Governmental Unit and Administrative and Statistical Boundary Theme

Status Report

Federal Geographic Data Committee (FGDC) Coordination Group Meeting
November 10, 2015
Agenda

• Introduction

• National Boundary Group (NBG) and Boundary Data Collection update
  Bob Pierce
  U.S. Geological Service, National Map Product Lead
  Laura Waggoner
  U.S. Census Bureau, Assistant Division Chief, Geographic Partnerships, Data Collection and Products

• Tribal Land Titles and Records Update
  David O’Donnell,
  Bureau of Indian Affairs, GIS Specialist
Governmental Unit and Administrative and Statistical Boundary Theme

• **Definition:** Boundaries that delineate geographic areas for uses such as governance and the general provision of services (e.g., States, American Indian reservations, counties, cities, towns, etc.), administration and/or for a specific purpose (e.g., Congressional Districts, school districts, fire districts, Alaska Native Regional Corporations, etc.), and/or provision of statistical data (census tracts, census blocks, metropolitan and micropolitan statistical areas, etc.). Boundaries for these various types of geographic areas are either defined through a documented legal description or through criteria and guidelines. Other boundaries may include international limits, those of federal land ownership, the extent of administrative regions for various federal agencies, as well as the jurisdictional offshore limits of U.S. sovereignty. Boundaries associated solely with natural resources and/or cultural entities are excluded from this theme and are included in the appropriate subject themes.
Governmental Unit and Administrative and Statistical Boundary Theme

- **Agency Lead:** Department of Commerce, U.S. Census Bureau
- **Theme Lead:** Lynda Liptrap
- **Executive Champion:** Timothy Trainor
Governmental Unit and Administrative and Statistical Boundary Theme

National Boundary Group (NBG)
- To have a federal effort leading toward national importance of boundaries and the A-16 data sets
- For all responsible federal agencies to achieve the following with boundaries:
  - Current (how is it defined by responsible agency)
  - Accurate (what is required by responsible agency)
  - Consistent (Between agencies)
  - Accessible (To federal agencies)
  - Integrated (Ability to use each other data without duplication)

Meeting Status
- First meeting held March 14, 2011
- Quarterly meetings since 2012
- Established as FDGC workgroup as of May 27, 2014

Co-chaired by the USGS and Census
Improvement and Delivery of National Boundaries
( Parcel, City, County, State, Federal, Tribal, International, PLSS Boundaries)

NATIONAL BOUNDARIES GROUP (NBG)

Data Integration Qualities
- Semantically Defined Completeness
- Accuracy, Currentness, Coverage
- Accuracy, Vertical and Horizontal Integration Consistent
- Catalog Inventory Interoperable
- Available and Accessible
- Useable

Target - Transforming Geospatial Data into Information Services

Functional Value Chain
- Planning and Acquisition
- Production Lifecycle Management
- Data Acquisition
- Cartographic Modeling
- Map Creation
- Product Generation
- Product Download

Syndicators
- Geospatial Data Use

Delivery

Service Development
- Map and Data Service Development

Aggregator - Stewardship Partnerships
- Source Suppliers Collaborators (VGI)
- Data Integration – Data Normalization, Classification
- Data Transformation (RDF) Model Building

Transforming Geospatial Data into Map Products

Customer Exchange Line

Providing: Cost Avoidance 5% of Value
Operational Efficiency: 34% of Value
Map Production and Information Management

Model is based on savings of $7 for every dollar invested
NBG Participating Agencies

- Bureau of Land Management (BLM)
- U.S. Forest Service (USFS)
- National Park Service (NPS)
- U.S. Fish and Wildlife Service (FWS)
- U.S. Geological Survey (USGS)
- U.S. Census Bureau (Census)
- Bureau of Reclamation (BOR)
- Bureau of Indian Affairs (BIA)
- National Geospatial-Intelligence Agency (NGA)
- U.S. Army Corps of Engineers (USACE)
- Bureau of Ocean Energy Management (BOEM)
- Environmental Protection Agency (EPA)
- Department of Defense (DOD - DISDI)
- Department of Energy (DOE)
- National Aeronautics and Space Administration (NASA)
- Department of Homeland Security (DHS)
- International Boundary Commission (IBC)
- International Boundary and Water Commission (IBWC)
- Department of State
- Veterans Administration (VA)
NBG 2015 Meetings

