FUNDAMENTALS OF NON-CONVENTIONAL CADASTRAL SURVEYS

The Mining Laws - Historical Background

The Land Ordinance passed by the Continental Congress on May 20, 1785, contains a proviso reserving from the townships "...one-third part of all gold, silver, lead and copper mines, to be sold, or otherwise disposed of as Congress shall hereafter direct."

Except for a somewhat unsuccessful attempt to lease the lead mines in Missouri, Illinois and Wisconsin, Congress did very little "hereafter directing" until 1866. Early day surveyors of the public lands were required to make note of mineral and salt deposits, among other things, but there is little evidence that this information was used to any extent in the disposal of the minerals. Large iron and copper deposits were known to exist in Michigan, Wisconsin and Minnesota, yet most of these lands were disposed of on the same cash-entry basis as the normal agricultural lands. The usual price of $5 per acre hardly reflected the value of the minerals contained on and under these lands.

Though some small deposits of placer gold were discovered and mined near Los Angeles in 1820, and near Gold Hill, North Carolina, in 1842, the first great mining activity in this country was the 1849 Gold Rush to the placer mines in California.

The thousands of American and foreign citizens who flocked to the gold fields in hope of becoming rich were all trespassers on the public domain. Since Congress had enacted no laws preventing the taking of gold from the public lands, those engaged in mining took the silence on the matter as acquiescence, or even tacit approval.

In the absence of statutory mining laws, and the absence of law enforcement officers, the miners made their own laws. They formed vigilante committees and enforced their rules with ropes and gun powder. Their methods proved, generally, to be effective.

Under these "miner's laws," which were based primarily on the "right of possession" and the Spanish laws of discovery and development, the first person to discover and stake claim to a mine, and then proceed to work that mine, was in possession. To the miners, possession was nine-tenths of the law.

If a miner abandoned his claim by failure to actively work it, the claim could be re-staked by someone else. This led to claim jumping and other problems. In order to deal with these problems, the miners formed "mining districts." They elected officials who accepted claims, kept records, made rules and heard disputes. Although the rules sometimes varied from one district to another they soon came to be much the same as the miners moved rapidly from one district to another in search for greater riches.

As states came into the Union or territories were created by Congress, the respective legislatures passed mining laws and regulations. In 1850, California passed a "Possessory Act," which regulated mining on agricultural lands in possession of someone other than the miner. Regardless of the Possessory Act or who held "possession," the lands were still part of the public domain of the United States.

Placer Mines and Lode Mines

Placer mines are those in which the mineral is found in free form, such as nuggets or flakes, in superficial sand or gravel deposits. Placer mines require large amounts of water to operate sluice boxes and other washing or panning apparatus used by miners to retrieve precious mineral from dirt, sand or gravel.

The placer miners dug ditches and canals along the mountain sides to bring the required water to their claims even though these early mining ditches were dug in trespass on the public domain.

Placer mining was predominant until the discovery, in 1859, of the silver-rich Comstock Lode at Virginia City, Nevada.

A lode claim is located on a vein of hard rock in place. Lode mines require tunnels and mills to reach, extract and process the ore.

Lode mining presented problems different from those of placer mining. For example: What if a miner discovered other veins of valuable mineral not previously known to exist while drilling a tunnel to his own vein? And if a miner should build a mill on top of a vein of ore, who would own that vein? By comparison the placer mining problems were few due to the fact that those workings were usually on the surface. Lode mines were such a different matter that their operation required many more laws and regulations.

1866 - The First Congressional Statutes

Congress disposed of the lead mines in the State of Arkansas and Illinois and the Territories of Iowa and Wisconsin in 1846 (9 Stat. 37) and then, for all practical purposes, was silent on the subject of mining for 20 years. Although there were many heated debates over the mineral lands and how they should be leased or sold, nothing significant materialized from all the discussion until July 25, 1866. On that date Congress passed an act entitled, "An Act Granting to A. Sutro the Right of Way, and Granting Other Privileges to Aid in the Construction of a Draining and Exploring Tunnel to the Comstock Lode, in the State of Nevada" (14 Stat. 242).

Under the terms of this Act, Sutro was granted the right to drill a tunnel and claim up to two sections of non-mineral land, not in the possession of others, near the entrance of the tunnel. He was also granted the right to purchase the mineral veins and lodes within 2000 feet of each side of the tunnel, at prices from $1.25 to $5 per acre. Subject to the various stipulations and provisions of the act, a patent was to be issued for the lodes and veins.

The day after passage of this act, July 26, 1866, Congress passed "An Act granting Right of Way to Ditch and Canal Owners over the Public Land, and for other purposes" (14 Stat. 251). Section 9 of the Act does grant such a right of way. Section 1, however, declared its main purpose; "...the mineral lands of the public domain, both surveyed and unsurveyed, are...free and open to exploration and occupation..." Regardless of its title, it was unquestionably a Lode Mining Act.

Section 3 set forth the procedures to be followed in making proper application for patent and pointed out that "...it shall be the duty of the surveyor-general, upon application of the party, to survey the premises and make a plat thereof..."

In no case was the plat, survey or description, or the patent, to cover more than one vein or lode.

The fourth section of the Act limits the length of a lode claim filed after passage of the Act to 200 ft; no minimum or maximum width is mentioned. All lode claims made prior to July 26, 1866, were to be in conformity, as to size, shape, etc., with the customs of the miners and local laws and rules. Each person could make only one location on a lode or vein. An association of persons was limited to 3000 feet (15 locations) along a single vein or lode.

Section 10 of this Act provided for agricultural entry on lands previously withdrawn as mineral lands on which no "valuable mines" had been discovered.

No mention of placer claims was made in the 1866 Mining Act. The prolonged silence of Congress in regard to placer claims was broken four years later.

1870 - Placer Claims Added

On July 9, 1870 (16 Stat. 217), the Lode Claim Act of 1866 was amended by the addition of sections 12 through 17.

Section 12 made placer claims, which included "...all forms of deposit, excepting veins of quartz or other rock in place...," subject to entry and patent. Where the lands were previously surveyed according to the rectangular system, the entry was to conform to legal subdivisions and was limited to 160 acres for each claimant or association of claimants. This section also provided "that the legal subdivision of forty acres may be subdivided into ten-acre tracts." No specific mention is made of how the claim was to be made on unsurveyed lands and there was no requirement that the deposit be valuable.

Section 13 provides that placer claims must meet requirements of State or Territory statutes concerning limitations for mining claims. Presumably placer claims made prior to July 9, 1870, would come under the local laws and customs mentioned throughout the first 11 sections of the Act.

It took less than two years for some of the obvious deficiencies of the Placer Act to be corrected.

1872 - The Mining Act

The Act adopted by Congress on May 10, 1872 (17 Stat. 91) is still the basic mining law of the United States. There have been amendments pertaining to coal, oil and gas (minerals which are now leased), but insofar as the Act pertains to lodes and placers, it is still in effect. Most of the mining claims requiring resurvey by the cadastral surveyors of the Bureau of Land Management were patented after the passage of this 100 year old statute.

Probably no other law of the land has created more litigation or has been interpreted more by lawyers and the courts. Few of these legal cases have had direct connection with the dependent resurvey of a mining claim. A cadastral surveyor must, however, have a basic understanding of the mining laws and the various decisions regarding them in order to resurvey a patented claim. Such knowledge is also required when surveyors must restore the corners of patented mining claims in order to segregate them from the remaining public lands.

This discussion is limited to the fundamentals of the laws concerned with mining in the United States. For a more complete treatment of the subject, refer to the 1872 Mining Act, 17 Stat. 91; U.S. Code, Title 30, and the numerous books that have been written on mining claims and mining laws.

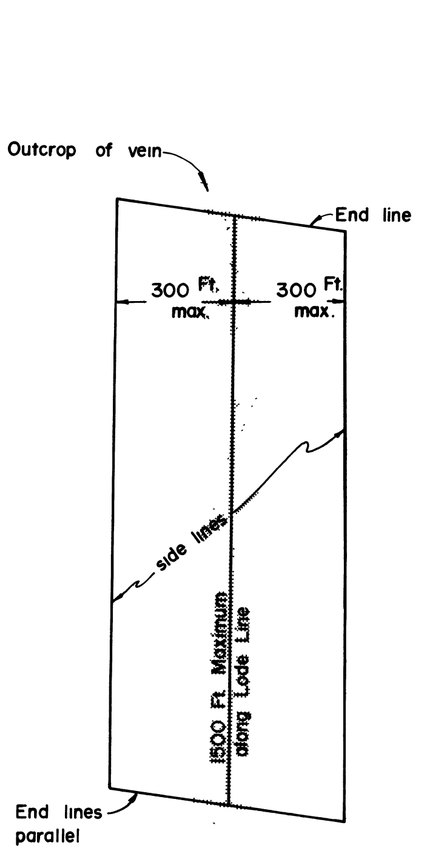
Lode Claims

An individual may make a claim upon "...veins or lodes of quartz or other rock in place bearing gold, silver, cinnabar, lead, tin, copper, or other valuable deposits... ." The lode claim is limited to 1500 feet in length along the vein and 600 feet in width (300 feet each side of the vein) as measured at right angles to the vein or "lode line." The endlines of a lode claim must be parallel.

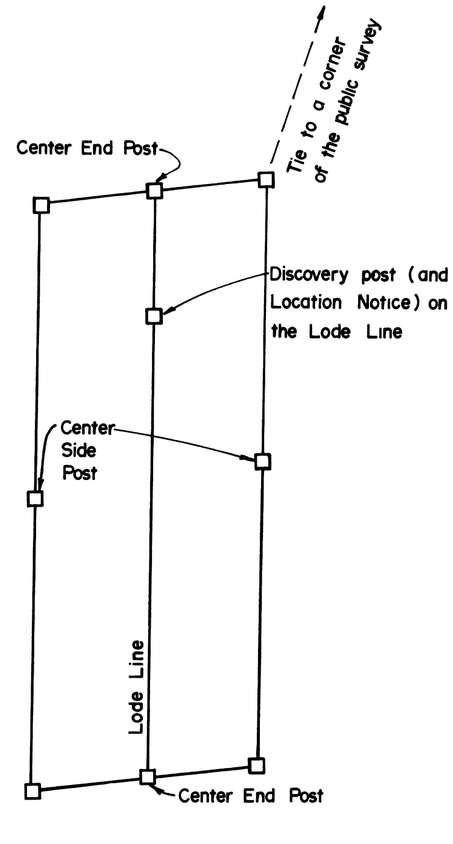
When a prospector finds a vein or lode which he believes to contain valuable mineral, he follows a more or less basic process in establishing his claim. He places a post at his discovery point and traces out the vein, as nearly as is possible, to determine the lode line. By whatever means he has available, he places posts at the four corners of his claim. He places a notice and description of his claim in a suitable container (usually a can or jar) on his discovery post.

Claims may be located in the following states: Alaska, Arizona, Arkansas, California, Colorado, Florida, Idaho, Louisiana, Mississippi, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, and Wyoming.

The prospector must comply with varying state laws as well as the Federal statutes. Some states require center end posts, that is, posts on the lode line at the end of his claim. Other states require center side posts. North Dakota is the only state that restricts the maximum of 600 feet in width.



LODE CLAIM, 1872
MINING ACT



LODE CLAIM MONUMENT
NOMENCLATURE

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After he has made his discovery and staked his claim, the claimant files a location notice with the county clerk or recorder in the county in which the claim is located. Before the counties were formed, such notices were filed with the mining district recorder. A notice of location must contain a description of the claim and a tie to a permanent land monument such as a section or ¼ section corner, or a location monument, or a tie to natural features which make it possible for the claim to be identified.

There are three things the locator must watch out for. He must not stake his claim on lands withdrawn by the BLM from mineral entry. He must not stake his claim on lands already patented in fee to someone else. He must be careful not to place his discovery point on a claim location already staked by and in possession of a prior locator. He may stake his claim in conflict with a prior claim but, if he does so, he should show the prior claim and where the claims overlap.

Survey Not Required

The claimant need not have the claim surveyed. To hold possession he must do at least $100 worth of "assessment" work on the claim each year. As long as he remains in possession and works the mine as a paying operation, he does not need to have the claim surveyed and he does not need to make application for patent. Many multi-million dollar mines operate on unpatented mining claims.

U.S. Mineral Survey

If a mining claimant does wish to patent his claim, he must first have it surveyed. The claimant must pay the cost of the survey and the attendent expenses of field note and plat preparation, application fees, etc. The Bureau of Land Management asserts rigid control over the manner in which the mineral surveys are conducted and reported. The Bureau examines and appoints qualified mineral surveyors. These surveyors, ordinarily private practitioners, occupy a peculiar position in that during the execution of the surveys they are technically Government employees even though their fees are paid by the claimants who employ them.

A claimant who wishes to arrange for a mineral survey should first request an official list of appointed mineral surveyors from the Bureau of Land Management. He may then select a surveyor from the list and make financial arrangements with him. The claimant may then make application for a mineral survey.

Instructions are written which, among other things, direct the mineral surveyor to execute the survey, inform him of other known U.S. Mineral Surveys in the area and assign a U.S. Mineral Survey number. Usually claimants also give their lode claims a name, such as "Nellie Lode," or Black Jack No. 1." The names are for identification purposes and they simplify reference to specific lode claims.

A claimant has the right at any time to fire the mineral surveyor and choose his successor. The Bureau of Land Management, however, tells the surveyor how his survey is to be conducted.

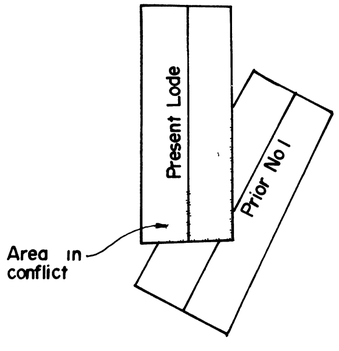
Once an application for survey has been made the claimant is precluded from amending his location. If he did not have the assistance of a surveyor when he staked the location, his location may not have parallel endlines or may be oversize, undersize or the like. If there are no other locations adjacent to or in conflict with his claim he may choose, prior to applying for a survey, to amend his location to correct the defects. However, if he does amend his location, his location rights start on the date the location is amended. Once the Order for Mineral Survey is issued, the surveyor must make the survey within the lines as marked by the location posts. He must make the endlines of lode claims parallel and the lode must not exceed the length and width restrictions.

In making the mineral survey the surveyor must show any conflicts with patented land, prior mineral surveys and any conflicts with claims within the same group of claims when there is a group-claim survey. Known conflicts with prior locations, even if they are unsurveyed, should also be shown if they are to be excluded. The surveyor must tie Corner Number One of each claim to, preferably, the nearest identified corner of the rectangular survey system within a two mile distance or to a location monument within the limiting distance.

When the required field work is completed the mineral surveyor must submit his field notes and a plat of the survey to the BLM, along with an estimated value of all improvements and expenditures found within his survey. The field notes are checked for correctness and the mineral survey plat is prepared by the BLM, with costs charged to the claimant.

Mineral surveyors are now appointed by the Washington Office (43 CFR 3861.5), but mineral surveys are not submitted to the Washington Office as is the case with other public land surveys. Instead, when all is in proper order, a mineral survey is approved at the State Office level. Once approved, the mineral survey becomes an official government survey with all the attendent restrictions and regulations pertaining thereto.

A mineral survey by itself confers no rights to the claimant that he did not have under his original location. It is more of a pre-requisite to patent than anything else at this point. After the survey is approved the claimant may apply for patent, though he is not required to do so.



Field Examination Prior to Patent

If a claimant applies for a patent, an examination is made of his claim by a qualified mineral examiner, a government employee, who determines whether or not the claim is valid under the law. To be a bona fide claim it must contain "valuable" minerals. This has long been defined as minerals sufficient in quantity and quality and of such character as to encourage a prudent person to expend time, labor and money to extract those minerals with a reasonable degree of expectancy of making a profit from the endeavor. Almost any vein or lode in the mining areas of the country will contain traces of metals. A mere trace or mineral of low quality would not, however, constitute a valid claim (U.S. v. Coleman, 88 S. Ct. 1327; 20 L Ed. 2d 170).

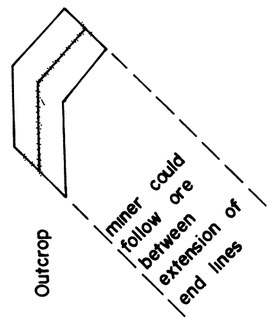
If found valid and free of adverse claims after the required posting and advertising, the claim will go to patent, with payment at the rate of $5 per acre.

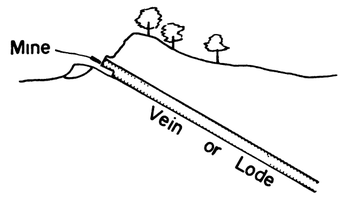
Conflicts with prior patents or other claims within a group or with valid lode locations held by other claimants, and which are excluded from the patent description, are the cause of most of the cadastral surveyor's problems when he is executing a resurvey to define the boundaries of the public lands.

The Surveyor and the Provisions of the 1872 Mining Law

Section 2 of the 1872 Mining Act limits a lode claim to 1500 feet in length along the vein and 300 feet in width on each side of the vein. These dimensions may be reduced by local statutes or mining regulations but cannot be reduced in width by such rules to less than 25 feet each side of the vein. The end lines of the claim must be parallel. No minimum length is specified.

In early mining practice many claims were much less than 1500 feet long and as little as the minimum 50 feet in width. Since the side lines do not have to be parallel the claims often had two, three or more courses along a side line, but never a dog-leg in the end line. The end lines were required to have a "substantial" length (34 L.D. 470, 35 L.D. 22). Claims made prior to the 1872 Mining Act, under the provisions of the 1866 Mining Act, could be made by up to 15 locators but could later be surveyed as one claim. This resulted, on occasion, in a patent for a mineral survey which is up to 3000 feet long and only 50 or 100 feet wide.

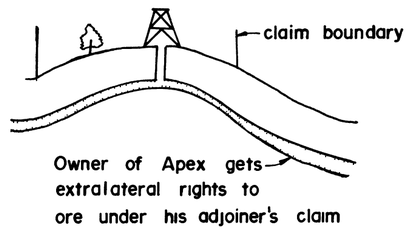




Apex at an outcrop

Section 3 of the Mining Act grants extralateral rights to persons who hold lode claims in which the apex or top of a vein is located. Under this provision a claimant with extralateral rights could follow a vein which "apexed" within his claim in its downward dip, outside the side lines of the claim but only within the vertical plane drawn through the end lines. He could mine a vein apexing on his claim and under the surface of adjoining property belonging to someone else. He had no right to the adjoining surface, however.

Extralateral rights were granted only if the end lines of the claim were parallel. A claim without parallel end lines would be allowed, but without extralateral rights. If a mineral survey returned parallel end lines and the monuments on the ground revealed that the end lines were not in fact precisely parallel, this would not deprive the claimant of his extralateral rights if the end lines were substantially parallel (Grant v. Pilgrim, C.C.A. Alaska 95 F. 2d 562; Note 157,30 U.S.C.A. 26).



Because of the parallel end line requirement claims were often staked and later surveyed in conflict with adjoining mineral surveys or patented lands. The trespass was legally allowed so long as it was done "peaceably." The areas in conflict were excluded from the claim which left it a fraction of a full claim. These claims were often called "fractions," such as "Standard Fraction" or "Alpine Fraction."

Although not specifically mentioned in the 1872 Mining Act, it has also been ruled that mining claims receive riparian rights if one line of the claim is shown by the survey of the claim as being a meander line along a meanderable body of water (45 L.D. 330, Alaska, 1916).

Section 4 of the Mining Act granted the right of possession to veins and lodes discovered in tunnels, and prevented locations on the surface along the line of the tunnel so long as the tunnel remained valid.

Section 5 of the Mining Act deals with recording requirements, annual assessment work requirements and other factors not directly connected with the surveys.

Section 6 provides for patenting claims. One of the requirements under this section is "...a plat and field notes of the claim or claims in common, made by or under the direction of the United States surveyor-general, showing accurately the boundaries of the claim or claims, which shall be distinctly marked by monuments on the ground,..." shall be filed with the application for patent.

The surveyor-general was to certify that $500 worth of labor had been expended on the claim, that the plat was correct and contained a full description of the claim by "...reference to natural objects or permanent monuments as shall identify the claim..." The term "permanent monuments" has been adjudicated to include just about anything but it usually means a corner of the rectangular survey or a location monument within two miles of the claim.

Section 7 of the Mining Act describes adverse claims and authorizes a "court of competent jursidiction" to settle the dispute or decide who gets the claim. The Land Office could not be the final judge unless the adverse claim was waived.

Section 8 of the 1872 Mining Act is probably the cause of more problems for the present day surveyor than any other part of the Act. Keep in mind that resurveys, except where specified by law, were not authorized until the Act of March 3, 1909 (35 Stat. 845) as you read this section, which follows in its single-sentence entirety:

> Sec. 8. That the description of vein or lode claims, upon surveyed lands, shall designate the location of the claim with reference to the lines of the public surveys, but need not conform therewith; but where a patent shall be issued as aforesaid for claims upon unsurveyed lands, the surveyor-general, in extending the surveys, shall adjust the same to the boundaries of such patented claim, according to the plat of description thereof, but so as in no case to interfere with or change the location of any such patented claim.

Of course, the "rectangular" sections in a township are very often far from being rectangular. They may be a misshapen figure with eight or more sides. The requirement in this section of the Mining Act that the surveyor-general was to segregate the mining claims from the rectangular survey system according to the mineral survey plat was interpreted as meaning that no change could be made in the dimensions of the claim as shown on the plat.

Segregation diagrams were made of a township, portions of a township or individual sections, depending on the mining activities and number of mineral surveys. When a mineral survey was made and tied to a section corner the claim was plotted on the diagram according to the bearings and distances returned in the mineral survey. There was no problem as long as there was only one claim or as long as the claims were far apart. These ties, which were supposed to be made from corner number one of the claim to the

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nearest identified sections or quarter section corner were not, however, always accurately made. The exterior boundaries of a section were drawn, usually nice and square on the rectangular record. As more claims were surveyed and tied to different corners, conflict with previously plotted claims would appear even if they did not exist in fact on the ground. A mineral surveyor might show a conflict with a prior (and perhaps patented) mineral survey though, when it was plotted on the segregation diagram, no such conflict would appear.

The surveyors-general were, or thought they were, in an impossible situation. They had no statutory authority and no funds with which to perform resurveys of the section lines. They couldn't resurvey the previously surveyed claims, the claimant had to pay for the present mineral survey and the surveyors-general had to make their segregation diagram strictly on the basis of the survey records.

Some surveyors-general forced their mineral surveyors to show conflicts where in fact there were none, and in other instances to not show conflicts which did exist.

These segregation diagrams usually were not "official" records of the General Land Office. They were signed by the surveyor-general of a particular state or territory but were not approved by the Surveyor-General of the United States in Washington.

As mining claims were added a new sheet protracting the the legal subdivision, segregating the mineral survey and assigning lot numbers to the remaining fractional areas was sometimes made. Many times, when new sheets were prepared, lot numbers were kept the same but the area was reduced. Sometimes they were repeated in a different place on the diagram. An agricultural entry patent was sometimes issued for certain lots and/or legal subdivisions, but the lot's location, and the area of the lot, might depend on which diagram was being used.

The Mary Darling Placer Claim, 31 L.D. 64, is an example of the problems created before these practices ended with the passage of the Act of April 28, 1904. This Act amends Section 2327 of the Revised Statutes (33 Stat. 545; 30 USC 34) and declares that the monuments on the ground shall control over erroneous or inconsistent descriptions or calls and the surveyors-general are bound to recognize them.

Though the situation was improved, the surveyors-general still did not have a resurvey law, so they "passed the buck" to the mineral surveyors. Sections 43 through 49 of the Manual of Surveying Instructions for the Survey of the Mineral Lands of the United States, 1909 (prepared in 1908), provide that if a mineral surveyor reports an error in a previous (unpatented) mineral survey, the first surveyor must go out, correct the error and amend his survey. If however, he says the second surveyor is the one in error, they must make a joint survey and resolve the dispute. It is not hard to visualize the risk the second surveyor would run if he reported the first surveyor to be in error; it could be costly in time and money and might lead to some rather hard feelings between surveyors. Most "amended surveys" are due to these requirements.

Segregation diagrams are no longer made. They have long since been replaced by the familiar supplemental plats and connected sheets.

The problem of non-existent conflicts excluded from a mineral claim patent was dealt with in 45 L.D. 10. The decision in that case was: If a patent calls for an exclusion because of a conflict with a senior claim, and that conflict does not exist on the ground as shown by the monuments, the excluded area belongs to the patentee of the Junior claim. The basis for the decision was that, had it been known at the time of the patent that no conflict existed, no exclusion would have been made.

Whether such an exclusion might remain public land subject to survey or might instead have passed to the patentee of the mineral claim, would be subject to close examination of the circumstances causing the exclusion and the wording and intent of the patent. In general, where the patents described the Junior claim by metes and bounds to exclude the conflict, the area in conflict would remain Public Lands. Where the Junior claim patent described the entire claim"less its conflict with.." the Senior claim, the situation fits 45 L.D. 10, and title would pass to the Junior claim patentee.

Section 9 of the Mining Act repeals portions of the Lode Mining Act of 1866, and provides for the patenting of claims made under that Act.

Section 10 retains the Placer Claim Act of 1870, but provides that placer claims are limited to 20 acres for any one placer location. Under this section, a group claim was still not to exceed 160 acres. The placer claim was to be in conformity with the legal subdivisions "as near as practicable," if located on surveyed lands, and no further survey was required. If the claim was on unsurveyed lands, or could not be made to conform with the rectangular system, a survey and plat were required. The last provision in this section of the Act directs "... that where by segregation of mineral land in any legal subdivision a quantity of agricultural land less than 40 acres remains, said fractional portion of agricultural land may be entered...for homestead purposes."

The provision that all placer claims conform to the legal subdivisions of a section made it possible for the claimant to receive patent by an aliquot part(s) description without the expense of a mineral survey and plat. The provision that it must conform "as near as practicable," however, caused the legal subdivision method to be widely ignored. Gold placer claims were often made along a mountain stream in ravines that sometimes caused them to assume rather wild shapes. Below Tincup, Colorado, there were "gulch placers" that were as little as five feet in width and stretched for 18 miles along the creek (6 L.D. 227). These claims were rejected by the local land office, but the rejection was overruled and patent was granted. Resurveys of such placer claims today could be quite a task.

For a full discussion of placer claims, see also Snow Flake Fraction Placer, 37 L.D. 250.

Some state statutes or local regulations, and even some surveyors-general, required that the corners of a placer claim be staked even if taken by legal subdivision. Such surveys often take the form of a stairstep pattern of allegedly aliquot parts, because the sections were not always properly subdivided. The surveyor sometimes started from a section or quarter-section corner and, for example, ran West, 10 chains; North, 20 chains; West, 10 chains, and then indicated he was at the SE1/16 section corner. That could be true only if the section was a perfect 80 chain square and the surveyor's work was precise.

A dependent resurvey and subdivision of section may, however, reveal a distorted section. The cadastral surveyor may find the placer claim monumented on the ground, but he may also find that the monuments do not conform to the positions described by aliquot parts in the patent.

If the patent described the placer using the aliquot parts, the practice followed by the BLM would be to honor the aliquot parts of the distorted section. This would be dependent on the ownership pattern and the local usage regarding the claim corner monuments.

Had the patent been issued by reference to a plat of the mineral survey which showed the cardinal courses, the BLM would then honor the monuments as found on the ground.

The last provision of this section of the Mining Act results in what is known as a "mineral segregation survey." If a mineral survey of a lode claim has been made in a section and there is good reason to believe there is distortion in the section lines, a supplemental plat based on the survey records could lead to a misrepresentation of the true acreage remaining in the section. A resurvey is made of the section boundaries and the mineral claim for the purpose of segregating the mineral land from the agricultural land. The fractional parts are given lot numbers and areas. These "segregation surveys" are now infrequent. They may be made to segregate either an official mineral survey or a valid, but unsurveyed, mineral location in which the lode claimant has a valid possessory title. See section 3-71 of the Manual of Surveying Instructions, 1973, which, generally, requires retracement of claims to provide accurate lotting of remaining public lands.

Section 11 of the Mining Act deals with lode claims within placer claims. If a known lode exists within a placer claim the claimant must file separately on the placer and on the minimum lode claim, 1500 feet in length and 50 feet in width. The lode is deducted from the placer for determining the price to be paid. If one claimant locates a lode claim and another locates a placer claim encompassing the prior lode location, the prior location (if valid) must be segregated from the placer. In this situation, a cadastral surveyor may be called upon to execute a segregation survey.

Sections 12, 13 and 14 deals with the appointment of and rules regarding mineral surveyors, land office regulations and handling of contests, and the ownership of intersecting lode veins, respectively.

Section 15 of the Mining Act provides for patent to be issued for up to 5 acres for a millsite. The millsite must be on non-mineral land and it may not be contiguous to the vein or lode. This was long held to mean that a millsite could not be contiguous to the lode claim. From this came instances where millsites were surveyed on non-mineral bearing land with only a foot or so of space between the side line of a lode claim, and the side line of the millsite. It is now acceptable for the millsite to have a common boundary with the side line of the lode claim (Yankee Millsite, 37 L.D. 674).

The millsite can be located across the end line of such a lode claim, but the area within the millsite must be shown to be non-mineral bearing in character (Montana-Illinois Copper Mining Co., 42 L.D. 434).

There is no mention of how many millsites may be taken up, but each one must be actually used for milling or mining purposes.

Mining Laws Codified

The preceding discussion is primarily directed toward an understanding of what happened in the past in order to give the cadastral surveyor some idea of what he may find when surveying an old mining claim. For that reason, the provisions of the mining law discussed are those of the 1872 Mining Act as written in the United States Statutes at Large.

In 1874, the Statutes at Large were re-written and codified under the Revised Statutes. In some cases the Revised Statutes had slightly different wording than the corresponding section of the original.

In 1926 the mining laws were broken down into sections and codified in Title 30 of the United States Code. The present wording of the mining laws is that contained in the United States Code, Title 30.

Mineral-Land Laws Since 1872

Since 1872, Congress has passed many laws pertaining to mineral lands. Most of them have been for specific purposes. Some of them are of possible interest to cadastral surveyors.

1897 - The Act of February 11, (29 Stat. 526), placed the public lands that were chiefly valuable for petroleum under the placer mining laws. The oil lands were taken up as a placer claim under the provisions of this Act.

1899 - The Appropriations Act of February 3 (30 Stat. 1095), authorized the survey of irregular homestead entries in the Black Hills Forest (Reserve) in South Dakota.

1904 - The Act of April 28 (33 Stat. 545), declared (as noted previously) that the monuments on the ground control over the field notes and plat.

1905 - The Act of February 1 (33 Stat. 628), transferred the administration of the National Forest Reserves to the U.S. Forest Service. The Act, however, provides that the administration of the minerals and land laws remained under direction of the General Land Office. Although the Forest Service does the administrative work (validity, etc.,) of mining claims within the national forests, the mineral survey, patent, etc., are still under the jurisdiction of the Bureau of Land Management.

1906 - The coal lands were withdrawn from entry.

1909 - The Act of March 3 (35 Stat. 845), authorized the resurvey of the public lands and also authorized patents on coal lands. The coal itself, however, was reserved to the United States.

1914 - The Act of July 17 (38 Stat. 509), permitted the entry of mineral lands containing nitrate, phosphate, potash, oil, gas and asphalt. These minerals, however, were reserved to the Government.

1920 - The Mineral Leasing Act (41 Stat. 437), provided for the leasing of oil, gas, coal, phosphate, sodium and other minerals. The Mineral Leasing Act affects the cadastral surveyor because he may be called upon to survey the surface of patented lands in order to determine where the Government retained the minerals. In this connection the surveyor could come increasingly under state laws, state court decisions, and local conditions affecting the execution of a resurvey, because the boundaries of the sub-surface rights follow the surface boundaries.

1960 - The Act of March 18 (74 Stat. 7), authorized the locating and patenting of millsites adjoining placer mining claims.

1962 - Public Law 87-851, enacted October 23, 1962, is also known as the Mining Claim Occupancy Act (MCOA). This law provided that the occupant of a mining claim which was not valid could receive that part of the claim actually used by him for a residence. The occupant was required to have been a resident on the claim for seven years prior to July 23, 1962. He was required to pay for the survey of his tract, which could be up to, but not exceeding 5 acres in size. Payment for the tract was to be at the current valuation rate. This law expired on June 30, 1971.

FUNDAMENTALS OF NONCONVENTIONAL CADASTRAL SURVEYS

Other Metes and Bounds Surveys

Many other non-conventional, metes and bounds type surveys have been executed in the past. Some, other than those in Alaska, are currently being made. The cadastral surveyor may have occasion to resurvey any of them. In all of them the corner restoration principles are very much alike. The following is a description of some, but not all, of these older surveys.

Donation Land Claim (DLC)

Donation land claims were authorized in Florida, New Mexico and Oregon by the Acts of August 4, 1842 (5 Stat. 502), September 27, 1850 (9 Stat. 496), March 2, 1853 (10 Stat. 172) and July 22, 1854 (10 Stat. 308).

For the most part, DLC's were surveyed in a rectangular form with north-south lines and east-west lines. Nevertheless, many were irregular in shape and some were bordered on one or more sides by a meanderable body of water. In the latter instance the DLC attained riparian rights. New plats of rectangular surveys followed DLC surveys and fractional portions remaining in a section were given lot numbers. DLC's were numbered beginning with DLC No. 37 in each township in which they appeared.

Soldiers' Additional Homestead

The Act of April 4, 1872 (17 Stat. 49), as amended by the Act of June 8, 1872 (17 Stat. 333), granted an additional homestead to veterans of the Civil War. The Act of March 3, 1909 (32 Stat. 1028), extended the provisions of the previous Acts to Alaska. Under the terms of these Acts, a soldier could take an additional entry which, when added to his original homestead entry, would not exceed 160 acres. These additional entries could be preempted. Sometimes they were for only a few acres and were seldom in rectangular form.

Indian Allotments

Indian allotments were surveyed under various laws and provisions. On reservations they normally were about 20 acre tracts which conformed, more or less, to the rectangular subdivision of a section. In other places they would run as much as 160 acres. Sometimes they were rectangular in form but not in cardinal directions. The variations in Indian allotments are so great that it is impossible to be specific. They were identified by name and/or number in such a widely differing system (or lack of system) that the surveyor must examine each situation in itself.

National Forest Homestead Entry Surveys (H.E.S.)

The Act of June 11, 1906 (34 Stat. 233), provided for agricultural homestead entry, within the national forests, of public lands that had been classified by the Forest Service as more suitable for agricultural than for forestry purposes. These Homestead Entry surveys were usually made by a Forest Service surveyor under Special Instructions issued by the General Land Office. These surveys were, more often than not, a many sided figure with 20 or more corners or angle points. They were generally well executed and their restoration seldom poses any serious problem. In each of these surveys the plat was made by the GLO and the field notes and plats were approved by the GLO prior to the issuance of patent by the land office.

The National Forest Homestead Entry Survey Act was repealed on October 23, 1962 (76 Stat. 1157), and these surveys are no longer executed.

Exchange Surveys

The exchange surveys were authorized by the Act of March 20, 1922 (42 Stat. 465), and amendments thereto. Under this act, the Forest Service is authorized to exchange an area of public land for an area of privately owned (patented) land elsewhere in a national forest. The purpose of the exchange is to provide for a consolidation of lands in order to facilitate administration of the forests. Originally, most of the exchange surveys were made by the Forest Service with Special Instructions, plats and patents issuing from the General Land Office in much the same manner as usual for homestead entry surveys within the national forests. The Act anticipated that exchanges were be be made by aliquot parts or lot numbers from a supplemental plat, but irregular metes and bounds tracts are far more usual in exchange surveys. Many of the tract surveys being made by BLM surveyors on lands administered by the Forest Service are made for the purpose of effecting exchanges.

Small Holding Claims

The Small Holding Claim (SHC) surveys were made pursuant to the Act of March 3, 1891 (26 Stat. 854), the Act of June 15, 1922 (42 Stat. 650) and the Act of June 8, 1926 (44 Stat. 709). Most of these were in New Mexico and Arizona. They were surveyed so that patent might be granted to the claimants of small tracts. They were usually in a group due to the settlement of a village. A special court verified the claims and the survey was made in accordance with the lands awarded to the bona fide claimant. Most surveys of these small holding claims were well executed. Unless there has been extensive obliteration of the original corners and angle points, few serious problems are encountered in their restoration.

Spanish and Mexican Land Grants

Most of the Spanish and Mexican land grants are in southern California, Arizona and New Mexico. The Federal Government acquired title to the lands that make up these States by treaty with or purchase from Spain and Mexico. The bona-fide rights of the owners of lands which had been granted by Spain or Mexico were honored by the United States. A court-of-claims verified title upon proofs. The grants were then surveyed and verifying patents were issued.

Sometimes the grants adjoined each other and a "dividing" survey was not executed. This left the boundary between contiguous grants described but not surveyed on the ground. In these instances the division line between grants is open to interpretation and may require a great deal of research and investigation before a dividing line may be fixed by survey.

