# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

**Opening Discussion-Comments-Notes to File (SL# = Slide Number of PPP)**

## 1. DEFINITIONS & TERMS OF BOUNDARY SURVEYING-SL6

**ACSM Definitions of Surveying and Associated Terms 1972**: **BOUNDARY, LAND**: A line of demarcation between adjoining parcels of land. The parcels of land may be of he same or of different ownership, but distinguished at some time in the history of their descent by separate legal descriptions, A land boundary may be marked on the ground by material monuments parcels primary for the purpose: by fences, hedges, ditches, roads, and other service structures along the line—or defined by astronomically described points and lines; by material monuments which are established without reference to the boundary line; by reference to adjoining present or previous owners; and by various other methods.

**ACSM Definitions of Surveying and Associated Terms 1972**: **LINE**, **BOUNDARY**: A line along which two areas meet. In specific cases, the word "boundary" is sometimes omitted, as in the "state line", sometimes the word "line" is omitted, as in "internationally boundary," country boundary, " etc. The term "boundary line" is usually applied to boundaries between political territories, as "state boundary line" between tow states. A boundary line between privately owned parcels of land is termed a property line by reference, or if a line of the United States public land survey, is given the particular designation of that survey system, as section line, township line, etc.

**ACSM Definitions of Surveying and Associated Terms 1972**: **SURVEY**, **BOUNDARY**: A survey made to establish or to re-establish a boundary line on the ground or to obtain data for constructing a map or plat showing a boundary line. See also *land surveying*. The term boundary survey us usually restricted to survey of boundary lines between political territories. For the survey of a boundary line between privately owned parcels of land, the term land survey is preferred, except that in surveys of the

public land of the Unties States the term *cadastral survey* is used, See also survey, cadastral.

**ACSM Definitions of Surveying and Associated Terms 1972**: **SURVEYING**, **LAND**: Land surveying is the art and science of: 1) reestablishing cadastral surveys and land boundaries based on documents of record and historical evidence; 2) planning, designing and establishing property boundaries; and 3) certifying surveys as required by statute or local ordinance such as subdivision plats, registered land surveys, judicial surveys, and space delineation. Land Surveying can include associated services such as mapping and related data accumulation; construction layout survey; precision measurements of length angle, elevation, area and volume; horizontal and vertical control systems; and the analysis and utilization of survey data.

**ACSM Definitions of Surveying and Associated Terms 1972**: **SURVEYING**, **CADASTRAL**: A survey relating to land boundaries and subdivisions, made to create unites suitable for transfer or to define the limitations of title. Derived from "cadastre," and meaning register of the real property of a political subdivision with details of area, ownership and value. The term cadastral survey is now used to designate the surveyor the public lands of the Unites States, including retracement surveys for the identification and resurveys for the restoration of property lines; the term can also be applied property to corresponding surveys outside the public lands, although such surveys are usually termed land surveys through preference. See also *survey boundary*.

**Webster's Dictionary:** to examine as to condition, situation, or value: Appraise. To query someone in order to collect data for the analysis of some aspect of a group or area. To determine and delineate the form, extent, and to position of (as a tract of land) by taking linear and angular measurements and by applying the principles of geometry and trigonometry.

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

## 2. WHY DO WE REGISTER OR HOLD PROFESSIONAL REGISTRATION

UNITED STATES

- BLM Manual 1973

CALIFORNIA (http://www.dca.ca.gov)

- Professional Engineers Act(Business and Professions Code sections
- 6700-6799)
- Professional Land Surveyor's Act (Business and Professions Code sections 8700-8808)
- Board Rules (Title 16, California Code of Regulations sections 400-476)

COUNTY/CITY

- Each have their own rules, regulations, ordinances, codes

History*

## 3. HISTORY & DEVELOPMENT OF BOUNDARY SURVEYING-SL7

- The role or the survey and its function have been closely and inseparably tie in with the progress of civilization.
- When man began to cultivate the soil, however, it became necessary for the sake of peace and harmony that there be definite boundaries established. So, we note that Jacob was required to purchase a definite heritage when he entered land of Canaan (Genesis, chapter 33, verse 19).
- One of the very earliest monuments of modern man to be found in the British Museum is a stone found in Babylonia set up to mark a corner inscribed with the circumstances under which the boundary was established. A very early record of the "fertile crescent," found in the Tigris-Euphrates Valley, speaks of war between the city of Lagash and a neighboring town over the movement of a boundary stone.
- And the Lord said unto Abram, after that Lot was separated from him, Lift up now thine eyes, and look from the place where thou art northward, sand southward, and eastward, and westward: For all the land which thou seest, to thee will I give it, and to they see for ever. Arise; walk through the land in the length of it, and in the breath of it for I will give it unto thee. Genesis, chapter 13, verses 14, 15 and 17.
- Where boundaries became marked and distinct, "Thou shalt not remove thy neighbors landmark which they of old time have set in thine inheritance which thou shalt inherit in the land that the Lord they God giveth thee to possess it."

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

Jeremiah, Chapter 19, verse 14. "Cursed be to he that removeth his neighbor's landmark and all the people shall say Amen. Jeremiah, Chapter 27, verse 17.

**THE LEGAL CONCEPT OF BOUNDARIES-SL7**: The English common law places a very high value on property rights. The law developed in the early Middle Ages when human life was cheap a much greater price was paid upon the property than life itself. Criminal penalties for injury to or taking of property were generally more sever than those of taking a life do.

- Property rights with individuals are protected by the first and fourteenth amendments to the federal constitution. The first protects against invasion by the United States, the fourteenth against invasion by the states.

- The statutes of Frauds, enacted by the English parliament in the reign of Charles II, 1672, made void any oral transfers of land.

**COLONIAL SURVEYING**: Even in the very early days in America, surveyors were called upon to perform their duties. The London (Virginia) Company sent surveyors to Jamestown colony to make maps and allotments to the shareholders. We find surveyor actively at work with the Dutch in New Netherlands and in Maryland and Delaware from 1647 to 1675. In 1750, George Washington, newly graduated from the College of William and Mary, Williamsburg, Virgina, was employed to make surveys in the Great Dismal Swamp south of Norfolk, Virgina.

- New England was divided by the "township" system. As a colony opened up new land, it was laid off in townships, usually six-mile squares. Land, after careful course and distance surveys, was given or sold by the colony to settlers with school and religious reserves.

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

**SETTLEMENT of the UNITED STATES**: The European countries, which settle in the Western Hemisphere, claimed title by right of conquest. Shortly after the discovery of America, Pope Alexander issued a papal bull, which purported to give all of the Western Hemisphere except the eastern part of Brazil to Spain. None of the other European nations recognized this, however, and England, France, the Netherlands, Denmark, Sweden and Russia all established colonies. Of these, only the English, French, Spanish, Russian and Danish claims survived. All of the territory east of the Mississippi except Louisiana and Florida was British at the time of the American Revolution. Louisiana and the vast area west of the Mississippi were acquired from France in 1803, France in turn having taken it from Spain by treaty. Texas came into the Union by treaty in 1845, it being at that time a separate republic. Florida was acquired by treaty with Spain in 1812. Arizona, New Mexico and California were taken by conquest in the Mexican War except the small are know as the "Gadsden Purchase" which was acquired from Russia in 1867. Hawaii came under United States sovereignty by treaty in 1898 and Puerto Rico were taken from Spain in 1898. The Virgin Islands were purchased from Denmark in 1917. The northern boundary of the United States was finally settled by treaty with England in 1846.

**INDIAN RIGHTS**: The Indians who inhabited the United States at the time of the coming of the white man were mostly in the hunting and fishing stage with the exception of a few tribes in the southwest. As such, the Indians have only vague ideas as to the land ownership. The settled policy of the Supreme Court of the Untied States has been to recognize only such Indian rights as have been confirmed by the Government of the Unites States, either by congressional act or by treaty. Virtually all of the early treaties with the native Indians by which the United State purported to obtain surrender of the Indian Claims were vague in nature and the land so involved was invariably described by abuttals of a geographic nature, such as rivers, meridians or parallels of latitude. India reservations were, however, subsequently surveyed in many instances and from valid legal boundaries today.

