

Extenuate Mine
Site 5ST1165

Historically, the Extenuate Mine was one of the Breckenridge area's most important and extensive operations. The site, around 10,050 feet in elevation, lies on the north side of French Gulch in the McKay Mining District. The steep wall of French Gulch, vegetated with a second-growth fir and lodgepole pine forest, rises steeply to the north, and the gently sloped floor of the gulch sprawls outward to the south. The gulch floor features stands of lodgepole pines amid open meadow, which forms a buffer between the site and both Wellington Road and French Creek. In general, the site retains archaeological and some engineering integrity, and it is an important contributing element of French Gulch's historic landscape.

Extenuate Mine Site History

For its first twenty years, the Extenuate Mine was a small, poorly developed operation. During the mid-1870s, prospectors perused the north side of French Gulch and discovered a collection of mineralized veins near the top. At that time, the prospectors were unaware that the veins, which carried gold, silver, and industrial metals, were components of a system that extended northeast for a length of around one mile.

Several individuals staked a series of claims between Prospect and Mineral hills that included the X 10 U 8, X 10 U 8 No.2, Orthodox No.1 through No.3, Colorado, and Silver Head. To fulfill the requirements of retaining title to the claims, the prospectors excavated several shallow shafts and open-cuts then did little more with the properties. Suspecting that the veins would yield ore upon formal development, A.G. Hoopes and John A. Willoughby, who was a local investor, purchased the properties.

Probably because the partners lacked capital, they only engaged in minor development and produced small volumes of ore. Whereas organized mining companies usually developed veins at depth, Hoopes and Willoughby extracted ore from near the surfaces of their claims. Further, the work was intermittent at best from around 1883 through 1893. Despite this, the shallow developments ultimately yielded a handsome \$200,000 before the owners suspended operations because of litigation.¹

During the late 1890s, it appears that Hoopes and Willoughby sold their claims to Peter S. Cummings, Robert Foote, Samuel W. Jones, and John Mairs. Foote was a local investor who owned the Denver Hotel in Breckenridge and shares of numerous mines, including the Ella, which adjoined the Extenuate on the east. Jones was a lawyer who invested in mines throughout Summit County, and he owned the Silver Head claim, which was once part of the Extenuate Group. Mairs, another local investor, owned and operated the Wellington Mine, which lay a short distance west of the Extenuate.

In 1892, these four capitalists acquired claims on the north side of French Gulch and consolidated them as the Wellington Mine. Through the rest of the 1890s, Foote et al. continued to add claims to their operation and realized that the Extenuate Group separated their growing consolidation. Either in the middle or end of the decade, the investors purchased the group and incorporated it into the Wellington operation.

In 1901, Foote et al. organized the Colorado & Wyoming Development Company to formally work the massive assemblage of claims, and, at first, used the Oro Tunnel as their

¹ *Colorado Mining Directory*, 1883:884; "General Mining News" *MIT* 3/16/93; "Mining News" *MSP* 8/4/06 p132; "Summit County, Colorado" *MIT* 8/20/91 p90.

haulage tunnel into the vein system. But by 1902, it became obvious that a second haulage tunnel was necessary to develop the northeast end of the vein system, and they chose the Extenuate ground as the site.

Within the year, Colorado & Wyoming began driving the Extenuate Tunnel northwesterly. As the company hoped, miners blundered into several rich ore formations en route to the main vein system. By 1904, the tunnel was complete and served as a conduit for the production of at least forty tons of ore per day. Within a short time, however, various property owners and company officials ran into a disagreement that mushroomed into litigation that lasted for two years.²

In 1906, a group of Kansas City capitalists organized the Wellington Mines Company to purchase the Wellington consolidation from the disagreeable owners. The company, managed by the experienced R.M. Henderson, resumed production from both the Oro and Extenuate tunnels and shipped the ore to smelters in Leadville and Canon City. To save treatment costs, the company built a mill on the Wellington property in 1908 then, in the following year, graded an electric railroad over to the Extenuate Tunnel to haul ore to the mill.³

With the service of the baby-gauge rail line, the Extenuate Tunnel remained the principal haulageway into the northeastern portion of the vein system for years. After around 1910, archival sources make few further mentions of the tunnel because their coverage shifted to the Wellington property. The Extenuate Tunnel was used until around 1922, when activity contracted to the Oro Tunnel and Wellington Mill.

