Public Land Survey System

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The **Public Land Survey System (PLSS)** is a method used in the United States to survey and identify land parcels, particularly for titles and deeds of rural, wild or undeveloped land. Its basic units of area are the township and section. It is sometimes referred to as the **rectangular survey system**, although non rectangular methods such as meandering can also be used. The survey was "the first mathematically designed system and nationally conducted cadastral survey in any modern country" and is "an object of study by public officials of foreign countries as a basis for land reform." [1] The detailed survey methods to be applied for the PLSS are described in a series of Instructions and Manuals issued by the General Land Office, the latest edition being the "The Manual of Instructions for the Survey of the Public Lands Of The United States, 1973" available from the U.S. Government Printing Office. The Bureau of Land Management (BLM) announced in 2000 an updated manual is currently under preparation.

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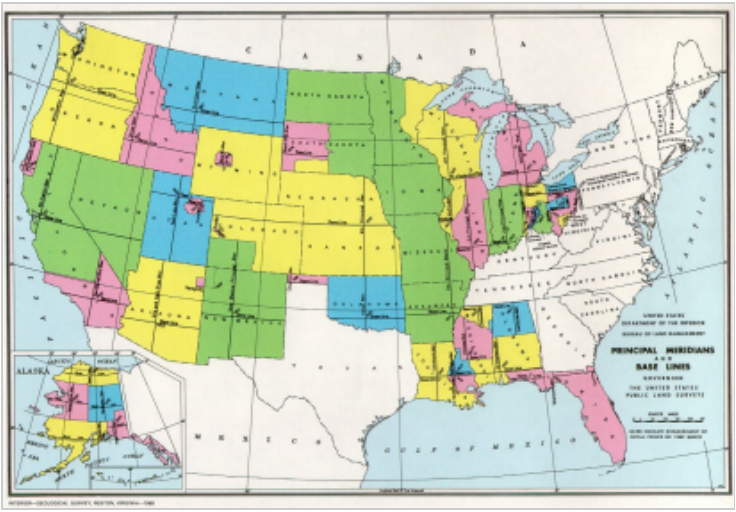

Figure 1. This BLM map depicts the principal meridians and baselines used for surveying states (colored) in the PLSS.

History of the system

The system was created by the Land Ordinance of 1785. It has been expanded and slightly modified by Letters of Instruction and Manuals of Instruction, issued by the General Land Office and the Bureau of Land Management and continues in use in most of the states west of Pennsylvania, south to Florida, Alabama, and Mississippi, west to the Pacific Ocean, and north into the Arctic in Alaska.

Origins of the system

The original colonies (including their derivatives Maine, Vermont, Tennessee, Kentucky and West Virginia) continued the British system of metes and bounds. This system describes property lines based on local markers and bounds drawn by humans, often based on topography. A typical, yet simple, description under this system might read "From the point on the north bank of Muddy Creek one mile (1.6 km) above the junction of Muddy and Indian Creeks, north for 400 yards, then northwest to the large standing rock, west to the large oak tree, south to Muddy Creek, then down the center of the creek to the starting point."

Particularly in New England, this system was supplemented by drawing up town plats. The metes-and-bounds system was used to describe a town of a generally rectangular shape, 4 to 6 miles (~6 to 10 km) on a side. Within this boundary, a map or plat was maintained that showed all the individual lots or properties.

There are some difficulties with this system:

- Irregular shapes for properties make for much more complex descriptions.
- Over time, these descriptions become problematic as trees die or streams move by erosion.
- It wasn't useful for the large, newly surveyed tracts of land being opened in the west, which were being sold *sight unseen* to investors.

In addition this system didn't work until there were already people on the ground to maintain records. In the 1783 Treaty of Paris recognizing the United States, Britain also recognized American rights to the land south of the Great Lakes and west to the Mississippi River.

The Continental Congress passed the Land Ordinance of 1785 and then the Northwest Ordinance in 1787 to control the survey, sale, and settling of the new lands. The original 13 colonies donated their western lands to the new Union, for the purpose of giving land for new states. These include the lands that formed the

Northwest Territory, Kentucky, Tennessee, Alabama, and Mississippi. The state that gave up the most was Virginia, whose original claim included most of the Northwest Territory and Kentucky, too. Some of the western land was claimed by more than one state, especially in the Northwest, where parts were claimed by Virginia, Pennsylvania, and Connecticut, all three of which had claimed lands all the way to the Pacific Ocean.