**SALES of STATE LANDS**: At the time of the American Revolution, each of the thirteen colonies acquired tract of land by acts of the various legislatures. These acts forfeited lands owned by the British crown and by some of the English lords who had received grants direct from the English kings. These forfeitures were confirmed by the Treaty of Ghent in 1783. Incidentally, the damages which the national government agreed, in this treaty, to pay the British Loyalist were never satisfactorily paid. The British government did make some recompense to the Loyalists. The new states also sold to private individuals, land companies and speculators of these public lands, All of these state sales were by metes and bounds descriptions, even in those areas which later became part of the public domain of the United States.

## 4. THE SURVEYOR, HIS RIGHTS, DUTIES AND LIABILITIES

**THE LEGAL ROLES OF THE SURVEYOR**: The law in most jurisdictions has recognized a qualified surveyor as being a professional man in the status of an architect, a lawyer or a doctor. Then he acts in such capacity, the surveyor acquires certain standards of conduct that entitle him to recognized privileges and, at the same time, impose upon him definite responsibilities.

The surveyor's client employs him because the surveyor has skills upon which the individual is entitled to rely. These recognized skills are, however, in a slightly different classification from that which is generally considered labor, such as a plumbing or bricklaying, the art of survey is, like that of the medical or legal professional, primarily one requiring mental ability. Although it might be difficult to convince a tire, muddy surveyor of that fact, the concept of surveyor does not involve physical effort. The surveyor is, instead, employed because of his superior knowledge.

This has two basic results: *First*, the work of the surveyor is entitled to be recognition in the courts of law above that of a layman. *Second*, because of the degree of trust imposed in him, the surveyor is held to a higher degree of liability for errors than is the ordinary individual.

The Surveyor has four roles to play in the law:

*First*: He can, in the first instance, lay out boundaries in the original division of a tract, which has theretofore existed as a single unit.
*Second:* He can "trace the footsteps" of the original survey in locating existing boundaries.
*Third*: He can, where authorized by statue or by consent of the parties involves, locate new boundaries.
*Fourth*: He can qualify as an "expert witness" in a lawsuit.

**THE SURVEYOR'S FUNCTION**: It is not the surveyor's responsibility to set up new lines except where he is surveying theretofore-unplatted land or subdividing a new tract. Where title to land has-been-established under a previous survey, the surveyors sole duty is to locate the lines of the original survey. He cannot establish a new corner, nor can he even correct erroneous surveys of earlier surveyors. He mist track the footsteps of the first.

**THE POWER OF A SURVEYOR TO FIX BOUNDARIES:** All this plays a vital part in determining the legal role of a surveyor. The surveyor, cannot, by his own act, establish a new boundary line, nor can he, except by express statutory authority, legally determine where the true existing boundary line is. As far as the law is concerned, absent statutory authority, all a survey or can do is testify as a witness as to where, in his best judgment, the boundary line is located. Except to the extent that a court of a jury might give his testimony more weight than that of the average individual, the surveyor can, in the absence of statute, play no special role legally in setting the boundary controversy.

**LIABILITY OF A SURVEYOR:** The law has dealt rather harshly, perhaps unjustly so, with the case of the surveyor. If he is employed to, run a line and he makes a mistake so that he runs the wrong line and the parties rely upon this fact, he is liable not merely to return the amount of his fee but also any damage that might result there from. It has been held that where a landowner relied on an erroneous survey and erected a building or part of the building on what was later found to be another man's land, the surveyor was responsible for all damage, including the cost of removal or even the cost of the building itself, this places a rather high degree of responsibility on the surveyor. It is no more than that placed on other professional men.

## 5. UNDERSTANDING THE "MASTER PLAN" GLO PROCEDURES

### GENERAL RULES: (SL-8)

**First**. That the boundaries and subdivisions of the public lands as surveyed under approved instructions by the duly appointed surveyors, the physical evidence of which survey consists of monuments established upon the ground, and the record evidence of which consist of field notes an plats duly approved by the authorities constitute by law, are unchangeable after the passing of the title by the United States.
**Second.** That the original township, section, quarter-section, and other monuments as physically evidence must stand as the true corners of the subdivisions which they were intended to represent, and will be given controlling preferences over the recorded directions and lengths of lines.
**Third.** That quarter-quarter-section corners not established in the process of the original survey shall be placed on the line connecting the section and quarter-section corners, and midway between them, except on the last half mile of section lines closing on the north and west boundaries of the township, or on other lines between fractional or irregular sections.;
**Fourth.** That the centerlines of a regular section are to be straight, running from the quarter-section corer on one boundary of the section to the corresponding corner on the opposite e section line.
**Fifth.** That in a fractional section where no opposite corresponding quarter-section corner has been or can be established, the center line of such section must be run from the property quarter-section corner as nearly in a cardinal direction to the meander

line, reservation, or other boundary of such fractional section, as due parallelism with section lines will permit.

**Sixth.** That lost or obliterate corners of the approved survey must be restored to their original locations wherever this is possible.

The basis provisions require that the public lands "shall be divided by north and south lines run according to the true meridian, and by other crossing them at right angels, so as to form townships six miles square;" that "the townships shall be subdivided into sections containing as nearly as may be, six hundred and forty acres each;" and that "the excess or deficiency shall be specially noted, and added to or deducted from the western and northern ranges of sections or half-sections in such townships, according as the error may be in running the lines, from east to west, or from south to north." The system of rectangular surveys fits the basic requirement to curve surface of the globe.

**BASE LINES & MERIDIANS (SL-8)**

The Ordinance of 1785 contemplated this establishment of base lines and principal meridians, the first land to be surveyed was known as the "seven ranges."

## 6. MEASUREMENTS-THAT'S WHAT WE DO BEST

- **Rod / Pole / Perch**-Is defined as being 16.5' feet in length. The English "rood' (rod or perch as we know it) was once defined as the total length of the left feet of 16 men, tall and short, as they came out of church on Sunday. (evidence and procedures for boundary location by Brown and Eldridge 1962 edition page 195
- Know the length of your chain, EDM, GPS, methods used to obtain measurements.

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

## 7. MEASUREMENTS-THAT'S WHAT WE DO BEST

**Rule One:** To avoid liability the surveyor should err on the side of safety. Always try to do a little more than an ordinarily prudent surveyor would do under the circumstances.

**Rule Two:** It is the land surveyor's duty to correctly locate and mark property lines as described in a deed furnished to him and to relate lines of possession to title lines. The surveyor cannot and does not assume the responsibility of proving that a given deed is correct and legal; that is a function of an attorney or court of law.

**Rule Three:** Search and search well! If it is there, find it. If it is not, be able to say with certainty that it is not there.

**Rule Four:** Liability result when the surveyor fails to do correctly the thing that he purports to do.

**Rule Five:** The surveyor is a fact finder. He goes upon the land armed with all the documentary evidence that is available and searches for markers, monuments and other facts. After all the evidence, facts, measurements and observations are assembled, the surveyor must conclude from the facts.

**Rule Six:** Never set a corner in disagreement with improvements without first satisfying yourself that you are not only right, but that your "right" will prevail in court if necessary.

**Rule Seven:** Discovery of a County Surveyor's monument does not relive the surveyor of the obligation to look further. The County monument is only proof in the event that superior evidence cannot be discovered. Therefore, the surveyor must seek all other evidence and use the official monuments as though they were the first resort.

**Rule Eight:** The conclusions that flow from the evidence may produce proof. Evidence in itself is not proof of a fact; a conclusion or inference that may be drawn from evidence is the proof in coming to conclusions from evidence, the most important need of the surveyor is his ability to recognize and know what is the best evidence of that available.