² *Bureau of Mines Scrapbook* V.36:15, 19, 36; Dougherty, 1980:96; Lovering, 1934:46; "Mining News" *EMJ* 10/13/04 p607.

³ "Current News" *Mining Science* 3/3/10 p211; Dougherty, 1980:96; "Mining News" *EMJ* 1/19/07 p160; Weed, 1916:1212.

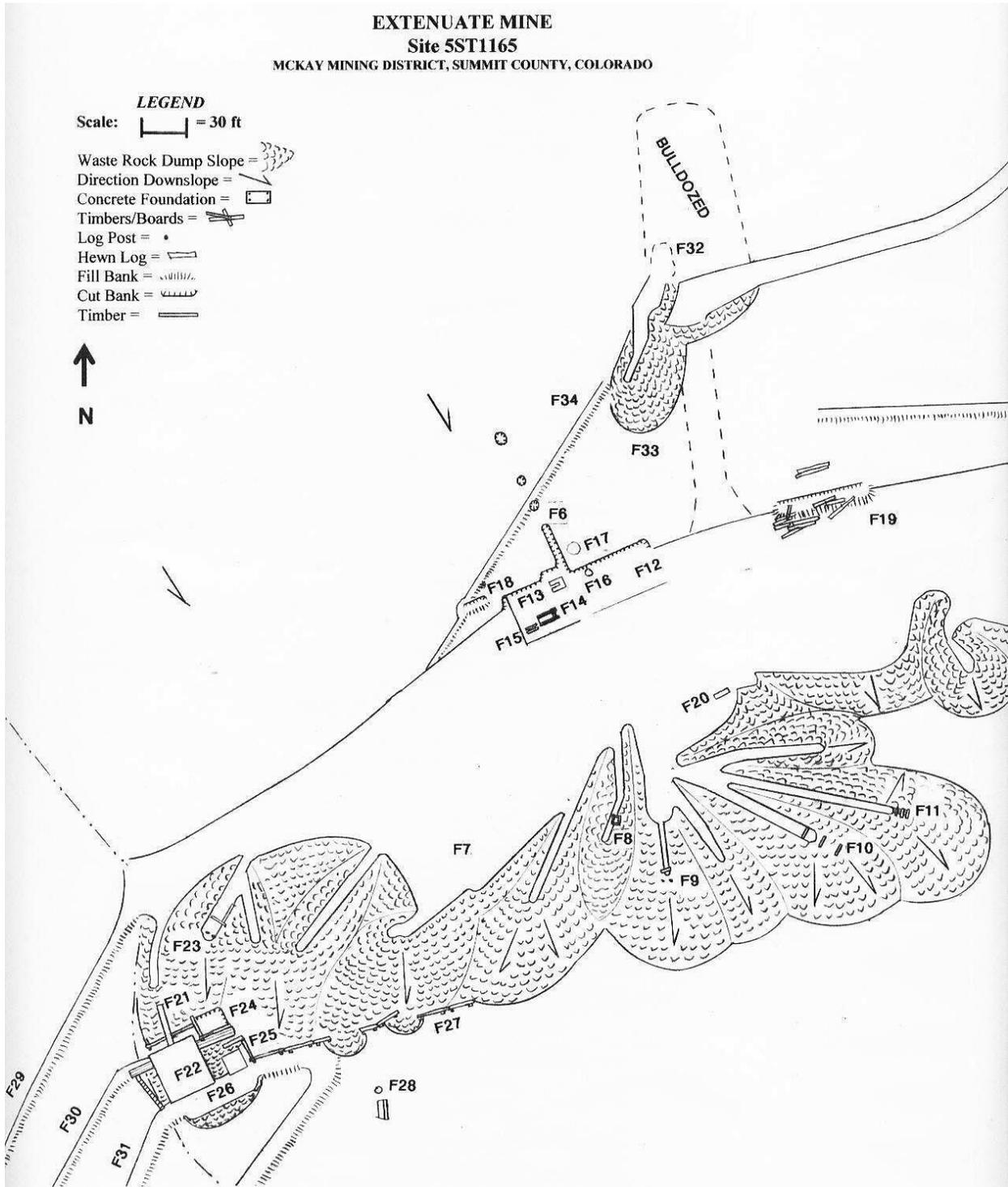


Figure 2.6: Plan view of Extenuate Mine site, western portion. The eastern portion is continued below.