• Tribal Lands and Boundaries – February 10th, 2015 ESRI Federal Users conference in Walter E Washington Convention Center, Washington DC

• International Boundaries May 28th, 2015, Webinar Sponsored by USGS

• Tribal Buyback September 15th, 2015, Webinar
Accomplishments of NBG 2015

• Created a public community page on the GeoPlatform.gov at www.geoplatform.gov/a16govunits/NBG
  – Establishing user accounts for theme page and NBG Sub Page
  – Admin will have editing and maintenance capabilities for these pages

• Created a public community page for Federal Land Workgroup at www.geoplatform.gov/a16govunits/FederalLands

• In discussions for a Tribal Land Boundary Working Group as a platform for Federal agencies and Tribal governments to create a unified source of Tribal land boundary data
Accomplishments of NBG 2015

• Continued collaboration with Census, the International Boundary Commission (IBC) and the International Boundary Working Group (IBWC) to complete the update of all international boundaries in Census’s digital map of the US, Puerto Rico and island areas.

• Continuing collaboration with the Cadastral Subcommittee to identify where boundaries are coincident with cadastral features.
  – The Census has operationalized the results of this activity with the Boundary Quality Assessment and Reconciliation Project (BQARP).
  – The Federal Lands workgroup coordinated a draft fed lands geodatabase to assess topology overlap errors and common agency needs, along with source data documentation and select core attribute standards.
Goals for NBG 2016

- Outreach to federal agencies that consume or produce data sets that define or affect boundaries to reduce duplication of effort and to increase the overall quality of shared boundary data.
- Continue to provide an open forum for the exchange of ideas to improve the overall management and availability of boundaries in federal data sets.
- Identify collaborative opportunities with tribal, federal, state, and local governments.
- Tribal Lands Subgroup will finalize their charter and document how agencies use tribal boundary data, what data quality is required, and what attributes about the boundaries are needed.
- NBG will continue to hold quarterly NBG meetings.
Federal Lands Subgroup

Objective:
To develop a data standard and the organizational strategies for federally own lands

- Publish aggregated fed lands geodatabase to meet common agency needs
- Complete paired agencies boundary adjudication effort
- Review data standards
- Guide workflow and contacts
Geoplatform Webpage Goals for 2016

1. Increase membership to Theme Community page
   - Streamline creation of accounts via better communication
   - One Census Bureau manager for access/permission settings

2. Managing the group access
   - NBG
   - Federal Lands Subgroup
   - Establishing Tribal Lands Subgroup

3. Management of content
   - Add content to existing public pages
   - Establish private pages and add content
   - Investigate ability to provide notifications
Federal Lands Subgroup

Current activities

• Developing Source Data documentation that identifies the data sources to be aggregated from agencies and field mapping.

• Testing the Fed Lands geodatabase model with the PAD-US schema using multiple feature classes.

• Assessing Federal naming standards; refine for Fed Lands geodatabase to meet common needs.

Goals for FY2016

1. Finalize and publish Source Data documentation.

2. Finalize and publish Core Attribute standards.

Tribal Boundaries Subgroup

- New National Boundaries Group Subgroup
- Purpose: Government agencies have overlapping needs for tribal boundaries
  - Population and economic data, mineral resources, criteria for programs etc.
  - Legal boundaries, statistical boundaries, cultural boundaries etc.
Tribal Boundaries Subgroup

Subgroup Goals:

– Document tribal boundary needs from agencies
– Document definitions for types of tribal lands and boundaries
– Document who is responsible for the authoritative dataset and what is the authoritative dataset
– Discuss ways that agencies can collaborate, reduce duplication, and share tribal boundary information
– Create a resource about tribal boundaries for writing legislation or program criteria
Tribal Boundaries Subgroup

- 1\textsuperscript{st} subgroup meeting (tentative) Tuesday 12/1/15

- Anyone is welcome to join

- Co-chairs:
  - Lee Para (EPA) Pera.Lee@epa.gov
  - Lyndsey Richmond (Census Bureau) lyndsey.richmond@census.gov
Governmental Unit and Administrative and Statistical Boundary Theme