**Rule Nine:** The best evidence of a monument's original position is a continuous chain of history by acceptable records, usually written and dating back to the time of the original monumentation. A found monument without a background history is of little value as evidence; and, a set monument is worthless if unidentifiable in the future.

**Rule Ten**: In civil cases having to do with land surveying and real property, it is only necessary to prove a "preponderance of evidence;" it is not necessary to prove "beyond a reasonable doubt" as in criminal cases.

**Rule Eleven**: It is of the utmost importance that a surveyor seek and find all of he evidence at the time of the initial survey, and this mist be done irrespective of costs. The major cause of disagreement between surveyors relates to the lack of discover of all available evidence. If every surveyor uncovered all of the evidence, differences would be reducing to a minimum, and their surveys would have finality of location!

**Rule Twelve**: A surveyor may be able to compute, make drawings, use instrument and stake engineering projects, but, until he understands property line law and the law of evidence, he is not qualified to make property locations.

**SL-9 – (SL-14)**

## 8. (SL-15) LAND SURVEYOR'S LIABILITY to UNWRITTEN RIGHTS
**By Curtis M. Brown**

In early writings, I generally advocated that surveyors should locate land boundaries in accordance with a written deed; all conveyances based upon unwritten rights should be referred to attorneys for resolution. Within recent years there have been cases, and one in particular, wherein surveyor have been held liable for failure to react to a change in ownership created by prolonged possession. The purpose of this paper is to re-examine what a surveyor should do in the event title has been altered by a legal transfer of title by prolonged possession.

Before delving into the question, it should be pointed out that there are two very different types of possession found by the surveyor. One is totally unrelated to the original survey lines; the other is possession, which represents where the original survey monuments were set. Let us suppose that an original surveyor set an original monument to mark a corner; further, a fence was erected at the time the monument existed. Later the monument material disappeared. Now the fence is a monument to where the original monument was located. In this discussion, only possession unrelated to original monumented lines and possession out of agreement with written deeds is being considered.

Below is described a case wherein a surveyor located his client's deed, yet found himself in trouble because he failed to take into account the ad joiner's occupancy. The facts are as follows:

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

**Surveyor "A"** was asked to survey the following land: The East Half of the Southwest quarter of Section 6, T1S, R1E, of some certain Meridian, in accordance with the official government plat thereof. See the attached sketch. The official plat disclosed the said East Half as having a full 80.00 acres, whereas the remainder of the SW ¼ was labeled as Lot 2 with 67 acres. Using the rules give in the booklet, *Restoration of Lost or Obliterated Corners and Subdivision of Sections, Bureau of Land Management,* the surveyor did correctly locate the said E ½. There was a little

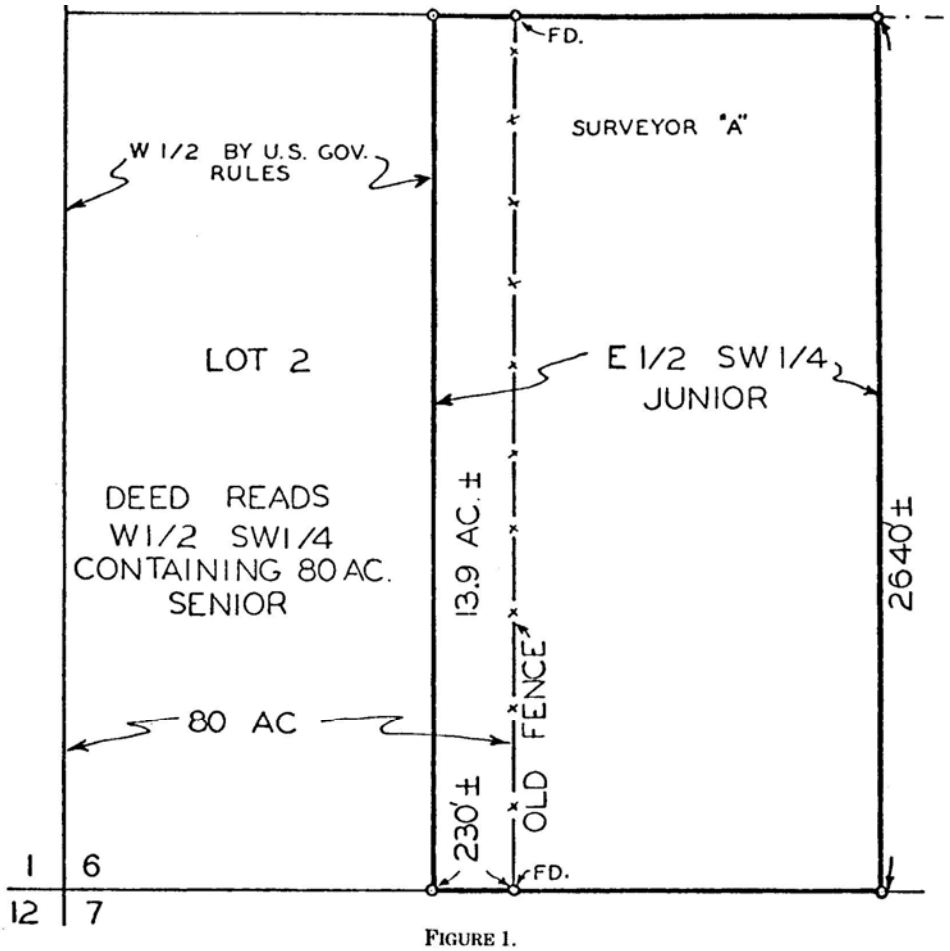



FIGURE 1.

F.1.1

excess which was property divided among the parcels. Up to this point, the surveyor did everything correct; he could not be faulted. What happened next did create a problem.

During the course of the survey, **Surveyor "A"** observed a fence encroaching on his client's deed lines by a little more than 13 acres. At each end of the fence, a surveyors stake was found (in California a surveyor must put his number on every property stake that he sets), and he was contacted. The adjoiner's deed read as follows: The West half of the SW ¼ containing 80 acres. Further facts were; the

dividing fence was old (more than the statute of limitations of 10 years), the adjoiner was occupying 80 acres, and at one time one party owned all of the SW ¼ and sold off the @ ½ containing 80 acres first.

On the theory that acreage was subordinate and the client had a written deed to the E 1/2, surveyor "A" monumented the deed as written, disclosed the fence line, and wrote in the gross area, including the approximate 13 acres fenced by the adjoiner. A buyer purchased the land as based upon the acreage figure (per acreage purchase price) and a title company insured title on the bases of the survey. **When the buyer tried to occupy the land, the adjoiner objected and a law suit followed.** The court judgment was up to the fence and the title company had to pay damages. Following this, the **title company** sued the surveyor and won more than $100,000 damages in the lower court. To date the appeal of this case has not been ruled on by the higher court; regardless of how the appeal comes out, **Surveyor "A"** has lost considerable time and money for legal fees, courts costs, travel, expert testimony, ect.

A point to bring out is that the title company was acting as a *third party*; they did not pay the surveyor's original fee for the work. As a matter of law, the surveyor is liable to third parties that have been damaged.

***This is a case where the land surveyor correctly located the client's deed lines in accordance with the writings of his client, yet was held liable for failure to recognize the ownership rights of the adjoiner***. The implications suggested by this case deserve further analysis.

I appeared as an expert witness and testified that the surveyor had located the E ½ correct in accordance with the government requirements. In addition, it was my opinion; (1) the title company had all the facts, including the location of the fence, the adjoiner's deed, etc. and (2) they elected to insure the title can collect the fee, not the surveyor; therefore, they should pay the damages. The judge obviously thought otherwise.

With the benefit of 20/20 hindsight, let us look at the case and see what the surveyor could have done, if anything, to have avoided liability or at least have reduced his liability to some degree.

