

Bureau of Land Management Cadastral Survey Handout

Public Land Survey System (PLSS): The beginnings....

- Land Tenure systems define the ways in which property rights to land are allocated, transferred, used, or managed in a particular society.

Types of Land Tenure Systems in the United States:

- The Land Tenure in the United States was originally Aboriginal title which is based on stewardship. In 1763 the British Crown issued The Royal Proclamation, a document that recognized Aboriginal title during European settlement of North America. The Proclamation states that ownership over North America is issued to King George III, but that Aboriginal title exists and can only be extinguished by treaty with the Crown. The treaties with tribes were agreements that reserved certain rights and title in exchange for the extinguishment of the title for certain other lands placing the said extinguished title in the King's name. When the United States won the revolutionary war, the U.S. Federal Government "replaced" the King and continued signing treaties with Native Tribes.
- The Colonial Land Grants were lands conveyed by an agent of the King of England and were described by Metes and Bounds typically containing title restrictions such as the Public Trust Doctrine. This doctrine has roots extending back to the 6th century Roman Empire and the reign of Emperor Justinian. A declaration by Justinian that "The seashore is owned by everyone, and no one," set the foundation of distinguishing between private and public ownership. A Metes and Bounds description of land consists of references to bearings and distances, adjoining landowners' boundaries, or a combination thereof. The original 13 colonies are Colonial Land Grants made by the King of England prior to the Revolutionary War. Any grants to individual owners prior to the war were preserved to allow the landowners to retain their rights to the ownership and control of their property although the territory is controlled by a "new" government.
- The Spanish Land Grants were lands conveyed in Spanish or Mexican territories prior to treaties with, purchases made by, or cessions to the United States. The treaties and or cessions typically preserved the grants that were made prior to title being vested in the United States. This allowed the landowners to retain their rights to the ownership and control of their property although the territory is owned by a "new" government.
- French Land Grants were lands conveyed in French territories prior to treaties with, purchases made by, or cessions to the United States. The treaties and or

Bureau of Land Management Cadastral Survey Handout

cessions typically preserved the grants that were made prior to title being vested in the United States. This allowed the landowners to retain their rights to the ownership and control of their property although the territory is owned by a “new” government.

- The PLSS had its start with the passing of the Land Ordinance Act of 1785. The Land Ordinance Act provided for a standardized system of identifying (surveying) and disposing of land (patenting) to citizens for the purpose of settlement and raising revenue. The revenue from land sales was necessary as Congress at the time did not have the authority to directly tax its citizens to raise such revenue. Another purpose of the land disposal was to provide military warrants as payment to soldiers who fought in the Revolutionary War. Patents are “deeds” from the government and are the basis of land title in the United States except in cases where land grants were executed prior to title being vested in the United States. An example would be the homestead patent, which is how many Americans established title to land. A military warrant is another type of deed that transfers land title from the government, except they had special service requirements such as military service in a war. The PLSS was improved upon through the passing of acts and other changes, however the basics remain the same. Even today the PLSS is important as the foundation of land title for much of the country and also because of how the original surveys control the location of current property lines. The following are some of the pertinent acts and the major changes that the acts made to the PLSS.
 - Some aspects of the basic survey requirements established by the **Land Ordinance Act of 1785** are: 1) adopted the New England Township System 2) required survey before settlement 3) measurements to be done in chains 4) townships are to be six miles square and divided into 36 sections 5) reserved section 16 for schools 6) reserved 1/3 of all gold, silver, lead or copper. The surveyors were titled Deputy Surveyors and were contracted by the Federal Government. The first areas surveyed were in Ohio and Indiana consisting of multiple similar types of survey that were part of the development of the PLSS. Land sales were low and half of the first townships surveyed in Ohio were sold whole, whereas the other half were sold by the section (640 acres).

