

# 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

- Agency Lead: Department of Commerce, U.S. Census Bureau
- Theme Lead: Lynda Liptrap
- Executive Champion: Timothy Trainor

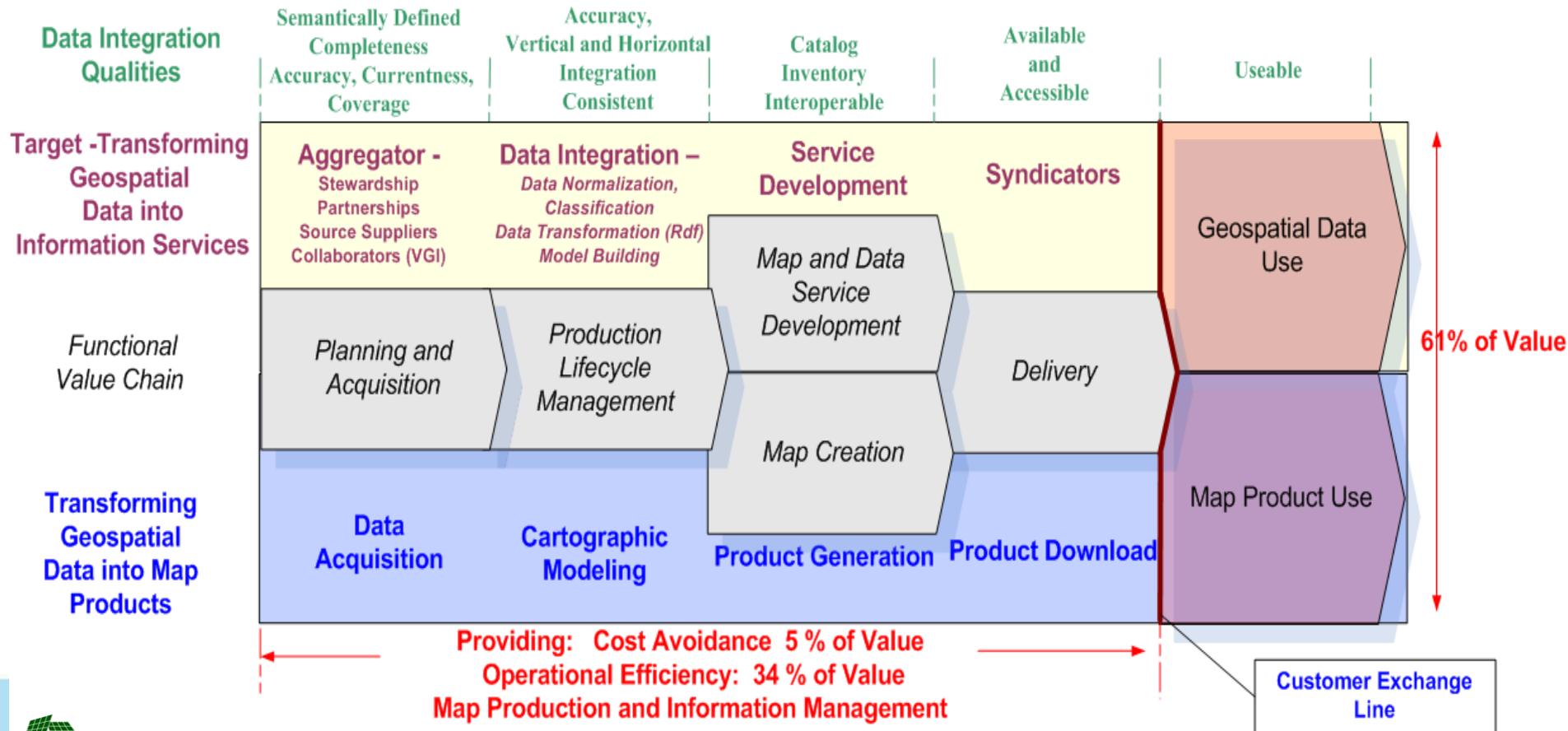




# Improvement and Delivery of National Boundaries

(Parcel, City, County, State, Federal, Tribal, International, PLSS Boundaries)

## NATIONAL BOUNDARIES GROUP (NBG)



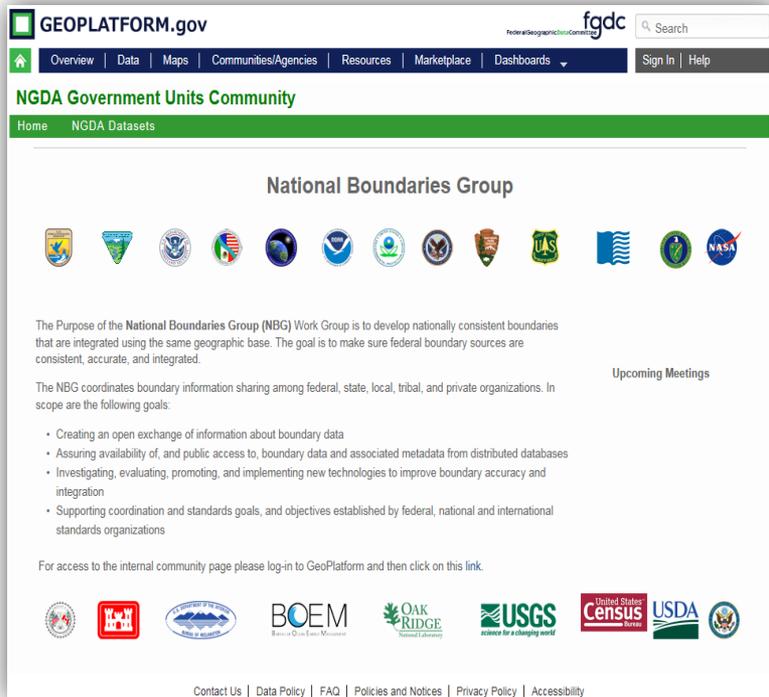


# NBG 2015 Meetings

- Tribal Lands and Boundaries –  
February 10<sup>th</sup>, 2015 ESRI Federal Users conference in Walter E Washington Convention Center, Washington DC
- International Boundaries  
May 28<sup>th</sup>, 2015, Webinar Sponsored by USGS
- Tribal Buyback  
September 15<sup>th</sup>, 2015, Webinar



# Accomplishments of NBG 2015



- Created a public community page on the GeoPlatform.gov at [www.geoplatform.gov/a16govunits/NBG](http://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](http://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



# 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.
3. Document Common Agency Needs that will help determine feature classes.





# 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<sup>st</sup> subgroup meeting  
(tentative) Tuesday 12/1/15
- Anyone is welcome to join
- Co-chairs:
  - Lee Para (EPA) [Pera.Lee@epa.gov](mailto:Pera.Lee@epa.gov)
  - Lyndsey Richmond (Census Bureau) [lyndsey.richmond@census.gov](mailto:lyndsey.richmond@census.gov)





# 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



# International Boundaries

## United States and Canada



### 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.



Photo courtesy of JT Moore and the IBC

The US Canadian border is can be seen by the maintenance of the border shown by a swath of land.

