Corner No. 1 of the Bushwhacker Lode, Sur. No. 20591 (lower left foreground) located in Buckskin Gulch three miles northwest of Alma, Colorado.
ADVANCED TOPICS AND CASE HISTORIES IN MINERAL SURVEY RESURVEYS

A. Introduction and Unique Aspects of Mineral Surveys
B. Discrepancies in the official record
C. The 1899 GLO policy that patent descriptions of prior official surveys must be held over the found, original and undisturbed monuments
D. Rectifying the GLO policy
F. Gibbonsville, Idaho Case History

Location is Buckskin Gulch with Mt. Bross to the right and Mt. Democrat in the background.
Introduction and Unique Aspects of Mineral Surveys

1. Descriptions of the three types of patentable mining claims
2. Characteristics of the Mineral Lands Tenure System
3. Sources of official Colorado BLM records
   a. BLM Public Room, 2850 Youngfield St., Lakewood, CO
   b. GLO Records web site
      https://glorecords.blm.gov/default.aspx
   c. Denver Regional National Archives

Cor. No. 1, Silent Friend Lode, Sur. No. 20504 with Mt. Silverheels in the background.

Note: Other states such as Arizona have the bulk of their public room information available online. Contact each state BLM office directly.
ADVANCED TOPICS AND CASE HISTORIES IN MINERAL SURVEY RESURVEYS

Introduction and Unique Aspects of Mineral Surveys

Overview of mining laws
a. Federal mining laws
   (1.) 1866 Mining Law
   (2.) 1872 Mining Law
   (3.) Act of April 28, 1904
   (5.) Federal Land Policy Management Act of 1976
b. State mining laws
c. Local customs and mining district rules.
Federal Mining Laws (Title 30, U.S. Code)

Act of July 26, 1866 (14 Stat. 251)

Declared the mineral lands of the public domain open to exploration and occupation by citizens of the United States. It provided for claims 200 feet in length along the vein for each locator, with an additional 200 feet for the discoverer. An association of 14 men could claim as much as 3000 feet. No width was specified, only sufficient ground for working the claim.

Extralateral rights were granted if a vein could be followed to depth, with all its dips, angles and variations. The Act also provided for obtaining patent (fee title) from the United States and recognized the local customs and rules of mining districts, as long as they were not in conflict with Federal laws.
FEDERAL MINING LAWS (Cont.)

ACT OF MAY 10, 1872 (30 U.S.C. Ch. 2)
This Act contains the General Mining Laws which, with amendments, are still in force today. It provides in detail for discovery, location, survey and patent of both lode and placer claims; also mill sites. It requires annual labor, or assessment work until patent. Tunnel sites are included to allow the discovery of blind lodes.

ACT OF APRIL 28, 1904 (30 U.S.C. 34)
The monuments on the ground shall constitute the highest authority as to which lands are patented notwithstanding a conflict with the survey record or the calls and descriptions recited in the patent. Also, in extending the public land surveys, all patented mineral claims shall be segregated from the public lands as they are monumented on the ground.
**FEDERAL MINING LAWS (Cont.)**


Allowed multiple use of federal public lands open for mineral entry by restricting the use of the surface of unpatented mining claims to that portion necessary for the development and mining of the deposit and permitted the federal government to manage the surface and vegetative resources.

**ACT OF OCTOBER 21, 1976 (30 U.S.C. Ch. 23)**

The Federal Land Policy and Management Act (FLPMA) required the owners of all unpatented mining claims located prior to the Act to file with the state BLM office a copy of the location certificate by October 21, 1979. Claims located after the passage of the Act must have the location notice filed at the state BLM office within 90 days of location. Maintenance fees must be paid, or an affidavit of labor filed annually.
**EARLY COLORADO STATE STATUTES**

The following information is included in Volume 14 of the 1880 Census entitled, “The United States Mining Laws and Regulations Thereunder and State and Territorial Mining Laws, to which are appended Local Mining Rules and Regulations”, compiled by Clarence King, 1885.

- General Laws, compiled 1877
- Code of Civil Procedure, 1877
- Session Laws, 1879
- Session Laws, 1881

Current laws related to mining easements can be found in C.R.S 34-48-101 through 34-48-111 (2019).

**LOCAL RULES, REGULATIONS AND BY-LAWS**

Local rules, regulations and by-laws are published in the above reference for several early Colorado mining districts.

United States Mining Laws and Regulations thereunder State and Territorial which are appended Local Mining Rules and Regulations under the direction of Hon. Clarence King, Special Agent Tenth Census. 1885.

ADVANCED TOPICS AND CASE HISTORIES
IN MINERAL SURVEY RESURVEYS

Four types of mining claims

a. Lode claims
   (1.) A possessory right to the subsurface mineral estate (in situ)
   (2.) The American apex law and extralateral rights
   (3.) Substantial parallelism of end lines

b. Placer claims
   (1.) A possessory right to the surficial minerals (also rights to petroleum "deposits" prior to 1920)
   (2.) Gulch placers
   (3.) Placeres by legal subdivisions (aliquot parts and government lots)

c. Mill sites
   (1.) For mining and milling purposes (must be located on non-mineral ground)
   (2.) Associated with lode claims and after 1960 with placer claims
   (3.) Independent mill site

d. Tunnel sites (a mechanism for discovery of blind lodes)
§ 539. Nature of the estate as defined by the courts since the enactment of general mining laws (Lindley on Mines, 3rd Ed., 1914).

