



PNIAF Anchorage 2016

Geographic Information Systems for the Analyst/Auditor

Topics today:

- ✓ Introduce GIS
- ✓ Our current evaluation Forest lands in Washington that pay a wildfire protection assessment
- ✓ Where to get help



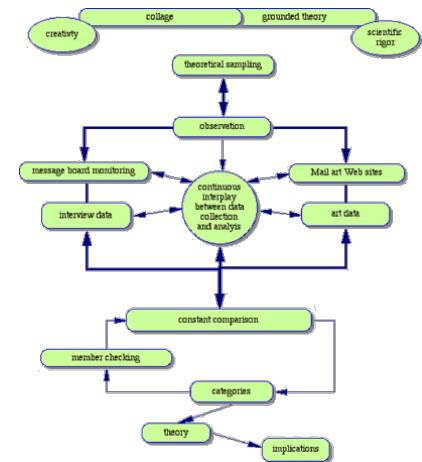
software

GIS

methods

hardware

data



people



	A	B	C	D	E	F
1	Amortization of a Loan					
2	Principal	Payment	Rate		Per year	
3	\$10,000.00	\$500.00	5.00%			
4	\$10,000.00	\$757.00	\$125.00			
5	\$9,625.00	\$379.89	\$120.81			
6	\$9,245.31	\$384.43	\$115.57			
7	\$8,869.88	\$389.24	\$110.78			
8	\$8,471.04	\$394.10	\$105.99			
9	\$8,077.51	\$399.03	\$101.97			
10	\$7,670.50	\$404.02	\$97.98			
11	\$7,274.49	\$409.07	\$93.98			
12	\$6,885.42	\$414.18	\$89.92			
13	\$6,495.23	\$419.35	\$85.84			
14	\$6,103.98	\$424.59	\$81.76			
15	\$5,697.27	\$429.91	\$76.68			
16	\$5,177.36	\$435.28	\$71.62			
17	\$4,642.00	\$440.72	\$66.58			
18	\$4,101.36	\$446.23	\$61.57			
19	\$3,553.31	\$451.81	\$56.56			

Source: U. of Washington, GIS 250

A GIS:

- ✓ Links data sets using location
- ✓ Provides tools to analyze and manage spatial data