The boundary follows monument to monument or turning point



# International Boundaries

## United States and Mexico



### 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





# 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

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)



Mason Dixon Line separating Penn County PA and Calvert County MD.  
Photo courtesy of Michael Ratcliffe 2015



# 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<sup>st</sup> 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







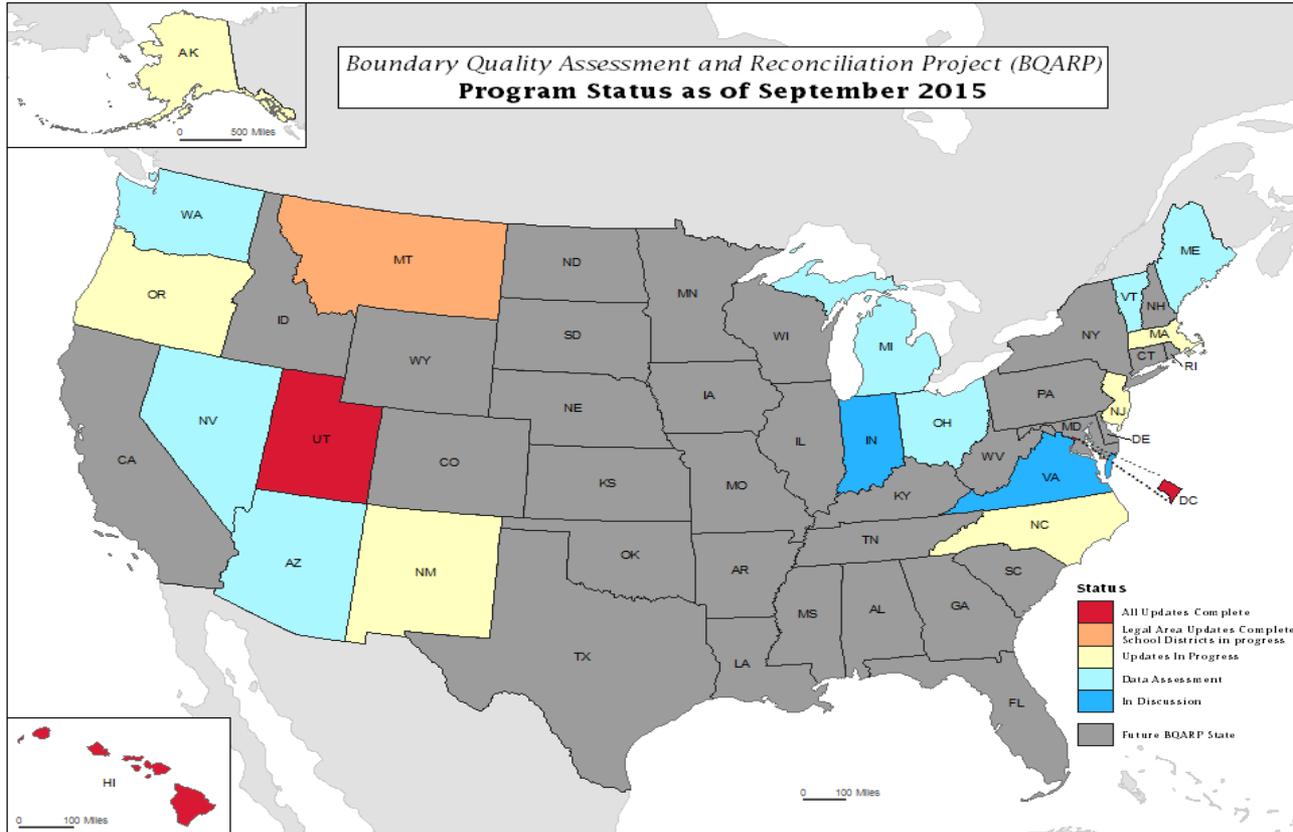
# BAS and Redistricting (RDP)

