

# 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.