

Preserving the Boundaries



The boundaries of the Public Land Survey System were established in Clark County over 150 years ago. These boundaries are and have been perpetuated throughout time by preserving the positions of the original survey section corners. It is from these section corner positions that the boundaries of all lands are created and preserved. The duty of the County Surveyor is to diligently preserve and protect these positions so that the boundaries of all are also preserved. Just as a landowner must preserve and maintain its fences to prevent them from falling over and disappearing into the ground, the County Surveyor must preserve and maintain the Public Land Survey System or it will disappear along with the boundaries that they define.

The following is a brief history of surveying in Clark County along with some information that may give you a better understanding of surveying, the duties of the County Surveyor and some of the reasoning and methods used in boundary determination and preservation.

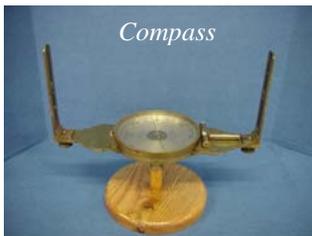
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The smoke hung in the dense canopy of the trees as the men awoke to the dawn of a new day that would only present them with the same tedious, exhausting job as the days or weeks before. A camp of five men resting in the forests of what would some day be Clark County, were stirring and making their way to the campfire for some coffee and breakfast. Who were these men? Were they loggers, explorers or homesteaders working to clear the lands for crops? Though their camp employed an axe man or two, their work had a much greater purpose than to clear land or harvest timber, for these men were working to mark the section corners that would become the boundaries of all lands on which the homesteaders would stake their claim.

The year was around 1848 and these men were here to complete the original survey of the many townships that are Clark County as we know it today. This survey party generally consisted of a Deputy Surveyor contracted by the General Land Office, two chainmen, a flagman and an ax man. According to the notes of the original survey, it took between 5 to 24 days to complete the survey of the interior section lines of one township. The interior lines required that 60 miles of line be cleared and measured. It would seem somewhat suspicious to accomplish this feat within the 5 days that was noted in one township. If anyone has brushed lines with a chainsaw it is hard to imagine how this could have been done using an axe.

Generally a separate surveyor would complete the survey of the exterior township boundaries. With compass and chain, the interior section lines would be surveyed and in almost all instances, a wood post hewn from an adjacent tree would be used to mark the corner position. The corner position was witnessed to blazes on a few nearby trees. As these section lines were run, geographical features, such as marshes, ridges, streams, windfalls, wagon trails and line trees were often noted. A compass was used to run the lines and would be somewhat similar to sighting a line using the sight of a rifle. Polaris



Compass

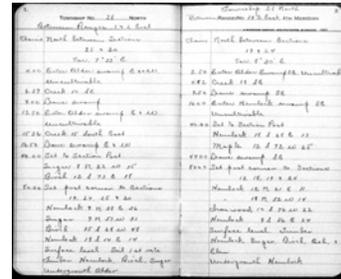
(North Star) observations were generally used to determine true north and thus a variance to magnetic north (as shown on a compass) was obtained. Most often a ½ chain (33') was used to measure the Section lines, because a full chain (66') was too long to get straightened out in the brush. Therefore, 160 ½ chains



Measuring Chain

were stretched in each mile run. These surveys were generally completed accurately (10' +/-), with an occasional chaining error. A couple of towns that were completed by the same original surveyor are considered to have been done fraudulently. This means that the specific survey instructions were not followed, short cuts were taken, and that notes and distances were falsified. Even though these “fraudulent” surveys were completed, the high courts have consistently held that the corner monument is correct even if placed by erroneous or fraudulent methods.

The notes of the original surveyor included streams, a soil rating, timber and undergrowth species. A typical note may be: “Surface Level, Soil 1st Rate, Timber-Sugar, Birch, Ash and Hemlock, undergrowth-hemlock” or “Surface Level and Wet, Soil 3rd Rate, Timber-Tamarac, Pine and Aspen, Undergrowth-Alder” These notes were examined by homesteaders to know what type of land they were buying and the availability of surface water for livestock to drink. Large and frequent areas of “windfall” were also noted and shown on the original survey maps.



