Activities of the Bureau of Land Management

FIG Commission 7 Cadastre & Land Management
June 22, 2005
Madison Wisconsin

Donald Buhler
Chief Cadastral Survey
Bureau of Land Management
BACKGROUND

- Public Domain – 1776
- Western Reserves
- Need for Security
- Show of Unity
- Need for Revenue
- Promote Settlements
PUBLIC LAND SURVEY SYSTEM

- Hotly debated by Thirteen Colonies
- Designed by Thomas Jefferson with major input from other States
- Land Ordinance of 1785
- Three Principals
  - Survey before settlement
  - Follow the design
  - Standard Unit
UNITED STATES RECTANGULAR SURVEY SYSTEM

24 miles
24 miles
24 miles
24 miles

RANGES WEST

FIRST STANDARD PARALLEL - NORTH

T4N, R4W

6 mi. 6 mi. 6 mi. 6 mi.

TOWNSHIPS NORTH

BASE LINE

Initial Point

SECOND GUIDE MERIDIAN - WEST

PRINCIPLE MERIDIAN

FIRST GUIDE MERIDIAN - EAST

SECOND STANDARD PARALLEL - SOUTH
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SECTION DETAIL

TOWNSHIP 1 NORTH, RANGE 1 WEST,
GILA & SALT RIVER BASELINE & MERIDIAN

5 Acres
SE 1/4, NE 1/4, NW 1/4, SW 1/4 of Section 36, T1N, R1W, G&SRB&M

10 Acres
SE 1/4, NW 1/4, SW 1/4 of Section 36, T1N, R1W, G&SRB&M

20 Acres
S 1/2, NE 1/4, NW 1/4 of Section 36, G&SRB&M

40 Acres
SW 1/4, NW 1/4 of Section 36, T1N, R1W, G&SRB&M

40 Acres
SE 1/4, NW 1/4 of Section 36, T1N, R1W, G&SRB&M

160 Acres
NE 1/4 of Section 36, T1N, R1W, G&SRB&M

2,640 ft.
5,280 ft. (one mile)

5,280 ft. (one mile)

5,280 ft. (one mile)
LAND POLICIES

- Land Ordinance of 1785 & 1787
- General Land Office 1812
- Homestead Act 1862
- Railroad land grants 1862 – 1871
- Yellowstone National Park and General Mining Law 1872
- Opening of Indian lands 1887
- Forest Reserve Law of 1891
- National Park Service 1916
LAND POLICIES (cont.)

- Taylor Grazing Act of 1934
- Fish and Wildlife Service created, 1940
- Bureau of Land Management created, 1946
- Land and Water Conservation Fund Wilderness Act of 1964
- Wild and Scenic Rivers Act of 1968
- National Environmental Policy Act of 1970
- Alaska Native Claims Settlement Act of 1971
- Endangered Species Act, 1973
- Federal Land Policy and Management Act (FLPMA) of 1976
MAJOR FEDERAL LAND AGENCIES

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Department of Defense
- Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
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<tr>
<th>Surface Managing Agency (SMA)</th>
<th>Acres (millions)</th>
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<tr>
<td>BLM</td>
<td>261</td>
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<td>Other Federal SMA</td>
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<tr>
<td>Forest Service</td>
<td>191</td>
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<td>Fish &amp; Wildlife Service*</td>
<td>93</td>
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<td>National Park Service*</td>
<td>84</td>
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<td>Dept. of Defense/Corps of Eng.</td>
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<td>Subtotal (Other Federal SMA)</td>
<td>380</td>
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<td>Non Federal (State/Private) SMA</td>
<td>58</td>
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<td><strong>TOTAL</strong></td>
<td><strong>699 million acres</strong></td>
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BLM
MISSION COMPONENTS

- Resource Protection
- Recreation
- Resource Use
- Serving Communities
12 WESTERN STATES INCLUDING ALASKA.