- 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

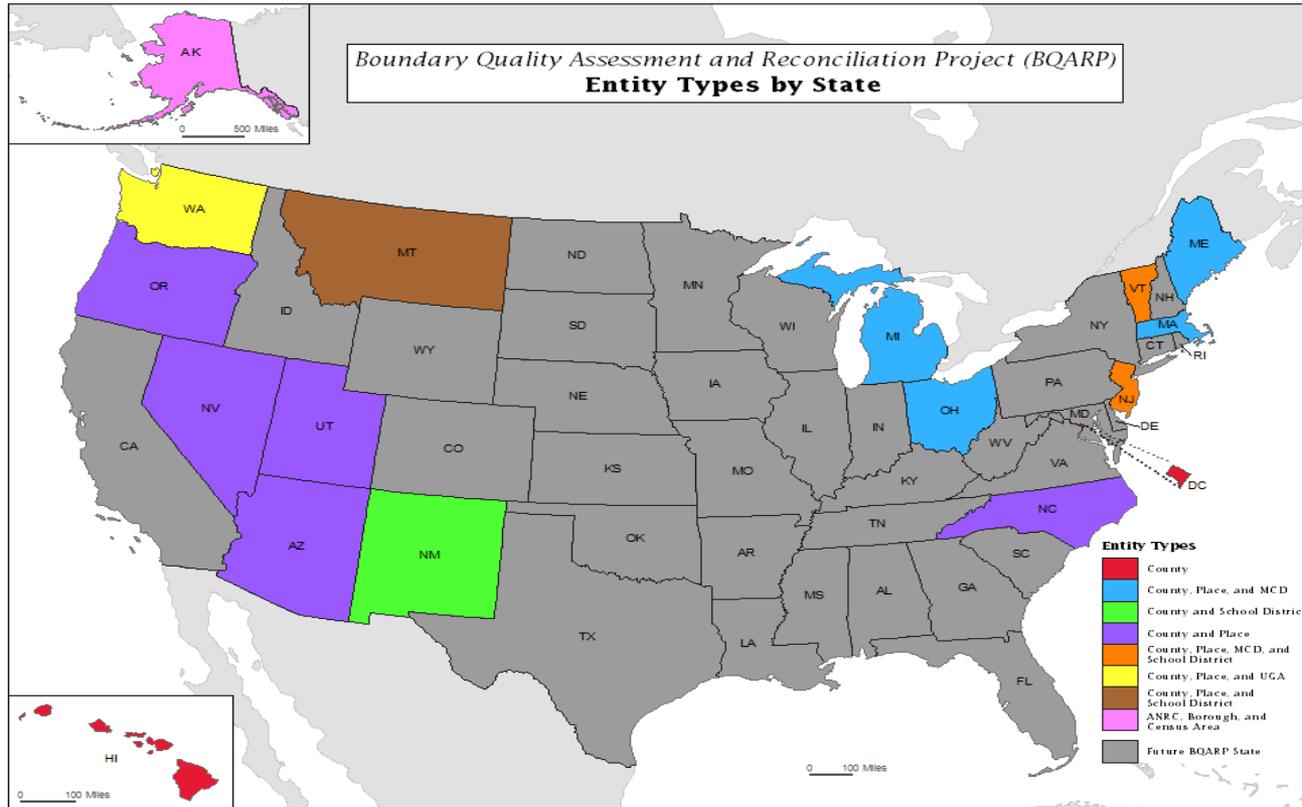




# BQARP Status



# BQARP Data Types



# 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



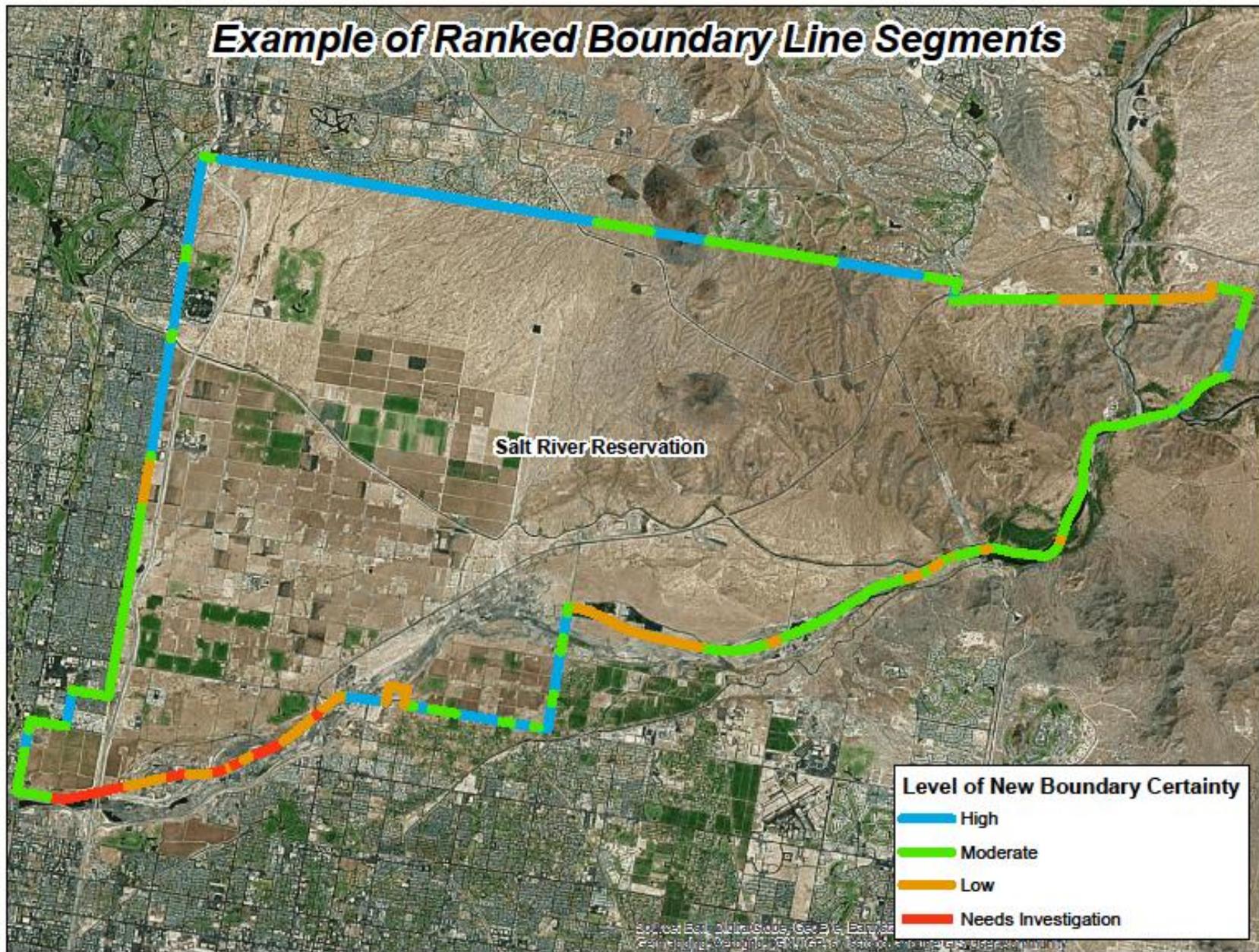
# Boundary Inventory and Update

## Goals:

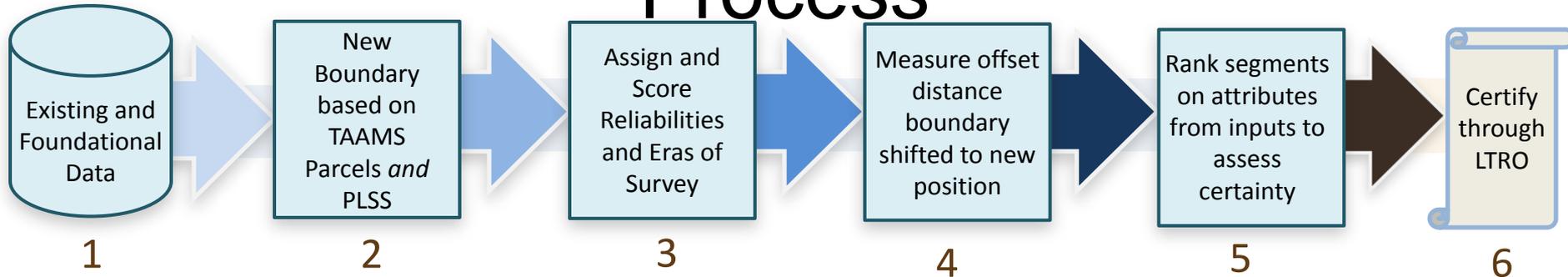
- Geospatially portray Federally recognized American Indian Land Boundaries that are linked to official land, title and cadastral records for land status mapping purposes.
- Illustrate boundary segments according to assessed “certainty” ranking and when required investigate and resolve discrepancies 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



# Boundary Inventory and Update Process



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.