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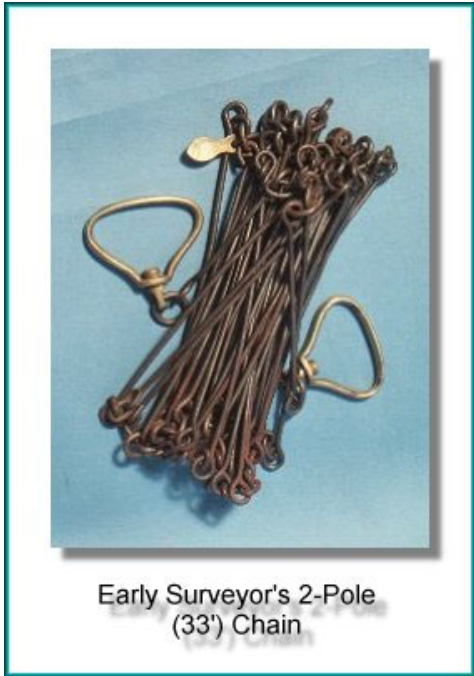
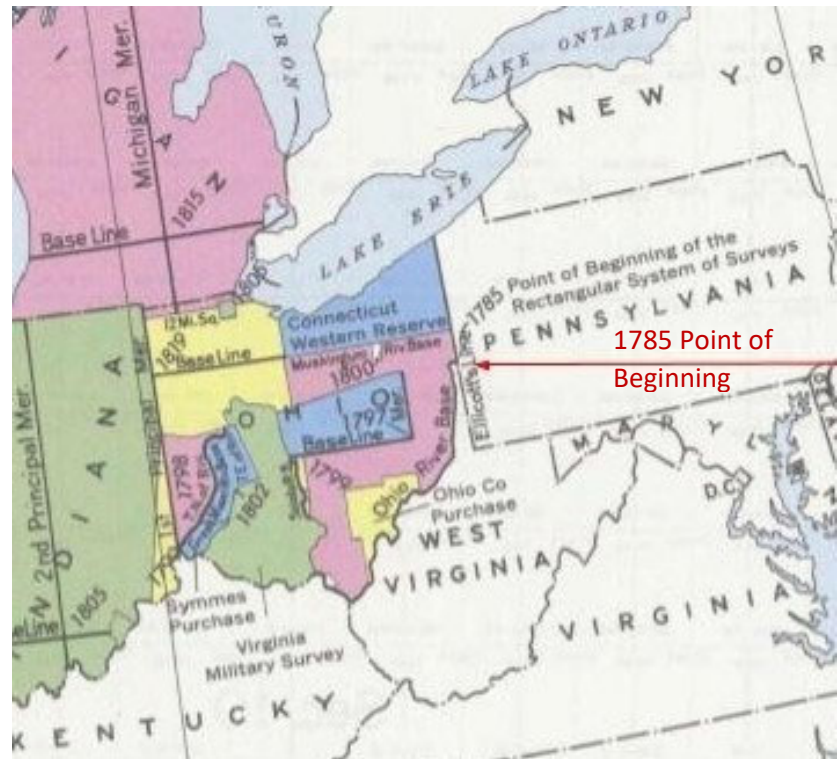
*THEORETICAL
TOWNSHIP DIAGRAM
SHOWING
METHOD OF NUMBERING SECTIONS
WITH ADJOINING SECTIONS*

36	31	32	33	34	35	36	31
80 Ch.		6 Miles - 480 Chains				80 Ch.	
1	6	5	4	3	2	1	6
12	7	8	9	10	11	12	7
13	18	17	16	15	14	13	18
24	19	20	21	22	23	24	19
25	30	29	28	27	26	25	30
36	31	32	33	34	35	36	31
1	6	5	4	3	2	1	6

T.V.S. 2

Diagram of the township as described in the 1785 Act.

