[redacted]

Subject: Using the township/public lands survey system to re-district---reference info from Wikipedia
Date: Monday, May 9, 2011 1:49 PM
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Conversation: Using the township/public lands survey system to re-district---reference info from Wikipedia

Greetings:

I've previously sent in a suggestion that the old rectangular township system be used as a gerrymander-resistant method of redictricting. Here's some reference info on it. (I'm not sure if the graphics from the original made it through the cut-and-paste process.....

Public Land Survey SystemFrom Wikipedia, the free encyclopediaJump to: navigation, search

[edit] Non-PLSS regionsThe 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 West Virginia.

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 mostly throughout.
Hawaii adopted a system based on the Kingdom of 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 (primarily what originally was the Connecticut Western Reserve) 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.
Wisconsin had French settlement prior to the PLSS in the areas of Green Bay and Prairie du Chien. Both have small amounts of the long, narrow French lots along some water frontage.
Michigan had French settlement prior to the PLSS along the Detroit and St. Clair rivers, and near Sault Ste. Marie, Marquette, and Ypsilanti. These were all examples of the French "long lots".
[edit] Mechanics
Illustration of the system from the National Atlas[edit] Commonly used terms[3]Aliquot part: The standard subdivisions of a section, such as a half section, quarter section, or quarter-quarter section.

Base line: A parallel of latitude, or approximately a parallel of latitude, running through an arbitrary point chosen as the starting point for all sectionalized land within a given area.

Cadastral: Having to do with the boundaries of land parcels.

Government lot: A subpart of a section which is not described as an aliquot part of the section, but which is designated by number, for example, Lot 3. A lot may be regular or irregular in shape, and its acreage may vary from that of regular aliquot parts. These lots frequently border water areas excluded from the PLSS.

Initial point: The starting point for a survey.

Land Grant: A land grant is an area of land to which title was conferred by a predecessor government and confirmed by the U.S Government after the territory in which it is situated was acquired by the United States. These lands were never part of the original public domain and were not subject to subdivision by the PLSS.

Principal meridian: A meridian line running through an arbitrary point chosen as a starting point for all sectionalized land within a given area.

Public domain: Land owned by the Federal government for the benefit of the citizens. The original public domain included the lands that were turned over to the Federal Government by the Colonial States and the areas acquired later from the native Indians or foreign powers. Sometimes used interchangeably with Public lands.

Public lands: Lands in public ownership, therefore owned by the Federal government. Sometimes used interchangeably with Public domain.

Range: A vertical column of townships in the PLSS.

Section: A one-square-mile block of land, containing 640 acres, or approximately one thirty-sixth of a township. Due to the curvature of the Earth, sections may occasionally be slightly smaller than one square mile.

Township: An approximately 6-mile (9.7 km) square area of land, containing 36 sections. Also, a horizontal row of townships in the PLSS.

Witness Corner: A marker set on a property line, near a corner. The witness corner is used when it is impossible to place a monument in the exact location of a section, quarter, or sixteenth corner.

[edit] Summary of objects and data required to be noted during survey[5]1. The precise length of every line run, noting all necessary offsets therefrom, with the reason and mode thereof.

2. The kind and diameter of all "bearing trees”, with the course and distance of the same from their respective comers; and the precise relative position of witness corners to the true corners.

3. The kinds of materials (earth or stone) of which mounds are constructed—the fact of their being conditioned according to instructions - with the course and distance of the "pits", from the centre of the mound, where necessity exists for deviating from the general rule.

4. Trees on line. The name, diameter, and distance on line to all trees which it intersects.

5. Intersections by line of land objects. The distance at which the line first intersects and then leaves every settler's claim and improvement; prairie; river, creek, or other "bottom"; or swamp, marsh, grove, and wind fall, with the course of the same at both

points of intersection; also the distances at which you begin to ascend, arrive at the top, begin to descend, and reach the foot of all remarkable hills and ridges, with their courses, and estimated height, in feet, above the level land of the surrounding country, or above the bottom lands, ravines, or waters near which they are situated.

6. Intersections by line of water objects. All rivers, creeks, and smaller streams of water which the line crosses; the distance on line at the points of intersection, and their widths on line. In cases of navigable streams, their width will be ascertained between the meander corners, as set forth under the proper head.

