# Comparing State Boundaries for the Boundary Technical Working Group

Source data:

- **USGS National Boundary Dataset (NDB) in Idaho 20211211**
  - Layer: https://prd-tnm.s3.amazonaws.com/StagedProducts/GovtUnit/Shape/GOVTUNIT_Idaho_State_Shape.zip
  - Metadata: https://www.sciencebase.gov/catalog/item/59fa9f5ce4b0531197affb29
- **Census 2020 Tiger Files**
  - Layers downloaded from https://www2.census.gov/geo/tiger/TIGER2020PL/STATE/16_IDAHO/16/
  - tl_2020_16_state20.zip
- **Idaho State Tax Commission**
  - 2022 County Taxing District downloaded from https://tax.idaho.gov/i-1071.cfm
  - For State Comparison the Counties have been merged

Processing steps:

1. Download all datasets as zip files
2. Load extracted datasets into feature dataset in Web Mercator (for easy publishing later)
3. Merge all counties from the State Tax Commission 2022 County taxing districts into one State polygon
4. Union as follows:
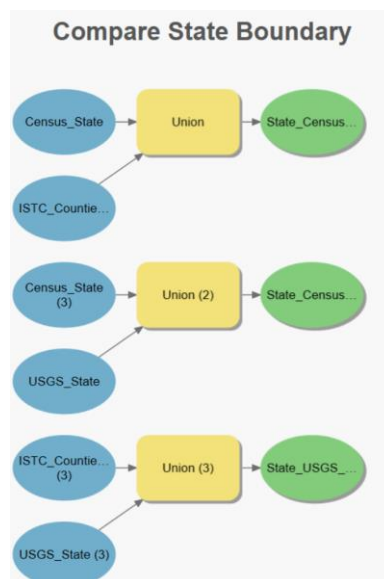
5. Explode all the resulting unions, and delete the largest shape (i.e. nearly all of Idaho) so that only the changes remain.

6. **Comparison between State Boundaries from different sources:**

|	USGS	Census	ISTC
USGS		Identical Shape	Difference in shape described in 10,895 polygons
Census	Identical Shape		Difference in shape described in 10,895 polygons
ISTC	Difference in shape described in 10,895 polygons	Difference in shape described in 10,895 polygons	

7. Add two fields to the feature class comparing ISTC and Census. Calculate the square miles as well as a field that divides `Shape_Length / Shape_Area` to help recognize the more compact shapes which will have a lower ratio.

8. **The non-overlapping parts between Census/USGS versus ISTC merged counties is combined 11.4 Square kilometers**

9. There are two areas where the geometry of the ISTC merged counties layer and the Census/USGS layer differ most. The first one if the boundary between Payette County and Oregon (below the Census/USGS boundary on the left, the ISTC boundary on the right):
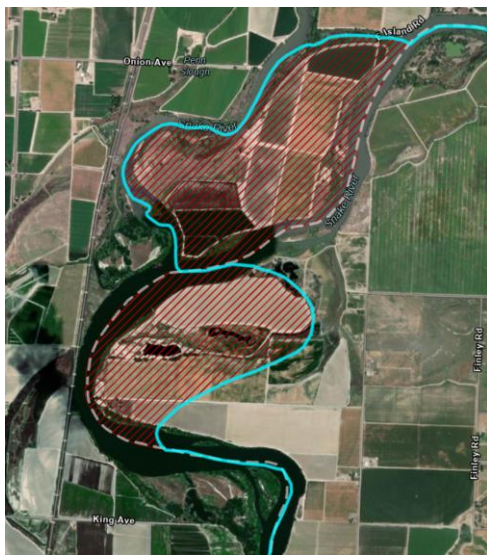
10. To see how this compares with the parcel maps from counties on either side of the river see the Payette County (below left) and Oregon (below right) parcel map:
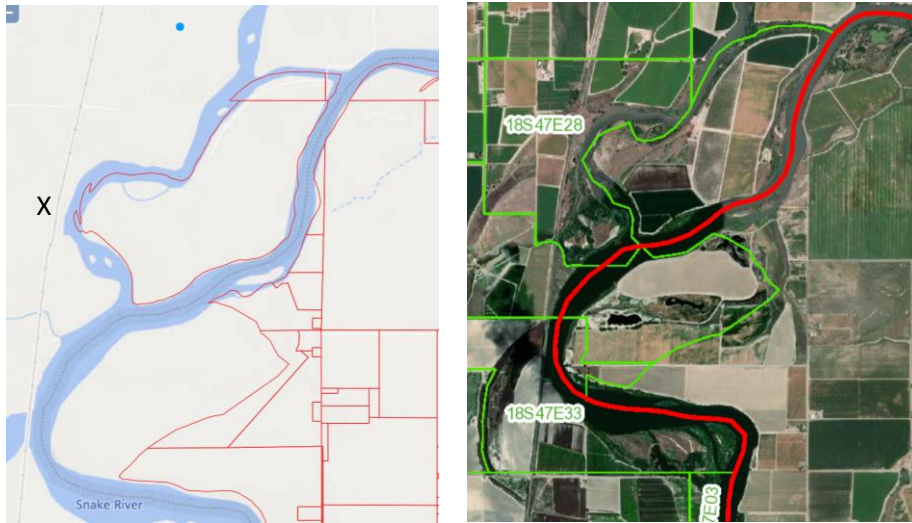
11. Property address of parcel assessed by Payette county but seemingly in Oregon is 3774 E. Island Rd in Ontario.   Send an email to Sandy Mitchell, the GIS analyst in the Payette County assessors office for more clarification.

