrian rocks, with infolded synclines of Paleozoic sediments. The Precambrian rocks consist of granites, gneisses and schists. These are overlain by Paleozoic sedimentary rocks ranging from the Manitou Limestone and Harding Quartzite (Ordovician) to the Sangre de Cristo formation (Pennsylvanian-Permian). On top of this is a thick sequence of volcanics (at least 4000 feet) of the greater San Juan volcanic field - flows, tuffs and breccias of rhyolite, rhyodacite, quartz latite, trachyandesite, and andesite.

The basal Rawley andesite/trachyandesite is 1500 feet thick, of probable Eocene age (Van Alstine, 1975) and is the most productive ore zone. Lead-silver deposits were the first ores mined, as veins were discovered along Kerber Creek in 1879. The mining town of Bonanza (still extant, albeit very small) grew up to support the industry. The 6200 feet-long Rawley tunnel in 1911-12 improved output from the district. Most of the ore around the tunnel was mined in the years 1923-1930, when the mills were finally dismantled.

Deposits were primarily complex ores of pyrite-sphalerite-galena-chalcopyrite-bornite-enargite-tennantite-strohmeyerite in a gangue of quartz, calcite, rhodochrosite, and barite. Some bismuth occurred in cosalite. Types of deposits differed geographically. In the northern part of the district, quartz veins of high sulfide content (lead-zinc-copper-silver +/- gold) predominated; in the south quartz-rhodochrosite-fluorite veins were dominant with minor sulfide, where silver was the most valuable.

Cappa and Wallace (Ibid) point out that additional exploration was conducted in the period 1952-54 and into the late 1970s, the latter for porphyry molybdenum.

One feature of the district is the Villa Grove turquoise mine, which produced clear blue gem turquoise. It closed in 1970. The Villa Grove (Hall) turquoise mine (sec. 26, T. 47 N., R. 8 E.; pl. 1) is located in the intrusive Turquesa gabbro in the Rawley Andesite of the Bonanza volcanic complex; it was originally mined for copper as far back as the 1890's. J.S. Randall recognized turquoise minerals in 1893; however, the Villa Grove Mine was not developed for turquoise until 1936. The deposit was developed by a pit, open cuts, and underground drifts (Eckel, 1997). Pearl (1941) described the turquoise as veins and

nodules filling openings in felsite porphyry. Later workers (Mayhew, 1969) described the turquoise as a fracture filling in the Turquessa gabbro. The Turquessa gabbro visible at the mine in 2004 had a porphyritic texture and was strongly altered. The mine produced high-quality turquoise, essentially free from veining and having a sky-blue color. Peak production was in the 1940s, when turquoise sold for \$15 to \$45 a pound. Voynick (1994) mentioned that the value of the production through the 1950s was \$80,000. The mine is currently (2006) closed (Cappa and Wallace, 2007).

Mines listed in the district (mindat.org) include:

- (Rawley No. 12 tunnel; High Rock tunnel)<sup>1, 2</sup>
  - Clark vein
- Ajax
- Alder Creek
- American Mammoth
- American Revenue
- Antoro Mine<sup>1, 2</sup>
- Ashley Tunnel Occurrence
- Atlantic Mine
- Baltimore Mine<sup>2</sup>
- Bernice Prospect
- Black Bess Mine<sup>1</sup>
- Bonanza
  - Empress Josephine Mine (Empress Josephine and Boss Mammoth Claims)
- Bonanza Mine (Cornucopia Claims; Bonanza No. 1)<sup>1</sup>
- Brighton
- Broadbury Group
- Buffalo Mine
- Burlington Mine
- Chicago Mine
- Chief
- Chloride Mine (Claims: Chloride 1-4)
- Cliff Mine (Cliff No. 1 Tunnel)
- Clover Creek Dist
- Cocomongo Mine<sup>1, 2</sup>
- Colorado Belle Mine (Claim: Belle of Colorado)<sup>2</sup>
- Columbia Group
- Commander Mine (Razoo Mine)
- Cora Shaft<sup>1</sup>
- Coronet
- Cronje Tunnel
- Cross Mine (Burlington; and Japan Claims; Cross)
- Crown Point Shaft Occurrence
- Defiance
- Deming Mine (Demming Mine)
- E D Shaft
- Eagle Mine (Eagle-Hawk Mine Eagle and Hawk Claims)<sup>1, 2</sup>
- Empress Josephine Mine (Empress Josephine & Boss Mammoth Claims)<sup>1, 2</sup>
- Enterprise Group (Golden Blow Out; Claims: Silver Key; Enterprise)
- Erie Mine<sup>2</sup>
- Essie and Little Jeff Mines
- Euclid Mine
- Evening Star Mine
- Exchequer Mine<sup>1, 2</sup>
- Express Mine (Express - Headlight Mine)<sup>2</sup>
- Findley Gulch (Findlay Gulch)
- Gem City<sup>1</sup>
- Gladstone Shaft Occurrence (Chicago No. 11 Claim)
- Glennbrook Mine
- Great Depth Tunnel Occurrence (Dandy; Claims: Great Depth)
- Great Mogul Tunnel (First Chance Mine)<sup>1</sup>
- Green Bay Tunnel (Claims: Green Bay; Big Manitou; Emma; Grand View; Little Manitou)
- Gypsy Queen Mine<sup>2</sup>
- Hanover Mine<sup>1, 2</sup>
- Hayden Mountain Group

- Hornet Manganese Mine
- Hortense Mine<sup>2</sup>
- Ignacio
- Joe Wheeler Mine (Claim: Golden Wave)<sup>2</sup>
- Josephine
- Jupiter Mine
- Jureta Tunnel Occurrence
- Katie Mine
- Kerber Creek Limonite Deposit (Kerber Creek Bog Iron Deposit)
- Kerber Creek Prospect
- Keystone Mine
- Kismuth Mines
- Klondike Mine
- Legal Tender Mine<sup>2</sup>
- Liberty Mine<sup>2</sup>
- Little Bonanza
- Little Darling Mine
- Little Jenny Mine (Jennie Mine; Jenny Mine)<sup>2</sup>
- Little Manitou Mine
- Little Pittsburgh Mine
- Little Thelma Mine
- Manitou - Sunlight Mine
- Marine Lode
- Mariposa Adit Occurrence<sup>2</sup>
- May Belle Tunnel<sup>1</sup>
- May Queen Prospect (Merrimac and May Queen Claims)<sup>2</sup>
- Memphis Mine (Arkansas Shaft)<sup>1, 2</sup>
- Michigan Mine<sup>1, 2</sup>
- Minnesota Mine
- Minnie Lynch Mine<sup>1, 2</sup>
- Morning Star Mine
- Navajo Claims
- New York Shaft
- Now What Mine<sup>2</sup>
- Oregon Tunnel Mine<sup>2</sup>
- Paddy Doyle Mine
- Paragon Mine<sup>1, 2</sup>
- Payson Mine
- Pershing Mine (Pershing Manganese Mine; Saguache Manganese Mine No. 334)<sup>2</sup>
- Porphyry Peak Alunite Deposit
- Queen City Mine<sup>2</sup>
- Radcliff Mine
- Rainbow Mine<sup>1</sup>
- Rawley Mine
- Revenue Mine
- Rico Mine<sup>2</sup>
- Rosalie Mine (Rosa Lee Mine)
- Sarah D
- Schoville Group
- Senator Mine
- Shawmut Mine<sup>1, 2</sup>
- Silver Creek Mine (Silver Creek 1-3)
- Sosthenes Mine (Sosthenis Mine)<sup>1, 2</sup>
- St. Joe Mine (St. Joseph Mine)<sup>1, 2</sup>
- St. Louis Mine<sup>1, 2</sup>
- Stemwinder Mine
- Superior Mine<sup>1, 2</sup>
- Twins Mines
- Vallejo Tunnel<sup>2</sup>
- Vienna Mine<sup>1, 2</sup>
- Villa Grove Turquoise Mine (Hall Turquoise Mine; Villa Grove Mine; Turquoise Lode and Turquoise Blue Lode Claims)
- Vini-Vidi-Vici
- Wainright
- Warwick (Paddy Doyle)
- Washakee
- Whale Mine<sup>1, 2</sup>
- Wheel of Fortune Mine<sup>2</sup>
- Whitney Group
- Wide Awake Mine
- Wisconsin Adit Occurrence (Brighton Claim)<sup>2</sup>
- Yellow Type Mine
- Zero Tunnel

Notes: <sup>1</sup> Specific discussion of this mine appears in Patton (1915).

<sup>2</sup> Specific discussion of this mine appears in Burbank (1932).

Minerals listed in the district (mindat.org) include:

Acanthite	Galena	Pyrargyrite
Altaite	var: Argentiferous Galena	Pyrite
Alunite	Gold	Pyrolusite
Anatase	'Halloysite'	Quartz var: Jasper
Anglesite	Hausmannite	Rhodochrosite
'Apatite'	Hematite	Rhodonite
Autunite	Hessite	Rickardite
Barite	Hydrobiotite	Rutile
Beidellite	Jarosite	Siderite
Bornite	Kaolinite	var: Manganoan Siderite
Calcite	'K Feldspar var: Adularia'	Silver
var: Manganoan Calcite	'Limonite'	Smithsonite
Cerussite	Mackayite	Spangolite
Chalcocite	Magnetite	Sphalerite
Chalcopyrite	Malachite	Stromeyerite
Chlorargyrite	Manganite	Stützite
'Chlorite Group'	Mazzettiite (TL)	Sylvanite
'Clay'	Microcline	Tellurium
Copiapite	Molybdenite	Tennantite
Copper	Montmorillonite	Tetrahedrite
Covellite	Muscovite	Turquoise
Diaspore	var: Illite	Uraninite var: Pitchblende
Dolomite	var: Sericite	Uranophane
Empressite (TL)	Pearceite	'Wad'
Enargite	Petzite	Wavellite
Epidote	Poughite	Zincocopiapite
Epsomite	<i>Proustite ?</i>	Zunyite
Fluorite	'Psilomelane'	

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## Saguache County

### Bondholder District (aka Cascade District)

The Bondholder District was described by Steven and Bieniewski (1977) in their study of mineral potential in the La Garita Wilderness Area. The district lies within the Stewart Peak and San Luis Peak quadrangles (Lipman and Sawyer, 1988). It is within the far southwestern corner of Saguache County, not far from the more famous **Creede District**.

The area was also noted by Cappa and Wallace (2007) who added the term Cascade District. It was also discussed by Thompson (1992) in a paper not reviewed for this survey but was summarized by Cappa and Wallace (Ibid). Mindat.org (2015) lists the district with six named mines and numerous prospects for gold, silver, lead, molybdenum, and bismuth.

Mineralization consists of veins containing mainly galena and sphalerite in hydrothermally-altered volcanic rocks of the San Luis caldera, the youngest of the calderas of the San Juan volcanic field. It occupies the center of the San Luis caldera in rocks of Oligocene age including gabbro, diorite, granodiorite, monzonite, and quartz monzonite that are interpreted to have been emplaced during the eruption of ashflows on the overlying terrain (Steven et al., 1974; Day et al., 1999).

Mines listed in the district (mindat.org) include:

- [Allara Tunnel Occurrence](#)
- [Cascade Mine \(New Cascade Tunnel; Bonnez 1-25; Zombie 1-7\)](#)
- [Jackass Mine](#)
- [Manganese Tunnel Occurrence](#)
- [Woodmansee Mine](#)

Minerals listed in the district at these mines (mindat.org) include:

[Galena](#)

[Pyrite](#)

[Sphalerite](#)

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**Saguache County**

**Cochetopa Creek District (aka Cochetopa District)**

Refer to Gunnison County, Cochetopa District.

## Saguache County

### **Crestone District** (aka **El Dorado District**; aka **Baca Grant District**)

The Crestone District is one of several district aligned along the western slopes of the Sangre de Cristo range on the eastern edge of Saguache County, with the **Liberty/Music District** to the south, the **Blake (Mirage), Orient, Hayden Pass** and **Steel Canyon Districts** to the north, all apparently associated with a belt of Precambrian rocks. Henderson (1926) and Dunn (2003) noted the district as the same as the **Eldorado District**. Vanderwilt (1947) called it the **Baca Grant District**.

The Crestone district is located within the former Baca Land Grant, a large Spanish land grant. According to Clement (1952), between 1890 and 1900, several prospectors began mining operations in the area and produced precious metals worth approximately \$7 million to \$8 million. The prospectors and miners were evicted in 1898, and the land came under the control of the heirs of Luis Maria Cabeza de Baca.

Clement (Ibid) stated that the mineral deposits are associated with north-trending thrust faults. Silica and sericite are the main alteration products in the Proterozoic rocks. The dominant mineral deposits are quartz-hematite and quartz-pyrite-chalcopyrite veins. Some of the veins had grades as high as 5 oz. per ton gold and 5 oz. per ton silver (Clement, Ibid). According to Vanderwilt (1947), 1,337 oz. of gold and 533 oz. of silver plus minor copper and lead were produced from the district between 1932 and 1939. He described the mineralization as veins in shear zones with free gold and limited chalcopyrite, sphalerite and galena. More recent research reported by Cappa and Wallace (2007) indicate that mineralization is associated with north-trending low-angle detachment faults.

In the late 1980s and early 1990s, Lexam Explorations Inc. conducted a gold exploration program in the area around Deadman Creek some 8 miles south of Crestone. The Deadman Creek prospect is located in strongly silicified breccia of feldspar and quartz in a chloritic matrix. Gold grades are as rich as 0.13 oz. per ton; the gold is associated with pyrite (Cappa and Wallace, 2007).

Several types of mineralization are apparently present, from mindat.org (Sept. 2015). From the mines listed on mindat.org (below), eight show base and precious minerals, three are listed because of uranium and/or vanadium (the Bob Cat Mine, the I. Kreiner Mine and the Judith claim - Nelson-Moore et al., 1970); two are listed for typical pegmatite minerals euxenite, xenotime (Blue Beard Claims) and quartz-feldspar (plus uranium) - I. Kreiner Mine; and one for fluorspar (Beryl Occurrence). Additional references include Johnson (1969) and Scott and Taylor (1974).

Mines listed in the district (mindat.org) include:

- [Beryl Occurrence](#)
- [Blue Beard claims](#)
- [Bob Cat Mine](#)
- [Concordia Claim](#)
- [Crestone Mineral Company Claims \(Vanderbilt; Sampson; Crestone; Dewey; Wedge; Hooper\)](#)

- [Dandy - Copper Tunnel](#)
- [Eastern Star Mine](#)
- [Elarton Manganese Deposit](#)
- [Garfield Claim](#)
- [Garner Creek](#)
  - [Minturn Formation](#)
- [I. Kreiner Mine](#)
- [Independence Mine \(Independence Mill Site Alamosa; Queen Esther Claims; Independent; Bonanza; Eastern Star; Midnight Star; Baca Grant No. 4\)](#)
- [Judith Claim](#)
- [Pelican Claim](#)
- [Reed Claim](#)
- [Sunbeam Claim](#)

Minerals listed in the district (mindat.org) include:

<a href="#">Andalusite</a>	<a href="#">Hausmannite</a>	<a href="#">Pyrite</a>
<a href="#">Beryl</a>	<a href="#">Hematite var: Specularite</a>	<a href="#">Quartz</a>
<a href="#">Chalcocite</a>	<a href="#">'K Feldspar'</a>	<a href="#">Samarskite-(Y)</a>
<a href="#">Chalcopyrite</a>	<a href="#">'Mica Group'</a>	<a href="#">Spessartine</a>
<a href="#">Euxenite-(Y)</a>	<a href="#">Monazite-(Ce)</a>	<a href="#">'Tourmaline'</a>
<a href="#">Galena</a>	<a href="#">Polycrase-(Y)</a>	<a href="#">Xenotime-(Y)</a>
<a href="#">Gold</a>	<a href="#">'Psilomelane'</a>	<a href="#">Zircon var: Cyrtolite</a>

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[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Crystal Hill District (aka Esperanza District)

The Crystal Hill District was listed in Henderson (1926) and Dunn (2003). Vanderwilt (1947) locates the district on Carnero Creek two miles west of La Garita". Cappa and Wallace (2007) in a much more detailed investigation, show the location to be, rather, about seven miles northwest of La Garita, around the headwaters of Sanderson and Biedell Creeks.

Gold was discovered in 1883 by Mark Biedell, a noteworthy local character, for whom both a mine and a town were named. The town grew quickly, but was gone by the late 1880s (Eberhart, 1969). The Crystal Hill Mine was developed in a breccia pipe of the Biedell quartz latite stock, a quartz latite intrusion dated at a mean age of 33.8 Ma by  $^{40}\text{K}/^{39}\text{Ar}$  methods on biotite and plagioclase (Lipman et al., 1970). The breccia pipe has plan dimensions of 600 by 400 feet, and the pipe extends at least 1,000 feet below the surface as indicated by drill-hole data (Pansze, 1987). The breccia fragments are mostly platy with dimensions of 1 to 12 inches. The poorly indurated matrix consists of quartz, calcite, iron-manganese oxides, and rock flour. Quartz crystals (including amethyst) are abundant in the upper portion of the stock, giving the district its name (Cappa and Wallace, Ibid).

Gold and silver minerals are found mostly below the zone of quartz crystals and are associated with manganese oxide in the matrix of the breccia (Cappa and Wallace, Ibid). The breccia pipe is interpreted as a collapse feature on the basis of the following primary evidence, as listed by (Pansze, 1987): (1) orientation and imbrication of platy fragments, (2) a tilted quartz latite roof slab or "trap door," and (3) volcanoclastic sediments in the upper part of the pipe.

Cappa and Wallace (Ibid) point out that mining continued into the 1980s. Some mining at Crystal Hill was conducted in the 1950s, resulting in production of 587 oz. of gold. Between 1984 and 1986, some 27,000 oz. of gold and 40,000 oz. of silver were recovered from the modern Crystal Hill Mine, which was an open pit-heap leach operation. The average grade of the orebody was 0.043 oz. per ton gold and 0.33 oz. per ton silver (Colorado Division of Minerals and Geology unpublished files, 2003).

Other mines in the area of the Biedell stock include the Esperanza and Buckhorn mines; their production was small. These deposits are located on an east trending fault, just north of the Crystal Hill breccia pipe (Osterwald, 1977). An additional reference is Steven et al. (1977).

Mines listed in the district (mindat.org) include:

- [Beidell](#)
- [Buckhorn Mine \(Adelia; Baltic; Oceanic; Buckhorn; Atlantic; Queen of Sheba; Celtic; Adriatic\)](#)
- [Esperanza Mine \(Valardena; Esperanza; Jesus Marie\)](#)
- [La Garita](#)
  - [Crystal Hill Mine](#)
- [Last Chance No. 1; No. 2 Occurrence \(No. 2; Red Bird Claims; Mexican Lode No. 1\)](#)

Minerals listed in the district (mindat.org) include:

Beidellite	Gold	Quartz
Calcite	Hollandite	var: Amethyst
Chlorargyrite	Magnetite	var: Rock Crystal
Coronadite	Malachite	'Stilbite'

References:

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Lipman, P.W., Steven, T.A., and Mehnert, H.H. 1970. Volcanic history of the San Juan Mountains, Colorado, as indicated by potassium-argon dating. Geological Society of America Bulletin, v. 81, no. 8, p. 2327–2352.