7. The land's surface - whether level, rolling, broken, or hilly.

8. The soil - whether first, second, or third rate.

9. Timber - the several kinds of timber and undergrowth, in the order in which they predominate.

10. Bottom lands - to be described as wet or dry, and if subject to inundation, state to what depth.

11. Springs of water - whether fresh, saline, or mineral, and the course of the stream flowing from them.

12. Lakes and ponds - describing their banks and giving their height, and also the depth of water, and whether it be pure or stagnant.

13. Improvements. Towns and villages; Indian towns and wigwams; houses or cabins; fields, or other improvements; sugar tree groves, sugar camps, mill seats, forges, and factories.

14. Coal banks or beds; peat or turf grounds; minerals and ores; with particular description of the same as to quality and extent, and all diggings therefore; also salt springs and licks. All reliable information you can obtain respecting these objects, whether they be on your immediate line or not, is to appear in the general description to be given at the end of the notes.

15. Roads and trails, with their directions, whence and whither.

16. Rapids, cataracts, cascades, or falls of water, with the height of their fall in feet.

17. Precipices, caves, sink-holes, ravines, stone quarries, ledges of rocks, with the kind of stone they afford.

18. Natural curiosities, interesting fossils, petrifactions, organic remains, also all ancient works of art, such as mounds, fortifications, embankments, ditches, or objects of like nature.

19. The variation of the needle must be noted at all points or places on the lines where there is found any material change of variation, and the position of such points must be perfectly identified in the notes.

[edit] Survey design and protocolThe 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). The federal government typically surveys only to the quarter-section level; smaller parcels are usually surveyed later by private surveyors if necessary.

Figure 2. This General Land Office diagram shows the theoretical sectioning of a standard survey township.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-T1S-R20E 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 were measured using chains and links based on Edmund Gunter’s chain for plotting ground. A chain was made up of 100 links. Each link measured 7.92 inches (201 mm). Each chain measured 66 feet (20 m) long. 80 chains equal one U.S. Survey Mile. NOTE: A U.S. Survey Mile differs from the International Mile by a few millimeters. In areas where measuring by chain was not possible, such as variable elevated terrain or terrain with water obstructions, distance was calculated using triangulation. The importance of the PLSS is one of the many barriers to metrication of property title in the United States.

Figure 3. The engraved cap on a corner monument pipe, in western Yosemite National Park, placed in 1905 during the Park boundary resurveyThe 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.

Figure 4. Kent County, Michigan in 1885 as a PLSS example, showing 24 named townships and sectional subdivisions.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 km2). 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.

[edit] Understanding property descriptions
A Right of Way marker in western IndianaThe description of a particular ten acre (40,000 m2) 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 m2) 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 TxRx WELS, or "West from East Line of State".

[edit] Sizes of PLSS subdivisionsThe following table indicates some distance and area conversions in the PLSS:

dimensions (miles)	(mile2) area (acres)	(m2)	(km2)	notes
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 by 1	1	640	2.6	
Half-section	1 by 1⁄2	1⁄2	320	1,294,994	1.3
Quarter-section	1⁄2 by 1⁄2	1⁄4	160	647,497	
Half of quarter-section	1⁄2 by 1⁄4	1⁄8	80	323,749	
Quarter of quarter-section	1⁄4 by 1⁄4	1⁄16	40	161,874	

[edit] List of meridiansMain 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 / 43.99556°N 104.05444°W / 43.99556; -104.05444 (Black Hills Meridian)	South Dakota
Boise Meridian	1867	43°22′21″N 116°23′35″W / 43.3725°N 116.39306°W / 43.3725; -116.39306 (Boise Meridian)	Idaho
Chickasaw Meridian	1833	35°01′58″N 89°14′47″W / 35.03278°N 89.24639°W / 35.03278; -89.24639 (Chickasaw Meridian)	Mississippi
Choctaw Meridian	1821	31°52′32″N 90°14′41″W / 31.87556°N 90.24472°W / 31.87556; -90.24472 (Choctaw Meridian)	Mississippi