Lots of data have a spatial dimension
though it may not always be obvious

Location of marijuana retailers in relation to schools

Outcomes of restoration on public lands

Software



Components of ArcGIS



ArcMap



ArcGIS Online



ArcCatalog

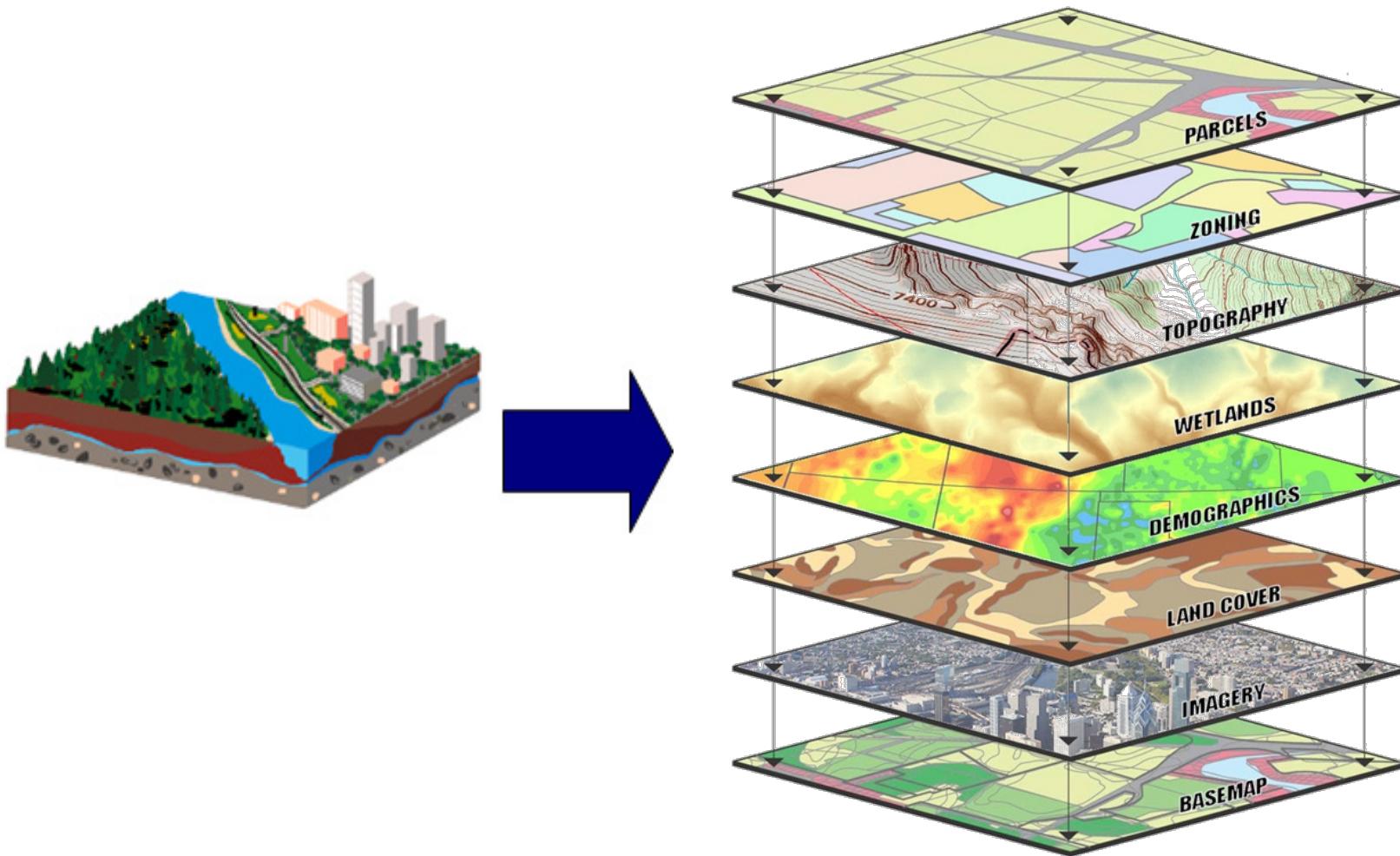


ArcToolbox



ArcGlobe

A GIS represents data as **layers**



a single source
of quality government
geospatial data resources

washington state **geography.wa.gov** geospatial portal

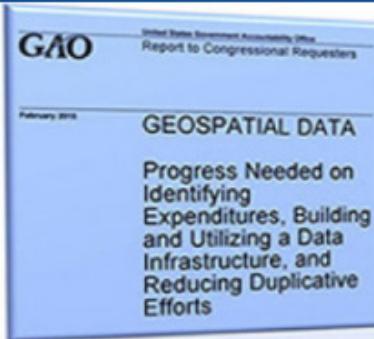
Data & Maps

Governance & Standards

Resources & Tools

Announcements

Washington one of five states interviewed



[all announcements](#)

Statewide Imagery Acquisition & Contributions Extended!

- Request For Quote (RFQ) & Participant Agreements are under development
- Go to the [OCIO website](#) to see more info. about 1 ft. and 6 in. imagery data partnership opportunities

Our Purpose

The purpose of [geography.wa.gov](#) is to provide access to and promote the use of geospatial data resources in Washington state. Here you will find a wide range of geospatial data, applications and services available to public and private entities alike.

It brings together, under one roof, the Geospatial Open Data platform, the Metadata Clearinghouse, the GIS Data Catalog and access to data, imagery and services stored on the state enterprise Geospatial Portal.

Calendar of Events

[Washington State Geographic Information Council \(WAGIC\)](#)

- Next User Meeting on October 20, 2016

[Geographic Information Technology \(GIT\) Committee](#)