National Geospatial Data Assets for 2015

114th Congressional District
2010 Census 5-digit ZIP Code Tabulation Area
2010 Census Population & Housing Unit Counts
2010 Census Public Use Microdata Area
2010 Census Urban Area
2010 Census Voting District
2010 Urban Growth Area
Alaska Native Regional Corporation (ANRC)
American Indian Tribal Subdivision
American Indian/Alaska Native/Native Hawaiian (AIANNH) Homeland Areas
Block Group
Census Block
Census Bureau Regional Office Boundaries
Census Tract
Combined New England City and Town Area
Combined Statistical Area
Consolidated City
County and Equivalent County Subdivision
Elementary School Districts
Estate (US Virgin Islands)
Metropolitan Division
Metropolitan Statistical Area/Micropolitan Statistical Area
NECTA Division
New England City and Town Area
Place
Secondary School District
State and Equivalent
State Legislative District (SLD) Lower Chamber
State Legislative District (SLD) Upper Chamber
Subbarrio (Subminor Civil Division)
Tribal Block Group
Tribal Census Tract
Unified School Districts
Roads (All Roads)
Traffic Analysis Zone
Regional Boundaries (EPA)
Regional Boundaries (HUD)
HUD Entitlement Grantee Jurisdiction
BLM Administrative Boundaries (BLM)
National Weather Service Forecast Boundaries (NOAA-NWS)
Canadian/US Border (IBC)
Mexican/US Border (IBWC)
Governmental Unit and Administrative and Statistical Boundary Theme

National Geospatial Data Assets for 2015

- International
- Federal
- Statistical
- Administrative
- Legal

Tippecanoe and Fountain Counties, IN survey marker. Photo courtesy of Michael Ratcliffe 2015
The International Boundary Commission (IBC) maintains the 5625 mile long international boundary using:
- Control Networks
- Land Monuments
- Reference Monuments

This year the IBC has QC’d 9,000 to 10,000 points along the boundary.

The IBC plans to release the boundary points in 2016.
The International Boundary and Water Commission (IBWC)
Bi-national commission on boundary disputes between the US and Mexico recently resurveyed and repaired land boundary monuments

- Boundary Monuments were last surveyed in 2007
- 120, 121, 122, 122C, 123 have been resurveyed by Mexico, currently being reviewed by the Commission
- 142A & 145 have been repaired. Commission is working on a joint report
- 207 was rehabbed, but restoration work has neared completion

Photo: IBWC boundary monument. Courtesy of IBWC
Governmental Unit and Administrative and Statistical Boundary Theme

National Geospatial Data Assets for 2015
Other Data Sets - Not Collected/Compiled by Census

- Regional Boundaries (EPA)
- Regional Boundaries (HUD)
- HUD Entitlement Grantee Jurisdiction
- BLM Administrative Boundaries (BLM)
- National Weather Service Forecast Boundaries (NOAA-NWS)
Statistical
Pre 2020 Census
Statistical geography concerns geographical areas defined solely for data collection, tabulation and analysis

- Tabulation Block
- Participant Statistical Area Program
  - Alaska Native Village Statistical Areas (ANVSAs)
  - Block Group
  - Census Designated Place
  - Census Tract
  - Oklahoma Tribal Statistical Areas
  - Tribal Census Tract
  - Tribal Census Block Group
Statistical
Post 2020 Census
Statistical geography concerns geographical areas defined solely for data collection, tabulation and analysis

• Metropolitan/Micropolitan Statistical Area
• Metropolitan Division
  – New England city and town area
• Urban Areas
• ZIP Code Tabulation Area
• Public Use Microdata Area
Administrative measures create administrative boundaries, specify their governmental or administrative functions, and contain provisions for establishing and changing their names and boundaries.

- **Redistricting Data**
  - Congressional District
  - State Legislative District (Lower Chamber)
  - State Legislative District (Upper Chamber)
  - 2010 Voting District

- **School District**
  - Elementary
  - Secondary
  - Unified
Legal

Legal entities originate from legal actions, treaties, statutes, ordinances, resolutions, court decisions, etc.