Cimarron Meridian 1881 36°30′05″N 103°00′07″W / 36.50139°N 103.00194°W / 36.50139; -103.00194 (Cimarron Meridian) Oklahoma
Copper River Meridian 1905 61°49′04″N 145°18′37″W / 61.81778°N 145.31028°W / 61.81778; -145.31028 (Copper River Meridian) Alaska
Fairbanks Meridian 1910 64°51′50.048″N 147°38′25.949″W / 64.86390222°N 147.64054139°W / 64.86390222; -147.64054139 (Fairbanks Meridian) Alaska
Fifth Principal Meridian 1815 34°38′45″N 91°03′07″W / 34.64583°N 91.05194°W / 34.64583; -91.05194 (Fifth Principal Meridian) Arkansas, Iowa, Minnesota, Missouri, North Dakota & South Dakota
First Principal Meridian 1819 40°59′22″N 84°48′11″W / 40.98944°N 84.80306°W / 40.98944; -84.80306 (First Principal Meridian) Ohio & Indiana
Fourth Principal Meridian 1815 40°00′50″N 90°27′11″W / 40.01389°N 90.45306°W / 40.01389; -90.45306 (Fourth Principal Meridian) Illinois
Fourth Principal Extended Meridian 1831 42°30′27″N 90°25′37″W / 42.5075°N 90.42694°W / 42.5075; -90.42694 (Fourth Principal Extended Meridian) Minnesota & Wisconsin
Gila and Salt River Meridian 1865 33°22′38″N 112°18′19″W / 33.37722°N 112.30528°W / 33.37722; -112.30528 (Gila and Salt River Meridian) Arizona
Humboldt Meridian 1853 40°25′02″N 124°07′14″W / 40.41722°N 124.12056°W / 40.41722; -124.12056 (Humboldt Meridian) California
Huntsville Meridian 1807 34°59′27″N 86°34′16″W / 34.99083°N 86.57111°W / 34.99083; -86.57111 (Huntsville Meridian) Alabama & Mississippi
Indian Meridian 1870 34°29′32″N 97°14′49″W / 34.49222°N 97.24694°W / 34.49222; -97.24694 (Indian Meridian) Oklahoma
Kateel River Meridian 1956 65°26′16.374″N 158°45′31.014″W / 65.43788167°N 158.758615°W / 65.43788167; -158.758615 (Kateel River Meridian) Alaska
Louisiana Meridian 1807 31°00′31″N 92°24′55″W / 31.00861°N 92.41528°W / 31.00861; -92.41528 (Louisiana Meridian) Louisiana
Michigan Meridian 1815 42°25′28″N 84°21′53″W / 42.42444°N 84.36472°W / 42.42444; -84.36472 (Michigan Meridian) Michigan & Ohio
Mount Diablo Meridian 1851 37°52′54″N 121°54′47″W / 37.88167°N 121.91306°W / 37.88167; -121.91306 (Mount Diablo Meridian) California & Nevada
Navajo Meridian 1869 35°44′56″N 108°31′59″W / 35.74889°N 108.53306°W / 35.74889; -108.53306 (Navajo Meridian) Arizona
New Mexico Principal Meridian 1855 34°15′35″N 106°53′12″W / 34.25972°N 106.88667°W / 34.25972; -106.88667 (New Mexico Principal Meridian) Colorado & New Mexico
Montana Principal Meridian 1867 45°47′13″N 111°39′33″W / 45.78694°N 111.65917°W / 45.78694; -111.65917 (Montana Principal Meridian) Montana
Salt Lake Meridian 1855 40°46′11″N 111°53′27″W / 40.76972°N 111.89083°W / 40.76972; -111.89083 (Salt Lake Meridian) Utah
San Bernardino Meridian 1852 34°07′13″N 116°55′48″W / 34.12028°N 116.93°W / 34.12028; -116.93 (San Bernardino Meridian) California
Second Principal Meridian 1805 38°28′14″N 86°27′21″W / 38.47056°N 86.45583°W / 38.47056; -86.45583 (Second Principal Meridian) Illinois & Indiana
Seward Meridian 1911 60°07′37″N 149°21′26″W / 60.12694°N 149.35722°W / 60.12694; -149.35722 (Seward Meridian) Alaska
Sixth Principal Meridian 1855 40°00′07″N 97°22′08″W / 40.00194°N 97.36889°W / 40.00194; -97.36889 (Sixth Principal Meridian) Colorado, Kansas, Nebraska, South Dakota & Wyoming
Saint Helena Meridian 1819 30°59′56″N 91°09′36″W / 30.99889°N 91.16°W / 30.99889; -91.16 (Saint Helena Meridian) Louisiana
Saint Stephens Meridian 1805 30°59′51″N 88°01′20″W / 30.9975°N 88.02222°W / 30.9975; -88.02222 (Saint Stephens Meridian) Alabama & Mississippi
Tallahassee Meridian 1824 30°26′03″N 84°16′38″W / 30.43417°N 84.27722°W / 30.43417;