The **first question** to explore is: What did the client have in mind when ha asked the surveyor to locate his boundaries? Was he asking the surveyor to locate his ownership? Or just the deed lines? As all surveyors should know, there is a vast difference between ownership and written deed rights. The written deed is merely evidence of ownership, not proof of ownership; title to land be transferred by unwritten rights. From my experience with clients, very few know that there is a difference between the two; most clients want to know what they own.

One thing is certain: the client is not asking the surveyor to locate his lines of possession they can see where they exist, ***As a minimum; he wants to know if his lines of possession agree with his written title.*** If the surveyor has no intention of locating the lines of ownership, that is, he intends only to locate the written deed lines and show possession in relation to the written deed, and if he fails to make the client aware of such fact, the courts will probably find that the surveyor contracted to locate

the lines of ownership and hold that client is entitle to rely on that standard of duty by the surveyor. Seemingly, that is what happened in the above case. While **Surveyor "A,"** in the above case, correctly marked the deed lines, did he inform his client completely about the difference between ownership and deed lines? Did he put on his map, "area claimed by others," or did he put a heavily solid line around the are of confusion, or did he exclude the acreage within the area of confusion from the gross acreage of ownership? By looking at the map, did the client have a right to think he owned the area fences by others? It is my opinion that if he had done the things suggested by these questions he probably would have avoided liability.

Within the United States, in most areas, the first right to land must be acquired via a writing, however defective. After a written title is obtained, except in Torrens Title areas, imperfections in the writing can be corrected by long possession or the land area can be enlarged or diminished by the acts of adjoiner's owners. Written title alone is not the only consideration in determining who owns property; actually physical possession of the land can result I the passing of title. In the order of importance of elements determining who has ownership of land, a legally consummated unwritten rights ranks higher than a written title (Note: no so in Torrens Titles).

The **second question** to explore is: **Can a surveyor monument the lines of ownership obtained by unwritten means?** To my knowledge, absolutely nothing in the law prevents him from doing so. Clearly, from my conversations with attorneys, this is not an unauthorized practice of law. If the surveyor chooses to claim that a possessory right has ripened into a fee title, he is certainly privileged to do so. The real question is what should he do?

The third question to explore is then: **Whenever a surveyor finds possession out of agreement with written title, and he determines that title has or probably has passed due to an unwritten conveyance, what are his obligations and what should he do?**

Since the client wants too know if his lines of possession are in agreement with his written title, the surveyor is certainly obliged to report on that, But since most clients think the surveyor is locating ownership line, the surveyor must fully disclose the fact the land can be gained or lost by possession, and if he thinks land has been lost to an adjoiner by some unwritten act, he is obliged to inform his client of such fact. In addition, since the surveyor is liable to all third parties that have a right to rely on the result of the surveyor's findings, the information must be presented in such a manner that no third party can be misinformed. Merely telling the client orally is not sufficient; every document presented must clearly indicate the fasts so that no third party can be misled.

In the above case the surveyor was held liable to a third party, the title company, If the surveyor had put a heavy border around the disputed area, and if he had clearly marked on his map, **"AREA OF DISPUTED TITLE " OR AREA CLAIMED BY OTHERS"** he could have saved himself a court trial, In addition, he should not have included the disputed area in the gross acreage of the client; acreage should be sorted

into two columns, the first showing what the client owns for certain, and the section showing doubtful areas.

My own policy in handling encroachment has been as follows: First, all adjoiner deeds are read to eliminate the possibility of senior rights. Second, the adjoiners are questioned as to how possession came into being and how long it had been there. If no senior rights existed and if the fence were there for a period of time less than the statute of limitations, then the possession would be treated as an encroachment, and stakes would be set in accordance with the written deed, If for any possible reason title could pass because of unwritten consideration, then the area encroached upon would be given a doubtful status. A written report would then be give to the client explaining why ownership is to doubt and a mp would be delivered showing the areas in question. Admittedly, this solution is not satisfactory to the client; he wants to know what he owns. On the other hand, I was never one willing to assume unnecessary liability. Some time ago, I made up my mint that, regardless of how much I knew, there would always be some situation in which it was impossible to find an answer as to own what, especially when you take into account what the client is willing to pay. If I were uncertain, I would monument the areas the client had for certain, explain that situation, and then let the client decide whether he wanted to go after the doubtful area.

In my own proactive, I have at times set monuments in a position that was determined to because of long occupancy, and as I reflect on it, in each case the client had color of title, that is, he had a written title that was defective. On its face the writings appeared to be good, yet in fact they were shown how deficient when you looked up record facts, such as senior rights or the original position of monuments.

## 9. (SL-16) ADVERSE POSSESSION

***5-8 Elements of Adverse Possession: An adverse claim, where permitted, will ripen into a fee when the following acts are complied with continuously and simultaneously for the period of years defined by law. But it is not to be assumed that all ten are required for all stats; there is much variation in laws. (pg.16 Evidence & Procedures for Boundary location Brown & Eldridge)***

1. ***Actual possession***
2. ***Open and notorious possession***
3. ***Claim of title***
4. ***Continuous possession***
5. ***Hostile or adverse possession***
6. ***Exclusive possession***

7. ***Possession as long as required by statute***
8. ***In some states under color of title***
9. ***In some state al taxes must be paid***
10. ***In some states under good faith***

## 10. (SL-17)- 5-19 SURVEYOR'S DUTY WITH RESPECT TO ADVERSE POSSESSION (CASE STUDY) by Brown & Eldridge

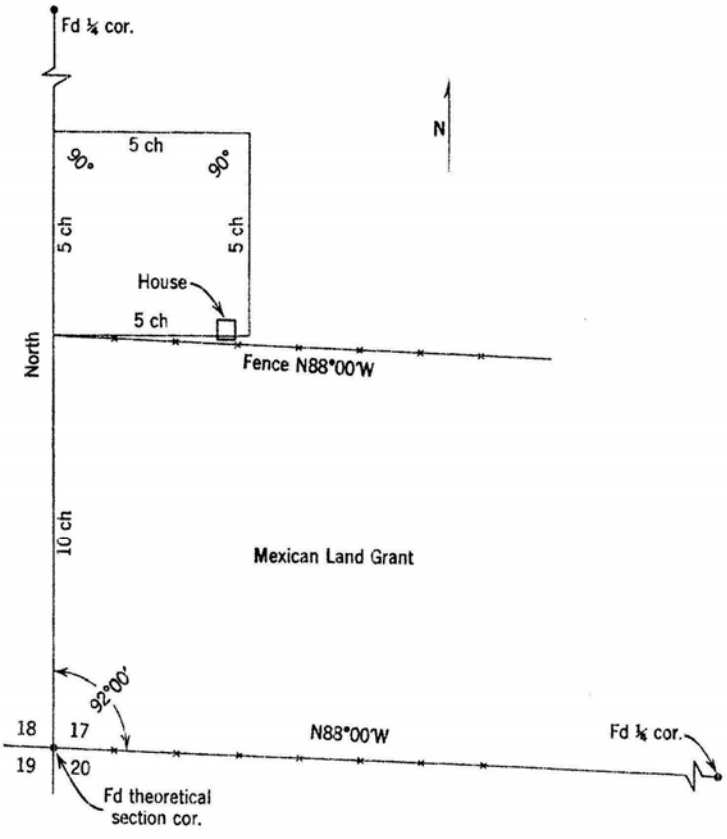



Fig. 5-19

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

**PRINCIPAL:** *Whether adverse rights have ripened into a fee is entirely outside the scope of a land surveyor. Such matters are referred to an attorney. But the surveyor often gathers evidence of possession and relates that possession to written title lines.*

The surveyor gathers evidence of tracts concerning matters of possession; he does not come to conclusions from the facts. Surveyors locate land from written descriptions furnished them; they do not decide who has ownership of land.

