

## HISTORY

The end of the Revolutionary War left the colonies with a great amount of land, many debts and little money. The vast lands to the west were not of much value unless they could be sold or used as payment for the services of the soldiers. Colonies with claims to these westerly lands were at first reluctant to give them up but later ceded many of those lands to the Federal government, and they became part of the public domain. The next step was to determine the best way to dispose of these lands.

In 1784, the Continental Congress appointed a committee, with Thomas Jefferson as the chairman, to devise a plan for the sale of the public lands. The plan was expressed in the following words, after the preamble which declared the ordinance applicable to the territory ceded by claimant states, purchased from the Indian inhabitants, and laid off into new states:

“It shall be divided into hundred of ten geographical miles square, each mile containing 6080 feet and four tenths of a foot, by lines to be run and marked due North and South, and others crossing these at right angles, the first of which lines, each way, shall be at ten miles from one of the corners of the state within which they may be. These hundreds shall be divided into lot of one square mile each, or 850 acres and four tenths of an acre, by lines running in a like manner due North and South, and others crossing these at right angles.”

This statement was taken from Papers of Thomas Jefferson, VII, 140-141 by Boyd and despite its unfamiliar hundreds and its unexpected quantities, contains the essence of our national rectangular survey system. That committee's report was not acted upon by the Congress.

In 1785, a new committee under a new chairman was formed. After much debate and amending, the report of this new committee was accepted and passed as the Ordinance of May 20, 1785.

### ORDINANCE OF 1785

This ordinance was to be administered by the Geographer of the United States, Thomas Hutchins, who died 1789. It provided for a system of rectangular surveys to be made on the ceded lands. It gave particulars on how the surveys were to be carried out:

1. Bounded plainly by marked trees
2. Lines shall be measured with a chain
3. Lines shall be exactly described on a plat
4. Surveyors shall pay due and constant attention to the variation of the magnetic meridian, and shall run and note all lines by true meridian, certifying with every plat what was the variation at the time of running the lines thereon notes.

It provided for the wages to be paid the surveyor (two dollars a mile) and how the lands would be platted and sold. It provided that the surveyor would be paid by the Federal government and his pay was to cover wages of chainman, markers and every other related expense. It completely ignored the problem of convergency of meridians.

Through the years, the Ordinance has been slightly modified and updated as problems were encountered. Some historians consider the Ordinance one of the best and most influential pieces of legislation of the Revolutionary period. Surveyors were briefly cast in a role for which there was no exact precedent, and to which, in the later history of the surveys, there would be no return.

Congress originally expected the Seven Ranges of Townships to be surveyed and ready for sale within one year. However, it took three years and three times the estimated cost of \$4,790.00 to complete the surveying of 1,082 miles. It is not surprising that Congress questioned the wisdom of the original program for squaring off the land. Congress' attempt at money-making had failed to yield enough money from land sales for one year's payment of the public debt. Possibly more important were the contributions to the tradition of public land surveying which promoted the settlement of the West and improved the mapping of the United States.

In 1812, the Government Land Office was established to carry out the public land surveys. This agency, which in 1946 became part of the Bureau of Land Management, has periodically published Instructions for the Survey of Public Lands (1855, 1881, 1890, 1894, 1902, 1930, 1947, and 1973). A new version, *The 2009 Manual of Instructions*, has now been published by the Government Printing Office. Prior to 1855, instructions were issued by the Geographer and later by the Surveyor General in the form of letters to the Deputy Surveyors.

Neither friends nor foes of the public land survey system, in its early years, seem to have anticipated the great extent to which the rectangular property lines would eventually determine lands use patterns. However, forecast concerning the ability of a rectangular survey system to prevent controversy over boundaries were generally proved correct. Today those who favor the system rest their case principally upon the fact that disputes over land title in the former public domain are few compared to the great amount of litigation in those parts of the United States not favored with basic rectangular land survey system.

Often writers' attentions are attracted to our rectilinear system and prompt such comments as "a striking example of geometry triumphant over physical geography", "one of the sights of the world from the air", and, of course, "unecological treatment of both woods and soil by farmers is here declared to be a result of rectangular subdivision of the land".