Boundary Annexation Survey

- Alaska Native Regional Corporation
- American Indian/Alaska Native
  - Off Reservation Trust Lands
  - Native Hawaiian Area
  - American Indian Tribal Subdivision
- Consolidated City
- County and Equivalent
- Minor Civil Divisions (County Sub)
  - Townships
- State and Equivalent
- Puerto Rico
  - Subbarrio
  - Subminor Civil Division
- U.S. Virgin Island Estates
  - (not part of BAS)
Boundary and Annexation Survey (BAS)

• Annual, voluntary survey to collect legal status and boundaries for local governments
• Boundaries must be legally in effect on or before January 1\textsuperscript{st} of BAS year
• Boundary updates submitted by deadline are reflected in American Community Survey and Population Estimates
• BAS 2015 Entities reported:
  – Counties: 442
  – Places: 1892 (1038 reported by County)
  – MCDs: 643 (637 reported by County)
  – Tribal Areas: 27
2016 BAS – What’s Different?

• The return of BAS Paper maps
  – Minor design updates
  – PDFs available online

• Introducing the Geographic Update Partnership Software (GUPS) tool
  – Provides a common geographic update tool that will allow over 40,000 tribal, state, and local governments to submit digital updates for geographic programs, including the BAS.
  – Makes geographic program participation more convenient for participants by offering the ability to view and update Census Bureau geospatial and tabular data
BAS 2016 Schedule

- **December 2015/January 2016** – Annual Response information emailed
- **January 1, 2016** – Annexations must be effective by this date in order to be processed
- **March 1, 2016** – Deadline for BAS submission to be included in Population Estimates Program and American Community Survey
- **March/April 2016** – State Data Center non-response follow up
- **May 31, 2016** – Deadline for BAS submission to be reflected in 2017 BAS Materials
BAS State Agreements or Memorandum of Understanding

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BAS and Redistricting (RDP)

• State Redistricting Data Program Liaisons may submit boundary updates as part of Phase 1 (BBSP) & Phase 2 (VTD) (new for 2020)

• Census coordinates RDP Liaison-submitted boundary updates with local officials (BAS processing staff responsibility, BAS 2016 and BAS 2017)

• Information on 2020 Redistricting Data Program:
  • Website: https://www.census.gov/rdo/
  • Phone: (301) 763-4039
Boundary Quality Assessment and Reconciliation Project (BQARP)

- Comparing locally sourced data to adjust Census boundaries where necessary
- Coordinating efforts with State partners
- Aligning with Parcel and Public Land Survey System (PLSS) boundaries, where applicable
- Improving the spatial quality of legal and administrative boundaries within the MAF/TIGER System
  - Set the boundaries spatial accuracy
  - Lock boundaries in place to avoid changes without legal documentation
BQARP Data Types

![Map of the United States showing BQARP data types by state.](image-url)
Tribal BAS

- Census Bureau tribal boundaries are frequently viewed:
  - We publish shapefiles twice a year and maintain an online viewer
  - Local and tribal officials view the boundaries in many ongoing programs
- Census Bureau tribal boundaries are frequently used by other agencies
- Census Bureau tribal boundaries are used for data dissemination
Tribal BAS

• Collect boundary data
  – Government-to-government policy
  – January thru May: Tribes submit updates
• We review the updates and check documentation: documentation is required
• Update our digital geographic database
  – Align new trust land or boundary changes with other geography
  – Check spatial reference (example: Public Land Survey System)
• Tribes with missing documentation: Notify tribe and refer them to BIA to get documentation
LAND TITLES AND RECORDS & BRANCH OF GEOSPATIAL SUPPORT

PRESENTED BY: DAVID O'DONNELL, GIS SPECIALIST
BETH A. WENSTROM, CHIEF LAND TITLES AND RECORDS

United States Department of the Interior
Bureau of Indian Affairs
Office of Trust Services
Division of Land Titles and Records
Boundary Inventory and Update

Goals:

• Geospatially portray Federally recognized American Indian Land Boundaries that are linked to official land, title and cadastral records for land status mapping purposes.

• Illustrate boundary segments according to assessed “certainty” ranking and when required investigate and resolve discrepancies based on legal determination.