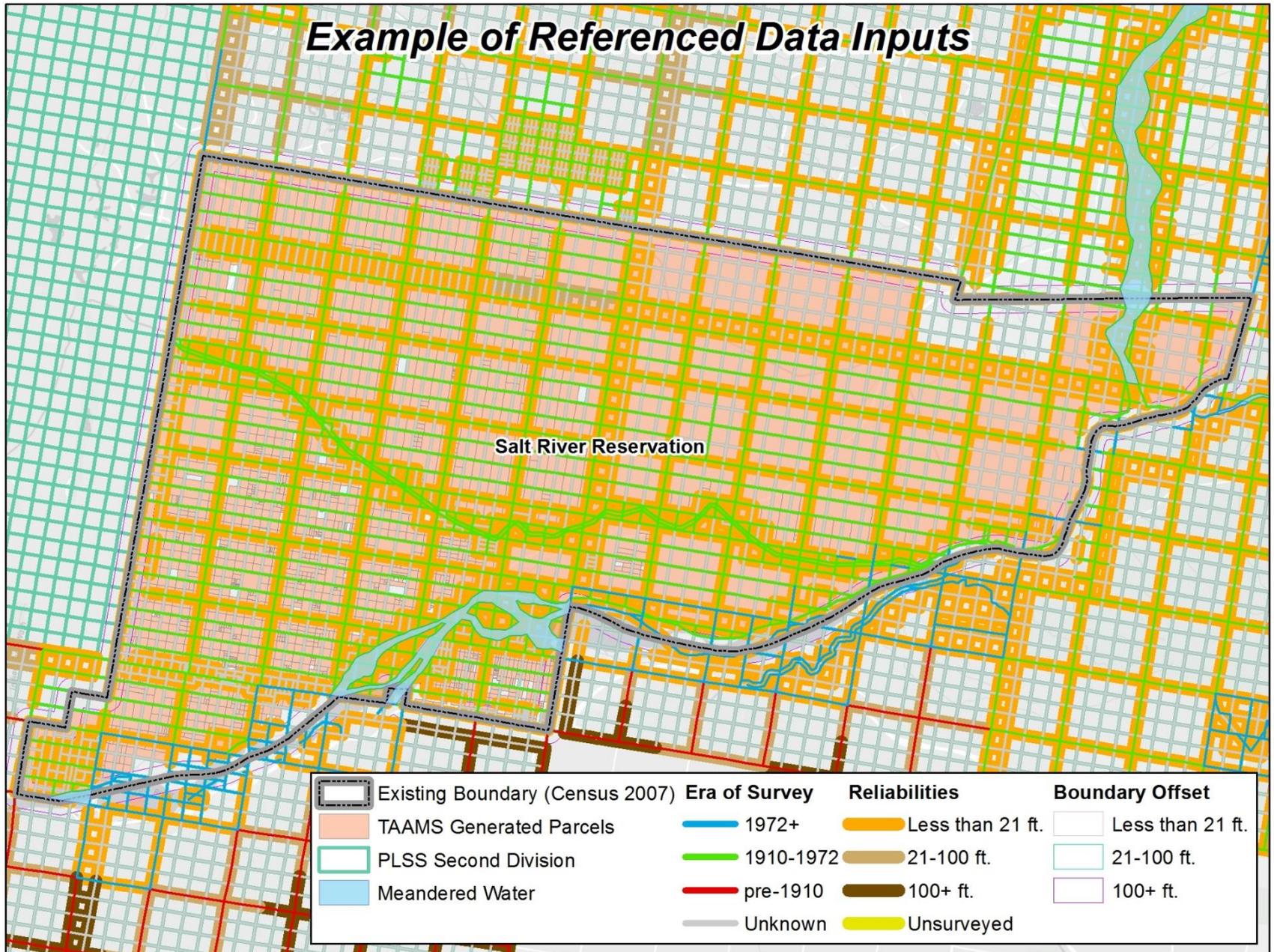


# Data Sources

- 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.



# Example of Referenced Data Inputs



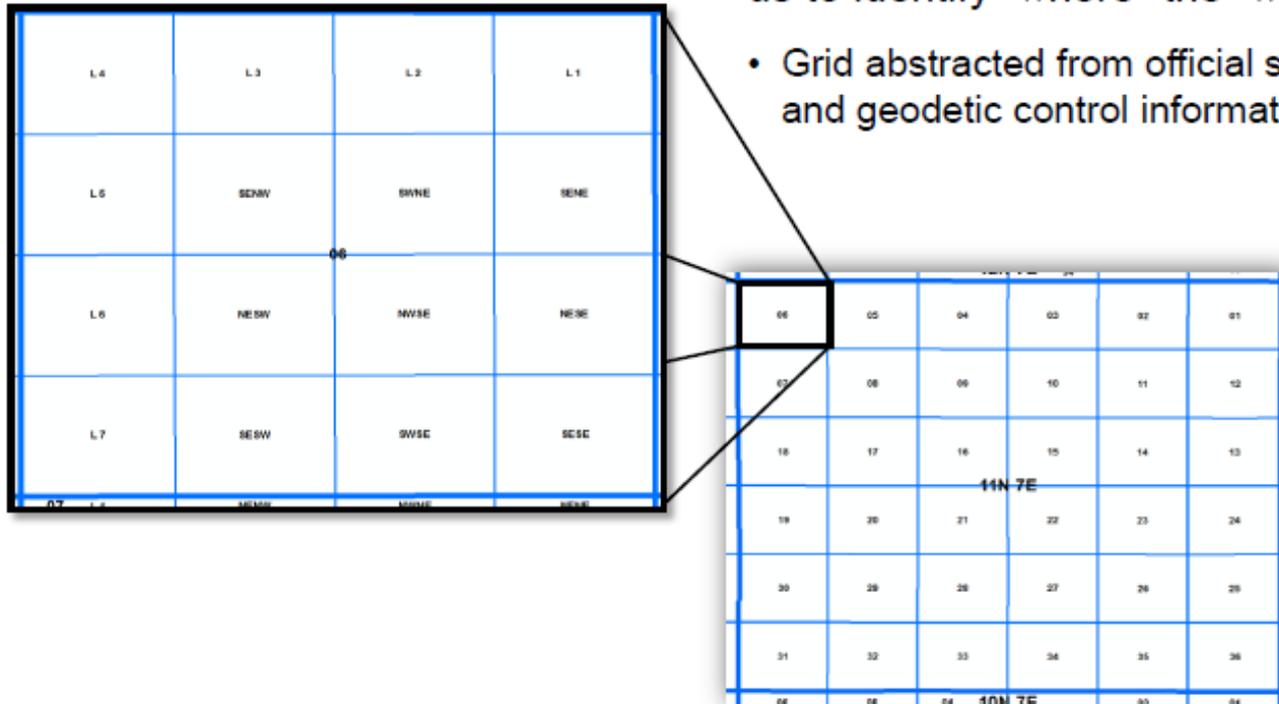
	Era of Survey	Reliabilities	Boundary Offset
	Existing Boundary (Census 2007)		1972+
	TAAMS Generated Parcels		Less than 21 ft.
	PLSS Second Division		21-100 ft.
	Meandered Water		100+ ft.
			Unknown
			Unsurveyed



# 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

The screenshot displays the TAAMS software interface. The main window is titled "Tract Lands: 820 10 -B". It features a table with the following data:

Survey System Identification	Description	Acres	State	County
TRS: 011.00N 004.00E 13	Lot 4-NE SW	35.900	OKLAHOMA (K)	POTTAWATOMIE (12)

Below the table, there are several input fields and sections:

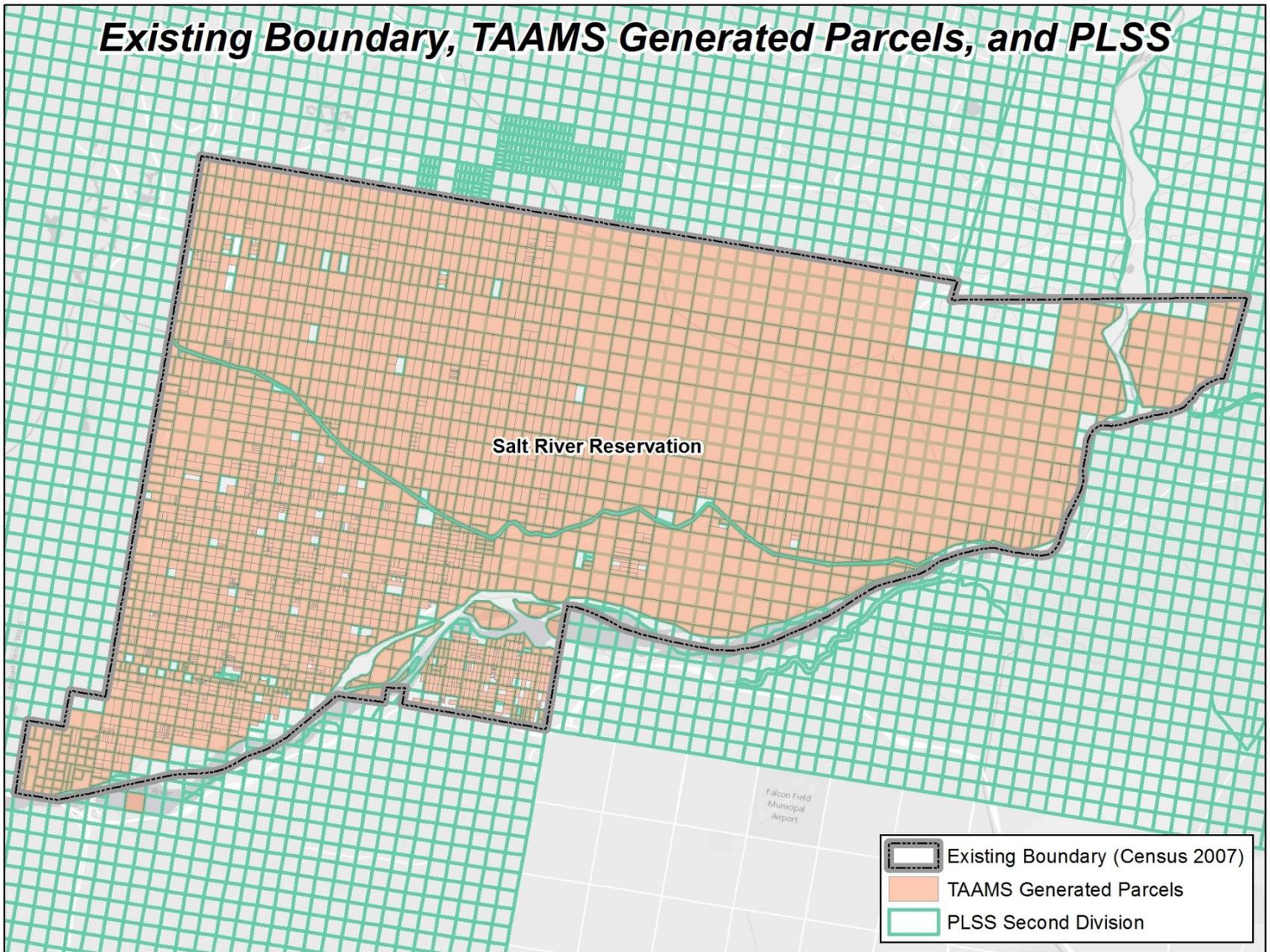
- Total Area:** 35.900
- State and County Selection:** State: OKLAHOMA (OK), County: POTTAWATOMIE (125)
- Coordinates:** Township: 011.00N, Range: 004.00E, Section: 13, Meridian: 17 - Indian
- Surface Area:** 35.900 acres
- Section Size:** 640.000
- Parcel Table:**

Lot	Aliquot	Auto Calc. Acres	Acres
4	NE SW	No	35.900





# Existing Boundary, TAAMS Generated Parcels, and PLSS



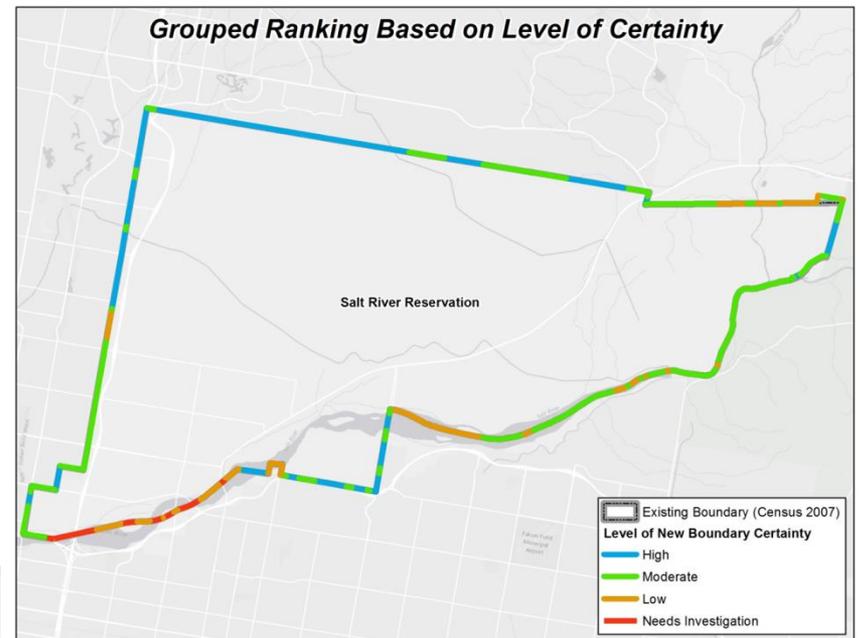
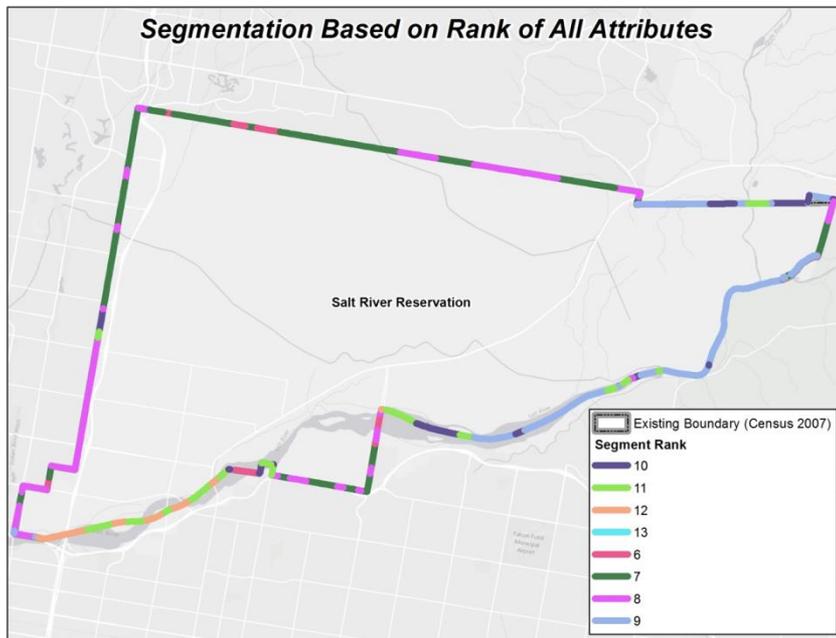
# Outline for boundary mapping process:

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

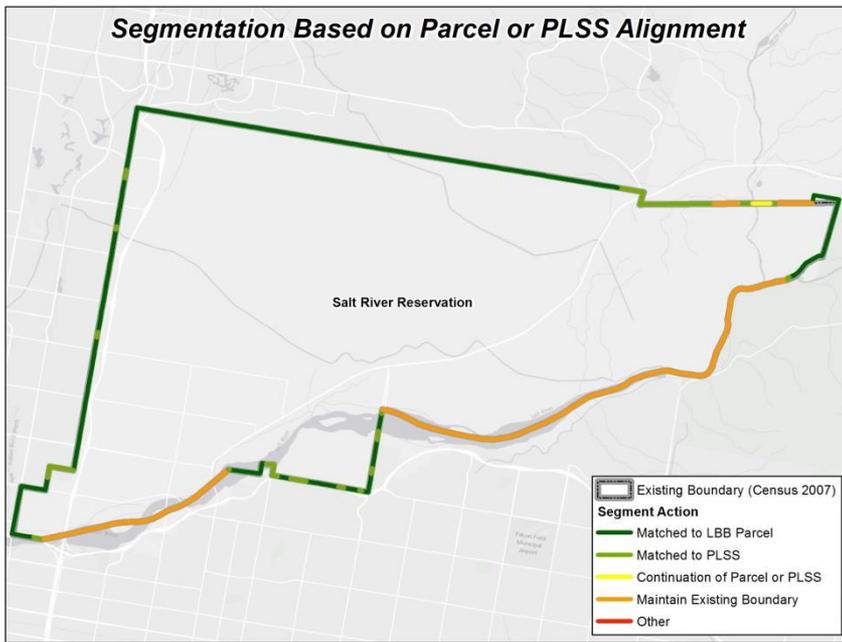


# Outline for boundary mapping process:

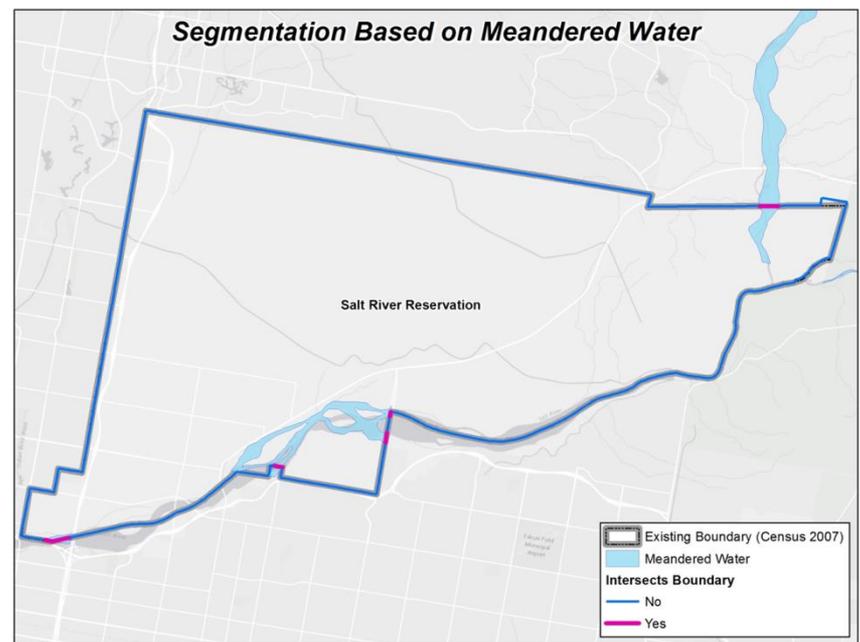
3. Evaluate each unique segment of boundary line according to an assigned rank calculated using the above attributes. Ranked values are based on level of certainty for each segment and are grouped to highlight areas of sufficiently accurate segments and those needing further investigation.



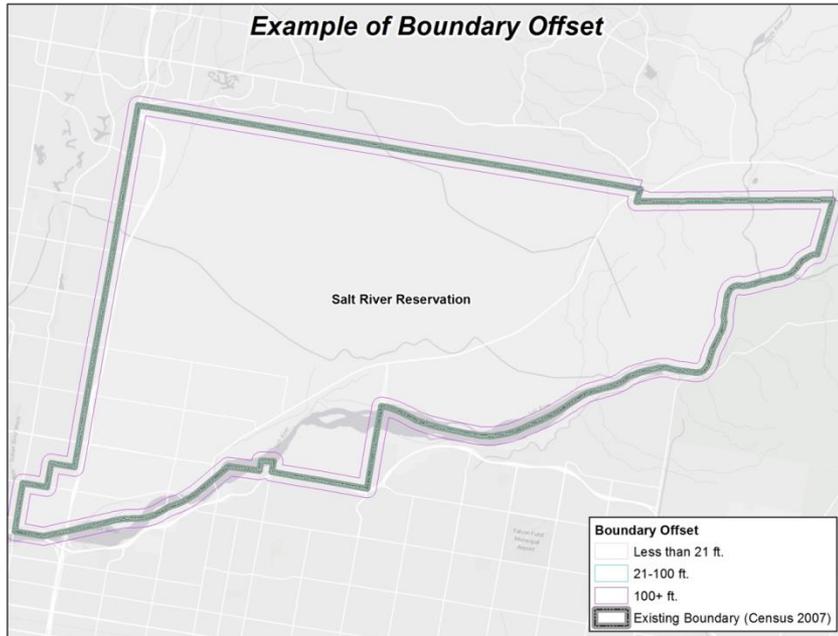
### Segmentation Based on Parcel or PLSS Alignment