...Yet as between the locator and everyone else save the paramount proprietor the estate acquired by a perfected mining location possesses all the attributes of a title in fee, and so long as the requirements of the law with reference to continued development are satisfied, the character of the tenure remains that of a fee.

...Until patent issues the locator's muniments of title consist of the laws under the sanction of which his rights accrue, the series of acts culminating in a completed valid location, and those necessary to be continuously performed to perpetuate it.

A mining claim perfected under the law is property in the highest sense of that term, which may be bought, sold, and conveyed, and will pass by descent. It is subject to administration and sale in payment of the debts of the deceased owner. "It is vendible, inheritable and taxable," "a legal estate of freehold," and "subject to the lien of a docketed judgment."

It has the effect of a grant by the United States of the right of present and exclusive possession of the lands located, at least for mining purposes.
UNPATENTED MINING CLAIMS - A POSSESSORY RIGHT

LODE CLAIMS

Lode claims have strict geometries and are located and oriented along the apex of a lode or vein. A discovery cut, shaft or tunnel was required to “prove up” the discovery and additional development determined the lode’s direction.

Under the 1866 Mining Law lode claims were between 400 and 3000 feet along the lode. The 1866 Mining Law was concerned with the “lode” and the claimant only owned the lode with sufficient surface ground to mine the lode.

Under the 1872 Mining Law, lode claims have a statutory limit of 1500 feet along the lode and 300 feet each side of the lode. The 1872 Mining Law was concerned with the “claim” and gave rights to the ground within the boundary of the claim (i.e. rights to all lodes apexing within the claim boundary).
TWO CONCEPTS UNIQUE TO LODE CLAIMS

**Apex of a Vein or Lode** - by definition, it is the “top” of the vein. It is the apex or surface expression of a lode that defines the claim’s lode line. The side lines of a lode claim roughly parallel the lode line. Whatever the statutory width of a claim was, the side lines cannot be further from the lode line than half of the statutory limit (usually measured at the discovery).

**Extralateral rights** - gives the miner the right to follow a vein at depth. This is only an issue if the vein is not vertical. This permits a miner to mine beneath a neighboring claim **IF** the vein apexes within the boundaries of his claim.
The leading idea of the Acts of Congress is that a lode is a straight vein whose course can be readily ascertained and indicated by a straight line or a series of straight lines; and that occasionally such a vein is crossed by another in a similar straight line, merely requiring the right of way to give each lode its proper claim; but, in fact, a lode is never a straight line; and is seldom to be traced, without confusion, for more than a few feet; and in its course other veins are absorbed into it; and off-shoots (not only spurs, but, perhaps, better developed veins than itself) run from it in all tortuous directions; and in its extension downward, it invariably dips laterally, and often shows a fork of which both parts approach the surface; and it will divide, and may, or may not, unite at another point; and it will abut suddenly upon country rock and so be thrown far to one side; and instead of showing distinct lines, mineral veins are as irregular, as disproportioned in length and width, as much intermingled, as uncertain to segregate from each other, as are the veins of the hand, or the veins on a block of marble.
Three General Geometries for Lode Claims
Under the 1872 General Mining Law

CLAIM A

A simple rectangle geometry for a lode mining claim.
A parallelogram geometry. Note that the length of the end lines can be greater than 600 feet. However, the perpendicular distance from the lode line to each side line cannot exceed 300 feet with a total width of 600 feet or less.
The lode line is not required to be a straight line. In fact, the lode line can have several bends in it as it traces the apex of the mineralized vein.
The odd zigzag in the lode line of the Polaris Lode, Sur. No. 248 has a purpose. Line 2-3 is parallel to and 150 feet from the southeasterly “zig” in the lode line and Line 3-4 is parallel to and 150 feet south of the east-west “zag” in the lode line. This construction of the lode line allowed the claimant to claim all of the triangular area not covered by the older lode claim to the southeast.
This second example of placing the lode line in such a way as to conveniently claim an area was rejected by the Commissioner of the General Land Office. The position of the lode line must follow the apex of a mineralized vein. It cannot be arbitrarily placed by the mining claimant.
After the discovery of a valuable locatable mineral, the mining laws required the mining claimant to conduct additional development work so that lode claim locations were oriented with the apex of the vein. This color map shows the ownership of mining claims in the Goldfield, Nevada Mining District. The ore geology of this area consists of several mineralized veins associated with a volcanic intrusive. The map illustrates that several of the mineralized veins are ring dike structures and the lode mining claims were located to follow the apexes of these circular-shaped veins.

(Elmer J. Chute's map of U.S. patent and location surveys in the Goldfield Mining District, Esmeralda and Nye Counties, Nevada. Special Collections & Archives, University Libraries, University of Nevada, Las Vegas.)
Close-up showing that many of the lode claims are oriented to trace the apex of the mineralized veins of the ring dike structures.