These land grants may contain only a few acres up to thousands of acres in area and have from as few as four corners up to hundreds. The original surveys were often poorly executed, poorly monumented and vaguely described. Restoration of a grant boundary may, therefore, be extremely complex. Resort may be made to all types of collateral evidence, including topographic calls, in order to fit the original survey to the shape of the natural terrain features. If the boundary of the grant is along a meandered river or the ocean, the boundary is riparian.

Bibliography

Gates, Paul W., History of Public Land Law Development; Swenson, Robert W., Chapter XXIII, Legal Aspects of Mineral Resources Exploitation, U.S. Government Printing Office, Washington, D.C., November 1968.

General Land Office, Manual of Surveying Instructions for the Survey of the Mineral Lands of the United States, 1909, U.S. Government Printing Office, Washington, D.C., 1909.

Lindley, Curtis H., American Law Relating to Mines and Minerals (3 Vols.), San Francisco, 1914.

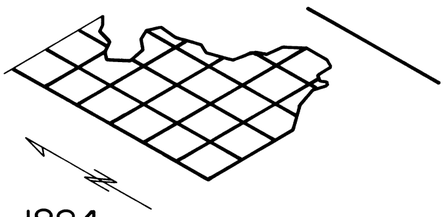
Morrison, Arthur R. and Desota, Emilio D., Mining Rights on the Public Domain, 16th Edition, Bender-Moss Company, San Francisco, Calif., 1936.

Ricketts, A.H., American Mining Law with Forms and Precedents, Fourth Edition, California State Mines Division Bulletin 123, San Francisco, Calif., 1943.

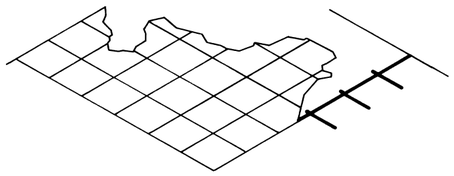
United States Code Annotated, Title 30, Mineral Lands and Mining, (2 Vols.), West Publishing Co., St. Paul, Minn. and Edward Thompson Company, Brooklyn, New York, 1964.

MINERAL SEGREGATION SURVEY IN NEW MEXICO

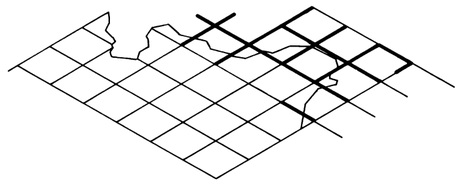
1873



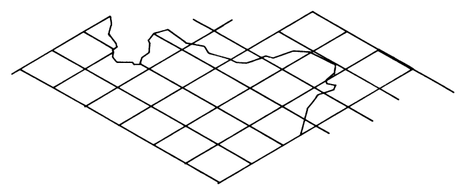
1884

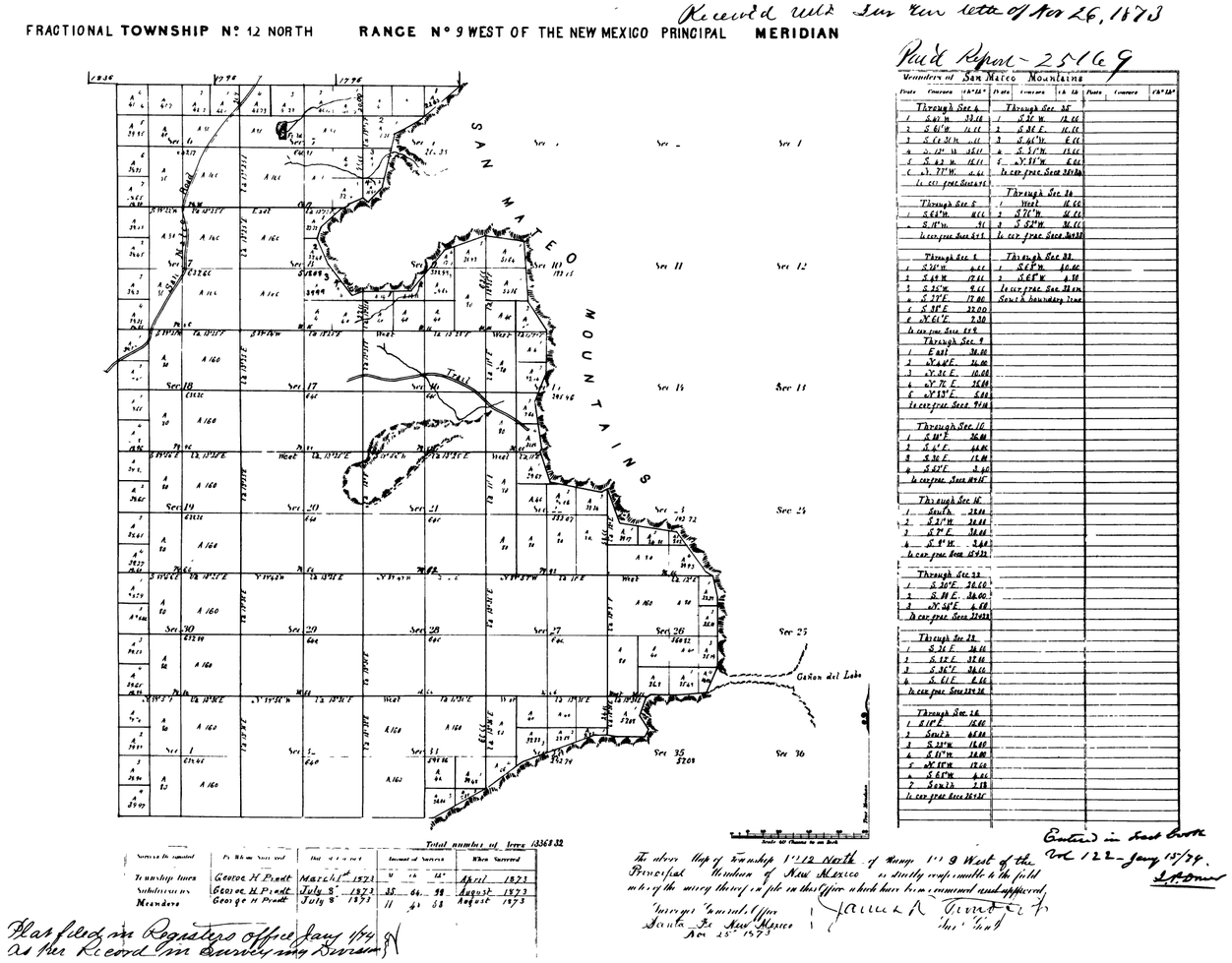


1892



1930





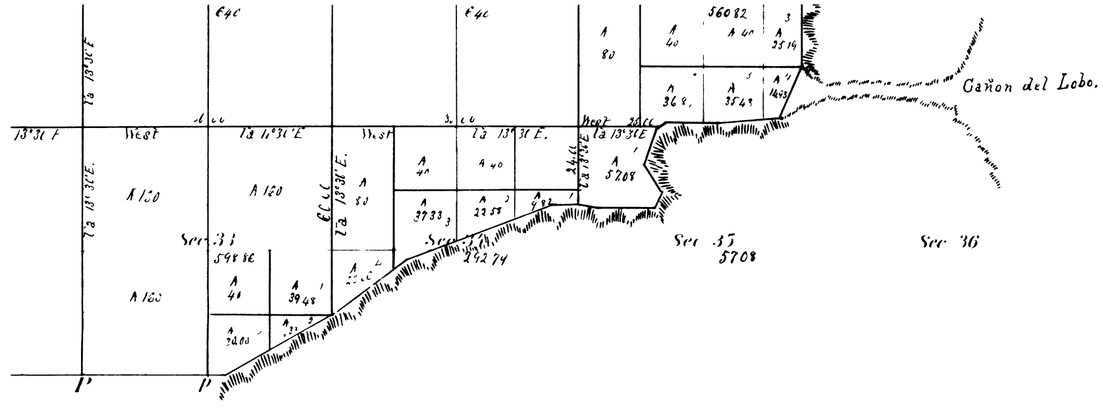


Figure 1 - 1873 Plat With Detail

History of Surveys

1873 George H. Pradt surveyed the west 2½ miles of the south boundary, the west boundary, the south 3 miles of the east boundary, and a portion of the subdivisional lines as shown on the plat approved November 26, 1873, Figure 1. Pradt terminated his subdivisional lines at the foot of the San Mateo mountains and then traversed thru the fractional sections in a manner similar to meandering.

1884 William White completed the south boundary of T. 12 N., R 9 W., and subdivided most of T 11 N., R. 9 W. White ran west on the south boundary of section 36, set a ¼ section corner at 40.00 chains, traversed around an impassable mountain area, regained line and set a witness corner for the corner of sections 1, 2, 35 and 36, 14 40 chains west of the true point. He then completed the boundary, returning a true line of west, with each corner at normal intervals.

1892 Walter G Marmon completed the survey of several sections, including sections 25, 26, 35 and 36, as shown on the plat approved September 21, 1892, Figure 2 Marmon retraced the east half mile between sections 1 and 36, returning a distance of 39.96 chains. He then ran N. 0º 01' W., from the witness corner of sections 1, 2, 35 and 36, 40.00 chains, offset east 14 40 chains and established the ¼ section corner He then proceeded normally. Marmon ran N. 0º 01' W., between sections 34 and 35, set a ¼ section corner at 40 00 chains, found and destroyed the Pradt "fractional section" corner at 56.30 chains and intersected the Pradt corner of sections 26, 27, 34 and 35. Marmon ran the line between sections 26 and 35 random and true with the ¼ section corner at midpoint and destroyed the Pradt "fractional section" corner

1930 Everett H. Kimmell dependently resurveyed the east boundary of section 36.

MINERAL SEGREGATION SURVEY IN NEW MEXICO

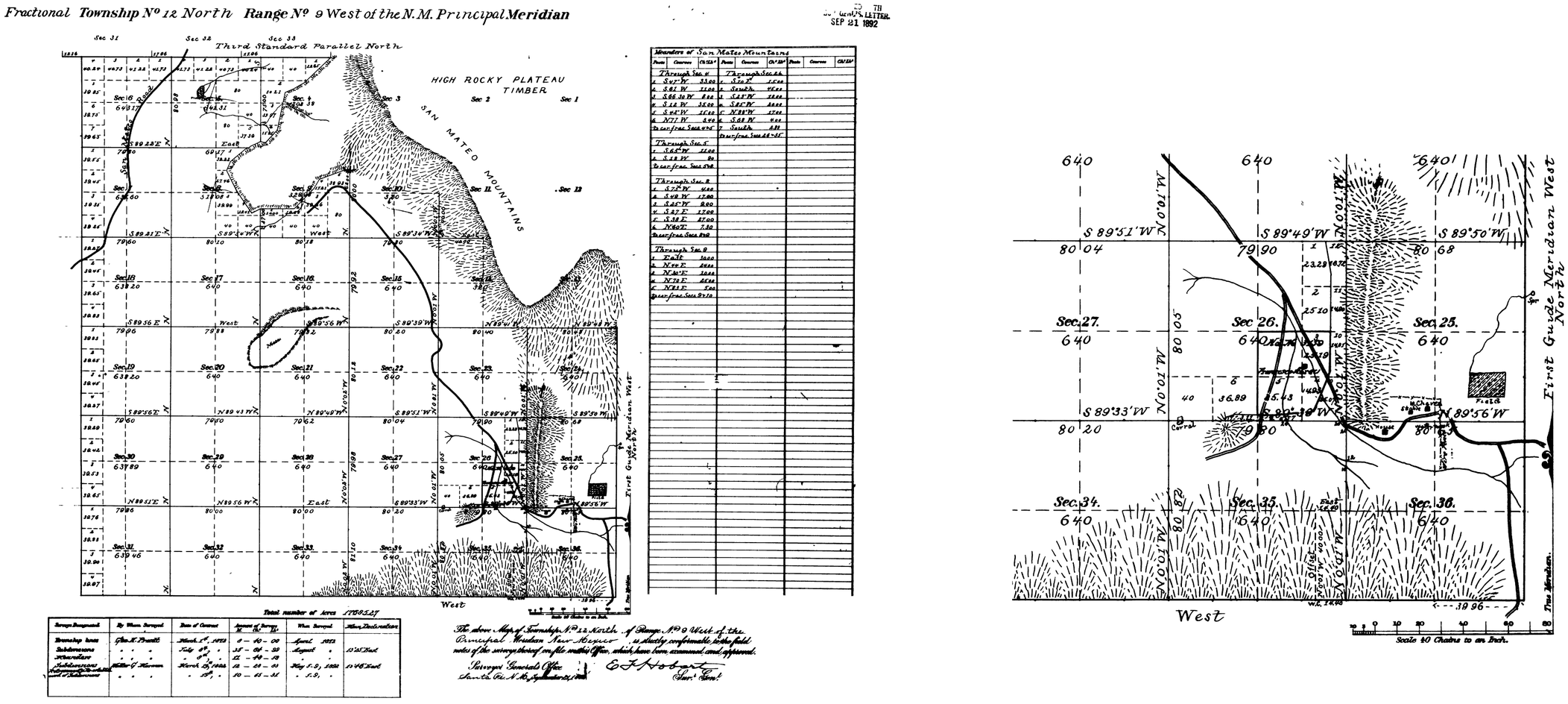


Figure 2 - 1892 Marmon Plat With Detail

MINERAL SEGREGATION SURVEY IN NEW MEXICO

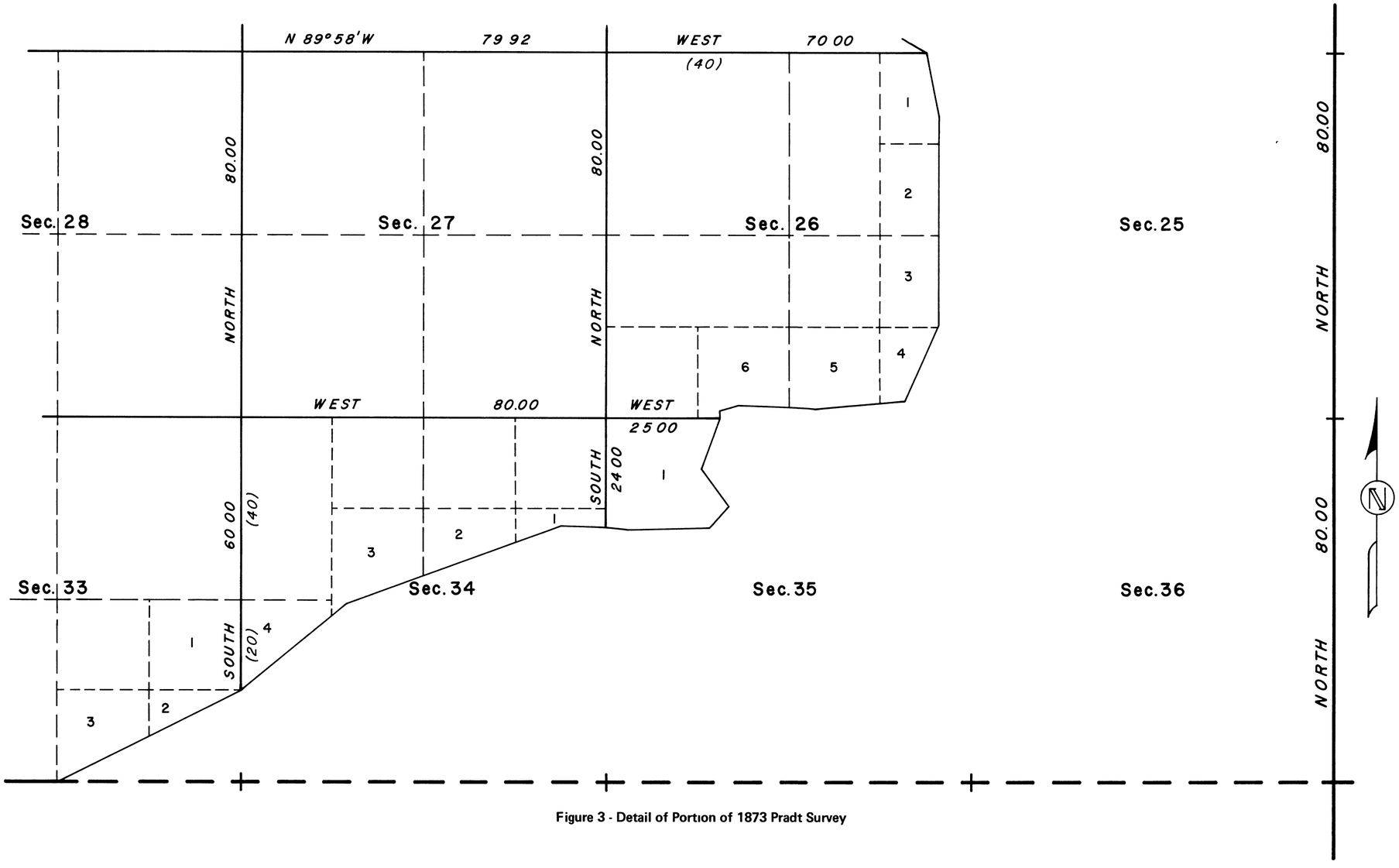


Figure 3 - Detail of Portion of 1873 Pradt Survey

MINERAL SEGREGATION SURVEY IN NEW MEXICO

Reasons for Request of this Survey

On January 23, 1946, Alva H. Gunnell and F.L. Schneider located the Silver Perl No. 1 lode mining claim. On April 10, 1946, and April 24, 1946, A.L. Head and Ralph O. Burney located the Mt. Taylor No. 1 and Mt. Taylor No. 2 lode mining claims. These claims were duly recorded with the Valencia County Recorder. The three claims are described as being in sections 35 and 36, T. 12 N., R. 9 W., N.M.P.M.

In 1952, F.L. Schneider and three other persons applied for mineral patent on the Silver Perl No. 1 Building Stone Placer claim. This claim was described by legal subdivisions and aliquot parts as:

W½ SW¼, Sec. 36; SE¼ NE¼ SE¼, SE¼ SE¼, SE¼ SW¼ SE¼, Sec. 35, T. 12 N., R. 9 W; NE¼ NW¼ NE¼, NW¼ NE¼ NE¼, sec. 2, T. 11 N., R. 9 W., N.M.P.M.

The application excluded the unsurveyed Silver Perl No. 1 and Mt. Taylor No. 1 and No. 2 lode locations. The provisions of 43 CFR 3863 - Placer Mining Claim Patent Applications - state that a placer claim does not require a regular mineral survey if taken by legal subdivisions, that all lode claims must be shown and "in all cases whether the lode is claimed or excluded, it must be surveyed and marked upon the plat, ...".

No application was made by the claimants of the lode claims for mineral survey and patent. But the lode claims would require a segregation survey to determine the area of the placer patent and proper payment.

The placer applicants agreed to furnish a surveying crew to be supplied by a mineral surveyor and paid an additional one hundred dollars toward the office work; with the Bureau to furnish a cadastral surveyor to supervise the surveying crew, write field notes, etc., incident to a segregation survey. The contributing funds arrangement was authorized by the Interior Appropriations Act of July 9, 1952, (66 Stat. 447). (For present provisions see 43 USC 1264).

Special Instructions

On September 19, 1952, Special Instructions were prepared for Group 540, New Mexico. They provided for the dependent resurvey of sections 35 and 36, T. 12 N., R. 9 W., N.M.P.M., and segregation survey of the unsurveyed Silver Perl No. 1 and Mt. Taylor No. 1 and No. 2 lode claims. The claims to be segregated could not exceed 1500 ft. by 600 ft. and the end lines must be parallel. The claims as segregated were to be tied to section or ¼ section corners. The field work was assigned to Everett H. Kimmell and the work was begun on October 27, 1952.

Conditions Found on the Ground

Figure 3 illustrates the pertinent portion of the 1873 survey by Pradt. Figure 4 illustrates the pertinent records of previous surveys on which dependent resurveys are to be based in 1952.

Figure 5 is a sketch showing the recovered original corners and position of the lode location corners as staked and posted.

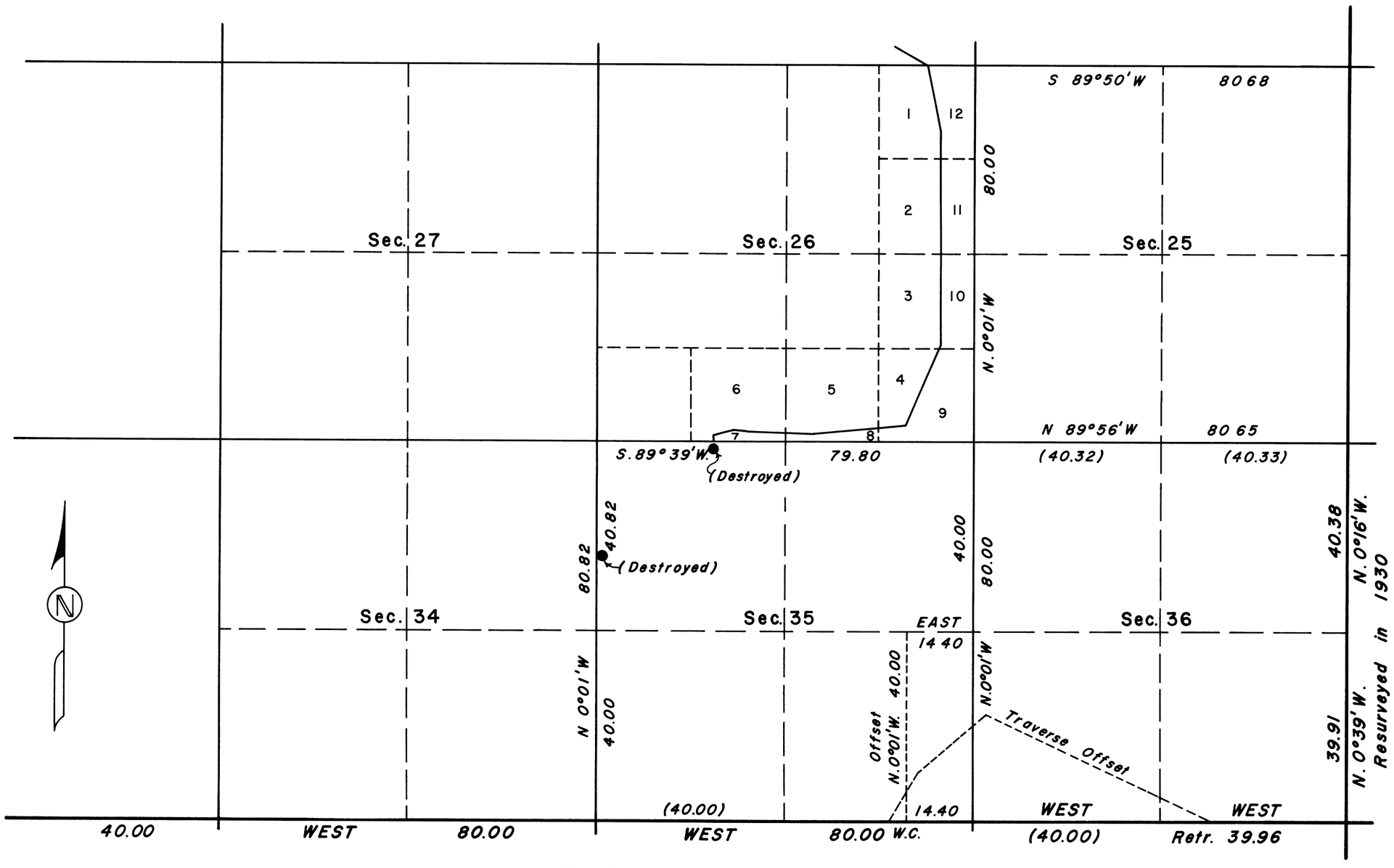


Figure 4 - Detail of Previous Survey Record

MINERAL SEGREGATION SURVEY IN NEW MEXICO

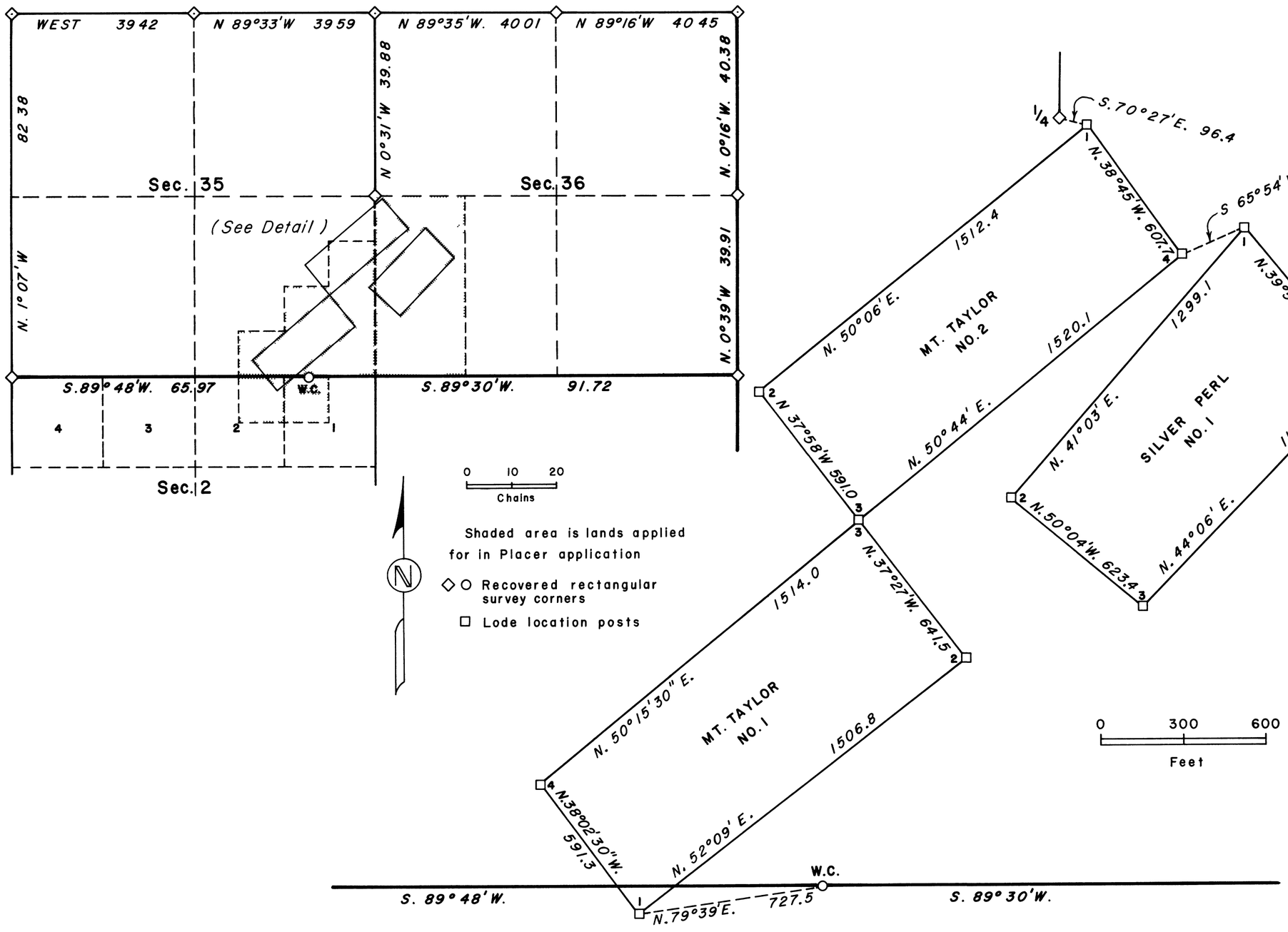


Figure 5 - Recovered Corners and Location Posts

Preliminary Statement of the Problem

The surveyor must restore the lost ¼ section corners of sections 1 and 36; 2 and 35; 34 and 35, and establish the corner of sections 1, 2, 35 and 36. He must survey the lode claims to be segregated within the provisions of the mining laws.

Regulations

This survey illustrates the application of the following sections of the Manual of Surveying Instructions, 1973:

5-17	Witness corners
5-34 and 5-38	Single proportionate measurement
7-39 to 7-43	Mineral segregation surveys
9-76 and 9-77	Plats of mineral segregation surveys
10-17 and 10-18	Lode lines and End lines

Legal Constraints

The lode claims cannot exceed 1500 feet in length nor 600 feet in width, and the end lines must be parallel. No part of the claim may extend outside the claim as located and posted on the ground. Details of the mining laws are codified in Title 30 USC.

Final Statement of the Problem

The surveyor must restore the lost corners of sections 35 and 36 and segregate the lode claims. The lode claims require revision to comply with the mining laws.

Solution

The missing corners were restored by single proportionate measurement methods. The recovered witness corner controlled for alignment and measurement in both directions and became an angle point in the township line.

The three lode locations were all "oversize" in either length or width, or both. Location posts 2 and 3 of the Mt. Taylor No. 2 were held in their original position, as was location post number 3 of the Silver Perl No. 1 claim. The surveyor consulted the lode claimants for their desires on where and along which lines the claims were to be reduced to be within the legal limit of 600x1500 feet with the following plan:

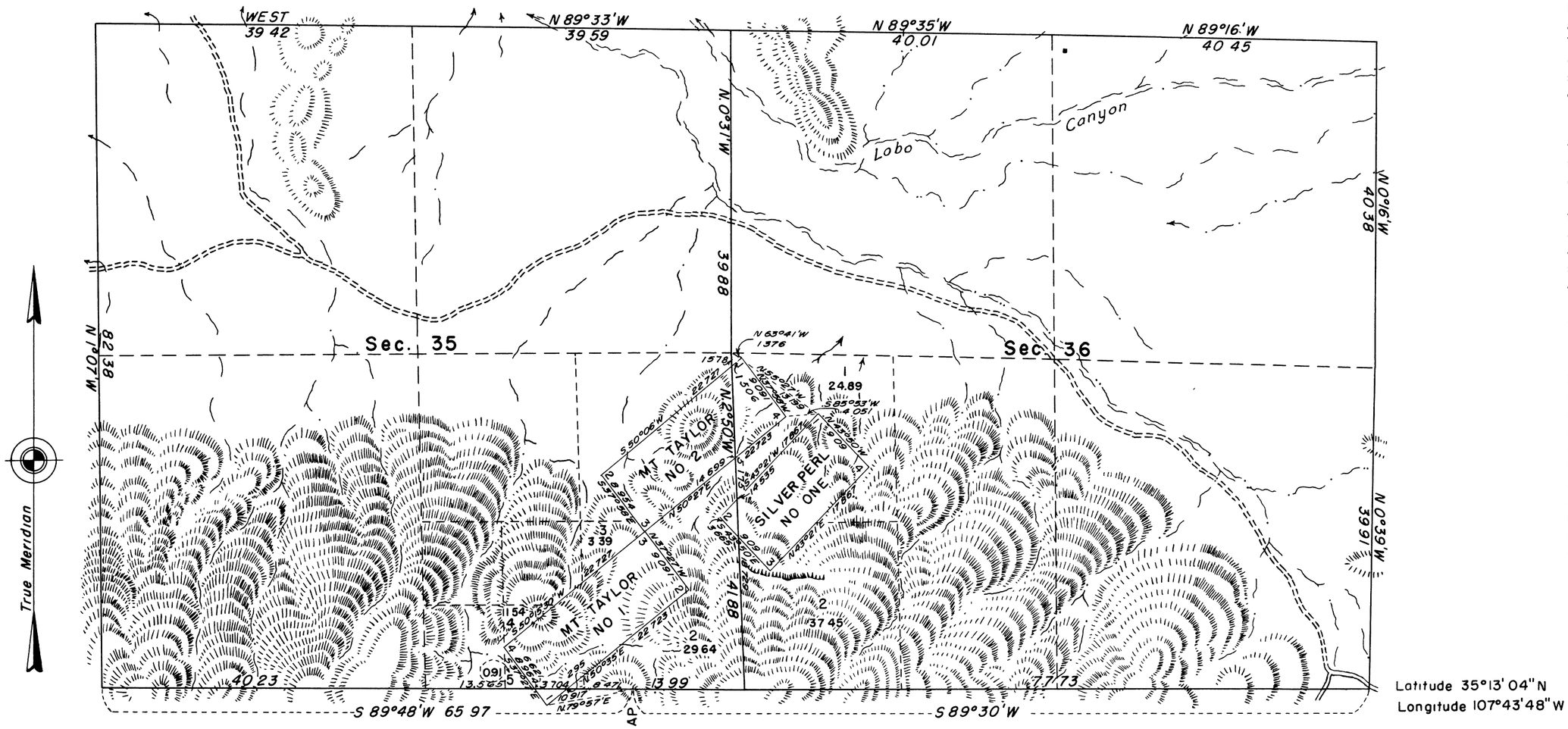
Mt. Taylor No. 1; Line 3-4 was held for alinement and reduced to 1500 ft. Line 3-2 was held for alinement and reduced to 600 ft. Line 4-1 was made parallel to line 3-2. Corner 1 was placed slightly inside the location line 1-2.

Mt. Taylor No. 2; Line 1-2 was held for alinement and reduced to 1500 ft. Line 1-4 was made parallel to line 3-2 and reduced to 600 ft.

MINERAL SEGREGATION SURVEY IN NEW MEXICO

TOWNSHIP 12 NORTH, RANGE 9 WEST OF THE NEW MEXICO PRINCIPAL MERIDIAN, NEW MEXICO

Dependent Resurvey and Segregation Survey of Sections 35 and 36



Latitude 35°13'04"N
Longitude 107°43'48"W

Area exclusive of segregations: 1,223.12 Acres
Area of segregations: 56.88 Acres
T O T A L: 1,280.00 Acres

Figure 6 - Accepted Plat

Silver Perl No. 1; Location post number 3 was held fixed. Line 3-2 was shifted inwardly and reduced to 600 ft. Posts 1 and 4 were shifted inwardly with line 1-4 reduced to 600 ft. and made parallel to line 2-3. This solution was based on directions from the claimant who indicated the areas which he was willing to "give up".

Each corner of each claim was monumented with a brass capped iron post, marked as an Angle Point, with the appropriate number, claim initials, and with the section number outside the claim. The claims were tied together and also tied by course and distance to the ¼ section corner of sections 35 and 36, and the former witness corner on the south boundary of section 35.

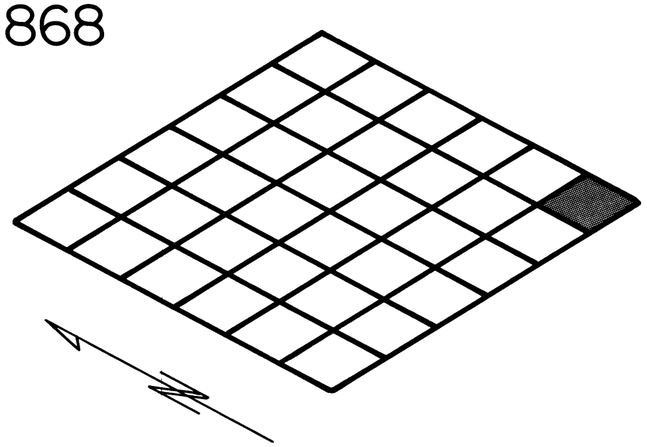
The plat was constructed showing the fractional lots and areas of the lands applied for in the placer patent application. A supplemental plat of section 2, T. 11 N., R. 9 W., was prepared returning an area on new lots, numbered 5 and 6, for the areas erroneously described in the patent application in that section. The plat accepted June 2, 1953, is shown by Figure 6. The supplemental plat of section 2 was accepted June 3, 1953.

Supplemental Topic

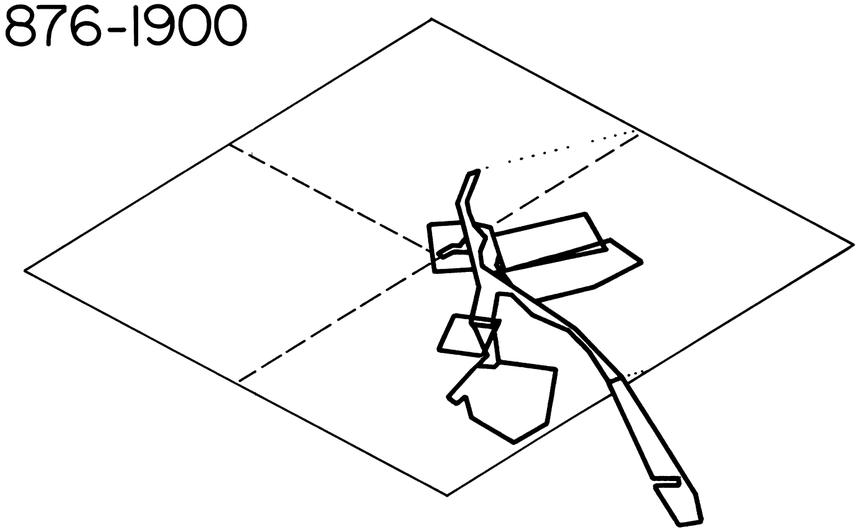
Two errors appear on the accepted plat, Figure 6. The proportions on the south boundary of the township, westerly from the township corner should have been 38.84 chains, 38.88 chains, and 14.00 chains, respectively, to the witness corner, (now an angle point). The south half mile between sections 34 and 35 should have been 40.77 chains and the north half mile 41.61 chains (instead of placing the ¼ section corner at midpoint). Finally, the bearings and distances shown on the North-South section lines read the wrong direction.