Pansze, A.J. 1987. Geologic sketch of the Crystal Hill breccia pipe, Saguache County, Colorado *in* Gold mineralization of Colorado's Rio Grande rift. Denver Region Exploration Geologists Society, Fall Field Guidebook, Denver, Colorado, p. 23–25.

Steven, T.A., Lipman, P.W., Fisher, F.S., Bieniewski, C.L., and Meeves H.C. 1977. Mineral Resources of Study Areas Contiguous to the Uncompahgre Primitive Area, San Juan Mountains, Southwestern Colorado. U.S. Geological Survey Bulletin 1391-E.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Embargo Creek District (aka Embargo District; aka Meyers Creek District)

The Embargo Creek District lies at the southwest border of Saguache County, adjacent to Rio Grande County, along (appropriately) Embargo Creek. The district does not appear in Henderson's (1926) list, but is mentioned on page 209 in the section on Saguache County. Dunn (2003) concludes it was one of the three primary districts in the county by 1900.

Eberhart (1969) indicates that prospecting was active as early as 1878, but not until the early 1880s did mining begin and the town of Embargo arise. It didn't last long.

Mineralization occurs as veins in the andesites and latites of the Conejos formation (Vanderwilt, 1947; Cappa and Wallace, 2007). Gold, silver, lead and copper were recovered. The Monon claims produced about 10,000 tons of ore and that the area of the Golden Income Group claims is underlain by an Oligocene granodiorite and had a value of \$28 per ton of silver, gold, and lead ore (McFaul et al., 2000).

Mines listed in the district (mindat.org; Eberhart, 1969) include:

- Comet Mine
- CY Claims (28-33; 46-55; 66-75; 86-95; 108-115)
- E.C.Y. Claims (E.C.Y. No. 2)
- Golden Income Group (Golden Income No. 2; Accidental; Claims: Golden Income; April Fool No. 2)
- H. H. Claims (H.H. Nos. 1-12)
- Last Relief Mine
- Lulu and Rufus Claims
- Monon Claims (Monon Nos. 1-27)
- On Claims (On Nos. 8-17)
- Penny Bright No. 1; No. 2
- Ray Tunnel
- Seattle Claim
- Silver Dollar Claims (Silver Dollar No. 2)
- Tornado Mining Company Claims (Alva Adams; Black Hawk; Mohawk; Tuff Nut; Black Diamond; U.S.A.; Grey Eagle)
- Washington Gold Mining and Milling Company Claims (Morning Star; Bachelor; Silver Moon; Evening Star No. 2)

Minerals listed in the district (mindat.org) include:

Alunite  
Augite  
Galena  
Gold

Kaolinite  
Muscovite var: Sericite  
Pyrite  
Pyrophyllite

Sphalerite  
Zunyite

References:

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

McFaul, E.J., Mason, G.T., Jr., Ferguson, W.B., and Lipin, B.R. 2000. U.S. Geological Survey mineral Databases-MRDS and MAS/MILS. U.S. Geological Survey Digital Data Series DDS-52, two discs.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Findlay Gulch District

The Findlay Gulch District (or Findley Gulch) is small and poorly defined. It is identified by Henderson (1926). Dunn (2003) describes it as southwest of the Kerber Creek District. Mindat.org (Sept. 2015) lists it as part of the **Kerber Creek/Bonanza District**, but does provide a listing of mineral species.

Minerals listed in the district (mindat.org) include:

[Altaite](#)

[Galena](#)

[Mazzettiite \(TL\)](#)

[Quartz](#)

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Ford Creek District

The Ford Creek District is on Henderson's 1926 list of districts and appears in Dunn (2003). It lies south of the Findley Creek District, southwest of the large **Bonanza/Kerber Creek District**, so is within the same geologic regime of Eocene to Oligocene volcanic rocks.

Eberhart (1969) describes the town of Spook City southwest of Bonanza, which is the appropriate location for the Ford Creek District, as it lies on a stream of that name. He attributes the Spook City and Lost Dickey Mines to the area around Spook City, owned by a Danish syndicate that produced small amounts of gold and silver.

Cappa and Wallace (2007) include the Spook City Mine on their map, outside the immediate area of the Bonanza district. Mindat.org contains neither the mines nor the district.

Mines listed in the district (Eberhart, 1969) include:

- Lost Dickey
- Spook City

#### References:

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

**Saguache County**

**Gold Basin District**

Refer to Gunnison County.

**Saguache County**

**Green Mountain District**

Refer to Gunnison County.

## **Saguache County**

### **Iron Mountain District**

The Iron Mountain District appears in Henderson's 1926 list as a single section (sec 32, T45N, R8E). Dunn (2003) discusses the district's association with the town of Orient, but we think there is confusion between this district and the **Orient District** (and Orient Mine) along the Sangre de Cristo front, 15 miles to the east.

Mindat.org has no listings for the Iron Mountain District.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## **Saguache County**

### **Manitou District**

Manitou District is a name that appears in Henderson (1926), so Dunn (2003) included it also in her compilation. They state that it overlaps with the **Bonanza (Kerber Creek) District**. Mindat.org lists the Manitou Mine and the Little Manitou Mine in the Bonanza District.

For more information, refer to the Bonanza District.

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Marshall Pass Uranium District

Dunn listed the Marshall Pass District in her 2003 compendium of Colorado Districts. The District is in the Swatch Range, centered about Marshall Pass in the area where Saguache, Gunnison and Chaffee Counties meet. Cappa and Wallace (2007) described the earliest discoveries occurring on the Gunnison County side of the district along the north-trending Chester fault. Dunn points out that uranium was discovered at the mouth of Indian Creek (Saguache County) in 1955 with mining beginning in 1957.

Olson (1988) describes in detail the geology of the district and indicates that structure controlled uranium deposition. The principal deposits are located at the intersection of major faults with the Tertiary erosion surfaces. 700 meters of Paleozoic sediments in the district range from Cambrian (Sawatch quartzite) to Pennsylvanian (Belden formation). Uranium deposition occurs in three environments: in carbonaceous shales of the Belden formation; in the Harding quartzite; and in shear zones in the Precambrian rocks.

The early discoveries include the Little Indian No. 36 Mine, which is about 1,000 feet north of the Saguache-Gunnison County line. This mine produced several thousand tons of ore from the quartzites of the Harding Quartzite. Other prospects in the area that were discovered in 1955 include the Apache No. 4 deposit, which consists of uranium deposits in carbonaceous beds in the quartzites of the Harding Quartzite, and the Lookout No. 22 Mine, in which uranium deposits are in a fault zone in Proterozoic metamorphic rocks (Malan, 1959). Nelson-Moore et al. (1978) report on production from the mines.

Some of the uranium deposits of the Marshall Pass district contained very high grade ore. The Lookout 22 deposit produced 42 tons of ore averaging 4.39 percent  $U_3O_8$  and 360 tons of ore averaging 0.55 to 0.60 percent  $U_3O_8$  (Gross, 1965). Nash (1988) describes in detail the Pitch deposit. The Pitch deposit was developed by two adits in 1959 through 1962 and produced about 100,000 tons of uranium ore at an average grade of 0.50 percent  $U_3O_8$ . An additional 100,000 pounds of  $U_3O_8$  were produced through a solution-mining process.

In 1972, Homestake Mining Company acquired the property and developed an open pit-minable resource of 2.1 million tons at an average grade of 0.17 percent  $U_3O_8$  (Nash, 1988). As the exploration program proceeded, the company geologists recognized that they had discovered a previously unrecognized type of uranium ore deposit in brecciated dolomite of the Mississippian Leadville Limestone. Homestake mined the deposit from 1975 to 1985. The ore was processed at Homestake's mill near Grants, New Mexico.

Nash (1988) suggested that iron sulfide minerals and organic material in the Leadville Limestone created a reducing environment, a favorable site for the deposition of uranium. Nash also suggested that the source of the uranium was the overlying volcanic rocks, the quartz latite ash-flow tuff and the Rawley Andesite, now both mainly eroded away in the mine area. Oxidizing ground water moved along and near the fault, and the ground water would have been able dissolve uranium from the volcanic rocks and transport it at low temperatures ( $<100^\circ C$ ) to favorable sites of reduction and precipitation in the fractures of the Leadville Limestone and other Paleozoic rocks of the district. The district contains many rare and unusual uranium minerals (Cappa and Wallace, Ibid), as listed below.

Mines listed in the district (mindat.org; Olson, 1988; Nash, 1988) include:

- Apache No. 4 Prospect
- Beginner's Luck<sup>1</sup>
- Big Indian Group
- Bonita claim<sup>1</sup>
- Erie No. 33 Prospect
- Hidden Reserve claim group
- Indian Creek Claims
- Indian Creek Limonite Deposit (11; Claims: Indian Creek Placers 3-7)
- Little Indian No. 6 Prospect
- Lookout No. 22 claim<sup>1</sup>
- Marshall Pass No. 5 Prospect<sup>1</sup>
- Marshall Pass Nos. 33 Claim (Marshall Pass Nos. 34 Claim; Marshall Pass Nos. 35 Claim; Marshall Pass Nos. 58 Claim; Olympia Extension; Marshall Pass Nos. 36 Claim)
- Pinnacle Mine<sup>1,2</sup>
- Pitch Mine (Pitch Tunnel; Erie No. 28 Claim; Pinnacle Mine)<sup>1,2</sup>
- Rainbow's End<sup>1</sup>
- Uncompahgre No. 1
- Unnamed Uranium - Feldspar Mine (MRDS - 10013132)
- Vulcan Silver-Zinc Company claims

Notes: <sup>1</sup>Details about mine in Olson (1988).

<sup>2</sup>Details about mine in Nash (1988).

Minerals listed in the district (mindat.org) include:

'Albite-Anorthite Series'	Hematite	Sabugalite
Autunite	Ianthinite	Schoepite
Baryte	Kasolite	Skłodowskite
Becquerelite	Liebigite	Soddyite
Boltwoodite	'Limonite'	Sphalerite
Bornite	Magnetite	Tetrahedrite
Chalcocite	Marcasite	Torbernite
Chalcopyrite	Meta-autunite	'Tourmaline'
'Chert'	Metatorbernite	Uraninite var: Pitchblende
Coffinite	Metatyuyamunite	Uranophane
Compreignacite	Metazeunerite	Xenotime-(Y)
Covellite	'Mica Group'	Yttrocolumbite-(Y)
Dolomite	Microcline	Zeunerite
Euxenite-(Y)	Phosphuranylite	Zippeite
Fourmarierite	Pyrite	Zircon
Galena	Quartz var: Jasper	
'Gummite'	Rutile var: Ilmenorutile	

References:

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Gross, E.B. 1965. A unique occurrence of uranium minerals, Marshall Pass, Saguache County, Colorado. *American Mineralogist*, v. 50, p. 909–923.

Malan, R.C. 1959. Geology and uranium deposits of the Marshall Pass district, Gunnison, Saguache and Chaffee counties, Colorado. Colorado Mining Association, National Western Mining Conference, Denver, 20 p.

Nash, J.T. 1988. Geology and Geochemistry of the Pitch Uranium Mine Area, Saguache County, Colorado. U.S. Geological Survey Bulletin 1797.

Nelson-Moore, J.L., Collins, D.B., and Hornbaker, A.L. 1978. Radioactive Mineral Occurrences of Colorado and Bibliography. Colorado Geological Survey Bulletin 40.

Olson, J.C. 1988. Geology and Uranium Deposits of the Cochetopa and Marshall Pass Districts, Saguache and Gunnison Counties, Colorado. U.S. Geological Survey Professional Paper 1457.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Music District (aka Liberty District)

Henderson (1926) listed the Music District as occupying four sections (sec. 17, 18, 19, 20, T25S, R73W) immediately south of the **Crestone District** along the western slope of the Sangre de Cristo Range along the eastern border of Saguache County. Dunn (2003) reported that it centered around Music Pass, providing the name. Vanderwilt (1947) names it synonymous with the Liberty District, located along Arena Creek.

Vanderwilt (Ibid) indicates the mineralization is the same as that in the Crestone District, producing gold and silver with minor lead and copper. (Refer also to the Crestone District.)

Mines listed in the district (mindat.org) include:

- [Blanca Mutual Mining and Milling Company Claims \(Myrtle K; Irene; Aztac; Revenue Placer\)](#)
- [Golden Treasure Tunnel \(Hannah; Delphos; Nora B; Golden Treasure Mill Site; Raven\)](#)
- [Liberty Occurrence \(Music\)](#)

Minerals listed in the district (mindat.org) include:

[Chalcopyrite](#)  
[Galena](#)

[Gold](#)  
[Magnetite](#)

[Platinum](#)  
[Quartz](#)

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## Saguache County

### Orient District

The Orient District lies along the west slope of the Sangre de Cristo Range in eastern Saguache County. The primary mine in the district is the Orient Mine, and it was a significant producer through its history. The mine is located less than 1 mile north of Valley View Hot Springs in Sec. 25, T. 46 N., R. 10 E (Cappa and Wallace, 2007). It was reviewed in several early works (Leith, 1906; Stone, 1934, and Harrer and Tesch, 1959). Vanderwilt (1947) attributed the mine with two million tons of iron ore, beginning in 1881 and lasting for 50 years. Several other locations - the Old Ironsides Mine and the Major Creek Mine appear in the records with the same type of deposits, connected with the Orient Mine.

The ore occurs in the lower part of the Leadville limestone, in apparent karst (dissolution) features. Cappa and Wallace (Ibid) provide information from an important thesis on the deposit by Balleweg (1990) including the history of the Orient mine, the geology of the area, and the specifics of the mineralization.

Eberhart (1969) provides a brief history of the town of Orient, arising in the late 1870s to service the mine and the miners, as it shipped 200 tons of ore a day to the Colorado Fuel and Iron (CF&I) Company plant in Pueblo. The total production of the Orient Mine was 1,736,000 tons of limonite ore (Balleweg, 1990).

Mines listed in the district (mindat.org; MRDS) include:

- Major Creek Mine
- [Old Ironsides Mine](#)
- [Orient Iron Mine](#) (aka Orient Mine; [Caesar](#); [Valley View](#); [Vivia B.](#); [Runaway](#); [Prospector](#); [Villa Grove](#))

Minerals listed in the district (mindat.org) include:

<a href="#">Ankerite</a>	<a href="#">'Chert'</a>	<a href="#">'Limonite'</a>
<a href="#">Aragonite</a>	<a href="#">Goethite</a>	<a href="#">Quartz</a>
<a href="#">Barite</a>	<a href="#">Gold</a>	<a href="#">Siderite</a>
<a href="#">Calcite</a>	<a href="#">Graphite</a>	
<a href="#">Chalcopyrite</a>	<a href="#">Hematite</a>	

References:

Balleweg, K.J. 1990. Geology of the Orient Limonite Deposit, Saguache County, Colorado. Colorado School of Mines M.S. Thesis, 218 pp.

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Harrer, C.M. and Tesch, W.J., Jr. 1959. Reconnaissance of Iron Occurrences in Colorado. U.S. Bureau of Mines Information Circular 7918.

Leith, C.K. 1906. Iron Ores of the Western United States and British Columbia. ; U.S. Geological Survey Bulletin 285.

MRDS (Mineral Resources Data System), <http://mrdata.usgs.gov/mrds/find-mrds.php>, accessed September 2015.

Stone, J.B. 1934. Limonite Deposits at the Orient Mine, Colorado. Economic Geology, Vol. 29, pp. 317-329.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed September 2015.

## **Saguache County**

### **Wannamaker District**

Cappa and Wallace (2007) called the area around the Sky City Mine the Wannamaker District, as it is located along Wannamaker Creek. The district is located in the southwestern corner of Saguache County. Mindat.org lists the mine as part of the Saguache Park Area, and includes a number of properties associated with the Sky City Mine, as shown in the mine list below.

Small amounts of gold were noted by Steven and Bieniewski (1977) in the mine dumps, but no significant mineralization. The only mineral listed by mindat.org for the Sky City Mine is pyrite. The mine (and presumably the district) lies within a monzonite plug in an andesitic volcano, in the Conejos formation.

Mines listed in the district (mindat.org) include:

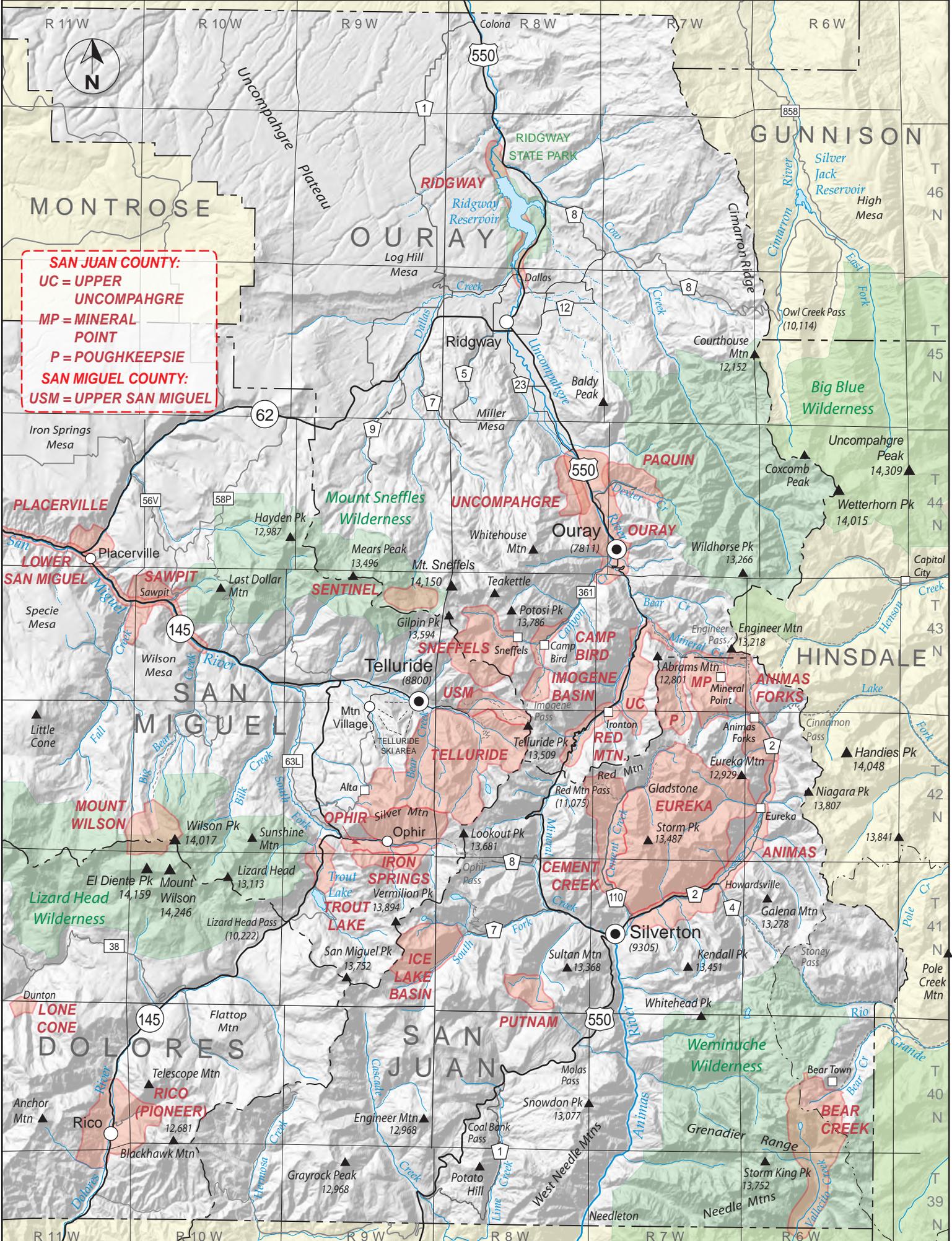
[Sky City Mine \(Hector; Cabin; Sky City; Apollo; Bellview; Del Norte; Lawrence; Saguache; Albany; Denver\)](#)

#### References:

Cappa, J.A. and Wallace, C.A. 2007. Geology and Mineral Resources of Saguache County, Colorado. Colorado Geological Survey Resource Series 44.