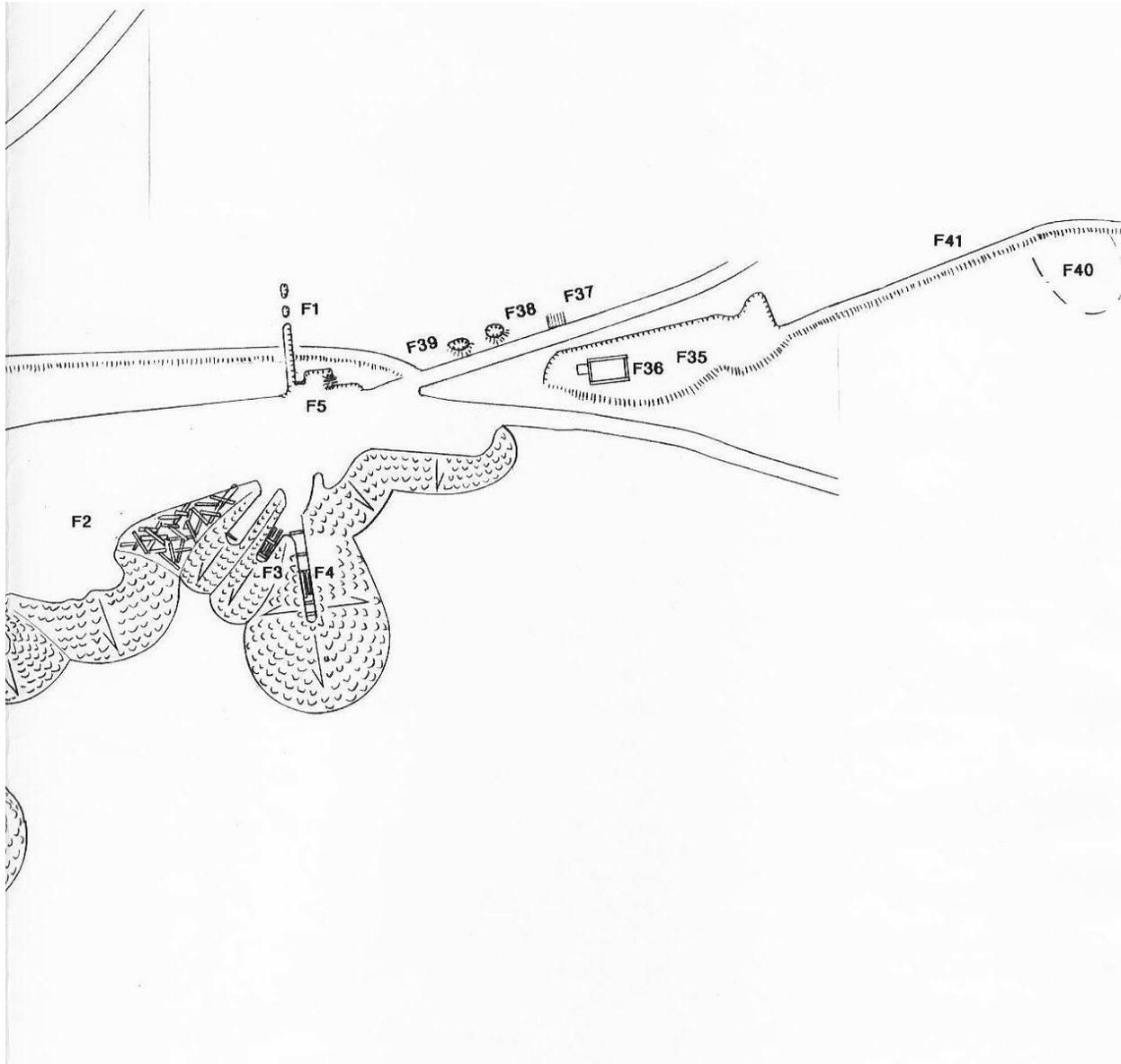


Figure 2.6: Plan view of Extenuate Mine site, eastern portion.

Extenuate Mine Site Description

The Extenuate Mine site currently features four complexes that are not completely explained by archival sources. The first is an eastern tunnel (F1 to F5) that archival sources fail to clearly distinguish. The second is the Extenuate Tunnel (F6 to F31) driven in 1902, and the third is an upper tunnel (F32 to F34) also ignored by archival sources. The last is a small, residential complex (F35 to F41) in the site's eastern portion.