RESTORATION OF MINERAL SURVEYS, MONTANA

1868



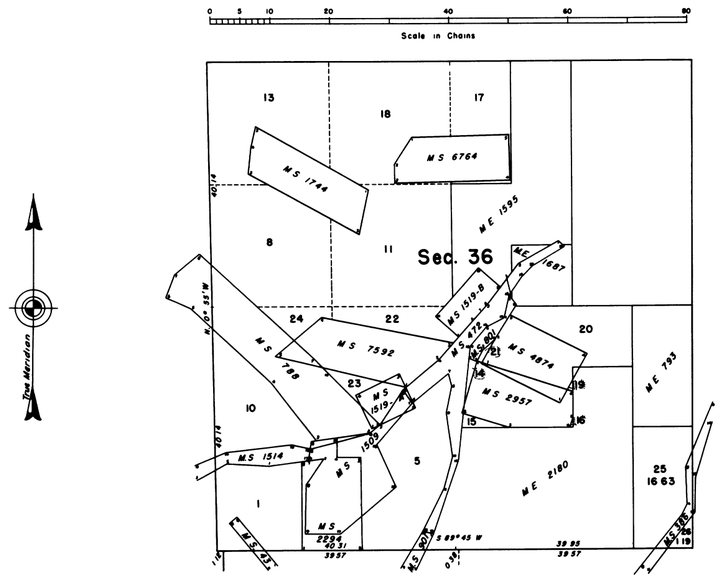
1876-1900



DUPLICATE ORIGINAL

TOWNSHIP Nº 10 NORTH, RANGE Nº 4 WEST, OF THE PRINCIPAL MERIDIAN, MONTANA.

SUPPLEMENTAL PLAT OF SEC 36



This plat of sec. 36, T. 10 N., R. 4 W., of the Principal Meridian, Montana, is based upon the plats approved July 9, 1868 and March 15, 1950, and the mineral survey record. It shows lots 25 and 26, created by cancellation of Mineral Entry No. 678, located in the N½ of the SE¼ of the SE¼.

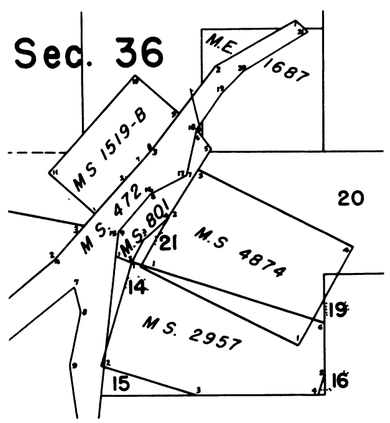
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D. C., September 23, 1952

This plat showing amended lottings, having been correctly prepared in accordance with the regulations, is hereby accepted.

For the Director

Chief, Branch of Surveys

Figure 1 - Supplemental Plat, With Detail At Left



History of Surveys

1868	Benjamin F. Marsh surveyed the exterior boundaries and subdivisional lines.
	Subsequent dependent resurveys are not directly pertinent to this case
1876	Marsh also surveyed Mineral Survey No. 472, Placer, Lot No. 47.
1880	George B Foote surveyed Mineral Survey No 801, Placer, Lot No. 54.
	Marsh surveyed Mineral Survey No 901, a Placer
1884	Marsh surveyed Mineral Survey No 1509, Placer, Lot No. 57
	Mineral Survey No. 1519, Mt. Helena Lode and Millsite Lots 59-A and 59-B was surveyed by Marsh.
1888	Albert S. Hovey surveyed Mineral Survey No. 2490, Placer, Lot 70. M.S. 2490 was a part of M.S. 1509, awarded an adverse claimant by judicial decree.
1890	Paul S.A. Bickel surveyed Mineral Survey No. 2957, Phenix Lode
1899	Bickel surveyed Mineral Survey No. 4874, 96 Lode.
	Segregation diagrams were approved on July 21, 1886, and December 11, 1896.
1950	A plat of dependent resurvey and segregation of mineral claims in sections 35 and 36 was accepted March 15, 1950. A supplemental plat of section 36 was accepted September 23, 1952 This plat depicts the mineral surveys and lotting status at the inception of this resurvey. The plat is shown in Figure 1

Reasons for Request of this Survey

On October 23, 1962, the Congress enacted Public Law 87-851 (76 Stat. 1127; 30 USC 701-709) commonly referred to as the Mining Claim Occupancy Act, or MCOA. This law allowed the Secretary of the Interior to convey to an occupant of an invalid mining claim the land actually occupied by the claimant for residential purposes, up to, but not exceeding 5 acres. The claimant must pay the cost of surveying the tract, the appraised value of the land and other costs as defined by the Act.

On September 16, 1964, Margaret E. Corbett filed an application under Public Law 87-851 and in due course of events the mineral examiner declared the "Corbett Limestone Placer" invalid under the mining laws on October 14, 1964. During the examination the examiner was unable to determine the location of the Corbett home with certainty. A highway department map indicated the house was located on the patented M.S. 472 Placer.

Paul Drennon was the occupant of unpatented M.S. 2957, Phenix Lode. The status of the Phenix Lode was in doubt, as was the location of his home. The possibility existed that his home could be located on the patented lot 14.

The Chief, Division of Lands and Minerals, Montana State Office, requested a resurvey and survey of small tracts to resolve these problems.

RESTORATION OF MINERAL SURVEYS, MONTANA

Special Instructions

On June 3, 1966, Special Instructions were prepared for Group 539, Montana. They provided for the dependent resurvey of the necessary mineral surveys within section 36 and the survey of two small tracts, the boundaries of the tracts to be determined after the true positions of the Corbett and Drennon homes were determined. The tract boundaries were to be surveyed according to actual occupancy as determined by the Missoula District Manager. These lands are located in the outskirts of the City of Helena, Montana. The Group was assigned and field work began on June 15, 1966.

Conditions Found on the Ground

The status of the surveys was determined as follows:

Mineral Surveys 472, 788, 801, 1514, 1519A, 1519B, 2294, 2490, 7592 and 4874, and M.E. 2180 are patented. Mineral Surveys 1509 and 2957 are unpatented. The "Corbett Limestone Placer" location, unsurveyed, is located on the greater part of Lot 5.

Figure 2 is an enlarged sketch of the area, showing the recovered original corners of the mineral surveys, relative coordinate positions of those corners, mineral survey record courses and distances, and the status of lands involved. At the time of the field work the Phenix Lode was not yet cancelled.

The Corbett home was found to be on the invalid Corbett claim. The Drennon home was found to be on line 1-2 of the Phenix Lode. No evidence of any kind could be found to determine the position of corners 7-12 and corner 14 of M.S. 472 Placer.

Preliminary Statement of the Problem

The surveyor must restore the lost corners of M.S. 472, and survey the small tracts.

Regulations

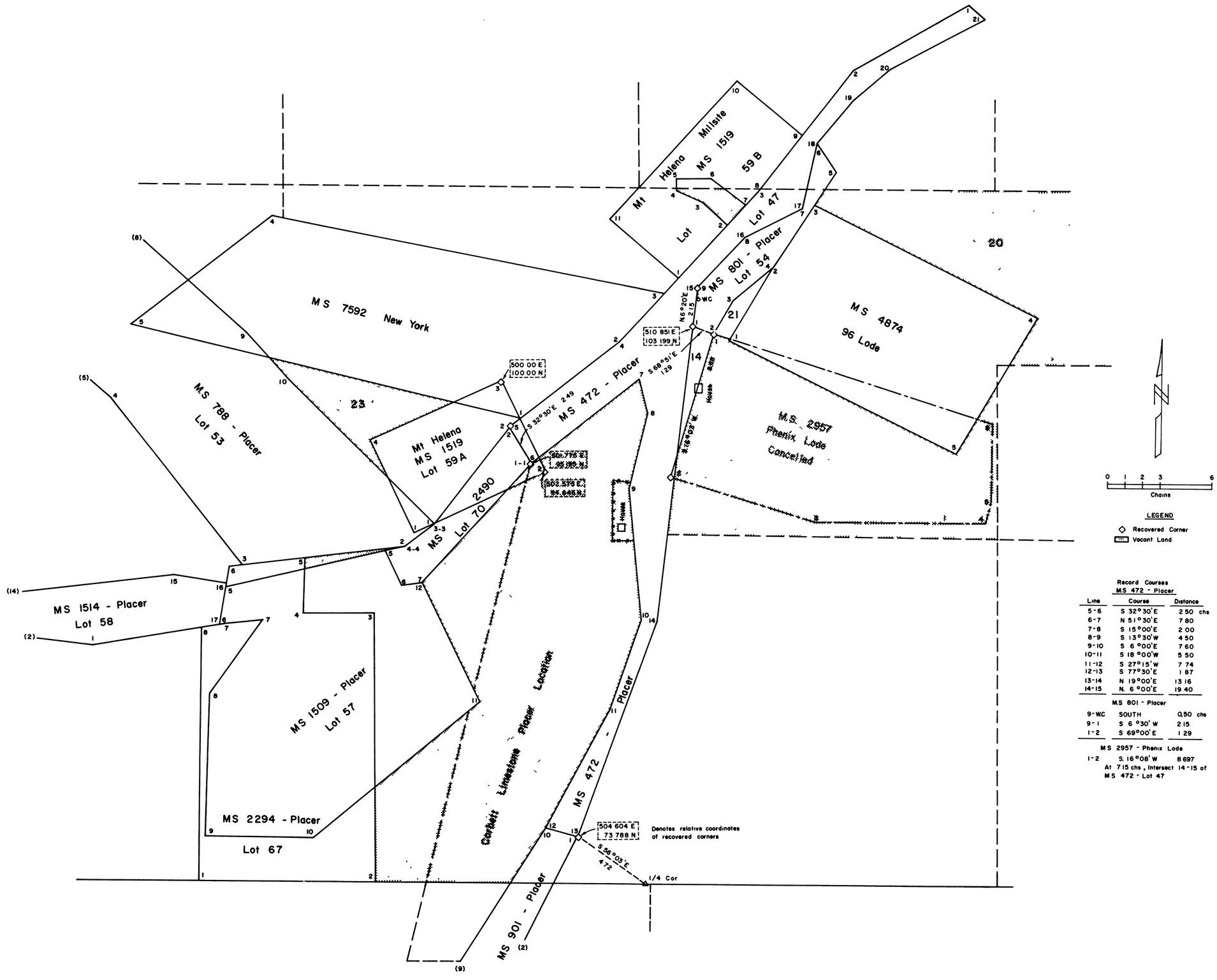
Regulations pertaining to the Mining Claim Occupancy Act are found in 43 CFR 2550.

This survey illustrates the application of the following sections of the Manual of Surveying Instructions, 1973:

5-17	Witness corners
5-20 to 5-23, 5-42	Restoration of Lost Corners
5-43 to 5-46	Broken Boundary Adjustments
7-16	Metes-and-Bounds surveys

Legal Constraints

The dependent resurvey must be executed in a manner that will restore the lost corners as nearly as possible in their true original position and protect the bona fide rights of the patented lands. The small tracts cannot exceed 5 acres.



Record Courses
MS 472 - Placer

Line	Course	Distance
5-6	S 32°30'E	2 50 chs
6-7	N 51°30'E	7 80
7-8	S 15°00'E	2 00
8-9	S 13°30'W	4 50
9-10	S 6°00'E	7 60
10-11	S 18°00'W	5 50
11-12	S 27°15'W	7 74
12-13	S 77°30'E	1 87
13-14	N 19°00'E	13 16
14-15	N. 6°00'E	19 40

MS 801 - Placer

9-WC	SOUTH	0.50 chs
9-1	S 6°30' W	2 15
1-2	S 69°00'E	1 29

MS 2957 - Phenix Lode

1-2	S. 16°08'W	8 697

At 7 15 chs, Intersect 14-15 of MS 472 - Lot 47

Figure 2 - Corner Recovery and Mineral Survey Record Courses

RESTORATION OF MINERAL SURVEYS, MONTANA

Auxiliary Topic

At the time the field work was executed, M.S. 2957, Phenix Lode had not been declared invalid or relinquished by the claimant. Technically, a survey of a small tract within a surveyed and uncancelled mining claim cannot be made. The mining laws are complex and administrative procedures required to invalidate a claim and cancel the mineral survey are usually lengthy; these procedures were in process for the Phenix Lode.

The courts have held that the execution of the field work alone does not constitute a survey - that something else is required. That something else is the preparation of field notes, plat and acceptance by the Director of the Bureau of Land Management.

The field work could proceed on the Drennon tract but the plat could not be accepted until after the legal procedures for invalidation were complete and M.S. 2967, Phenix Lode was duly cancelled.

Final Statement of the Problem

The surveyor was to restore the lost corners 7-12 and corner 14 of M.S. 472 by a proportionate method. These corners are required to determine the boundaries of public lands and for purposes of determining acreage of the remaining lands after the survey of the two small tracts. The two tracts must be surveyed and monumented.

Solution

The lost corners of M.S. 472 - Placer were restored by the broken boundary method (compass rule) described in section 5-43 of the manual. A grant boundary adjustment (Manual, section 5-44) was also computed. Both methods were compared with the record courses and distances. The compass rule adjustment most nearly conformed to the record. Corners No. 6 and No. 13 controlled the position of corners No. 7 thru No. 12. Corner No. 15, identical with corner No. 9 of M.S. 801, was restored at record bearing and distance (North, 0.50 chains) from the witness corner established in the survey of M.S. 801. Corner No. 14 of M.S. 472 was tentatively restored between corners No. 13 and No. 15. Corner No. 1, M.S. 801 was found on the restored line 14-15, a desirable condition. The compass rule was thus used to restore corner No. 14.

The Corbett home was found to be entirely within the vacant lot 5 and invalid Corbett placer location with a yard fenced on the north, south and west. The actual land in occupancy use was thus easily determined. The Corbett tract was designated Tract 37. Corner No. 9, M.S. 472 was designated and marked for Angle Point No. 1 and from that point Tract 37 was surveyed in a clockwise direction, limited by the fence and by lines 8-9 and 9-10 of M.S. 472. Each angle point was monumented and properly marked.

The Drennon home was only partially located on M.S. 2957, Phenix Lode. The Missoula District personnel indicated the extremities of actual occupancy to be surveyed along the northerly and easterly sides of the Drennon tract, which was designated Tract 38. Angle Point No. 1 was established on line 1-2 of M.S. 2957. Angle point No. 2 was established at the intersection of line 14-15, M.S. 472 and line 1-2 of M.S. 2957. Angle

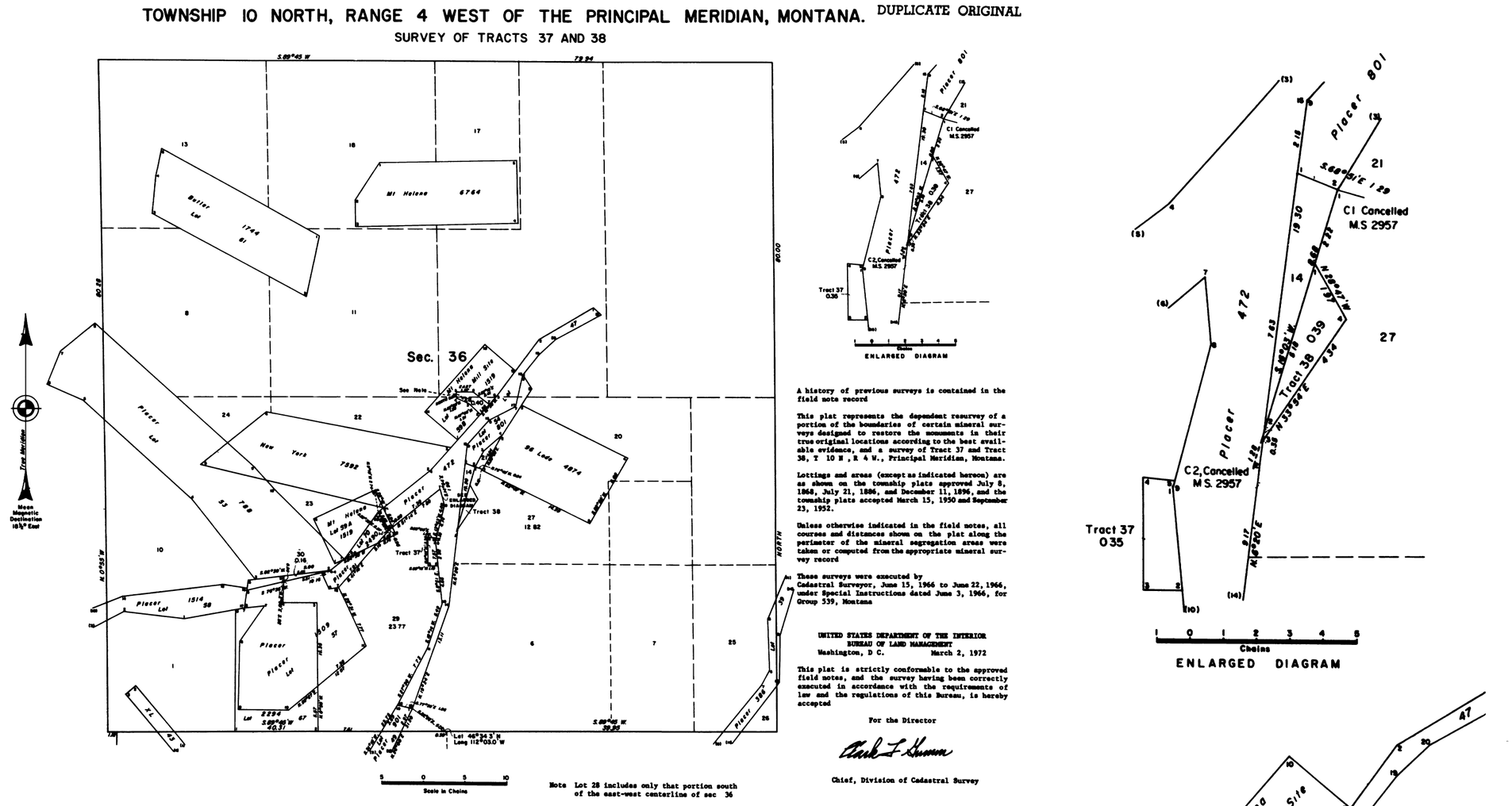


Figure 3 - Accepted Plat, With Details On Right

Point No. 3 was established on line 14-15 of M.S. 472 and the easterly line of occupancy. Angle Point No. 4 was the most northeasterly corner of occupancy. Each angle point was monumented and properly marked.

Corner 13, M.S. 472 was tied to the ¼ section corner of section 36, on the south boundary of the township. This tie made it possible to accurately protract the mineral surveys and determine areas of fractional lottings necessary within section 36, and construction of the plat based on the resurveyed lines and previous mineral survey and rectangular survey records.

On October 31, 1968, Paul Drennon relinquished all rights, title and interest to M.S. 2957, Phenix Lode. The mineral survey of the claim was officially cancelled on November 7, 1968. A notation of the cancellation was placed on the plat of M.S. 2957. None of the monuments were removed from the land.

The plat was constructed assigning a new lot number and area to the former lot 5; former lots 15, 16 and remaining portion of cancelled Phenix Lode; and a lot number and area to a small remnant lying between M.S. 788 and M.S. 1509. The SW¼NE¼ of section 36 was patented as was the Mt. Helena Millsite. The millsite was surveyed omitting an area between corners No. 2 and No. 7, which was never indicated as vacant public land on supplemental plats. By protraction, the east-west centerline of section 36 crosses the area. A lot number and acreage was assigned to the portion south of the protracted east-west centerline.

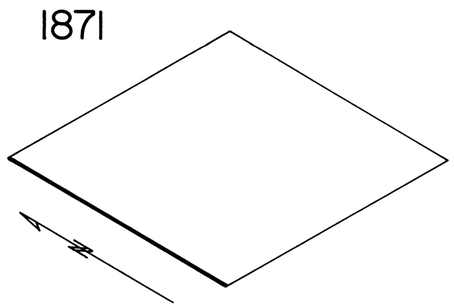
M.S. 2294 is patented and is largely in conflict with M.S. 1509, outside the patented M.S. 2490. M.S. 1509 is not patented but is a mineral survey of record, presumably with possessory rights. Until the validity of M.S. 1509 is determined, M.S. 1509 must be shown on the plats. Only when a claim is found invalid may the survey be cancelled.

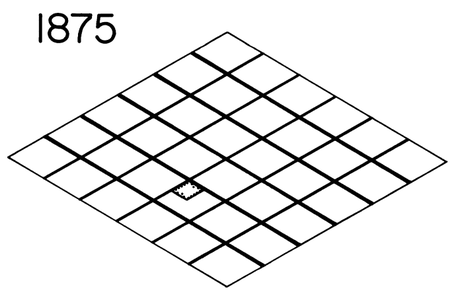
The field notes were written, the plat was prepared and submitted to the Washington Office. The plat was accepted on March 2, 1972, and is shown in Figure 3.

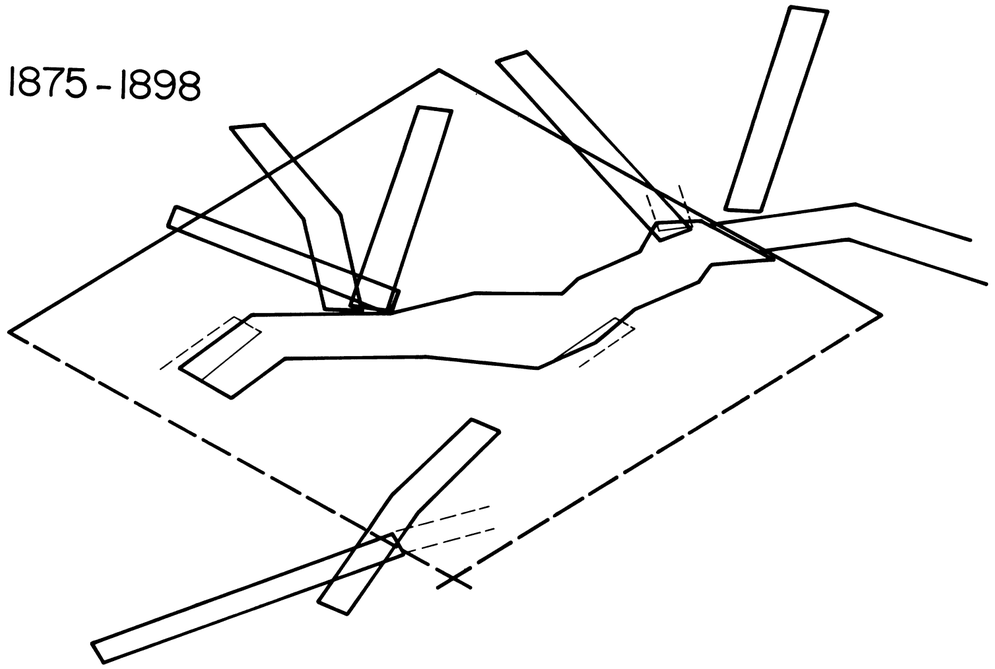
Tract 37 was patented under the Mining Claim Occupancy Act.

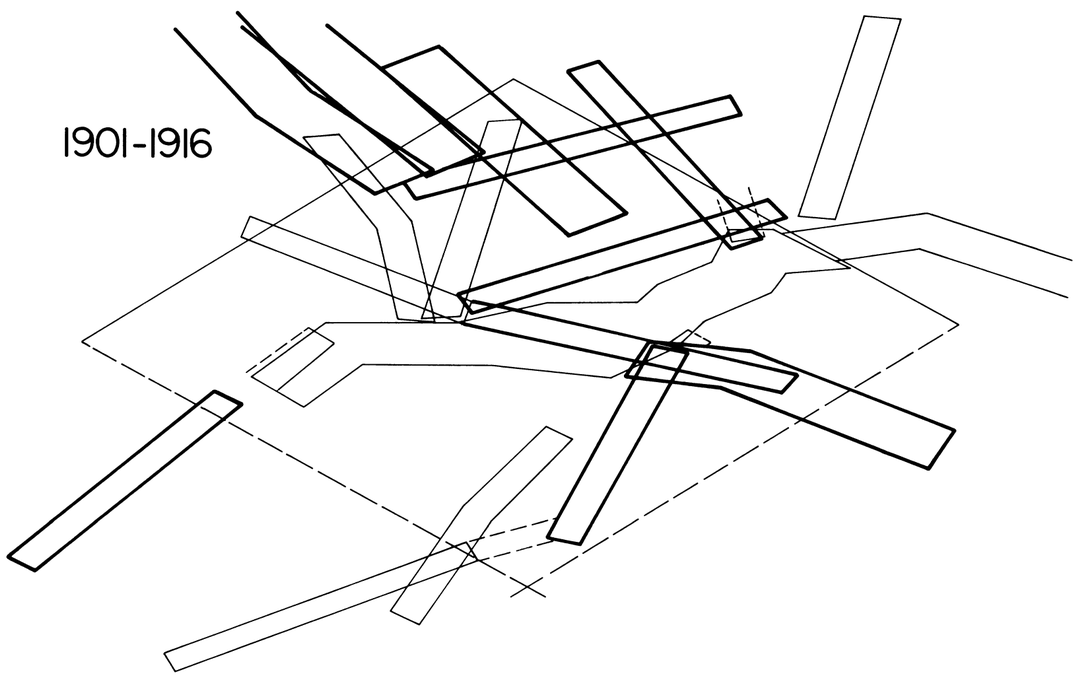
Drennon could not qualify for purchase under the MCOA because of residency requirements, etc. Tract 38 has been leased under the Small Tract Act of June 1, 1938, 52 Stat. 609; 43 USC 682a; and 43 CFR 2730.

MINERAL SURVEY RESTORATION









History of Surveys

The full history of surveys in this township is complex and lengthy Because the discussion here is confined to the vicinity of the northeast quarter of section 20, the history of pertinent surveys is given

1871 Frances F Bryne surveyed the west boundary of the township.

1875 Edwin H. Kellog surveyed the subdivisional lines as shown on the plat approved July 24, 1875, Figure 1.

1875 Josiah Dart surveyed M.S. 203, D.M. McKnight Placer. Corner number 1 was tied to the corner of sections 19, 24, 25 and 30 on the west boundary of the township. From corner number 5, Dart's notes state "Cabin, S. 38° W., 70 ft "

1880 J.P. Maxwell amended M.S. 203, McKnight Placer, (prior to patent) excluding conflicts with the unsurveyed Charlotte, Southern Kansas and Vine Lode locations. Maxwell reported a tie from corner number 12 of the McKnight to the ¼ section corner of sections 20 and 21, but did not describe the corner monument. Though not so stated it is evident that this tie was computed.

1882 Daniel Drummond surveyed M.S. 530, Eclipse Lode, on March 1. Corner number 1 was tied to the corner of sections 16, 17, 20 and 21. The conflict with the McKnight Placer was shown with no reference to the unsurveyed Vine location.

1882 J.P. Maxwell surveyed amended M S. 542, Groton Placer. Corner number 1 was tied to the southeast corner of section 21 Corners numbered 5 and 6 were reported to be on line 10-11 of the McKnight Placer

1889 C.A. Russell surveyed M.S. 5915, Vancouver Lode. Corner number 1 was tied to the corner of sections 16, 17, 20 and 21.

1893 C A. Russell surveyed M.S. 8616, Alaska and Blue Ribbon Lodes. Corner number 1 was tied to the corner of sections 17, 18, 19 and 20 The conflict of the Blue Ribbon with the unsurveyed Princeton Lode location was shown.

1898 C.A Russell also surveyed M.S. 12635, Crisman and Bessie Lodes on July 1-6, 1898. Corner number 1 of each claim was tied to the corner of sections 16, 17, 20 and 21. Corner number 4, Bessie, was described as being on line 4-5, McKnight Placer The conflict of the Bessie with the unsurveyed Iron Lode location was shown. The conflict with the Crisman and McKnight Placer was shown

Russell also surveyed M S. 12822, Arapahoe Lode, on September 29, 1898. Corner number 1 was tied to the corner of sections 16, 17, 20 and 21 Conflicts with the Crisman and Bessie Lodes were shown.

1901 Mathew Rogers surveyed M.S. 15296, Iron Lode. Corner Number 1 was tied to the corner of sections 16, 17, 20 and 21. Conflicts with the unsurveyed Iron Lode location and the previously surveyed Eclipse and Bessie Lodes were shown. The Iron Lode and Iron Lode location had different claimants.

1902 Albert E. Chase surveyed M S. 15921, Dona Lode. Corner number 1 was tied to the corner of sections 17, 18, 19 and 20. No conflicts were indicated.

1907 Horace C. Hall surveyed M.S. 18311, Seven Thirty, Eclipse, Klondyke and Cresent Lodes. Corner number 1 of each claim was tied to the corner of sections 16, 17, 20 and 21 Conflicts with the previously surveyed Crisman, Bessie and Iron Lodes and McKnight Placer were shown. The Eclipse Lode was the same claim as the previously surveyed M S. 530. An erroneous tie to corner number 4, McKnight Placer, indicated an unreal conflict of the Bessie Lode and McKnight Placer Corner numbers 1 and 2, Klondyke Lode, were described as identical with corner numbers 3 and 4, Crisman Lode No conflicts with unsurveyed locations were indicated

1916 Henry S. Sanderson surveyed M.S. 19742, Dixie Queen Lode on April 10, 1916 Corner number 1 was tied to the corner of sections 16, 17, 20 and 21. Conflicts with the previously surveyed Klondyke and Crescent Lodes and McKnight Placer were shown No conflicts with any unsurveyed locations were indicated.

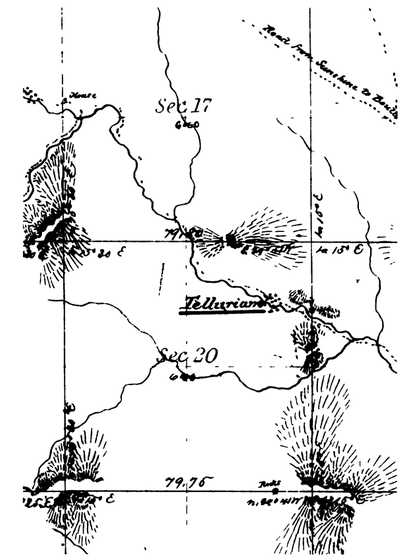
1916 Henry S. Sanderson also surveyed M.S 19744, Roberta, Golden Rule and Queen of the Valley Lodes on April 11-15, 1916 Corner number 1 of each claim was tied to the corner of sections 16, 17, 20 and 21 The conflicts with the previously surveyed Arapahoe, Bessie and Iron Lodes were shown. No conflicts with any unsurveyed locations were indicated.

The Connected Sheet of section 20, on file in the Colorado State Office showing the described mineral surveys is shown in Figure 2.

On March 6, 1903, an unofficial "segregation diagram" was approved by the Surveyor General of Colorado. This diagram assigned lot numbers to areas of public lands made fractional by mineral surveys. It is not an official plat of survey, but shows lot numbers 37 thru 45.

1953 On January 21, 1953, a supplemental plat of the NE¼ of section 20 was accepted and is shown in Figure 3.

On July 17, 1953, a supplemental plat of the NE¼ of section 20 was accepted and is shown in Figure 4.