Steven, T.A. and Bieniewski, C.L. 1977. Mineral Resources of the La Garita Wilderness, San Juan Mountains, Southwestern Colorado. U.S. Geological Survey Bulletin 1420.

[www.mindat.org](http://www.mindat.org), accessed September 2015.



**SAN JUAN COUNTY:**  
UC = UPPER UNCOMPAHGRE  
MP = MINERAL POINT  
P = POUGHKEEPSIE  
**SAN MIGUEL COUNTY:**  
USM = UPPER SAN MIGUEL

MONTROSE

OURAY

GUNNISON

PLACERVILLE

LOWER SAN MIGUEL

SAWPIT

SAN MIGUEL

MOUNT WILSON

DOLORES

LONE CONE

RICO (PIONEER)

DOLORES

Mount Sneffels Wilderness

SENTINEL

TELLURIDE

UNCOMPAHGRE

PAQUIN

OURAY

UNCOMPAHGRE

HINSDALE

SAN JUAN

SAN JUAN

SAN JUAN

SAN JUAN

SAN JUAN

SAN JUAN

Weminuche Wilderness

Weminuche Wilderness

Weminuche Wilderness

Weminuche Wilderness

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BEAR CREEK

BEAR CREEK

BEAR CREEK

BEAR CREEK

## San Juan County

### Animas District

The Animas District was listed by Henderson (1926) as synonymous with the **Putnam District**. Dunn (2003) delineates the district as occupying both sides of the Animas River valley northeast of Silverton, reaching two miles above Howardsville where it abuts the Eureka District. However, Varnes (1947) in Vanderwilt (1947) describes the Animas District as the mineralized area south and east of Silverton in a belt several miles wide on the rim of the Silverton Caldera. It has also been referred to as the **Silverton District**.

Gold was discovered in Arrastra Gulch in the early 1870s, but the area didn't boom until the 1880s. Development was aided by the railroad which came to Silverton in 1882. The district was a major producer into the 1950s and produced gold and silver placers in the 1930s.

The geology is predominately pyroxene andesites within the caldera. Productive veins extend to the south rim of the caldera. Secondary fractures are concentric to the caldera structure, intersecting the radial fractures. Several different mineralization types are present (Varnes, 1947; 1963).

The town of Howardsville (aka Bullion City) supplied both the Animas and the Eureka Districts.

Mines listed in the district (mindat.org) include:

- [Alice Cary lode](#)
- [Bowery Mine](#)
- [Cleaveland Consolidated](#)
- [Cunningham Gulch](#)
  - [Green Mountain Mine](#)
  - [Highland Mary Mine](#)
  - [Keystone mine](#)
  - [Lower Highland Mary Mine](#)
  - [Osceola Mine \(Osceola-Pride\)](#)
  - [Pride of the West Mine](#)
  - [Unnamed prospect](#)
- [Dakota Occurrence](#)
- [Deadwood Gulch](#)
- [Diamond mine \(Emblem lode\)](#)
- [Dives](#)
- [Empire - Mascot](#)
- [Esmeralda](#)
- [Galena Mountain Group](#)
- [Genoa Claim](#)
- [Gold Lake](#)
- [Gold Nugget](#)
- [Green Mountain](#)
- [Hamlet Mine](#)
- [Hematite Gulch](#)
  - [Rochester mine](#)
- [Hermes Group](#)
- [Howardsville](#)
  - [Canby Mountain](#)
    - [Antiperiodic Mine](#)
  - [Galena Mountain](#)
    - [Gary Owens Mine](#)
    - [Neigold claim](#)
    - [Niegold group](#)
    - [Old Hundred Mine](#)
    - [Ridgway Mine](#)
    - [Ruby Mine](#)
  - [King Solomon Mountain](#)
    - [Big Giant Mine](#)
    - [Philadelphia Mine](#)
    - [Royal Charter-Little Nation lode](#)
  - [Maggie Gulch occurrence](#)
- [Idaho Mine](#)

- Ione Mine
- Irene Group
- King
- Kittie Mac Mine
- Liberty Bond Creek Occurrence
- Little Fanney
- Little Giant Basin
  - Gold Lake Mine
  - North Star (King Solomon)
- Little Giant Peak
  - Buckeye Mine
  - Little Giant Mine
  - Mountaineer Mine (Lookout)
  - North Pole Mine
  - Royal Tiger Mine
  - Shenandoah Mine
- Little Maud Occurrence
- Mabel Group (Mable1931)
- Maxwell
- Mayflower Mine
- Molas Creek
- Silverton
  - Anvil Mountain
    - Anvil Mountain South occurrence
    - Coming Wonder Mine (Emerald Mine)
    - Delano Mine (Jer Bar Mine)
    - Mayday Mine
    - Porcupine lode occurrence
    - Saratoga Mine
    - Victoria Mine
  - Arrastra Basin
  - Hazelton Mountain
    - Aspen Mine (Legal Tender Mine)
    - Ayman Mine
    - Happy Jack Mine
    - Red Anvil occurrence
    - Valley Forge group
  - Ideal placer
  - Kendall Mountain
    - Argentine Mine
    - Clara Mine
- Kendall group
- Lackawanna Mine (Osceola Mine)
- Marcella Mine (Marcello Mine)
- Mighty Monarch occurrence
- Mystery group (Fairview; Champion Mine)
- Scranton Mine
- Round Mountain
  - Iowa Mine
  - New York Mine
  - Round Mountain Mine
  - Silver Lake group
  - Silver Lake Mine
  - Titusville Mine (Columbia; Mighty Monarch)
- Storm Peak area
  - Cement Creek Bog Iron Mine
- Sultan Mountain
  - Ajax Mine (Hercules Mine)
  - Alethea group
  - Belcer Mine (Belcher)
  - Blue Jay Mine
  - Dora Mine (Little Dora; Hercules; Empire Group)
  - Empire group
  - Hawkeye Mine
  - Hercules occurrence
  - Jennie Parker Mine
  - King group (King-United; Mohawk; Fairview; Harmon)
  - Mineral Creek Mine
  - North Star Mine (Sultan Mine; North Star-Sultan)
  - Pittsburg tunnel
  - Ricker group
  - Senior Warden Mine
  - Silverheel occurrence
  - Sultan Mountain occurrence
  - Thunder Tunnel Mine
- Stony Pass Mine
- Terrible
- Trilby Group
- Unity Tunnel

Minerals listed in the district (mindat.org) include:

Acanthite	Epidote	Posnjakite
'Alaskaite'	Ferrimolybdate	Proustite
Amphibole Supergroup	Fluorite	'Psilomelane'
var: Uralite	Freibergite	Pyrite
Anglesite	Galena	Pyrolusite
Aragonite	var: Argentiferous Galena	Pyroxmangite
Atacamite	'Garnet'	Quartz
Aurichalcite	Goethite	var: Amethyst
Azurite	Gold	var: Rock Crystal
Baryte	Gypsum	Rhodochrosite
Bismuthinite	Hematite var: Specularite	Rhodonite
Bornite	Hübnerite	Sanidine
Boulangerite	Jamesonite	Serpierite
Brochantite	Jarosite	Siderite
Calaverite	Lillianite	Silver
Calcite	'Limonite'	Sphalerite
Cerussite	Linarite	Stibnite
Chalcoalumite	Malachite	Sylvanite
Chalcopyrite	Marcasite	Tennantite
'Chert'	Molybdenite	Tenorite
'Chlorite Group'	Monticellite	Tetrahedrite
Chrysocolla	Muscovite var: Sericite	Tremolite
Clinozoisite	'Ochre'	Tungstite
Copper	Osarizawaite	Vesuvianite
Covellite	Pearceite	'Wad'
Digenite	Petzite	'Wolframite'
Diopside	Plumbojarosite	Wollastonite
Dolomite	Polybasite	Zunyite

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## **San Juan County**

### **Animas Fork District (aka Eureka District)**

Vanderwilt (1947) uses this name to refer to the Eureka District, as does Mindat.org. Refer to the Eureka District write up for more information.

## San Juan County

### Bear Creek District

The Bear Creek district is a small district about 19 miles east of Silverton. It lies across the Continental Divide near the border of La Plata and Hinsdale Counties. According to Dunn (2003) it encompasses the headwaters of Bear Creek (a tributary of the Rio Grande River) and Vallecito Creek (a tributary of the Los Pinos River). Mindat.org also uses the name **Beartown District**.

Vanderwilt (1947) describes narrow white quartz fissure veins containing gold and silver tellurides and other minor sulfides. Vanderwilt identifies petzite as the telluride and mindat.org adds calaverite.

According to Eberhart (1969) the town of Beartown rose up after a big strike in 1893. The district was a rich, although smaller, producer well into the 1900s.

Note: Eberhart (Ibid) lists among the mines the *Yankakee*, while mindat.org refers to it as the Kankakee.

Mines listed in the district (mindat.org) include:

- Century Mine
- Eldorado Claim (Patented Claim: El Dorado)
- Gold Bug Mine (Patented Claims: Gold Bug; Gold Bug Mill Site; Repeal; Gold Nugget)
- Golden Shear Mine (Patented Claim: Bonita)
- Good Hope Mine (Patented Claims: Good Hope; Wonder)
- Kankakee Mine (Pure Gold; Iron Mask; Aurum; Oro; Tunnel Site; Golden Age; Extension; Lake View; Iron King; Crusader Gold Mine; Chance; Gold Coin; Bullion; Unpatented Claims: Kankakee)
- Little May Mine
- Robinson Mine (Patented Claims: Robertson; Scott)
- Summit Mine
- Sylvanite Mine

Minerals listed in the district (mindat.org) include:

Alunite	Enargite	Pyrite
Baryte	Galena	Quartz
Bornite	Hematite	Siderite
Calaverite	Kaolinite	Sphalerite
Calcite	'Limonite'	Sylvanite
Chalcocite	Magnetite	Tetrahedrite
Chalcopyrite	Marcasite	Vermiculite
'Chlorite Group'	Petzite	

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## San Juan County

### Cement Creek District

The Cement Creek District is included in the **Eureka District** as described under that heading. Mindat.org indicates the same, but does list mines and minerals exclusive to that part of the district. The website indicates that "all but the southern part of the Cement Creek District lies within the Eureka District." Burbank and Luedke (1969) include a small section on the "Cement Creek-Bonita Peak" area in their paper on the Eureka District. In their description, they include the Gold King Mine and the Bonita vein, iconic mines of the San Juan Mountains in general.

Mines listed in the district (Cement Creek "subdistrict" of Eureka District, on mindat.org) include:

- [Adams Mine \(Adams Tunnel Mine\)](#)
- [Anglo-Saxon Mine](#)
- [Gladstone Area occurrence](#)
- [Golden Hub](#)
- [Hoosier Bay occurrence \(Hoosier Boy\)](#)
- [Minnesota Gulch Mine](#)
- [Omaha Mine](#)

Minerals listed in the district (mindat.org) include:

[Fluorite](#)

[Freieslebenite ?](#)

[Hübnerite](#)

[Quartz](#)

[Rhodonite](#)

References:

Burbank, W.S. and Luedke, R.G. 1969. Geology and Ore Deposits of the Eureka and Adjoining Districts, San Juan Mountains, Colorado. U.S. Geological Survey Professional Paper 535.

[www.mindat.org](http://www.mindat.org), accessed January 2016.

## San Juan County

### Eureka District

The Eureka District was recognized by Henderson (1926) and by Vanderwilt (1947). The latter considered the district synonymous with the **Cement Creek, Mineral Creek and Animas Forks Districts**. Dunn (2003) noted that it has also been called the **Silverton District**. Moore (2004) provided boundaries - from "the abandoned town of Eureka north along the valley of the Animas River to the ghost town of Animas Forks, west along the valley of the West Fork of the Animas (California Gulch) and across the divide into the drainage of Cement Creek above the abandoned townsite of Gladstone, and from Gladstone easterly along Eureka Gulch to Eureka. He also notes that the reference to the district has often been expanded to include the **Mineral Point and Engineer Districts**.

The district lies entirely within the Silverton Caldera with the dominant structural feature being the Eureka Graben, in the center and northeastern parts of the district. The boundary faults (and associated fractures) of the graben helped localize the ore deposition (Moore, Ibid).

Two types of deposits are found - veins and chimneys. The vein deposits are themselves of several types, according to Varnes and Burbank (1947). Quartz-pyrite gold veins with some galena and other sulfides in white quartz with abundant pyrite and some free gold are characterized by the Gold King Mine. A second type is the tungsten-bearing quartz veins. Massive pyrite veins also exist. Another variation is pyrite veins (such as the Brooklyn Vein) with some chalcopyrite and other base metal sulfides with a bit of quartz.

Chimney deposits are similar to those in the **Red Mountain District**. A good example is the Zuni Mine, characterized by a pipe sixty feet long and fifteen feet wide with massive anglesite, guitermanite (lead-arsenic sulfide) and argentiferous enargite. Some gold occurs in the pyritic ore.

Gold was first discovered in 1860 at Eureka and lode discoveries followed, leading to the development of the district by 1874. The Eureka and Silver Wing Mines were working by 1875. The Gold King vein was discovered in 1887. The largest producer by far was the Sunnyside Mine. According to Moore (Ibid) the Sunnyside was eventually connected to other large producers - Gold King, Gold Prince, and Great Mogul - by the American Tunnel.

The Sunnyside Mine and mill was served by the town of Eureka, a now-dead town. As many as 2000 residents called Eureka home at one time (Eberhart, 1969) and the Sunnyside mill alone employed 500. The mighty Gold King Mine was served by the town of Gladstone.

George Moore, a veteran geologist of the area, points out that most of the mines have been explored to only shallow depths and considerable mineralization probably remains in the area (Moore, Ibid.)

A large volume of literature has been generated on the geology and mineralization in the Silverton area. Aspects of the geology have been discussed by Lipman (1976), Lipman et al. (1978), Luedke and Burbank (1987), Plouff and Rakiser (1972), Steven (1975), and Steven and Lipman (1976). Ore deposits and mineralization have been discussed by Prosser (1910), Bejnar (1957), Burbank (1940), Burbank and Luedke (1968), Casadevall and Ohmoto (1977), Fischer et al. (1973), Grauch et al. (1985), Sanford et al. (1987), King and Allsman (1950), Rosemeyer (1988), and Mosier et al. (1986), among others.

Mines listed in the district (mindat.org and others) include:

- Adelia Occurrence
- Adelphin
- Alabama Occurrence
- Amador Occurrence
- Animas Forks
- Animas Forks Deposits
- Auburn Group
- Aztec
- Bagley
- Barnes Tunnel
- Belcher Occurrence (Belcher Tunnel No. 1)<sup>2</sup>
- Belle Creole
- Ben Butler Occurrence<sup>2</sup>
- Ben Franklin<sup>2</sup>
- Benitoite
- Bill Young
- Bismarck
- Black Diamond Occurrence (1)
- Blacksmith Occurrence
- Blanchard Placer
- Bonanza
- Bonanza King
- Bonita Peak
- Brazillian Occurrence (Monitor)
- Broadgage Mine
- Burns Group
- Burrows Prospect (Little Ida; Burrows Group)
- Caledonian
- Cement Creek
  - Adams Mine (Adams Tunnel Mine)
  - Anglo-Saxon Mine
  - Gladstone Area occurrence
  - Golden Hub
  - Hoosier Bay occurrence (Hoosier Boy)
  - Minnesota Gulch Mine
  - Omaha Mine
- Columbia<sup>2</sup>
- Columbus
- Como Consolidated
- Custer Occurrence<sup>2</sup>
- Detroit Hollister
- Dewitt
- Eagle Mountain Occurrence
- Early Bird
- Elk
- Endless Chain
- Eureka
  - Eureka Gulch
  - Ransom Mine
- Evaline
- Evening Star
- Forest Queen Occurrence
- Fourteen Occurrence
- Free Gold Occurrence
- Frisco Tunnel (Gladstone)
- Galena Queen Mine (Silver Pitcher)
- George Washington Occurrence
- Gladstone
  - Black Hawk; Occidental
  - Bonita Peak
    - Sunnyside Mine group (American Tunnel Mine; American Tunnel; Gold King Mine; Washington Mine; Belle Creole; Gold Prince; Brenneman Mine; Mogul Mine)<sup>2</sup>
  - Galtie Boy - Hercules Mine
  - Gladstone Mine<sup>2</sup>
  - Gold King Mine (Gold King Extension)<sup>1, 2</sup>
  - Poughkeepsie Gulch
  - Sunnyside Extension Mine<sup>2</sup>
- Gold Dollar - Little Mack
- Gold Hub Occurrence (Yukon Tunnel Ariadne)
- Gold King Mill Placer
- Gold King Occurrence
- Gold Prince Mine
- Golden Fleece<sup>2</sup>
- Graham Mine (Crevice; Kansas City Adits)
- Great American Occurrence
- Great Eastern (Silver Wing; Frederica; Monitor; Sioux City)
- Grivitza; Mountain Eagle; Norman
- Hesperian
- Hidden Treasure<sup>2</sup>
- Hurricane Pass
- Independence
- Indian Chief
- Kansas City
- Kittimac Mine

- Lark Mine
- Lead Carbonate Mine<sup>1</sup>
- London Occurrence
- Maid of the Mist
- Mastodon Mine<sup>2</sup>
- Midway
- Minnehaha Mine
- Mocking Bird
- Mogul Mine
- Montezuma No. 1 and Plain Streak Occurrence
- Mountain Queen Mine<sup>2</sup>
- No Name Mine
- Oyama Occurrence
- Palmyra
- Picket
- Poughkeepsie
- Pride of Bonita
- Pride of the Rockies<sup>2</sup>
- Queen Anne Occurrence<sup>2</sup>
- Red and Bonita Occurrence<sup>2</sup>
- Red Cloud
- Red Rogers Occurrence
- Reed Tunnel
- Rollo Occurrence
- Rose
- Ross Basin (Red Rogers; Bonanza; Canandaigua; Queen Anne; Columbia; Seven Thirty)<sup>2</sup>
- San Antonio
- San Juan Chief<sup>2</sup>
- San Juan Queen<sup>2</sup>
- Sandiago (Treasure Mountain)
- Scotia Occurrence<sup>2</sup>
- Serrano
- Seven-Thirty Occurrence
- Sewell Occurrence
- Shenandoah-Dives Mine (Shenandoah Mine)
- Silver Bay Mine
- Silver Chord
- Silver Cloud Occurrence
- Silver Coin
- Silver Queen Occurrence<sup>2</sup>
- Sixteen-To-One
- Sound Democrat<sup>2</sup>
- Star of the West
- Sunnyside Mine<sup>2</sup>
- Surprise Occurrence
- Tempest Occurrence
- Terry Tunnel
- Tincup and Gypsy Occurrence
- Toltec Occurrence<sup>2</sup>
- Tom Moore Lode
- Treasure Mountain Gold; Sandiago Tunnel Occurrence
- Tyrol
- Uncompahgre Chief Occurrence<sup>2</sup>
- Union Occurrence
- Upper Uncompahgre Mines
- Vermillion
- Victory - Silver Monarch Occurrence
- Washington
- Webster
- White Crow Occurrence
- Yukon Mine (Gold Hub Mine)

Notes:

<sup>1</sup> Details in Burbank and Luedke (1969, pp. 59-60).