12. In eastern Idaho, the next largest difference, (see images below: on the left the blue line is census, simple gray line is ISTC, the image on the right is a snapshot from Fremont County parcels):
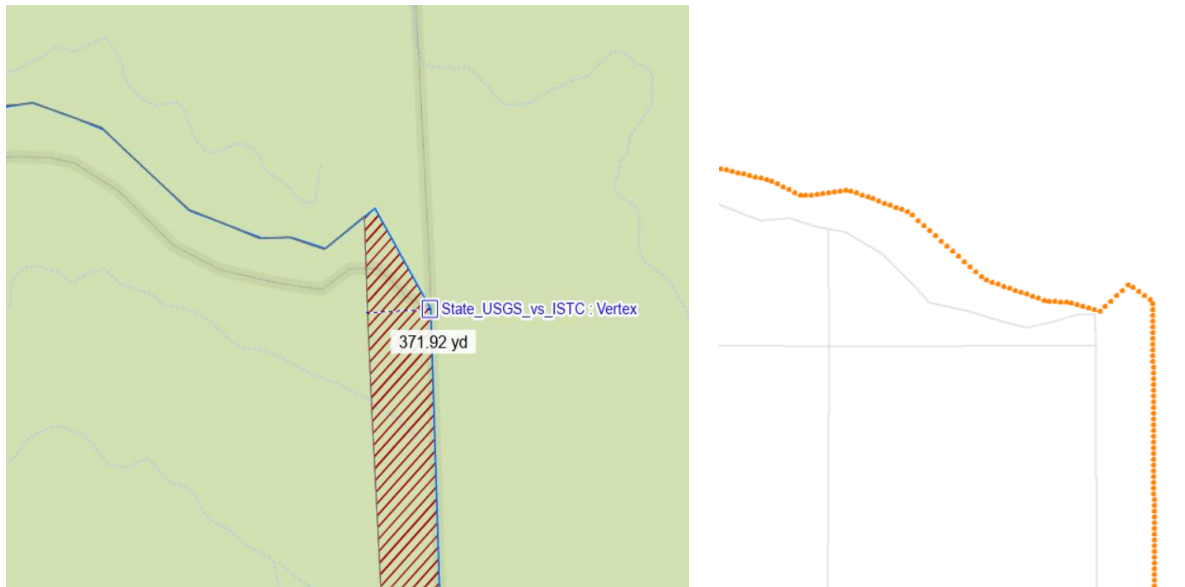
13. ISTC line appears to follow USGS topo map (the older ones that were scanned and then georeferenced). The blue line matches Bing and other topographic maps.

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- **Census 2020 Tiger Files**
  - Layers downloaded from https://www2.census.gov/geo/tiger/TIGER2020PL/STATE/16_IDAHO/16/
  - tl_2020_16_county20.zip
- **Idaho State Tax Commission**
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Processing steps:

1. Download all datasets as zip files
2. Load extracted datasets into feature dataset in Web Mercator (for easy publishing later)
3. Union as follows:
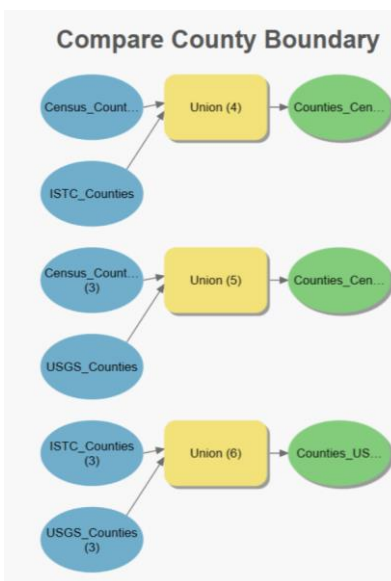
4. Explode all the resulting unions, and delete the largest shape (the bulk of the county shapes) so that only the changes remain.

5. **Comparison between State Boundaries from different sources:**

|	USGS	Census	ISTC
USGS		Identical Shape	Difference in shape described in 45,429 polygons
Census	Identical Shape		Difference in shape described in 45,429 polygons
ISTC	Difference in shape described in 45,429 polygons	Difference in shape described in 45,429 polygons	

6. Add two fields to the feature class comparing ISTC and Census. Calculate the square miles as well as a field that divides `Shape_Length / Shape_Area` to help recognize the more compact shapes which will have a lower ratio.