-84.27722 (Tallahassee Meridian) Florida & Alabama
Third Principal Meridian 1805 38°28′27″N 89°08′54″W / 38.47417°N 89.14833°W / 38.47417; -89.14833 (Third Principal Meridian) Illinois
Uintah Meridian 1875 40°25′59″N 109°56′06″W / 40.43306°N 109.935°W / 40.43306; -109.935 (Unitah Meridian) Utah
Umiat Meridian 1956 69°23′29.654″N 152°00′04.551″W / 69.39157056°N 152.00126417°W / 69.39157056; -152.00126417 (Umiat Meridian) Alaska
Ute Meridian 1880 39°06′23″N 108°31′59″W / 39.10639°N 108.53306°W / 39.10639; -108.53306 (Ute Meridian) Colorado
Washington Meridian 1803 30°59′56″N 91°09′36″W / 30.99889°N 91.16°W / 30.99889; -91.16 (Washington Meridian) Mississippi
Willamette Meridian 1851 45°31′11″N 122°44′34″W / 45.51972°N 122.74278°W / 45.51972; -122.74278 (Willamette Meridian) Oregon & Washington
Wind River Meridian 1875 43°00′41″N 108°48′49″W / 43.01139°N 108.81361°W / 43.01139; -108.81361 (Wind River Meridian) Wyoming

[edit] Social impact[edit] Railroad land grants
Illustration of railroad land grant layout.The Pacific Railroad Act of 1862 (signed by President Abraham Lincoln) was the first major land grant specifically for the transcontinental railroad. This act provided surveyed, public lands for a railroad right-of-way to build rail systems, and millions acres to raise the capital needed to build and maintain the future railways. Ten square miles of land on each side of the proposed rail track were granted for every one mile of completed railway. The US Public Land Survey System was utilized for measurement. Every one-mile railway completed was akin to a section. If the railway ran predominantly east and west, a ten mile (16 km) range of one square mile sections were allotted on each side of the 400-foot (120 m) right-of-way. If the railway ran predominantly north and south, a ten mile (16 km) township of one square mile sections were allotted on each side of the 400-foot (120 m) right-of-way. The land was
granted in alternating sections (one square mile). Each odd numbered section going to the railroad company. Each even numbered section kept by the government. This created a checkerboard pattern along proposed rail way. This was supposed to guarantee that railroad access would increase the value of not only the railroad granted sections, but also the government owned sections in the checkerboard.

[edit] EducationUnder 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 subsequently added as a school section in western states.[6] 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.

[edit] Metric system adoptionThe US Public Land Survey System is considered one of the major points of contention in the adoption of the metric system in the United States. The US Public Land Survey System has used the Gunter's chain as a basic measurement. “…the measurements of every plot of ground in the United States have been made in acres, feet, and inches, and are publicly recorded with the titles to the land according to the record system peculiar to this country.” — Franklin Institute of Philadelphia (1876). Because of this, redefining property boundaries could create a large amount of legal issues and property owner confusion. Many local zoning laws are defined in feet / square feet. Conversion of units for surveyors are not always simple and complex decisions are frequently required (non-universal conversion factors, soft / hard conversions, number rounding).

Farmland in Kansas divided into quarter sections
Example of road system in a PLSS area; Nebraska

Example of road system in a non-PLSS area; North Carolina[edit] Urban designAs 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 (named after the town of Euclid, Ohio, which won a 1926 Supreme Court case — Village of Euclid, Ohio v. Ambler Realty Co. — which established the constitutionality of zoning). In Euclidean zoning, use of a property is dictated and regulated by zoning district, the boundaries of which are often based on locations of arterials.