<sup>2</sup> Details in Ransome (1901).

Minerals listed in the district (mindat.org) include:

Acanthite	'Apatite'	Chalcocite
Aikinite	Baryte	Chalcopyrite
Akaganeite	Bismuth	'Chlorite Group'
Alabandite	Bornite	Copper
Allanite Group	Bustamite	Digenite
Alleghanyite	Calaverite	Enargite
Altaite	Calcite	Epidote
Anhydrite	Chalcanthite	'Feldspar Group'

Fluorite	Kutnohorite	'Ruby Silver Ore'
Freibergite	Marcasite	Scheelite
Friedelite	Matildite	Silver
Galena	Molybdenite	Spessartine
var: Argentiferous Galena	Muscovite var: Sericite	Sphalerite
Gersdorffite	Petzite	Stephanite
Gold var: Electrum	Proustite	Tephroite
Gypsum var: Selenite	Pyrite	Tetrahedrite
Helvine	Pyroxmangite	Titanite
Hematite	Pyrrhotite	Uraninite
Hessite	Quartz	'Wad'
Hübnerite	var: Amethyst	'Wolframite'
Kaolinite	var: Milky Quartz	
'K Feldspar var: Adularia'	Rhodochrosite	
Krennerite	Rhodonite	

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## San Juan County

### Ice Lake Basin District (aka Ice Lake District)

Vanderwilt (1947) mentions the Ice Lake Basin District as adjoining the Ophir District in San Miguel County along the South Fork of Mineral Creek. Mindat.org also includes the district. It is mentioned in Worcester's paper on molybdenum occurrences (Worcester, 1919).

According to Eberhart (1969) and Dunn (2003), the leading mines were the Esmerelda and the Bandora. The former continued working long after the rest of the district declines.

Mines listed in the district (mindat.org; Eberhart, 1969; Dunn, 2003) include:

- Bandora
- [Black Diamond Occurrence \(2\)](#)
- [Burbank](#)
- [Diamond](#)
- [Emma; Oregon and Galena](#)
- [Ensle Tunnel Occurrence](#)
- Esmerelda
- [Golden Gate](#)
- [Kinney Tunnel \(Mineral Slope\)](#)
- [Last Hope & Grandview G. \(Columbus - Grandview\)](#)
- [Lucy \(Last Hope; Lake\)](#)
- [Waco](#)

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[www.mindat.org](http://www.mindat.org), accessed January 2016.

## San Juan County

### Mineral Point District

The Mineral Point District is named for a mineralized knob of rock near the Bill Young Mine (Moore, 2004). It lies in a heavily-mineralized area of abundant mines where several named districts meet (or overlap). The boundaries of the district were defined by Kelly (1946) as Poughkeepsie Gulch on the west, Engineer Mountain on the north, the California Gulch divide on the southeast and the Canadian Lake Basin on the southwest. This constitutes about 3 1/2 square miles of relatively flat terrain - glacial moors of lakes, ponds, swamps and meadows between 11,500 and 12,500 feet in elevation (Moore, Ibid). In fact Moore shows the district as lying almost entirely in San Juan County, extending slightly north across the Ouray County boundary adjacent to the Engineer Mountain District.

Burbank described the area in Vanderwilt (1947) as containing vein swarms extending out from the Silverton Caldera, with more than 100 miles of vein outcrops mapped. To the east, these veins are a part of the Eureka District. The dominant rock is porphyritic andesite of the Burns member of the Silverton volcanics. Deposits were of three types: fissure and cavity fillings, breccia chimney and dike deposits, and replacement deposits (Burbank, 1947). The principal mines were shafts, mostly less than 300 feet deep (Burbank and Luedke, 1969).

Burbank describes the veins as mostly quartz with pyrite, sphalerite, galena, chalcopyrite, rhodochrosite and barite. (Note that Burbank includes several separate districts in his single description.) Precious metal mineralization is distinct from the base metals, with gray quartz with argentiferous tetrahedrite, some ruby and brittle silver (stephanite, proustite/pyrargyrite) and some native gold. More detailed descriptions can be found in papers by Hazen (1949), Hon et al. (1986), Kelley (1946), King and Allsman (1950), and Yager and Bove (2002).

The town of Mineral Point was a bustling center for a short while, serving mines in the Mineral Point, Engineer Mountain and Poughkeepsie Gulch districts (Eberhart, 1969). Nearby was American Flats (later called Engineer City). Histories of these two towns can also be found in Eberhart (Ibid).

Mines listed in the district (mindat.org and others) include:

- [Annie Crooke Occurrence](#)<sup>2</sup>
- [Annie Wood](#)<sup>1, 2</sup>
- Ben Butler Mine<sup>1</sup>
- Bill Young<sup>1, 2</sup>
- [British Queen Occurrence](#)<sup>2</sup>
- [Engineer Mountain](#)<sup>2</sup>
- [Grand View Occurrence](#)<sup>2</sup>
- Little Fraud<sup>1</sup>
- London<sup>1</sup>
- [Lucky Jack Occurrence](#)<sup>2</sup>
- [Mammoth](#)<sup>1, 2</sup>
- Oyama<sup>1</sup>
- Palmetto<sup>1</sup>
- Palmyra<sup>1</sup>
- Polar Star<sup>1</sup>
- Red Cloud Mine<sup>1</sup>
- Siegel<sup>1</sup>
- [San Juan Chief](#)<sup>1, 2</sup>
- [Syracuse Pride](#)<sup>2</sup>
- Uncompahgre Chief Claim<sup>1</sup>

Notes: <sup>1</sup> Details found in Ransome (1901) under section "Lodes of Mineral Point".

<sup>2</sup> Details found at mindat.org.

Minerals listed in the district include:

Acanthite	Galena	Silver
Baryte	Gold	Sphalerite
Chalcopyrite	Pyrite	Stephanite
Enargite	Quartz	Tetrahedrite
Fluorite	'Ruby Silver Ore'	
Freibergite	(Proustite/Pyrrargyrite)	

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## **San Juan County**

### **Poughkeepsie District**

The Poughkeepsie District spans the county line with Ouray County. Refer to the district write up in Ouray County.

**San Juan County**

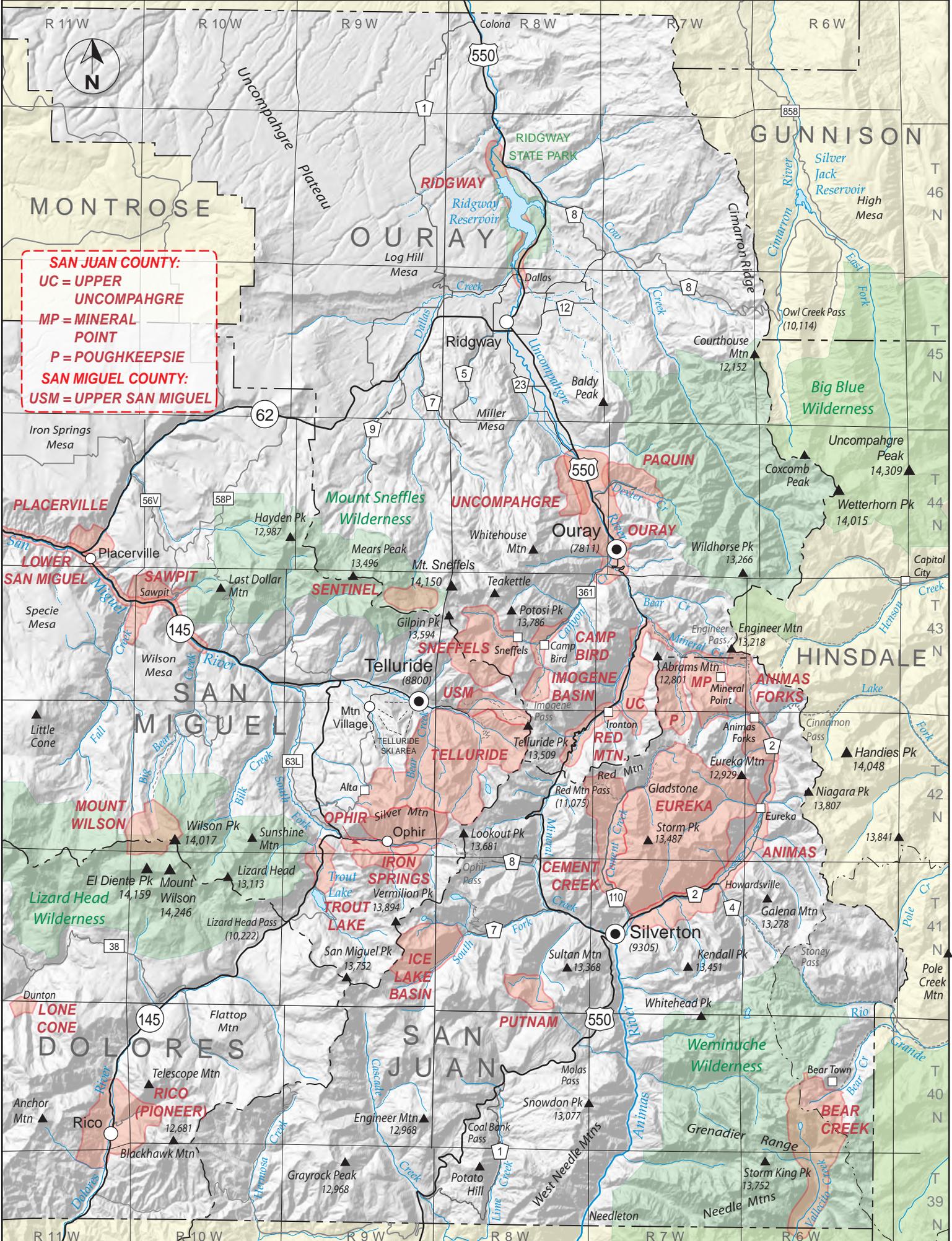
**Red Mountain District**

Refer to the Red Mountain District in Ouray County.

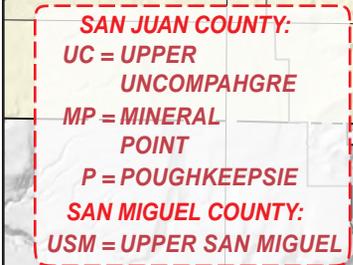
**San Juan County**

**Upper Uncompahgre District**

Refer to the Upper Uncompahgre District in Ouray County.



**SAN JUAN COUNTY:**  
UC = UPPER UNCOMPAHGRE  
MP = MINERAL POINT  
P = POUGHKEEPSIE  
**SAN MIGUEL COUNTY:**  
USM = UPPER SAN MIGUEL



## San Miguel County

### Iron Springs District (aka Ophir District)

The Iron Springs District was located at Sections 25-36, T. 42 N., R. 9 W; Sections 1-4 and 9-12, T. 41 N., R. 9 W. of the New Mexico principal meridian (Henderson 1926). It is located about 10 miles south of Telluride. It was also referred to as the Ophir District, which was the preferred name by Vanderwilt (1947). Dunn (2003) indicates that the district may include or overlap with the **Trout Lake District** to the southwest. The Iron Springs District was one of the original six main districts of San Miguel County, but by 1898 it was one of four districts (Dunn, 2003). It is a former gold, silver, lead, copper and zinc mining area and the Alta Mine was one of the biggest producers (Dunn, 2003).

Claims were being made by the mid 1870's. Mines were operating in the valley and shipping silver ore by 1878. Several mines, including the Alta Mine, were being developed by 1881. An unsuccessful smelter was built in Ames in 1883. The district was driven by silver prices and most mines only operated intermittently. The district was mostly inactive from 1930-1936, but was very active from 1937-1948, and inactive since then (Dunn, 2003).

The mining camp of Ophir, a short lived mining camp, was located on Ophir Creek in Ophir Valley (Eberhart, 1969) at approximately the center of the District. The small town of Iron Springs was east of Howard's Fork (later Ophir, New Ophir) (Dunn, 2003). Eberhart (1969) indicates that the small village of Iron Springs was a short distance from Old Ophir, towards Ophir Pass, and that besides mining it was also a resort community.

Mines listed in the district (mindat.org and others) include:

- [Alta Mine \(Alta group; Alta - St. Louis\)<sup>1</sup>](#)
- [American Frenchman Mine](#)
- [Atlas Mine \(Atlas & Clara Mine\)](#)
- [Attica occurrence](#)
- [Badger Mine \(Badger tunnel; Getrude\)](#)
- [Black Hawk tunnel \(Alta group\)](#)
- [Black Warrior](#)
- [Bog Iron pit \(Chapman Gulch Spring Type\)](#)
- [Boston and Navite Mine](#)
- [Butterfly Mine<sup>1</sup>](#)
- [Calamine Mine](#)
- [Calumet](#)
- [Carbonero Mine](#)
- [Carribeau Mine](#)
- [Colorado Mine](#)
- [Commercial Mine](#)
- [Contention Mine](#)
- [Court House - Dynamo Mine \(Court House Mine\)](#)
- [Creve Coeur](#)
- [Crown Jewell Mine](#)
- [Crown Point Mine](#)
- [Deadwood Mine](#)
- [Double Eagle Mine](#)
- [Electric Mine](#)
- [Fairview Mine](#)
- [Favorite tunnel \(Exploration at Favorite\)](#)
- [Ferric Oxide Mine](#)
- [Garibaldi Mine \(Garibaldi - San Bernardo Mine\)](#)
- [Getrude](#)
- [Glasier Placer Nos. 1; 2](#)
- [Gold King](#)
- [Gold King group](#)
- [Gold Medal](#)

- Gold Run placer & mill
- Golden Rose
- Grace Mine
- Hamilton Mine
- Happy Home (Roanoak placer)
- Hattie Mine (Hattie group)
- Highline
- Honduras occurrence (South Fork; Tombo)
- Ida shaft
- Illinois
- Iron Springs Group<sup>1</sup>
- Lake View Group
- Lewis Mine
- Little Boy Mine
- Little Dorrit
- Little Eva Mine
- Little Joe crosscut
- Lucky Strike placer
- Maryland
- Matterhorn Mine
- Mohawk
- Montana vein (Revenue tunnel)
- Mountain Flower
- Mountain Quail
- Moyer & Tuscon
- Nellie & Laura Mine (Nellie Mine)
- Nevada Mine
- New Dominion Mine
- North Slope Mine
- O'Reilly Mine (Oreilly)
- Old Butterfly Mine
- Ophir Iron Springs Mine
- Ophir Mine
- Ophir tunnel
- Ophir Valley occurrence (New Dominion; Nevada Gulch; Silver Tip Lower Yellow Jacket; Chapman Gulch)
- Osceola Mine
- Palmyra Mine
- Paragon Mine
- Pike County Mine
- Pioneer Mine
- Porcupine Mine
- Purdy lease
- Redcloud Mine
- Roy Johnson Mine
- Royal group - Nelson tunnel
- San Bernardo Mine<sup>1</sup>
- San Bernardo Valley View Mine
- Santa Cruz (Santa Cruse)
- Sarah Mine
- Shamus O'Brien Mine
- Shoemaker Mine
- Silver Bar
- Silver Bell Mine
  - Ida vein
- Silver Chief Mine
- Silver King Mine
- Silver Pick<sup>1</sup>
- Silver Tip Mine
- Single Standard Mine
- Spar group No. 1; 2; 3; 4; 5
- St. James
- Telluride Mine
- Terrible Mine<sup>1</sup>
- Texaco Mine
- Townsend Mine
- Trout Lake
  - Canton
- Turkey Creek Mine
- Turkey King occurrence
- U. S. Mines
- Vagabond
- Van occurrence (Kentucky; Dakota; Union)
- Vera Mine
- W. G. Claggett Mine
- Warren placer
- Wasatch Mine
- Woodie Mine (Woody Mine)
- Zambodga Mine

Note: <sup>1</sup>Listed in Dunn (2003).

Minerals listed in the district (mindat.org) include:

Anhydrite	Galena	Pavonite
'Apatite'	var: Argentiferous Galena	Pyrargyrite
Barite	Goethite	Pyrite
'Biotite'	Gold	Quartz
Bismuth	'Gold Amalgam'	Rhodochrosite
Calcite	Hematite	'Schirmerite'
Cerussite	Hübnerite	Siderite
Chalcopyrite	Jarosite	Sphalerite
'Chlorite Group'	'Limonite'	Stibnite
Dolomite	Magnetite	Tetrahedrite
Ferrimolybdite	Molybdenite	'Wolframite'
Fluorite	Molybdite	Wollastonite
Freibergite	Muscovite var: Sericite	Zoisite
	Natrojarosite	

#### References:

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[www.mindat.org](http://www.mindat.org), accessed May 2015.

## San Miguel County

### Lower San Miguel District (aka Placerville District; aka Sawpit District)

Henderson (1926) lists the district as being located at T. 44 N., R. 11 W. and T. 43 N., R. 10 W. of the New Mexico principal meridian. Vanderwilt (1947) and mindat.org refer to the Lower San Miguel District as including the Placerville, Sawpit, and **Newmire Districts**, having commodities of silver, gold, lead, copper and vanadium. Mindat.org also has a separate listing for the Placerville District. Placerville is located 14 miles northwest of Telluride, and Sawpit and Newmire Districts are located between the two along the San Miguel River valley (Vanderwilt, 1947). Heyl (1964) reports that the Placerville District was centered near Sawpit along the San Miguel River.

The Sawpit mineralization is located along an 8-foot bed of limestone. Commodities included silver and gold with lead. Gold placering along the river consisted of small sluicing operations which yielded relatively little gold, due to the fine gold being widely distributed (Vanderwilt, 1947). Parker (1968, 1974) indicates that the placering extended nine miles downstream from Sawpit and that Placerville was at the center of this area.