Applying the system

The first surveys under the new rectangular system were in eastern Ohio in an area called the Seven Ranges.

The Beginning Point of the U.S. Public Land Survey is a United States National Historic Landmark.

Ohio was surveyed in several major subdivisions, collectively described as the Ohio Lands, each with its own meridian and baseline. The early surveying, particularly in Ohio, was performed with more speed than care, with the result that many of oldest townships and sections vary considerably from their prescribed shape and area. Proceeding westward, accuracy became more of a consideration than rapid sale, and the system was simplified by establishing one major north-south line (principal meridian) and one east-west (base) line that control descriptions for an entire state or more. For example, a single Willamette Meridian serves both Oregon and Washington. County lines frequently follow the survey, so there are many rectangular counties in the Midwest and the West.

Non-PLSS regions

The system is in use in some capacity in most states, but not in Hawaii and Texas or any of the territory under the jurisdiction of the Thirteen Colonies at the time of independence, with the exception of the area that became the Northwest Territory and some of the Southern states. These exclusions are now Georgia, Connecticut, Delaware, Kentucky, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, and Virginia.

The old Cherokee lands in Georgia use the term *section* as a land designation, but does not define the same area as the *section* used by the PLSS.

Major exceptions to the application of this system in the remaining states:

- California, before statehood in 1850, surveyed only the boundaries of Spanish land grants (*ranchos*); since statehood the PLSS system has been used throughout.
- Hawaii adopted a system based on the Hawaii native system in place at the time of annexation.
- Louisiana recognizes early French and Spanish descriptions called *arpents*, particularly in the southern part of the state, as well as PLSS descriptions.
- Maine uses a variant of the system in unsettled parts of the state.
- New Mexico uses the PLSS, but has several areas that retain original metes and bounds left over from Spanish and Mexican rule. These take the form of land grants similar to areas of Texas and California.
- Ohio's Virginia Military District was surveyed using the metes and bounds system. Areas in northern Ohio were surveyed with an earlier standard, often referred to as Congressional Survey townships, which are just five miles (8 km) on each side instead of six. Hence, there are 25 sections per township there, rather than 36.
- Texas has a hybrid of its own early system, based on Spanish land grants, and a variation of the PLSS.

Mechanics

Survey design and protocol

The surveying of any regional area is a multi-step process. First, two controlling survey lines are established for some relatively large area: a baseline, which runs east-west and a principal meridian, which runs north-south (Fig. 1). These two lines pass through, and intersect at, a location known as an initial point. Next, at a defined distance interval, commonly 24 or 30 miles (48 km) depending on the year and location, standard parallels are established parallel to the baseline. The meridian, baseline and standard parallels thus established form a lattice upon which all further surveying is then based. Subsequent work divides the land into survey townships of roughly 36 square miles (~93 km²) or 6 miles (~9.7 km) on each side. This is done by the establishing of township and range lines, which run parallel to the baseline and principal meridian, respectively, at six mile (10 km) intervals. Lastly, townships are subdivided into 36 sections of one square mile (640 acres, ~2.6 km²) and 144 quarter-sections of 0.25 square mile (160 acres, ~0.65 km²) each. (See descriptions and figures illustrating the system (http://www.landprints.com/LpRectangularSurveySystem.htm)). The federal government typically surveys only to the quarter-section level; smaller parcels are usually surveyed later by private surveyors if necessary.

The townships and sections are indexed based on the township's position relative to the initial point and the section's location within the designated township. Township, range and section are abbreviated as T, R and S, respectively, and cardinal bearings from the initial point by N, S, E, and W, and each principal meridian has its abbreviation. Thus, for example, S13-R20E-T1S MDM refers to: Township 1 South, Range 20 East, Section 13, Mount Diablo Meridian, or the 13th section in the first township south of the baseline and 20th township east of the principal meridian. The sections within a township are numbered boustrophedonically (Fig. 2). Starting in the northeast corner, sections in the first row (sections 1-6) are numbered east to west, those in the second row (sections 7-12) are numbered west to east, the direction continuing to alternate with each row, until section 36 is reached in the southeast corner. Distances are measured in U.S. survey miles, which are equal to eighty Gunter's chains, the standard unit of length used in surveying; these differ from international miles by a few millimeters. The importance of the PLSS is one of the many barriers to metrication of property title in the United States.