West of the Appalachians, road systems frequently follow the PLSS grid structure (see illustrations of Nebraska vs North Carolina on left). The results can be 90-degree intersections and very long stretches of straight roads.[7][8]

[edit] Popular cultureThe 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.
The idea of 40 work days in an acre came from a Gunter's chain calculation. At the time of the Homestead Act, four square perch (33 ft × 33 ft) = one work day.
RKO Forty Acres was a film studio backlot for filming movies and TV shows such as King Kong, Gone With The Wind and Star Trek.[9]
40 Acres & A Mule Filmworks is the production company of noted American filmmaker Spike Lee.
The movie Far and Away starring Tom Cruise and Nicole Kidman - Part of the central plot is the quest of Irish immigrants to claim 160 acres of land during the Land Run of 1893 in present day Oklahoma.
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 km2) of land; in other words, a quarter-section.
Later amendments of the Homestead Act allocated more land, as much as 640 acres (2.6 km2); in other words, a section. This was a good revision to apply to land that was drier or more desolate than the earlier, more desirable lands already settled. Many times, this land was more suited to ranching than to farming.
Hodag is a mythical creature and the mascot of Rhinelander, Wisconsin, created by Gene Shepard in 1893. A specimen of the creature was claimed to have been found in Section 37 of a local township (Townships are only made up of 36 sections).
[edit] Notes1.^ Joseph S. Mendinghall (December 27, 1974), National Register of Historic Places Inventory-Nomination: Beginning Point / Beginning Point of the U.S. Public Land Survey, National Park Service, http://pdfhost.focus.nps.gov/docs/NHLS/Text/66000606.pdf
2.^ C. Albert White. A History of the Rectangular Survey System, page 115
3.^ a b http://www.nationalatlas.gov/articles/boundaries/a_plss.html
4.^ Inscription on monument, pictured here
5.^ http://books.google.com/books?id=1X1VAAAAMAAJ&ots=yVuKwyy54l&dq=theory%20and%20practice%20of%20surveying%201913&pg=PP1#v=onepage&q&f=false J. B. Johnson, Leonard S. Smith; The Theory And Practice of Surveying, Wiley & Sons, New York, 1913

6.^ http://www.land.state.az.us/history.htm "Act of Congress,February 24, 1863, granted sections 16 and 36 of each township for the benefit of the common schools"
7.^ http://www.uctc.net/papers/878.pdf
8.^ http://web.ics.purdue.edu/~duffy/IE486.../IE486_p14_Accid%20Anal%20Prv.pdf
9.^ http://www.retroweb.com/40acres.html "40 Acres" - RetroWeb Studio Backlots website"
[edit] See alsoGroma 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
[edit] Meridians in the United StatesPrincipal Meridian
[edit] ReferencesAndro 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.)
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[edit] External linksLSD + GPS + UTM coordinates (batch) conversion Free map convertors & tools
Bureau of Land Management
Manual of Instructions for the Survey of the Public Lands of the United States, 2009
Manual of Instructions for the Survey of the Public Lands of the United States, 1973 (as PDF) - Official manual for PLSS
Resources page of the U.S. Department of the Interior, Bureau of Land Management
National Land Information System (NILS) - Cadastral records and land parcel information including GeoCommunicator below
NILS GeoCommunicator - Cadastral records and land parcel information
The Public Land Survey System (PLSS) - general reference in the nationalatlas.gov (National Atlas of the United States)
U.S. Geological Survey
National Geodetic Survey
American Congress on Surveying & Mapping
Township and Range - Public Land Survey System on Google Earth - convert latitude/longitude to township and range
TRS data to latitude/longitude calculator - for 17 western U.S. states
www.resurvey.org - reference for land surveyors working in the PLSS
Federal Township Plats of Illinois, 1804-1891 from the Illinois State Archives
Researching New Mexico Land Grants
IIC Minnesota Historical Vegetation
The Minnesota Bearing Tree Database
The Principal Meridian Project
Locating Oil or Gas Wells Using The Federal Township and Range System
Lists of the coordinates used for section corners in Kansas City, Missouri
Wisconsin State Cartographer's Office - Curiosities and trivia about the PLSS
Public Land Survey System in Google Earth - a free Google Earth implementation of the National Integrated Land System (NILS) GeoCommunicator map service

EarthPoint Google Earth - KML files for PLSS and other grid systems
Sample of PLSS in ESRI ArcGIS - Alabama PLSS
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