Most of the Placerville area is underlain by nearly horizontal sedimentary beds of Permian to Cretaceous age, which have been intruded by Tertiary igneous rocks and cut by numerous faults (Fischer, 1968). The district is located west/northwest of the Silverton Caldera (Vhay, 1962). In the Placerville Quadrangle, the Entrada sandstone of Late Jurassic age contains tabular deposits of vanadium with subordinate uranium, and the Pony Express limestone member of the Wanakah formation contains bedded replacement deposits of gold- and silver-bearing pyrite. Fischer (1968) provides a map with roughly north/northwest trending chrome- and vanadium-bearing belts in and around Placerville and Sawpit. Copper-bearing veins, containing varying amounts of "hydrocarbon" (solid members of the petroleum group), follow northwestward-trending normal faults; in places some of the hydrocarbon is uranium bearing. Sporadic attempts have been made to produce both copper and uranium from these deposits (Bush et al., 1959). Gold-bearing placer deposits are present along the bottom of the San Miguel River valley and in elevated terrace gravels as much as 200 feet above the present stream level (Parker, 1968). Some gold was produced from the placers late in the 19th century and early in the 20<sup>th</sup> (Bush et al., Ibid).

Towns in the district include Placerville (named for the placering operations), and Sawpit (named for the nearby creek). The city of Placerville was originally located about 1.5 miles away, and was platted with cabins in 1877. However, a young fellow built a general store and saloon at the current location and the first settlers pulled up their stakes and buildings to relocate around the store and saloon. Much of the business section of Placerville burned in 1919, but was rapidly rebuilt. Placerville boomed after ranching came into its own and it is a top livestock shipping point in western Colorado (Eberhart, 1969).

Sawpit came into being as a result of a blacksmith who located good ore in 1895. He named his mineral claim the Champion Belle and mined it for gold and silver. Small quantities of smithsonite were found in its deeply oxidized ores (Heyl, 1964). The town was laid out in 1895 and several wood frame buildings were built (Eberhart, Ibid).

Mines listed in the district (mindat.org and others) include:

- A1
- Alpha and Gamma Occurrence
- Bear Creek Mine
- Beaver - Perkin Placers
- Belle Champion Mine (Unpatented Claims: Belle Champion; Golden Era)
- Belvidere
- Benice; Scott and McDonal Occurrence
- Big Mack
- Binkley - Sawpit Project (Republic)
- Blue Bird Mine (Blue Bell Nos. 1-6; Lake View; Unpatented Claims: Blue Bird Nos. 1-17; Lake View Nos. 1-7; Trout Lake)
- Boston; Enterprise; and Peoria Placers (Peoria Placer; Enterprise Placer; Patented Claim: Boston Placer)
- Brazier Brothers Drilling
- Carpenter Mine
- Crescent City
- Crucible Mine (Patented Claim: Crucible No. 1)
- Deep Creek Placer (Deep Creek Placer Limestone Quarry; Patented Claim: Deep Creek Placer)
- Donegan Lease
- Donegan Placer (Donovan Placer)
- E Bar Placer
- Evans Claims
- Fall Creek Mine
- Fall Creek Quarry
- Fayette Occurrence (Wells; Egan Placer)
- Fighting Chance Mine
- Flagstone Nos. 1 and 2 Claims
- Frazier Mine
- General De Wet Placer (Patented Claim: General De Wet)
- Gill Edge Occurrence (Gold Bug Placer)
- Gold Ledge Placer
- Golden Era
- Granger Placer
- Gripe (Sunnyside Claims)
- Grumwald Mine
- Idaho Occurrence (Meadow Brook)
- Iron Crown (Blue Bird Group)
- Ironside Occurrence
- Jo Dandy Mine (Lone Wolf; Edward; Unpatented Claims: Joe Dandy; Wesley; Nifty)
- Laen Occurrence (Oak Leaf; East; Bra.)
- Leopard Vanadium Mine
- Lizzie G. Mine
- Lone Tree
- Lone Wolf
- Major Occurrence (South Fork; Mary E)
- Manhattan Occurrence (Keystone; Boste)
- Mineral Mine
- Montana Placer (Patented Claims: Montana Placer; Old Channel Placer; Idaho Placer; Dump Placer)
- Northern Ohio
- Nugget Nos. 1; 2; 3 (Horseshoes Nos. 1; 2; 3; 4; 5; Nugget)
- Ohio (Virginia; Arthur)
- OK (Elder Occurrence)
- Old Man Mine
- Omega Mine (Patented Claim: Omega)
- Placerville
  - Sunnyside Claims
  - Black King Mine (Black King No. 4; Black King No. 5; Black King No. 5 Claim; Unpatented Claims: Black King No. 1; Evans Claims; Weatherly Claims)
  - New Discovery (Barbara Jo Claim; White Spur; White Spar)
  - Robinson Property
- Pocahontas Mine
- Polaris
- Pretty Blue
- Primos
- Providence
- Rare Metals
- Rattlesnake Claims

- Rosemary Placer (Patented Claim: Rosemary Placer)
- San Miguel River
- Silver Slipper
- Single Jack
- Stella
- Sunup
- UnawEEP
- Unnamed Placer Mine (Lawn Placer; Patented Claims: Placer Mining Claim No. 1)
- Wave Bar (Smug; Homestead)
- Wells and Egan Placer (Patented Claim: Wells and Egan Placer)
- Wheeler Bars (E. Placer; Patented Claims: A Placer)
- White Crow
- White Spar and Black King Occurrence
- White Spar Mine (New Discovery; Patented Claims: White Spar)
- Willow Creek Bar (Patented Claim: Willow Placer; Willow Creek Place)
- Wilson and Chambers
- Yellow Girl

Minerals listed in the district (mindat.org) include:

Annabergite	Gold	'Pyrobitumen' <sup>1</sup>
Autunite <sup>1</sup>	'Illite-1M' <sup>1</sup>	var: Thucholite <sup>1</sup>
Azurite <sup>1</sup>	'Ilsemannite' <sup>1</sup>	Quartz
Baryte	Jordisite <sup>1</sup>	Roscoelite
Bornite	'Limonite'	Sherwoodite
Calcite	Malachite <sup>1</sup>	Silver <sup>1</sup>
Carnotite	Metatorbernite <sup>1</sup>	Skutterudite
Cerussite	Minium	'Smectite Group'
Chalcocite	Molybdenite <sup>1</sup>	Smithsonite
Chalcopyrite	Montroseite	Sphalerite
Clausthalite	Muscovite	Tetrahedrite <sup>1</sup>
Coffinite	var: Fuchsite	Tyuyamunite <sup>1</sup>
Dolomite	var: Illite	Uraninite var: Pitchblende
Erythrite <sup>1</sup>	var: Mariposite <sup>1</sup>	Uranophane <sup>1</sup>
Ferrimolybdenite <sup>1</sup>	Pascoite	
Galena	Pyrite <sup>1</sup>	

Note: <sup>1</sup> Indicates listed in the Placerville District on mindat.org.

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[www.mindat.org](http://www.mindat.org), accessed September 2015.

## San Miguel County

### Mount Wilson District

The Mount Wilson District is located 12 miles south of Newmire. Mineral commodities included gold, silver, lead and copper.

The principal mine was the Silver Pick, which is located high on the rugged ridge at the head of Silver Pick Basin just west of Wilson Peak. Despite its name the principal product in value was gold. Bromfield and Williams (1972) have an extensive discussion about the mine and its production.

The Silver Pick vein, which is 3-6 inches wide, trends N. 40° to 60° E. and dips about 75° SE.; it cuts microgranogabbro, grandiorite, and porphyritic quartz monzonite of the Wilson Peak stock. The most productive part of the vein was in granogabbro. The principal sulfide minerals in the vein are pyrite, chalcopyrite, and arsenopyrite. Galena and sphalerite are present, but are not conspicuous in the vein material. The gangue is chiefly white crystalline quartz, carbonate minerals, and, possibly, some barite. The gold is apparently very fine grained and, like that in many gold districts, it is closely associated with arsenopyrite and chalcopyrite. Silver exceeds gold in the ore by a ratio of 3 to 1 (Bromfield and Williams, 1972).

Mines listed in the district (mindat.org) include:

- [C & K Drilling Prospect](#)
- [Lakeside Mine](#)
- [Magpie Mine \(Patented Claims: Magpie; MS 8608; Sunlight; MS 8608; Almeda; MS 8608\)](#)
- [Morning Star Mine](#)
- [Silver Eagle Lode](#)
- [Silver Hat](#)
- [Silver Pick Mine \(Synopsis Mine; Tam O'Shanter; Gold Pick; Archean; Gold Pick Mill Site; Southport\)](#)
- [Slide Rock - Silver Dollar Group](#)
- [Special Session Mine \(Polar No. 1; Polar No. 2; Oasis; Slide Rock\)](#)

Mineral listed in the district (mindat.org) include:

<a href="#">'Apatite'</a>	<a href="#">'Chlorite Group'</a>	<a href="#">Sphalerite</a>
<a href="#">Arsenopyrite</a>	<a href="#">Galena</a>	<a href="#">Spinel</a>
<a href="#">Baryte</a>	<a href="#">Gold</a>	<a href="#">Stibnite</a>
<a href="#">Calcite</a>	<a href="#">Pyrite</a>	<a href="#">Tetrahedrite</a>
<a href="#">Chalcanthite</a>	<a href="#">Quartz</a>	
<a href="#">Chalcopyrite</a>	<a href="#">Silver</a>	

References:

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[www.mindat.org](http://www.mindat.org), accessed September 2015.

## San Miguel County

### Telluride District (aka Upper San Miguel District)

The Telluride district was a former gold, silver, lead, zinc and copper mining district located in the western San Juan Mountains, in the Uncompahgre National Forest. Prospecting resulted in the district being discovered in 1875, specifically gold in the Sheridan and Smuggler veins (Dunn, 2003). Henderson (1926) lists the Upper San Miguel District, but places a Telluride District (aka Frying Pan District) in Eagle County. Vanderwilt (1947) referred to the district as the Upper San Miguel District. Fisher (1990) includes the Telluride District with the **Sneffels and Camp Bird Districts** as one district.

The district's principal mines were the Liberty Bell Mine, Smuggler (of Smuggler Union), and the Tomboy. These three produced much of the district's gold and silver, making it one of the 25 top leading gold producers in the U.S. The Tomboy and the Smuggler supported their own mining camps that housed hundreds of miners (Dunn, 2003). The Liberty Bell Mine closed in 1921, the Tomboy Mines in 1927, and the Smuggler-Union Mines in 1928. However, in 1940 the Tomboy and Smuggler-Union were consolidated and worked through the 1950s.

Mineralization is generally comprised of polymetallic veins. Controls for ore emplacement include the types of wall rock, vein intersections, character of fault movement, presence of intersecting dikes and faults, and abrupt changes in strike or dip. Local alteration is propylitic (caused by iron and magnesium bearing hydrothermal fluids, altering biotite or amphibole to epidote–chlorite–albite such that veining or fracture fill with the mineral assemblage along with pyrite). Volcanic rocks are propylitically altered with epidote, calcite, chlorite, pyrite, sericitic, argillic, and calc-silicate alteration near the veins; quartz-pyrite-sericite, kaolinite, and epidote-rich calc-silicate skarns. Local rocks within the district are comprised of Eocene pre-volcanic sedimentary rocks. Local geologic structures include a NW-trending swarm of dikes, fissures, and veins radiating from the Silverton Caldera, forming a belt of fracture zones, ring faults and dikes, cone sheets, and radial dike swarms.

The town of Telluride, which was originally called Columbia, was established in 1878 along the San Miguel River. The town of San Miguel City was established west of Telluride (about 1 mile down river) in the mid 1870's due to promising gold and silver discoveries, but by the early 1880's most of the inhabitants had moved to Telluride (Dunn, 2003). This was due to Telluride being located closer to the better producing mines (Eberhart, 1969). Eberhart (Ibid) provides a rich history of the town, including some of the notable people and union wars that occurred in the early 1900's. The district also included the camp of Savage Basin (Dunn, 2003).

Mines listed in the district (mindat.org and others) include:

- [Ajax](#)
- [Allegheny](#)
- [Alta](#)<sup>2</sup>
- [Andrus Mine \(Andrews Mine\)](#)
- [Argentine Mine \(Montana Mine; Belmont Mine\)](#)<sup>1,2</sup>
- [Atlanta tunnel](#)
- [Bay State tunnel](#)

- Black Bear Mine (Black Bear & Iona Mine)
- Bobtail Mine (Idarado Mine Telluride Side; Pandora)
- Bridal Veil Basin
  - Horatio Mine
- Bullion tunnel<sup>1,2</sup>
- Cascade tunnel
- Champion Mine
- Cimmaron<sup>1,2</sup>
- Cincinnati shaft
- Cleveland<sup>1,2</sup>
- Columbia tunnel<sup>1,2</sup>
- Croziers claims
- Dividend Mine
- Donald Mine
- Eldorado tunnel
- Estel crosscut
- Fortuna Mine
- Gold Block Mine
- Hermit Mine
- Hidden Treasure<sup>2</sup>
- Humboldt Mine
- Japan Mine (Japan - Flora)<sup>1,2</sup>
- Kibbe shaft
- La Junta Mine (Lajanta Mine Map Repo)
- Liberty Bell Mine<sup>1,2</sup>
- Little Mary Mine
- Lower Columbia Mine
- Lower White Bear Mine
- Mandota shaft
- Marshall Basin
- Mayflower Mine
- Medata<sup>2</sup>
- Meldrum tunnel
- Mendota tunnel
- Mikado tunnel
- Mill tunnel (Mill Level tunnel)
- Montana Mine
- Mountain Top tunnel
- N. W. H. Jr. Mine
- Old Kibbe shaft occurrence
- Old Tomboy Mine
- Ophir tunnel [2]
- Orient Mine
- Penn tunnel (Pennsylvania tunnel)
- Preston Moore Mine
- Royal Mine
- Savage Basin
  - Big Elephant Mine
- Savage Mine
- Shamrock Mine (Little Jimmy Mine)
- Sheridan Mine<sup>2</sup>
- Smuggler (Smuggler Union)<sup>1,2</sup>
- Stillwell tunnel
- Sulpherette Mine
- Summit Mine
- Telluride
- Telluride Mill tunnel
- Tomboy 2nd Level lease
- Tomboy Mine<sup>1,2</sup>
- Treasury tunnel (Tomboy; Argentine; Black Bear)
- Trust Rugby Mine
- Union Mine<sup>2</sup>
- Union Flag Mine
- Upper Chieftan Mine
- Upper White Bear Mine
- Valley View shaft
- Weller Mine

Notes: <sup>1</sup>Listed in Dunn (2003).

<sup>2</sup>Listed or discussed in Eberhart (1969).

Minerals listed in the district (mindat.org) include:

Acanthite	Galena	var: Amethyst
Amphibole Supergroup	var: Argentiferous Galena	var: Milky Quartz
Bismutite	'Geode'	Rhodochrosite
Calcite	Gold	Silver
var: Manganoan Calcite	Ilmenite	Sphalerite
Cerussite	'K Feldspar var: Adularia'	Stephanite
Chalcanthite	Magnetite	Tangeite
Chalcopyrite	Pearceite	Tennantite
Chromite	Platinum	Tetrahedrite
Ferrimolybdate	Proustite	Zoisite
Fluorite	Pyrite	
Freibergite	Quartz	

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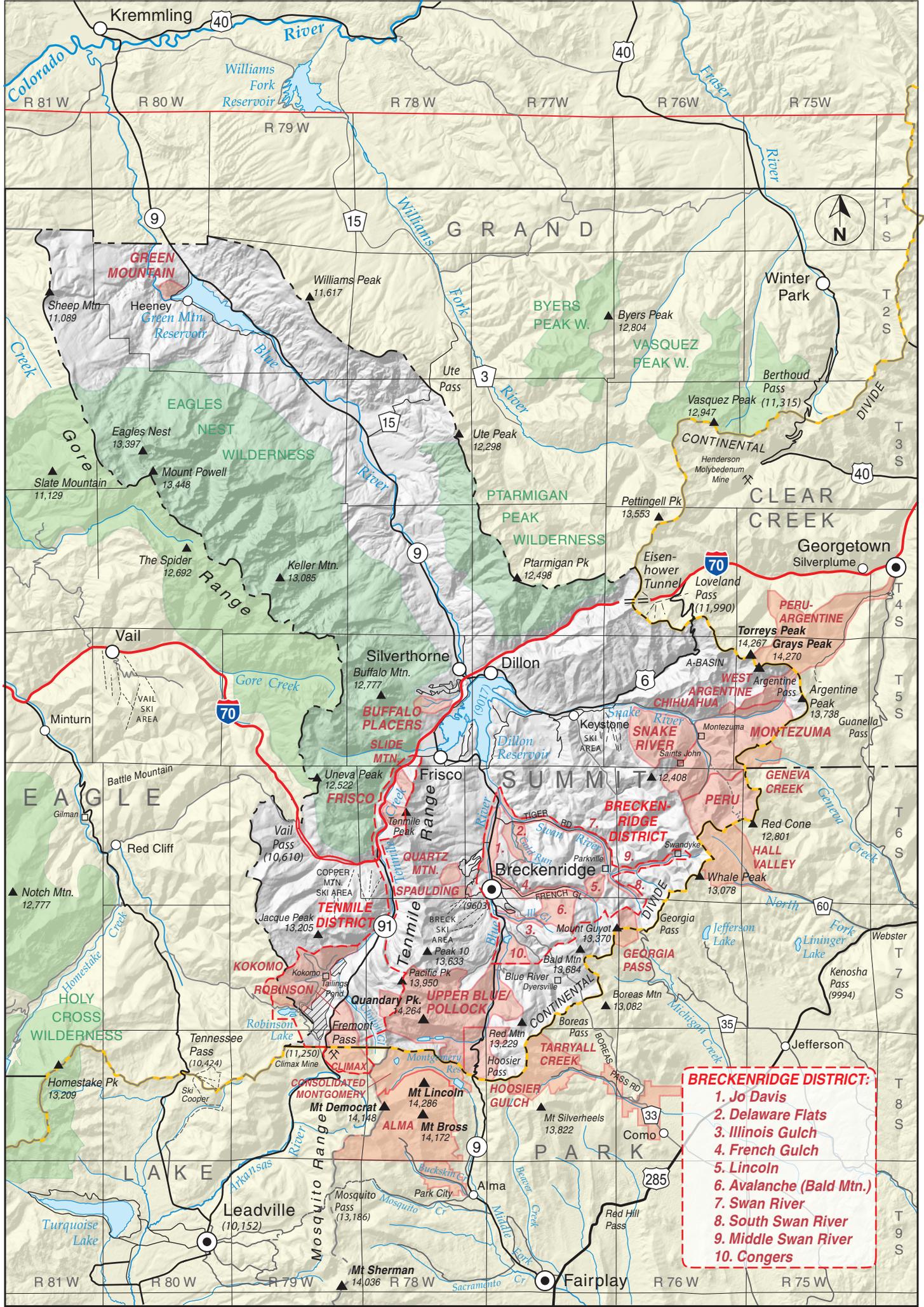
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Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

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- BRECKENRIDGE DISTRICT:**
1. Jo Davis
  2. Delaware Flats
  3. Illinois Gulch
  4. French Gulch
  5. Lincoln
  6. Avalanche (Bald Mtn.)
  7. Swan River
  8. South Swan River
  9. Middle Swan River
  10. Congers

**Summit County**

**Avalanche District**

Refer to **Lincoln District** and **Breckenridge District**.