- Next executive board meeting October 6, 2016

Open Data

Washington State Open Data Bridge

Providing Access to Geospatial and Tabular Data



Biota



Boundaries



Climate



Economy



Elevation



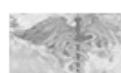
Environment



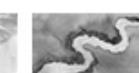
Farming



Geosciences



Health



Inland Waters



Location



Maps



Military



Oceans



Planning



Society



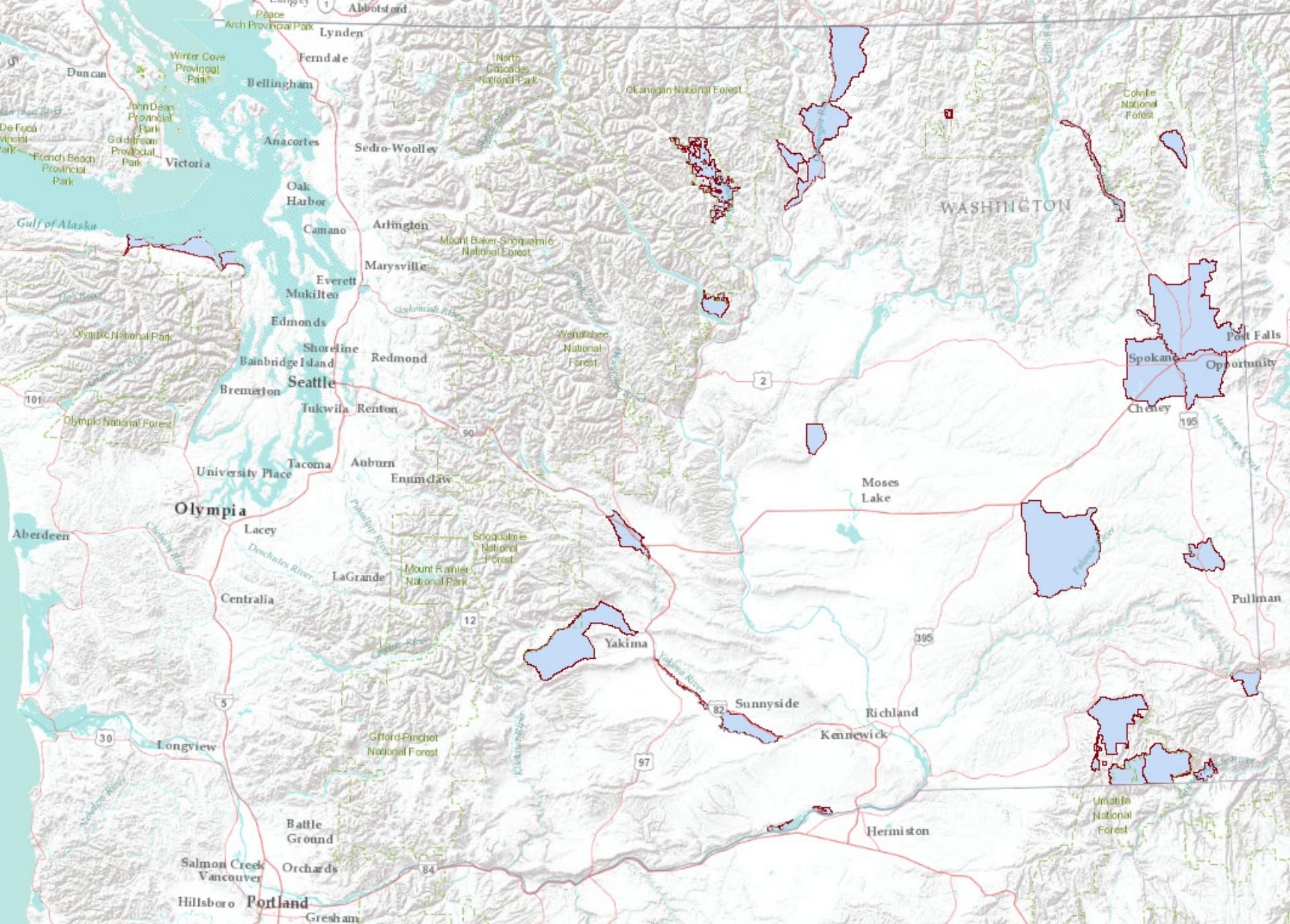
Structure



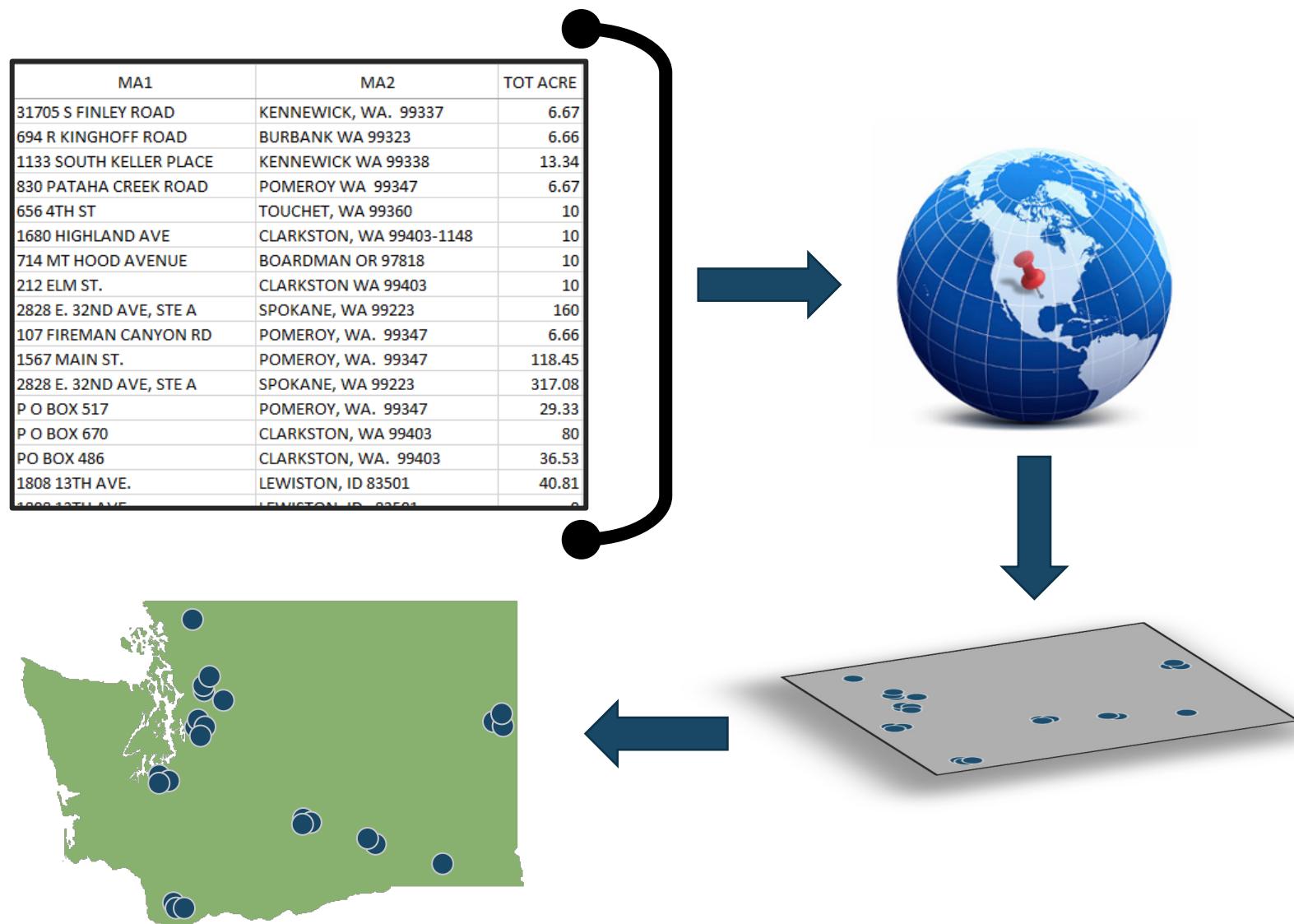
Transportation



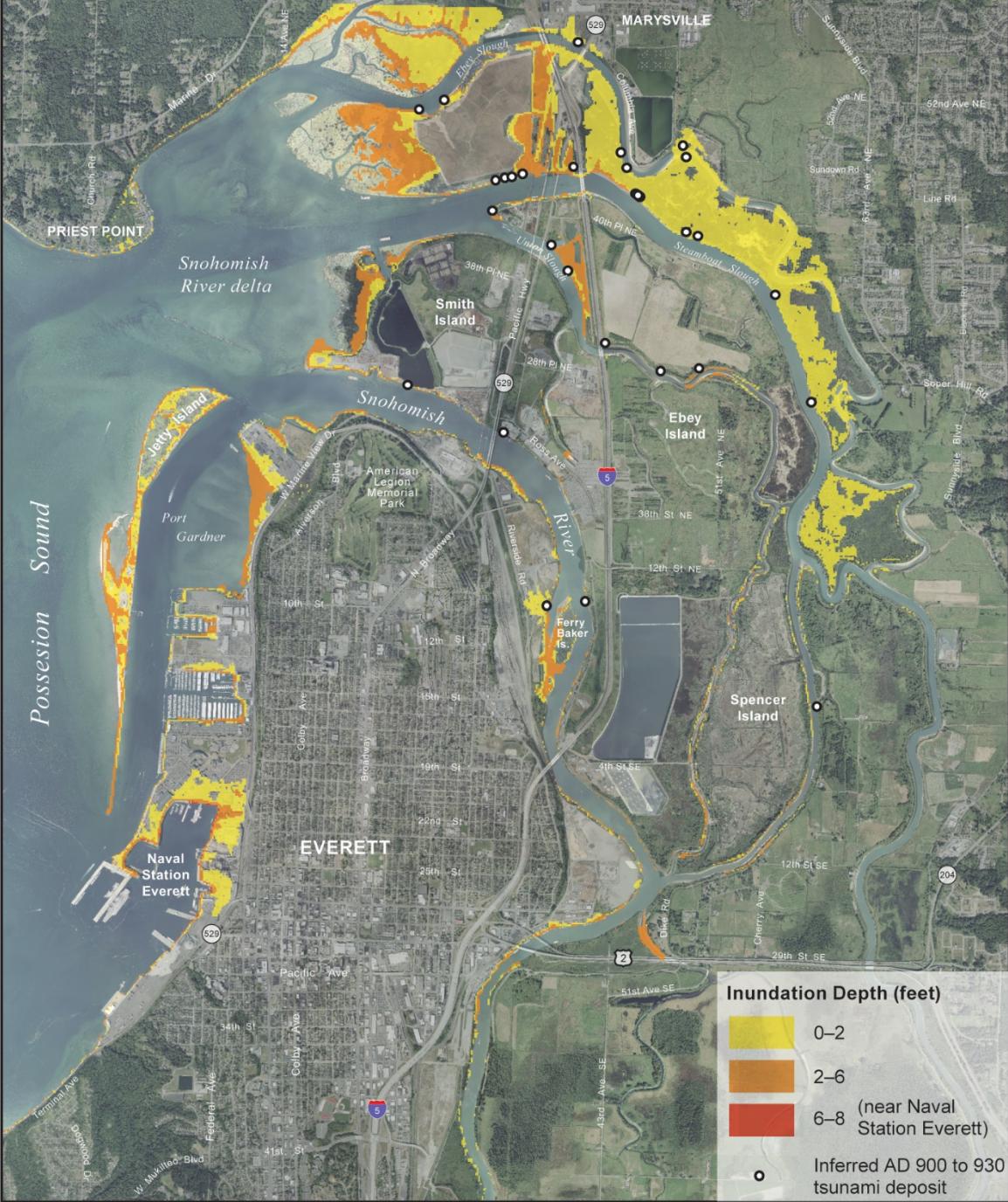
Utilities



Creating spatial data from tables: geocoding and georeferencing



Live demo of acquiring and analyzing data



JLARC Audit of Forest Protection Assessment

Department of Natural Resources levies the assessment on protected state and private lands in 34 counties



County assessors collect the assessment on most parcels



Objectives

- Identify “no-man’s land”
- Identify parcels that have become developed

Data



