Use of Government Land Office Surveys in Tribal GIS Land Management

Dustin Holt
GIS Technician
Choctaw Nation of Oklahoma
Ardmore Quadrangle - 1949
Different versions of the same map were printed in 1901, 1913, 1918, 1931 and 1949.

All versions contained the same cultural and landscape features. The only additions from the original section surveys used to create this map is elevation data (bench marks), contour lines and modern grid systems.

Why?

Because the original surveys still had value then and now, above and beyond there historical significance!
Survey plats are part of the official record of a cadastral survey within the Public Land Survey System. Surveying is the art and science of measuring the land to locate the limits of an owner's interest thereon. A cadastral survey is a survey which creates, marks, defines, retraces or re-establishes the boundaries and subdivisions of Federal Lands of the United States. The survey plat is the graphic drawing of the boundaries involved with a particular survey project, and contains the official acreage to be used in the legal description.
Field notes are the narrative record of the cadastral survey. They are written in tabular format and contain the detailed descriptions of entire survey process including the instrumentation and procedures utilized, calling all physical evidence evaluated in the survey process, and listing all of the individuals who participated in the work.
Who uses GLO Surveys

- **Land surveyors** routinely use historical GLO data because it is the foundation of all land ownership records, and all land survey lines are interconnected.

- **Historians** use the GLO grid in a similar way to ecologists, because surveyors were required to record where lines intercepted man-made features such as roads, fence lines, farmyards, and towns. Surveyors routinely recorded distances and compass bearings to prominent buildings that were visible along the survey lines. These records have been used to relocate early settlements, support claims to water rights, and validate early census records. GLO users of any stripe also often are drawn to its history because they inevitably wonder who the surveyors were, what they saw, and how they did their work without roads, electronic survey equipment.

- **Ecologists and Botanists** use GLO survey lines as a grid of transects, along which surveyors recorded changes in vegetation, and information about trees and shrubs every half mile. They also had to record information at random points where lines intercepted trees, rivers, streams, lakes, and other natural features. Notes on streams and rivers often included depth, current, alluvium, and condition of the banks. Witness tree data are particularly useful in assessing historical stand density, fire history, and species distributions. They are being used to restore plant community structure, species composition, and ecological processes (see Witness Trees below).
Government Lots

Fractional sections in the rectangular (government) survey system that are less than one quarter-section in area. Areas smaller than full quarter-sections were numbered and designated as government lots by Surveyors. These lots can be created by the curvature of the earth; by land bordering or surrounding large bodies of water; or by artificial state borders.
Rectangular Survey System

Figure 3.—Section of land (640 acres) showing minor subdivisions and corners.
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Government Lots
Collecting GLO’s and Georeferencing

Bureau of Land Management (BLM), General Land Office (GLO) Records Automation web site
http://www.glorecords.blm.gov/

Download digital raster graphic county mosaic by NRCS. This is a mosaic of 24,000 scale topographic maps of entire county.
http://datagateway.nrcs.usda.gov/

90% of the time I use a first-order polynomial transformation. Four control points unless georeferencing a fractional township along a political boundary.
http://www.bing.com/search?q=earthpoint&pc=MOZI&f orm=MOZSBR
determined by Polaris observation made in camp and found to be correct.

At the corner of secs. 1, 2, 35, and 36, on S. bdy. of T. 6 S. R. 2 E., herebefore described, in lat. 33° 59' N. and longitude 97° 03' W. I set off 33° 59' N on the lat. arc and 12° 50' S. on the declination arcs, and at 8 A.M. I determined with the solar a true meridian.

The mean magnetic declination of the true meridian is

8° 56' E.

From the above described corner,

I run.

N. 00° 01' W. bet. secs. 35 and 36.

Over rolling land, through field.

7.00 Leave field and enter timber, bears E. and W.

11.20 Drain, course N. E.

11.40 Drain, course N. W.

40.00 Set a line stake 24 x 10 x 4 ins. 16 ins. in the ground for a sec. cor. marked 1. on W. face; from which,

A post oak 8 ins. diam. bears N. 60° N. 32 lbs. dist. marked 4. 3. E.T.

A post oak 8 ins. diam. bears E. 86° 3/4 E. 29 lbs. dist. marked 4. S. E.T.

40.30 Mail fence, bears N. E. and S. W. Leave timber and enter field.
7.00  Leave field and enter timber, bears E. and W.

11.20  Drain, course N. W.

21.00  Drain, course N. W.

40.00  Set a limestone 25 x 10 x 4 ins. 19 ins. In the ground for

  ¼. Sec. cor. Marked ¼. On W. face; from which,

  A post oak 6 ins. diam, bears N. 88 ¾ degree . 33 lks. dist.

  Marked ¼. S. B. T.

  A post oak 6 ins. diam, bears S. 86 ¾ degree W. 29 lks. dist.

  Marked ¼. S. B. T.

47.30  Rail fence, bears N. E. and S. W. Leave timber and enter

   Field.
The red dots on this map represent features recorded by the surveyors. The surveyors walked every section line documenting worthy features such as roads, drainage, fences, homes etc. Each feature was described and its location from the last section corner was recorded in chains. Only features that fell on or within view of the individual section lines were recorded in the field notes. Township 6 S 2 E had over 643 recorded features.
Exhibit A

All of the following described real estate, lands and premises, situated in the County of Red River, State of Texas, out of the J.P. LINCECUM SURVEY, ABSTRACT NO. 514 and the WILLIAM STONEHAM SURVEY, ABSTRACT NO. 750, described as follows:

BEGINNING at a point on the East line of Lot 5 Sec. 32-8-23E at intersection of the 1898 and 1965 Meander Lines.

Run THENCE along the 1898 Meander Line N 32° E 792 feet;

THENCE N 14° E 726 feet;

THENCE N 3°30' E 1,122 feet;

THENCE N 12°30' W 660 feet;

THENCE N 8°30' E 396 feet;

THENCE N 25° W 660 feet;

THENCE N 40°45' W 132 feet;

THENCE N 07° W 231 feet;

THENCE N 38°30' W 132 feet;

THENCE N 21° W 330 feet;

THENCE N 45° W 198 feet:
The End

Dustin Holt
Choctaw Nation of Oklahoma
dholt@choctawnation.com