## Summit County

### Breckenridge District

The Breckenridge District covers a large area, defined by Ransome (1911) as all the territory drained by the Blue River and its tributaries above the confluence with the Snake River and Tenmile Creek near Dillon. Vanderwilt (1947) seems to refer to it alternatively as the **Bevan District**. On our map, we break out the smaller districts, including placers, along the Swan River. Those districts include the following:

- Jo Davis
- Delaware Flats (placer)
- Union (placer)
- Illinois Gulch (placer)
- French Gulch (placer)
- Lincoln (aka Avalanche)
- Avalanche (Bald Mountain)
- Swan River
- South Swan River
- Middle Swan River
- Congers

The Breckenridge District is primarily known as a gold-producing district, although some silver was found. As was usually the case, the earliest activity was placer, but then lodes were found and hard-rock mining activity picked up. Lead-silver lodes produced early, and notably the Wellington Mine yielded ore until 1929. Lode gold and silver were mined until 1942.

The Breckenridge District includes the well-known Farncomb Hill, where some of the largest discoveries were made in Summit County, and the famous Wire Patch Mine. In 1879, lode deposits were first discovered on the northeast side of Farncomb Hill. These lode deposits probably supplied French Gulch (on the south side of Farncomb Hill) and the American Gulch placers (on the north side of Farncomb Hill).

Precambrian schist, gneiss and granite and sedimentary rocks ranging in age from Proterozoic to Cretaceous are intruded by early Tertiary monzonite and quartz monzonite porphyries (Vanderwilt, 1947). Most ore occurs in small veins in the monzonite or in Dakota Quartzite, although veins can be found in all the bedrock types. As noted, placers were most important, but contact metamorphic deposits and stockworks are also found.

Extensive detailed histories of both mining and settlement can be found in Ransome (1911), Eberhart (1969) and Gilliland (2006).

The Breckenridge District grew where the first miners pushed across the Continental Divide in Colorado in 1859 from South Park (Tarryall). Rich placers were first discovered on Farncomb Hill. For some time,

activity was concentrated on the north slope of that feature. Ransome (Ibid) quotes an early report that Georgia Gulch alone produced \$3 million in gold by 1862. Vanderwilt (1947) estimated some 750 million ounces were recovered by the mid-twentieth century. It wasn't long, however, until intrepid prospectors branched out and found significant gold on the French Creek side of Farncomb Hill and other production opened up.

Early in its history, a small fort was erected because of rumors of hostile Ute Indians. The fort was deserted and a town founded soon after (with the fascinating story told by Gilliland, Ibid). The town was named Breckinridge for political reasons (named for the Vice President of the US). When that politician announced for the southern cause in the Civil War, however, the first "i" was changed to an "e" and the town of Breckenridge was born.

Additional references include Henderson (1926) and Lovering (1934).

Mines in this district (mindat.org and others) include:

- Alice A Tunnel
- Australia Gulch Placers
- Barney Ford Hill
- Big Sally Barber F7T
- Blue River Placers
- Bon Ton Occurrence
- Bowery Tunnel
- Brewery Hill Breccia No. 2 Mine
- Brooks - Snider (Brooks - Snyder)
- Brown Gulch
  - Brown Gulch Placer
- Browns Gulch
- Bullion King
- Cally Mine
- Carbonate Mine (Carbonate Group; Carbonite)
- Commodore Placer
- Como Claims
- Country Boy Mine
- Delaware Flats Placer
- Detroit - Hicks (Standard)
- Dewey
- Dry Gulch Placers
- Dunkin; Juniata; Puzzle; Ouray; Gold Dust; Washington
  - Gallagher tunnel
  - Gold Dust
- Railroad tunnel
- Red Wing tunnel
- Edna
- Emperor Tunnel
- Erueka Shaft Mine
- Excelsior
- Farncomb Hill Placers
- Finding Shaft (Deep Shaft)
- Fox Lake Mine
- Fremont - Vineta Group
- French Gulch
  - Farncomb Hill
    - American Gulch placers
    - Boss Mine No.2
    - Gold Flake Mine
    - Ontario; Key West; Boss; Gold Flake; Fair Fountain; Bondholder
    - Wapiti Mine (Wapiti Claims)
    - Wire Patch Mine
      - Elephant Tunnel
  - French Gulch Placers
- Galena Gulch placers
- Georgia Gulch
- Germania
- Gibson Gulch Placers
- Gibson Hill

- Gold Bell; Gold Edge (Golden Edge)
- Gold Cord Tunnel
- Gold Nugget Placer
- Gold Run Gulch Placers
- Goose Pasture Placers
- Hamilton
- Harrison Tunnel
- Hellen Mine
- Hendrix Gold Mining Property
- I.X.L. (Royal Tiger; Cashier)
- Iron Mask Occurrence
- Jeff Davis Patch Placers
- Jessie Mine (B and B Mines Inc)
- Joe Glidden Occurrence (Joe Gliddon)
- Johannesburg Tunnel (New York Claims)
- Jumbo Occurrence
- Juventa Occurrence (Juventa Mine Shaft; McLeod Tunnel)
- Kellogg Mine
- Leona
- Little Corporal Mine
- Little Sally Barber
- Lone Bug
- Louis D Shaft
- Maxwell
- Mayo Gulch Placers
- Middlesex Mine
- Mineral Hill
  - Cincinatti mine
  - Ella mine
  - Lucky mine
  - Minnie mine
- Minnesota (McBarnes; Bevan)
- Monitor
- Mount Guyot (Mount Gugot)
- Mountain Pride; Laurium (Larium; Blue Flag)
- Naperville Tunnel
- Nebraska
- New York Mine (New York Claims; New York Tunnel)
- Nickel Plate
- Niggarr Placer (Lillian Vale)
- Old Ironsides mine
- Pacific - Gold Dust
- Player
- Puzzle Ouray
- Rose of Breckinridge
- Royal Tiger Group
- Sallie Barber Mine
- Siam Mountain
- Silence
- South Barton Gulch Placers
- Standard No. 1
- Streng
- Sultana Mine
- Tommy Mine
- Washington mine (Dunkin; Juniata; Puzzle; Ouray; Gold Dust)
- Weber Gulch Placers
- Wellington Mine (Siam Tunnel; Old Oro Tunnel; Mill Tunnel; Liberty Tunnel; Extenuate Tunnel; Wellington Tunnel; Abundance Tunnel; New Tunnel; Oro Shaft)
- Willard
- Wire Patch Placer

Minerals listed in this district (mindat.org) contains entries from the region specified including sub-localities:

Acanthite

Albite var: Andesine

'Allanite'

Amphibole Supergroup

Andradite

Anglesite

Ankerite

Augite

Azurite

Baryte

Bismuth

Bismuthinite

Calcite

Cerussite

Chalcopyrite

Chlorargyrite	Jarosite	Rhodochrosite
'Chlorite Group'	Kaolinite	Siderite
Chrysocolla	Lead	Silver
Epidote	'Limonite'	Smithsonite
Fluorite	Magnetite	Sphalerite
Galena	Malachite	Sulphur
'Garnet'	Marcasite	Tetrahedrite
Goethite	Microcline	Titanite
Gold	Muscovite var: Sericite	Vanadinite
Gypsum	Orthoclase	'Wad'
Hematite	Platinum	Wulfenite
'Hypersthene'	Pyrite	Zircon
Iridium	Quartz var: Jasper	

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

Lovering, T.S. 1934. *Geology and ore deposits of the Breckenridge mining district, Colorado*. U.S. Geological Survey Professional Paper 176, 64 p.

Ransome, F.L. 1911. *Geology and ore deposits of the Breckenridge district, Colorado*. U.S. Geological Survey Professional Paper 75, 187 p.

Vanderwilt, John W. 1947. *Mineral Resources of Colorado*. Colorado Mineral Resources Board, Denver, Colorado.

www.mindat.org, accessed July 2015. <http://www.mindat.org/loc-3689.html>.

## Summit County

### Chihuahua District

The Chihuahua District includes the area around the town of Chihuahua and Chihuahua Creek - a tributary to the Middle Fork of the Snake River, northeast of Montezuma. The District is listed by Henderson (1926) and Dunn (2003), but is not specifically described in any of the other major references on Summit County.

Among the mines listed in Dunn (2003) as representing the district, the Maid of Orleans Mine (and vein) are described, in Lovering (1935) on the southeast spur of Lenawee Mountain about a mile northeast of the town of Montezuma. The Eliza Jane is listed with the American Eagle Mine (in the Peru Creek Area) in mindat.org and described in Lovering and Goddard (1950).

Silver was discovered in the area called Chihuahua Creek in 1878 (Gilliland, 2006) and the Chihuahua Mining and Milling Company incorporated the following year to process ore from the find. The town of Chihuahua became one of the largest in the area (Eberhart, 1969).

Mines reported in this district (Dunn, 2003; Henderson, 1926) include:

- Chihuahua
- Eliza Jane
- Edith
- [Maid of Orleans; Jumbo \(Little Jumbo\)](#)
- Pickwick
- Queen
- Rothschild
- Winning Card

Minerals listed in this district (mindat.org) include:

[Arsenopyrite](#)  
[Baryte](#)  
[Chalcopyrite](#)  
[Galena](#)

[Geocronite](#)  
[Marcasite](#)  
[Pyrite](#)  
[Quartz](#)

[Semseyite](#)  
[Sphalerite](#)  
[Tetrahedrite](#)

References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

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Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138, p. 241.

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Lovering, T.S. and Goddard, E.N. 1950. Geology and ore deposits of the Front Range, Colorado. U.S. Geological Survey Professional Paper 223.

Patton, H.B. 1909. The Montezuma Mining District of Summit County, CO. Colorado Geological Survey 1st Report 1908.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Summit County

### Congers District (aka Upper Blue River District)

Henderson (1926) lists the Congers District as part of the **Breckenridge District**. An additional reference is Gilliland (2006).

Activity started in 1879 when lead-silver veins in carbonate - said to be like those in Leadville - were discovered. The rush didn't last long and the mining activity soon died out. The geology noted by Singewald (1951) at the Warriors Mark Mine showed Pennsylvanian and Permian sedimentary rocks intruded by a monzonite, forming conformable bodies. As best he could tell at the time, most of the mineralization occurred in fissures in a thin limestone with galena, barite, a pinkish carbonate, limonite, malachite, cerussite, and quartz.

Mines listed in this district (Eberhart, 1969) include:

- Dianthe
- Daisey
- High Line
- Newark City
- Greenwood
- Young America
- Franklin
- Great Republic
- Gray Horse
- Warrior Mark.

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

Singewald, Quentin D. 1951. *Geology and Ore Deposits of the Upper Blue River Area, Summit County, CO*. U.S. Geological Survey Bulletin 970.

## Summit County

### Delaware Flats District

This placer district is included in the larger **Breckenridge District**. It is the area between the lower Blue River and the lower Swan River, adjacent to the Jo Davis District. It probably overlaps with the **Swan River District**. Parker (1974) quotes several publications at the time of the mining which mention the Delaware Flats area. The town of Delaware Flats lay between the Blue and the Swan Rivers, near the mouth of Silver Creek (Eberhart, 1969). Gilliland also notes that the old name of Delaware Flats was Buffalo Flats (Gilliland, 2006). The town housed a post office in 1861.

Parker also quotes an old source that seems to equate Delaware Flats with Buffalo Flats, a highly productive area included here within the **Consolidated Union District**, further indication of the confusion of all the small districts in the area.

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. *Colorado School of Mines Quarterly*, 69 (3).

## Summit County

### French Gulch District

Vanderwilt (1947) included the French Gulch District as part of the larger **Breckenridge District**.

French Gulch empties into the Blue River just north of the main town of Breckenridge, running twelve miles from French Pass, with tributaries Gibson, Negro, and Corkscrew Gulches. This was also originally a placer district, although it runs past the famous Farncomb Hill and its lode mines, including the famous Wire Patch Mine. While miners diligently panned and sluiced the gulch, Harry Farncomb noted vein gold on Farncomb Hill and began buying up land. In the early 1860s, however, his secret leaked out when he plopped a large sack of gold onto a counter in a Denver bank. This precipitated a land war called the "Ten Years War," over the land ownership, a story which is skillfully related in both Eberhart (1969) and Gilliland (2006).

The Wire Patch Mine is described as a metallized breccia zone (Ransome, 1911) where a quartz monzonite porphyry intruded a dark shale that forms the Farncomb Hill. The veins on Farncomb Hill were notably narrow, seldom exceeding a half inch in width. The Wire Patch has long been famous among mineral collectors for its fantastic crystallized gold. Samples are still bought and sold among collectors and populate the better mineral collections at museums around the world.

Mines listed in this district (mindat.org; Dunn, 2003; Eberhart, 1969) include:

- French Gulch
- [Farncomb Hill](#)
- [American Gulch placers](#)
- Boss Mine No.2
- Gold Flake Mine
- Ontario; Key West; Boss; Gold Flake; Fair Fountain; Bondholder
- Wapiti Mine (Wapiti Claims)
- Wire Patch Mine
- Elephant Tunnel
- French Gulch Placers
- Wellington
- Minnie
- Country Boy
- Cincinnati
- American Union
- Governor King
- Queen of the Forest
- Bismarck
- Little Morgan
- Triangle
- Emperor
- Frederick
- Great Lode

Minerals listed in this district (mindat.org) contains entries from the region specified including sub-localities:

[Ankerite?](#)  
[Bismuthinite](#)  
[Chalcopyrite](#)  
[Fluorite](#)

[Galena](#)  
[Gold](#)  
[Kaolinite](#)  
[Pyrite](#)

[Quartz](#)  
[Rhodochrosite](#)  
[Sphalerite](#)

References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Ransome, F.L. 1911. *Geology and ore deposits of the Breckenridge district, Colorado*. U.S. Geological Survey Professional Paper 75, 187 p.

Vanderwilt, John W. 1947. *Mineral Resources of Colorado*. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Summit County

### Frisko District

The Frisko District occurs near the town of Frisko at the northern end of the **Consolidated Tenmile District**. (The Tenmile District is considered by most to include the Frisko, the Kokomo, the Robinson and the Wilkinson Districts.) It was listed by Henderson (1926) and Dunn (2003). Vanderwilt (1947) described the Frisko district as lying within the Tenmile Canyon - a steep-walled canyon in Precambrian gneiss and schist with easily-identifiable veins. He considered the veins generally too small to be productive. The district produced mainly gold, but sphalerite and galena have been found in the dumps.

The town of Frisko was significant in 1880, but withered several years later. Revived somewhat in the 1890s, it spurted in growth again in 1932 (Eberhart, 1969). Gilliland (2006) describes in detail the location of many of the historic mining features around the current town of Frisko.

The District was never a significant producer. The major commodity was gold, trace commodities included zinc, silver, lead, and copper. An additional reference is Hollister (1867).

#### References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

Hollister, Ovando J. 1867. *Mines of Colorado*, reprinted 2010, Nabu Press.

Vanderwilt, John W. 1947. *Mineral Resources of Colorado*. Colorado Mineral Resources Board, Denver, Colorado.

## Summit County

### Green Mountain District (aka Wilkinson District)

Henderson (1926) recognized the **Wilkinson District**, which Vanderwilt (1947) equated to the **Green Mountain District**. This is a small district, which Dunn (2003) places far to the south of Henderson's location, extending into Eagle County. Gold, silver, copper, lead and zinc are present (Dunn, 2003).

Vanderwilt (Ibid) says the district occurs along the Blue River 12 miles south of Kremmling, just east of the Green Mountain Reservoir. Mineralization occurs on the west slope of Green Mountain where a vein occurs at the contact of a quartz monzonite sill with Mancos Shale (and possibly Dakota Quartzite). The discovery was in the mid-twentieth century and it maintained small production.

Mines in this district (Dunn, 2003) include:

Summit County:

- Excelsior Mine

Eagle County:

- Tenmile Valley Lode
- Santa Eulalia
- Combination
- Rosa Lee

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Summit County

### Hoosier Gulch District (aka Hoosier Pass District)

According to Henderson (1926), the Hoosier Gulch District overlaps the **Pollock District**. Lying along the Park-Summit County line, the district consists of historic placer operations at the headwaters of the Blue River (Dunn, 2003). It bounds the **Upper Blue River District** to the north. It is interpreted to include the mines discussed in the paper by Singewald (1951).

Parker (1974) describes the Bemrose and Bostwick Placers as producing from 1871 to 1877 and again sporadically from 1914 to 1922. Singewald (1951) describes the Bemrose Mine, in addition to the productive placer, as consisting of a shaft into mineralized rock consisting of replacement deposits in Pennsylvanian rocks. The mines of Monte Cristo Gulch are also included in the Hoosier Gulch District. The Monte Cristo Mine also produced a small amount of gold and silver from a lode deposit possibly in Dyer Dolomite.

Mines listed in this district (Singewald, 1951; Parker, 1974) include:

- Bemrose
- Bostwick

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Parker, Ben H. Jr. 1974. Gold Placers of Colorado; Colorado School of Mines Quarterly, 69 (3).

Singewald, Q.D. 1951. Geology and Ore Deposits of the Upper Blue River Area, Summit County, Colorado. U.S. Geological Survey Bulletin 970.

## Summit County

### Illinois Gulch

The Illinois Gulch District is included in the **Breckenridge District** by Vanderwilt (1947). Ransome (1911) describes the Illinois Gulch placers as being worked by hand early in the history of the area. A large pit was excavated in the area by hydraulic mining. Parker (1974) notes that a bedrock shaft was started in Illinois Gulch in 1898, but no other mention is made of anything but placer activity.

#### References:

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

[Ransome, F.L. 1911. Geology and ore deposits of the Breckenridge district, Colorado. U.S. Geological Survey Professional Paper 75, 187 p.](#)

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## **Summit County**

### **Jo Davis District**

The Jo Davis is one of the smaller districts that make up the large **Breckenridge District**. It may be what is referred to in Parker (1974) as the "Jeff Davis Patch", although Parker's map (1992, page 47) shows the "Jeff Davis Patch" in French Gulch. (This further exemplifies the confusion in the old names.)

Vanderwilt (1947) places the Jo Davis District near Delaware Flats on the lower Blue River. It probably extended beneath what is currently Dillon Reservoir on the downstream end and to the town of Breckenridge on the upstream end.

#### References:

Parker, Ben H. Jr. 1974. Gold Placers of Colorado. Colorado School of Mines Quarterly, 69 (3).