## PUBLIC DOMAIN

The public domain, lands held in trust by the government, includes portions of all states excepting the original thirteen states, the District of Columbia, Hawaii, Kentucky, Maine, Tennessee, Texas, Vermont, and West Virginia.

## SYSTEM OF RECTANGULAR SURVEYS

Much of the public lands have been surveyed and are still being surveyed in accordance with the appropriate edition of the Manual of Surveying Instructions. The 2009 Manual of Surveying Instructions is currently being used, having replaced the 1973 edition. (In the retracement of old surveys it is necessary to know under which instructions the original survey was made.)

The Ordinance of 1785 provided for the survey of public land into approximately 6 mile squares called townships. Townships would be further divided into 36 sections, each section being approximately 640 acres. Later instructions established rules for the subdivision of sections.

The Act of 1796 made several changes in the Act of 1785. It provided that parallel lines be run two miles apart both north and south, and east and west. Corners were to be set at one mile intervals on these lines. This divided the townships into one mile sections with three corners marked for each section. By the Act of 1800 the lines were again run one mile apart.

The original survey of a section required that, whenever possible, all four section corners be established and monumented, and that the quarter corners be set and monumented at the midpoint between section corners. In practice, however, few quarter corners were put exactly on line or half way between the sections corners. However, these quarter corners must be used in their originally set positions. This rule for setting quarter corners does not apply in a section on the north or west boundary of a township when a deficiency or excess has been placed in the northerly or westerly half of section.

At first, the surveys were carried out by private surveyors under contract. After 1910, the General Land Office made the surveys using government employees. Today this function is performed by the Cadastral Survey of the Bureau of Land Management. Originally, only section corners and quarter corners were set by the government or contract surveyors, with further subdivision left to private surveyors after the land had passed from federal ownership. In recent years, Government surveyors have on many occasions subdivided sections, establishing corners for small fractional tracts.

## SURVEY RECORDS

Surveys of the public lands have been completed, or substantially completed, in the states of Alabama, Florida, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, and Wisconsin. The original survey records and plats have been transferred to the states. Some records for Oklahoma are still kept by the Bureau of Land Management in Washington, D.C. Copies of most, but not all, of the state records are also filed in Washington.

Surveys are still in progress in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. The original records for surveys for these states are kept in regional offices of the Bureau of Land Management. Copies of field notes and plats are available for a fee.

The Colorado records are filed at the Bureau of Land Management office at 2850 Youngfield Street in Lakewood. Field notes and plats have been recorded on Microfilm, and may be examined, and copies made, very expeditiously.

The public lands have been divided, and are still being divided, in accordance with regulations imposed by law. The public lands are divided into Townships, and these may be further divided into sections, quarter sections, and in some instances into smaller fractional units. In 1785, a resolution by the Continental Congress established the system for surveying, marking and disposing of the public lands. This resolution provided for townships six miles square, divided into thirty six sections. Changes, mostly of a minor nature, have occurred over the years, but the system remains basically the same. One of the principles established at this time is of primary importance to the surveyor or anyone else concerned with land boundaries. It is stated thusly:

***“Boundaries of Public Lands, when established by duly authorized surveyors, and when approved by the Director, are unchangeable. The original corners established by the surveyor stand as the true corners they were intended to represent, whether in the place shown by the field notes or not. The primary purpose of the Public Land Survey is to mark the boundaries on the ground; the field notes and plats are subordinate.”***

The regulations for subdivision of the public lands have been changed through the years, so differences occur, depending on the date of the survey. Sections numbering from 1785 to 1796 provided for section 1 to be in the Southeast corner of a township, section 36 in the Northwest corner. Section 6 was at the Northeast corner, and section 7 was adjacent to section 1 to the West. See Figure 1.

Figure 1

36	30	24	18	12	6
35	29	23	17	11	5
34	28	22	16	10	4
33	27	21	15	9	3
32	26	20	14	8	2
31	25	19	13	7	1

This system of numbering sections was based on the procedure used in surveying the sections lines, but for some reasons unknown was changed in May 1796 to the system used today, with section 1 in the Northeast corner. See Figure 2.

Figure 2

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36