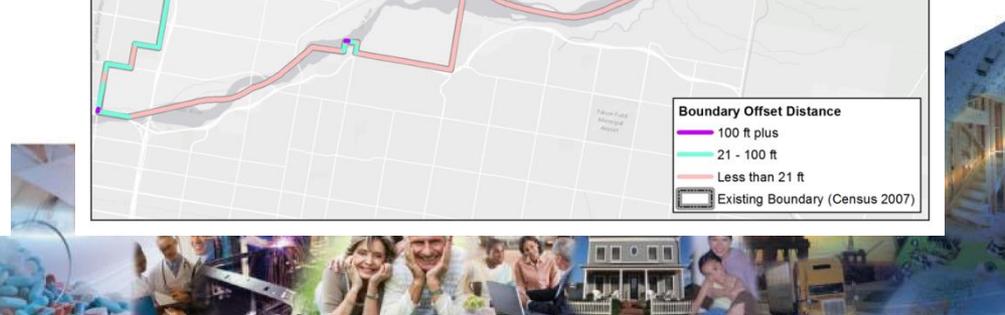
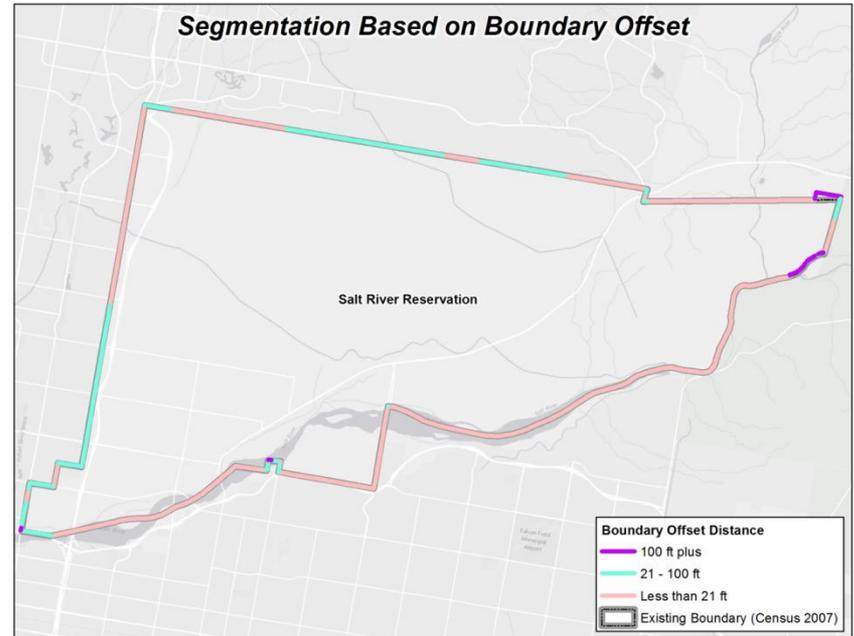
### Segmentation Based on Meandered Water

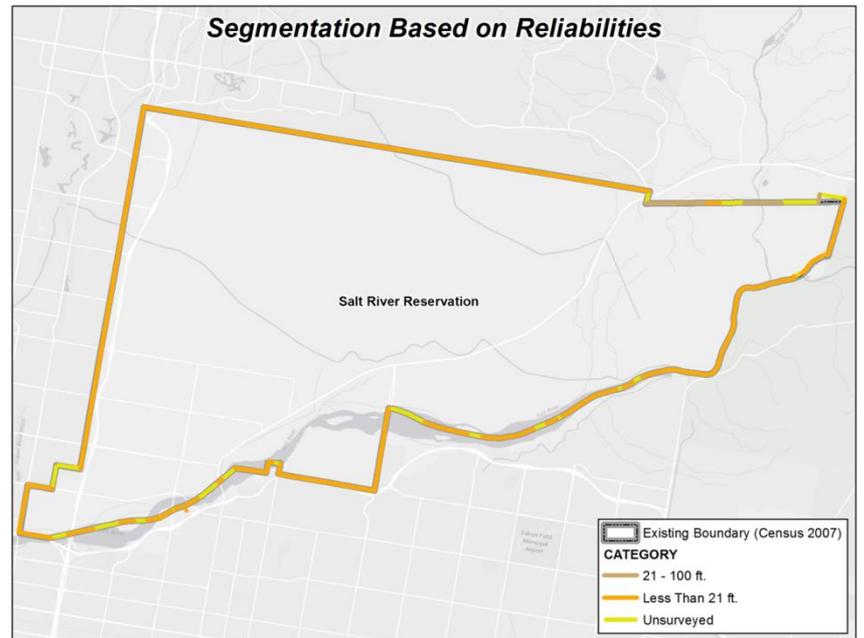
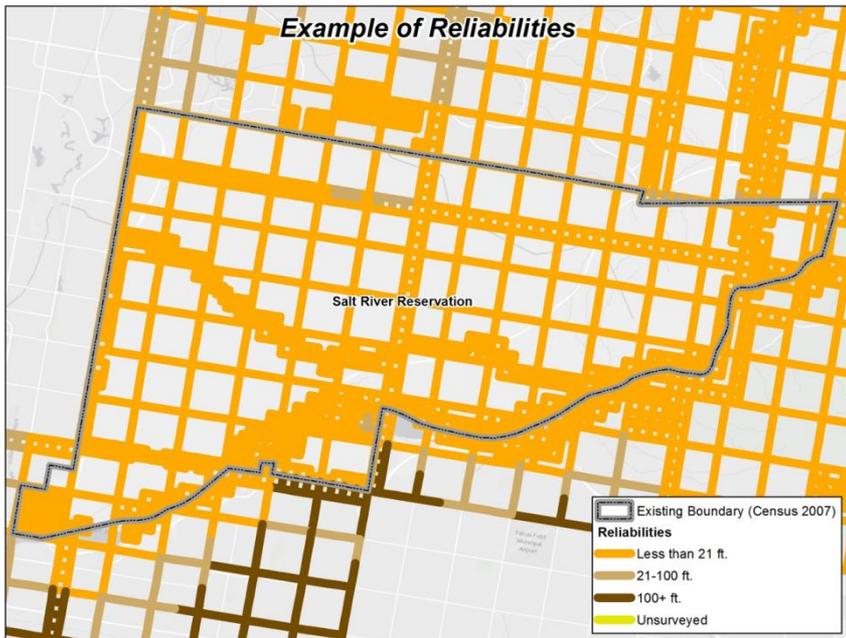
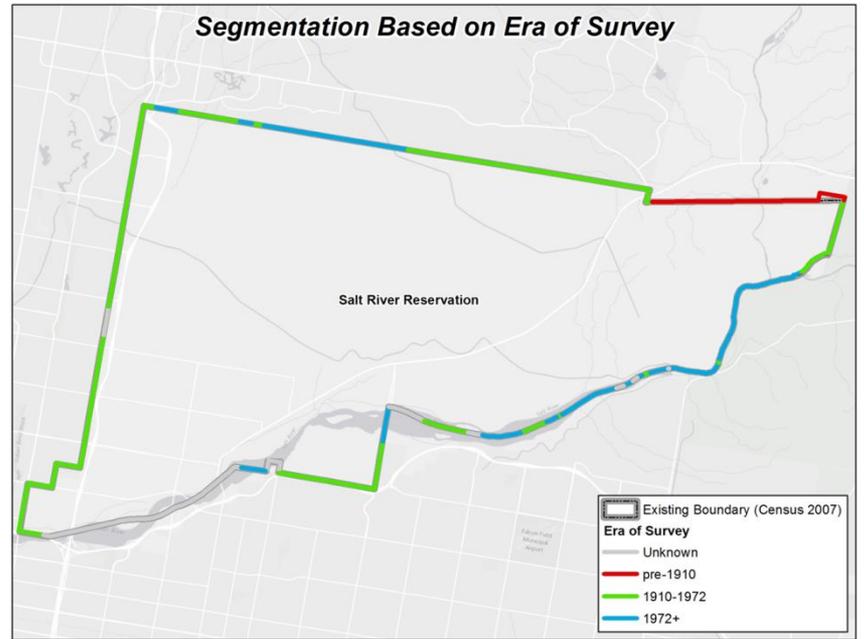
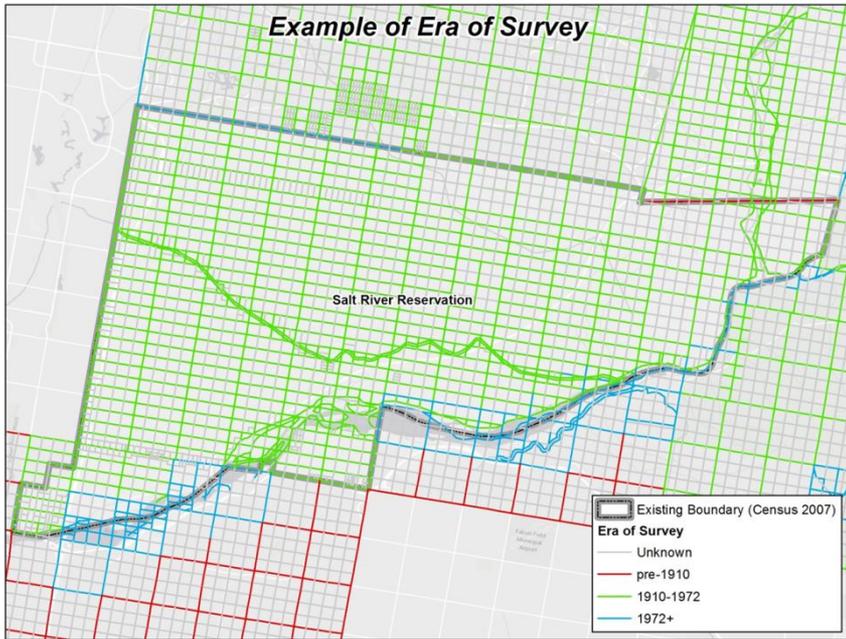