**FACTS:**

Sample legal description; impact of field conditions; assumptions made for the establishment of the boundary.

**LEGAL:**

Commencing at the Southwest corner of theoretical section 17…….; thence North along the Westerly line of said section 17 a distance of 10 chains to the true point of beginning.; thence continuing along the section line 5 chains; thence at right angles easterly 5 chains; thence southerly parallel with the westerly section line 5 chains; thence 5 chains to the true point of beginning.

A survey revealed that an angle of 92 degrees existed at the theoretical (rancho land-grant area) section corner and that all fences were constructed parallel with the south line of the section. The deed call of "at right angles" deviated from a 30-year old fence by 2 degrees. After weighing all evidence, the surveyor decided that the fence would be controlling, and he monumented the property with a 92 degree angel at the corner. The owner, who was not notified of he conditions, erected a house adjoining the south line. Upon discover of the facts, the title-insuring agency refused to insure a house loan. The house was several feet over the line when a 90 degree angle was used, and the surveyor was in trouble. As discussed under evidence, "the written words are conclusive." The deed did not say "parallel with the south line of the section"; it said "at right angles." If the surveyor had disclosed the true facts to the client, in writing, he would have been without fault; but he, on his own, located the land as thought he deed read "parallel with the south section line." To be sure, he could use occupancy rights as a defense, but the fact remains that, win or lose, the client was damaged because of inability to get a loan. It was not the surveyor's duty to conclude that the occupied land was gained by possession; it was his duty to reveal the fasts as they existed.

**SUMMARY:**

This discussion is in no sense complete, but id does give a general concept of the doctrine of adverse rights. If there is a realization of the necessity of referring long continued possession matters to attorneys and a realization of why title-insuring agencies insist upon disclosure of facts of encroachments and possession on written title lines, the purpose will have been accomplished.

## 11. EVIDENCE by Brown & Eldridge

2-3 Arrangement of the Subject Matter: Evidence varies in significance and importance. Thus, witnesses may give testimony as to the location of a property corner. But such evidence is incompetent and irrelevant to overcome the location of an original undisturbed monument called for. The evidence of a rock mound is of little importance where the original notes called for an oak tree. The evidence of measurement is incompetent to prove an original monument to be in error.

In coming to conclusions from evidence, the most important need of the surveyor is the ability to recognize and know what is the best evidence of that available. After defining terms and after presenting legal concepts that determine the effect of evidence, the remainder of his chapter will be arranged, as best may be, in the descending order of importance of evidence, that is, in the order of the best available evidence. An outs is as follows:

1. Definitions
2. Effect of evidence
3. Best available evidence
    a. Senior Rights
    b. Writings
    c. Intent of conveyances
    d. Calls for surveys
    e. Monuments
        i. Natural
        ii. Artificial
        iii. Record
    f. Measurements
4. Surveyor's obligations with respect to evidence.

## 12. THE BENSON SURVEYS- by James R. Fields 1982 ACSM Convention

**ABSTRACT:**

There are a substantial number of fraudulent original surveys that affect landownership in then western states. The owners and managers of these lands are unable to utilize the lands without fear of trespass. A 19th century conspiracy of land surveyors, bankers and attorneys is responsible for the fraud and there is a great deal

of archival information written by the people of the 19th century who were involved in exposing and attempting to prosecute the fraud, which occurred between 1879-1886. These prosecutions failed because of corruption in the legal system and in Congress. Because survey examinations began in 1885 and only involved surveys submitted but not yet approved, many of the special deposit surveys done between 1879 and 1885 are uncorrected. The confusion generated by these uncorrected surveys is becoming more acute. A rational and consistent method for dealing with this must be developed. The type of resurvey method chosen will have a significant impact on the cost of the correction. If costs are high, the work will continue to be delayed. Average dependent resurvey costs for a township are often in excess of some quarter million dollars.

**INTRODUCTION:**

One of the major issues facing the surveying profession is the maintenance of a professional image. One of the requirements of professionalism is a concern for the public good and a willingness to correct any previous harm that may have been done by members of the profession.

**THE PROBLEM:**

Many surveyors in the Western U.S. are aware that a substantial number of corner monuments for original rectangular surveys were not set. The general belief seems to be that the lack of land corners in these townships is the result of "barroom surveys" done by some "good ole boys" on what was, at the time of the survey, useless land.

This presentation hopes to dispel at least a portion of this myth and who that many of these surveys were a successful attempt to defraud the public on a grand scale and that these "good ole boys" were actually part of a criminal conspiracy.

During the period between 1879 and 1886 a group of surveys in collusion with attorneys and bankers conspired to control all of the Special Deposit Surveys in Arizona, California, Colorado, Idaho, New Mexico, Nebraska, Oregon, Washington, and Wyoming. In California alone, the group was responsible for about 20% of the original surveys.

This group was called the "Benson Syndicate" by the newspapers of the time, and while the group's activities were primarily in the west, it was frequently the target of editorials in the New York Times because of its flagrant activities.

A sample of the style of work done by the Benson group can be seen in this survey by Deputy J. R. Glover showing the actual work done in five townships (See Figure 1). The original plats created by this skeletal work are still approved and still

in effect. If a Dependent Resurvey should be done in these townships using the corners actually set, the resultant distortions and acreage inequalities will be very great. Also, a Dependent Resurvey in one of these or in the similar townships will cost from one hundred to over three hundred thousand dollars. This dependent resurvey cost is not justified with this sort of original work.

Had the 19th century criminal proceedings brought against this group been successful, the Federal government would have had to take some remedial action to correct conditions like these. This paper will show a brief history of the fraud and some of the reasons why the prosecution failed.

Fraud has been defined as a false representation of a material fact knowingly made with the intent to deceive which was relied upon by the injured party to his detriment. The available 19th century survey reports show that may false representations were made clearly intending to deceive the government and the landowners.

The initial and subsequent survey costs, the litigation costs and the loss of recourses in managing the affected lands have created several generations of injured parties.

The Benson surreys meet all of the criteria for fraud, particularly in their disregard of 19th century survey instructions.

The ringleader of the Benson group was John A. Benson who began his career in California in 1871 or 1873; contemporary accounts differ. At any rate, he was acting as a survey examiner in the aftermath of the Hardenburgh scandal of 1872. Hardenburgh was the Surveyor General of California and was dismissed for obtaining "kick-backs" from the Deputy Surveyors and for using the timing of plat approval in order to "Claim Jump" improved lands from the actual settlers.

Hardenburgh must have been an inspiration to John, but Hardenburgh's methods were small scale, crude and too well know. Benson had to look for other ideas.

In 1871 and amendment was added to the Homestead Act of 1862 whereby the settlers on Unsurveyed lands could make cash deposits towards the cost of the necessary survey. The money also reduced the amount of required residence time as well as the cost of the homestead.

On March 10, 1879 and additional amendment was added which called for the issuance of Certificates of Deposit as receipts fort the settler's survey application. Unfortunately, the Certifications were changed to allow them to be used in the purchase of any available land within the Rectangular System. Worse yet, the certificates were as negotiable as cash. This was a critical point in the surveys that were to follow.

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

A scheme to take advantage of the 1879 amendment was evidently under way by November 1879. With the sale of "dummy" settlers and false applications for surveys, the control of great deal of land sale was now possible and, although the maximum government price was $2.50 per acre, even at this early time good agricultural land was worth in excess of $100 per acre. The Benson ring was to control over $6,000,000 in land sales.

The scheme followed this basic process:

- Find an Unsurveyed township
- Arrange for "dummy" settlers to apply for a survey
- Make an extremely low estimate of the cost of the survey in order to reduce the amount of the deposit required.
- Obtain the cost of the deposit from the Bank of Nevada, which was in collusion with the surveyors.
- Begin the survey. Discover that the initial estimate was too low and obtain additional money from regular survey appropriations.
- Perform only a skeletal or reconnaissance survey and submit the field notes to Benson who would compose a complete set from the partial information.
- Use the special deposit certificates to purchase valuable agricultural or timbered lands under the Homestead Act.