DNR



Counties



Others

Fire locations

Parcel map (2009)

County-wide tax parcel boundaries

Detailed parcel information

Forest Protection Assessment rolls

County boundaries

Land cover (USGS)

Fire District boundaries

Data cleaning and organization

- ArcCatalog
- Excel
- R/Python

The screenshot shows the ArcCatalog interface. The Catalog Tree pane on the left displays a hierarchical list of geodatabase structures. The main workspace shows a map of a geographic area with numerous yellow polygons representing parcels. A data grid in the foreground lists eight rows of parcel data with columns for FID, Shape, baselot, download, parcels_c, OWN_TYPE, and SERIAL.

	FID	Shape *	baselot	download	parcels_c	OWN_TYPE	SERIAL
▶	0	Polygon	0	6/3/2016	0		17343
	1	Polygon	0	6/3/2016	0		22877
	2	Polygon	0	6/3/2016	0		22153
	3	Polygon	0	6/3/2016	0		21254
	4	Polygon	1	6/3/2016	0		27057
	5	Polygon	1	6/3/2016	0		27080
	6	Polygon	1	6/3/2016	0		27059
	7	Polygon	1	6/3/2016	0		27059
	8	Polygon	1	6/3/2016	0		27059

Spatial Metadata

Metadata is a valuable feature of GIS data

Good metadata:

Provenance

License

How to accurately display and use

Field reference

Code used to create data

wa_fstats
Shapefile



Tags
wildfire

Summary
This dataset is used to track wildfire information, assess wildfire risks, and to plan wildfire prevention activities.

Description
This dataset includes information about wildfires that have occurred on lands protected by the Washington State Department of Natural Resources, 1970 thru 2007

Credits
There are no credits for this item.

Use limitations
Must adhere to agency data license agreement

FIELD START_DT ►
* ALIAS START_DT
* DATA TYPE Date
* WIDTH 8
* PRECISION 0
* SCALE 0
FIELD DESCRIPTION
The date in which the fire started

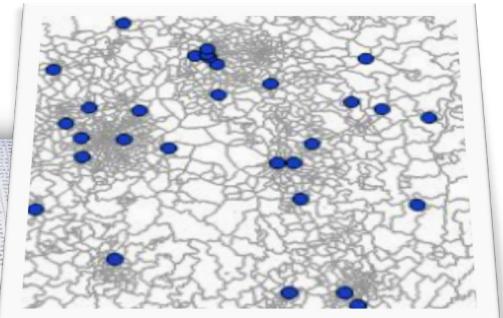
DESCRIPTION SOURCE
WA Department of Natural Resources,

Joining data sources

Challenge: 34 counties, multiple state agencies, federal data, imagery
(WA has a standard, not everyone uses it)