The eastern tunnel was driven northward during the 1880s to undercut the area's principal ore formation. The operation was a typical tunnel mine and featured a simple surface plant currently represented by archaeological features and artifacts. The principal surface plant component was a tunnel house, 30 by 30 feet in area, which enclosed a basic blacksmith shop. Artifacts lying around the tunnel indicate that the surface plant included several pieces of equipment that are not represented by archaeological features. Specifically, a hose and pipe fittings are left from a boiler and steam pump used to keep deep workings dry. Ventilation tubes indicate that miners employed a blower to force fresh air into the mine workings.

Miners used ore cars to deposit waste rock at the tunnel portal, forming a dump (F2) 180 by 315 feet in area and 25 feet thick. The dump features several trestle remnants (F3, F4) and lobes of material that represent the use of ore cars. The volume of waste rock is substantial, indicating that the underground workings are extensive and deep.

The Extenuate Tunnel was the largest complex on the site and is clearly represented today by archaeological and engineering features. Historically, the tunnel (F1) was the center of the operation, and it collapsed and now manifests as a linear area of subsidence. As was typical, miners used ore cars on a rail system to haul waste rock out of the underground workings. They dumped the unwanted material off the ends of several trestles, creating a massive bench. The dump (F7), one of the most prominent features in lower French Gulch, is 250 by 450 feet in area and 42 feet thick. Trestle remnants and lobes of waste rock currently represent the rail system.

The Extenuate Tunnel featured an advanced surface plant that provided the services needed for both work underground and ore production. A tunnel house enclosed some of the mine's key facilities, and it was a frame building 30 by 100 feet in area. The building burned, leaving a platform (F12) and numerous artifacts. The western portion was a compressor room and currently features a concrete slab floor 30 by 36 feet in area. A blacksmith- and machine shop occupied the tunnel house's center and is currently denoted by a forge (F16) and shop refuse. A miners' change area occupied the tunnel house's eastern 20 feet and features partially buried clothing and personal items. The buried deposits may be important because they probably contain artifacts representing personal articles kept by miners.

Two air compressors served the mine, and they were installed at different times. The earliest is represented by a U-shaped concrete foundation 6½ by 6½ feet in area. The foundation's shape indicates that the compressor was a Rand, steam-powered, duplex model similar to the unit currently on site (F14).

The extant compressor (F14) is a cross-compound, duplex, belt-driven Imperial Type 10 unit made by Ingersoll-Rand. The machine, 6 by 8 feet in area, is bolted to a U-shaped, natural lime concrete foundation similar to Feature 13. A compressor of this size had the ability to power three to four heavy rock drills underground.⁴ The machine is relatively complete and features most of its fittings, linkages, and grease covers. For this reason, the compressor is an important and rare engineering feature.

The surface plant included components in addition to the tunnel house, and they are represented by archaeological features. One was a water tank (F17) adjacent to the tunnel house,

⁴ Twitty, 2002:311.

and it originally contained compressor coolant and water used for drilling. Another was a transformer station (F18), and the third was a sawmill where workers dressed logs into mine timbers. A platform (F19), 9 feet wide and 60 feet long, represents the sawmill's location.

The last component was a privy, currently denoted by a pit in the waste rock dump. As was typical, miners constructed the pit (F20) by assembling a plank box 3 by 9 feet in area on the edge of the dump then burying the structure with waste rock. The pit is 3 feet deep and features a floor of waste rock and organic material. Meaningful buried deposits representing miners in the workplace are highly likely.

The tunnel complex offers a rich artifact assemblage capable of reflecting a few details of the mining operation. Most of the materials lie either on the waste rock dump or around the tunnel house platform. According to bituminous coal and sight glass segments, the surface plant featured a boiler, which powered both the Rand compressor and pumps underground. Numerous machine parts, forged iron, cut pipe scraps, and tools indicate that shop workers conducted a high volume of fabrication, carpentry, and repairs. The mine had an extensive electrical system, reflected by a variety of insulators and electrical hardware. Overall, these characteristics are typical of large, mechanized mines like the Extenuate.

Dateable artifacts reflect several sustained periods of occupation. The first occurred during the early 1900s, which is in concert with archival sources. Hand-finished bottle fragments, steel-spiral wrapped air hoses, and boiler water sight glasses fall within this timeframe. The second period occurred during the 1910s, which also is confirmed by archival sources. Carbide lamp parts, cruciform drill-steels, electrical hardware, a soldered 55 gallon drum, and fragmented bottles date to such a timeframe. The last period occurred during the late 1930s as indicated by dynamite box panels, a 55 gallon drum, and fragmented bottles.