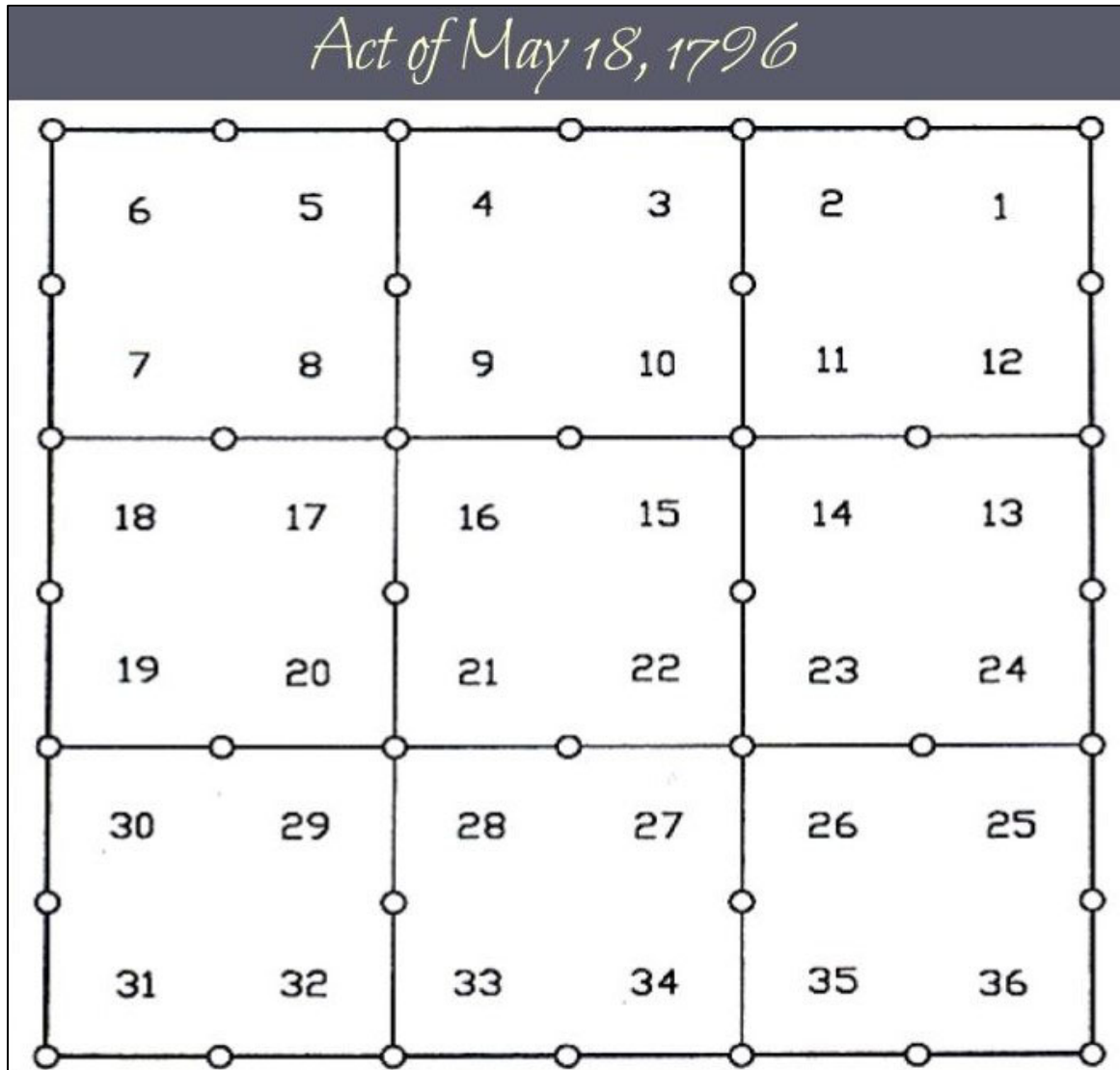
Diagram of the Point of Beginning of the PLSS, established in 1785



- The surveyors measured the land using a chain, as required by the Land Ordinance Act, and a compass. The chain is a unit of measurement and an actual physical item. The unit of measure is equivalent to 66 feet and was used because of the simplification of computations including determining acreage. The chain was graduated into 100 links which are 0.66 feet or 7.92 inches per link. An example of a simplified computation is to compute the acreage of a 20 chain square; $20 \times 20 = 400$ then divide by 10 to get 40 acres. The preceding calculation is an example of a 40 acre parcel or a quarter quarter of a section. The physical item is an actual chain with links constructed of a heavyweight wire.