7. **The non-overlapping parts between Census/USGS versus ISTC merged counties is combined 15.2 Square kilometers**

8. The following are some areas where the county boundaries as described by the ISTC and the Census/USGS are the most different (ISTC in white, Census in Blue):
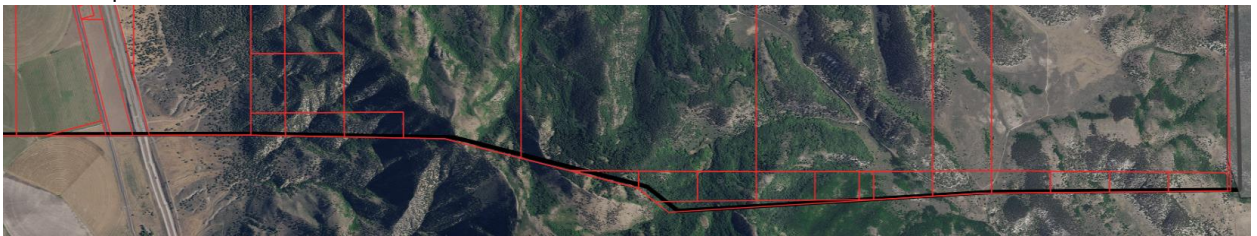

Elmore County parcels / Camas County parcels in this area:
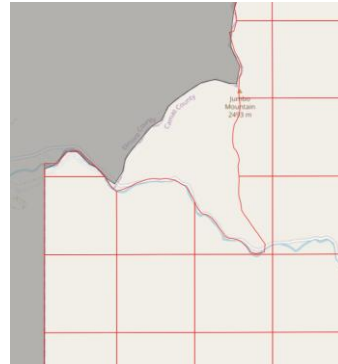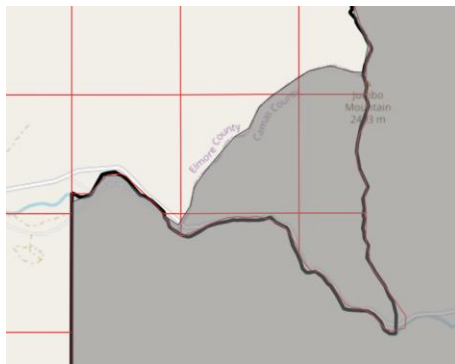
Oneida parcels:

Where do the boundaries come from? How do ISTC and Census determine their boundaries?

ISTC?

Census: The boundaries for counties and equivalent entities are mostly as of January 1, 2013, primarily as reported through the Census Bureau's Boundary and Annexation Survey (BAS). However, some changes made after January 2013, including the addition and deletion of counties, are included. https://www.census.gov/programs-surveys/bas.html

Some counties in Idaho participate in this program as shown on this map:
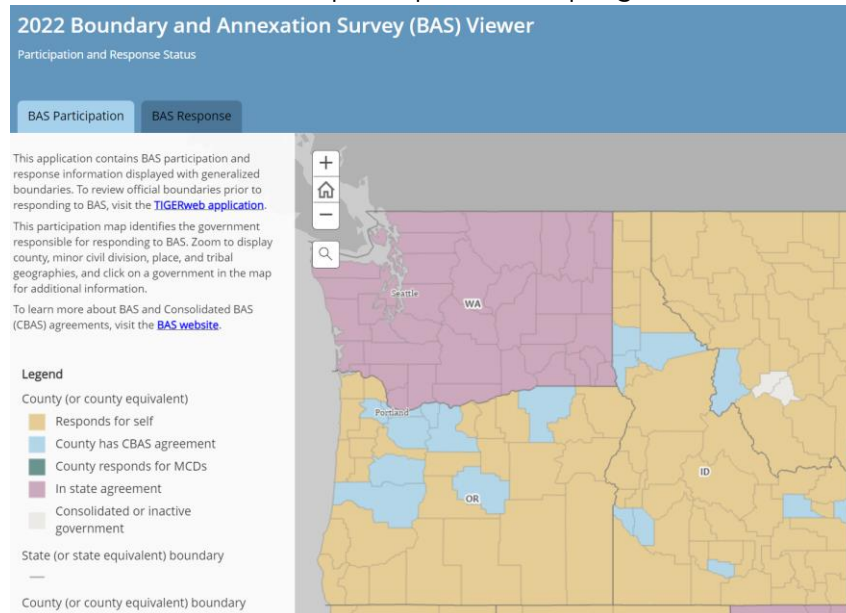
From the BAS website:
The Boundary and Annexation Survey (BAS) provides tribal, state, and local governments an opportunity to review the Census Bureau's legal boundary data to ensure the Census Bureau has the correct boundary, name, and status information. BAS also allows participants to review and provide updates to census designated places.

Each year, all active, functioning legal government are surveyed. This includes almost 40,000 governments across the United States and its territories. These governments can update boundaries and features for:

Federally recognized tribes with a reservation or off-reservation trust land.
States.
Counties or county equivalents, such as boroughs or parishes.
Minor civil divisions, such as towns and townships.
Consolidated cities.
Census designated places.