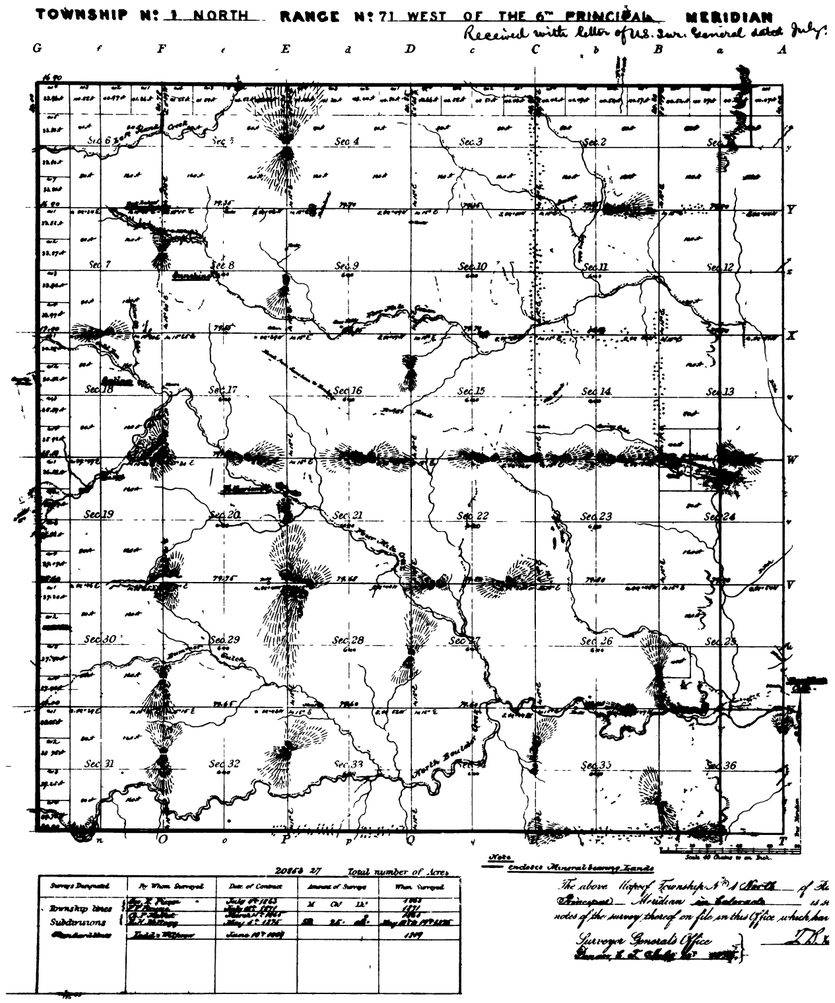


Figure 1 - Original Plat With Detail of Section 20

MINERAL SURVEY RESTORATION

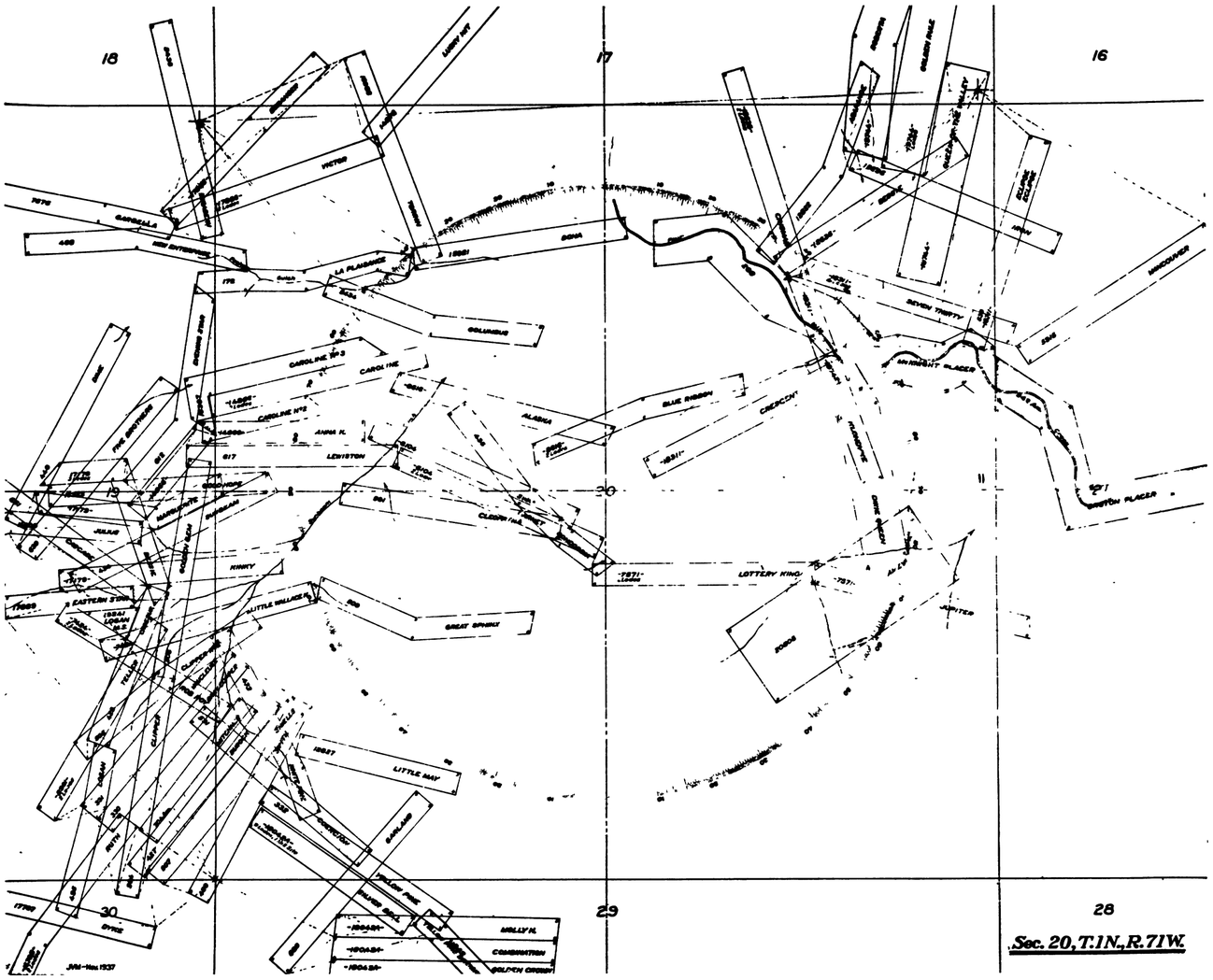


Figure 2a - Connected Sheet, Section 20

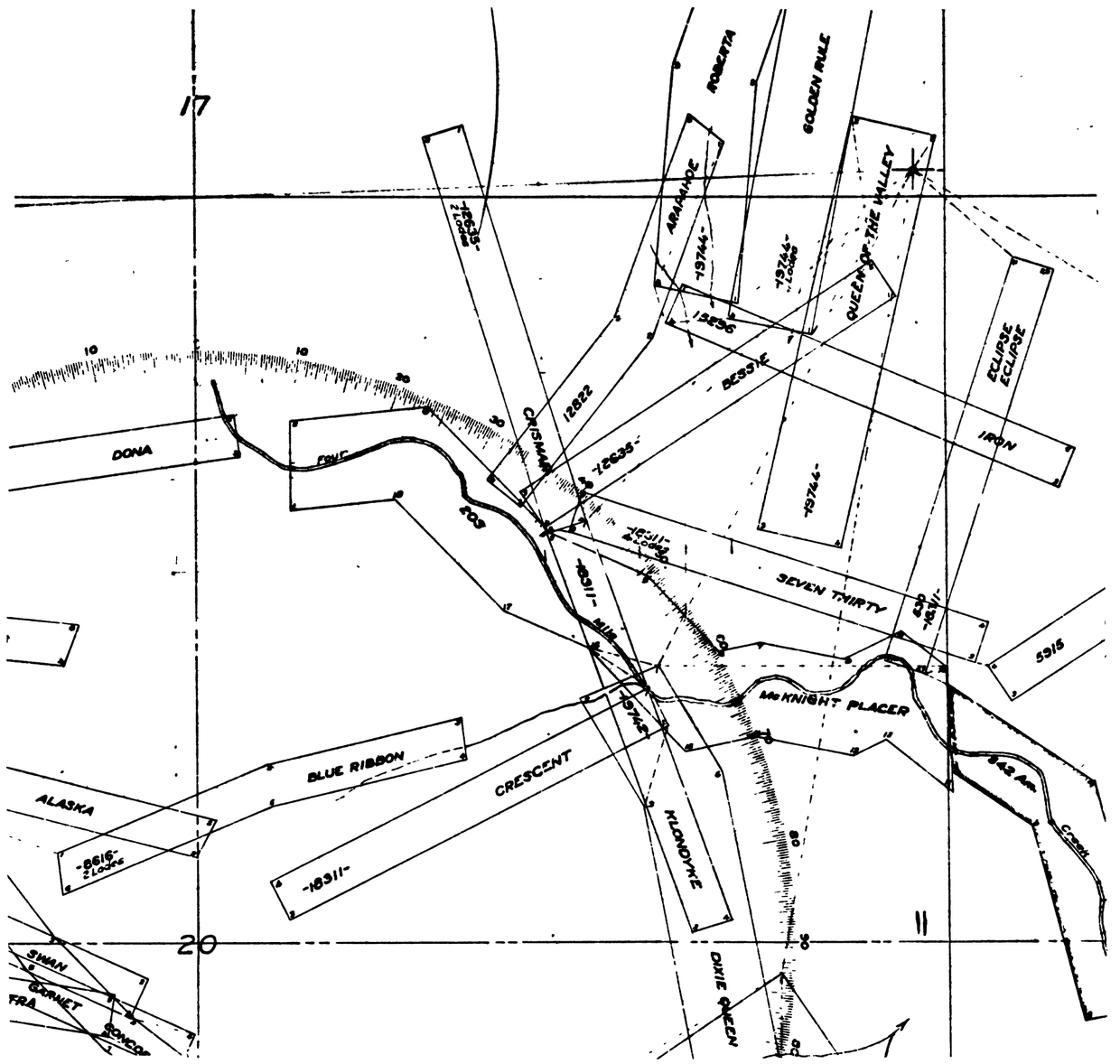


Figure 2b - Detail At NE¼ Section 20

MINERAL SURVEY RESTORATION

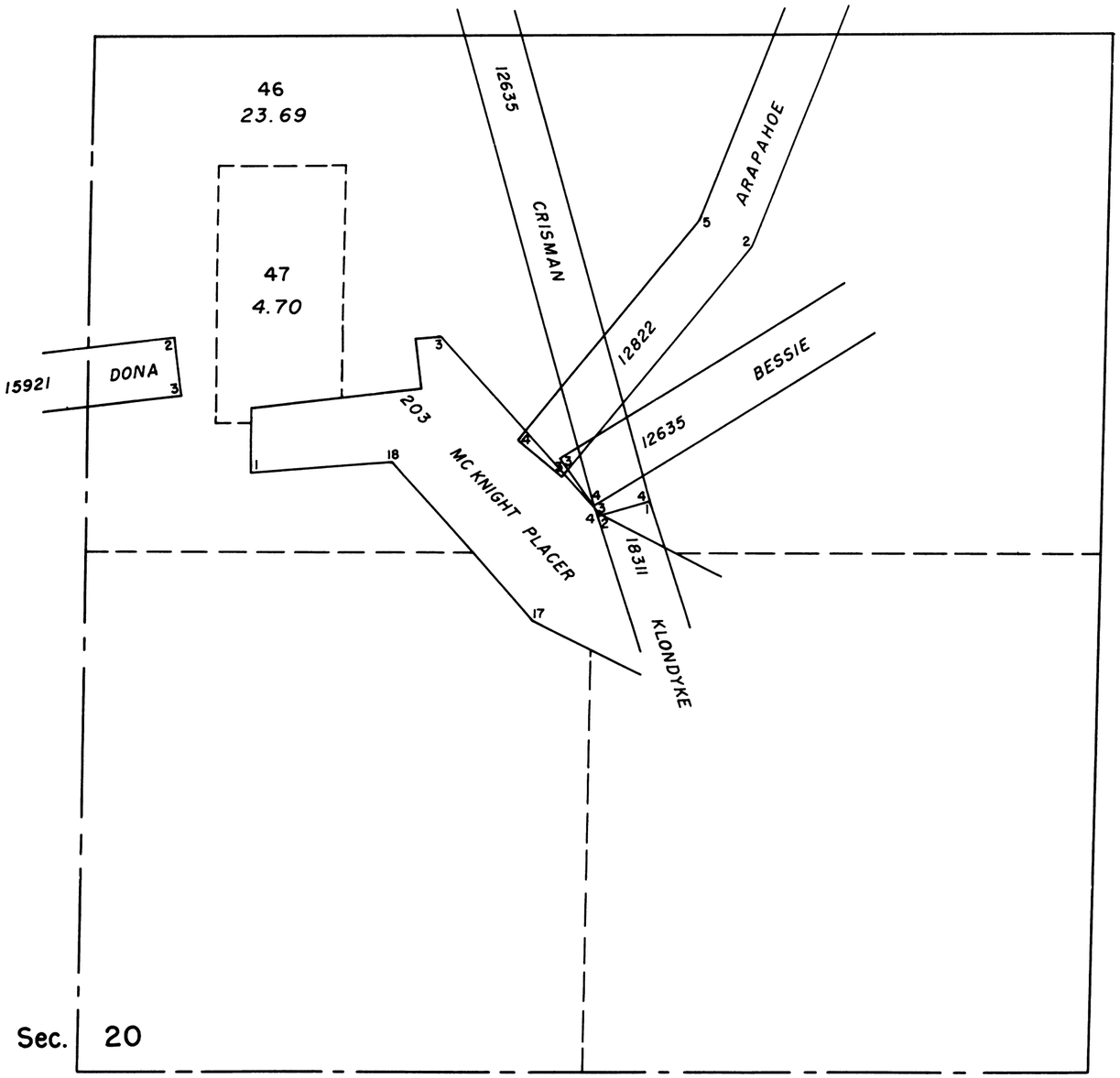


Figure 3 - Supplemental Plat

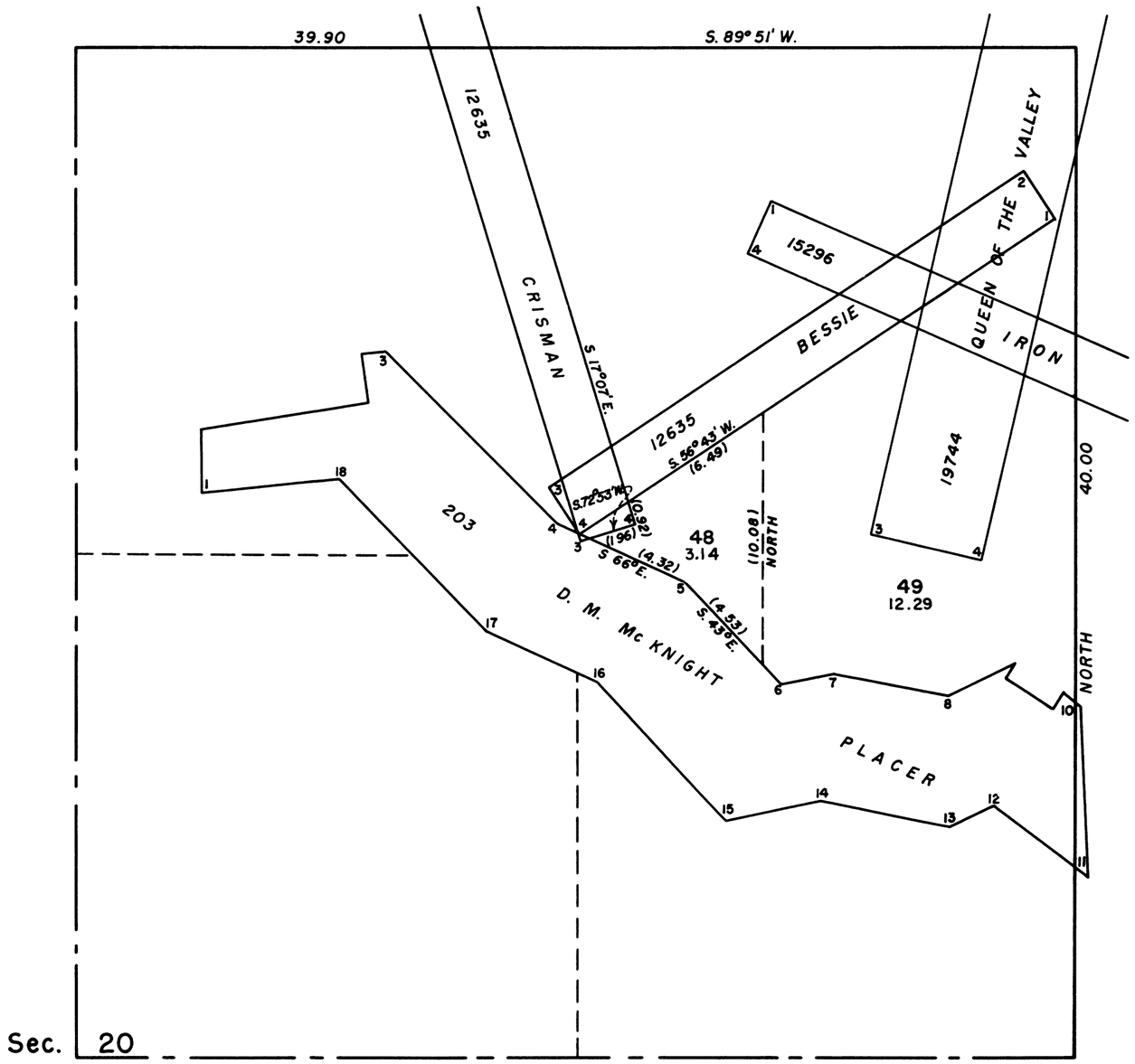


Figure 4 - Supplemental Plat

Reasons for Request of this Survey

Section 20, T. 1 N., R. 71 W., is located about 4½ miles northwest of Boulder, Colorado. The area is rough and mountainous, making surveying and identification of survey lines difficult. Extensive mining activities and mining claims in years past created a confused pattern of ownership. Homes and cabins have been constructed on mining claims, both surveyed, and unsurveyed lode locations. The decline of the mining industry and abandonment had made many of the unpatented claims invalid under the mining laws. Applications were being filed on the public domain lands under the Small Tract Act (43 USC 682a-c) and other Congressional Acts.

Two such applications were accommodated by the preparation of Supplemental plats shown in figures 3 and 4. As the number of applications increased it became evident that supplemental plats could not meet the needs and could create even greater problems of identification. The Colorado State Supervisor (Director) requested a resurvey of section 20, subdivision of the section and identification of the boundaries of the public lands within the section.

MINERAL SURVEY RESTORATION

Special Instructions

Special Instructions for Group 448, Colorado, were prepared on March 11, 1959. They provided for the dependent resurvey and subdivision of section 20, resurvey of patented mineral surveys and subdivision into small tracts of the remaining public lands as required by the State Supervisor. The Group was assigned to a cadastral surveyor. Field work began March 25, 1959.

Conditions Found on the Ground

A search of patent records and the files revealed the following status conditions·

M.S. 203, McKnight Placer, patented April 1, 1881. The patent description excluded the conflict with the unsurveyed Charlotte, Southern Kansas and Vine Lode locations.

M.S. 8616, Alaska and Blue Ribbon Lodes, patented January 11, 1895. Alaska patented in full. Blue Ribbon patented excluding the conflicts with the Alaska and the conflict with the Princeton Lode location, unsurveyed.

M.S. 12635, Crisman and Bessie Lodes, patented August 9, 1901, excluding the Crisman conflict with the McKnight Placer and excluding from the Bessie the conflict with the Iron Lode location, unsurveyed, and all veins apexing within the exclusions.

M.S. 12822, Arapahoe Lode, patented August 9, 1901, excluding all conflicts with the Crisman and Bessie, and all veins apexing within the excluded area.

M.S. 15296, Iron Lode, patented November 9, 1903, excluding all that portion of the Bessie lying south of and outside the Iron Lode claim, unsurveyed, and all veins apexing within the exclusion.

M.S. 15921, Dona Lode, patented December 13, 1904, with no exclusions of any kind mentioned.

M.S. 19744, Roberta, Golden Rule and Queen of the Valley Lodes, patented August 4, 1919, excluding all conflicts with the Bessie, Arapahoe, and Iron Lode (M.S. 15296), and all veins apexing within the exclusions. No mention is made of the unsurveyed Iron Lode location.

M.S. 19742, Dixie Queen Lode, patented August 4, 1919, excluding the conflict with M.S. 203, McKnight Placer.

Lots 47 and 48 were patented in 1955.

The E½NE¼NE¼NW¼ of section 20, was patented August 2, 1960, while this survey was still in progress.

Some mineral surveys were still of record. In the letter of transmittal of resurvey returns dated June 13, 1962, it is stated that M.S. 18311, the Seven Thirty, Eclipse, Klondyke and Crescent Lodes were declared null and void on May 13, 1959. The file records do not indicate that any of the unsurveyed lode locations, (Charlotte, Vine, Southern Kansas, Iron and Princeton) were ever adjudicated. There is no record of cancellation of M.S. 18311 in the file or on the plats.

With the status of the lands determined, the first step was to plot all of the mineral survey records in reverse order on a large scale drawing. In the NE¼ of section 20 the latest mineral survey record is M.S. 19744. An assumed co-ordinate was assigned to the corner of sections 16, 17, 20 and 21. From that point the Roberta, Golden Rule and Queen of the Valley claims were plotted, then M.S. 19742, Dixie Queen, and so on back to M.S. 203, McKnight Placer. This process revealed descrepancies in corner positions and intersections which could then be resolved temporarily based on probabilities. Figure 5 illustrates the mineral survey records as so plotted and reveals some minor defects in the connected sheet, Figure 2.

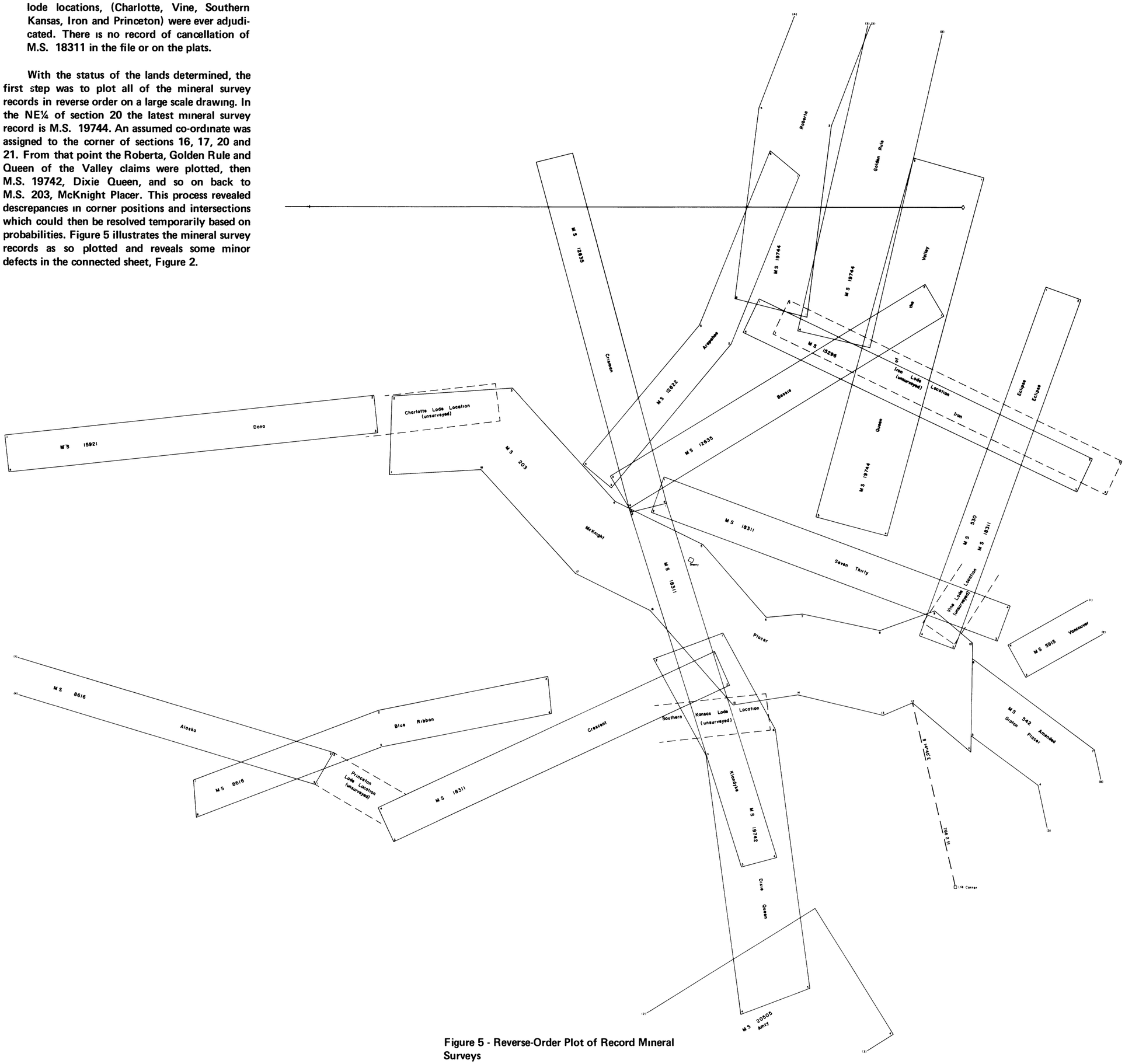


Figure 5 - Reverse-Order Plot of Record Mineral Surveys

MINERAL SURVEY RESTORATION

Section 20 was dependently resurveyed. All four section corners, the ¼ corner of sections 20 and 29, and ¼ corner of sections 19 and 20 were recovered. The lost ¼ section corners and all of the necessary 1/16 section corners were restored or established at single proportionate positions. The centerlines of the section and centerlines of the NE¼ and NW¼ were surveyed and monumented as needed. All section lines and section subdivisional lines were adjusted to a perfect closure and each monument assigned a relative co-ordinate. Based on the large scale plat of the mineral surveys (which served as a "dirty sheet") approximate relative co-ordinates were assigned to the mineral survey corners for searching purposes.

Using a solar transit, in good condition and adjustment, closed traverses were run through each 1/16 section, beginning and ending at an established corner. If a mineral survey corner was found, the traverse was run into and out from that corner (in some cases a close "side tie" was made) and so on to a closure. The terrain was very broken and man-made structures often precluded any possibility of a direct line retracement of the mineral survey boundaries. In this manner a very large percentage of the original mineral survey corners were recovered, usually marked with the original stone monuments. Closures were kept to 1:5000 or better. The closing error was adjusted and a fixed relative co-ordinate assigned to each recovered corner. As corners become fixed, an approximate proportionate position was computed for those corners not yet found and further search made in the near vicinity of a computed point, resulting in more recoveries. Search was made for all other possible collateral evidence, such as the tunnel adit (entrance) described in the mineral survey notes, calls of topography, buildings, and testimony of local residents and private surveyors. The final evidence on which corner restorations were based and the further division of the public lands is illustrated in figure 6.

Preliminary Statement of the Problem

The surveyor must restore the lost corners of the patented mineral surveys as described in the patents and establish the corners of the patented lots 47 and 48 as shown on the supplemental plats, delineating the boundaries of the remaining public lands. The remaining lands must be surveyed into lots along aliquot part subdivision-of-section-lines insofar as possible and by metes and bounds as required to meet the needs of the State Director for purposes of disposal under the appropriate land laws.

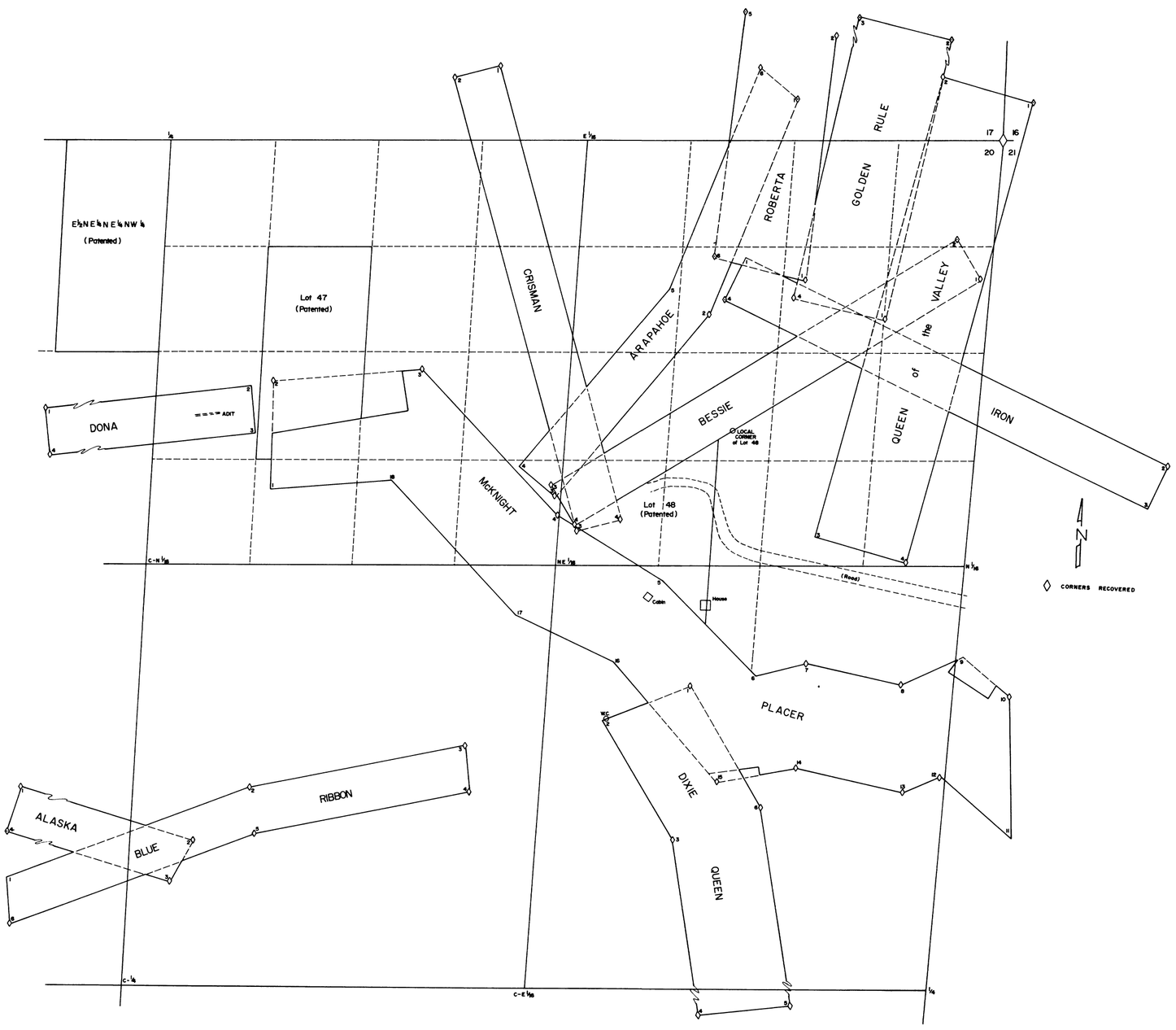


Figure 6 - Conditions Found and Corner Recovery

MINERAL SURVEY RESTORATION

Regulations

This survey illustrates the application of the following sections of the Manual of Surveying Instructions, 1973:

5-4 to 5-17	Identification of existent corners
5-20 to 5-23	Restoration of lost corners
5-38	Single proportionate measurement
5-42	Local corners and property rights
5-44	Grant boundary adjustment
5-29 and 5-45	One point control and index correction
5-46 and 5-47	Special cases
6-1 to 6-32	Dependent resurveys and Bona-fide rights
7-8 to 7-12	Subdivision of sections
7-16	Metes and Bounds Surveys
7-32 to 7-38	Small Tract Surveys

The surveys must conform to the land laws including those codified in Titles 30 and 43, U.S. Code as described in E-1.

Legal Constraints

The survey must comply with the regulations and judicial decisions and be executed in a manner that will protect the bona-fide rights of all claimants.

Changes in Instructions

After the retracements of the boundaries of section 20 were completed it became evident that enough distortion existed in the section lines to further complicate the survey situation. The high value of the land for residental purposes made a survey of the adjoining sections imperative. Supplemental Special Instructions for Group 448 were prepared on May 25, 1959, extending the resurveys and surveys to include sections 17, 18 and 19.

Auxiliary Topic - Minimum Lot Areas

As finally completed and approved, there are four small areas of public land in the NE¼ of section 20 which were not identified with an assigned lot number and area. Two of these fragments are less than 0.01 acre in area. Section 9-21 of the Manual of Surveying Instructions, 1973, was construed to mean that an area less than 0.01 acres would not be lotted. This interpretation was in error. Any area of public land, regardless of how small, should be identified, assigned an appropriate lot number and given an area designation of 0.01 acre, even if only containing a few square feet. Of course if such a fragment contains more than 0.01 acre, the proper acreage would be shown to the nearest 0.01 acre. When a resurvey and survey of this type is being made, identifying all the public lands would tend to preclude any further need of supplemental plats to identify the remaining public lands. These small parcels cannot be "given away" without a proper patent procedure.

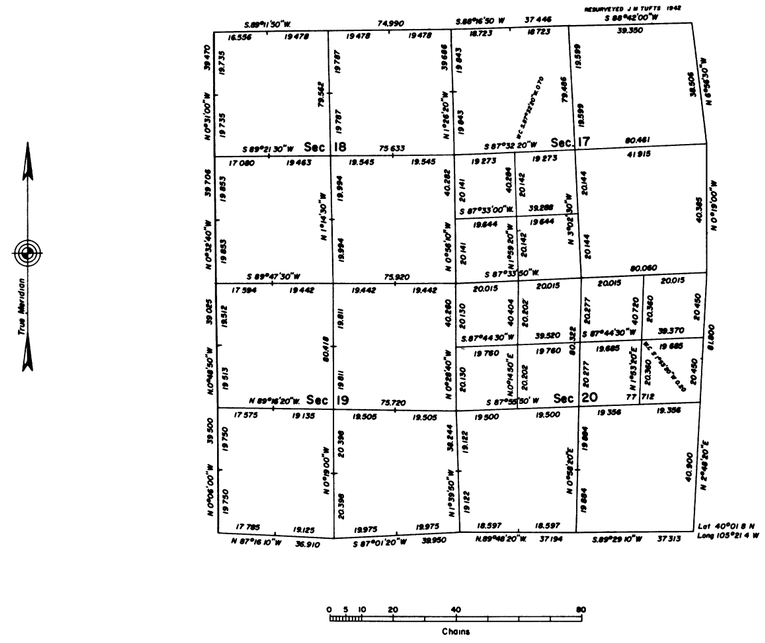
Until properly patented, even a very small parcel will remain public land as an "island" or "window" in the surrounding patented lands, creating potential title problems to valuable improvements and could conceivably be filed on under the land laws.

Final Statement of the Problem

The surveyor is to restore the lost mineral survey corners. He must survey and monument the small tracts in a manner that will meet the needs of the Lands and Minerals Officers of the Colorado State Office in the processing of the small tract applications.

TOWNSHIP 1 NORTH, RANGE 71 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COLORADO.

DEPENDENT RESURVEY AND PARTIAL SUBDIVISION



This plat (in 6 sheets) represents a retracement and re-establishment of the boundaries of secs 17, 18, 19 and 20, and certain mineral surveys therein, designed to restore the corners in their original locations according to the best available evidence and a partial subdivision of these sections The lottings and areas are based upon the plats approved July 24, 1875, October 22, 1919, December 28, 1922, September 20, 1923, and plats accepted November 29, 1932, May 25, 1950, July 25, 1951, January 21, 1953, April 28, 1953, July 17, 1953, September 10, 1954, February 2, 1955, May 12, 1955, April 23, 1956 and April 10, 1959, excepting as new or modified lottings are shown on the respective sheets of this plat for the detail not shown hereon as follows

Sheet 2 - Resurvey and partial subdivision in NE¼ sec 20
Sheet 3 - " " " " NW¼ sec 20
Sheet 4 - " " " " SW¼ sec 20
Sheet 5 - " " " " secs. 18 & 19
Sheet 6 - " " " " sec 17

Area of segregations 1022 70 Acres (approx)
Area exclusive of segregations 1534 83 Acres (approx)

Total area resurveyed 2557 53 Acres

The boundaries of sections 8 and 9 were resurveyed by John M Tufts, Cadastral Engineer, in 1942 and are represented upon the plat accepted November 27, 1942 For history of the mineral surveys refer to the mineral survey record History of previous surveys is set forth in the field note record

For topography within the sections reference is made to U S Geological Survey Quadrangle Sheets "Gold Hill" and "Boulder", dated 1957

As shown hereon, the surveys and resurveys in sections 17, 18, 19 and 20, T 1 N , R. 71 W , of the 6th Principal Meridian, Colorado, were executed by from March 25, 1959 to March 16, 1961, under special instructions dated March 11, 1959 and supplemental special instructions dated May 25, 1959, for Group 448, Colorado

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C March 13, 1963

This plat is strictly conformable to the approved field notes and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

For the Director

Chief, Division of Engineering

Figure 7 - Sheet 1 of the Accepted Plat

MINERAL SURVEY RESTORATION

TOWNSHIP 1 NORTH, RANGE 71 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COLORADO.

RESURVEY AND PARTIAL SUBDIVISION OF N.E 1/4 SECTION 20

Solution

The methods used to restore lost mineral survey corners, in order of mineral survey number was:

M.S. 203, McKnight Placer; Corner number 5 was restored at record bearing and distance from a cabin described in the mineral survey notes. John and Ester Romarine who were local residents since 1904 signed a sworn affidavit that of their personal knowledge this existing cabin occupied the site of the original cabin. A copy of their affidavit was included at the end of the field notes.

Corner number 6 was restored by use of grant boundary adjustment, section 5-44, between the restored corner number 5 and recovered corner number 7.

Corner number 9 was restored by the grant boundary adjustment between the recovered corners numbered 8 and 10. The intersections of the Vine Lode location were restored by single porportionate measurement on line 8-9 and line 9-10. The southeast and southwest corners of the Vine Lode location were than restored by the grant boundary adjustment.

Corners numbered 12 to 15 were well marked stone monuments, whereas the record called for wood posts. The found monuments appeared to have been in place for a long period, perhaps 40 years - as evidenced by moss and lichen growth, embedding, etc. No record could be found to reveal who had remonumented these points. Each monument was quite close to record bearing and distances from original corner number 10 and had been used as authentic survey marks by the local residents. In conformity with the intent of sections 5-42 and 6-28 of the Manual of Surveying Instructions, 1973, the stone monuments for corner numbers 12 to 15 were accepted and used as original.

Corner number 11 was restored between corner numbers 10 and 12 by the grant boundary adjustment.

Corner Number 16 was restored at record bearing and distance from the recovered Corner Number 1, M.S. 19742, Dixie Queen Lode. The field notes of the Dixie Queen Lode state that Corner Number 10 of the McKnight Placer was recovered and tied to Corner Number 1. The position of Corner Numbers 14, 15 and 16 of the McKnight Placer were computed using the tie to Corner Number 10 and the McKnight record. The conflict between the Dixie Queen and McKnight was based on those computed positions. The Dixie Queen was patented on that basis. Both the Dixie Queen and McKnight Placer were occupied on the assumption that Corner Number 16 of the McKnight was in the position called for by the Dixie Queen. Rather than disrupt an acceptable situation, Corner Number 16 was restored on the basis of the Dixie Queen tie.

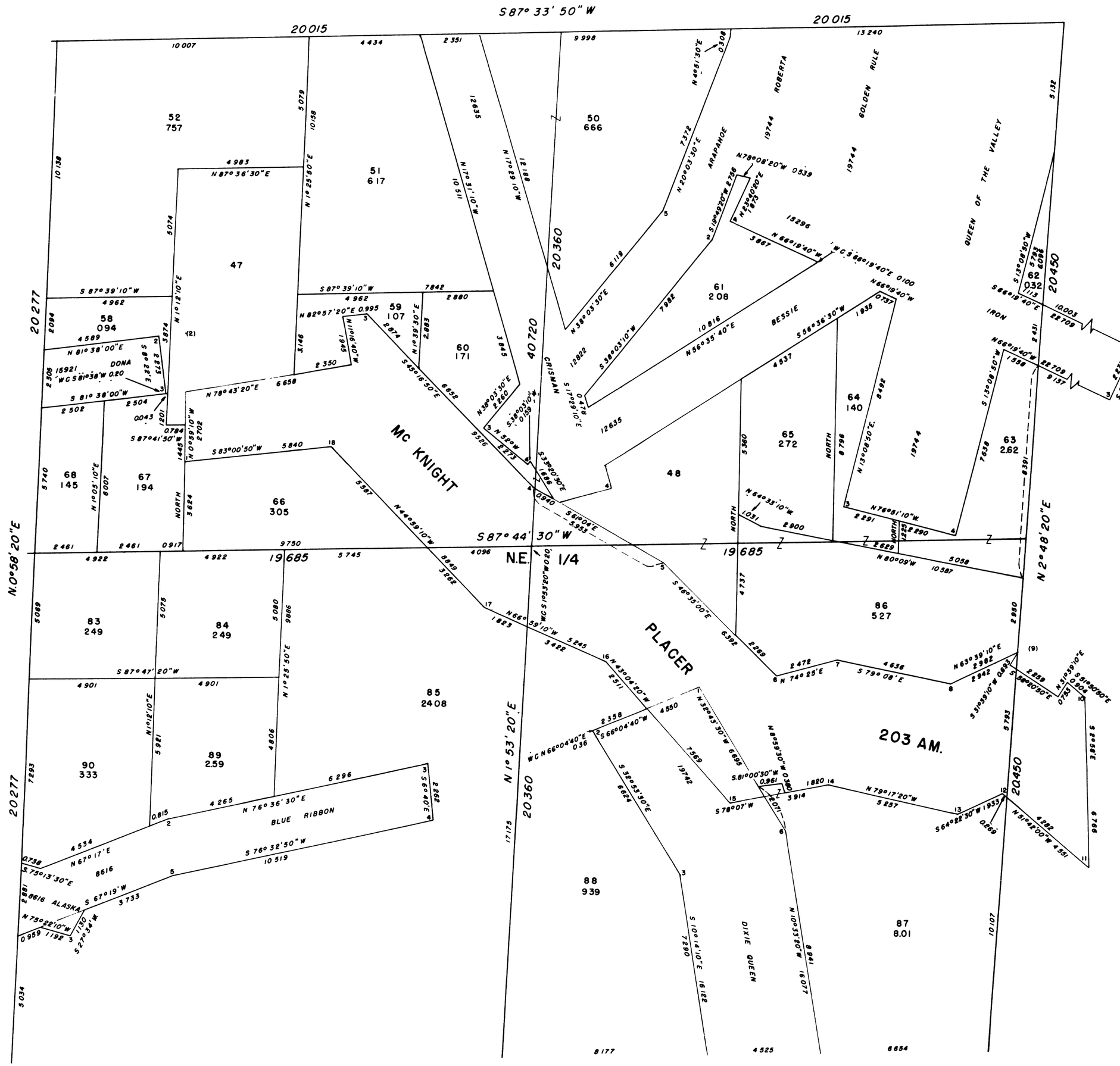


Figure 8 - Portion of the Accepted Plat

MINERAL SURVEY RESTORATION

The east endline and the north sideline intersections of the Southern Kansas location were restored by single proportionate measurement on lines 14-15 and 15-16 of the McKnight Placer. The northeast corner of the Southern Kansas location was then restored by using the grant boundary adjustment.