Original Survey Field Notes

The north-south lines were run first and were to be 40 chains (2,640') between section corners. The east-west lines were measured between set corners, thus having varying dimensions, based upon the accuracy of the north-south lines. These east-west lines could be up to 66 feet long or short of 5,280 feet, with these actual distances shown on the Original Survey Plat Map. Government Lots were created along the shores of rivers and lakes. Fractional Sections exist along the north and west lines of each town.



The wood post section corner markers were only intended to be a temporary monument that would stand until permanently monumented by the town or county. This duty was severely neglected (in Clark County) with only 5 towns having stones set to perpetuate the corner position between 1902 and 1918. Based on the recorded surveys of those 5 Towns, about 2/3 of the corners marked the position where remains of the original corner post, or witness trees were recovered. Quite often these notes indicate that only the roots of bearing trees were recovered.

6” square by 36” long chiseled limestone or concrete monuments were set to permanently mark the corner position.

Between 1937 and 1942, the lands that are now the Clark County Forest, were resurveyed as part of a Works Progress America (WPA) program. Byrl Enerson, Deputy County Surveyor along with a crew from the Civilian Conservation Corp, re-monumented section corner positions with a 2” x 48” brass capped iron pipe and witnessed them to nearby trees or stumps. Enerson realized that



the stumps of pine trees provided the most permanent type to mark as they decayed much slower than any other native species. The original survey bearing trees were almost never a pine, but were anything that was close to the corner, most commonly being birch, basswood, elm, maple, and poplar, which has made the chance of any modern day recovery almost impossible. Based on his notes and survey maps, I estimate that Enerson recovered some remaining evidence of the original corner about 20 percent of the time and this was generally in the most likely areas of the county that they would be recovered, the lands of the County Forest.



If a road existed, Enerson would set the brass capped pipe as a witness to the corner, which most often was located in the road. The corner was then monumented with almost any type of metal object that could be found. It seems likely that a farmer's junk pile was sometimes raided to find a suitable iron monument. According to his notes, one could expect to find sleigh shoes, drag iron, plow coulters and shares, Model A wishbones and



bumpers, rifle barrels, grader blades, axle shafts, hinge bolts, king pins, rebar, miscellaneous iron pipes and a rare stone. I have recovered a few of these items, but often have to consult a local old machinery and junk expert to properly identify them. Because of frost heaving, road improvements and maintenance, very few of these monuments are recovered.

About 70 percent of the stumps or trees that were blazed and scribed by Enerson are recovered, probably because he marked pine, if possible. Some of the large pine stumps that were marked around 1940 are very solid today and have his "BT" scribing and blaze clearly visible. On one occasion, I used remains of these bearing stumps to determine that a corner monument had been moved. To a surveyor, it is an exhilarating feeling when these bearing trees or stumps can be recovered with the



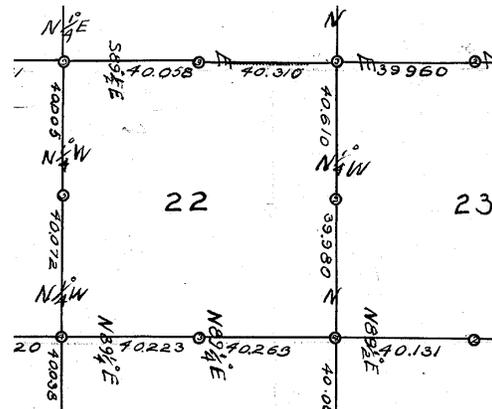
visible scribing. I have only recovered one stump from the original survey that had some partial scribing visible. Very little evidence of an original survey bearing tree has been recovered. When one considers all the land that was cleared, roads that were built, and logging done throughout the years, it is not at all surprising that few if any are recovered. Many of Enerson's witness monuments and off-road corners have been badly damaged due to logging operations, road ditching and mowing. Brush and trees grow up around the corner or witness monuments, and unknowingly are run over or hit. Many monuments have been found with bullet holes in them. Even if the corner or witness monuments are undisturbed, they are still generally in need of some maintenance work due to frost heaving.