(Elmer J. Chute's map of U.S. patent and location surveys in the Goldfield Mining District, Esmeralda and Nye Counties, Nevada. Special Collections & Archives, University Libraries, University of Nevada, Las Vegas.)
The “outcrop of vein” labeled in the diagram is also the apex of the vein and the lode location is based on it. The portion of the dipping vein that is to the right of the vertical extension of the side line is the extralateral portion of the vein and the mining claimant has the right to follow and mine the vein outside of the vertical side line.
The Apex of a Vein And Extralateral Rights

Figure 1 above is from “Mineral Survey Procedures Guide” by John V. Meldrum, 1980. The preceding page to Figure 1 (page 15) describes the extralateral rights of five claims, all of which have parallel end lines. Claim A is most senior and progresses to Claim E as the most junior. Court decisions for situations where the vein passes through one end line and one side line have moved the other end line to the point where the vein intersects the side line (Claim B).

The case of Claim C where the vein passes through both side lines is far more problematic. Some court cases have held that the side lines become end lines (the only vein included is the lode of the claim and the side lines must be parallel). There are other court decisions covering situations where the vein passes through the same side line twice, where the side lines are not parallel and other veins that apex within the claim boundaries. Because the court cases are in different jurisdictions, there is not a simple way of evaluating these situations.

The next situation shows that a junior extralateral right terminates where its end lines intersect the end line of the senior claim (Claim D and Claim B respectively). Finally, the case of two diverging end lines leaves a portion of the vein unclaimed (area “F”) and neither claim has any extralateral rights to that area (Claims D and E).
**END LINES MUST BE SUBSTANTIALLY PARALLEL**

Under the 1872 General Mining Law, preservation of a claim’s extralateral rights require that the end lines be parallel to each other to properly define those rights. Some early claims did not adhere to this requirement usually when the lode line had one or more bends in it.

**NUMBERING OF LODGE CLAIM CORNERS**

The corners of lode claims are delineated by number, starting with “1”. The other corners are numbered sequentially. Cor. No. 1 is usually the corner closest to the section corner, quarter corner, or U.S. Location Monument that the claim is tied to.
The Burnside Lode, Sur. No. 155, which includes the summit of Mt. Cameron (Elev. 14238). The patented mining claim was reconveyed to the United States of America in 2014. The end lines are Line 6-7 (S 53° 10’ E) and Line 11-12 (N 75° 50’ E).
An 1879 Department of the Interior, General Land Office decision that a lode claim can have the shape of a triangle (middle head note paragraph). The answer was “Yes” if the lode line ran precisely through the vertex of the triangle.

(Source Copp’s Landowner)
The subject of the GLO Departmental decision, the Pogue Lode, Sur. No. 243. No patent was issued, and the claim was abandoned.
Plat of the Pogue Lode, Sur. No. 269. The claim boundaries were adjusted slightly from the previous survey. Surprisingly, the lode line was moved to go through the vertex of the "end point."
Among the laws contained in this booklet is the February 9, 1866 “50-footer” law that reserved to mining claimants of lode claims a width of 25 feet each side of the lode in order to mine the vein.
COLORADO TERRITORIAL MINING LAWS

An Act Concerning Mines and Minerals - February 9, 1866

The act entitled the discoverer of a lode up to 1400 linear feet along the lode. In addition, 25 feet each side of the lode was reserved in order to work the mineral vein. This act is also known as the “50-footer” law as it established 50 feet to be the width of lode claims in the Colorado Territory.

Other provisions of the act included extralateral rights for lode claims, how claims were to be monumented, what constituted a valid discovery, persons destroying legal evidence of discovery were guilty of malicious mischief, various duties and responsibilities of county clerks, recorders and treasurers, and relief of disabled miners.

Additional acts are included in the ninth edition of Colorado Territorial Mining Laws, 1873 (available from Google Books).
The Colorado Territorial and State Legislatures restricted the lode claim widths to a statutory maximum of 300 feet. Four counties were granted the authority to restrict lode claim widths down to 150 feet. The widths of all lode claims located after April 13, 1923 were brought into conformity with the statutory maximum of 600 feet authorized in the U.S. Mining Law of May 10, 1872.
The Seaton Extension Lode, Sur. No. 235, an example of an early Colorado lode claim with 50-foot end lines and a length along the lode of less than or equal to 3000 feet.
The No Name and Dorina Lodes and the No Name Mill Site, Sur. No. 14222A&B, an example of a lode claim in Clear Creek County where the county restricted lode claim widths to 150 feet. Also, note that the No Name Mill Site is contiguous with the side lines of the two lode claims.
The J.G. Blaine Lode, Sur. No. 766, is an example of a lode claim where the state restricted lode claim widths to 300 feet. Prior to 1884, the official plats in Colorado were prepared by the U.S. Deputy Mineral Surveyor. Deputy Hayes demonstrated a flair for embellishing the claim name.
The Tabor Lode, Sur. No. 2251, is another example of a lode claim where the state restricted lode claim widths to 300 feet. U.S. Deputy Mineral Surveyor. Sam’l N. Spray obviously wanted to impress the mining claimants with his drafting panache.
The Patches Lode, Sur. No. 20367, an example of a lode claim located on April 27, 1927 where the width of the lode claim is 600 feet. After expressly excepting and excluding 37 lode claims and the Nevadaville Townsite the acreage in the patent is only 0.461 acres.
**UNPATENTED MINING CLAIMS - A POSSESSORY RIGHT**

**Placer Claims**

Today, placer claims are usually staked in 20-acre aliquot parcels. The 20 acres is a statutory limit. A surveyor should look at the township plat, and any resurvey or supplemental plats. If the placer is located in a regular 640-acre section, then any overage from the platted amount may be allowed. If the platted size of the aliquot part is larger than 20 acres, you may be forced to stake a 10 acre claim or stake the claim as an association placer.