The mine had a complex system for receiving, sorting, and shipping ore over to the Wellington Mill. A massive ore-sorting house was central to the system, and it currently stands as an icon of French Gulch. The building was a facility in which workers manually sorted through crude ore from the mine, removed waste, and transferred the recovered material into storage bins. Miners shoveled the ore into the building's top, the sorting stations were on a lower floor, and the storage bins formed the building's bottom portion.

The sorting house (F22) is a split-level, five-story, square building 30 by 30 feet in area and 50 feet high. The floors are irregularly arranged and fulfilled different functions. The top floor, heavily decayed, was 30 by 30 feet in area and featured a row of receiving chutes along the south wall where miners input crude pay rock from ore cars. A frame superstructure enclosed the top floor, and it featured a side-gabled roof and gabled doorway at center. The superstructure collapsed, exposing the plank floor to the elements.

The fourth floor, which occupies the southern half of the structure, featured a row of steel grizzlies (screens) that received the crude ore. Metal-rich fines passed through the grizzlies and dropped into the main ore bins below. Waste-laden cobbles rolled across the grizzlies and collected against a stout bench where workers manually sorted through the cobbles and shoveled low-grade ore into a large bin forming the third floor, discussed below.

The third floor consisted of a flat-bottom ore bin occupying the overall structure's north half. From top to bottom, the bin is 18 feet high and featured a wall dividing it from the sorting room. The bin's bottom is 10½ feet lower than the sorting floor. During the 1970s, someone used the bin as a residence and installed insulation, paneling, and plywood flooring. Refuse currently remains.

The second floor lies directly underneath the northern ore bin and featured a rail line. The electric railroad graded in 1909 passed underneath the bin, where trains received loads of ore

through a series of four plank chutes. The rails were spiked to 6x6 stringers nailed to the overall structure's support frame, and workers nailed plank flooring on both sides of the track.

The bottom, first floor consists of the structure's two main ore bins, which occupy the structure's south half, directly underneath the sorting floor. The bins are symmetrical, 15 by 15 feet in area, and feature sloped floors. The front, south face features four steel chutes that directed ore into wagons or trucks that parked underneath a 10-foot-wide awning. The chutes featured hinged extensions that have been removed.

The main ore bins feature an unusual and important engineering feature. Specifically, steel ducts served as heater stacks that carried hot air up through the stored ore and into the sorting room. This kept the ore thawed and the workers warm during the winter. Eight ducts made of riveted steel rise along the south wall and feature painted labeling "Wellington M.C."

The furnace was housed in a separate building adjacent and east. When intact, the building was similar to a shed countersunk into the ground. The existing ruin (F25) is 11 by 11 feet in area, slopes south, and features a rim of 8x8 timbers slightly above ground-level. A superstructure probably stood on the rim, although evidence is absent.

In addition to the sorting house, miners also stored ore in a simple, open, flat-bottom bin (24). The bin was 18 by 27 feet in area and 7 feet high, and it consisted of a plank floor and log walls. The south side featured several chutes stopped by louvered gates, which allowed ore to pour into ore trains that backed out of the sorting house.

The site features clear evidence of the 1909 electric railroad that provided service to the Wellington Mill. A lower grade (F30) extends northeast into the site and terminates underneath the ore-sorting house, where trains received ore. A second grade (F29) accommodated an upper track that passed through the surface plant. Both grades currently feature rail ties, and the lower grade also has several cast iron hangers for trolley wires that powered a locomotive.

Some of the mine workers lived in a small residential complex at the site's east end. The complex featured several buildings and other aspects, which have been reduced to archaeological remnants. The buildings stood on an irregularly shaped platform (F35) 36 by 135 feet in area. An incision into the eastern cut-bank may have been a root cellar, a dense deposit of stove clinker lies at center, and a sparse scatter of domestic refuse extends around 150 feet downslope.

The charred foundation of one of the buildings (F36) is located on the platform's western portion. The foundation is 16 by 20 feet in area and consists of wall footers and plank flooring buried by ash, charcoal, and structural debris. Refuse in and around the foundation indicates that the building was inhabited within the last several decades, most likely the 1970s.