Very few survey records (that were completed prior to 1970) exist in Clark County. The notes and field books of the previous County Surveyors are missing. Most of Clark County's survey records have been lost or destroyed; it is rumored that a previous County Surveyor kept all of the survey records in his house or garage and were destroyed by fire. The only available survey records are those that were either recorded in the Register of Deeds Office or where filed in the Department of Natural Resources office. The notes and maps from the original survey are kept at the Wisconsin Board of Commissioners of Public Lands. Were it not for these records, all would have been lost.

Currently, approximately 63 percent of the county's 3,805 section corner positions have been re-monumented; and a corresponding corner record sheet has been filed in the County Surveyor's office. A corner record sheet generally provides a detailed explanation of evidence recovered and considered in the re-establishment of a lost or obliterated section corner position. By Statute, a corner monument must now be witnessed to four durable monuments and can still be referenced to trees. The four yellow signs seen along side the road are witness monuments to a section corner only. Do not assume that they are any type of a boundary marker. They are set at random locations where they are least likely to be damaged or destroyed. Lines between opposite witness monuments do not intersect at the section corner monument. The evidence considered for corner re-establishment varies from corner to corner and most commonly includes recovered monuments, roads, fences, occupation lines, previous surveys of record, land owner testimony, and deeds. All evidence found is compared to the original survey notes and distances before a corner position is re-established. Many times the road centerline or an ancient fence line or corner is the best and only evidence available. Most towns have the old "Highway Orders" that originally ordered that a road be created and make a call for the road to be built on the section line and occasionally will say "by accurate survey".



As previously mentioned, the original survey was generally accurate within 10' +/- . I have compared a town's resurvey map to the original survey map and find distances to vary from 0' to over 50'. These distances are compared between corners from the resurvey where the original corner post or bearing trees was recovered. I previously mentioned that a 1/2 chain (33') was used to measure the Section lines; this resulted in differences in distances measured between actual corner positions originally and in subsequent surveys. A typical north-south section line was to be 5,280 feet, which is equal to 80 chains or 160 of the 1/2 chains typically used. If the chain had stretched an additional inch longer, it would create a 13' difference from what was intended to be measured. The resurvey maps also indicate a difference of about 33', which can be directly attributed to miscounting the number of 1/2 chains measured. The resurvey map shown illustrates some of the distance variations that were found between that of the original survey and the resurvey. The distances shown on the resurvey map are in chains; multiply them by 66' and you will have the distance in feet. If one applies the 13 foot error to the 33 foot error, one can see that some substantial differences can exist from the original survey. Even though errors may have been made, a surveyor has absolutely no right to move the position of an original corner, and the high courts have consistently held that the corner monument is correct no matter how much in error it was set in the original survey. Lands were homesteaded by the people who went to their land and accepted these corner monuments as their boundary.



The exterior boundaries of a section were the only lines run by the original survey. The corners set were to be and still are the basis for all land descriptions that exist today. Based on the original section corner positions all $\frac{1}{4}$ - $\frac{1}{4}$ or “forties” were then established simultaneously once the section corners were set, thus giving no $\frac{1}{4}$ - $\frac{1}{4}$ or “forty” any right to additional lands. These “forty” parcels or lines are derived from the position of the corners by methods established at the time of the original survey. Almost all interior fence lines were determined by neighbors and landowners. Landowners have told me about many different methods in which their boundary lines were measured, of which none were correct.

Many people assume that magnetic north (as read on a compass) is “North”. Magnetic north is always changing; shifting in a pattern to the east or west over a period of time. The difference between true north and magnetic north is called declination and can be obtained from survey observations or from a website. To give you an idea of how critical that this is to understand, I will give you an example of what difference this makes when we are retracing the surveys completed



around 1940. All bearings to the witness stumps or trees are recorded as magnetic bearings that were obtained with a compass. The difference in magnetic north from 1940 to today, is about $4\frac{1}{2}$ degrees. When I take a compass sighting, I must adjust the record bearing clockwise by $4\frac{1}{2}$ degrees. If I were to apply this bearing distance over 1,320 feet this would equal about a 104' difference in position. Many landowners have a difficult time understanding why fences don't fit the surveyed forty lines. I believe that most 40 fences were probably measured out by and agreed upon by adjoining land owners or possibly even individually by the first homesteader to arrive. I have seen some old advertisements for a wheel barrow that had a compass mounted on front and a counter for the wheel that would give you the distance. It was sold as something to “survey your own land”. Can you imagine how accurate this would be?