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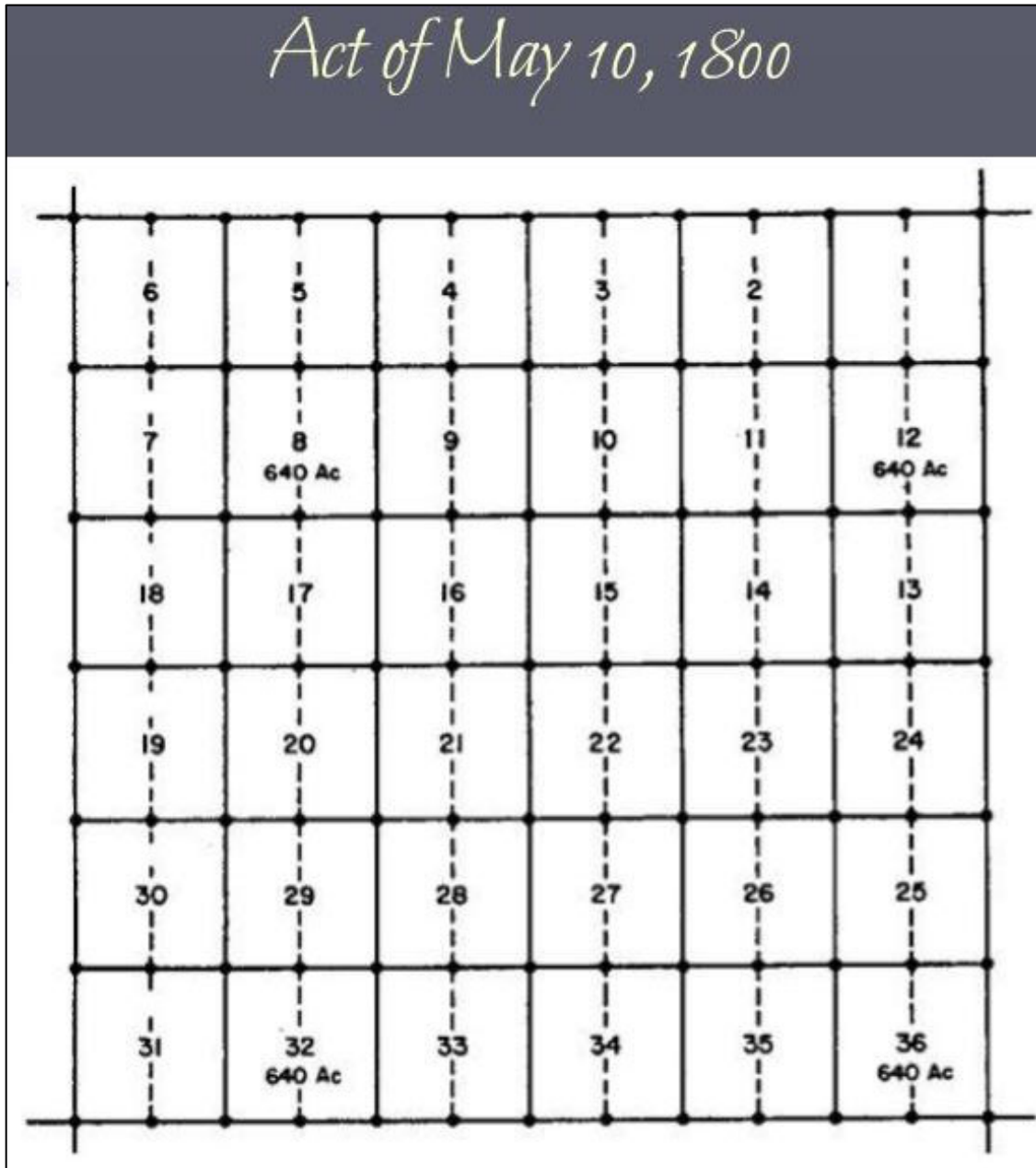
- The constitution was ratified in 1788 therefore a new land law was necessary. The **Act of May 18, 1796** was passed and retained the previous requirements of the Land Ordinance Act of 1785. A new requirement of the act was that surveyors were to note the quality of the land surveyed and water source locations for potential buyers



This diagram shows the corners, as open circles, that were to be monumented during a township subdivision according to the 1796 Act.