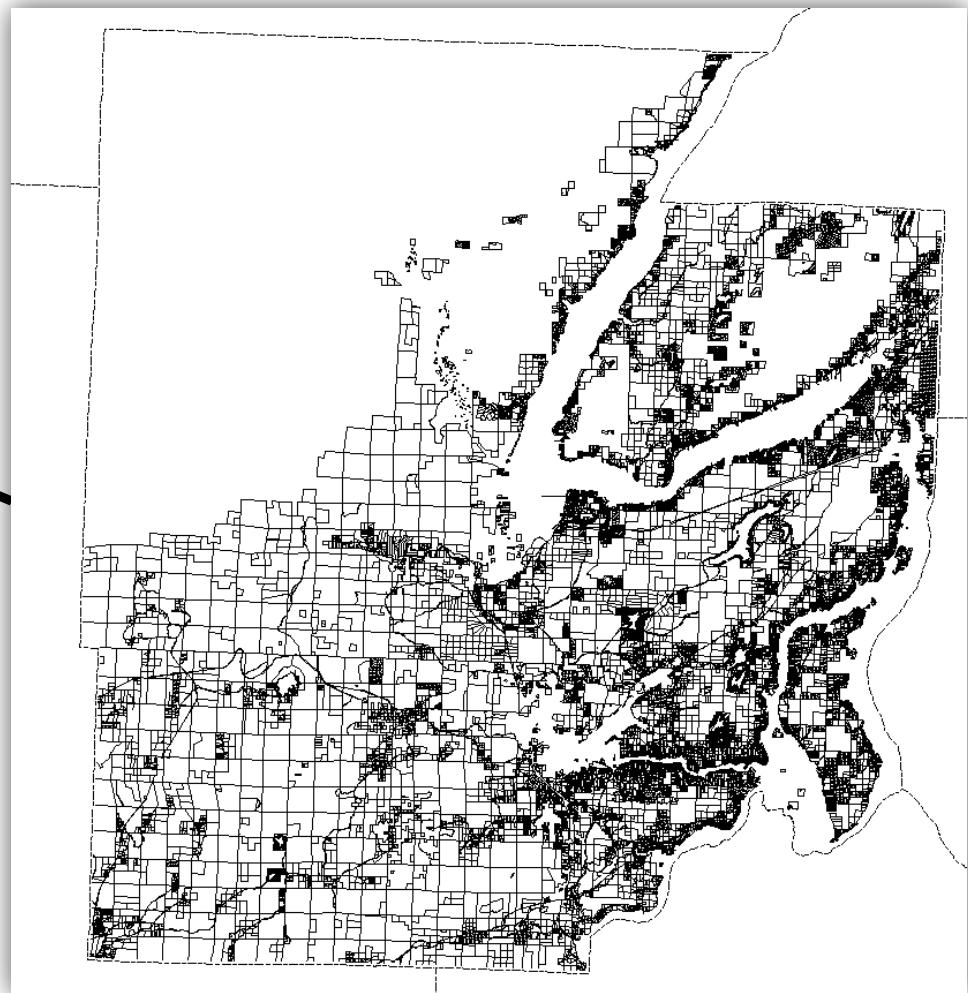
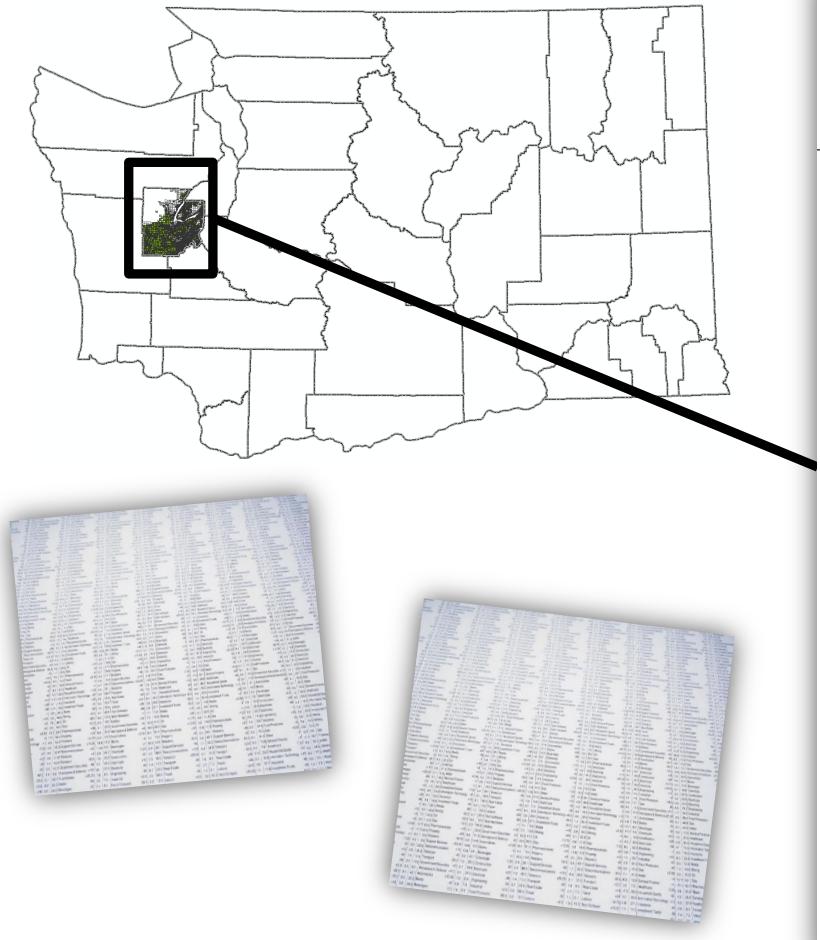