The intersection of a township line with a range line is called a *township corner*, of a section line with another section, township or range line a *section corner*, and a point halfway between two section corners a *quarter corner*. At each such corner, a *corner monument* is established to mark the location of the corner on the ground. This monument is the legally binding mark used for setting property lines as the land is sold off and/or settled; it is the culminating work of the entire survey. As with most surveying specifications, those for the corners have changed over time. In the 19th century, the monuments were commonly a rock pile, a wooden post, or a combination of the two. Trees were also sometimes used when available. In the 20th century, steel pipes with caps, supported by mounds of rock, became required

(e.g. Fig. 3). Monuments are always witnessed to by the marking of other nearby natural objects on the ground. These witnesses can be trees, rocks or trenches dug in the ground; the exact locations of the witness objects, and the markings made on them, are recorded in the surveyor's official field notes. Witness trees are commonly referred to as bearing trees, and they are highly important, not just for their legal purposes, but also for their use by ecologists in the estimation of historic forest vegetation conditions. The witness objects are designed to allow subsequent surveyors and landowners to find the original corner monument location should the actual monument be destroyed. It was not uncommon for squatters or homesteaders to destroy corner monuments if they felt the patenting of the land would threaten their residence on it. For this reason, destruction of corner monuments or their witness objects is a federal offense.

Because the grid is rectangular and the earth is round, adjustments must be made periodically; not all sections can be one square mile nor can all townships be exactly 36 square miles (93 km^2). These adjustments are done within each township by starting the sectional surveys of the township in the southeast corner and moving progressively toward the northwest corner. The northernmost and westernmost tier of sections—11 in all—are allowed to deviate from one square mile, but the other 25 are not. This method accommodates the curvature effects, and also allows for the correction of errors made during the surveying—which were not uncommon—without overly compromising the rectangular nature of the system.

Understanding property descriptions

Indiana The description of a particular ten acre (40,000 m^2) parcel of land under this system might be given as **NW1/4 SW1/4 SE1/4 SEC 22 T2S R3E**. The elements of such descriptions are interpreted from right to left, so we are describing a plot of land in the township that is the third east of the Range Line (R3E) and the second south of the base line (T2S). We are also looking at section 22 in that township (refer to the grid above). Next that section is divided into quarters (160 acres each), and we should be in the SE quarter section. That section is divided again in quarters (40 acres) and the description calls for the SW quarter. Last in this description, it is quartered again into 10-acre (40,000 m^2) plots, as we want the NW quarter.

So, in language, the example plot is the NW quarter of the SW quarter of the SE quarter of section 22 of the township that is the second south of the base line and the third east of the range line. Some descriptions will use other references such as S½ to refer to the south half of a quarter section. As an area became settled a township and county name might replace the range and base line numbers, but they can always be traced backwards.

Some western states have only one base line. (Notice that these states have straight line borders to the north or south.) This means that all the townships in the state are either north or south. (The base line for survey of the Kansas and Nebraska territories was the 40th parallel dividing them.) They also typically have only one principal meridian. (For examples, the Kansas range line is 97° west of Greenwich). In the Maine variant of the system, the range line is called the "East Line of State"; all ranges are to the west of this line, and are normally written T*x*R*x* WELS, or "West from East Line of State".

Sizes of PLSS subdivisions

The following table indicates some distance and area conversions in the PLSS:

	miles	mile²	acres	m²	km²	
Quadrangle	24 by 24	576	368,640		1,492	Usually 16 townships
Township	6 by 6	36	23,040		93	Usually 36 sections
Section		1	640		2.6	
Half-section		1/2	320	1,294,999	1.3	
Quarter-section		1/4	160	647,500		
Half of quarter-section		1/8	80	323,750		
Quarter of quarter-section		1/16	40	161,875		

List of Meridians

Main article: List of principal and guide meridians and base lines of the United States