In the past gulch placers were common. Gulch placers are metes and bounds parcels that normally straddle the stream and are bounded by the valley. The little known 1870 Mining Law added placer claims, which were overlooked in the 1866 Mining Law.
An example of a gulch placer that is aligned with several drainages. Placer claim in California Gulch, Sur. No. 158 in Leadville, CO. Note that the acreage of the placer is 255.56 acres, which is more than the statutory maximum of 160 acres. Litigation ensued all the way to the U.S. Supreme Court who ruled that a party cannot challenge what the General Land Office allowed after the patent is issued, unless fraud can be proved.
The Joseph Rist Placer Claim, Sur. No. 190 southwest of Central City, Colorado. Note the red marginal notation at the top of the plat confirming the connection to the east range line of T. 3 S., R. 73 W., 6th P.M. in the patent, which presumes a later amendment was made to the connection. A pencil notation on the plat states, “Does not close by 9 ft. in latitude and 4 ft. in departure.”
A gulch placer taken to the extreme. The Taylor Park Placer, Sur. No. 11841, near Tincup, Colorado. This claim appears to run along the contour lines and to claim a strip of land approx. 50 feet wide for a water flume. There are 700 corners, the great majority being 4”x4” wood posts. The pencil lines on the plat show how the three segments are joined together.
Close-up of the middle segment showing the bearings and distances. Most of the corners are not labeled with the corner numbers.
Excerpt from the Department of the Interior land decision, The Snow Flake Placer (37 LD 250) regarding an unpublished General Land Office decision. The acreage of The Taylor Park Placer shows that the unpublished decision was for this placer claim.

Note:
An early gulch placer claim example in Montana that is approx. four miles long. The great majority of the corners are trees or stakes with mound and pit.
The Middle Yuba Placer Mine, circa October 1872, embracing a record 90.35 acres, traversed approximately 2.7 miles along both sides of the Middle Yuba River. This patented Placer Claim is bordered on all sides by National Forest lands and the centerline of the Middle Yuba River is the dividing line between two California counties.
The Forest Service had informed the owners of the patented placer mining claim that their building and other structures, between Angle Point 24 and 25, were suspected to be on National Forest lands. However, the Forest Service had not actually dependently resurveyed the placer claim boundary and had no firm basis for such an assumption. The owners sought the services of a private land surveyor that had experience in retracing patented mining claim boundaries. In addition to locating the placer claim boundary near the building and other structures, the owners wanted to know where their boundary line was located near a gold dredging operation they were leasing within their property at the far eastern end of the placer claim.
Edward B. Eddy, Deputy Surveyor, described a typical metes-and-bounds survey upland of the river banks but closely following the sinuosities of the river (except the portion between Angle Point 5 to 7).

After becoming familiar with the terrain, it was obvious that Eddy and crew traversed along the riverbed and established the “Angle Points” by offsetting from this single line traverse. This portion of the Middle Yuba River is in a deep canyon with steep, rocky, brush and tree covered slopes down to the majority of the riverbanks on both sides of the river. The retracement and dependent resurvey efforts yielded only two positive angle point monuments – the scribed Live Oak corner tree at Angle Point 24 and the remains of the large Live Oak at Angle Point 29.
Arizona example of a placer claim mineral survey, Sur. No. 1806 that is located in an unsurveyed township. This is a metes-and-bounds survey even though the dimensions comprise a perfect 1 square mile section. The circular feature in the center of the plat denotes the outline of the rim of Meteor Crater.
This is another example of an Arizona placer claim mineral survey, Sur. No. 2365. Note that the smallest legal subdivision for mineral lands is 10 acres. Two, 10-acre aliquot parts comprise the basic 20-acre placer claim. Neither the plat nor the official field notes provides a reason for the clockwise rotation of 0°32’ from cardinal.
An example of a placer claim located on unsurveyed lands in South Dakota that includes a lode claim within the placer claim boundary. Patents to placer claims exclude any known lodes not included in the placer mineral survey. Known lodes not included in the placer claim can be located and patented by others.