Parker, Ben H. Jr. 1992. Gold Panning and Placering in Colorado. Colorado Geological Survey Information Series 33.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Summit County

### Kokomo District (aka Tenmile District)

The Kokomo District was first named by Hollister (1867). It was listed by Henderson (1926) as one of the smaller districts comprising the **Consolidated Tenmile District**, which also included the **Wilkinson, Frisco, and Robinson Districts**. On the website [www.mindat.org](http://www.mindat.org), the Kokomo District is considered synonymous with the Tenmile District, extending into Eagle County. Vanderwilt (1947) equates the Kokomo District to the Robinson and Tenmile Districts. Vanderwilt (Ibid) notes that the mines lie mainly west of Kokomo, but that the mineralized area extends to the northeast and to Robinson, five miles to the southwest. Dunn (2003) restricts the district to the area around the town of Kokomo on Tenmile Creek.

Koschmann and Wells (1946) and Koschmann (1947) describes the Kokomo/Tenmile District as lying immediately north of the Continental Divide near the headwaters of Tenmile Creek, with the Tenmile Range on the south (Mosquito Range) and the Gore Range on the north. He says the district was a minor producer of lead, silver, and gold from oxidized ores; later more zinc was recovered from unoxidized ores. Activity waxed and waned and nearly died from 1923 to World War II, but was reinvigorated with the demand for zinc in the war years.

The rocks of the district are Precambrian, and Paleozoic intruded by porphyries of late Cretaceous/Early Tertiary age. The primary ore horizons lie within limestones of Pennsylvanian-Permian age, which occur in thin beds spaced through the stratigraphic sequence (Koschmann, 1947). The ore occurs as one of two types: sulfide replacement deposits in limestone and sulfide veins in siliceous rocks. Most of the production was from the former.

Additional references include Bergendahl and Koschmann (1971), Eberhart (1969), Emmons (1898), and Gilliland (2006).

Mines listed in this district ([mindat.org](http://mindat.org)) include:

- [American Metals Incline](#)
- [Armstrong](#)
- [Axtell Tunnel](#)
- [Belcher](#)
- [Boston Occurrence](#)
- [Brain](#)
- [Breene Mine \(Aftermath; Whitequail; Badger; Milo; Delphose; Colonal Sellers; Wilfley-Kimberly\)](#)
- [Champion](#)
- [Chicago Boy Occurrence](#)
- [Clinton Gulch](#)
- [Cole Peterson](#)
- [Columbia Group](#)
- [Connors Mine](#)
- [Fugitive Mine](#)
- [Golden Crest Occurrence \(Gold Crest\)](#)
- [Grand Union Tunnel Occurrence \(Silver Bowl\)](#)
- [Humbug Occurrence \(Humbug Stock\)](#)
- [Kimberly](#)
- [Little Artist Group](#)
- [Little Chicago Mine](#)
- [Little Rex; Red Cloud Occurrence](#)
- [Littler Tunnel Occurrence](#)
- [Mask Mine](#)
- [Mayflower Gulch](#)
- [McNulty Gulch](#)
- [McNulty Gulch Placers](#)
- [Michigan - Uthoff \(Michigan\)](#)

- Mountain Chief No. 6 Occurrence
- Nettie B
- New Shaft
- Pacific Gulch
- Queen of the West Occurrence
- Raven and Eagle Mine (Quail Group)
- Robinson Mine (Robinson No. 2)
- Selma Mine
- Silver Queen
- Snowbank
- Summit County Times; Reconstruction Occurrence
- Ten Mile Tunnel Occurrence (Tenmile Shaft)
- The American Placer
- Treasury Vault Mine
- Tucker Mountain
- Uthoff
- Victory Tunnel; Lucky Strike; Washington (Victory Mine; Victory-Lucky Strike)
- Walsh Incline
- Weller
- Wheel of Fortune
- Wifley
- Wilson
- Wintergreen Mine

Minerals listed in this district (mindat.org) include:

'Allanite'	Ferrimolybdite	Pyrolusite
Almandine	Galena	Pyrrhotite
Andradite	Gold	Quartz
Anglesite	Hematite	var: Smoky Quartz
Arsenopyrite	'Hornblende'	Rhodonite
Baryte	'Limonite'	Sanidine
Beryl	Magnetite	Siderite
'Biotite'	Marcasite	Silver
Calcite	Molybdenite	Smithsonite
Cerussite	Muscovite	Sphalerite
Chalcopyrite	var: Sericite	Tetradymite
Chlorargyrite	Orthoclase	Tridymite
'Chlorite Group'	Pearceite	'Wad'
Epidote	'Psilomelane'	Wollastonite
'Feldspar Group'	Pyrite	

References:

Bergendahl, M.H. and Koschmann, A.H. 1971. Ore Deposits of the Kokomo-Tenmile District, Colorado. U.S. Geological Survey Professional Paper 652.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

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Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Hollister, Ovando J. 1867. *Mines of Colorado*, reprinted 2010, Nabu Press.

Koschmann, A.H. and Wells, F.G. 1946. F.G. Preliminary report on Kokomo Mining District, Colorado. Colorado Scientific Society Proceedings, vol. 15.

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Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Summit County**

### **Lincoln District (aka Avalanche District)**

While Henderson (1926) clearly defines the geographic extent of the Lincoln District as occupying two sections (1 and 2 in T7S, R77W), there are so many names associated with this area, and with neighboring and overlapping districts being better known, this district is virtually undefined geographically. Henderson (1926) lists both the Lincoln and the Avalanche Districts. He states that the Lincoln District overlaps the **South Swan District**, the **Minnesota District**, and the Avalanche District. He describes the Avalanche District as also called the **Bald Mountain, Carpenter, Lincoln or Swan River District**. In Vanderwilt (1947), neither the Lincoln nor the Avalanche is named specifically.

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Summit County

### Middle Swan District

Considered part of the larger **Breckenridge District**, Henderson (1926) considers this district synonymous with the **Rexford** and **Missouri Districts**.

The Middle Fork of the Swan River comes from the east where, near timberline, the town of Swandyke serviced the old mines (listed below) in the 1890s. An additional reference is Eberhart (1969).

Mines in this district (Gilliland, 2006) include:

- Brilent Mine
- Uncle Sam Mine
- Three Kings Mine
- Pompeii Mine
- Isabella Mine.

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

## **Summit County**

### **Minnesota District**

The Minnesota District is within the **Breckenridge District**, but poorly defined. In mindat.org, this district is said to overlap **Lincoln, Bevan** and **McBarnes Districts**. In Henderson (1926) it is said to overlap the **Bevan** and **Utah Districts**. Refer to the Lincoln District.

Minerals identified in the Minnesota District include:

Galena

Gold

Pyrite

Silver

#### References:

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## Summit County

### Montezuma District

In Vanderwilt (1947), the mineralized area that comprises the Montezuma District extends two to five miles from the town of Montezuma east to the Continental Divide. With prospectors concentrating on gold deposits, silver was not thought of until the first silver lode in Colorado was discovered in 1864. A prospector named Coley came down Georgia Pass from South Park, headed up the North Fork of the Swan River (in present day Summit County) to Glacier Peak and there made his silver discovery. More prospectors followed on the news and silver was discovered here and in the Argentine District. The Gus Belmont was the first recorded lode in Colorado (Lovering, 1935).

Not much occurred in the Summit County area until 1879 when the villages of Chihuahua and Decatur arose in the valley of Peru Creek northeast of Montezuma. Montezuma itself had been settled in 1865 and has been there ever since. While the area was first worked in the early 1860s, it was always inhibited by its severe climate (at 10,000 feet) and difficult access.

Patton (1909) found the mineralization consisted of two vein systems. While lead, zinc, and some copper is present, most of the value was always in gold and silver. Silver was mainly in the form of *ruby silver* (proustite -  $\text{Ag}_3\text{AsS}_3$  or pyrargyrite -  $\text{Ag}_3\text{SbS}_3$ ), *brittle silver* (stephanite -  $\text{Ag}_5\text{SbS}_4$ ) and native *wire silver* (simply metallic native silver). Other silver minerals in the district are listed below.

Eberhart (1969) and Gilliland (2006) provide interesting stories and anecdotes about the town of Montezuma and other towns and camps within the district. Additional references are Goddard (1947) and Lovering and Goddard (1950).

Mines listed in this district (mindat.org and Lovering, 1935) include:

- [Adrian Shaft](#)
- Adder\*
- [Aladdin](#)
- Altoona\*
- American Eagle (Eliza Jane)\*
- [Aorta No. 1](#)
- [Arapaho](#)
- [Atlantic \(Sarisfield; Sarsfield; Bullion and Yellow Jacket; Mozart\)](#)
- Baker\*
- Baltic and Revenue\*
- [Bell \(California; Meteor; Wing\)](#)
- Belmont (Gus Belmont; Johnson)\* - first recorded lode in Colorado
- Blanche\*
- [Braganza](#)
- Brittle Silver\*
- Buda\*
- Buena Vista\*
- Bullion\*
- Buster\*
- [Bullton Extension Occurrence](#)
- Cable\*
- [California Bell Mine](#)
- Carrie\*
- [Cashier Mine \(Champion\)](#)
- Chataugue\*
- Chrysolite\*
- Clarion\*
- [Climax Mine \(Climax Lode\)](#)
- Coley\*
- [Collier Mountain](#)

- Commonwealth\*
- Congress\*
- Copeland; Garrett; Tangle Lodes
- Copenhagen\*
- Daisy G. Pooley
- Delaware\*
- Don Pedro\*
- Elise Mine
- Equity Mine
- Erickson\*
- Fisherman\*
- Florence Mine
- Fred & Will Mine
- Glendale (Grand Trunk, Treasure Vault, Israel Williams)\*
- Gold Belt and Hamill\*
- Hancock\*
- Hannibal
- Harold Roberts tunnel
- Harrison\*
- Herman\*
- Hi Ho Mine
- Hunkidori\*
- Ida Belle\*
- Independence\*
- Iowa\*
- Jerry\*, Equity\*, Denver\*, Celtic\*
- Jones Gulch Claims
- Josephine\*
- Jumbo\*
- Kelso\*
- Kistler Mine
- Kitty Owsley\*
- Lancaster\*
- Lower Chataqua Mine
- Lucky Baldwin; Blanche
- Maid of Orleans; Jumbo (Little Jumbo)
- Mark Twait and St Elmo\*
- Marlin; More Work (Roberta; Martin Mine)
- Missouri\*
- Modoc Mine
- Mohawk\*
- Montezuma
- Morgan (Morgen Manganese Prospect)
- New York and Aladdin's Lamp\*
- Old Settler; Toledo Tunnel; Fisherman (Old Settler and Waterloo; Colorado and Toledo Tunnel)\*
- Old Timer\*
- Orphan Boy\*
- Paymaster\*
- Pennsylvania\*
- Peruvian and Shoe Basin\*
- Pilot
- Pinnacle Occurrence
- Poor Boy Mine
- Potosi\*
- Preston Tunnel
- Quail\*
- Queen of the West\*
- Radical
- Rainbow\*
- Rainbow Occurrence
- Red Jacket\* (Star of the West; Star of the West No. 2; Mohawk; Iowa)
- Roberta\*
- Rochester Queen\* (Arrestra Queen)
- Rothschild (Minerou)\*
- Royal Tiger\*
- Saints John Mine (Florado; Saint John Mine)
- Saints Johns Cirque
- Santiago-commonwealth-Centennial\*
- Sarsefield\*
- Silver Cord Mine (Rainbow)\*
- Silver King\*
- Silver Wave\*
- Snake River
  - Burke Martin Mine (Silver Wing)
  - Chatauqua Mine
  - General Teller Lode
  - Slide No. 1 & 2 Claims
  - Uauneita Mine
- Snake River Bog Iron (Iron King)
- St Elmo
- Star of the West No. 2\*
- Stevens\*
- Teller Mountain
  - Montague claim
  - Star of the West Mine\*
  - Unnamed vein
- Tiger, Tiger Extension, St Cloud and Windsor\*
- Tip Top Mine

- Toledo\*
- [Upper Chatauqua Mine](#)
- Vidler\*
- Waldorf, Paymaster and Commonwealth\*
- Washington\*
- [Waterloo Mine](#)
- 
- Waukegan\*
- Whale\*
- White Swan\*
- [Wild Irishman; Altoona; Herman Occurrence](#)
- [Wombat Mine](#)
- Yorkshire\*

(Note: \* indicates mine with a detailed description in Lovering (1935).

Minerals listed in this district include:

<a href="#">Acanthite</a>	<a href="#">Galena</a>	<a href="#">Proustite</a>
<a href="#">Anglesite</a>	<a href="#">Galenobismutite</a>	<a href="#">Pyrargyrite</a>
<a href="#">Anhydrite</a>	<a href="#">Geocronite ?</a>	<a href="#">Pyrite</a>
<a href="#">Ankerite</a>	<a href="#">Goethite</a>	<a href="#">Pyromorphite</a>
<a href="#">Arsenopyrite</a>	<a href="#">Gold</a>	<a href="#">Quartz</a>
<a href="#">Baryte</a>	<a href="#">Gypsum</a>	<a href="#">Rhodochrosite</a>
<a href="#">Beudantite</a>	<a href="#">Jalpaite</a>	<a href="#">'Schirmerite'</a>
<a href="#">Bismuthinite</a>	<a href="#">Jarosite</a>	<a href="#">Semseyite</a>
<a href="#">Bornite</a>	<a href="#">Jordanite</a>	<a href="#">Siderite var: Manganoan</a>
<a href="#">Boulangerite</a>	<a href="#">Lillianite</a>	<a href="#">Siderite</a>
<a href="#">Bournonite</a>	<a href="#">'Limonite'</a>	<a href="#">Silver</a>
<a href="#">Bromargyrite</a>	<a href="#">Marcasite</a>	<a href="#">Sphalerite</a>
<a href="#">Chalcanthite</a>	<a href="#">Matildite</a>	<a href="#">Stephanite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Molybdenite</a>	<a href="#">Stromeyerite</a>
<a href="#">Chlorargyrite</a>	<a href="#">Opal</a>	<a href="#">Tennantite</a>
<a href="#">Dolomite</a>	<a href="#">Ourayite</a>	<a href="#">Tetrahedrite</a>
<a href="#">Eskimoite</a>	<a href="#">Pavonite</a>	<a href="#">'Turgite'</a>
<a href="#">Fizélyite ?</a>	<a href="#">Pearceite</a>	
<a href="#">Freibergite</a>	<a href="#">Polybasite</a>	

References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*; Alpenrose Press, Silverthorne, Colorado.

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Lovering, T.S. 1935. Geology and Ore Deposits of the Montezuma Quadrangle, Colorado. U.S. Geological Survey Professional Paper 178, p. 86-87.

Lovering, T.S. and Goddard, E.N. 1950. Geology and Ore Deposits of the Front Range of Colorado. U.S. Geological Survey Professional Paper 223.

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Vanderwilt, J.W. ed. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Summit County**

### **Pollock District (aka Pollack District; aka Pollard District)**

The Pollock District is named in Henderson (1926) and Dunn (2003). There is no specific information on the district or its mines, as those seem to be included in other nearby districts by different authors. Therefore, we assume the mineralization and the mines of the Pollock District are included either in the Tenmile District (Koschmann, 1947) (and possibly its sub-districts) and the Upper Blue River District (Singewald, 1951).

#### References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Koschmann, A.H. and Wells, F.G. 1946. Preliminary report on Kokomo Mining District, Colorado. Colorado Scientific Society Proceedings, vol. 15.

Koschmann, A.H. 1947. The Kokomo (Tenmile) Mining District, Summit County *in* Vanderwilt, J.W. ed. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

Singewald, Q.D. 1951. Geology and Ore Deposits of the Upper Blue River Area, Summit County, Colorado. U.S. Geological Survey Bulletin 970.

## Summit County

### Robinson District

There is no clear boundary between the Robinson District and the **Kokomo District**. The Robinson District was included in the **Consolidated Tenmile District** by both Henderson (1926) and Vanderwilt (1947). Bergendahl and Koschmann (1971) didn't recognize the Robinson District, but included the entire area south of Copper Mountain in the **Kokomo-Tenmile District**. For our purposes, we will consider the Robinson in general, to lie to the south of the town of Kokomo, including the former townsite of Robinson, and to extend to Fremont Pass.

Gold was first discovered in McNulty Gulch by prospectors pushing over Fremont Pass from Leadville (Gilliland, 2006). The finds included the Justice Lode between McNulty and Gilpin Gulches. The town of Robinson was founded by George Robinson and was a large population center for a short time, the home of large milling and smelting capacity, with some 2000 occupants in 1880-81 (Eberhart, 1969).

The original Robinson holdings date back to late 1878. Mineralization occurred in limestone beds of the Minturn Formation, where replacement deposits created rich silver-bearing ore in three separate beds. Bergendahl and Koschmann (Ibid) quote an 1881 article in Engineering and Mining Journal stating that one of the ore bodies averaged 66.7 ounces silver per ton, but some assays exceeded 400 ounces per ton. Additional information can be found in the 1942 USGS map on the Tenmile Mining District, which has been superseded by Bergendahl and Koschmann (1971).

Most of the old Robinson District is now buried beneath tailings from the giant Climax Mine on Fremont Pass.

Mines listed in this district (Gilliland, 2006) include:

- Robinson Consolidated (included El dorado, Wilson, Felicia Grace and Champion/New York)
- Seventy-eight
- G.B. Robinson
- Smuggler
- Undine
- Grand Union
- Pirate
- Little Giant
- Big Giant, Checkmate
- Rhone
- Ten Mil

Minerals listed in the district (Bergendahl and Koschmann, 1971) include:

Pyrite	Sphalerite	Pyrrhotite	Marcasite
Galena	Chalcopyrite	Arsenopyrite	Molybdenite
Tetrahedrite	Enargite	Pearcite (?)	Gold
Magnetite	Hematite	Fluorite	Rhodochrosite
Covellite	Cerussite	Smithsonite	Anglesite
Limonite	Pyrolusite	Psilomelane	Silver
Malachite	Azurite		

References:

Bergendahl, M.H. and Koschmann, Albert H. 1971. Ore Deposits of the Kokomo-Tenmile District, Colorado; U.S. Geological Survey Professional Paper 652.

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. Mining in Colorado, a history of discovery, development and production. U.S. Geological Survey Professional Paper 138.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

## Summit County

### Snake River District

According to Dunn (2003), the Snake River District is generally synonymous with the **Montezuma District**, as indicated by Vanderwilt (1947). The Snake River District is listed under the Montezuma Area in mindat.org, separate from the Montezuma District (Snake River District).

The Lower Chataqua Mine, located on the website us-mining.com as a Breckenridge area copper and gold mine, is identified by mindat.org as lying within the Snake River District, is several miles south of the town of Montezuma.

Mines listed in this district (mindat.org) include:

- [Burke Martin Mine \(Silver Wing\)](#)
- [Chataqua Mine](#)
- [General Teller Lode](#)
- [Slide No. 1 & 2 Claims](#)
- [Uauneita Mine](#)

Mineral listed in this district (mindat.org and Lovering, 1935) include:

<a href="#">Acanthite</a>	<a href="#">Galena</a>	<a href="#">Sphalerite</a>
<a href="#">Baryte</a>	<a href="#">Pearceite</a>	<a href="#">Stephanite</a>
<a href="#">Chalcopyrite</a>	<a href="#">Pyrargyrite</a>	<a href="#">Tetrahedrite</a>

(A large list of minerals is found in Lovering (Ibid) which are included in the description of the Montezuma District. Because the Snake River District is described in Lovering's paper, and the mineral occurrences are not separated out, this list is just those on mindat.org.)