Name	Adopted	Initial point	State(s)
Black Hills Meridian	1878	43°59′44″N 104°03′16″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=43_59_44_N_104_03_16_W_&title=Black+Hills+Meridian)	South Dakota
Boise Meridian	1867	43°22′21″N 116°23′35″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=43_22_21_N_116_23_35_W_&title=Boise+Meridian)	Idaho
Chickasaw Meridian	1833	35°01′58″N 89°14′47″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=35_01_58_N_89_14_47_W_&title=Chickasaw+Meridian)	Mississippi
Choctaw Meridian	1821	31°52′32″N 90°14′41″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=31_52_32_N_90_14_41_W_&title=Choctaw+Meridian)	Mississippi

Cimarron Meridian	1881	36°30′05″N 103°00′07″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=36_30_05_N_103_00_07_W_&title=Cimarron+Meridian)	Oklahoma
Copper River Meridian	1905	61°49′04″N 145°18′37″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=61_49_04_N_145_18_37_W_&title=Copper+River+Meridian)	Alaska
Fairbanks Meridian	1910	64°51′50.048″N 147°38′25.949″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=64_51_50.048_N_147_38_25.949_W_&title=Fairbanks+Meridian)	Alaska
Fifth Principal Meridian	1815	34°38′45″N 91°03′07″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=34_38_45_N_91_03_07_W_&title=Fifth+Principal+Meridian)	Arkansas, Iowa, Minnesota, Missouri, North Dakota & South Dakota
First Principal Meridian	1819	40°59′22″N 84°48′11″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_59_22_N_84_48_11_W_&title=First+Principal+Meridian)	Ohio & Indiana
Fourth Principal Meridian	1815	40°00′50″N 90°27′11″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_00_50_N_90_27_11_W_&title=Fourth+Principal+Meridian)	Illinois
Fourth Principal Extended Meridian	1831	42°30′27″N 90°25′37″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=42_30_27_N_90_25_37_W_&title=Fourth+Principal+Extended+Meridian)	Minnesota & Wisconsin
Gila and Salt River Meridian	1865	33°22′38″N 112°18′19″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=33_22_38_N_112_18_19_W_&title=Gila+and+Salt+River+Meridian)	Arizona
Humboldt Meridian	1853	40°35′02″N 124°07′10″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_35_02_N_124_07_10_W_&title=Humboldt+Meridian)	California
Huntsville Meridian	1807	34°59′27″N 86°34′16″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=34_59_27_N_86_34_16_W_&title=Huntsville+Meridian)	Alabama & Mississippi
Indian Meridian	1870	34°29′32″N 97°14′49″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=34_29_32_N_97_14_49_W_&title=Indian+Meridian)	Oklahoma
Kateel River Meridian	1956	65°26′16.374″N 158°45′31.014″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=65_26_16.374_N_158_45_31.014_W_&title=Kateel+River+Meridian)	Alaska
Louisiana Meridian	1807	31°00′31″N 92°24′55″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=31_00_31_N_92_24_55_W_&title=Louisiana+Meridian)	Louisiana
Michigan Meridian	1815	42°25′28″N 84°21′53″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=42_25_28_N_84_21_53_W_&title=Michigan+Meridian)	Michigan & Ohio
Mount Diablo Meridian	1851	37°52′54″N 121°54′47″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=37_52_54_N_121_54_47_W_&title=Mount+Diablo+Meridian)	California & Nevada
Navajo Meridian	1869	35°44′56″N 108°31′59″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=35_44_56_N_108_31_59_W_&title=Navajo+Meridian)	Arizona
New Mexico Principal Meridian	1855	34°15′35″N 106°53′12″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=34_15_35_N_106_53_12_W_&title=New+Mexico+Principal+Meridian)	Colorado & New Mexico
Montana Principal Meridian	1867	45°47′13″N 111°39′33″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=45_47_13_N_111_39_33_W_&title=Montana+Principal+Meridian)	Montana
Salt Lake Meridian	1855	40°46′11″N 111°53′27″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_46_11_N_111_53_27_W_&title=Salt+Lake+Meridian)	Utah
San Bernardino Meridian	1852	34°07′13″N 116°55′48″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=34_07_13_N_116_55_48_W_&title=San+Bernardino+Meridian)	California
Second		38°28′14″N 86°27′21″W (http://stable.toolserver.org/geohack/geohack.php?	Illinois &