The residents disposed of their refuse in the manner common to western mining camps. Specifically, they relied on a privy for their personal use and threw solid waste away from the buildings. Two prospect pits (F38, F39) upslope from and northwest of the platform may have been reused as privy pits, although this remains uncertain. The residents did, however, carry their solid refuse to the east and throw it on the ground. In so doing, they created a scatter (F40) around 42 by 45 feet in area. Minor excavations by bottle collectors demonstrated that the scatter is largely surficial and is unlikely to offer buried materials. The scatter consists mostly of disintegrated cans in an ashy matrix.

Artifacts associated with the residential complex reflect several periods of occupation. The first occurred during the early 1900s according to hand-finished bottle fragments, amethyst glass, and hole-in-cap cans. One of the bottles featured a mark used by the Western Glass Company between 1900 and 1907. The second period was during the 1910s as indicated by machine-made amethyst bottle fragments, early machine-made selenium bottles, and several bottle makers' marks. The last period occurred between 1934 and 1945, which is reflected primarily by fragmented bottles.

Extenuate Mine Site Interpretation

Both archival sources and material evidence confirm that the Extenuate Mine was one of the most substantial and advanced operations in the Breckenridge area. In terms of size, the mine possesses one of the largest waste rock dumps in the region. The dump reflects vast underground workings driven both to develop the vein systems and in search of more ore formations. Such workings were costly, and they and the advanced surface plant were hallmarks of a significant capital investment.

The surface plant was designed to support extensive work underground. To achieve this, the surface plant relied on advanced mechanization that required formal engineering, exemplified by the compressed air and electrical systems. As a reflection of the formal design, the mine engineer arranged the tunnel house, air compressors, ore sorting house, and privy according to a common orientation.

The surface plant was also designed to accommodate high volumes of production. The massive ore-sorting house, the additional ore bin, and the electric railroad allowed the Wellington Mines Company to process, store, and ship considerable volumes of pay rock. Further, in the ore-sorting house, workers segregated the ore into two grades to maximize income. High-grade ore stored in the building's main bins was periodically loaded into wagons, freighted to the Denver, South Park & Pacific Railroad, and then shipped directly to a smelter. Low-grade ore was stored in the building's northern bins and then transported via the electric railroad to the Wellington Mill. There, the ore was concentrated to a level that was economical to ship to a smelter. The sorting house featured a heating system, which was an important and unusual engineering feature. Hot air kept damp ore thawed during cold winters, which permitted the mine to produce all year.

According to dateable artifacts, the Extenuate was initially developed during the 1880s and saw its most important period of production during the early 1900s and 1910s. These timeframes are in concert with archival information. The mine was also worked during the latter half of the 1930s, which archival sources fail to mention. The 1930s operation was relatively minor and had a limited impact on the site.

During all the above timeframes, a fraction of the workforce lived in a residential complex on site. The associated artifact assemblage portrays several aspects of the workers and their lifestyle. First, according to the artifact assemblage, the residents were mine workers who belonged to a low socioeconomic status. The assemblage features few fine and costly goods but does include items attributable to labor, such as lunchpails, boot remnants, and a thermos. Further, the lot of butchered bones represents inexpensive cuts of meat such as beef stews and pork roasts. Second, a woman's rubber overshoe indicates that one of the workers was probably married. Third, the residents consumed a Victorian diet that was typical of industrialized mining camps. According to fragmented canning jars and numerous butchered bones, the residents preferred fresh foods but had to supplement them with canned goods when necessary. In contrast to popular myths, the residents consumed little alcohol when on site, as indicated by few liquor bottles.

Extenuate Mine Site Significance

During its lifetime, the Extenuate Mine was one of the Breckenridge area's most significant operations. Today, the mine is a prominent landmark and retains a high degree of archaeological integrity relative to the 1900s and 1910s, when the Wellington Mines Company operated the property on a large scale. The Extenuate was initially developed during the 1880s, but the existing remains do not clearly represent this timeframe. The Extenuate possesses

important and rare engineering features in the form of a massive ore-sorting house and an intact air compressor. The site lies in a setting evocative of mining, which combines natural aspects and a cultural landscape. In addition, the site is likely to yield information that can enhance the current understanding of mining engineering and the mine as a workplace. For the above reasons, the site is recommended eligible for the NRHP under Criteria A, C, and D, and the SRHP under Criteria A, C, D, and E.

In terms of NRHP and SRHP Criterion A, the Extenuate Mine is associated with trends that were important on national, statewide, and local levels. On a local level, the Extenuate was one of the Breckenridge area's greatest producers, employers, and consumers of goods and services. In this capacity, the mine was a cornerstone of the local economy. As a high-volume producer and an advanced operation, the Extenuate was a bellwether of the local mining industry, which boomed during the 1900s and 1910s. The Extenuate stimulated confidence in the industry, contributed to its overall production figures, and interested investors in the area.