Corner Numbers 17, 18 and 1 were restored by the grant boundary adjustment between the restored Corner Number 16 and recovered Corner Number 2.

The south sideline and east endline intersections of the Charlotte Lode location were restored by single proportionate measurement along line 1-2 and 2-3. The southeast corner of the Charlotte location was then restored by the grant boundary adjustment.

M.S. 8616, Blue Ribbon Lode; the lost corner number 1 of the Blue Ribbon Lode was restored at record distance from the recovered corner number 6 and on a line parallel to endline 3-4.

M.S. 12822, Arapahoe Lode; the lost corner 4 was restored at record distance from the recovered corner number 3 and on a line parallel to line 1-6. The lost corner number 5 was then restored between corner number 4 and corner number 6 by the grant boundary adjustment.

M.S. 15296, Iron Lode; the lost corner numbers 1 and 3 were restored between recovered corners numbered 2 and 4, each by the grant boundary adjustment.

M.S. 15921, Dona Lode; line 2-3 was determined from the lode line at record distance (107 ft.) from the adit of the discovery tunnel and parallel to line 1-4. The lost corner numbers 2 and 3 were restored on line 2-3 at record distance (75 ft.) each side of the lode line.

M.S. 19744, Roberta, Golden Rule and Queen of the Valley Lodes; the lost corner number 3, Queen of the Valley was restored on a line parallel to and the same length as line 1-2 of the claim.

The corners of the patented lots 47 and 48, shown on the Supplemental Plats, figures 3 and 4, were established as follows:

Lot 47; as shown on the plat is the SE¼NW¼NW¼NE¼ and the NE¼SW¼NW¼NE¼ lying outside of the patented McKnight Placer. In compliance with the special instructions, the exterior lines of these aliquot parts were calculated and surveyed on the calculated courses and distances with the south and east lines terminated at the intersections with the McKnight Placer boundary.

Lot 48 was another problem. The Supplemental plat (Figure 4) was improperly made in 1953, showing specific courses and distances. The easterly line of lot 48 was intended to lie along an aliquot part division, i.e., the N-S centerline of the SE¼SW¼NE¼NE¼, and aliquot part extensions of that line to intersections with the Bessie Lode and McKnight Placer, figure 6. The patentee had a survey made of lot 48 by D.H. Core, a registered land surveyor. Core established the most northeasterly corner of lot 48 on line 1-4 of the Bessie Lode at the distance shown on the plat (6.49 chains) from line 1-4 of the Crisman Lode. From that point he ran due South (as shown on the plat) to an approximate intersection with line 5-6 of the McKnight Placer; approximate because corner numbers 5 and 6 of the McKnight were not monumented at that time. On the basis of the line surveyed by Core, the owner of lot 48 constructed a home. Upon the dependent resurvey of section 20 the aliquot part division line (intended to be the east line of lot 48) passed through the house, about as shown in Figure 6. The northeast corner of lot 48 as established by Core was found and was on line 1-4, Bessie Lode. That point was accepted and the easterly line of lot 48 was extended due South therefrom to an intersection with line 5-6, McKnight Placer. Placement of specific distances on the Supplemental plat which were wholly based on the original survey record created, in effect, a metes and bounds survey. The government would be in an untenable position if it tried to hold to the aliquot part division instead of the distances indicated on the improper plat.

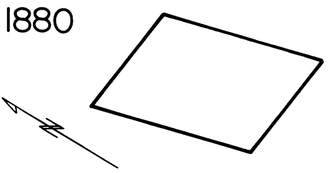
The division lines between the various lots were surveyed as directed by Lands and Minerals staff to meet their needs in processing the small tract applications. The lot lines followed aliquot part subdivisional lines wherever possible. Improvements such as roads and dwellings determined the position of most lot lines, many of which were not monumented. Where lot corners were monumented, "Copperweld" stakes were used in most instances. Brasscapped iron posts were used to monument the regular subdivision of section corners on those lines which were surveyed normally. Mineral survey corners marked with stone monuments were not remonumented.

In writing the field notes, the section lines were written, then section subdivisional lines with all intersections entering and leaving public lands called and monumented if they were also a lot corner. The resurvey of the McKnight Placer was written in its entirety with lot corners called and in most cases monumented as they occurred. The metes and bounds descriptions were written in order of lot numbers. Finally the mineral survey corners not previously described but which controlled the directions of lines and proportions were written in order of mineral survey numbers.

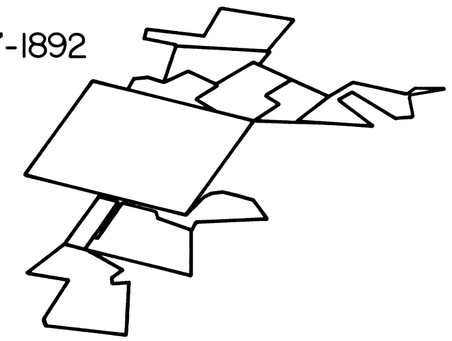
The plats of the entire Group 448 were accepted on March 13, 1963, and consisted of six sheets. Sheets 1 and 2 are shown in Figures 7 and 8.

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

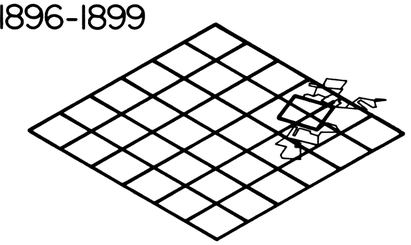
1880



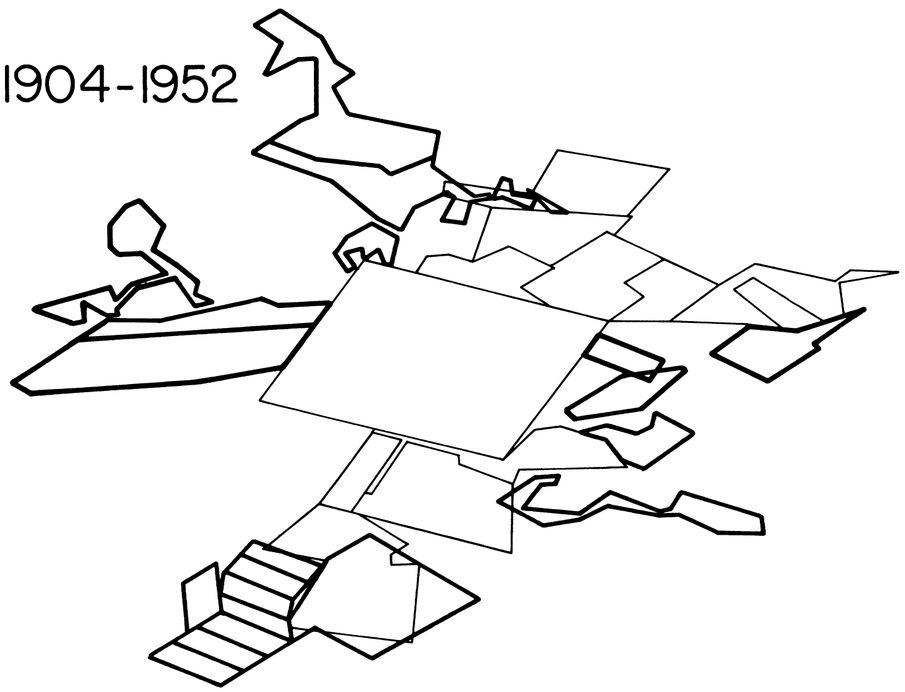
1887-1892



1896-1899



1904-1952



History of Surveys

1880	F W. Von Bodengen surveyed the Custer City townsite on July 26, 1880. See figure 1, the connected sheet
1887	Charles W Bryden surveyed M.S 506, Clark Placer, plat approved October 19, 1887.
	Charles W Bryden also surveyed M S. 507, Smith Placer, plat approved October 25, 1887.
1888	John W. McIntyre surveyed M S. 548, Haserodt Placer, as shown on the plat approved June 23, 1888 and M.S. 590, Heideprim Placer, plat approved February 9, 1889.
1889	John W. McIntyre surveyed M.S. 594, Hall Placer, as shown on plat approved June 6, 1889
1890	John W. McIntyre surveyed M.S. 644, Mallon Placer, as shown on the plat approved June 19, 1890 and M.S. 651, Tubbs Placer, plat approved September 1, 1890. McIntyre also surveyed M S 701, Denver Placer, plat approved September 1, 1890
1892	John W. McIntyre surveyed M S. 890, Durst Placer, plat approved June 13, 1892 and M.S. 936, Edward Cook Placer, plat approved January 28, 1893.
1896	Frank S. Peck surveyed the exterior boundaries of T 3 S., R. 4 W , in September, 1896.
1897	James W. Baldwin surveyed the subdivisional lines of T 3 S., R 4 W
1898	M P. McCoy retraced the exterior boundaries of Custer City townsite. The township plat was approved on May 23, 1899 See figure 2
1904	Roscoe K. Watson surveyed H E S. of Mathew S. Daly, plat approved May 22, 1907.
1907	Charles M Caton surveyed M S. 1954, Home and Japan Lode group, plat approved September 27, 1907
1908-1911	Charles E. Smith surveyed H.E S. No 60, plat was approved November 2, 1909, H.E.S. No. 95, plat approved January 10, 1910 and H.E.S. No 157, plat approved March 29, 1912.
1914	W.C. Campbell surveyed H.E.S No 277, plat approved July 19, 1915
	Fred D. Mendenhall surveyed H.E.S No 326, plat approved October 25, 1915.
	W.C. Campbell surveyed H E.S No 327, plat approved March 31, 1917
	W.C. Campbell surveyed H E.S. No 328, plat approved February 21, 1916.
1917	W C. Campbell surveyed H.E.S. No 392, plat approved October 31, 1919.
	H.F Mader surveyed H.E.S. No. 393, plat approved August 23, 1918.
	H.F. Mader surveyed H.E.S. No 412, plat approved September 23, 1918.
	W.C Campbell surveyed H.E.S. No. 525, plat approved October 31, 1919
1923	Supplemental plat of section 23 prepared, approved August 15, 1923.
1949	Stein Bangs surveyed M S. 2152, Wayside Lode, plat approved October 18, 1949, and M S. 2158, Horse-shoe Lode, plat approved October 29, 1952.

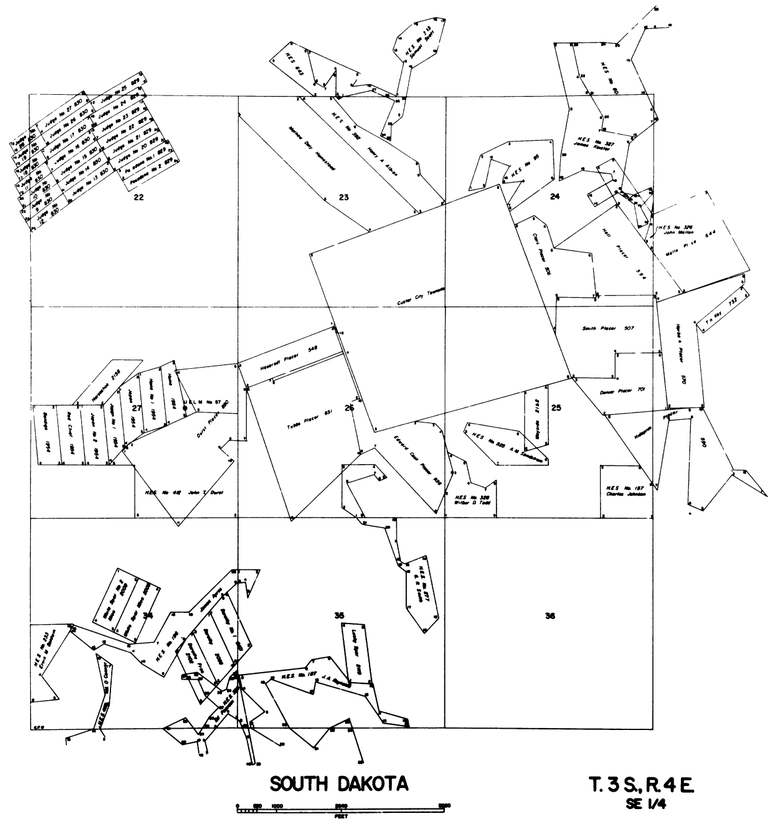


Figure 1 - Connected Sheet

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

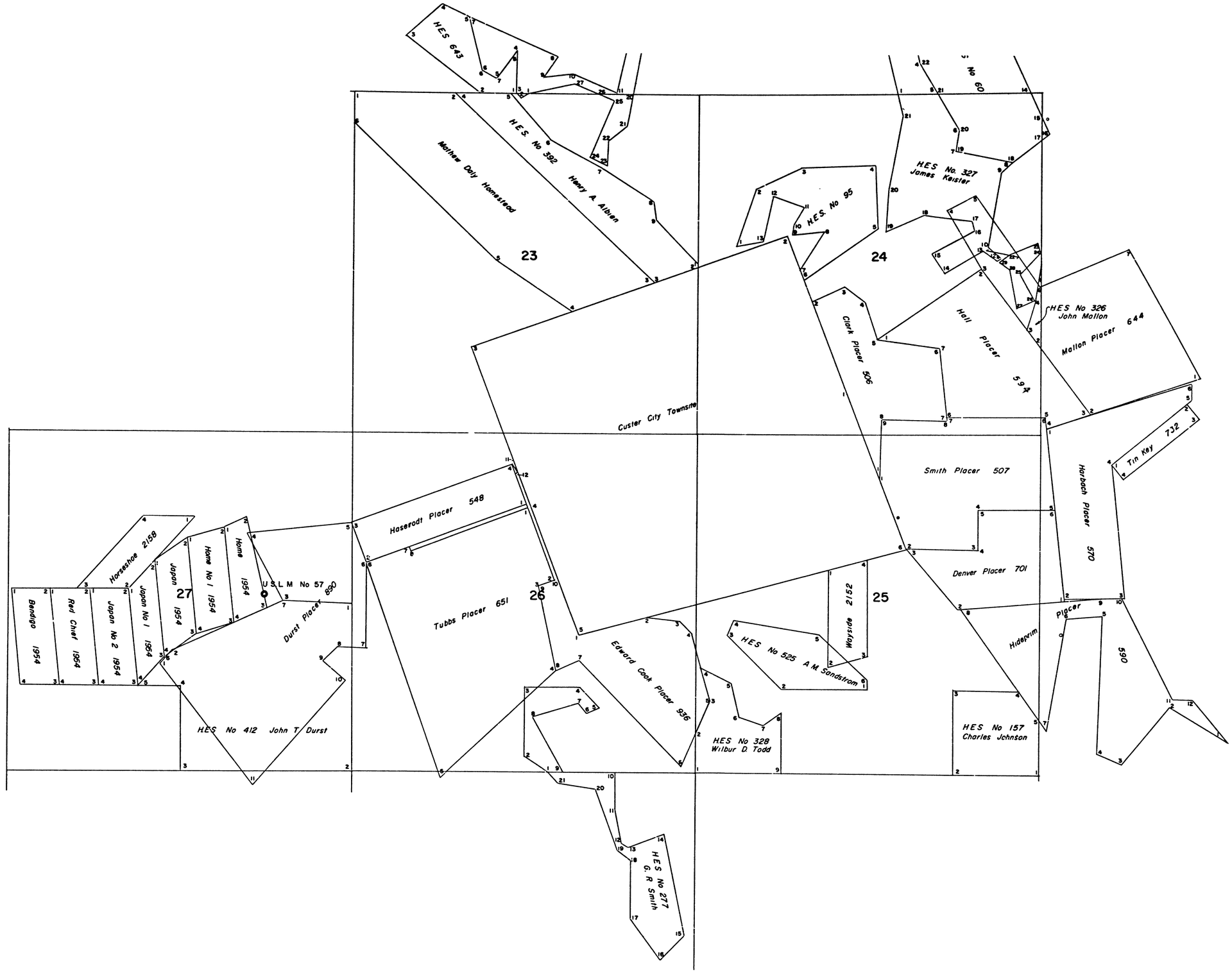
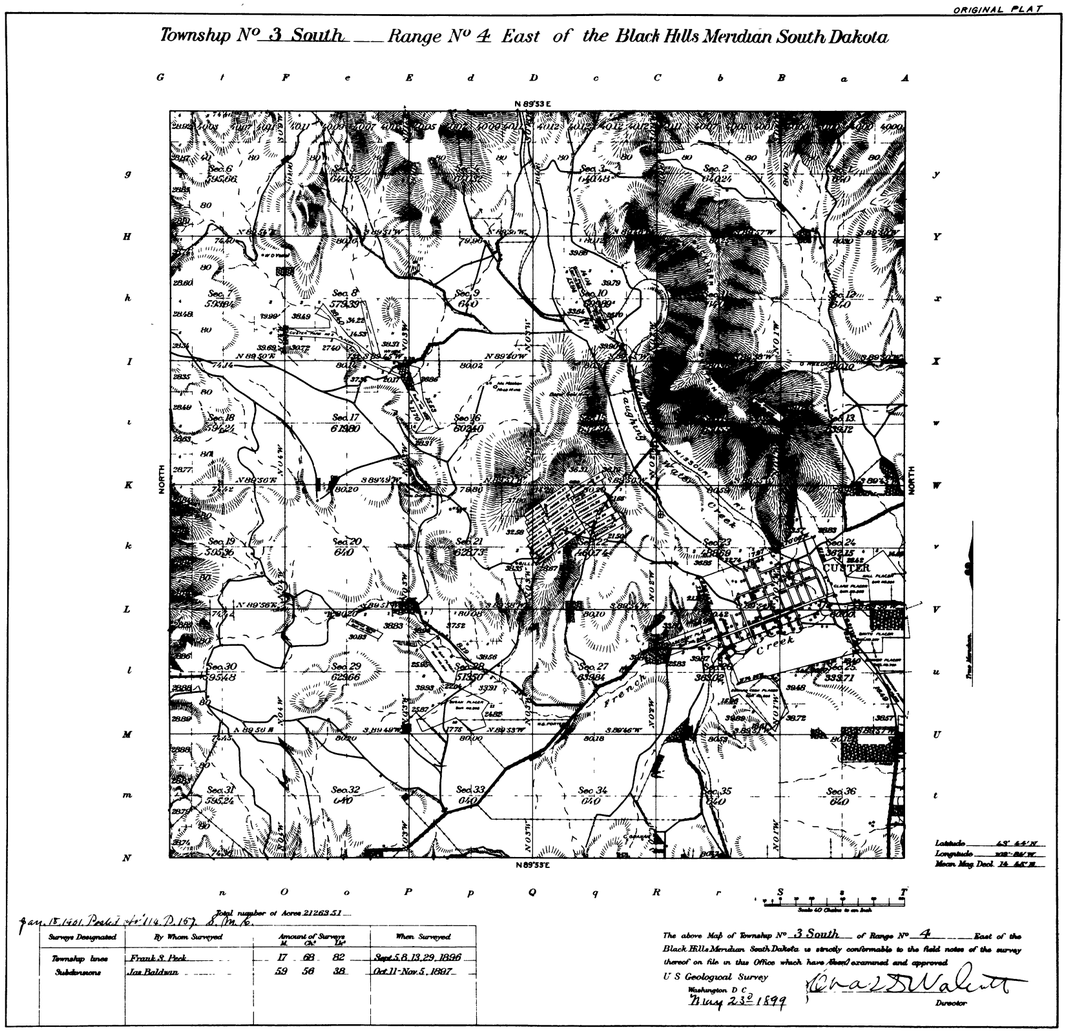


Figure 1a - Portion of Connected Sheet

H.E.S. AND MINERAL CLAIMS, S. DAKOTA



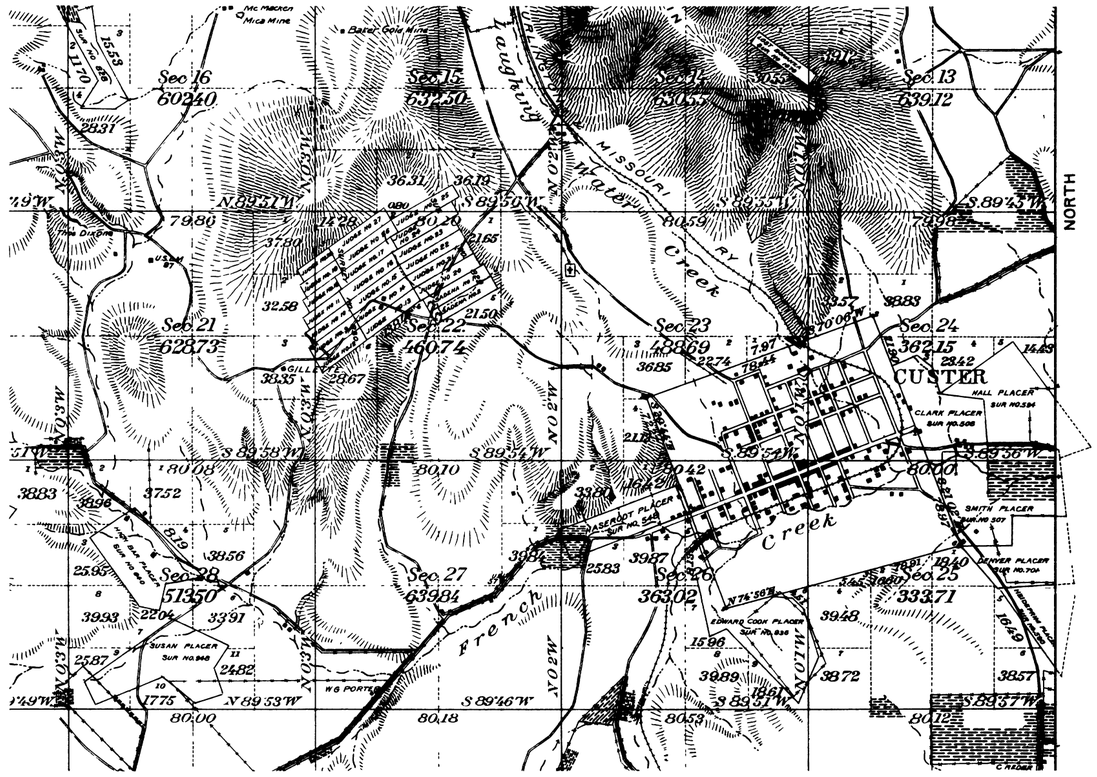


Figure 2 - Township Plat With Detail of Sections 23-27 on Right

Reasons for Request of this Survey

The public lands in this township are located in the Black Hills National Forest. The Forest Service was in the process of trying to effect several land exchanges. These exchanges are authorized under the Act of March 20, 1922 (42 Stat. 465). In the land exchange known as the "Rosse Exchange", the Forest Service was to exchange the patented N½SE¼SE¼ of section 22 for some vacant land in section 27, specifically: The triangular area in the SE¼NW¼ lying between the Japan Lode, M.S. 1954, and the Horseshoe Lode, M.S. 2158; that part of the SW¼NE¼ outside the patented M.S. 1954; and all of the SE¼ lying between the patented M.S. 1954 and patented H.E.S. number 412. These described lands required lot numbers and areas for patent purposes. A supplemental plat would not suffice because of uncertainties of the true position of the patented lands in relationship with section subdivisional lines. In general, the many metes and bounds surveys within the township created administrative problems. The Regional Forester requested a dependent resurvey of the township.

Special Instructions

Special Instructions were prepared on June 22, 1967, for Group 41, South Dakota. They provided for the dependent resurvey of T. 3 S., R. 4 E., including subdivision of sections and resurvey of the metes and bounds surveys to the extent necessary to define and properly plat the public lands within the township. The field work was begun on June 23, 1967. This discussion is limited to the work in sections 23 thru 27.

Conditions Found on the Ground

Figure 3 depicts the conditions found on the ground. All corners were recovered EXCEPT those indicated. The resurveys were not extended into T. 3 S., R. 3 E. The tracts in that township are shown only for informative purposes and to indicate relationships. For record plats see the supplemental topics at the end of this discussion.

All of the Homestead Entry Surveys are patented. H.E.S. 326 and 327 are partially in conflict with M.S. 644, Mallon Placer, but no mention is made of the conflicts and there are no mineral reservations made in the patents. H.E.S. 412 is largely in conflict with the Durst Placer, M.S. 890, but no mention is made of the conflict nor are any mineral reservations made in the patent.

The Custer townsite is patented.

Section 23 - Lots 7 and 12, the N½SE¼SW¼NW¼, and the NW¼SW¼ are patented.

Section 24 - There are no patents in this section except the Homestead Entry Surveys, Custer Townsite, and Mineral Surveys.

Section 25 - Lots 1 and 5, the W½SW¼ and SE¼ SW¼ are patented.

Section 26 - Lot 3 includes all of the SW¼NW¼ outside the Haserodt Placer. Lot 7 includes all of the NW¼SE¼ outside the Edward Cook Placer. Lots 3, 4, 5 and 7 and the N½SW¼ were patented to Tubbs. The S½SW¼ has also been patented.

Section 27 - The N½NE¼, Lot 1, NE¼NW¼, S½SW¼, M. S. 1954, M.S. 2158 and H.E.S. No. 412 have been patented.

Section 35 - The E½NW¼ and NW¼NW¼ have been patented without mention of the Tubbs Placer, M.S. 651.

All of the Mineral Surveys have been patented with the following exceptions:

M.S. 644, Mallon Placer: Mineral application (for patent) was made on this claim by John Mallon on December 11, 1890. The application was officially rejected on February 21, 1906. M.S. 644, Mallon Placer has never been declared null and void, nor has the mineral survey ever been cancelled.

M.S. 651, Tubbs Placer. On December 5, 1890, Newton S. Tubbs filed a mineral entry on M.S. 651. Before any action was taken on this entry and after the township was surveyed, Tubbs filed a homestead entry on lots 3, 4, 5 and 7 and the N½SW¼ section 26. Since this homestead entry was partially in conflict with the Durst Placer, M.S. 890, John P. Durst protested the Tubbs entry. In the ensuing Land Office hearing Tubbs stated that he had abandoned his mineral application. The Durst protest was dismissed because the Durst Placer was also being farmed instead of mined. The Tubbs Placer mineral entry was cancelled on August 3, 1904. Tubbs was later granted a patent to the lands applied for under the homestead entry. The mineral survey of the Tubbs Placer has never been cancelled.

M.S. 890, Durst Placer: No action has ever been taken on this claim. After the Tubbs Placer dispute, John P. Durst filed on the larger portion of the lands covered by the Durst Placer, under a homestead entry. This entry was surveyed as H.E.S. No. 412 and Durst was granted patent to H.E.S. No. 412. No action has been taken against M.S. 890, Durst Placer and is still an official mineral survey of record.

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

M.S. 2152, Wayside Lode: This claim was patented excluding the area designated as Tract A and the portion in conflict with H.E.S. 525.

Preliminary Statement of the Problem

The surveyor must restore the lost corners indicated on figure 3 and subdivide the sections to the extent necessary to properly lot and return areas on the vacant public land under Forest Service administration. The surveys are to be executed to the closures required for "Class D" terrain.

Regulations

The following sections of the Manual of Surveying Instructions, 1973, are directly applicable to the problem:

3-79 to 3-89	Subdivision of sections
3-124	Limits of closure
5-4 to 5-18	Identification of existent corners
5-20 to 5-38, 5-41 and 5-42	Restoration of lost corners
5-43 and 5-44	Restoration of broken boundaries
6-11 to 6-32	Dependent resurveys
7-8 to 7-12	Subdivision of sections

Legal Constraints

The lands within surveyed but unpatented mineral surveys must be treated in accordance with Interior Decision A-30762, Harry Yukon, dated August 23, 1967.

Auxiliary Topic - Cancellation of Surveys

Portions of the parcels of land to be patented in the "Rosse Exchange" were in conflict with M.S. 890, Durst Placer. The Durst Placer is an officially approved survey of record. Admittedly H.E.S. No. 412, patented to John P. Durst under an agricultural entry, is largely in conflict with the Durst Placer. Since agricultural entries could not be made on KNOWN mineral lands the agricultural patent might be construed as an adjudication of any mineral rights on the Durst Placer. In fact, there had been no adjudication as to the validity of the lands embraced by the mineral survey, as currently provided for in 43 CFR 4.451. Until the Durst Placer, M.S. 890 has been officially declared null and void, the mineral survey cannot be cancelled. Until the mineral survey is officially cancelled the lands embraced by the claim are in a state of withdrawal from other entry, the land cannot be lotted, and the M.S. 890 would have to be shown on the dependent resurvey plat. See Interior Decision A-30762, Harry Yukon, dated August 23, 1967, and cases cited therein.

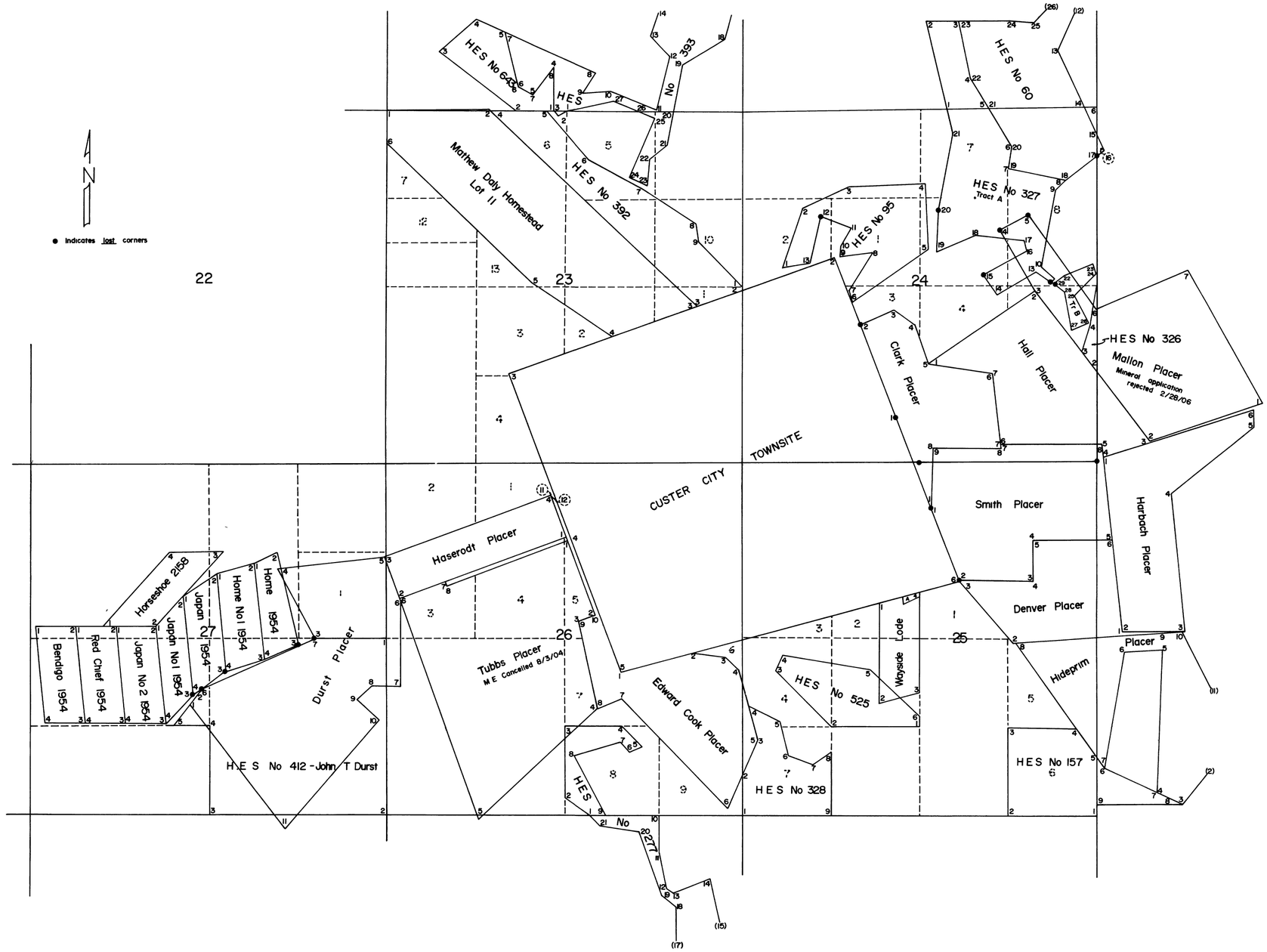


Figure 3 - Conditions Found on the Ground

Because the Forest Service has the administrative responsibility over mining claims in National Forests, they were requested to proceed against the Durst Placer, M.S. 890, the Tubbs Placer, M.S. 651, and the Mallon Placer, M.S. 644.

The Durst Placer was officially declared null and void on July 7, 1971. Mineral Survey No. 890 was officially cancelled on September 22, 1971.

The fragmentary parcels applied for in the Rosse Exchange were free to be lotted and given an area for patent purposes. No action was taken against the Tubbs Placer or Mallon Placer. Since the Mallon and Tubbs Placers were not cancelled they had to be shown on the plat. In a memorandum dated April 21, 1971, the Washington Office advised:

'In those cases where there is a cancellation or rejection of the mineral entry in the record, cancellation of the mineral survey can proceed. The rejection of an application for patent is not in itself a cancellation of the entry. In those cases where the rights of the original claimant may still be in effect, an adjudication action declaring the claims null and void must precede any cancellation of the mineral survey."

Since all of the lands embraced by the Tubbs Placer have already been patented, the status of that claim is debatable.

The rejection of the mineral application on the Mallon Placer does not constitute a cancellation of a mineral entry. The rights of the Mallon Placer must be adjudicated before the lands within the claim, but not in conflict with patented homestead entries, can be lotted and given areas.

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

Final Statement of the Problem

The surveyor must restore the lost corners of the townsite, mineral surveys and homestead entry surveys, since they control the position of federal public lands. He must also subdivide the sections to the extent necessary to provide adequate data for computing areas of fractional lots.

Solution

The corner of sections 19, 24, 25 and 30 was restored at single proportionate position on the range line. The ¼ section corner of sections 24 and 25 was then restored by single proportionate measurement.

Corner Number 1, Custer Townsite, was restored by single proportionate measurement at midpoint between the recovered Corner Number 2 and Number 6. Corner Number 2, Clark Placer, was restored by single proportionate measurement between Corner Number 1, Custer Townsite, and recovered Corner Number 6, H.E.S. 95, which was on line 1-2 of the townsite. The proportionment was based on ties made by H.E.S. 95. Corner Number 1 and Number 2, Smith Placer, were restored by single proportionate measurement on line 1-6 of the Custer Townsite, based on the Clark Placer, Smith Placer and Denver Placer records. Corner Number 1, Custer Townsite and Corner Numbers 1 and 2, Smith Placer, were not permanently monumented.

Corner Numbers 12, 15 and 20, H.E.S. 327, were restored by the grant boundary method as stated in section 5-44 of the Manual of Surveying Instructions, 1973. Corner Number 29, H.E.S. 327, was restored at record bearing and distance from recovered Corner Numbers 22 and 28.

Corner Number 17, H.E.S. 60, was restored at the intersection of the range line and a direct line between recovered Corner Numbers 16 and 18.

Corner Numbers 4 and 5 of M.S. 644, Mallon Placer, were restored by the broken boundary method (compass rule) as given in section 5-43 of the Manual of Surveying Instructions, 1973, between recovered Corner Numbers 3 and 6, Mallon Placer.

Corner Number 6, H.E.S. 412, was restored by single proportionate measurement on line 3-4, Japan Lode, based on the mineral survey record. Corner Number 7, H.E.S. 412, was restored by single proportionate measurement on the east-west centerline of section 27, based on the H.E.S. record.

Corner Number 12, H.E.S. 95, was restored by the grant boundary method.

The three lost corners of M.S. 1954 were restored by the grant boundary method.

The necessary section subdivision lines were surveyed as shown on the accepted plats. "Crossing closing corners" (section 5-41 of the Manual of Surveying Instructions, 1973) were not monumented, but the intersection points where the line entered or left public lands were "called" in the field notes. Existing corners with adequate stone monuments were not remonumented but new bearing tree accessories were added where necessary.

All areas of public lands not encumbered by a mineral survey of record were lotted and given an area on the plat.