Principal Meridian	1805	pagename=Public_Land_Survey_System&params=38_28_14_N_86_27_21_W_&title=Second+Principal+Meridian)	Indiana
Seward Meridian	1911	60°07′37″N 149°21′26″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=60_07_37_N_149_21_26_W_&title=Seward+Meridian)	Alaska
Sixth Principal Meridian	1855	40°00′07″N 97°22′08″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_00_07_N_97_22_08_W_&title=Sixth+Principal+Meridian)	Colorado, Kansas, Nebraska, South Dakota & Wyoming
Saint Helena Meridian	1819	30°59′56″N 91°09′36″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=30_59_56_N_91_09_36_W_&title=Saint+Helena+Meridian)	Louisiana
Saint Stephens Meridian	1805	30°59′51″N 88°01′20″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=30_59_51_N_88_01_20_W_&title=Saint+Stephens+Meridian)	Alabama & Mississippi
Tallahassee Meridian	1824	30°26′03″N 84°16′38″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=30_26_03_N_84_16_38_W_&title=Tallahassee+Meridian)	Florida & Alabama
Third Principal Meridian	1805	38°28′27″N 89°08′54″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=38_28_27_N_89_08_54_W_&title=Third+Principal+Meridian)	Illinois
Uintah Meridian	1875	40°25′59″N 109°56′06″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=40_25_59_N_109_56_06_W_&title=Unitah+Meridian)	Utah
Umiat Meridian	1956	69°23′29.654″N 152°00′04.551″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=69_23_29.654_N_152_00_04.551_W_&title=Umiat+Meridian)	Alaska
Ute Meridian	1880	39°06′23″N 108°31′59″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=39_06_23_N_108_31_59_W_&title=Ute+Meridian)	Colorado
Washington Meridian	1803	30°59′56″N 91°09′36″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=30_59_56_N_91_09_36_W_&title=Washington+Meridian)	Mississippi
Willamette Meridian	1851	45°31′11″N 122°44′34″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=45_31_11_N_122_44_34_W_&title=Willamette+Meridian)	Oregon & Washington
Wind River Meridian	1875	43°00′41″N 108°48′49″W (http://stable.toolserver.org/geohack/geohack.php?pagename=Public_Land_Survey_System&params=43_00_41_N_108_48_49_W_&title=Wind+River+Meridian)	Wyoming

Social impact

Education

Under the 1785 act, section 16 of each township was set aside for school purposes, and as such was often called the *school section*. (Section 36 was also frequently used as a school section.) The various states and counties ignored, altered or amended this provision in their own ways, but the general (intended) effect was a guarantee that local schools would have an income and that the community schoolhouses would be centrally located for all children. An example of land allotments made specifically for *higher* education is Ohio's College Township.

Urban design

As roads have typically been laid out along section boundaries spaced one mile (1.6 km) apart, growing urban areas have adopted road grids with mile-long "blocks" as their primary street network. Such roads in urban areas are known as *arterials* or *section line roads*, usually designed primarily for automobile travel and limited in their use for non-motorized travel. In post-World War II suburbs, commercial development has largely occurred along and at intersections of arterials, while the rest of the former square-mile sections have generally filled with residential development, as well as schools, religious facilities, and parks. One example of this is Mile Road System of Detroit, Michigan. Occasionally, and more frequently in a metropolitan region's inner postwar suburbs than in outer areas, arterials are located at approximately half-mile intervals. This strictly regimented urban (or suburban) structure has coincided with the similarly strict practice of Euclidean zoning, in which use of a property is dictated and regulated by zoning district, the boundaries of which often being derived from locations of arterials.

Farmland in Kansas divided into quarter sections

Popular culture

The land system is an important part of American history and culture. Among other things, the stock phrases "lower 40", "front 40", "back 40", and "40 acres and a mule," which are sometimes heard in American movies, reference the quarter-quarter section.

- The "lower 40" in a quarter-section is the one at lowest elevation, i.e. in the direction that water drains. The "lower 40" is frequently the location of or the direction of a stream or a pond.
- The phrase "40 acres and a mule" was the compensation apocryphally promised by the Freedman's Bureau following the American Civil War.

Homesteading, another staple of American western culture, was also dependent on the Public Land Survey System. In the original Homestead Act of 1862, during the Lincoln Administration, each settler was allocated 160 acres (0.65 km^2) of land; in other words, a quarter-section.