The Extenuate participated in several statewide trends. First, the mine contributed to Colorado's economy through its voluminous production and consumption of goods and services. Further, the Wellington Mines Company purchased much of its equipment from manufacturers in Denver, which hosted one of the most important mine supply industries in the United States. In so doing, Wellington Mines helped Denver's mine supply industry maintain its status. Second, as noted above, the Extenuate was a key component of the Breckenridge area's mining industry. During the 1900s and 1910s, that industry was recognized as one of Colorado's most important in terms of metals production. Third, the Extenuate was part of the greater Wellington Mine, which the Western mining industry recognized as a particularly extensive, advanced, and successful operation. Given this, the Extenuate contributed to Colorado's reputation as an important mining center.

The Extenuate participated in several national trends. First, because of its size and productivity, the Extenuate was tied to national commercial and banking systems. In terms of commercial systems, the Wellington Mines Company consumed goods and services from outside of Colorado and hence contributed to distant economies. In so doing, the company also contributed to distant industries. In terms of banking, the company contributed to the development of interstate systems because many of the company investors were located outside of Colorado, mostly in Kansas City. These individuals provided financing, accepted profits, and distributed company stocks to buyers. Second, as noted, the Wellington (including the Extenuate) was recognized throughout the West as a particularly large and successful mine. In this capacity, the mine served as an example to engineers of how to plan, equip, and manage a large and complex operation.

In terms of NRHP and SRHP Criterion C, the Extenuate is an excellent archaeological example of a massive, complex, and formally engineered tunnel mine. The features and artifacts permit the ready and easy reconstruction of the surface plant, and they clearly reflect the timeframes when the mine operated. In addition, the features, especially the massive waste rock dump, provide a distinct visual image of a large tunnel mine.

The site possesses important and rare engineering features, which lends importance under Criterion C. One is an intact, belt-driven, duplex air compressor made by Ingersoll-Rand. Common between the 1900s and 1940s, these compressors were hallmarks of mechanized mining operations. Relatively few examples survive today, and the unit at the Extenuate features many small parts that are usually missing from other compressors. The site's second important engineering feature is a massive, five-story ore-sorting house, which stands intact. The building was formally engineered so workers could efficiently sort through crude ore and segregate the

material into several grades. The building is particularly large and clearly illustrates the sorting process and flow-path for the ore. In addition, the building features an unusual and important attribute that enhances the current understanding of large ore-sorting houses adapted to the Rocky Mountains. Specifically, the building had a special heating system that forced hot air through ore stockpiled in bins and into the sorting area. This kept the workers warm and the ore thawed for shipment during the depths of winter. In general, relatively few sorting houses as large as the one at the Extenuate currently survive.