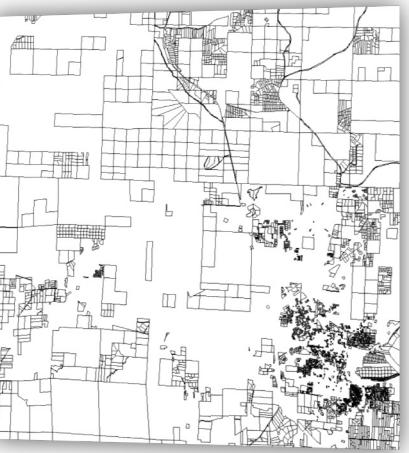
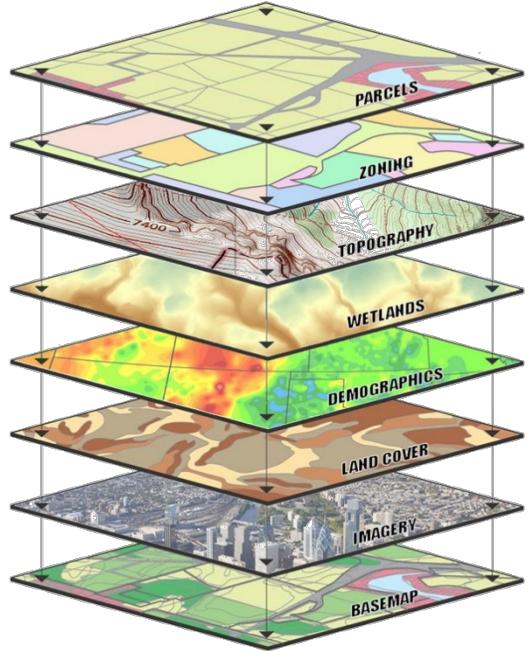
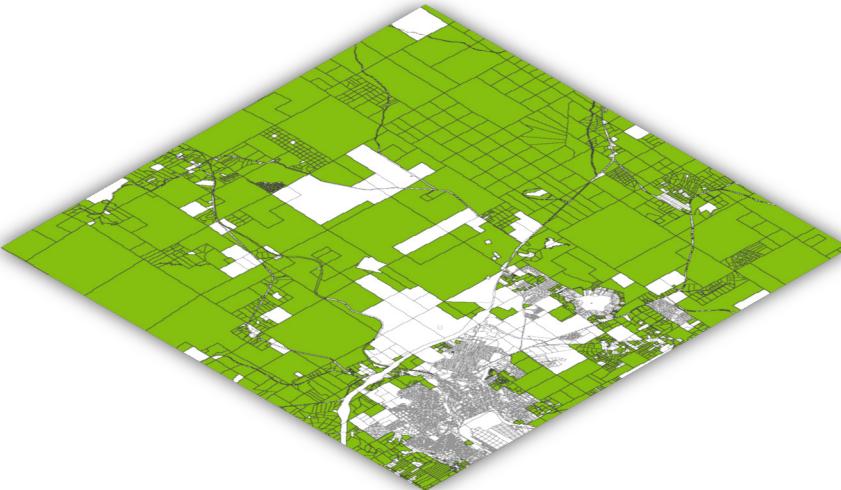
A large table of data with many columns and rows, representing a dataset. The columns include various categories such as "Business Type", "Address", "City", "State", "Zip", "Phone", "Email", "Website", "Latitude", "Longitude", and "Notes". The data is presented in a grid format with numerous entries.