The special deposits accelerate the surveys to a point defying natural laws. The number of contracts awarded in 1880 was double that awarded in 1879. More miraculous yet, where a flat agricultural township survey had required from three weeks to a month to complete, the new township surveys in the step brush covered mountains were supposedly complete in only five to ten days. The resulting plats were models of regularity although some topography would be shifted more than a mile out of positions. In one instance, Deputy Berdan lost six miles of the steamboat carrying Sacramento River.

The Benson Syndicate abuses required that the graft be widespread and there are some indications that some Commissioners of the General Land Office were involved.

In 1885, however, and honest Commissioner was appointed. When Commissioner Sparks took office, he was extremely upset at the corruption spread throughout the land office. He began some violent reform policies, one of which involved the field examinations of surveys.

Because of budge restrictions, Sparks was only able to examine those surveys submitted as complete but which had not yet been approved. A three year stature of

limitations on bond recovery effectively stopped examinations of previously approved work.

Before the end of 1885, Commissioner Sparks began sending survey examiners into the field. A few proved unreliable, Agent Pennybacker began by sending back glowing reports of the Benson work. It was later reported that George Perrin, one of the Benson Syndicate, was bribing Pennybacker to stay sway from the field, However, three additional agents prove to be very effective. As soon as James Treadwell, George Pickett and Charles Contra arrived in California, their most reports declaring the Benson Syndicate work to be fraudulent began arriving back in Washington. Treadwell, in addition to his survey work was also instrumental in the final exposure of the Redwoods Land Fraud where the NcNee brothers, survey bondsmen for the Benson Syndicate, had bribed some four hundred people to make agricultural homestead applications for 60,000 acres of virgin redwood lands.

Although Treadwell, annual salary was $1,300 during the course of this investigation he turned down an offered $5,000 bribe. His investigations stopped and further fraudulent survey work in Northern California by the Benson Deputies. However, congressional pressure was brought against him through Secretary of Interior Lamar and Commissioner Sparks was unable to keep Treadwell from being dismissed. There is little doubt that the Benson dismissal, George Perrin threatened Agent Conrad with the statement that “We got rid of Treadwell and we’ll get rid of you as well.”

Treadwell’s reports show that even on base lines only short traversed had been run through the easily surveyed areas.

Agent George Pickett was hired by the government in his home state of Illinois and sent to California. He examined surveys primarily in the southern part of the state and found the skeletal or non-existent survey to be normal for Benson work. Pickett’s investigations alarmed Deputy Surveyor W. H. Norway, Benson’s man in Santa Barbara. Norway visited Pickett’s camp and hinted broadly the visit was reported to the Washington office, and only four months into a new fiscal year, congressional pressure greatly reduce the already appropriated survey examination money and Pickett was dismissed. Moreover, he was required to pay his own way back to Illinois.

Agent Charles Conrad had been a bit wiser than either Treadwell or Pickett. Prior to beginning his field examinations, he had carefully aligned himself with newspaper people in Sacramento and San Francisco.

During December 1886, Conrad sent Commissioner Sparks his first field examination report showing numerous skeletal surveys. By April 1887, a federal

grand jury had handed down forty-one indictments for conspiracy to defraud the government.

Conrad took full advantage of his press connections. The press coverage of his investigations sent the Benson Deputy Surveyors hurrying to him trying to protect them from prosecution. During the course of Conrad's meetings with the Benson deputies, he asked a number of the Benson men to answer, under oath, twenty-nine questions. The worn responses did not agree with the initial or final oaths as shown in the previously submitted field notes. Charles Holcomb stated that he had never been a Deputy Surveyor although there were contracts in his name for over seventy townships. Henry Meyrick said that he knew that the work done under his signature was not done in the manner show in the submitted field notes. C.F. Ragsdale said that his skeletal field was completed in John Benson's San Francisco office.

There were other and equally damaging testimonies.

However, even with the above admissions, the federal indictments were in trouble. The prosecuting U.S. Attorney, Henry S. Dibble was "moonlighting" for the Bank of Nevada, Benson's bank. Inevitably, the indictments were rejected as being incorrectly made.

Even in the face of Attorney Dibble's incredible conflict of interest, John Benson was frightened. Although Bank of Nevada directors, Folis and Connor, had provided $17,000 in order to free John on bail, Benson fled to Denmark in August 1887. While in Copenhagen John was arrested by an English detective and was charged with being a terrorist dynamiter. After several months in a Danish jail, the U.S. Began to look better and John managed to gain release through the American consul who held John until he was returned to the U.S. in the hands of a Marshal. John now faced new indictments, which had been sustained by the U.S. Supreme Court.

John returned to the United States in 1889.

During the delays between 1887 and 1889, Agent Conrad discovered what he believes to be connections between the Southern Pacifica railroad and the Benson Deputies. Indeed, in 1887 on the night before he was to testify before the Federal Grand Jury, Deputy Buckley was approached by an official from the Southern Pacific Railroad an was told to leave San Francisco. Also, the subsequent actions of Leland Stanford make a railroad Benson connection likely.

With the removal of Pickett and Treadwell, Agent Conrad was the chief prosecuting witness against the Benson group. In early 1889, Conrad was also dismissed. His newspaper friends protested and he was reinstated. On July 20, 1889, Secretary of Interior Noble received a telegram from Senators A. P. Jones, Leland

Stanford, William Stewart and Representative C. N. Felto, William Morrow and T.J. Clunie urging Conrad's dismissal.

The protesting Senator Stewart was also the primary defense attorney for the Benson Group.

Agent Conrad was replace by Agent Sibbald. Now moving with great speed, the government brought Sibbald to San Francisco in November with instructions to prepare for trial in January. The new U.S. District Attorney, John Carey, chose the weakest indictment to begin the trials against the defendants. Cary did not wish to lose and apparently was under direction to do so, for when he resigned he wrote a thirty-page apology to his successor for questioning the integrity of the Benson surveys, disregarding the many reports by Treadwell, Pickett and Conrad.

Carey's successor was attorney Charles Garter whose lack of enthusiasm for the prosecution was even more pronounced. He told Special Agent Edwin Bruce to proceed carefully for "we do not want to convict anyone." Even with this attitude, Garter demanded an assistant.

This assistant was F. S. Stratton, the son of the former Surveyor-General of California who had approved, without field examination, for one of John Benson's township surveys.

When the first indictment finally came to trail in 1892, there was little hope for the people's cause. At one point one of the defense attorneys said to the U.S. Attorney "Get down, Mr. Carter, you don't know anymore about surveying than a man in the moon." The U.S. Attorney agrees. So much for adversary law.

On the day, that U.S. was to sum up the prosecution's case U.S. Attorney Garter went to the horse races leaving his assistant, who incidentally had a boil on his neck so large as to prevent him from turning his head, to sum up. The assistant, boil or not, was at any rate cut off by the presiding judge half way through his jury presentation.

Predictably, the verdict was not guilty although six of the jurors said later that they would have voted for conviction had the judge allowed them any leeway to do so.

The Benson Group had thoroughly defeated the government in the trail of the first indictment. The additional cases were scheduled to be tried in January of 1893 but were delayed for a year. Before they could be brought to trial, Benson's attorney in Washington, D.C. Col. Hazleton, who was also a close personal friend of GLO Commissioner Lamoreau, offered the government the infamous "1894 Compromise." This compromise, fought bitterly by the hones attorneys and Agents of the Justice

Department, agreed to send the indicted Deputies back into the field to "place in a perfect condition all surveys under their rejected contract, said revisions to be subjected to a Department of the Interior; provided if thereafter the Department of Justice would consent to allow said indictments to be dismissed and the (civil) suits (against the bondsmen) withdrawn.