Land owners do have rights to make a claim to a fence or other accepted boundary if the survey lines do not fit what is being occupied or used. The Wisconsin Statutes contain law that gives landowners a legal claim, under certain circumstances, to the occupied lands that are excluded from a survey. Statute 893.25 defines an action called “Adverse Possession”, and generally requires that a fence or other visible lines or points of occupation have been in place for at least 20 years and have been commonly visible and accepted by the adjoining landowner. Each situation is different and legal advice should be obtained from an attorney. Often times these situations can be corrected without involving the courts, if the neighbors are in agreement that the fence lines are the boundary.

It is absolutely incorrect to assume that a 40 line is 1,320 feet in length, nor has it ever been true since the day the original survey was completed. It is also incorrect to assume that a “forty” is exactly 40 acres. Many deeds have been written that make these assumptions and will quite often lead to having a description that does not match what was intended to have been sold or bought. These descriptions can also create unintentional overlaps or gaps between deeds. Many deeds can be unclear as to the boundary position and can be left open to many different interpretations from different people or even the same person. The deed should be worded in very specific methods that provide a clear and undisputable definition of the boundary. Different words and phrases will control the interpretation of a deed and need to be carefully placed.

Today’s survey equipment is much more accurate than that of the 1800’s or even when compared to 30 years ago. The development of the Global Positioning System (GPS) has provided us with a versatile tool for measuring and obtaining monument and evidence positions. An orbiting constellation of satellites provides the means of determining a position anywhere on the earth to accuracy within one-half inch or under a centimeter. This means that I can measure to opposite corners of the county (40 miles) and be accurate to within one inch of the true distance between these two points. Realize this is only a tool that provides us with distance, direction and position, similar to that of the chain and compass from years previous. The GPS does not tell us where the corner is, unless the coordinates of the corner monument were previously collected. Many people believe that the GPS will tell us where a lost corner should be set. Remember that the original corner must be re-established in its original position and not where measurements indicate it should be. There are times when the original corners are re-established by measurements, but this only occurs when no evidence exists or when there is conflicting or inconclusive evidence.



Surveying procedures and methods are complicated and is often difficult (for many people) to understand and accept. It takes years of education, training and experience to become a Registered Land Surveyor (RLS) in the State of Wisconsin. As the Clark County Surveyor, my primary duties are to monument and maintain the public land survey system of section and quarter corners, as required by law. Even when the records are again complete, they will require constant updating and inspection.

Our forefathers came to America for many reasons, one of which was the right as free people to own land. As I execute my job, I help to maintain this right of ownership, which is a sacred dream to all Americans. It is the section corners and the preservation of their positions that ensure property boundaries are also preserved in the same location throughout the change of time and possession. I put this sacred right and surveying law above all else as I perform the County Surveyor’s duties, which have changed very little since 1848.

I have provided you with a little history and information about the work and the purpose for the work that I do as Clark County Surveyor. I hope that I have provided you with some type of an understanding of the history of surveying in Clark County and the importance of preserving and protecting the many section corner monuments that exist in our county. Though there is so much more that could be told, it must be left for another time. I ask that you please contact me with any questions or concerns that you may have and I will do my best to help you. I leave you with a final thought similar to how this story began.

A heavy fog hangs in the dense tree canopy as a new day takes me down a path walked once before. I am equipped with a measuring tool, a compass and a machete as I make my way through the tangled brush and swarms of mosquitoes in search of evidence of a lost place. For I am retracing the footsteps walked over 150 years ago, carrying equipment for measuring, sighting direction and clearing brush, in an effort to find the position of a lost section corner position. I know

that some rugged men had cleared this path for me and have left behind some type of evidence of that I wish to find. Their path is generally straight and true, but at times does wander and takes me to a place unexpected. I must be thorough in my search, being sure not to miss anything that may be a clue. I stop and hear what seems to be the sound of an axe chopping on a tree, for it draws me forward in the direction I need to travel, and then is gone, but leaves me to wonder if the spirit of the old surveyor is still amongst the lands of Clark County.