References:

Dunn, Lisa. 2003. Colorado Mining Districts: A Reference. Colorado School of Mines, Golden, Colorado.

Lovering, T.S. 1935. Geology and Ore Deposits of the Montezuma Quadrangle, Colorado. U.S. Geological Survey Professional Paper 178, 119 P.

Vanderwilt, John W. 1947. Mineral Resources of Colorado. Colorado Mineral Resources Board, Denver, Colorado.

[www.mindat.org](http://www.mindat.org), accessed July 2015.

[www.us-mining.com](http://www.us-mining.com), accessed July 2015.

## Summit County

### South Swan District

Recognized by Henderson (1926) and is considered part of the large **Breckenridge District**. Dunn (2003) notes it as a rather small district, occupying sections 31, 32, and 33 of T6S, R73W. The district is along the South Fork of the Swan River, near Georgia Pass, where the first prospectors came across the Continental Divide and into present-day Summit County. It butts against the Georgia Pass District (which is generally not considered to be part of the Breckenridge District).

When a party of prospectors from Georgia pushed across "the Snowy Range" (as they called it) from South Park in May 1860, they crossed what they called Georgia Pass, down Georgia Gulch, to the South Fork of the Swan River. There, on the north side of Farncomb Hill, in Georgia Gulch, a very rich strike was made. Gilliland (2006) quotes totals of \$10,000 made in the summer season, with a party of 4 miners producing \$300 to \$500 in gold per day (at a time when the standard wage was less than \$2/day.) The rich placer gravels were soon exhausted, so lode mining took over. After that, hydraulic operations washed down the deeper gravels.

Eberhart (1969) describes the town of Parkville - founded in 1859 - as the largest in the area with as many as 10,000 residents at its apex. Residents used this little town as a commercial center for activity in the Swan River, Georgia Gulch and Georgia Pass areas. It was eventually buried under the tailings from the hydraulic operations.

#### References:

Dunn, Lisa. 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*. Alpenrose Press, Silverthorne, Colorado.

Henderson, C.W. 1926. *Mining in Colorado, a history of discovery, development and production*. U.S. Geological Survey Professional Paper 138.

## Summit County

### Swan River District

This district is part of the large **Breckenridge District**. It runs the length of the Swan River upstream to the confluence of the Middle Swan. The best descriptions of the area are found in two books on the history of the area, by Eberhart (1969) and Gilliland (2006). Gilliland (2006) describes the locations along the Swan River. The river was extensively dredged. Very rich placer mining took place at Galena Gulch, where the North American Gold Dredging Company ran a large operation down to bedrock at the turn of the 20th century.

According to Gilliland, the next gulch upstream - Summit Gulch - was the site of the Hamilton Mine, operating from 1887 until 1910, with a ten-stamp mill, a tramway, flumes and its own reservoir. Swan City was located at the mouth of Brown's Gulch, with a population of 200 to 300 (Eberhart, 1969) during the 1880s. The DXL, New York, and Summit Mines were located there (Gilliland, *Ibid*). Up the North Fork of the Swan River were found the Rexford, the Rochester King (Arrastre King), formed from the original Black Swan, White Swan, Sweet William, Santa Claus and Ben Franklin claims.

#### References:

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Fourth, revised edition. Swallow Press, Athens, Ohio.

Gilliland, Mary Ellen. 2006. *Summit: A Gold Rush History of Summit County, Colorado*; Alpenrose Press, Silverthorne, Colorado.

## Summit County

### Tenmile District

The Tenmile District was first identified by Hollister (1867) and described as all the sections drained by Tenmile Creek. It was listed by Henderson (1926) as the Consolidated Tenmile, and he included within it the **Wilkinson, Frisco, Robinson** and **Kokomo Districts**. On the website [www.mindat.org](http://www.mindat.org), the Tenmile District is considered synonymous with the Kokomo District, extending into Eagle County. Vanderwilt (1947) equates the Tenmile District to the Robinson and Kokomo Districts. Vanderwilt (Ibid) notes that the mines are mainly west of Kokomo, but extend to the northeast and to Robinson, five miles to the southwest. Dunn (2003) describes the district as lying mainly in Summit County, but being large enough to extend into Eagle, Lake, and Park Counties. Two additional references are Eberhart (1969) and Gilliland (2006).

Koschmann and Wells (1946) and Koschmann (1947) describes the District as lying immediately north of the Continental Divide near the headwaters of Tenmile Creek, with the Tenmile Range on the south (Mosquito Range) and the Gore Range on the north. He says the district was a minor producer of lead, silver, and gold from oxidized ores; later more zinc was recovered from unoxidized ores. Activity waxed and waned and nearly died from 1923 to World War II, but was reinvigorated with the demand for zinc in the war years.

The rocks of the district are Precambrian, and Paleozoic intruded by porphyries of late Cretaceous/Early Tertiary age. The primary ore horizons lie within limestones of Pennsylvanian-Permian age, which occur in thin beds spaced through the stratigraphic sequence (Koschmann, 1947). The ore occurs as one of two types: sulfide replacement deposits in limestone and sulfide veins in siliceous rocks. Most of the production was from the former.

Mines listed in this district ([mindat.org](http://mindat.org)) include:

- [American Metals Incline](#)
- [Armstrong](#)
- [Axtell Tunnel](#)
- [Belcher](#)
- [Boston Occurrence](#)
- [Brain](#)
- [Breene Mine \(Aftermath; Whitequail; Badger; Milo; Delphose; Colonal Sellers; Wilfley-Kimberly\)](#)
  - [Colonel Sellers Mine](#)
- [Champion](#)
- [Chicago Boy Occurrence](#)
- [Clinton Gulch](#)
- [Cole Peterson](#)
- [Columbia Group](#)
- [Connors Mine](#)
- [Copper Mountain \(Cooper Mountain\)](#)
- [D & G Mine](#)
- [Delphos](#)
- [East Shaft; Eldorado; Felicia Grace \(Robinson Consolidated\)](#)
- [Eden Treasure; Grand View; Pauline Occurrence](#)
- [Felica - Grace Mine](#)
- [Follette Placer](#)
- [Free America Occurrence](#)
- [Fugitive Mine](#)
- [Golden Crest Occurrence \(Gold Crest\)](#)
- [Grand Union Tunnel Occurrence \(Silver Bowl\)](#)
- [Humbug Occurrence \(Humbug Stock\)](#)

- Jacque Mountain: DR &G Railroad tunnel
- Kimberly
- Little Artist Group
- Little Chicago Mine
- Little Rex; Red Cloud Occurrence
- Littler Tunnel Occurrence
- Mask Mine
- Mayflower Gulch
- McNulty Gulch
- McNulty Gulch Placers
- Michigan - Uthoff (Michigan)
- Mountain Chief No. 6 Occurrence
- Nettie B
- New Shaft
- Pacific Gulch
- Queen of the West Occurrence
  - Enterprise Shaft
  - Mayflower Tunnel
- Raven and Eagle Mine (Quail Group)
- Robinson Mine (Robinson No. 2)
- Selma Mine
- Silver Queen
- Snowbank
- Summit County Times; Reconstruction Occurrence
- Ten Mile Tunnel Occurrence (Tenmile Shaft)
- The American Placer
- Treasury Vault Mine
- Tucker Mountain
- Uthoff
- Victory Tunnel; Lucky Strike; Washington (Victory Mine; Victory-Lucky Strike)
- Walsh Incline
- Weller
- Wheel of Fortune
- Wifley
- Wilson
- Wintergreen Mine

Minerals listed in this district (mindat.org) include:

'Allanite'	'Feldspar Group'	Pyrite
Almandine	Ferrimolybdite	Pyrolusite
Andradite	Galena	Pyrrhotite
Anglesite	Gold	Quartz var: Smoky Quartz
Arsenopyrite	Hematite	Rhodonite
Baryte	'Hornblende'	Sanidine
Beryl	'Limonite'	Siderite
'Biotite'	Magnetite	Silver
Calcite	Marcasite	Smithsonite
Cerussite	Molybdenite	Sphalerite
Chalcopyrite	Muscovite var: Sericite	Tetradymite
Chlorargyrite	Orthoclase	Tridymite
'Chlorite Group'	Pearceite	'Wad'
Epidote	'Psilomelane'	Wollastonite

References:

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[www.mindat.org](http://www.mindat.org), accessed July 2015.

## **Summit County**

### **Union District (aka Consolidated Union District)**

The Consolidated Union District is listed by Henderson (1926), although he provides no geographical reference. The district includes Gold Run Gulch downstream to Delaware Flats (and possibly to the Swan River). Parker (1974) describes it as including the very rich placer areas of Gold Run and Buffalo Flats. The former is said to have yielded 96 pounds of gold in its first season of work by the Weaver brothers, who first discovered it. Supposedly, the Buffalo Flats area yielded even more.

Note that the old reports imply that Buffalo Flats refers to the Delaware Flats area, which is listed here as a separate district (Eberhart, 1969; Gilliland, 2006).

Mines listed in the district (Dunn, 2003) include:

- Country Boy
- Gold Dust
- Puzzle
- Buffalo Flats

#### References:

Dunn, Lisa, 2003. *Colorado Mining Districts: A Reference*. Colorado School of Mines, Golden, Colorado.

Eberhart, Perry. 1969. *Guide to Colorado Ghost Towns and Mining Camps*. Swallow Press, Athens, Ohio.

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## Summit County

### Upper Blue River District

The Upper Blue River District is interpreted as encompassing the area of the upper Blue River, bounded on the south by the **Hoosier Gulch District**, on the west by the **Pollock District**, and extending downstream on the Blue River nearly to the town of Breckenridge, overlapping with the **Congers District** of the greater **Breckenridge District** to the north. Dunn (2003) describes the district as being centered on the common corner of four township blocks. Singewald (1951) describes the district as occupying 85 square miles. Vanderwilt (1947) describes it as adjoining the **Montgomery District** of adjacent Park County and states that it has not traditionally been listed as a district. So clearly the boundaries of the district are poorly defined, but the current configuration serves to encompass numerous small mines tapping widespread vein systems in the rock.

Singewald (1947) pointed out that the severe terrain of the district makes exploration and mining difficult. Many mines are "perched on cliffs that can be ascended only by aerial tramway or by foot". Ore deposits consist of veins - both fissure and replacement - in the Sawatch Quartzite, stratabound replacements and replacement veins in the Manitou and Dyer Dolomites and other calcareous beds, and as contact metamorphic deposits in the Morrison formation. Additional stringers are found in quartzite and in the intrusive porphyries themselves.

Mines listed in the district (mindat.org; Singewald, 1951) include:

- Arctic
- Briar Rose
- Brooks-Snider
- Diamond Jack
- El Dorado
- [Fredonia](#)
- Governor
- [Hunter Boy; Derilla](#)
- Iron Mask
- Last Dollar
- Ling
- Little Fool
- Monte Cristo
- Mountain Pride
- Senator
- [Seven-Thirty](#)
- Solitary and Big Bonanza (listed by mindat.org in Pollock District)
- [Twin Sisters](#)
- Vanderbilt
- [Warriors Mark](#)

Minerals listed in the district (Singewald, 1951) include:

Barite	Hematite	Pyrite
Bismuthinite	Huebnerite	Pyrrhotite
Chalcopyrite	Limonite	Silver
Galena	Magnetite	Sphalerite
Gold	Molybdenite	
Tremolite		

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## Summit County

### West Argentine District (aka Argentine District; aka Peru District)

The West Argentine District (a.k.a. Peru-Argentine District) crosses the Continental Divide from northeast Summit County into adjacent Clear Creek. Vanderwilt (1947) considers the Peru District of Summit County to be synonymous with the **Montezuma District** (refer to the Argentine District in Clear Creek County for further information). The West Argentine District is considered by Lovering and Goddard (1950) as that part of the Argentine District west of the Continental Divide.

Lovering and Goddard (Ibid) describe the district as a narrow belt (less than a mile in width) trending south-southwest from the Divide into Summit County. They account Pennsylvania, Delaware, Peruvian, Santiago, and Independence veins as making up the bulk of the district's output. Lead, silver, and gold were the principle constituents of the ores, but there was some zinc and copper.

The geology is characterized by Silver Plume Granite and Tertiary quartz monzonite, rhyolite, and dacite intrusions in the Idaho Springs Formation. Gold occurs in polymetallic veins of sphalerite-galena-pyrite-chalcocite + silver minerals (Lovering & Goddard, Ibid).

Mines listed in the district (mindat.org; Lovering and Goddard, 1950) include:

- Baker Mine
- Congress; Rothschild; Pennsylvania (Minerou Tunnel)
- Double Header Lode
- Josephine Mine
- Peru Creek Area
  - Allen - Emory Mine
  - Allen Emory
  - Anderson Tunnel
  - Buda
  - Buena Vista Mine
  - Callo Mine & Tunnel
  - Decatur Mines
  - Hidden Treasure Group
  - Louisiana Lode
  - Minikus; Olson and Associates Site Claim
  - National Treasury Mine
- Orphan Boy
- Paymaster; Peruvian; Shoe Basin Tunnel
- Quail Mine
- Revenue; Brittle Silver; Delaware (Baltic and Revenue)
- Rose Mine
- Ruby Mountain
- Sarisfield
- Silver Spoon Mine
- Vidler Tunnels West; Queen of the West
- Whale Lode (Alhambra Mill Site; Silver Falls Lode; T-Boy Tunnel Site)
- Winning Card; American Eagle (Eliza Jane)
- Stephens Mine

Minerals listed in this district (mindat.org) include:

Acanthite  
Alabandite

Ankerite  
Azurite

Baryte  
Beudantite

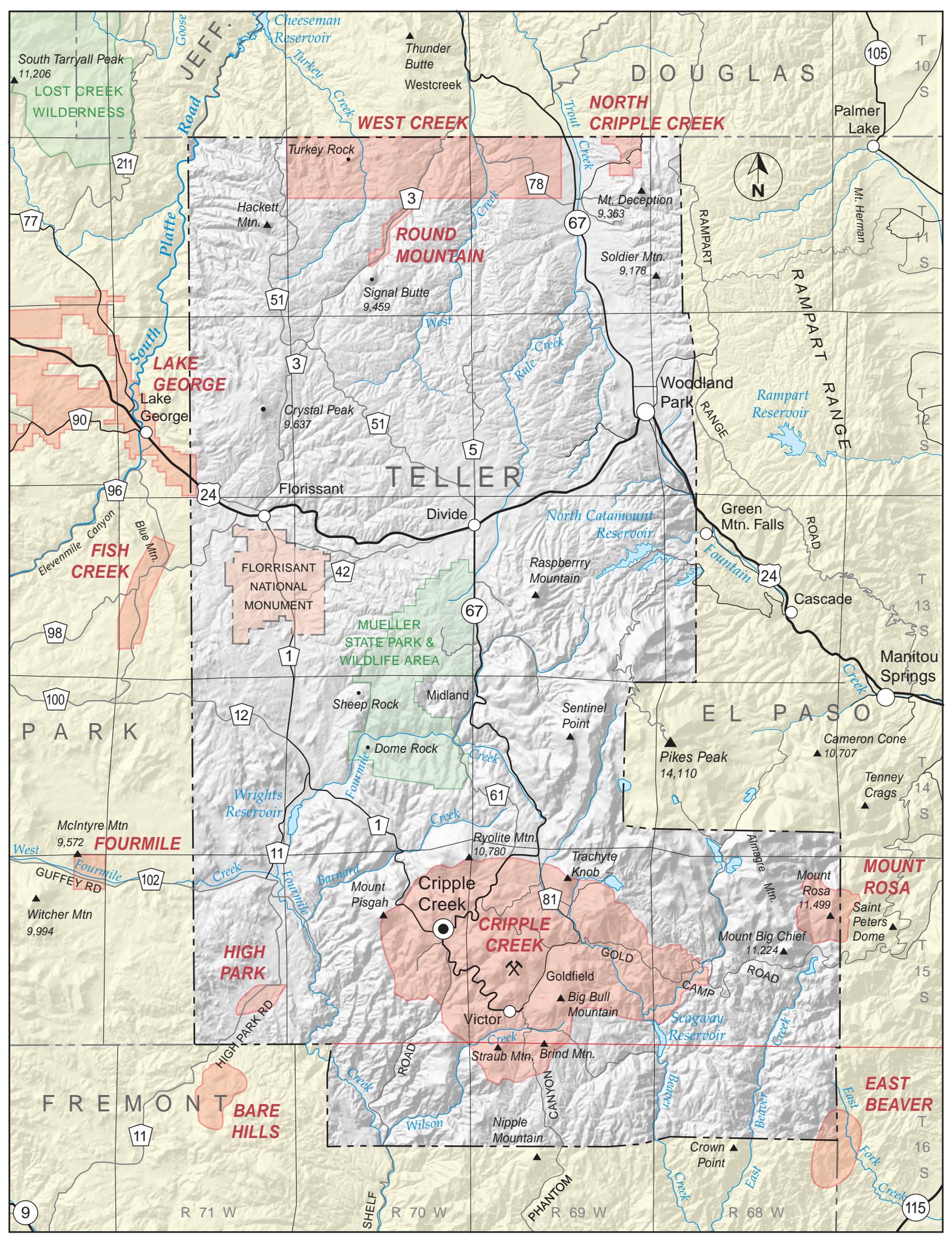
'Biotite'	Galena	Rhodochrosite
Calcite	var: Argentiferous Galena	Sillimanite
Cerussite	Gold	Silver
Chalcanthite	Jalpaite	Sphalerite
Chalcopyrite	'Limonite'	Stephanite
Chlorargyrite	Malachite	Stromeyerite
Copper	Matildite	Sulphur
Covellite	Muscovite var: Sericite	Tetrahedrite
Fluorite	Pyrite	'Wad'
Freibergite	Quartz	'Wolframite'

References:

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[www.mindat.org](http://www.mindat.org), accessed July 2015.



South Tarryall Peak  
11,206  
LOST CREEK  
WILDERNESS

LAKE  
GEORGE  
Lake  
George

FISH  
CREEK

FOURMILE  
McIntyre Mtn  
9,572  
Witcher Mtn  
9,994

BARE  
HILLS

WEST CREEK

ROUND  
MOUNTAIN

FLORISSANT  
NATIONAL  
MONUMENT

HIGH  
PARK

BARE  
HILLS

DOUGLAS  
NORTH  
CRIPPLE CREEK

ROUND  
MOUNTAIN

MUELLER  
STATE PARK &  
WILDLIFE AREA

CRIPPLE  
CREEK

CRIPPLE  
CREEK

DOUGLAS  
Palmer Lake

TELLER  
Woodland  
Park

EL PASO  
Manitou Springs

MOUNT  
ROSA

EAST  
BEAVER

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**Editor's Note:** *Detailed descriptions of the historical mining districts in Teller County are not available as of the online publication date  
11 November 2020*