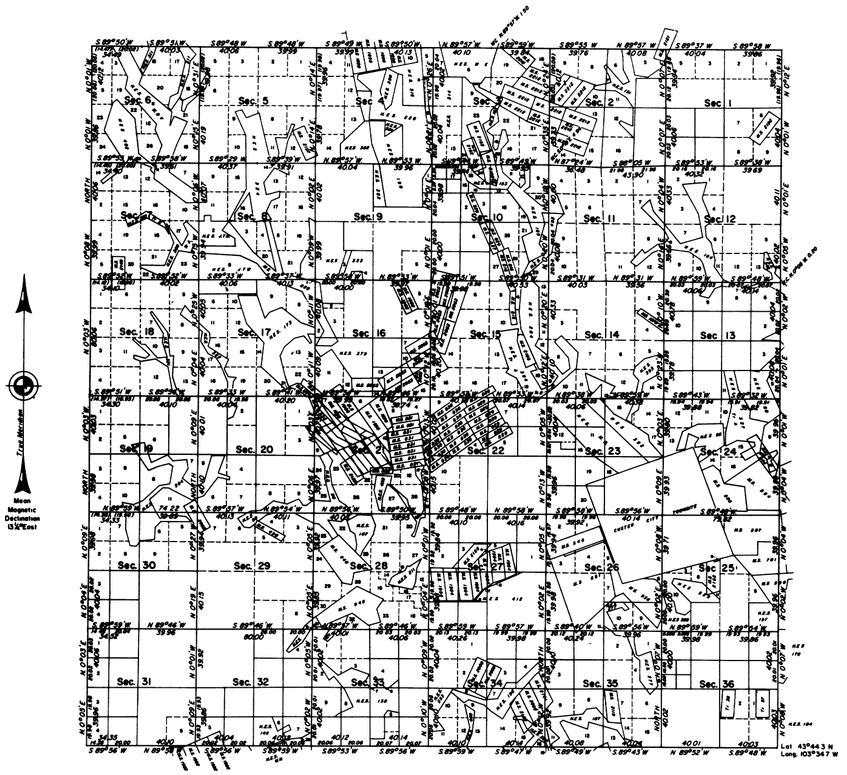
The field notes of this entire township total 702 pages. The plats are in 24 sheets. Sheets 1, 14, 15, 16 and 17, accepted January 12, 1972, are illustrated in Figures 4a through 4e.

The approved mineral survey and homestead entry survey plats are shown in historical order in the appendix figures.

TOWNSHIP 3 SOUTH, RANGE 4 EAST OF THE BLACK HILLS MERIDIAN, SOUTH DAKOTA.

DEPENDENT RESURVEY AND SUBDIVISION
AND SURVEY OF TRACT 39

Sheet 1 of 24



The history of previous surveys is contained in the field note record

This plat in 24 sheets represents a dependent resurvey of the east, south, west and north boundaries, subdivisional lines, certain boundaries of mineral surveys, homestead entry surveys and the Custer City Townsite, designed to restore the corners in their true original locations according to the best available evidence, and the survey of the subdivision of certain sections and tract 39, in T 3 S., R 4 E., Black Hills Meridian, South Dakota

Modified lottings are based upon the resurvey of the Mineral Surveys, Homestead Entry Surveys, the survey of tract 39 and the record of the Mineral Surveys. Except as new or modified vacant subdivisions are shown hereon, the lottings and areas are as shown on the plats approved May 23, 1899, May 22, 1907, Mar 13, 1908, Aug 25, 1908, Oct 26, 1908, May 11, 1909, Nov 2, 1909, Sept 25, 1914, June 26, 1920, Aug 15, 1923, Jan 20, 1926, April 27, 1929, Jan 30, 1931 and the plat accepted April 22, 1955

These surveys were executed by Cadastral Surveyors beginning June 28, 1967 and completed August 25, 1971, pursuant to Special Instructions for Group No 41, South Dakota, dated June 28, 1967

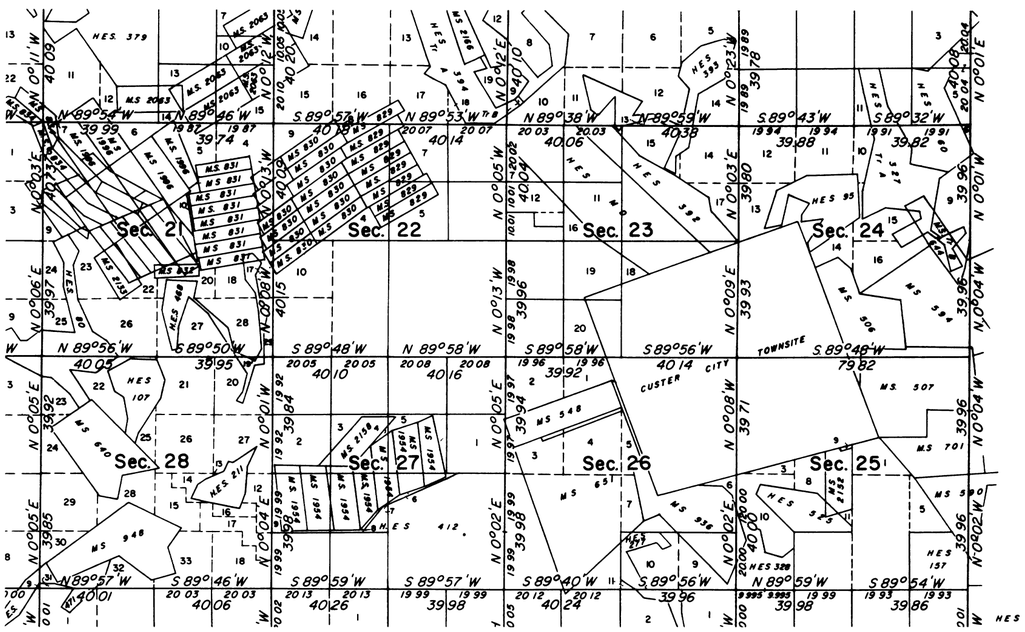
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C January 12, 1972

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

For the Director

Chief, Division of Cadastral Survey

Figure 4a - Sheet 1 of the Accepted Plat



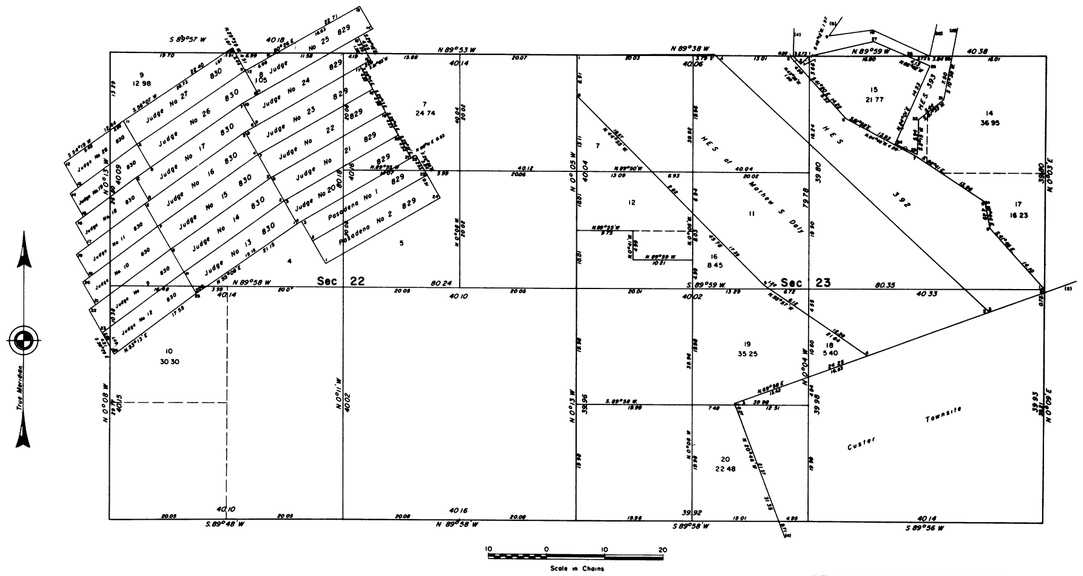
H.E.S. AND MINERAL CLAIMS, S. DAKOTA

TOWNSHIP 3 SOUTH, RANGE 4 EAST OF THE BLACK HILLS MERIDIAN, SOUTH DAKOTA.

DEPENDENT RESURVEY AND SUBDIVISION

Sheet 14 of 24

Reference should be made to Sheet No 1 for survey information



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C January 12, 1972

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

For the Director

Chief, Division of Cadastral Survey

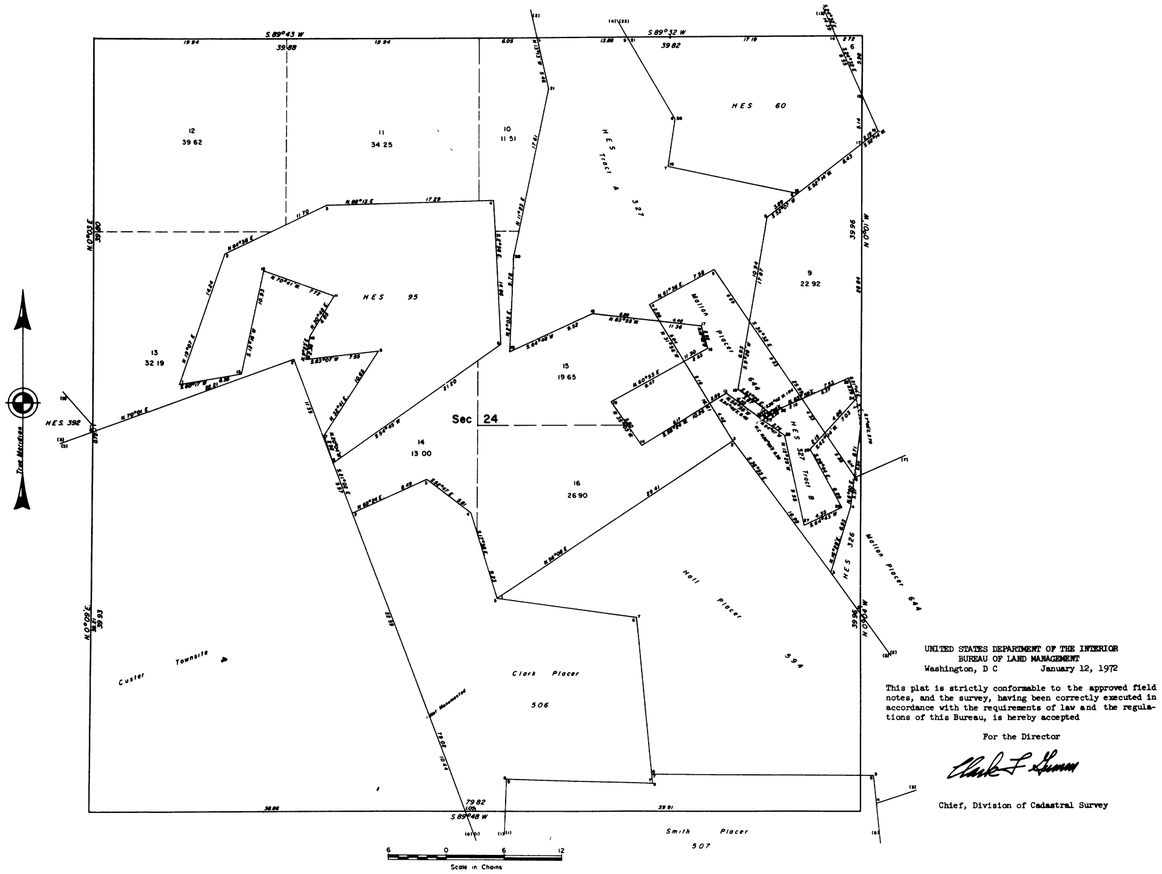
Figure 4b - Portion of Accepted Plat

TOWNSHIP 3 SOUTH, RANGE 4 EAST OF THE BLACK HILLS MERIDIAN, SOUTH DAKOTA.

DEPENDENT RESURVEY AND SUBDIVISION

Sheet 15 of 24

Reference should be made to Sheet No 1 for survey information



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C January 12, 1972

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

For the Director

Chief, Division of Cadastral Survey

Figure 4c - Portion of Accepted Plat

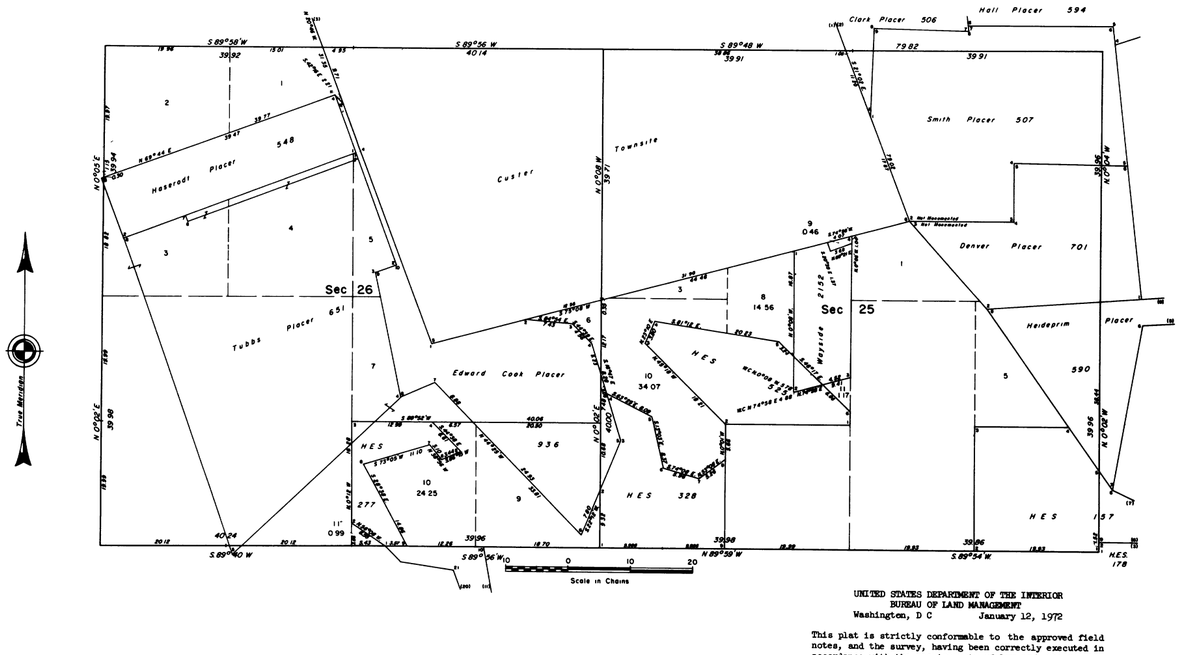
H.E.S. AND MINERAL CLAIMS, S. DAKOTA

TOWNSHIP 3 SOUTH, RANGE 4 EAST OF THE BLACK HILLS MERIDIAN, SOUTH DAKOTA.

DEPENDENT RESURVEY AND SUBDIVISION

Sheet 16 of 24

Reference should be made to Sheet No 1 for survey information



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C January 12, 1972

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

For the Director

Clark L Hamm

Chief, Division of Cadastral Survey

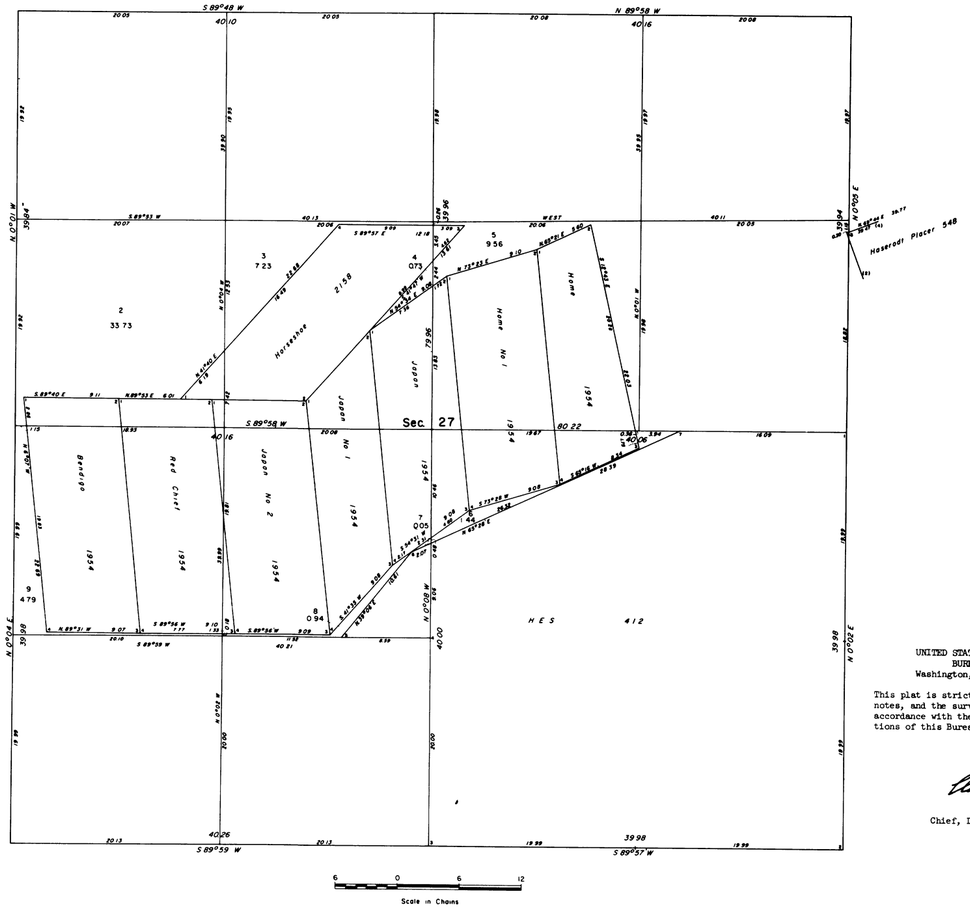
Figure 4d - Portion of Accepted Plat

TOWNSHIP 3 SOUTH, RANGE 4 EAST OF THE BLACK HILLS MERIDIAN, SOUTH DAKOTA.

DEPENDENT RESURVEY AND SUBDIVISION

Sheet 17 of 24

Reference should be made to Sheet No 1 for survey information



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington, D C January 12, 1972

This plat is strictly conformable to the approved field notes, and the survey, having been correctly executed in accordance with the requirements of law and the regulations of this Bureau, is hereby accepted