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- The **Act of May 10, 1800** allowed for tracts to be sold in half sections (320 acres) and allowed buyers 4 years to pay the full amount. The act also established local land offices, which gave people on the frontier the opportunity to purchase the lands auctioned.



This diagram shows the corners, as filled circles, that were to be monumented during a township subdivision according to the 1800 Act.

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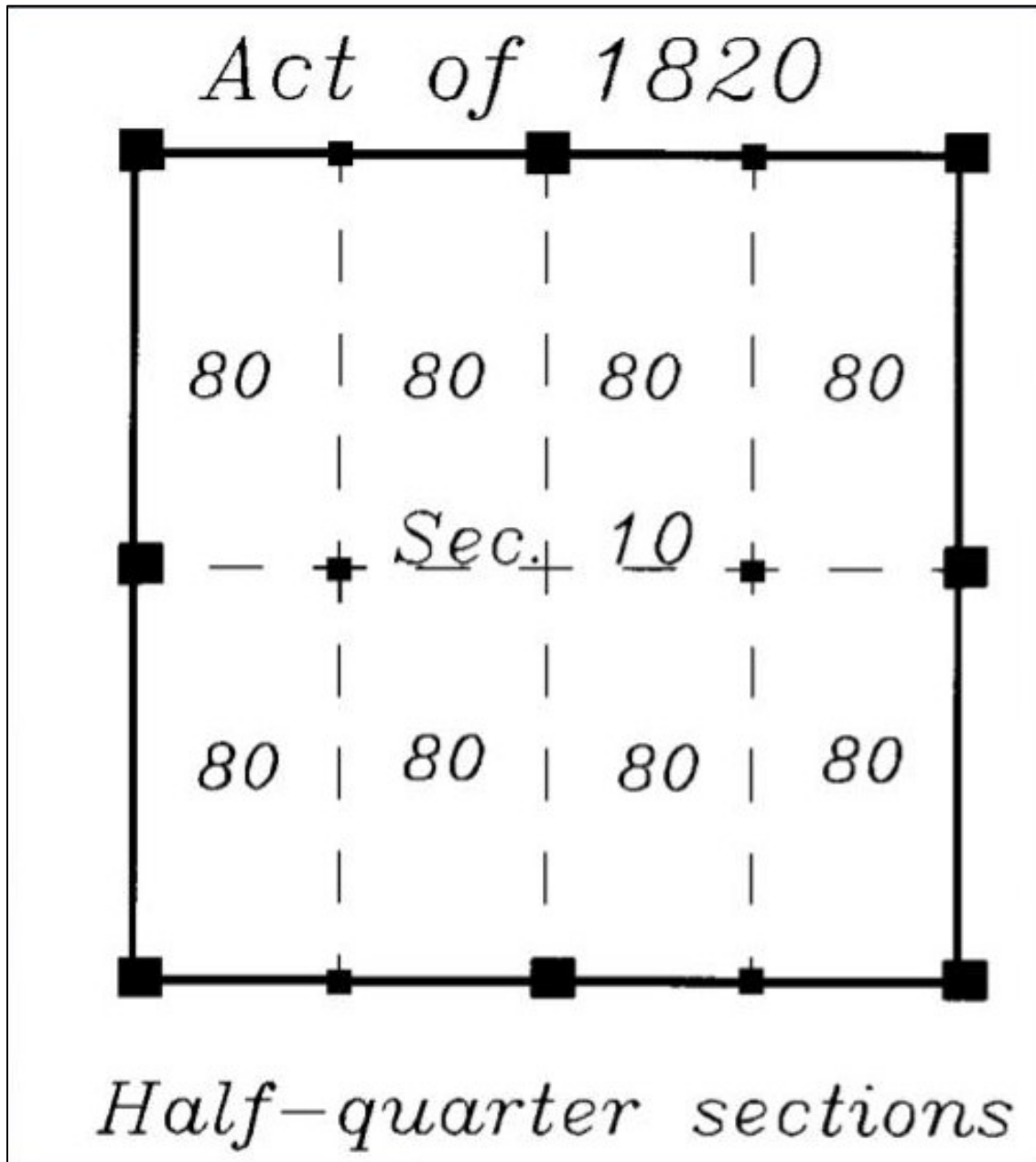
- The General Land Office (GLO) was created in 1812 to manage the rapid increase in land sales. The GLO was placed in the Treasury Department because land sales generated revenue for the government. Edward Tiffin was appointed as the first GLO Commissioner. At its height, the GLO managed more than 400 land offices to facilitate the disposal of Public Domain Lands.



