A brief look at the Stewardship Model for the Public Land Survey System

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What is the PLSS?

• A system for subdividing & describing land in the US

• For many states, it’s ‘just’ the foundation of private land ownership
  – State Boundaries
  – Meridian Systems (origin & axes)
  – Townships (6 x 6 mile divisions)
  – Sections (1 square mile)
  – Section Divisions (Quarters, Quarter-Quarters, Special Surveys, etc)
PLSS States
Analogy: PLSS as Aerial Photography or GPS

- Precision of PLSS impacts all ‘downstream’ data products and uses ...
  - County Digital Parcels
  - Public/Private land boundaries
  - Public Lands Ownership, Administrative Boundaries
  - Leasing/Permitting for energy, mining, forestry, grazing, recreation
  - Valuations of federal land exchanges
  - ...
PLSS Township Grid, 6 x 6 miles (Panguitch, UT)
Section Grid, 1 x 1 mile (Panguitch, UT)
Section Divisions & Corners: Foundation of Ownership

- Section 20: Edward Gillon
- Section 21: Henry N. Hamilton
- Section 22: Geo A. Miller
- Section 23: Augustus E. Hoth
- Section 24: Israel W. Phillips
- Section 25: Fred A. Ray
- Section 26: Curran Wilson
- Section 27: Ezekiel H. Ames
- Section 28: Charles A. Bice
- Section 29: Norman F. Chandler
- POB: Point of beginning
Corner Monuments
Monumented Corners
Precision Limitations

Legend
- PLSS Corner Points
- PLSS Quarter_Sections_Lines
- Municipalities
- Improved Corner Pnt Location
- Probable new Quarter Section Line
In short. A High Precision PLSS GCDB is...

• the Key to...
  – Survey grade GIS boundary data
  – Efficiencies in future surveying
  – Minimizing property & jurisdictional disputes
  – Better analysis and decision-making
  – Economic activity
PLSS A-16 Stewardship Activities

- BLM is designated NGDA (A-16) Steward
- BLM oversees enhancement of the Geographic Coordinate Data Base (GCDB)
  - Conducts high precision surveys of ‘corner’ monuments for areas of interest on public lands
  - Contracts for inclusion of high-precision geographic coordinates into GCDB for surveyed corner ‘monuments’
  - Contracts for mathematical adjustments to unsurveyed GCDB corner points
  - Seeks to publish GCDB updates for public use
Utah-specific activity

- County cadastral grants
  - Federal / State funding
  - Survey PLSS corner monuments
- Real-time GPS base station network (sub cm)
- Digital record of tie-sheet survey records
  - Online map for viewing and submission
- Maintenance of Public Land Ownership layer
  - Adjusted to GCDB
Private lands not a top GCDB priority
mapserv.utah.gov/plss access tie sheets
Deficiencies with PLSS Stewardship

- Under-funded
  - Too much downstream GIS data is being created using imprecise GCDB corner data as foundation
  - Quality control issues
- BLM not incorporating local survey control
- Lack of input on ‘areas of interest’ for new surveys
  - Primary focus on BLM and Public Lands
- Nuisance mathematical adjustments = moving targets
- FGDC cadastral data model is a data transfer/exchange format, not suitable for direct use
- Uncertain future commitment
A new model...?

- BLM stewards GCDB representation of state boundaries, gathers public land corners
- State opts to maintain GCDB corner point and PLSS division layers
  - MOU for contributing/supporting partners, incl. BLM
  - Creation of a single access point for tie sheets
  - Local high precision control incorporated
  - Threshold set to exclude nuisance adjustments
- GCDB and Public Land ownership layers maintained in a single database as an integrated ‘fabric’