• Publish the single Authoritative source for American Indian Land Boundaries for use by Tribes and other Agencies (Census, USDA, EPA, FEMA, State, Local etc.)
Example of Ranked Boundary Line Segments

Salt River Reservation

Level of New Boundary Certainty
- High
- Moderate
- Low
- Needs Investigation
1. Foundational data organized, projected, and symbolized in a template GDB and MXD.
2. Align existing boundaries to TAAMS Generated Parcels or PLSS wherever possible.
3. Assign attributes according to BLM’s Era of Survey and Reliability for Indian Lands.
4. Calculate offset distance from existing boundary location to updated location.
5. Assess level of certainty for each segment based on rank of summarized attributes from all data inputs.
6. Certify the newly aligned boundary through LTRO.
Data Sources

- TAAMS (System of Record for BIA Land Titles) legal descriptions and associated ownership data.
- Most current BLM PLSS, CadNSDI v2 enhanced with GCDB Indian Survey data.
- Era of Survey from BLM (No Data, Pre-1910, 1910 - 1972, 1972+)
- Reliabilities from BLM (Less than 21 ft., 21 - 100 ft., 100 ft.+) 
- Boundary Offset distance generated by BOGS (Less than 21 ft., 21 - 100 ft., 100 ft.+)
- Other – Proclamation, Court Decree, Solicitor Opinions etc.
BLM Geographic Coordinate Database

Data Sources - GCDB/PLSS

• GCDB (CadNSDI) Data - BLM’s Geographic Coordinates Database (GCDB)
  • The “locational” aspect of the data allows us to identify “where” the “what” is located
  • Grid abstracted from official survey records and geodetic control information
Data Source: TAAMS

- **TAAMS** - BIA’s Trust Asset and Accounting Management System
  - The “ownership” aspect of the data identifying the “what” of land ownership; NOT THE WHERE
  - Current and historical title, deed, and patent data
  - Land descriptions describing the parcel or parcel boundaries in tabular format
Outline for boundary mapping process:

1. Determine the new location of Indian Land boundary segments by following hierarchy:
   a) Match to parcel boundaries generated from TAAMS along perimeter of Indian Lands
   b) Match to PLSS boundaries along perimeter of Indian Lands
   c) Continuation of either Parcel or PLSS boundaries
   d) Maintain existing boundary location in the case of missing Parcel or PLSS data
Existing Boundary, TAAMS Generated Parcels, and PLSS

Salt River Reservation

Legend:
- Existing Boundary (Census 2007)
- TAAMS Generated Parcels
- PLSS Second Division
Outline for boundary mapping process:

2. New Indian Land boundary is split at every location where one of the following attributes changes and those attributes are applied to that particular line segment.
   a) **Boundary Action**: Matched to Parcel, Matched to PLSS, or No Parcel Or PLSS available
   b) **Meandered Water**: Yes or No
   c) **Era of Survey**: 1972 to present, 1910-1972, pre-1910, or Unknown
   d) **Reliabilities**: Less than 21ft, 21-100ft, 100+ ft, or Unsurveyed
   e) **Boundary Offset** (Distance original boundary shifted to new location): Less than 21ft, 21-100ft, 100+ ft
Outline for boundary mapping process:

3. Evaluate each unique segment of boundary line according to an assigned rank calculated using the above attributes. Ranked values are based on level of certainty for each segment and are grouped to highlight areas of sufficiently accurate segments and those needing further investigation.
6 Phases of Boundary Development

1. *Reservation and Trust Land Boundary Inventory and Update* as demonstrated above.

2. Review of Regional Boundary data for the collection of missing off reservation restricted fee and trust tracts – Tribal Proclamations.

3. Collection of Title references from recorded documents & other official legal papers from which the boundaries where defined to attribute line work

4. Data submitted to LTRO Manager for review and certification for publication for the purpose of land status mapping.
6 Phases of Boundary Development

5. Identify/flag for future work riparian and other non-rectangular boundaries (land grants) which will require additional research and cadastral support.

6. Evaluation of Historic reference maps for pertinent historical boundaries, ceded areas, adjustments, original ranges and associated references for inclusion as related feature classes.
Region, Agency and LTRO Jurisdictions
Thank you

Questions?