Specimen preliminary plat included in the “Manual of Instructions for the Survey of the Mineral Lands of the United States” 1909, General Land Office. Note that the lengths of the Keen Stone Lode end lines are 50 feet; 25 feet each side of the lode. This is similar to early lode claims in Colorado where the 25 feet of surface ground each side of the lode were reserved to access the vein.
Another example of a gulch placer claim, The Nebraska Placer, Sur. No. 2079 located between Alice and Idaho Springs Colorado. This placer claim failed to stake and include known lodes within its boundaries. Several lodes were staked on those known lodes (See next slide).
The five lode claims: Annie May, Flora Thorne, Pilgrim, Little Fred, and Belmont lodes, Sur. No. 10759 were located between 6/21/1892 and 12/3/1895. The lode claims were staked on the three patented placer claims: G.B. Harris, Sur. No. 1426; Nebraska, Sur. No. 2079; and Lincoln, Sur. No. 2080 amended. These placer claims were patented between 4/22/1886 and 1/5/1889, however none of the patents included lode claims. In this instance, the five lode claims were able to claim the known lodes within the three patented placer claims because known lodes were excluded in the placer patents.
An example of a placer claim patented by legal subdivisions. The patent for the Gold Star Placer consists of Lots 5, 6, 7, 8, 9, and 10 of Sec. 3; and Lot 5 of Sec. 4, T. 9 S., R. 78 W., 6th P.M. and was issued on July 20, 1896. This segregation diagram was prepared in May 1904 and therefore is not valid for the disposition of the Gold Star Placer.
Close-up view of the Gold Star Placer (yellow outline) that shows only its Mineral Entry number. No mineral survey was conducted as the placer was patented via legal subdivisions. The Excelsior “Placer”, Sur. No. 40 was never patented (outline in red) and abandoned prior to the location of the Gold Star Placer.

The offsets of the Gold Star Placer with the Rockingham, Bald Eagle, Young, and Panabase No. 2 lodes were caused by a policy of the General Land Office to show patent description positions in vogue from July 1899 through July 1904.

Note: This policy is discussed in detail later in the course.
In September 1895, the General Land Office required the preparation of “Field Notes of a Survey to Segregate Excluded Mineral Surveys from The Gold Star Placer,” which was approved on June 29, 1896. Monuments were not set, nor was a survey on the ground conducted to show the monumented positions of the excluded mineral surveys nor were Secs. 3 and 4 subdivided by a field survey.
A cartoon sketch showing the record positions of the excluded mineral surveys and the protracted positions of a “perfect” section subdivision into 10-acre aliquot parts (i.e. the red dashed lines describe aliquot parts that are all 660 x 660 feet with bearings that are north-south and east-west).
Mill sites were originally metes and bounds parcels located on unmineralized land. The land was used in conjunction with the mining activities of a noncontiguous lode claim and/or milling operations. By statute, they cannot exceed 5 acres in size.

For lode claims with an associated mill site in the same U.S. Mineral Survey, an “A” is appended to the survey number. The mill site has a “B” appended to the survey number. If a lode claim crosses an existing mill site, only the portion of the lode claim containing the discovery is valid. Because mill sites can only be located on non-mineralized land, it is presumed that the lode does not cross the mill site. A second discovery remedies the problem.
An independent mill site does not have an associated lode or placer claim. There are specific requirements that the mill site claimant must complete to hold an independent mill site. One is to build a mill on the mill site.

The Act of March 18, 1960 (30 U.S.C. 42) allowed mill sites to be included with a mineral survey containing one or more placer claims. The legislation also permitted the mill site to be described by aliquot parts.

In 1972, a BLM Instruction Memo (No. 72-151) permitted mill sites to be described by aliquot parts for mineral surveys containing associated lode claims.
An example of an 1866 lode claim with a mill site at the end of the lode, Second Discovery of the Virginia Lode and Mill Site, Sur. No. 240.

Note: Mill sites were not explicitly included in the 1866 mining law but were authorized in the 1872 mining law.
Another example of an 1866 lode claim with a mill site located in the middle of the lode, Confidence Lode [and Mill Site], Sur. No. 102.

Note: Under the 1872 mining law, mill sites were required to be on non-mineralized ground and therefore it was not proper to site a mill site where it shared a common line with an end line of a lode claim.
An example of an 1866 lode claim with an adjoining lot, Excelsior Lode, Sur. No. 40. The lot has several improvements including five arastras. This is the same claim shown on the segregation diagram and labeled as the Excelsior Placer.
An article entitled, “Ancient and Modern Concentration” in The Mining Reporter, Vol. 39, No. 25, June 22, 1899. The article discusses various methods of concentrating gold, in particular the concentration of native gold from quartz ore.
The quartz ore was crushed in an arastra by draft animals that dragged one or two large stones attached to a yoke.
Looking upstream at an arasta adjacent to Fairchild’s Creek (one of the five arastras shown on the plat of Sur. No. 40.)
Photo of same arastra. The central high point shows the remains of a steel post that the yoke and heavy stones were attached.
Photo looking downstream of a second arastra located in Fairchild’s Creek.
Photo of arastra from downstream. The downstream lip of the arastra has broken off and acts like a spillway.
An example of a lode claim with mill site that do not share a common boundary line, Hunter Lode and Mill Site, Sur. No. 826A&B. Under the 1872 mining law, mill sites are metes and bounds parcels that cannot exceed 5 acres in size.
Another example of a lode claim and mill site, Florence C. Lode and Florence C. Mill-Site, Sur. No. 12001A&B. In this case, the mill site adjoins a side line of the lode. It is rare for a mill site to adjoin the lode claim on an end line in the same survey as the mill site must be on non-mineralized ground.
An example of an independent mill site (no associated lode claim), Elyria Mill Site, Sur. No. 5647.