- Outdoor recreation
- Livestock grazing
- Energy
- Mineral development
- Conserving natural, historical, cultural, and other resources
BLM PRIORITIES FY 07 to 09

- ENERGY
  - Contribute to Domestic Energy Supply

- WATERSHEDS
  - Manage Rangelands and Forests to Achieve Healthy and Productive Watersheds

- RECREATION
  - Improve Dispersed Recreational Opportunities

- HERITAGE
  - Protect Cultural and Natural Heritage Resources
Stretch the Buying Power of New Appropriations

- **PARTNERSHIPS**
  - Working with partners that are willing to donate funding or labor to projects that benefit BLM lands

- **COST RECOVERY**
  - Recovering costs to the BLM of its use authorization reviews
    - Reimbursable accounts

- **WORFORCE MANAGEMENT**
  - Forecasting and managing the workforce to optimize its efficiency
PARTNERHSIPS
Projects That Benefit BLM Lands

- Geographic Coordinate Data Base
  - Demands Increasing
  - Indian Country Needs
  - Western Governors’ Association Resolution

- Contributed Services Agreements
  - Proponent pays BLM and provides labor
  - Timely services provided
DEMAND FOR CADAstral SURVEY SERVICES

- BLM’S backlog of high priority surveys
  - Inventory by field managers
  - $93 million with additional yearly needs
DEMAND FOR CADAstral
SURVEY SERVICES

- Meeting BLM’s fiduciary responsibility for Indian trust
  - A long term commitment
  - Over $63 million high priority for next 3 years ($110 m in backlog)
  - Additional needs of $2 M per year
  - Modern land status system base upon surveyed data
HIGH PRIORITY
CADASTRAL SURVEY INITIATIVES

- Alaska Conveyance – complete in 2009
  - Increase of to $42 million in FY 05
- Cadastral survey
  - Fiduciary trust model - $11 million
    - PLSS Maintenance, GCDB, Certified federal surveyor
  - National parcel data base – multipurpose cadastre
    - Linked to the proposed Federal Real Property Bill
  - Leverage existing State and County databases
DEMAND FOR CADAstral SURVEY SERVICES

- Geographic Coordinate Data Base
  - Demands Increasing
  - Indian Country Needs
  - Western Governors’ Association Resolution
- Base layer for land parcel data
FGDC Cadastral Subcommittee

Subcommittee – Bob Ader, Don Buhler Chairs

Nancy von Meyer - Secretary
Members from:

BLM State Offices, USFS, USFWS, FSA,
Corps of Engineers, NGS, MMS, NACo,
Counties, NSGIC, Private Industry

Western Steering Committee
Bill Ferguson - Coordinator
Regional Agency Offices, Federal
State Reps, States, Counties,
Private Sector, WGA GI Council

Eastern Steering Committee
David Stage - Coordinator
Regional Agency Offices, Federal
State Reps, States, Counties,
Private Sector
CADASTRAL PHILOSOPHY

- Standards to Meet Business Needs
  - Standards have a basis in applications
  - Build profiles of standards to support application
  - Tie activities to the needs of our customers
  - Partner and participate with customers

- These Initiatives Can Actually Happen
  - Florida has core data assembled statewide
  - Alabama program has 80% of their parcels converted in three years
  - Implementation of and compliance with standards (Tribes, Montana, USFW and Park County Colorado and many many others)
Accomplishments

- Our Web Page
  (http://www.nationalcad.org)
- Completed and Maintaining a State-by-State Survey
- Standard Maintenance, Implementation and Compliance
- State Boundaries Control Project
- Outreach and Partnerships
FEDERAL GEOGRAPHIC DATA COMMITTEE SUBCOMMITTEE FOR CADASTRAL DATA

These web pages provide information related to the development, standards and implementation of the Cadastral National Spatial Data Infrastructure (NSDI). This site is the home for the Federal Geographic Data Committee (FGDC) Subcommittee for Cadastral Data and serves as a focus for coordinating national cadastral, parcel, and land records efforts. The Bureau of Land Management (BLM) is charged with coordinating cadastral information under OMB Circular A-16.

To further the cadastral NSDI, two related web sites for the Eastern Cadastral Steering Committee and the Western Cadastral Steering Committee are linked to and integrated with this site.

For the lastest news and information regarding this subcommittee visit the “news” section under Reports & Documents.