This was an admission of guilt to the indictments since the defense was that the work had been faithfully done. The Benson Group wished to get the prosecutions of the surveys away from the Justice Department and back into the GLO where Benson had nearly full control.

Special Agent H.L. Collier was selected to make certain the resurveys were done correctly and Collier went to California in July 1895. he immediately asked the Deputy Surveyors to bring their surveys into conformance. By December 1895, no work had begun and Collier went to Benson and demanded that Benson use his influence to begin the revisions.

Benson began by bringing witnesses and affidavits that the work in T1S. R1.W San Bernardino Meridian was done property. Special Agent Collier would have none of these paper witnesses. Consequently, Benson, Glover, Perrin and Reilly and "two full corps' of surveyors went into the township and began work. After a week of a "desperate" effort of trying to find a place to begin, they GAVE UP and moved into another township sixteen ranges west. In this township, they made no pretense of looking for original work but began totally new surveys. These resurveys completely repudiated the original notes, the plats and all of the affidavits and witnesses brought by Benson.

When Agent Collier found that Glover had completed his resurvey in T22S, R13E, Mt. Diablo Meridian, Collier wrote to the Deputy and obtained a copy of his actual field notes to compare with the Special Agent's survey and the original notes. From Benson, Collier also received the official Surveyor-General's copy of the field notes for the same work. There was little agreement between the Benson and the Glover notes even though this time the fieldwork had been done. Benson was still editing the notes.

Collier confronted Benson with both Glover and the two dissimilar field notes, Benson, with a fine mathematical concept of infinity, told the Special Agent "I have three or four sets of notes for that township, and I am sure by combining them all, I can get up a set that will check your work." Benson, however, was unable to do so until he was furnished with a copy of the Government's check notes.

But Agent Collier was in trouble. He was recalled to Washington, D.C. and was dismissed for having required too much time in getting the revisions done,

notwithstanding that he was under orders not to examine any work not completely revised by the Deputies.

In June of 1897 and "Amended Stipulation" was added to the 1894 compromise. This stipulation said that all of the rejected surveys would be accepted if the indicted deputies would not sue the government for damages. So without further examination the government put forward $400,000 to the Bank of Nevada for the surveys.

Benson Syndicate had beaten the government soundly and moreover was bask in the contract business. Benson's old friends Glover and Perrin were awarded new contracts involving thirty townships.

While the townships involved in the indictments and the 1894 compromise were finally rejected in 1911, there still remain in then western states a large number of Benson surveys that were approved prior to the Sparks field examinations of 1885.

**CONCLUSION:**

The skeletal work that was done makes the surveys worse than useless. Landowners either are unable to find any land boundary corners at all, or find a few, and attempt a protract from these. Deeds are often incapable of location within thousands of feet.

A rational and equitable solution must be developed in order to rectify these conditions and to protect the public interest. The problem in California grows more complex each day as further deed, subdivisions take place.

The intent of the Rectangular Survey System was to set land corners in a manner permitting settlers to occupy their lands with confidence. Where the surveys were faithfully done, frequently 80 to 90 percent of the corners are capable of recovery even after 150 years have passed; with many of the Benson surveys recovery runs from 0 to 10% on surveys done 50 years latter.

The surviving and still approved Benson Special Deposit townships should be examined on at least seven counts:

1. Are there ownership problems in this township?
2. Has the township been subjected to a rigorous search by qualified experienced people?
3. Does the approved plat topography match the ground?
4. Was the work done under the Special Deposit System?
5. Was the work done between 1879 and 1886?
6. Was the time shown on the approved notes enough to have done the work?

7. Does the combined ownership/found original corners pattern warrant the use of an independent Resurvey method?

The Benson survey legacy must be corrected.

175, Landmark Enterprises, Sacramento, CA

Vaughn, Richard C. 1974, "Legal Aspects of Engineering," page 80, Iowa State University

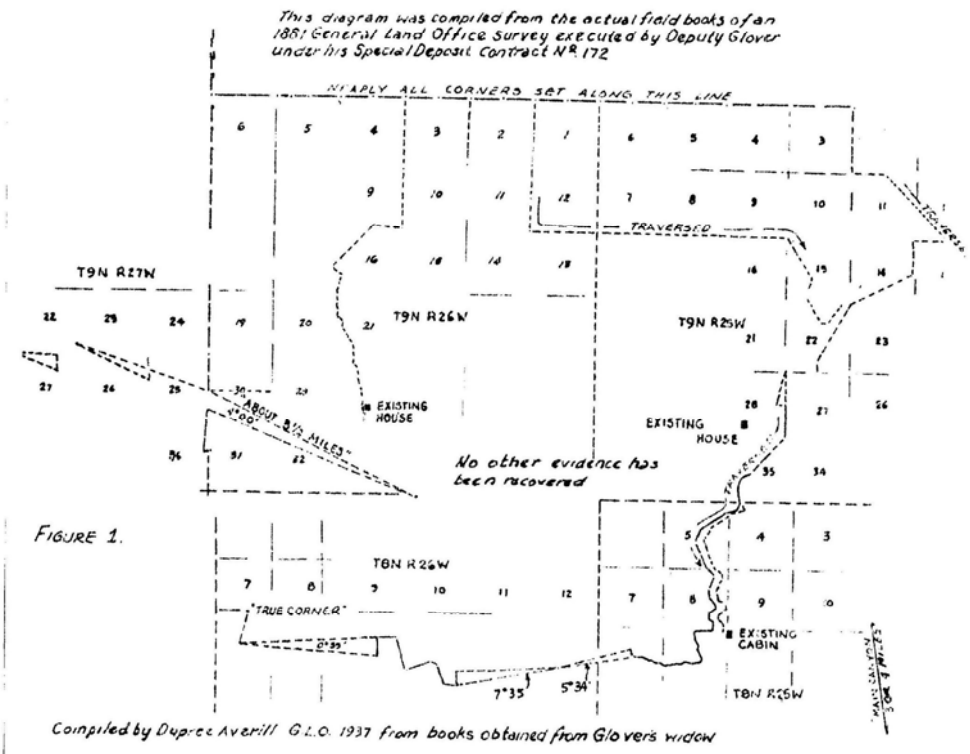
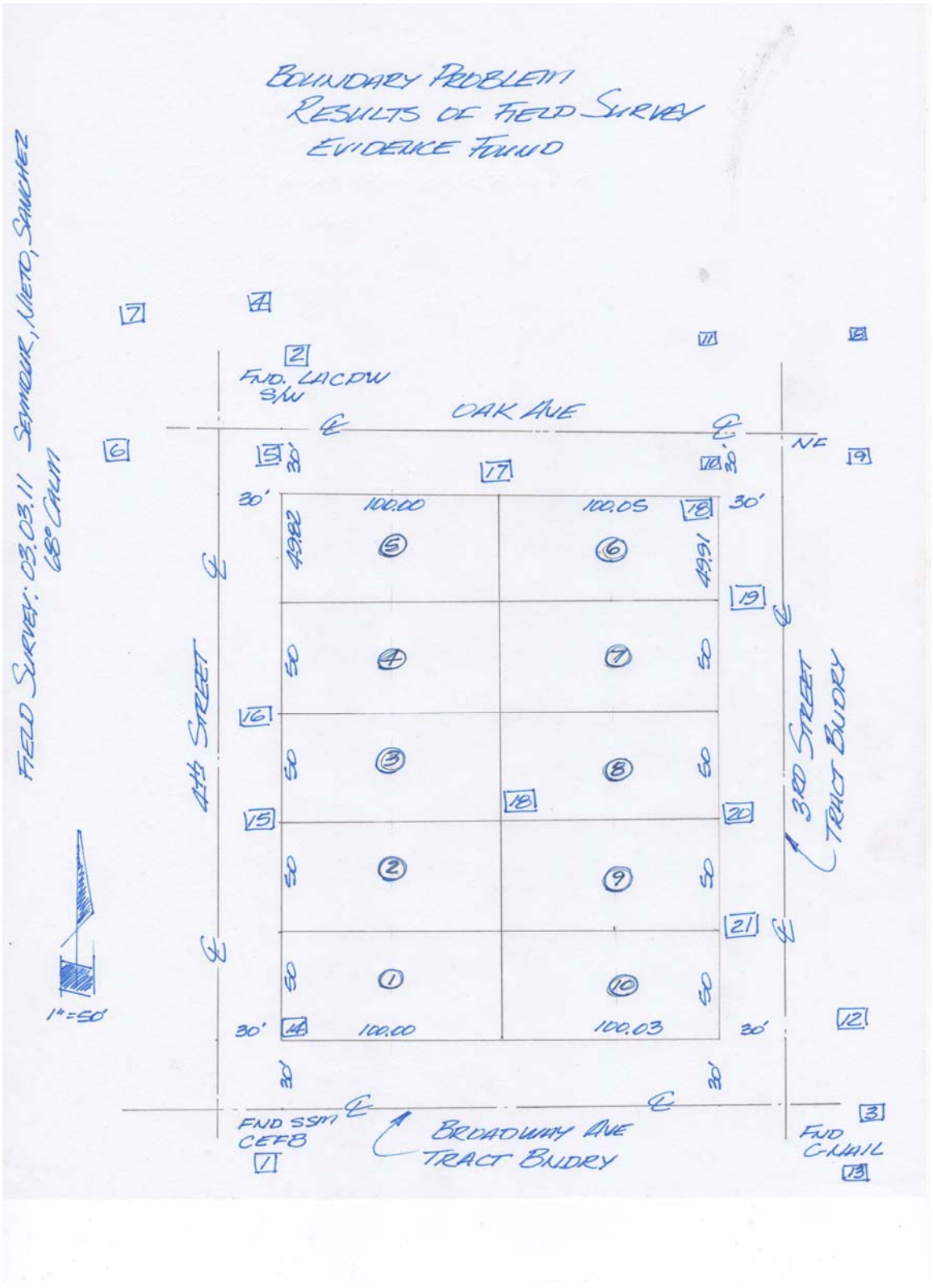