Note: Independent mill sites do not have a “B” appended to the survey number and in order to be valid must have an improvement such as a stamp mill built on the claim.
UNPATENTED MINING CLAIMS - A POSSESSORY RIGHT

TUNNEL SITES

Tunnel sites are a means of discovering valuable minerals when the veins do not extend up to the surface, or the surface is covered by alluvium or talus. A tunnel site claimant cannot patent the tunnel. A tunnel site is considered abandoned if no work has been conducted within the last 6 months.

Tunnel site dimensions are 3000 feet along the direction of the tunnel and 1500 feet on each side of the tunnel. Stakes are usually placed at the surface to form a 3000 by 3000 feet claim. Other miners cannot prospect the surface (except for known lodes) while the tunnel site is being worked.
Underground Workings and Vein Structures

Plan view of the underground workings at the Sweet Home silver mine showing numerous veins.
The Sweet Home Mine is located in the lower third and center of the photo and any mineralized veins discovered underground could be used to establish lode claims on the surface since the scree covering the surface makes it difficult to trace the apex of those mineralized veins.
RELOCATION AND AMENDED CLAIMS

A **RELOCATION** certificate is required whenever the original discovery has moved or is invalid. The rights to the claim are reset to the date of relocation. A relocation is normally filed when there is a flaw in the original location certificate that requires a physical change. One example is if the original discovery is located on ground in conflict with a senior claim.

An **AMENDED** location certificate is usually filed when there is an error such as an erroneous tie to the section corner. Another reason to file an amended location certificate (**ADDITIONAL** location is sometimes used) is to claim an area in conflict with a senior lode claim that has been abandoned. Until the amendment is filed the area of conflict is open ground. An amended location certificate keeps the original location date for seniority purposes.
**UNIQUE ASPECTS OF MINERAL SURVEYS**

**CHARACTERISTICS OF THE RECTANGULAR SURVEY SYSTEM**

- Global in design beginning with an Initial Point, Principal Meridian and Base Line;
- Land divisions are formed by a telescoping grid that is based on well-defined rules & procedures;
- The official survey is normally done prior to sale and before 1909, under contract with the U.S. Government;
- Most township subdivision surveys are conducted under a single contract;
- Subdivision creates common boundaries between land parcels (in other words, the plan is that there are no overlaps or hiatuses);
**UNIQUE ASPECTS OF MINERAL SURVEYS**

**CHARACTERISTICS OF THE RECTANGULAR SURVEY SYSTEM**

- Subdivision does not normally create junior-senior relationships (e.g. a “regular” township subdivision);
- Bona fide rights as to location;
- The concept of closing corners is well defined; and
- **The simple squares of the rectangular survey system are not simple.**
UNIQUE ASPECTS OF MINERAL SURVEYS
CHARACTERISTICS OF MINERAL SURVEYS

• The initial possessory right to Mineral Lands is based on the discovery of a locatable mineral on ground open to mineral entry;
• The lode is determined by additional exploration and development;
• The mining claimant must sufficiently mark his claim so it is readily retraceable on the ground;
• Prior to patent, the claimant must do $100 of annual mining improvements to maintain his possessory right;
• Placer claims are surficial estates and do not normally overlap or create junior/senior rights with abutting claims;
UNIQUE ASPECTS OF MINERAL SURVEYS

CHARACTERISTICS OF MINERAL SURVEYS

• At the time of the application for patent any known lodes within a placer claim must be segregated and staked as lode claims by the placer claimant. Otherwise, others can enter the placer claim and claim the known lodes;

• If there are no known lode claims at the time of the application for patent, all lodes apexing within the surface boundary of the placer claim belong to the placer claimant. However, the placer claimant does not have any extralateral rights to dipping mineralized veins;

• Mill sites are required to be located on non-mineralized ground;
**UNIQUE ASPECTS OF MINERAL SURVEYS**

**CHARACTERISTICS OF MINERAL SURVEYS**

- Mill sites are surficial estates & do not normally overlap or create junior/senior rights with abutting claims;
- While mill sites are required to be located on non-mineralized ground, all surficial and subsurface mineral rights are conveyed to the mill site owner upon issuance of the patent. Like placer claims, no extralateral rights are granted for veins apexing within the surficial boundary;
- Lode claims often overlap and junior-senior rights are the norm;
- Hiatuses and gaps between lode claims are the norm, not the exception;
UNIQUE ASPECTS OF MINERAL SURVEYS

CHARACTERISTICS OF MINERAL SURVEYS

• For lode claims, bona fide rights to the subsurface mineral estate (i.e. extralateral rights) are fully preserved if the end lines are substantially parallel;
• The concept of closing corners is not explicitly defined;
• The loci of all mineral surveys are fixed by a connection to the rectangular survey system, a U.S. Location Monument or U.S. Mineral Monument;
• Mineral surveys are often tied to far distant, poorly established, shifting monuments, supposed to be corners of the rectangular survey system;
• When retracing mineral surveys, thinking outside the box is to be encouraged;
**Unique Aspects of Mineral Surveys**

**Characteristics of Mineral Surveys**

- The mining claimant must employ and pay a U.S. [Deputy] Mineral Surveyor to conduct the official mineral survey after obtaining a survey order (the survey was approved by the U.S. Surveyor General, currently the BLM Branch Cadastral Chief);
- There are explicit rules on how to address the junior-senior rights of two or more lode mining claims;
- U.S. patents to lode mining claims that have conflicts with other lode claims that are senior in right will have an “expressly excepting and excluding” clause after the metes-and-bounds description; and
- **Mineral Surveys are not simple rectangles.**
What resources are available at the Andy Senti Public Lands Information Center other than the obvious patent, plat and field notes? Where should you start?