This is a picture of a U.S. Land Office, which is where people applied to purchase land from the GLO.

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Cadastral Survey Handout

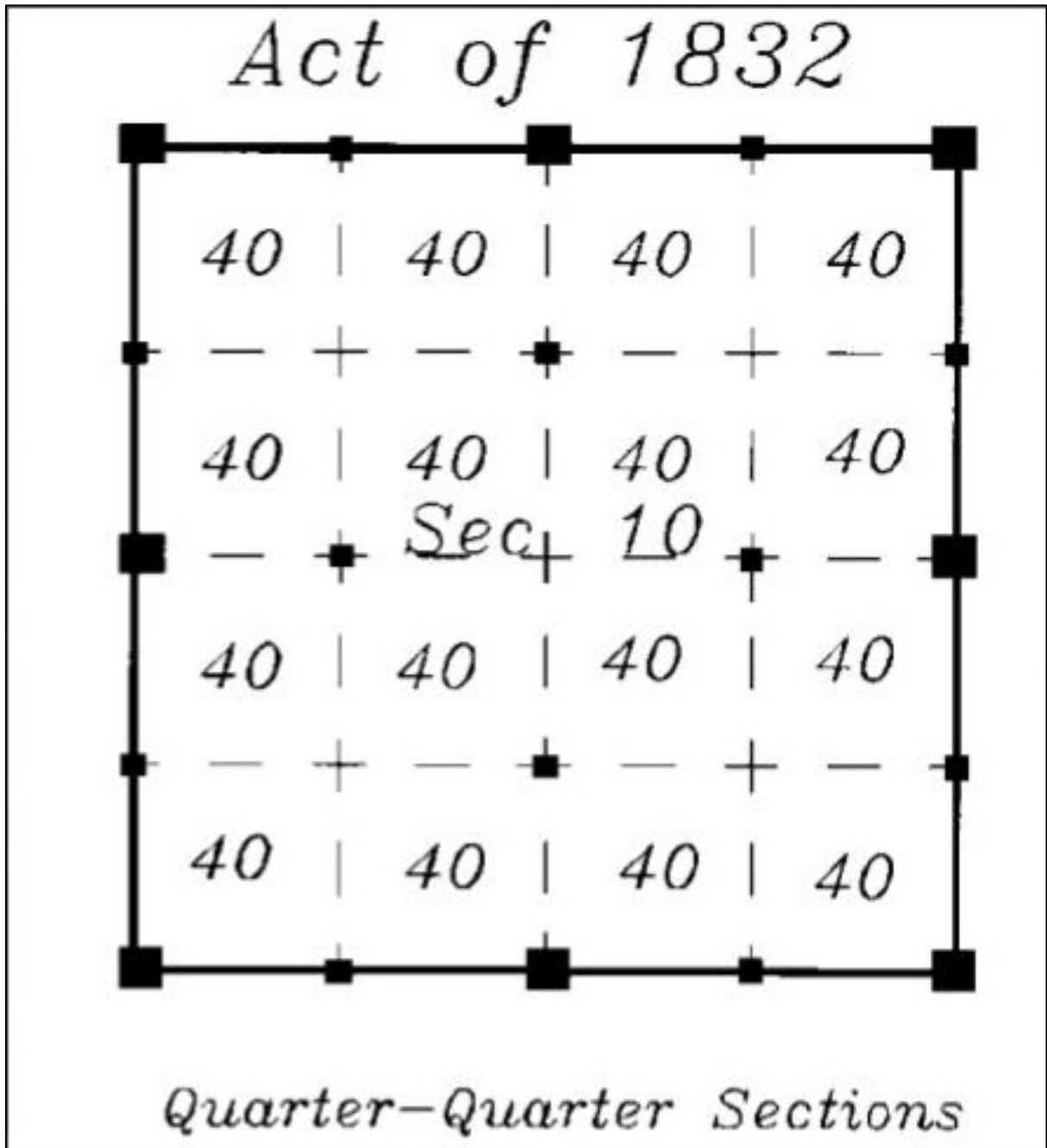
- The **Acts of April 2 and 24, 1820** reduced the size of tracts allowed for disposal, making land more affordable, but the credit system was abolished and the lands must be paid for in full.