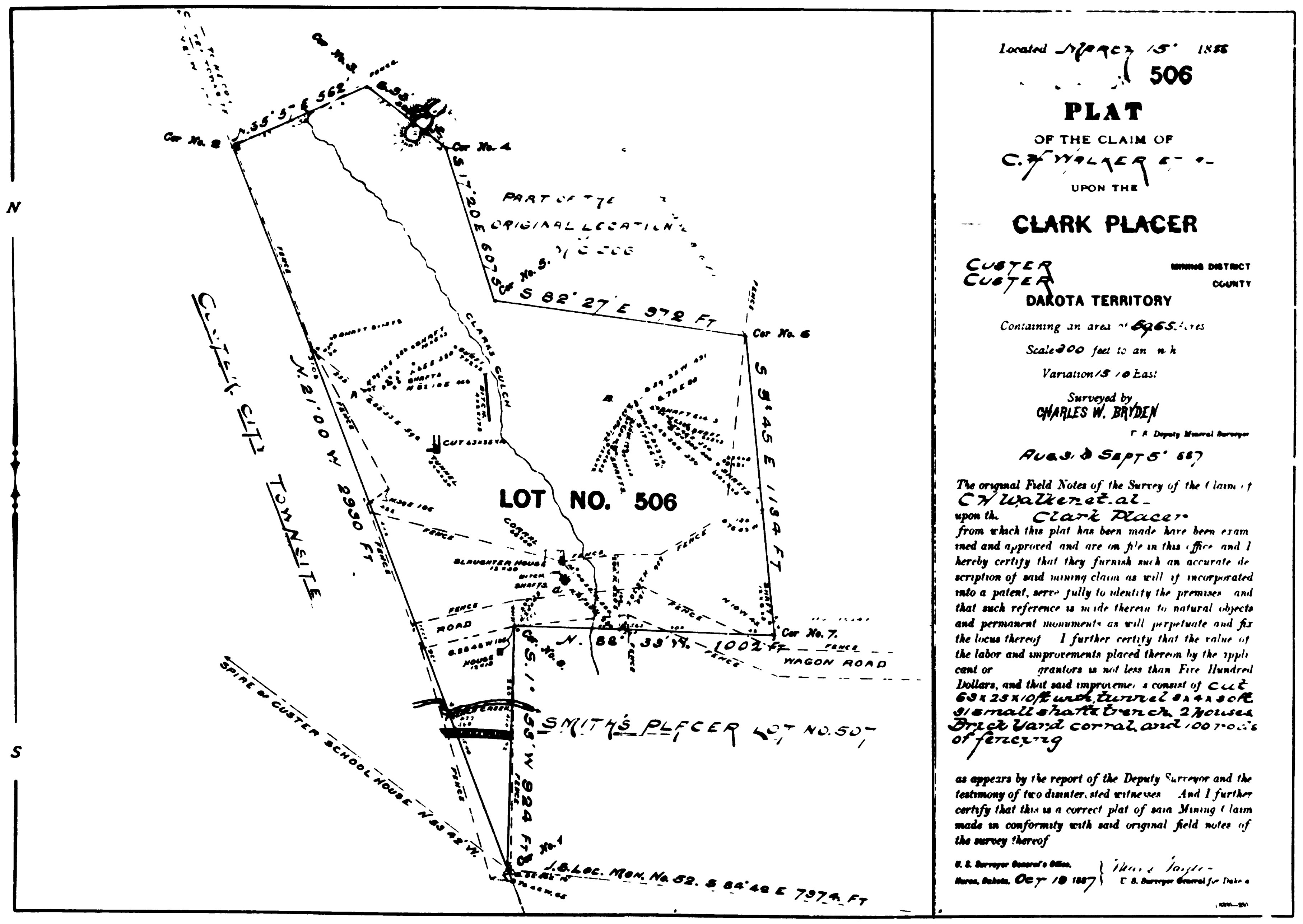
For the Director

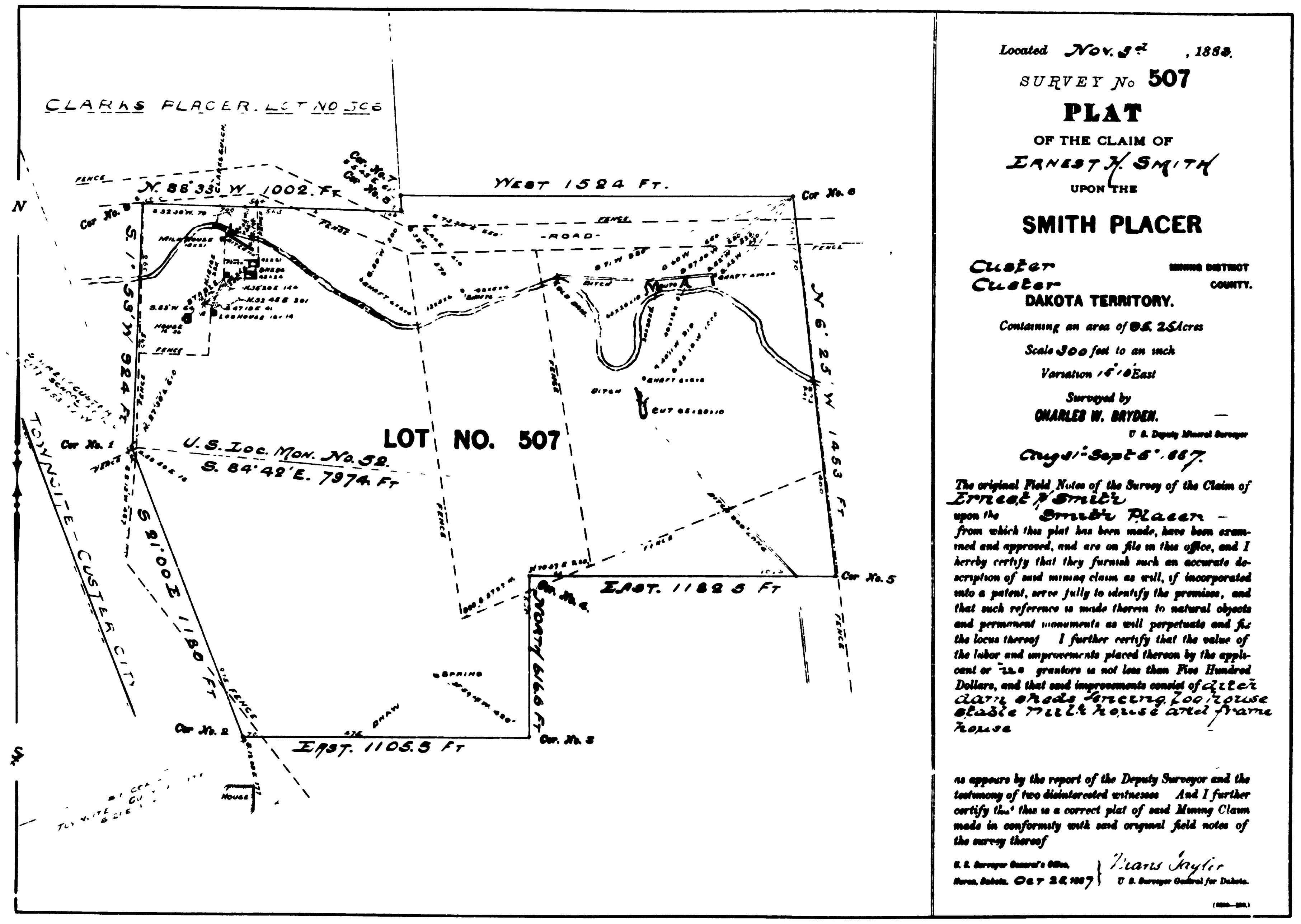
Clark L Hamm

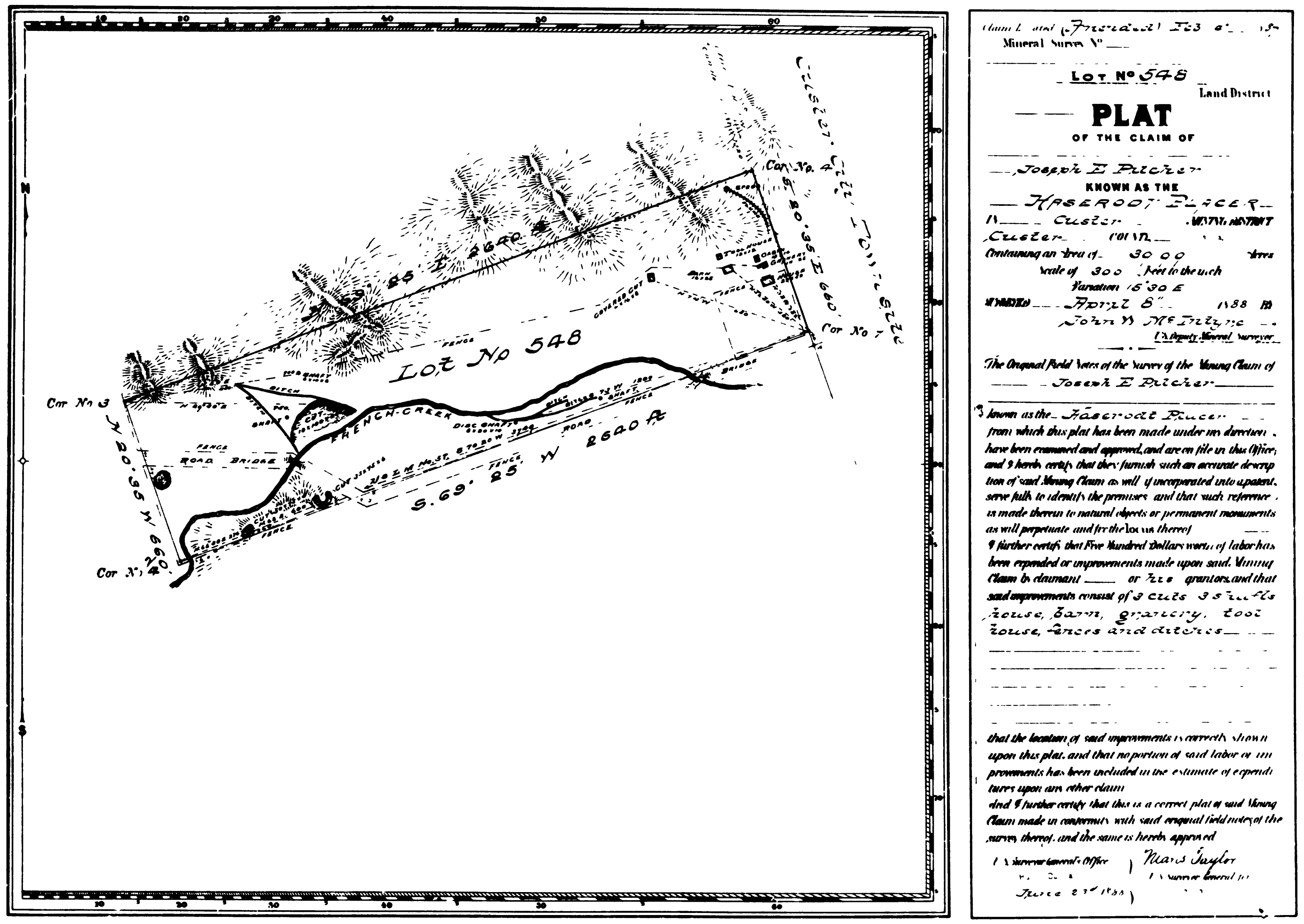
Chief, Division of Cadastral Survey

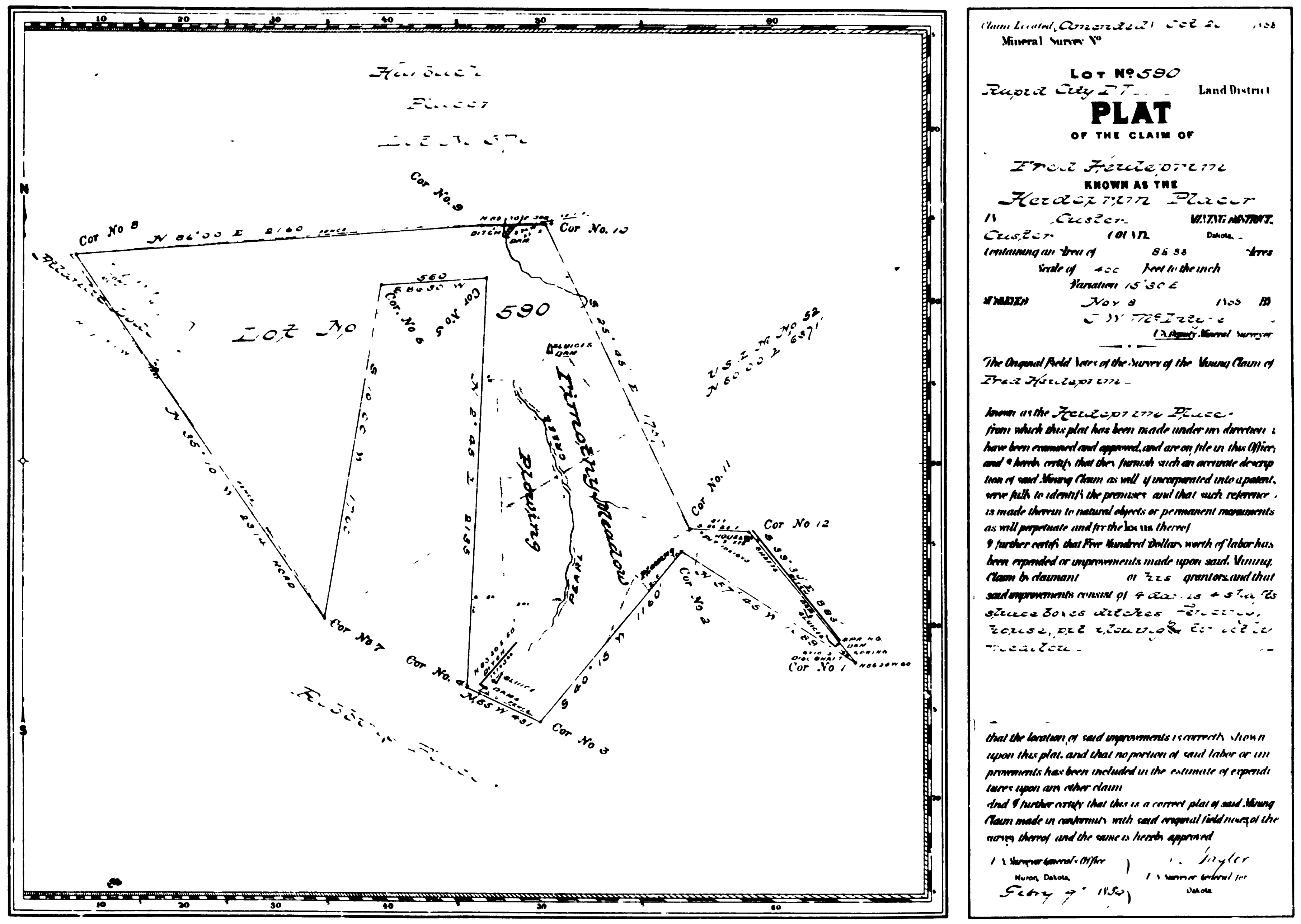
Figure 4e - Portion of Accepted Plat

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

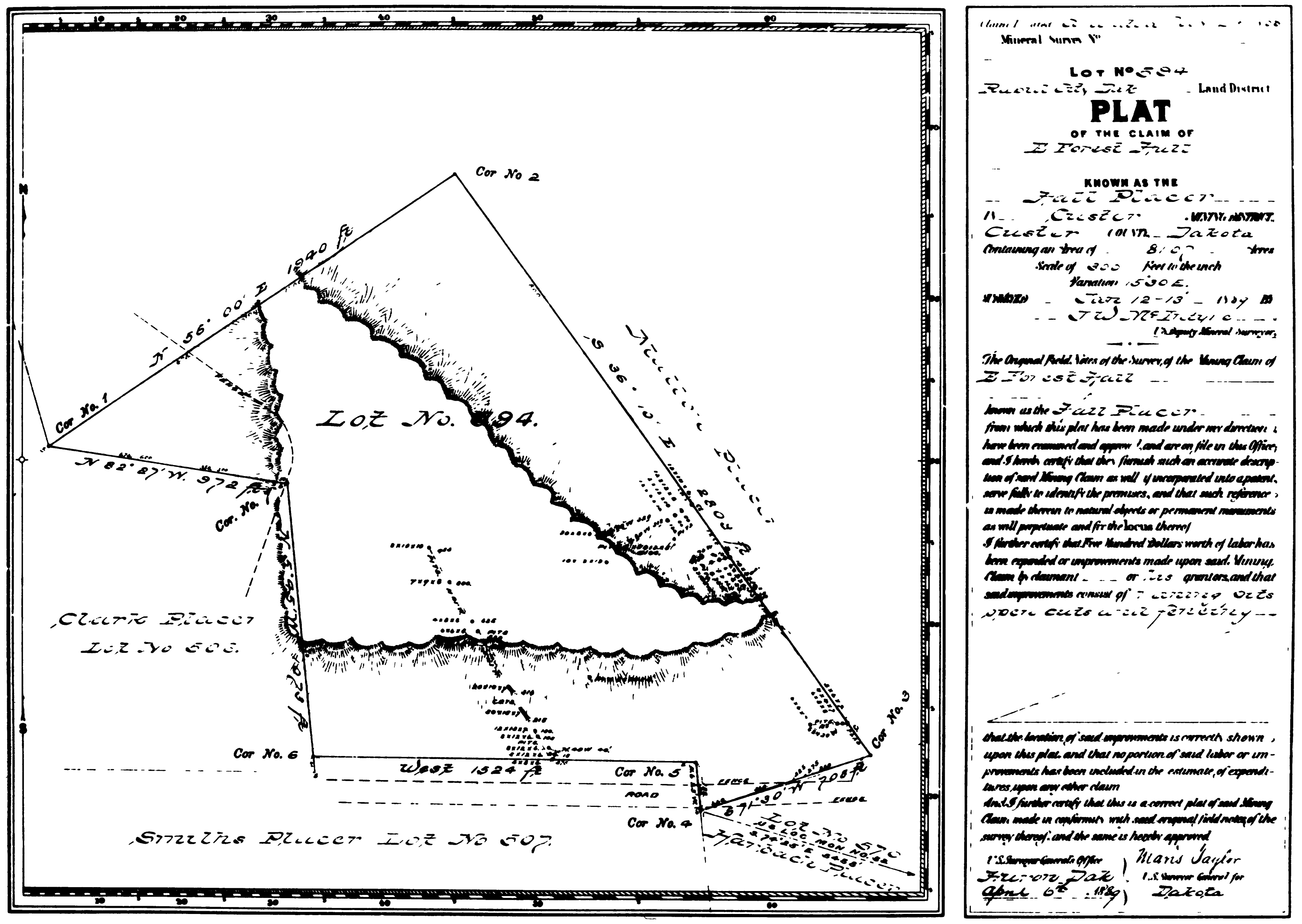


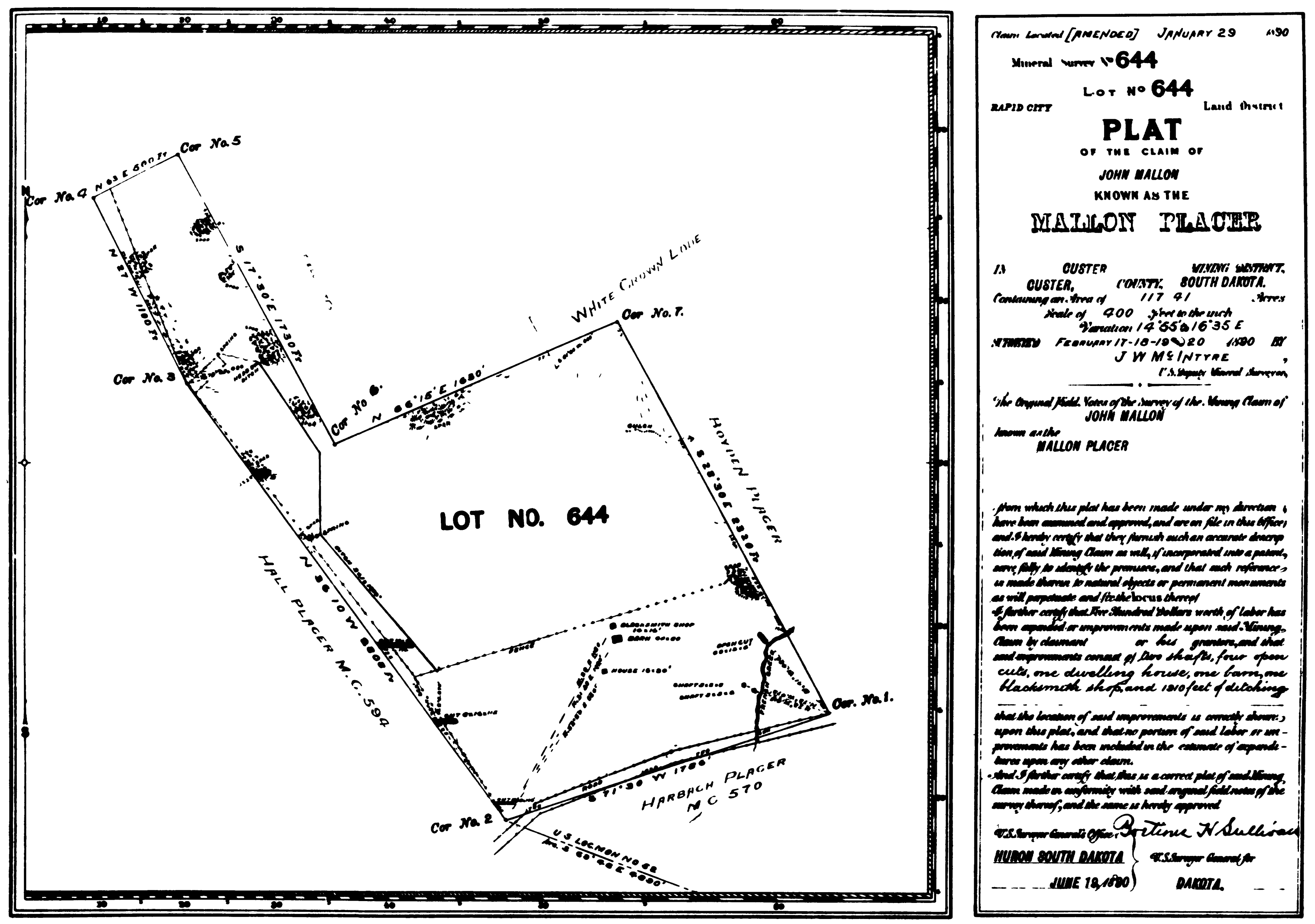


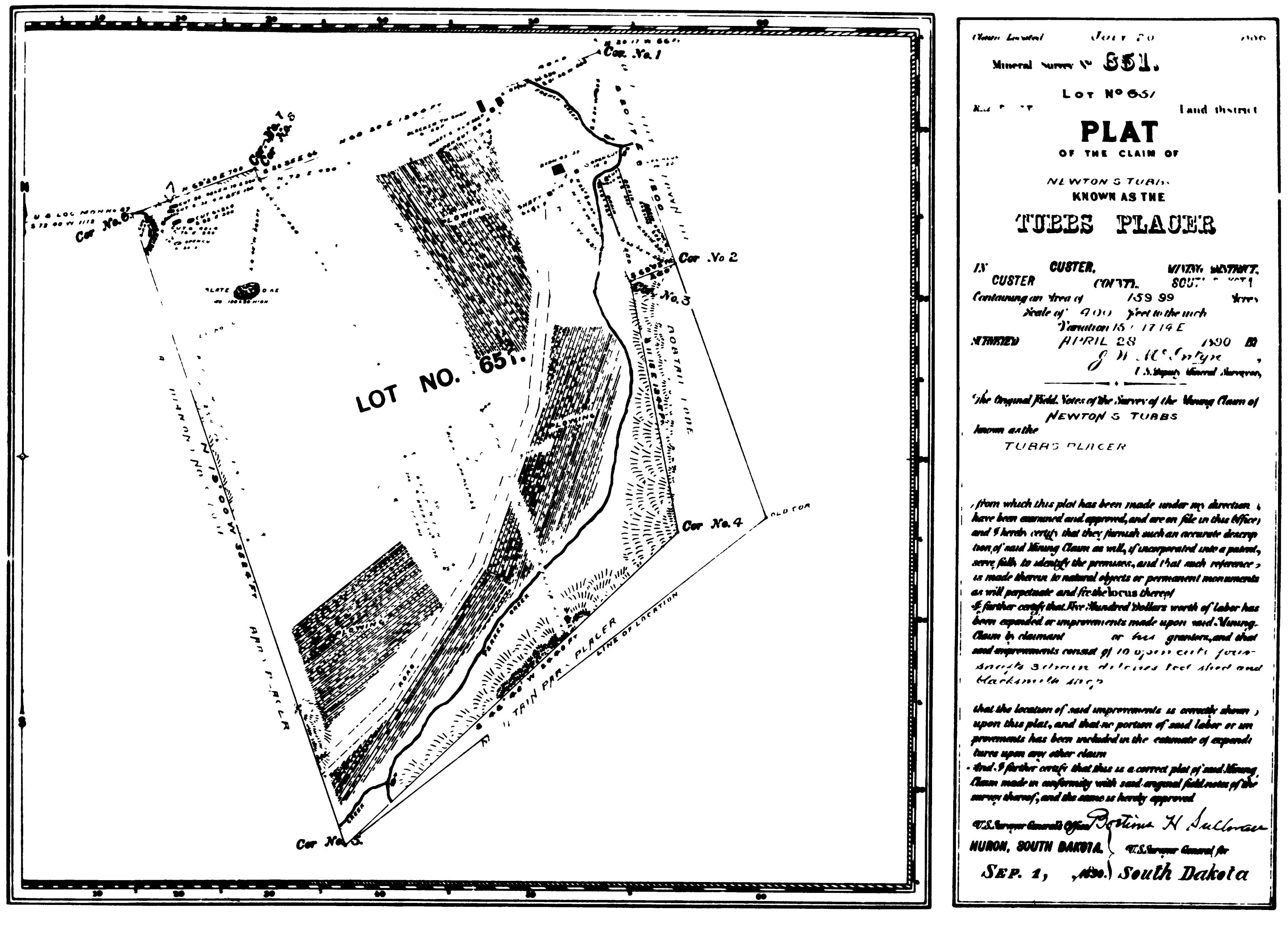


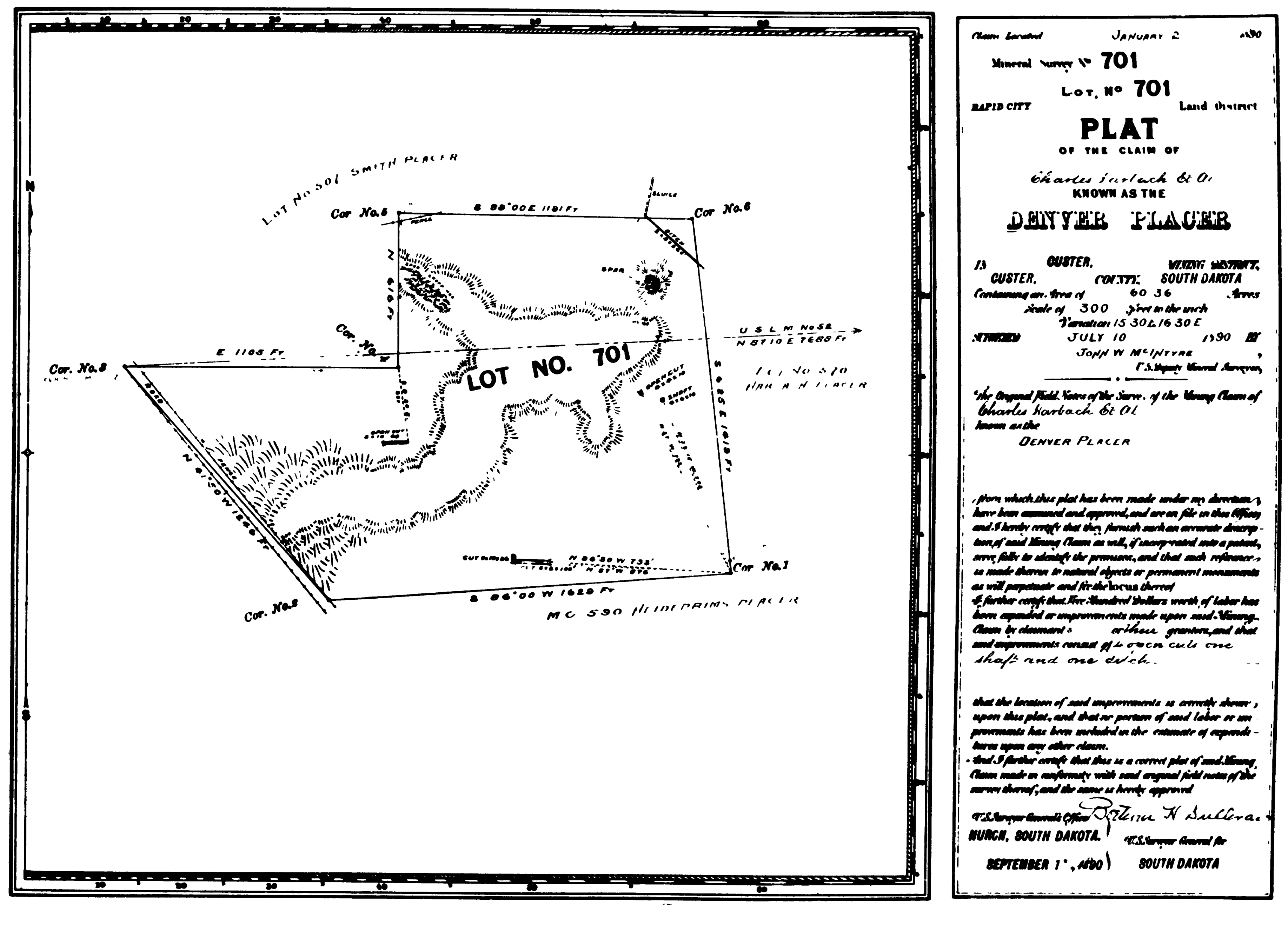


H.E.S. AND MINERAL CLAIMS, S. DAKOTA

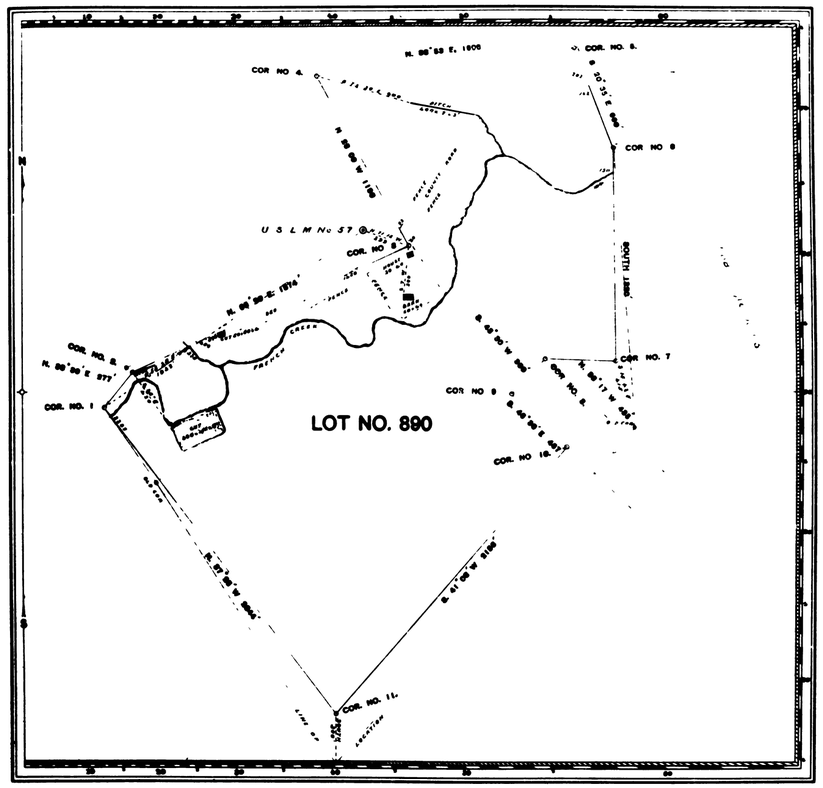








H.E.S. AND MINERAL CLAIMS, S. DAKOTA



(Name Located) JANUARY 9 1892

Mineral Survey № 890

Lot № 890

Rapid City Land District

PLAT

OF THE CLAIM OF

NAOMI DURST

KNOWN AS THE

DURST PLACER

IN CUSTER UNORGANIZED MINING DISTRICT,
CUSTER (CUSTER) SOUTH DAKOTA
Containing an Area of 1534 Acres
Scale of 400 Feet to the inch
Variation 15 30 TO 16 30 E.
SURVEYED MARCH 11-12 1891 BY

JOHN W MC INTYRE U.S. Deputy Mineral Surveyor

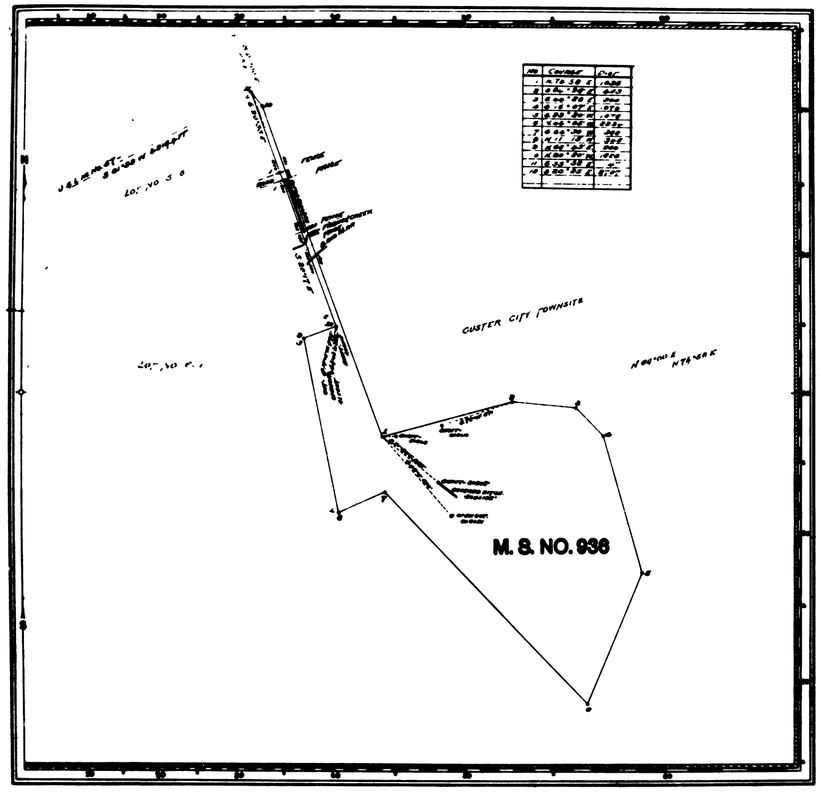
The Original Field Notes of the Survey of the Mining Claim of
NAOMI DURST
known as the
DURST PLACER

(from which this plat has been made under my direction,) have been examined and approved, and are on file in this Office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if interpreted into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof
I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim, by claimant or HER grantors, and that said improvements consist of

TWO OPEN CUTS AND TWO DITCHES

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim
And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof; and the same is hereby approved

U.S. Surveyor Generals Office Barbara N. Sullivan
HURON, SOUTH DAKOTA U.S. Surveyor General for
June 13th, 1893 SOUTH DAKOTA



(Name Located) NOVEMBER 8TH 1892

Mineral Survey № 936

Lot № 6 7

Rapid City Land District

PLAT

OF THE CLAIM OF

Edward Roberts

KNOWN AS THE

EDWARD COOK PLACER

IN Unorganized MINING DISTRICT,
Custer COUNTY, South Dakota
Containing an Area of 7.6 5.0 Acres
Scale of 300 Feet to the inch
Variation 15°W 15°E or
SURVEYED December 6-7TH 1892 BY

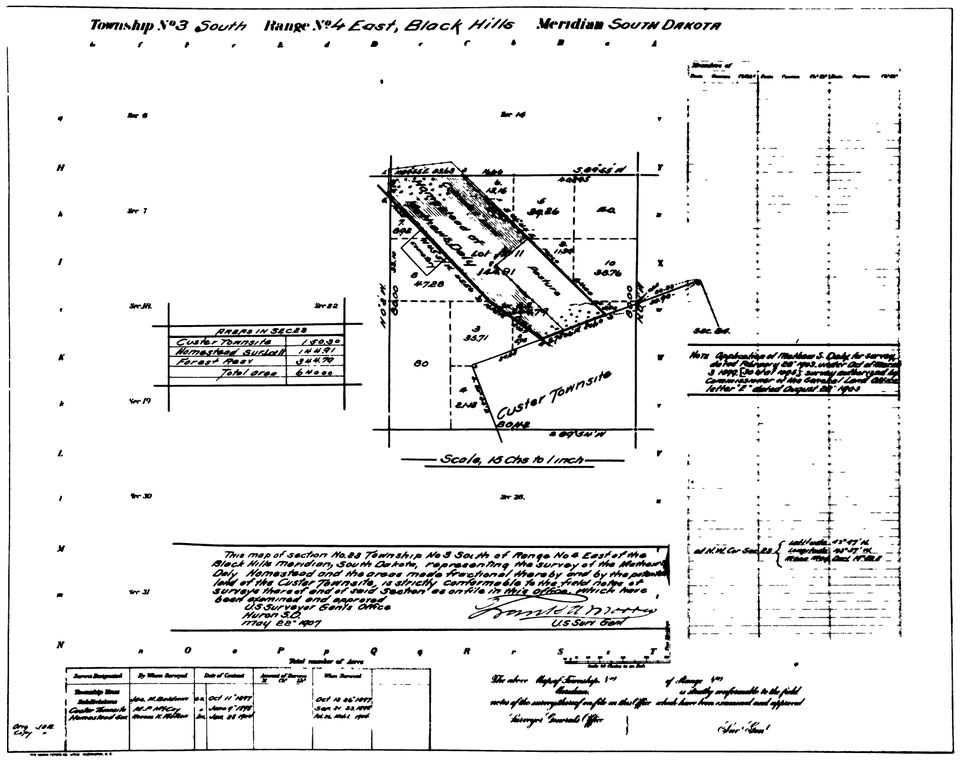
James W McIntyre U.S. Deputy Mineral Surveyor,

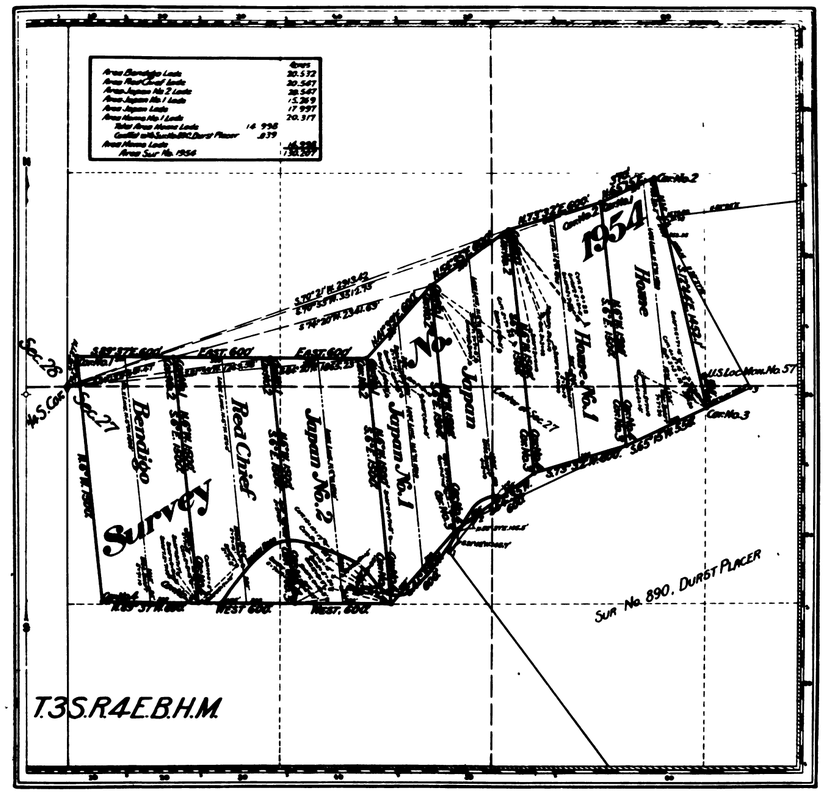
The Original Field Notes of the Survey of the Mining Claim of
Edward Roberts
known as the
Edward Cook Placer

(from which this plat has been made under my direction,) have been examined and approved, and are on file in this Office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if interpreted into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof
I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim, by claimants or his grantors, and that said improvements consist of
4 adits, 3 cuts, 408 ft of ditch and 1851 ft of contact ditch.

that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim.
And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved.

U.S. Surveyor Generals Office Barbara N. Sullivan
Huron, South Dakota U.S. Surveyor General for
January 28th, 1893 South Dakota.





(Name Located) Nov 2 1907 Dec 4 1907

Mineral Survey № 1954

Lot № 1

Rapid City Land District

PLAT

OF THE CLAIM OF

James McGuigan and Denis Carrigan

KNOWN AS THE

Bendigo et al Lodes

IN Not organized MINING DISTRICT,
Custer COUNTY, South Dakota
Containing an Area of 130.297 Acres
Scale of 400 Feet to the inch
Variation 15°30'E.
SURVEYED March 21-25, 1907 BY
Charles M. Cohen U.S. Deputy Mineral Surveyor,

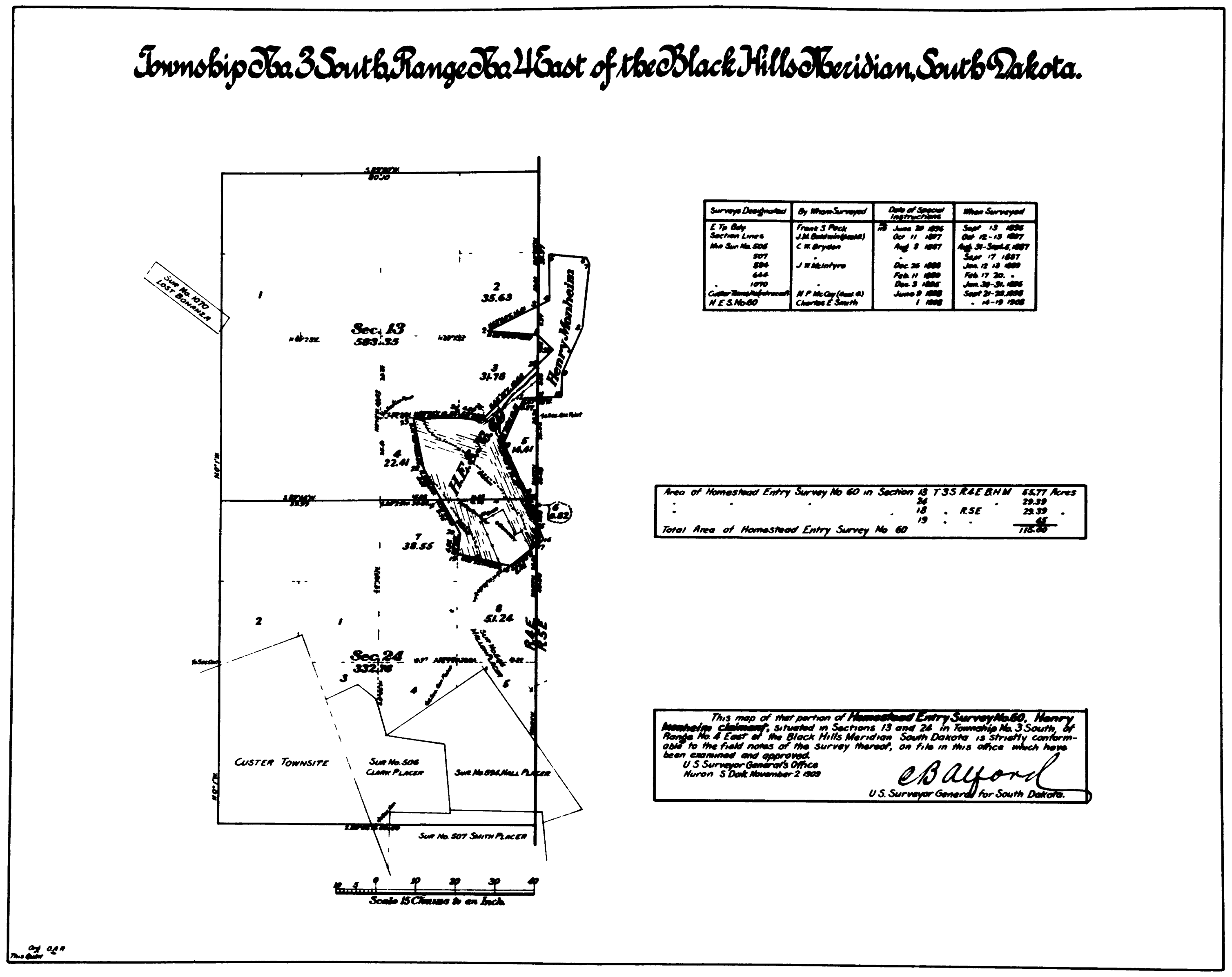
The Original Field Notes of the Survey of the Mining Claim of
James McGuigan and Denis Carrigan
known as the
Bendigo, Red Chief, Japan No 2 and 1, Home, Home No 1 and Extra Lodes

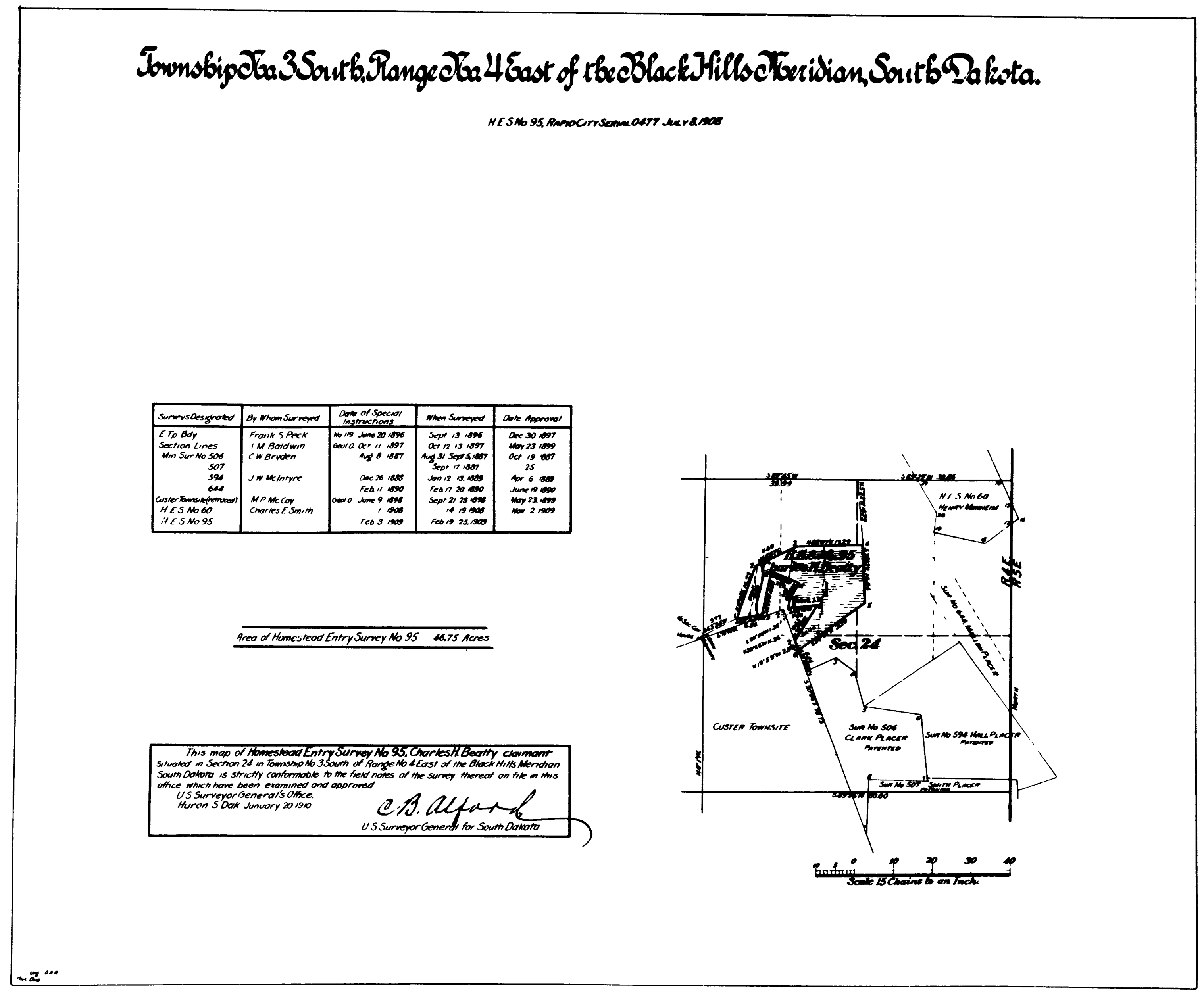
(from which this plat has been made under my direction,) have been examined and approved, and are on file in this Office, and I hereby certify that they furnish such an accurate description of said Mining Claim as will, if interpreted into a patent, serve fully to identify the premises, and that such reference is made therein to natural objects or permanent monuments as will perpetuate and fix the locus thereof
I further certify that Five Hundred Dollars worth of labor has been expended or improvements made upon said Mining Claim by claimants ——— or their grantors, and that said improvements consist of 20 shafts and 21 adits;

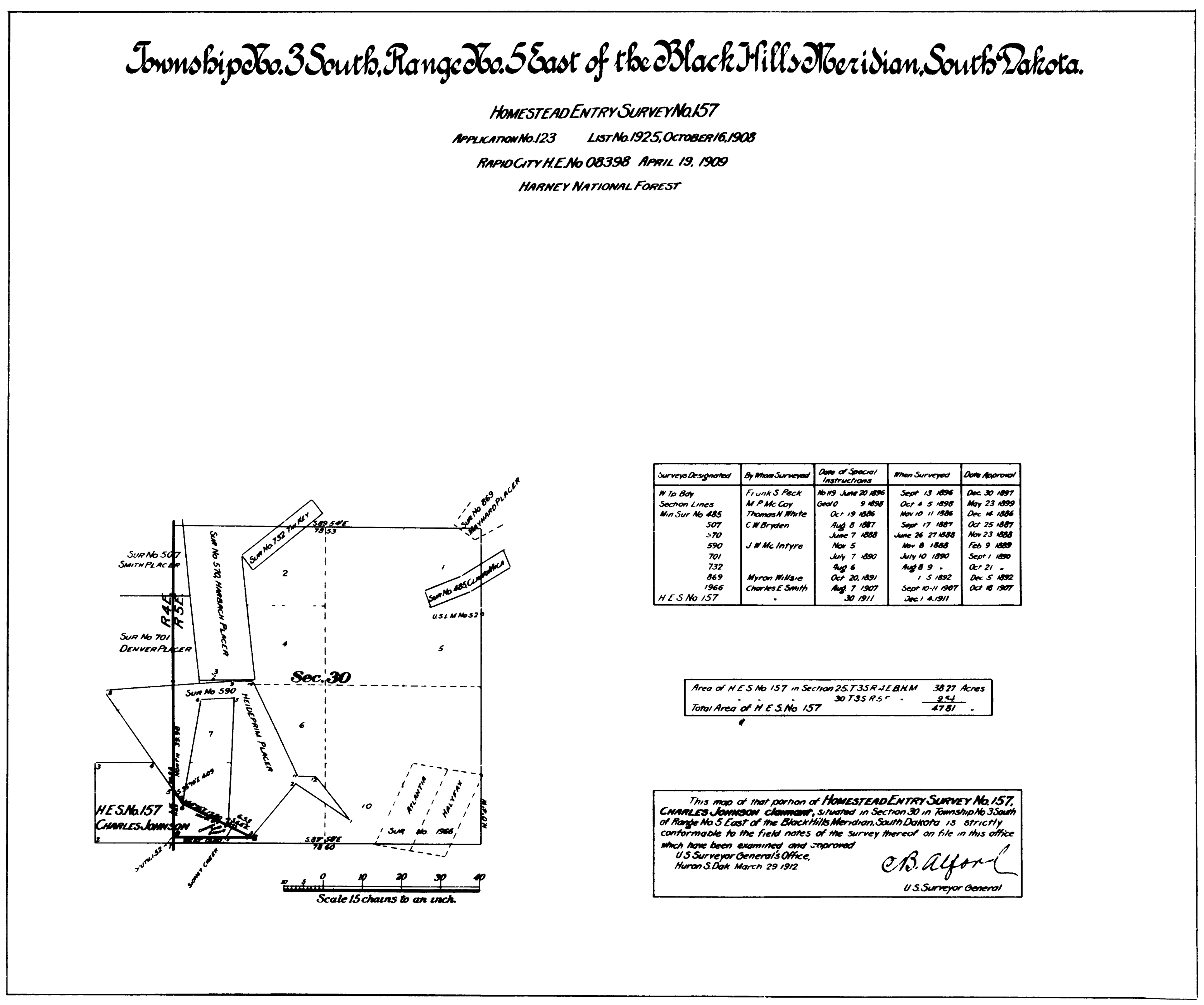
that the location of said improvements is correctly shown upon this plat, and that no portion of said labor or improvements has been included in the estimate of expenditures upon any other claim
And I further certify that this is a correct plat of said Mining Claim made in conformity with said original field notes of the survey thereof, and the same is hereby approved

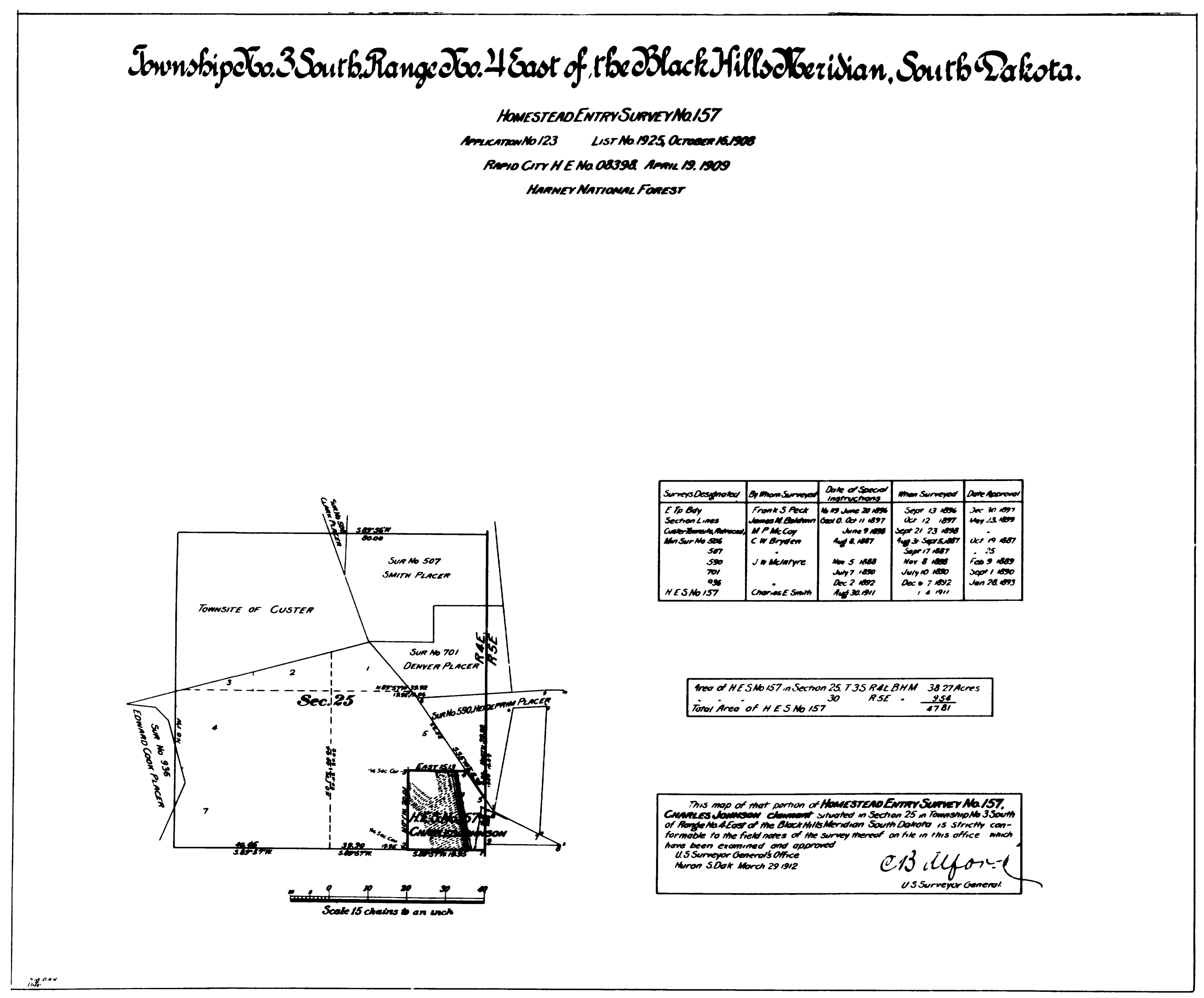
U.S. Surveyor General's Office
Huron, South Dakota. U.S. Surveyor General for
September 27, 1907 South Dakota.

