Montana Base Map Service Center Geocoding Web Service

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Outline

- Geocoding background
- BMSC Geocoding web service
- Problems/issues with geocoding
- Demonstration

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Geocoding?

- Often confusing term
- Even Esri has different definitions on their website
  - "To assign a street address to a location"
  - "A code representing the location of an object, such as an address, a census tract, a postal code, or X,Y coordinates"
- Dept of Revenue CAMA database contains a field called "GEOCODE"

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Geocoding

- Geocoding – the process of converting addresses (“101 W Main St, Lewistown, MT”) into geographic coordinates (X: -109.4239545 Y: 47.066674386)
- Reverse geocoding – the converse operation, matching a set of geographic coordinates to a known address

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Geocoding

- Extremely useful – it has been estimated 80 percent of all databases contain address data
- It doesn't need to be a "database", what about spreadsheets, lists?
- Geocoding can transform all of those data associated with an address into spatial data

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BMSC Geocoding Web Service

- Based on the MSDI Structures and Transportation Frameworks, commercial road centerline address data, and ZIP Code data (MSDI Structures)
- Not all structures in the Structures Framework contain address information
- Likewise, not all road segments in the Transportation Framework contain address ranges
- Commercial data are used to backfill these gaps
- ZIP Code match is the last resort, and will locate the post office for that ZIP Code

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BMSC Geocoding Web Service

- Each of the sources of addresses (Structures, Transportation, commercial data, ZIP Codes) are used to create an *address locator*, which is the dataset that contains the address attributes used by ArcGIS for geocoding
- Each address locator is linked with a *composite address locator*, which allows addresses to be matched against multiple address locators to find the best match

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Address Search Process

- An address enters the geocoder:
  - It first attempts to match to the Structures Framework address locator,
  - Then the Transportation Framework address locator,
  - Then the commercial road data
  - Finally a ZIP Code address locator
- Potential matches are ranked based on how well they match

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Problems with Geocoding

- Requires good data in the address locators
  - Spatial errors
  - Attributes errors
- Requires the end user to have good address data
  - Standardized format (single ‘free from’ field -> stored in database with constraints and validation)
  - Valid addresses (spelling errors, missing parts)
  - Up-to-date
- Can be time-intensive to fix/rematch

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Demonstration

- Add the Geocoding toolbar to ArcMap
- Add the BMSC Geocoding Service
- Finding an address
  - Using the Geocoding toolbar
  - Using the Find dialog
- Batch geocoding a table of addresses
- Reverse geocoding with the Address Inspector
- REST Service Find Address Candidates

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Future Plans

- Testing, learning!
- Best Practice/How-to documentation
- Continue to build relationships with local governments that manage addresses to replace DOR CAMA addresses
- Create a statewide ZIP Code polygon layer to assign ZIP Codes for address data that are missing them

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Geocode Web Service

ArcMap connection:

http://gisservice.mt.gov/arcgis/services

Directory: **BaseMapServiceCenter**

Service Name: **Montana**

REST Service:

http://gisservice.mt.gov/arcgis/rest/services/

Directory: **BaseMapServiceCenter**

Service Name: **Montana**

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