This diagram is of a section and shows the configuration of the section subdivision according to the 1820 Act.

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- The **Act of April 5, 1832** created the quarter quarter section of 40 acres which is the smallest legal subdivision of a section defined by law. The saying of back 40....



This diagram is of a section and shows the configuration of the section subdivision according to the 1832 Act.

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The territories, then later states, had a Surveyor General who was responsible for making sure the surveys were completed in the respective territory. The surveys were executed by Deputy Surveyors, which were contractors, with contracts issued by the Surveyor General to complete surveys deemed necessary. Once all of the territory had been surveyed, the Surveyor General abolished the Government Survey Office and turned the records over to the respective State Governments. Many of the Surveyor Generals issued Survey Instructions to the Deputy Surveyors that were the interpretation of the controlling Acts for the particular territory. The first Manual was issued in 1855 by the Commissioner of the General Land Office, and it applied to all territories/states. The latest Manual of Survey Instructions was issued in 2009. The laws pertaining to Public Land Surveys are still on the books and are located in Title 43 of the United States Code, Sections 751, 752, and 753.

The Deputy Surveyors hired a crew which consisted of a compass person, chain handlers, axe wielders, monument builders (examples of monument construction tasks: chisel stones, dig pits, build mounds, and mark trees), hunters, and a cook. The crews were large and lived in camps that were constantly moved due to the progress of the surveys. Prior to the surveys the territories were mostly wild with sparse settlements in accessible areas and very few roads, as most travel was by water. This caused many hardships for the crews as they were travelling in roadless areas that were inhabited by wild animals, hungry and poisonous bugs, unidentified poisonous plants, and many other dangers.

The surveying was a monumental task and many historical figures were surveyors as represented by Mount Rushmore, which is 3 surveyors (George Washington, Thomas Jefferson, Abraham Lincoln) and another guy (Theodore Roosevelt)!



- Public Domain as it relates to the PLSS is land that belongs to the citizenry (public). After the Revolutionary War the United States' boundaries were established in a treaty, negotiated with England, Spain, and France, signed September 3, 1783. The original 13 colonies identified their respective claims. See "*colonial claims map of 1783.*" The first Public Domain in the United States was ceded, under the 1787 Northwest Ordinance, by the 13 colonies, for the benefit of all the people, and were to be disposed of or settled under such rules and regulations as agreed on by the Congress. The ceded lands included

Bureau of Land Management Cadastral Survey Handout

the territory south of the State of Tennessee (Alabama and Mississippi) and the territory northwest of the Ohio River (Ohio, Indiana, Illinois, Michigan, Wisconsin, and part of Minnesota). These territories were the first to be surveyed and sold for the purpose of generating revenue for the newly formed United States.



This image is of a map depicting the territories of the original 13 colonies.

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About 1.5 billion acres of land were added to the U.S. Public Domain when territories west of the Mississippi River, Florida, and Alaska were acquired by the United States, namely:

- The Louisiana Purchase in 1803
- The British Cession in 1818
- The Spanish Cession in 1819
- Texas Annexation in 1845
- Treaty with Great Britain for Oregon Territory in 1848
- The Mexican Cession in 1848
- The Gadsden Purchase in 1853
- The Alaska Purchase in 1867
- Hawaii Annexation in 1898



Bureau of Land Management Cadastral Survey Handout

This map shows the acquisitions by the United States.