If you have any questions or comments on this site please let us know. We welcome your input and suggestions and we encourage you to use the information on this site to assist your project.

http://www.nationalcad.org
State Survey and Contacts

Contacts for federal agencies by state

State cadastral coordinators

Related web sites for reaching the contacts
Welcome to the Mesa County Land Development Application Location Map.

This map will allow you to locate and obtain basic information on Land Development Applications. Click on "Project Info" from the left toolbar then select a red parcel for information on projects in process.
Federal Land Records, Review Mesa County, Colorado

- Public Land Survey System
- Land Disposals (Patents, etc.)
- State Lands
- Bureau Of Reclamation Wdls.
- USFS Withdrawals
- Wilderness & Study Areas
- Federal ROW Cases
- Mesa County Parcels
- Federal Mineral Estate
- Telecom. Right-Of-Way
- Federal Oil & Gas Leases
COST RECOVERY

- **Indian Surveys**
  - Full costs are reimbursed $10 M
  - Can supports BLM initiatives
  - Secretary’s Fiduciary Trust Responsibility
  - Maintains BLM survey expertise

- **Forest Service and other Agencies**
  - Can support BLM initiatives
  - Maintains BLM survey expertise
• Prioritizing Cadastral Services to BLM’s four major themes
• Matching Cadastral Services to BIA, Forest Service and other Agencies
• Program Assessment Rating Tool
  – Perform highest priority surveys
  – Complete surveys promptly
Review Public Land Survey Corner Positions

- GCDB/USGS Distance Analysis
  - Distance In Feet
  - 0.000 - 92.448
  - 92.449 - 249.048
  - 249.049 - 638.720
  - 638.721 - 1354.200
  - 1354.201 - 2348.216
The GCDB reliability data was generated by evaluating each line segment endpoints and assigning the highest coordinate reliability value to that line.
Reliability Analysis Cont…
INDIAN ISSUES

FIDUCIARY TRUST MODEL
Three Affiliated Tribes of Fort Berthold
Cadastral Geographic Information System
Pilot Project
The Three Affiliated Tribes was one of four Cadastral GIS pilot projects selected in FY 04

Project is entered into by:
- Bureau of Indian Affairs
- Three Affiliated Tribes
- Office of the Special Trustee
- Bureau of Land Management

Project is funded by OST for $200,000
Fort Berthold reservation is home to three Tribes: the Mandan, Hidatsa, and Arikara.

The original reservation was established by the Fort Laramie Treaty of 1851.

Executive Order of 1870 reduced the reservation size to the external boundaries now recognized.

1947 Legislation provided for taking reservation lands for the Garrison Reservoir.
LAND STATUS PROFILE

- Total Area: 988,000 acres
- Tribally Owned: 79,233 acres
- Allotted Owned: 378,604 acres
- Tribal/Allotted Owned: 457,837 acres
- Government Owned: 3,280 acres
- Non-Indian Owned: 526,883 acres
- Reservoir Taken area: 155,000 acres
COMMUNITY ENVIRONMENTAL PROFILE

- Population of enrolled members: 8,400
- Reservation Population: 3,776

Land Use Economy:
- Agriculture: 78,150 acres
- Grazing: 377,134 acres
- Forestry: 3,477 acres
- Other: 2,356 acres
PROJECT GOALS

- Develop a Cadastral GIS to integrate survey information, land titles information and resource information for management of Tribal Assets
- Promote management of Tribal Assets through self determination
- Implement GIS technologies in support of BLM and BIA to fulfill Trust Responsibilities under the Fiduciary Trust Model
PROJECT OBJECTIVES

- Initial computation and collection of GCDB PLSS to the aliquot part, government lot level from GLO records for the entire reservation.
- Integrate GCDB data with land status information from the Bureau of Indian Affairs.
- Develop a Tribal GIS Business Plan: Conduct a Needs Assessment for GIS and GCDB integration.
- Collection of agreed upon land use authorizations data needed to meet Tribal and BIA business requirements, as much as is practicable in the time allowed for two priority townships.
T. 148 N., R. 91 W
GCDB combined with survey plat and aerial photo
Needs Assessment and Requirements Analysis