### Example of Boundary Offset



### Segmentation Based on Boundary Offset





# 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 were defined to attribute line work
4. Data submitted to LTRO Manager for review and certification for publication for the purpose of land status mapping.



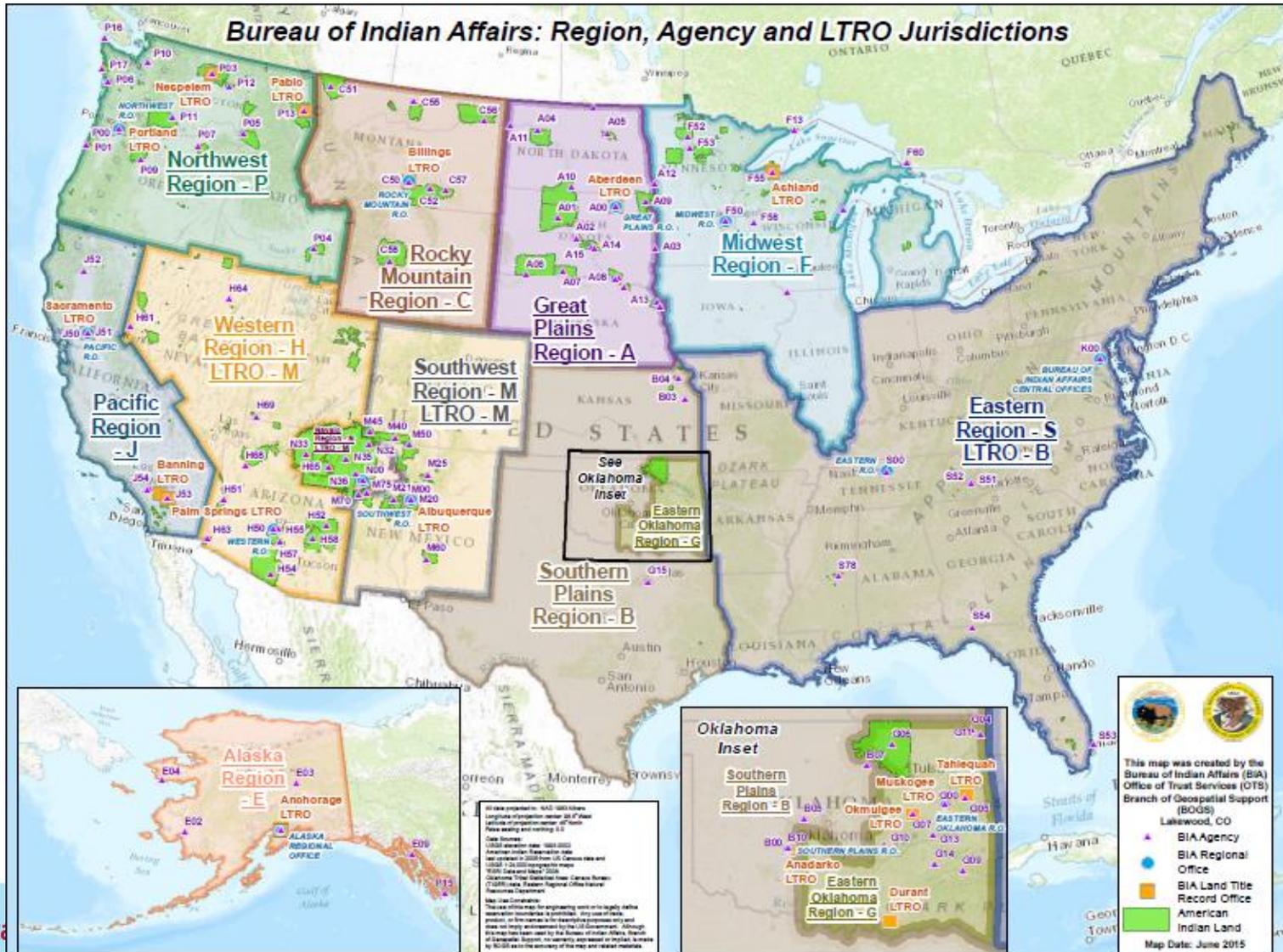
# 6 Phases of Boundary Development

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?