FIGURE 1.

Compiled by Dupree Averill G.L.O. 1937 from books obtained from Glover's widow

125

# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems



# CLSA/NALS 2012 Conference
# LS Review Session
# Boundary Surveying
# History-Sample Problems

## BOUNDARY PROBLEM-Results of Survey Field Survey 03-03-11

**Listing of Evidence:**

1 FND Standard Survey Monument per Civil Engineer Field Book CE-5786 Pg 212-214 (01-14-1969). Monument matches "tie notes" all axillary reference monuments destroyed with new construction ADA Ramps dated (06-22-2009). NOTE: Monument was found 1.6' below NG. 3" BC monument leaning SW'ly no center punch mark found.

2 FND Los Angeles County Department of Public Works Spike and Washer on the surface. According to the county, no notes on file for this monument. Recovered all four "normal" Tangent-toss-over's in place. All C&G appears to be original. Native stone curb faces and all lead/tack references are of a type set by the CEFB procedures. NOTE; when occupied and crosses established in the field, we miss the S/W in a SW'ly direction 0.22'

3 FND C-Nail in lieu of SSM set in 1969 see #1 above. Found the NE/SE Reference monuments and located same. County will provide notes to our office at a latter date unable to locate notes being scanned into GIS

4 FND Reference monument at the NE Corner of the intersection of Oak & 4th Street. As noted in #2 above no notes are available. Accepted monument as Quality-1

5 FND Reference monument at the SE Corner of the intersection of Oak & 4th Street. As noted in #2 above no notes are available. Accepted monument as Quality-2

6 FND Reference monument at the SW Corner of the intersection of Oak & 4th Street. As noted in #2 above no notes are available. Accepted monument as Quality-1

7 FND Reference monument at the NW Corner of the intersection of Oak & 4th Street. As noted in #2 above no notes are available. Accepted monument as Quality-3

8 FND Reference monument at the NE Corner of the intersection of Oak & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-3

9 FND Reference monument at the SE Corner of the intersection of Oak & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-2

10 FND Reference monument at the SW Corner of the intersection of Oak & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-1

11 FND Reference monument at the NW Corner of the intersection of Oak & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-3

12 FND Reference monument at the NE Corner of the intersection of Broadway & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-1

13 FND Reference monument at the SE Corner of the intersection of Oak & 3rd Street. No Corner Record Form available per research. Accepted monument as Quality-1

14 FND 2" I.P. at actual SW Corner of Lot 1. Record corners shown for lot corners to be 1 ½" I.P.

15 FND L/T on Lot Line "Prod" believed to be a 2' offset reference corner based on

Curb split (no reference)

16 FND LT&T LS-6551 on Lot Line Prod believed to be a 3' offset reference corner based on curb split (no reference)

17 FND LT&T LS-2996 on Lot Line Prod belived to be a 2' offset reference corner based on curb split (no reference)

18 FND 1" I.P filled with concrete with LT&T LS-8989 believed to be the actual NE corner of lot 6 (no reference) as per curb split

19 FND L&T on Lot Line Prod believed to be a 4' offset reference corner based on curb split (no reference)

20 FND LT&T LS-7001 on Lot Line Prod believed to be a 2' offset reference corner based on curb split (no reference). NOTE: Owner has a copy of a survey done in 2007 signed by LS-7001 Evidence to the location of the NE cor of Lot 8

21 FND LT&T LS-7001 on Lot Line Prod believed to be a 2' offset reference corner based on curb split (no reference). NOTE: Owner has a copy of a survey done in 2007 signed by LS-7001 Evidence to the location of the SE cor of Lot 8

PROCEDURE FOR BOUNDARY RETRACEMENT SURVEY:

1. Research the public record for record maps; county corner and reference monument history and other available public agency information
2. In some instances, I will prepare a "search-plan" or Pre-Calcs of the record information to assist the field crew.
3. "Recon-Survey" the block/streets and Premark all found evidence to facilitate an orderly collection of data in the field survey.
4. Depending on terrain (tree cover/buildings) decide on the best equipment for the survey.
   a. If I use the Pre-Calc method I locate the longest back sight and two found monuments to localize and begin traversing the project
   b. If I do not have Pre-Calcs, I assume coordinates and direction once again to the longest back sight and begin traversing the project
5. I obtain measurements to the found monuments to the existing curbing features. I usually data collect curbs at all intersections and along the tangents to assist the office in locating the curbing to determine the offset of found monuments and in some instances establish centerline of streets when conflicting information is evident or no monumentation is available.
6. I collect walls and fences along the lines of the lot lines especially if they do not match possession or monumentation.
7. I take a minimum of twenty pictures to assist the office staff and prepare a field sketch to accommodate my field notes.
8. Upon completion of the field-data-collection-survey, I meet with the Project Surveyor to review the record map to establish intent on how the block was

created by the original mapper. I determine the procedure to use for distribution of excess/deficiency.

9. I allow staff to establish the limits of the block and make an analysis of the exterior and how they will support those calculations.
10. Upon acceptance of the exterior boundary, we review and analyze the data points and start with "What-if-scenarios" for a best fit to the calculations.
11. Upon finalization of the calculations, we prepare a Surveyors Report to support our findings and prepare package for the field crew to set final monumentation.
12. Field crews return to the field and set final monuments ONLY after the lines in question are set on either actual or offset. Dimensions are taken to improvements like walls, fences, structures to ensure that the line established in the office works with possession on the ground.
13. In the event we discover discrepancies with occupation, then additional measurements are taken and in some instances the supervising LS comes to the field to set the final Lot of the survey in question.
14. Following completion of the field survey updated information is provided to the office to be included in the Surveyors Report and those official documents required by law as well as contract are prepared and delivered to the client.

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