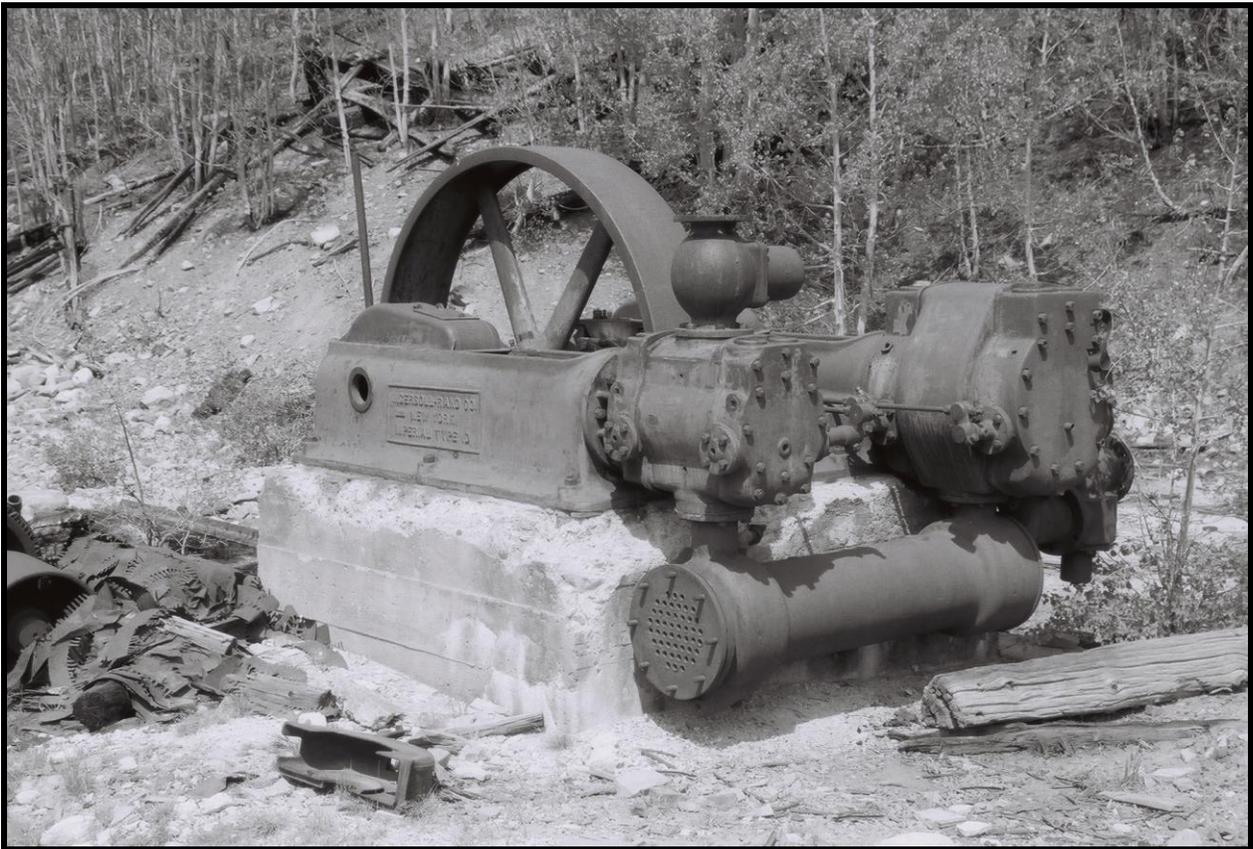


Figure 2.7: The Extenuate Mine’s surface plant included an air compressor that powered rockdrills underground. The machine, at one time common and now rare, is an important, surviving example of a belt-driven, two-stage, duplex unit. The drum at bottom cooled the air between compression stages. Source: Author.

In terms of SRHP Criterion D, the Extenuate Mine was historically and is still an important landmark in French Gulch. The Extenuate was a figurehead for the Breckenridge area’s hardrock mining industry and continues this role today.

In terms of NRHP Criterion D and SRHP Criterion E, the Extenuate will yield important information upon further study. Detailed documentation and in-depth archival research of the ore-sorting house will enhance the current understanding of mining engineering. Arenas of study include the engineering of massive timber structures, the ore-sorting process employed at large mines, and the mine as a work environment.

The site also includes several buried deposits that are likely to contribute knowledge regarding miners in their workplace. Specifically, the tunnel house platform offers shallow,

buried deposits that are rich with miners' personal articles and workplace refuse. An industrial privy pit probably possesses additional deposits that are both greater in depth and slightly different in content. Testing and/or excavation of these deposits may recover materials that reflect workplace practices, behaviors, diet, and equipment.

Extenuate Mine Site Management Recommendations

Because of the importance of the Extenuate Mine and its engineering features, and the opportunity for meaningful studies, management recommendations strongly suggest several actions. First, the ore-sorting house should be preserved. The structure currently stands in dilapidated condition, but its state of preservation is sound enough to justify stabilization. The concrete foundation remains monolithic, and most of the structure's 12x12 support posts and footers appear sound. The woodwork within the main bins and the northern bin is also in reasonable condition, due in part to a temporary roof installed by a 1970s occupant. The sorting floor, however, is dangerously rotted, and the top story is in poor condition and is missing planks. Because of this, weather invades the interior and promotes rot. Management recommendations suggest rebuilding the top story, repairing the sorting room floor, installing a roof, and installing windows.

Second, the site should be developed as a heritage resource. Public access has already been provided via the Minnie and X 10 U 8 recreational trails. The mine's rich history, an interpretation of the archaeological features, an explanation of the mining operation, and the regional history can be conveyed through signage or pamphlets.

Third, research on the ore-sorting house as discussed above can be accomplished in preparation for stabilization. If the building is made safe, then the public can be granted access and the information used for their education.

Last, the buried archaeological deposits provide an important opportunity for the research noted above. The deposits should be tested then excavated if they prove substantial, and the data can be used for public education.