In Colorado, begin by asking for directions to the index that references the names of lodes and placers to their U.S. Mineral Survey number. Numbers less than 4500 are not unique and the Mining District Number is also needed. After the US Mineral Survey number is known, you should pull the index card for the mineral survey.
Until December 1, 1886 there were seven mineral districts in Colorado each of which had mineral survey numbers beginning with “37” and therefore there can be up to seven mineral surveys with the same number. Mineral survey numbers greater than 4500 are unique and the mineral district number is not required.
Rectangular and mineral survey field notes and plats on microfiche in the Colorado BLM public room. GLO tract books are also included in this collection.
Close-up of microfiche tray containing mineral survey plats and field notes for Land District 3 (same as Mineral District 3 on the Mineral District map). The surveys are organized by mineral survey number, starting with Sur. No. 37.
The public room also contains microfilm rolls for mineral surveys which are organized by the original bound field notes volumes. The microfiche records were imaged from these microfilm rolls so if the microfiche is illegible, the microfilm image may be readable. The mineral survey index cards (see below) include the original field notes volume letter/number.
Mineral survey index cards that contain information on each mineral survey (also includes the mineral surveys that were not approved). The cards are organized by Mineral District number (survey numbers less than 4500) and mineral survey number.
An example of a mineral survey index card. The cards normally include the survey number, claim name, claimant, mineral surveyor, plat book number, field notes volume number, section and township, date of mineral survey order, date survey approved, county, mining district, land district, Mineral Entry number, date and number of patent, and miscellaneous information such as GLO Departmental letters and which claims went to patent.
Another example of a mineral survey index card. The miscellaneous note, “MS on connecting sheet only” indicates that the mineral survey was only approved, not patented.
A separate mineral index card system contains an alphabetical list by mineral survey claim names. For each unique claim name, the index lists all mineral survey numbers and mineral district numbers of mineral surveys that include the claim name.

Note: A very common claim name is “Last Chance.”
Other general information includes the Township Plat, Master Title Plat and any Supplemental Plats, and Connected or Connection Sheets. Master Title Plats show ownership, along with rights reserved by the Federal government such as ditches and canals. The MS number and patent number are included for each survey. If multiple claims are part of the same survey, the interior boundaries are [usually] not shown.

Connection Sheets are generated for each section that has multiple mineral surveys but does NOT show ownership in areas of conflict. The Connection Sheets include approved mineral surveys regardless of whether they are patented or not. In states like Arizona, Montana and Utah, multi-section diagrams are called Mining District Sheets.
An example of a supplemental Master Title Plat in an area with numerous patented mineral surveys (Secs. 22, 27, 33 & 34, T. 8 S., R. 78 W., 6th P.M.).
Close-up of the above supplemental MTP in Sec. 22 that shows the mineral survey numbers, patent numbers and lot acreages of the remaining public lands.

Note: These are early mineral surveys where many of the mineral surveys that overlap do not exclude the conflicting mineral survey(s). In other words, the patents do not include an “expressly excepting and excluding” clause. There are numerous examples on this supplemental MTP showing both patent numbers for the areas in conflict because there are no explicit exceptions in any of the patents.
In addition to pulling the Field Notes and Plat for the survey of interest, it is usually informative to also examine the notes and plats of nearby claims. This is especially true for surveys that were done after the survey you are researching. There is often valuable information in those field notes regarding whether corners were destroyed, material errors in prior surveys, etc. in the “Report” or “Other Corner Descriptions” section of the field notes.
The official field notes of mineral surveys contain a plethora of information, much of it after the metes-and-bounds description at the beginning of the field notes. This is an example where the U.S. Deputy Mineral Surveyor included a separate report to explain why his connection to the PLSS section corner did not agree with a prior official survey.

Note: In this case, the township subdivision survey where this mineral survey is located was surveyed between Oct. 29 and Nov. 7, 1882. The sandstone for Secs. 3, 4, 33 & 34 that was described in the township subdivision field notes as being, “duly set & marked” was found on October 11, 1883 during the survey of the Cutoff Lode, Sur. No. 3434 to have, “rolled down the mountain.” It likely was disturbed during the intervening winter by snow movement or by landslide activity. The section corner was established on June 9, 1873 in the upper portion of a scree slope.
COLORADO GLO DIGITAL RECORDS
AVAILABLE ON PORTABLE HARD DRIVE

(1.) Rectangular survey field notes through Volume 597. Some early volumes and volumes 598 through 617 are available on the GLO Records web site.