Currently, Public Domain is a type of public land that was never patented by the U.S. Government and is designated Public Domain (P.D. land). P.D. land, along with other public lands, is managed by the Bureau of Land Management (BLM), consisting of approximately 248.3 million acres. Other public land managing agencies include the National Park Service (NPS), U.S. Forest Service (USFS), and the U.S. Fish and Wildlife (USFWS). Public Lands including Public Domain are being conserved and managed for the use of all Americans by federal agencies. However there are many things that individual citizens can do to help conserve the land for future generations. These include volunteering on cleanup/maintenance days, volunteer with agency noxious weed programs, if you see trash pick it up, stay on travelled paths if possible (depends on activity), leave as little of an impact as possible on the environment (leave plants and animals alone), respect others' rights to experience nature without noise or other pollution (many Public Lands are pristine settings), and use the land as it is intended (follow the managing agencies' rules and regulations for a particular site, some are for off-road vehicle recreation whereas others are for observing nature and habitat - many different uses). Leave No Trace is a set of outdoor ethics promoting conservation in the outdoors. It consists of seven principles: plan ahead and prepare, travel and camp on durable surfaces, dispose of waste properly, leave what you find, minimize campfire impacts, respect wildlife, and be considerate of other visitors.



Bureau of Land Management Cadastral Survey Handout

Resources:

- GLO Records:
<https://glorerecords.blm.gov>
- Cadastral Survey:
<https://www.blm.gov/programs/lands-and-realty/cadastral-survey>
- The Federal Land Policy and Management Act of 1976, as amended:
https://www.blm.gov/sites/default/files/AboutUs_LawsandRegs_FLPMA.pdf
- Manual of Surveying Instructions:
https://www.blm.gov/sites/blm.gov/files/Manual_Of_Surveying_Instructions_2009.pdf
- Specifications for Descriptions of Land:
For Use in Land Orders, Executive Orders, Proclamations, Federal Register Documents, and Land Description Data Bases:
https://www.ntc.blm.gov/krc/uploads/940/2017_SpecificationsForDescriptionsOfLand.pdf
- Surveying our Public Lands:
<https://www.ntc.blm.gov/krc/uploads/538/SurveyingOurPublicLands2002.pdf>
- Bureau of Land Management Classroom Investigation:
<https://www.blm.gov/classroominvestigations>

GLO Records - Fun Examples:

a. A patent issued to Abraham Lincoln in section 18 of T. 6 N., R. 5 W., 4th Principal Meridian, Illinois. *E¹/₂SW¹/₄ of section 18 of T. 6 N., R. 5 W., 4th PM, Illinois.*

b. A plat search for T. 157 N., R. 42 W., 5th Principal Meridian, Minnesota. *The initials ATCP 1879 and cross symbols.*

The following is some interesting information concerning the individual. What does A.T.C.P. mean in the middle of the swamp in sections 26, 27 and 28, T. 157 N., R. 42 W., 5th Principal Meridian Minnesota? This is the question asked by a surveyor in Minnesota. Through the diligent research of an Eastern States Cadastral survey employee the answer was found: Regarding "A.T.C.P.:" Azariah Theodore Crane Pierson (1817-1889) was George Hamilton's cartographer for the 1879 surveys in Minnesota. He was a very high ranking leader among the Freemasons in Minnesota as well as belonging to the Knights Templar. The crosses on the plat are symbols used by the Knights Templar and the Freemasons. In addition to working for the General Land Office, he was also an Indian agent and served as the school superintendent on a Chippewa (Ojibwe) reservation. There are at several Minnesota field note volumes that contain diagrams by him along with his initials. There are also several other plats in the Minnesota collection that bear his initials scribed within swamp lands with several showing the 1879 date. I've only seen one, though, that includes the cross symbols. This cartographer added his initials and symbols of his affiliation

Bureau of Land Management Cadastral Survey Handout

to the Freemason's on the face of these plats. This is just one example of the fascinating history that can be found in the land records of the Bureau.

- c. A notes search for T. 61 N. R. 10 W., 4th Principal Meridian, Minnesota. At the end of the notes is a general description. What corner did the surveyor leave equipment at and why? *Answer: Cor. of Secs. 16, 17, 20, and 21, because the supplies had to be carried on the backs of the men due to it being too rocky for horses or wagons.*
- d. Many interested in family history can find the original homestead patent from ancestors.