Major Points
- Business Planning and Development Guide
  - Serves as the blueprint and road map for system evolution
  - Valuable for funding initiatives & development grants
- Evaluation of Current GIS/LIS Programs
- Assessment of Business Requirements/Needs
- Review of Data Assets
  - Inventory current spatial data
  - Evaluate Land Information Systems
    - Land ownership
    - Land use authorizations
      - Leases, Rights Of Way, Permits, etc...
- Define Future Needs
  - Data
  - Software
  - Hardware
  - Training
- Crosswalk against FCDC/Cadastral Content Standards
Assessment Process

- Departmental Interviews
  - Define departmental functions
  - Define departmental data dependencies
  - Define data functions, creator, maintainer, user
  - Define connections of the GIS/LIS to other systems
  - Define the needs of each functional group
  - Devine security and data distribution parameters
Planning Issues

- What are the short and long term goals of the system?
- Is the current GIS/LIS meeting user needs?
- How will the system evolution be funded & supported?
- What tabular data bases will be processed through the system?
- Are end user analysis tools available in the current system?
- Are legal land descriptions properly entered and map compatible?
- What types of maps must be produced from the system, at what scale?
- Are current data layers based on survey?
  - Positional Accuracy (+/- 1 foot, or +/- 100 feet)
  - Source
  - Scale
- How are maps and data to be processed/produced?
- Who will update the data & how will it be managed?
- Who needs to be trained, & what training is needed?
GIS\LIS Business Applications

- Tribal, Federal State & Local Government
  - Property Parcel Maps - 911 Emergency Response
  - Land Management/Planning
  - Land Management Bnds.
  - Resource Anal. & Mgmt.
  - Transportation Analysis
  - Environmental Planning
  - Demographic Analysis
  - Wild Land Fire Fighting
  - Infrastructure Mapping
  - Water Conservation
  - Ecology Studies
  - Disaster Analysis
  - Environmental Analysis
  - Soil Conservation
  - Emergency Planning
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<th>Business Application Matrix</th>
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<td><strong>Department</strong></td>
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<td><strong>Geographic Feature Database</strong></td>
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<td><strong>Physical Geography</strong></td>
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<td><strong>Street and Addresses</strong></td>
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<td><strong>Property Addresses</strong></td>
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<td><strong>Parcel Mapping</strong></td>
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<td><strong>Utilities</strong></td>
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<td><strong>Other Facilities</strong></td>
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<td><strong>Administrative Districts</strong></td>
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## Data Needs Inventory

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<th>Building Department</th>
<th>Clerk &amp; Recorder</th>
<th>Treasurer’s Office</th>
<th>Sheriff</th>
<th>Emergency Mgmt.</th>
<th>Communications</th>
<th>Planning Department</th>
<th>Environmental Health</th>
<th>County Surveyor</th>
<th>Information Systems</th>
<th>County Attorney</th>
<th>Extension Office</th>
<th>Flood &amp; Bridge</th>
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<td>Rights-of-way and easements</td>
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General Report Contents

- Current Situation
- Functional Needs
- Data Needs
  - Geographic information needs inventory
  - Map inventory
  - Geographic Information needs matrix
  - Tabular data needs
  - Tabular data inventory
  - Tabular information needs matrix
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  - Map conversion
  - Data entry
  - File translation
- Data Processing Needs
- Hardware And Software Needs
- Staffing Needs
- Training Needs
- Legal Needs
- Multi-participant Strategies

Multi-participant Strategies
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  - Bureau Of Indian Affairs
  - Bureau Of Land Management
  - Department Of Agriculture
  - Corps Of Engineers
  - N.D. State Government
  - County Government
- Coordination with regulated industry
  - Natural gas utilities
  - Electric utilities
  - Telephone companies
  - Oil & Gas companies
Summary
Principals of Trust Management

- Promote tribal control and self-determination over tribal trust lands and resources.
- Protect and preserve Indian trust assets from loss, damage, unlawful alienation, waste and depletions;
- Enforce the terms of all leases or other agreements that provide for the use of trust assets, and take appropriate steps to remedy trespass on trust or restricted lands.
- Communicate with beneficial owners regarding the management and administration of Indian trust assets.
Accurate Boundary Placement

Following the deployment of the initial data sets, the following activities will be supported:

- Geographic inventory of Tribal lands, leasing assets, land rights, and economic development areas
- Compare rights described in paper documents with actual rights as exercised on the ground.
- Boundary review by abstracting legal land descriptions from documents
- Boundary analysis to determine the nature and extent of conflicts
- On the ground situation identification to drive survey priorities and identify areas that require survey enhancements.
Fiduciary Trust Model
and Indian Trust Lands Boundary Standards
Cadastral Services

- Cadastral Survey
- Geographic Coordinate Data Base
- Fee to Trust
- Expert Witness Services
- Land Status Determinations
- Land Description Review Certification
- Boundary Line Assurance Certification
- Review of State Authority Surveys
BLM Cadastral Survey Will Hire Land Surveyors for Indian Country

As part of an ongoing effort to streamline land surveying in Indian Country, the Bureau of Land Management (BLM), Office of the Special Trustee for American Indians, and Bureau of Indian Affairs (BIA) has hired land surveyors specifically for Indian lands in six regions. Officials of the agencies met with the new surveyors for the first time today in Washington, DC.

"It gives me great satisfaction to welcome these new employees to Washington," said Ross Swimmer, the Interior Department's Special Trustee for American Indians, who hosted the meeting. "They will play a key role in managing administrative duties and providing technical guidance on survey services performed in Indian Country, and in improving service to individual and tribal trust beneficiaries."

The six new surveyors are part of a larger effort to hire land professionals and develop the Certified Federal Survey Program for licensed land surveyors to establish legal boundaries on Indian lands. Another six are slated to be hired in 2005, ultimately allowing one surveyor to be assigned to each BIA regional office.

"These surveyors will work with the federal agencies and individual tribes to ensure that high-priority work is addressed first," said Jim Hughes, Deputy Director for the BLM, who will also attend the meeting. "Since the Tribes themselves have identified the projects that need to be addressed, the surveying work will address real, on-the-ground concerns," he added.

The new surveyors are as follows:

- **Michael Beale, Great Plains Region (Aberdeen, South Dakota):** Mike Beale obtained his Land Surveyor registration in Montana in 1989 and has over 15 years of experience working with native villages in Alaska.
- **Thomas Castor, Northwest Region (Portland, Oregon):** Tom Castor, a Cadastral Surveyor at the BLM's Oregon State Office for over 15 years, has a degree in surveying from Oregon Institute of Technology and opened and worked for 5 years in the BLM's project office on the Yakama Indian Reservation in south central Washington.
- **Roger Green, Midwest Region (Fort Snelling, Minnesota):** Roger O. Green is currently a Forest Land Surveyor in Northwestern Montana, stationed on the Kootenai National Forest, has been surveying for the Federal government for 27 years, working on projects in 17 States from Washington, DC to the Grand Canyon, with the most experience in Oregon, Arizona and Montana.
- **Daniel Oordt, Eastern Oklahoma Region ( Muskogee, Oklahoma):** A Field Chief with the BLM's Nevada State Office, Oordt has over 20 years of experience in a wide range of surveying disciplines and has provided cadastral services to Native American groups such as the Umpqua, Alhambra, Xikap, Pueblos, Shoshone, Haida, and the Eyak people.
- **Ronald Scherer, Navajo Region ( Gallup, New Mexico):** Ron Scherer, a graduate of Oregon Technical Institute, has worked as a cadastral surveyor for over 30 years, with significant experience in dealing with land boundaries in Indian Country, and has served as an instructor for BLM training courses on Advanced Cadastral Survey and Land Tenure in Indian Country.
- **Richard Widmar, Southern Plains Region (Amarillo, Oklahoma):** A graduate of Iowa State University, Widmar has worked since 1984 for the BLM in New Mexico as a cadastral surveyor servicing Oklahoma, Texas, Kansas, and New Mexico.

Cadastral surveys establish land boundaries and subdivisions that create units suitable for transfer or define the limitations of a parcel's title. Surveyors also identify and establish the legal boundaries between public and private lands to determine the extent and nature of private rights adjoining public or Indian lands for both the surface and subsurface estate.
Questions?

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Current Websites
Bureau of Land Management: www.blm.gov
FGDC Cadastral Subcommitee: www.nationalcad.org
Cadastral Survey: www.blm.gov/cadastral