(2.) Mineral survey field notes (700 volumes are scanned; 86 volumes remain to be scanned).

(3.) Colorado mineral survey plats and connected sheets not available on the GLO Records web site.

(4.) Miscellaneous finding aids & search strategies.

The BLM Andy Senti Public Lands Information Center has for sale a 1 TB portable hard drive that contains the above information (call (303) 239-3600 for availability and pricing).
GLO RECORDS WEB SITE
https://glorecords.blm.gov/default.aspx

1. Land patent records
2. Survey plats and field notes
3. Land status records
4. Control Document Index records
5. Tract Books
6. Web services and bulk data
7. Reference materials and surveying manuals

LR2000 reports and status serial register pages
https://reports.blm.gov/reports.cfm?application=LR2000
The regional National Archives house many original maps, manuscripts and documents of value to the land surveyor. The U. S. Bureau of Land Management records are catalogued under Record Group 49. For the Denver Archives there is a catalog for each state entitled, “Preliminary Inventory of the Records of the Bureau of Land Management - <state name>”.

The Rocky Mountain Region (includes Colorado, Montana, New Mexico, Utah and Wyoming). Information about the National Archives at Denver is available on their web site.

https://www.archives.gov/denver
Records at the National Archives

Some of the original items of interest to the mineral survey retracement surveyor are:

- Township & Township Triplicate Plats
- Connected or Mining District Sheets
- Segregation Diagrams
- Mineral Survey Plats and Field Notes
- General Land Office Correspondence
- Various Land Office Registers & Indices
- Survey Contracts & Special Instructions

Land Entry Case File ordering information

https://www.archives.gov/research/land

National Archives at Denver, Colorado

17101 Huron Street
Broomfield, CO 80023
Phone: 303-604-4740
An example of the original township plat for T. 8 S., R. 78 W., 6th P.M. that was originally bound in a plat book at the Colorado Surveyor’s General office.
An example of a triplicate township plat, T. 24 N., R. 77 W., 6th P.M., Wyoming that shows the land disposition in this portion of Albany and Carbon counties. This triplicate plat was located at the local Land Office and shows the land disposition along the transcontinental railroad with every other section being granted to the Union Pacific Railroad (blue shading). The land disposed of by the Stock Raising Homestead Entry Act, December 29, 1916 (yellow shading) only granted patent to the surficial estate.
Close-up of the triplicate township plat, showing several corners were monumented by fossilized mastodon bones. U.S. Deputy Surveyor William O. Owen had difficulty finding stone in the area, but luckily found these fossils nearby. In fact, the fossils were from a sauropod dinosaur not a mastodon.

An example of a triplicate township plat of T. 1 N., R. 72 W., 6th P.M., northwest of Boulder, Colorado showing various land disposals, rights-of-way (both roads and electrical distribution lines), Colorado National Forest withdrawal, and lands withdrawn from mineral entry and reserved for picnic areas, etc.
A triplicate township plat, T. 9 S., R. 78 W., 6th P.M. with a letter and notes on the back side. The letter is from the Federal Power Commission granting a 100-foot right-of-way for three electrical distribution lines.
Details of a Federal Power Commission letter describing three electrical distribution lines all with 100-foot rights-of-way.
An example of a connected sheet, Sec. 20, T. 15 S., R. 69 W., 6th P.M. in the Bull Hill area southeast of Cripple Creek, Colorado.
An example of a segregation diagram, Sec. 7, T. 9 S., R. 78 W., 6th P.M. showing an idealized section and the patent description positions of the lode claims along the London Fault, which is west of Alma, Colorado.
An example of a General Land Office Departmental Letter “N” to the U.S. Surveyor General in Colorado.

Note: Letter “N” correspondence is from the Mineral Division of the Commissioner’s office of the GLO in Washington, D.C. This letter is directed at U.S. Deputy Mineral Surveyor, George Holland who is being chastised for allowing others to survey a portion of the mineral survey that only he was authorized to conduct. By regulations and instructions, mineral surveyors were required to personally conduct the survey in the field.
An example of the left page of the abstract of title for the Silver Gem Lode that was part of the patent application for Sur. No. 4617. The papers included in the patent application can be ordered from the National Archives via an online form. The National Archives refers to the patent application as the Land Entry Case File.

https://www.archives.gov/research/land
An example of the right page of the abstract of title of the Silver Gem Lode that was part of the patent application for Sur. No. 4617. The papers included in the patent application can be ordered from the National Archives via an online form. The National Archives refers to the patent application as the Land Entry Case File.

https://www.archives.gov/research/land
An example of a “US. Surveyor General’s Final Certificate On Field Notes.” The U.S. Surveyor’s General office after approval of the mineral survey would prepare a transcription of the official field notes for the claimant. The claimant would include the transcribed field notes in the application for patent. This form certified that the transcription was a true and accurate copy of the approved field notes.

Note: On occasion, the metes-and-bounds description in the official field notes will not be the same as in the patent. The transcribed copy of the field notes that the patent was based upon can be obtained from the National Archives by ordering the Land Entry Case File for the mineral survey and used to isolate the source of the scrivener’s error.