Later amendments of the Homestead Act allocated more land, as much as 640 acres (2.6 km^2); in other words, a section. This was a good revision to apply to land that was drier and/or more desolate than the earlier, more desirable lands already settled. Many times, this land was more suited to ranching than to farming.

Notes

1. ↑ Joseph S. Mendinghall (December 27, 1974), *National Register of Historic Places Inventory-Nomination: Beginning Point / Beginning Point of the U.S. Public Land Survey (http://pdfhost.focus.nps.gov/docs/NHLS/Text/66000606.pdf)* , National Park Service, http://pdfhost.focus.nps.gov/docs/NHLS/Text/66000606.pdf

References

- Andro Linklater, *Measuring America: How an Untamed Wilderness Shaped the United States and Fulfilled the Promise of Democracy*, New York: Walker & Co., 2002. ISBN 0-8027-1396-3 (softbound ISBN 0-452-28459-7) (Describes the history and social context of the PLSS and some of the political maneuvering that went into its creation.)
- Payson J. Treat. *The National Land System, 1785-1820*. New York: E.B. Treat, 1910 (Reprinted in 1967 and 2003) ISBN 1-57588-797-5
- C. Albert White. *A History of the Rectangular Survey System*. Washington: U.S. Dept. of the Interior, Bureau of Land Management : For sale by Supt. of Docs., U.S. G.P.O., 1983
- Curt Meine. *Correction Lines: Essays on Land, Leopold, and Conservation*. Washington, D.C.: Island Press, 2004.

See also

- Groma surveying
- Benson Syndicate
- Dominion Land Survey (Canada)

- General Land Office
- Section (United States land surveying)
- State Plane Coordinate System
- Surveying
- Beginning Point of the U.S. Public Land Survey
- Beginning Point of the Louisiana Purchase Survey

Meridians in the United States

- Principal meridian

External links

- Free PLSS Data (http://usgdr.org/PLSS.aspx)
- Bureau of Land Management (http://www.blm.gov/)
  - Manual of Instructions for the Survey of the Public Lands of the United States, 1973 (http://www.blm.gov/cadastral/Manual/73man) (as PDF (http://www.blm.gov/az/cadastral/manual/manindex.htm)) - Official manual for PLSS
  - Resources page of the U.S. Department of the Interior, Bureau of Land Management (http://www.blm.gov/wo/st/en/prog/more/cadastralsurvey/tools.html/)
  - National Land Information System (NILS) (http://www.blm.gov/wo/st/en/prog/more/nils.html) - Cadastral records and land parcel information including GeoCommunicator below
  - NILS GeoCommunicator (http://www.geocommunicator.gov) - Cadastral records and land parcel information
- The Public Land Survey System (PLSS) (http://www.nationalatlas.gov/articles/boundaries/a_plss.html) - general reference in the nationalatlas.gov (National Atlas of the United States)
- U.S. Geological Survey (http://www.usgs.gov/)
- National Geodetic Survey (http://www.ngs.noaa.gov/)
- American Congress on Surveying & Mapping (http://www.acsm.net/)
- Township and Range - Public Land Survey System on Google Earth (http://www.earthpoint.us/Townships.aspx) - convert latitude/longitude to township and range
- TRS data to latitude/longitude calculator (http://www.esg.montana.edu/gl/trs-data.html) - for 17 western U.S. states
- www.resurvey.org (http://www.resurvey.org/) - reference for land surveyors working in the PLSS
- Researching New Mexico Land Grants (http://www.nmcpr.state.nm.us/archives/land_grants.htm)
- IIC Minnesota Historical Vegetation (http://iic.gis.umn.edu/finfo/land/histveg2.html)

- The Minnesota Bearing Tree Database (http://files.dnr.state.mn.us/eco/nhnrp/brgtree.pdf)
- The Principal Meridian Project (http://www.pmproject.org/index.htm)
- Locating Oil or Gas Wells Using The Federal Township and Range System (http://www.geomore.com/Township%20Range%20Explanation.htm)
- Lists of the coordinates used for section corners in Kansas City, Missouri (http://www.kcmo.org/pubworks.nsf/web/gis?opendocument)
- TractBuilder Quartering/Aliquot Tool (http://www.tractbuilder.com/tools_quartering.html)

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