H.E.S. AND MINERAL CLAIMS, S. DAKOTA

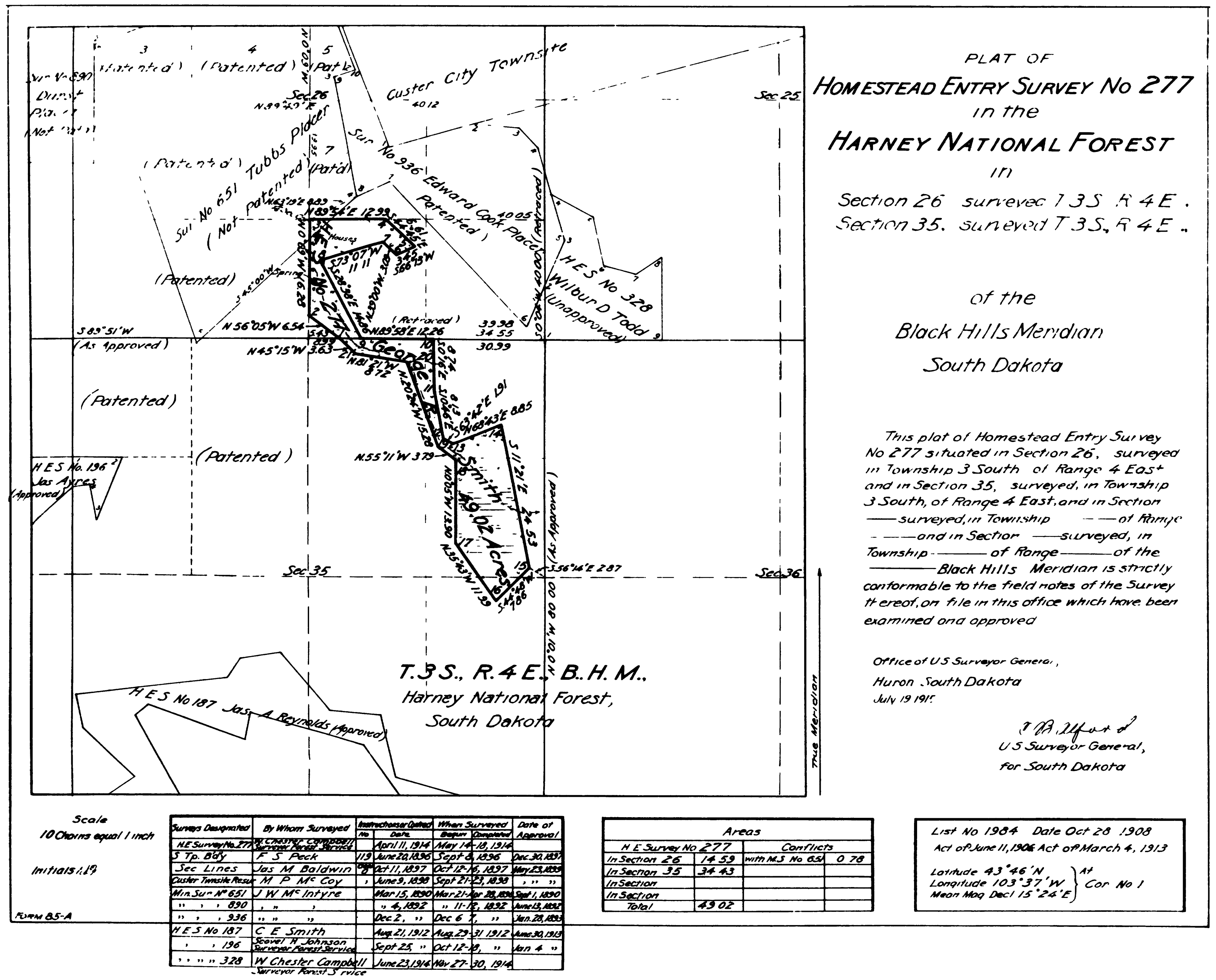


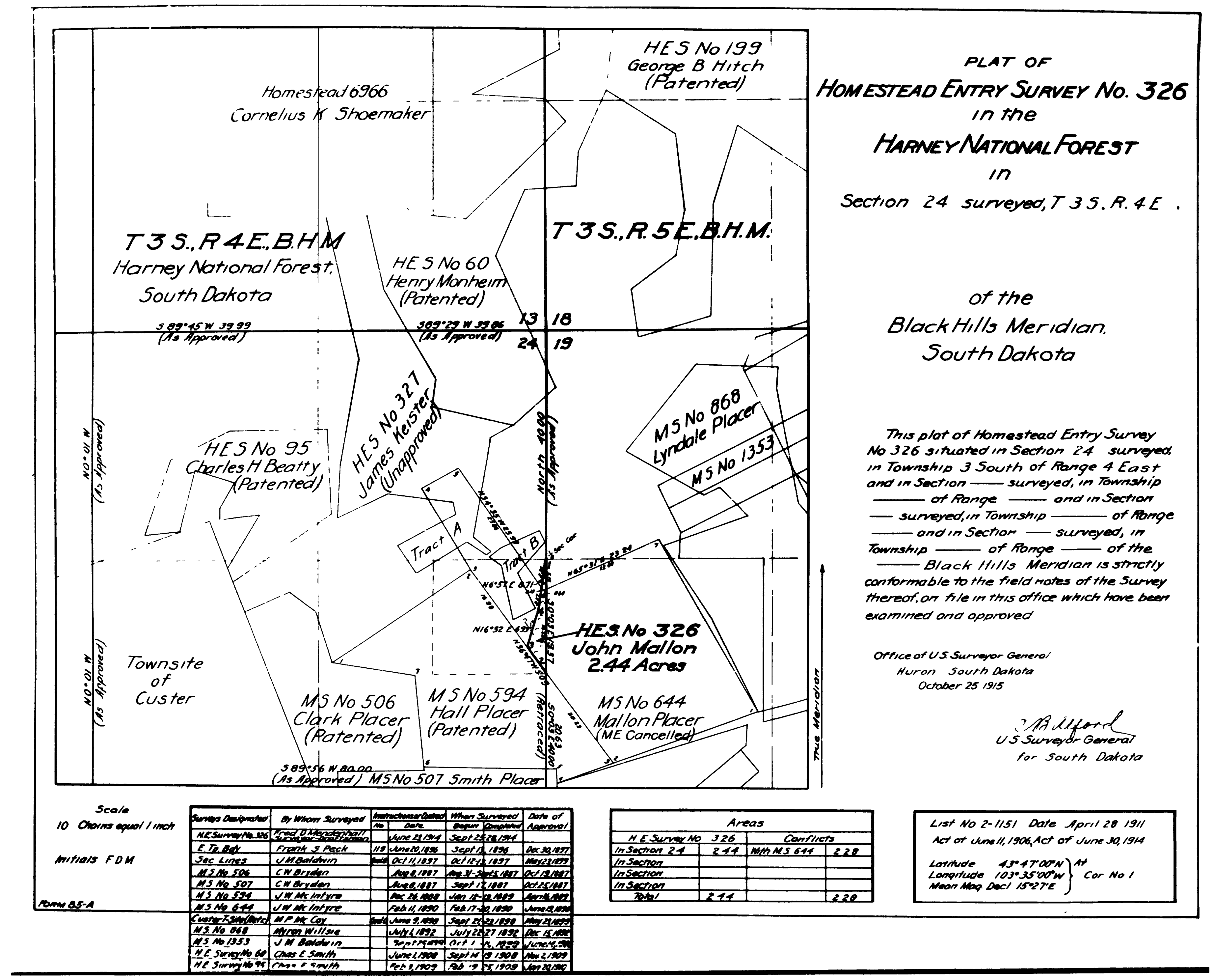




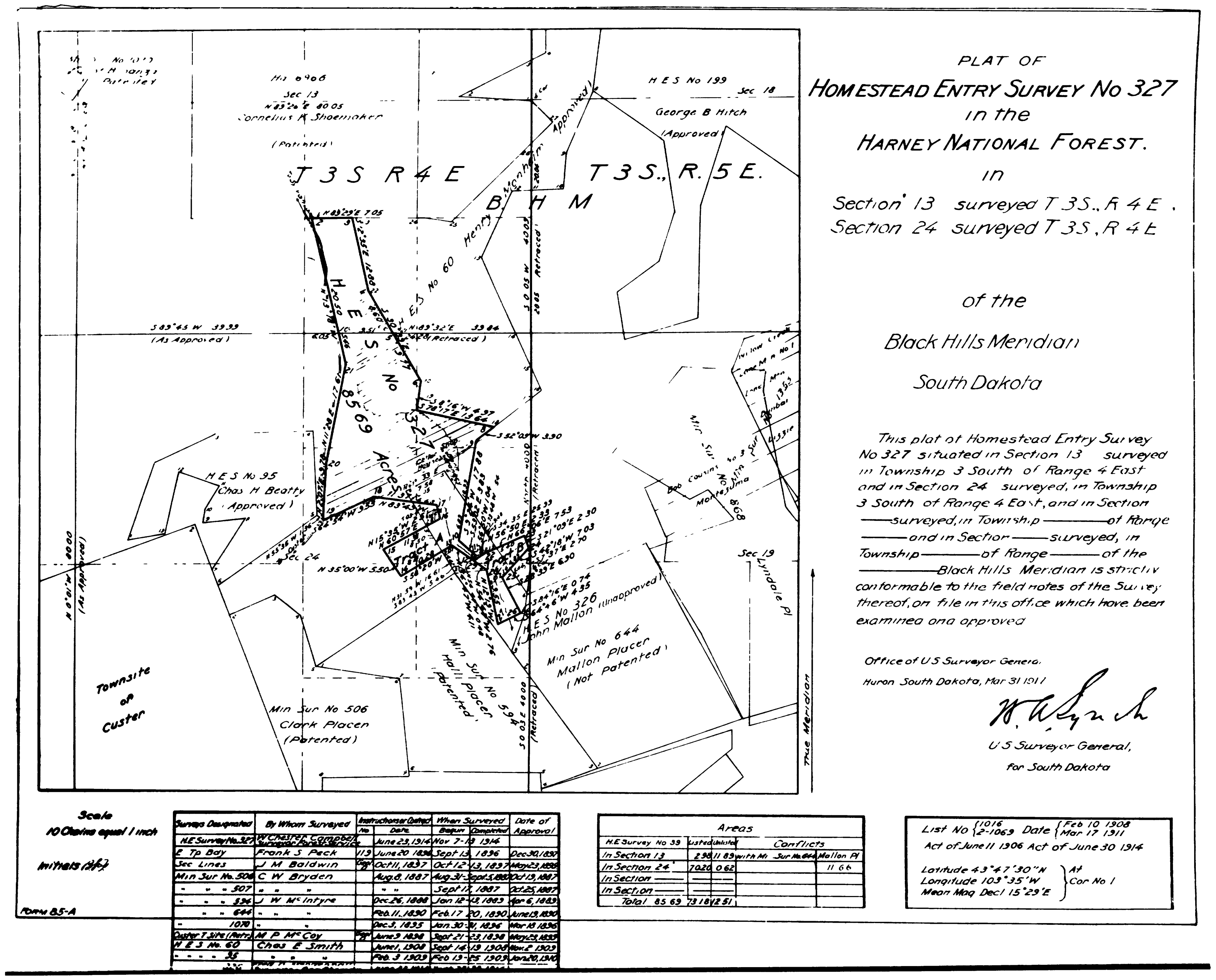


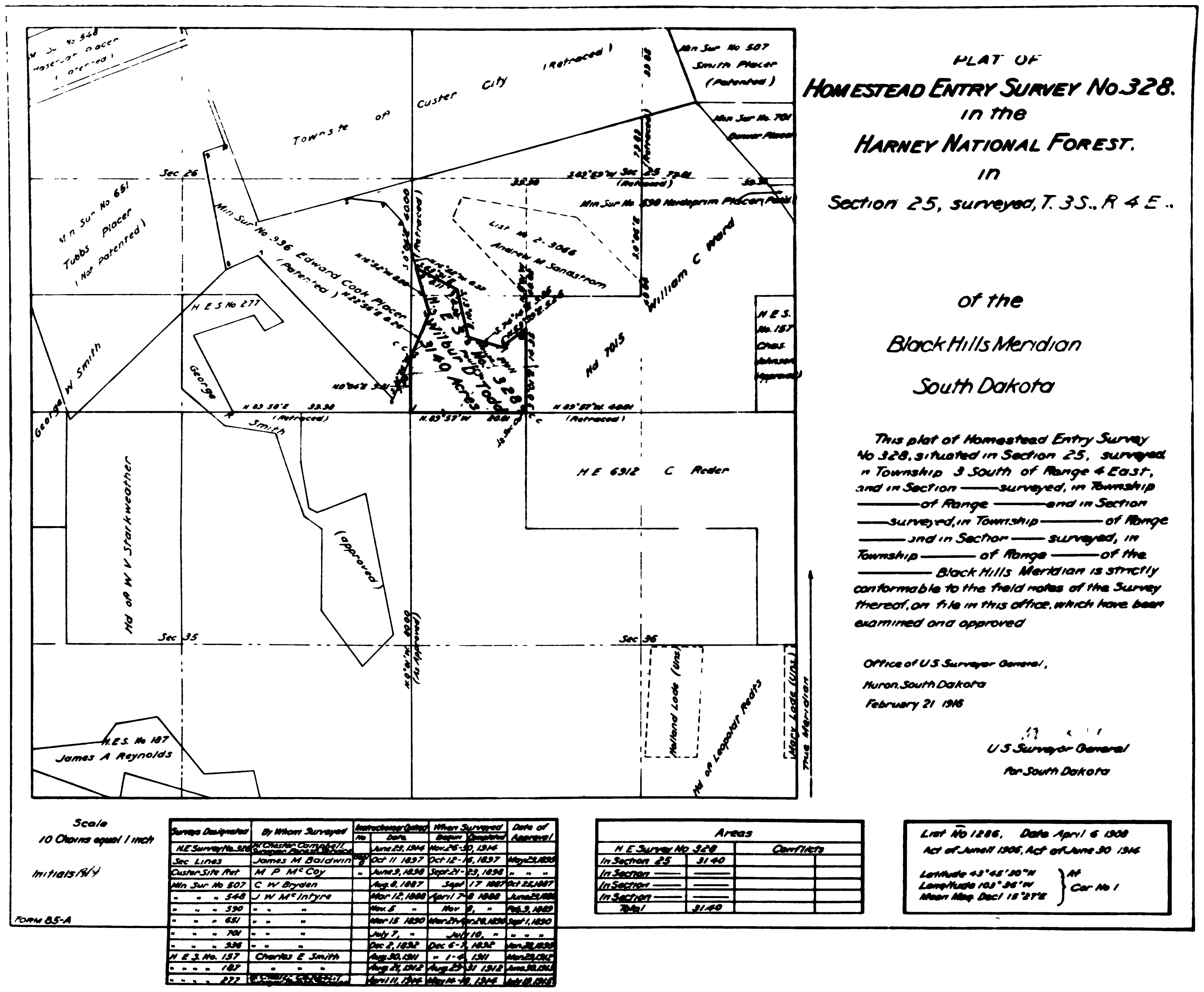
H.E.S. AND MINERAL CLAIMS, S. DAKOTA

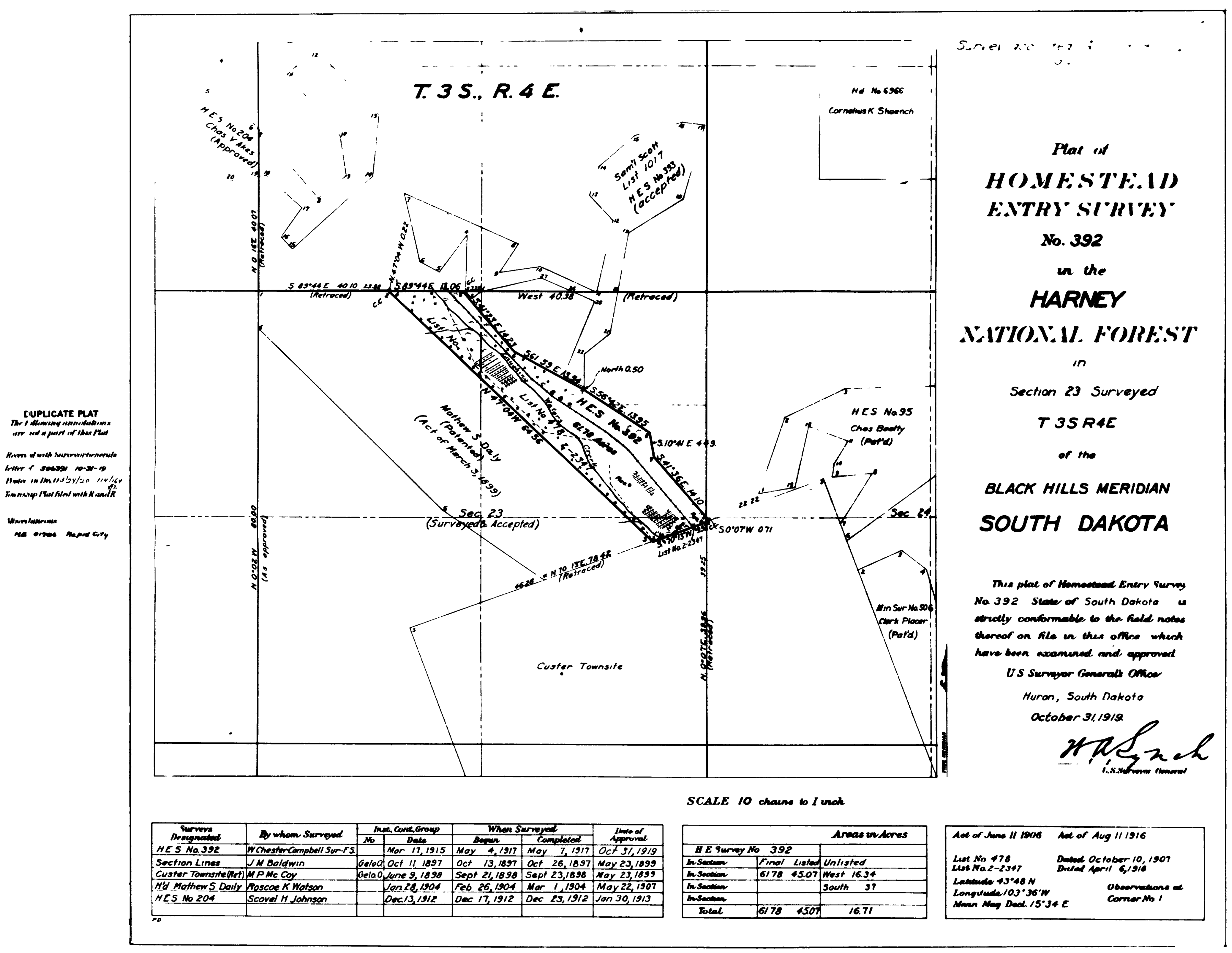


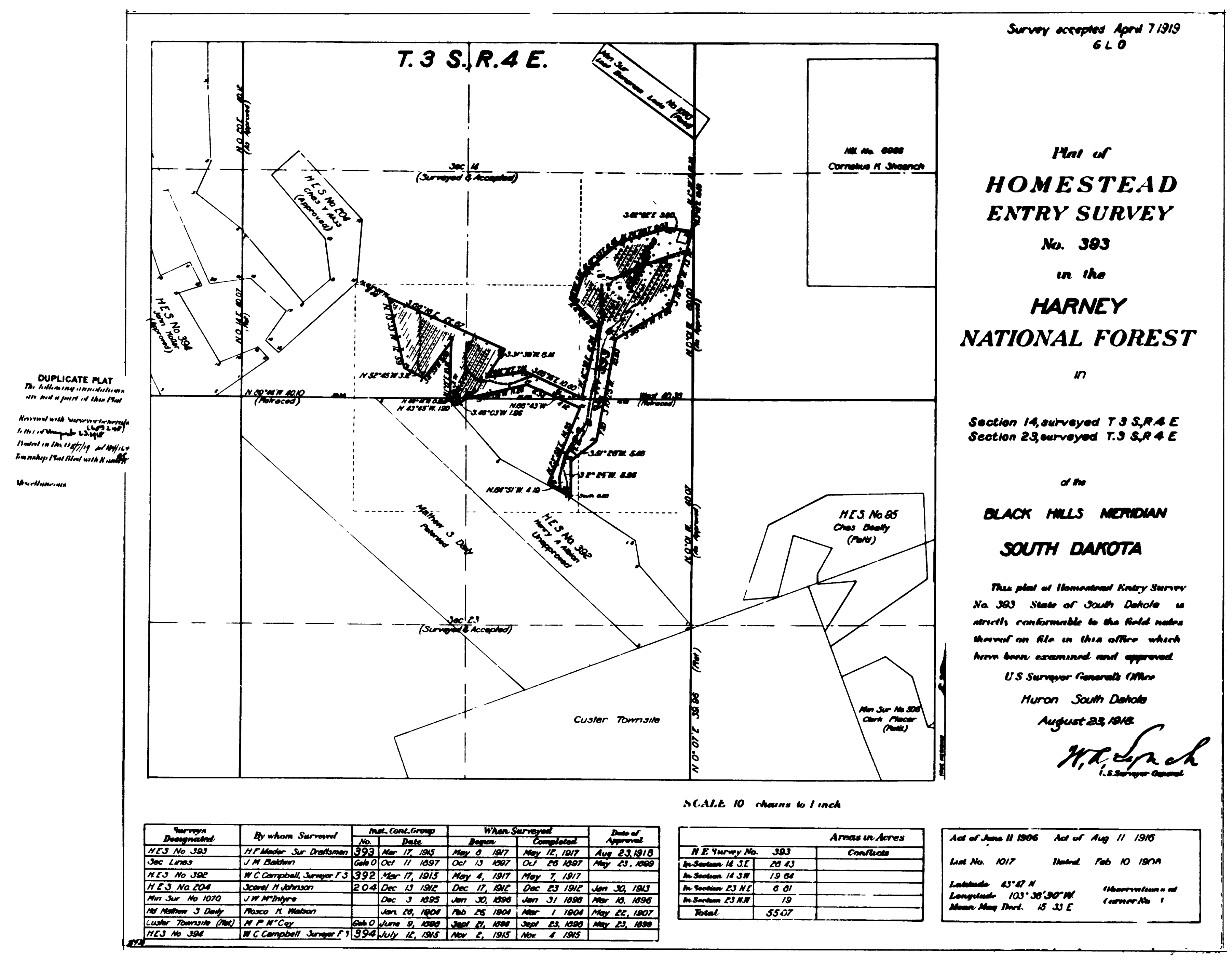


H.E.S. AND MINERAL CLAIMS, S. DAKOTA

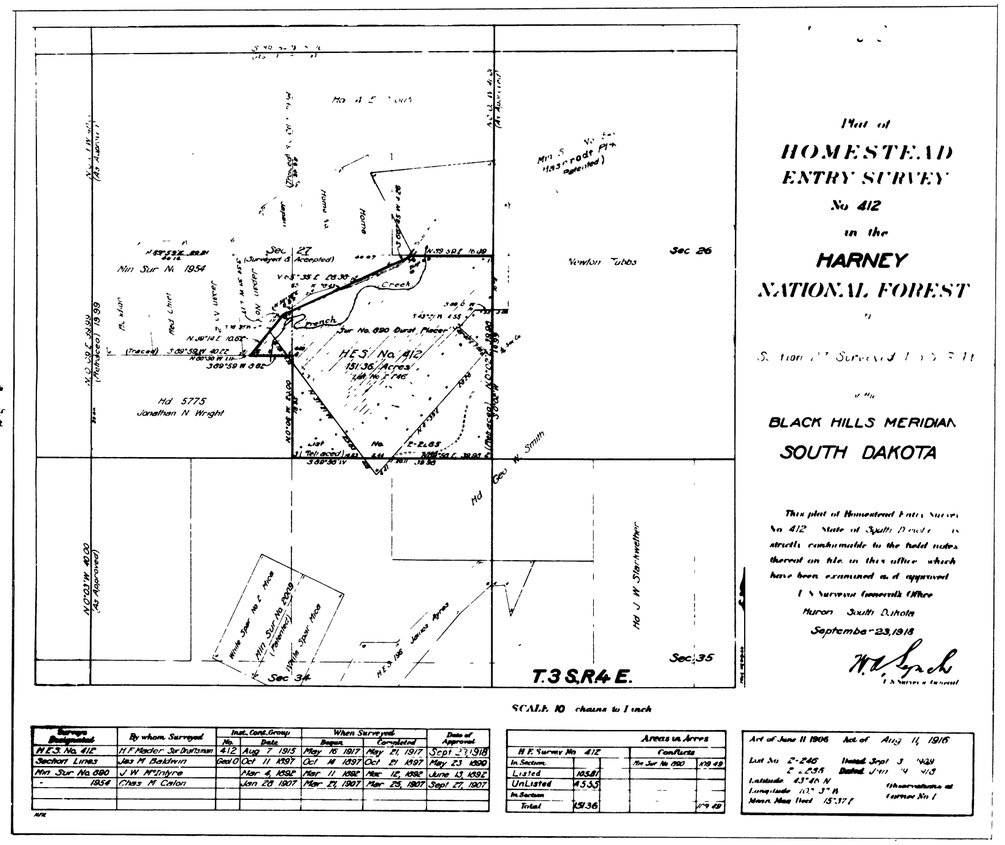








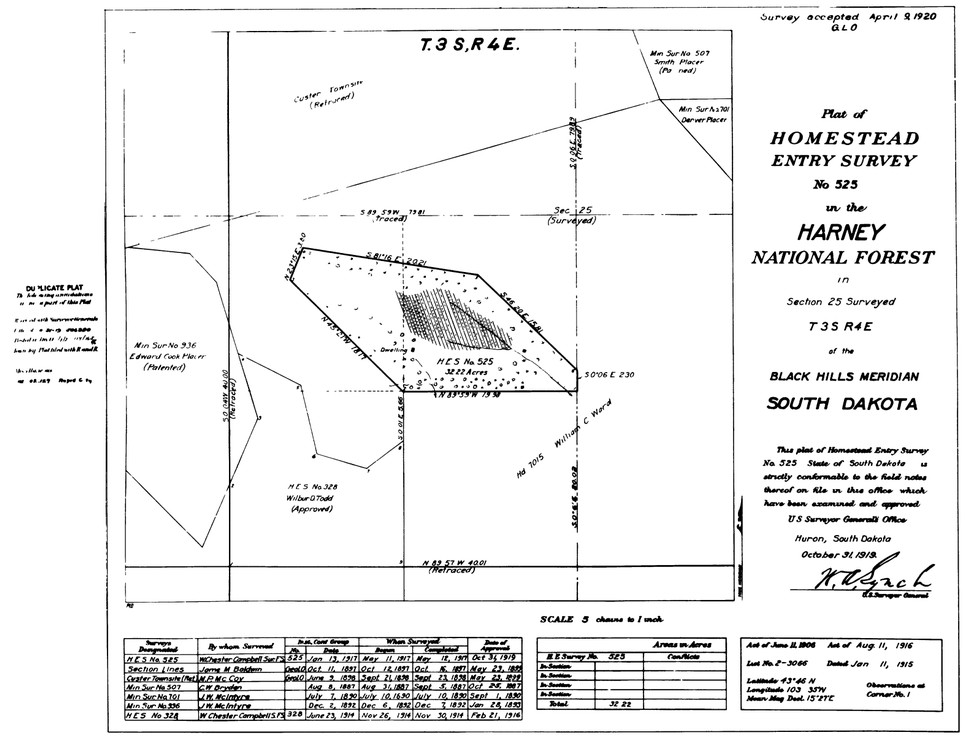
H.E.S. AND MINERAL CLAIMS, S. DAKOTA



Surveys Descriptions	By whom Surveyed	Inst. Cont. Group No.	When Surveyed Date Begun	When Surveyed Date Completed	Date of Approval
H E S No. 412	H F Hedor Sur Draftsman	412	May 16 1917	May 21 1917	Sept 23 1918
Section Lines	Jas M Bakhmin	Geol O	Oct 11 1897	Oct 21 1897	May 23 1899
Mineral Survey No. 690	J W McIntyre		Nov 4 1892	Nov 12 1892	June 13 1893
" 1954	Chas M Colon		Jan 29 1907	Nov 29 1907	Sept 17 1907

Areas in Acres		
H E Survey No 412	Conflicts	
	No Sur No 690	No 69
In Section		
Listed	40.67	
Unlisted	90.69	
In Section		
Total	131.36	No 69

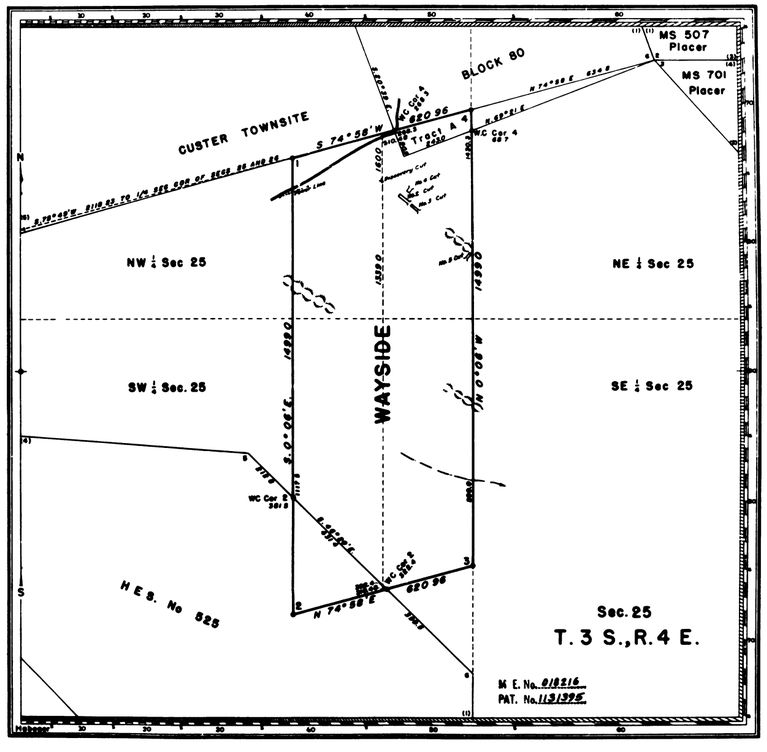
Act of June 11 1906 Act of Aug 11 1916
Lot No 2-246 Dated Sept 3 1920
2-255 Dated Jan 14 1915
Latitude 43°40' N
Longitude 103° 37' W
Mean Mag Dec 15°37' E
Observations at Corner No 1



Surveys Descriptions	By whom Surveyed	Inst. Cont. Group No.	When Surveyed Date Begun	When Surveyed Date Completed	Date of Approval
H E S No. 525	W Chester Campbell Sur	525	Jan 13, 1917	May 11, 1917	Oct 31, 1919
Section Lines	Jame M Baldwin	Geol O	Oct 11, 1897	Oct 12, 1897	May 23, 1899
Custer Townsite (Retraced)	W D Mc Coy	Geol O	June 3, 1898	Sept 21, 1898	May 23, 1899
Mineral Survey No 507	C W Bryden		Aug 9, 1887	Aug 31, 1887	Sept 5, 1887
Mineral Survey No 701	J W McIntyre		July 7, 1892	July 10, 1892	Sept 1, 1892
Mineral Survey No 936	J W McIntyre		Dec 5, 1892	Dec 7, 1892	Jan 28, 1893
H E S No 328	W Chester Campbell U S	328	June 23, 1914	Nov 26, 1914	Nov 30, 1914	Feb 21, 1916

Areas in Acres		
H E Survey No. 525	Conflicts	
In Section		
In Section		
In Section		
In Section		
Total	32.22	

Act of June 11, 1906 Act of Aug 11, 1916
Lot No. 2-3066 Dated Jan 11, 1915
Latitude 43°46' N
Longitude 103° 35'W
Mean Mag Dect. 15°17'E
Observations at Corner No. 1



MINERAL SURVEY
No. 2152
SOUTH DAKOTA

CLAIM OF
BERNETT L SOLOM ET AL

KNOWN AS THE
WAYSIDE LODE

SITUATE IN
Sec 25, T 3 S, R 4 E, B H M
CUSTER COUNTY
(Unorg) Mining District
Rapid City Land District
Lat. 43°46'N Long 103°35'W

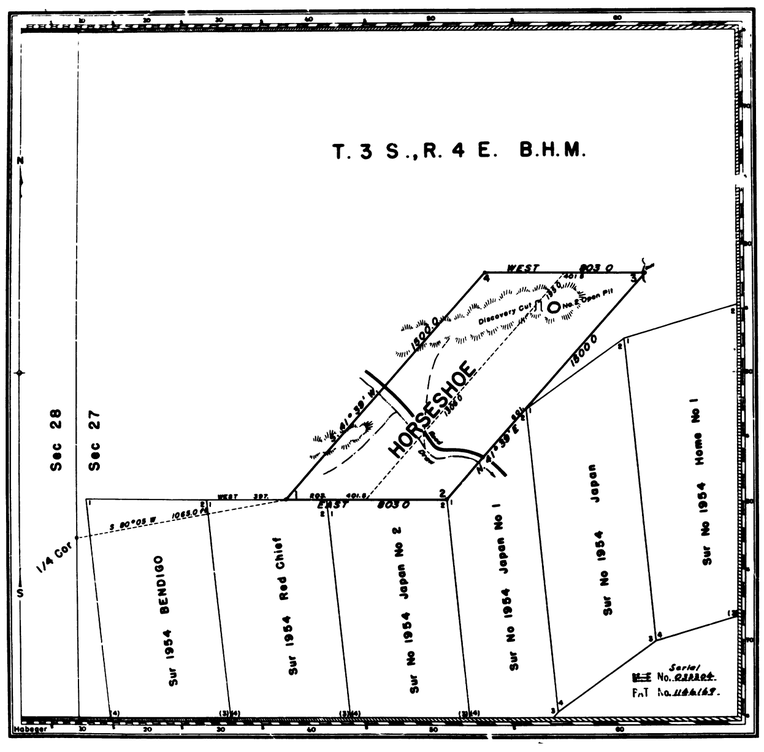
0 100 200 300 400 500 600
Feet
Magnetic Declination 13°30 E

Surveyed April 12 to April 15, 1949,
by Stein Bangs, Mineral Surveyor

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Public Survey Office
Billings, Montana, October 18 1949

I hereby certify that this plat of Mineral Survey No 2152, South Dakota, is strictly conformable to the field notes of said survey which have been examined and approved

Office Cadastral Engineer



MINERAL SURVEY
No. 2158
SOUTH DAKOTA

CLAIM OF
NORA BORGEN-CHALGREN

KNOWN AS THE
HORSESHOE LODE

Situate in
Sec 27, T 3 S, R 4 E, B H M
CUSTER COUNTY
Custer Mining District
Lat 43°46'N and Long 103°39'W at
Discovery Point, Horseshoe Lode

0 100 200 400 600 800
Feet
Magnetic Declination 13°35 E

Surveyed, July 2 to August 15, 1952,
By Stein Bangs, Mineral Surveyor

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Division of Engineering
Billings, Montana, October 29, 1952

I hereby certify that this plat of Mineral Survey No 2158, South Dakota, is strictly conformable to the field notes of said survey which have been examined and approved

Regional Chief of Engineering