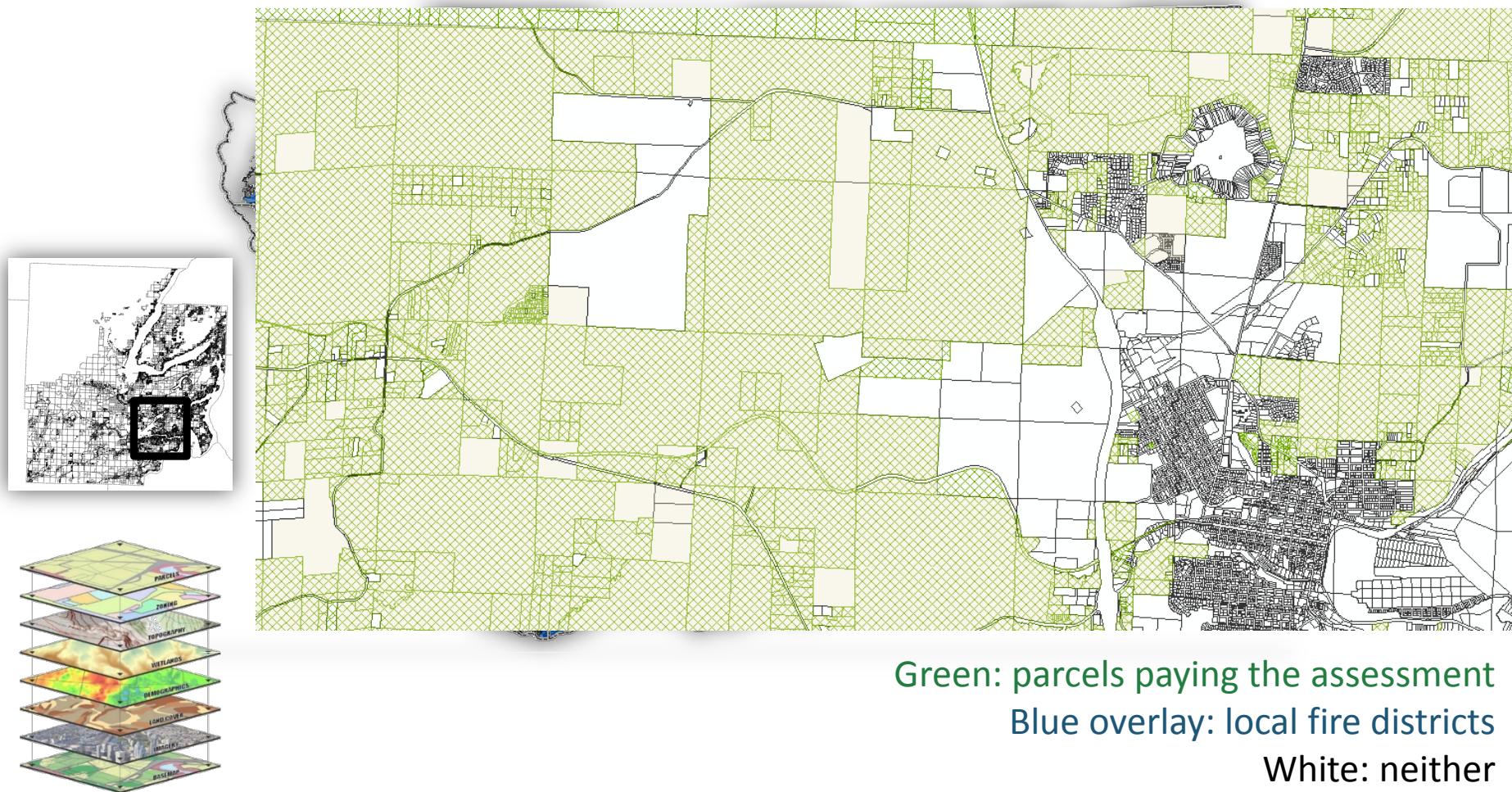
Leverage spatial relationships



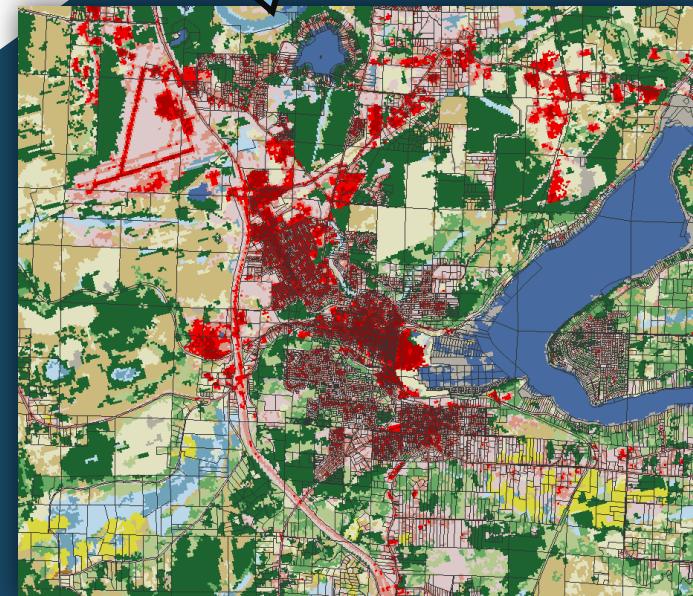
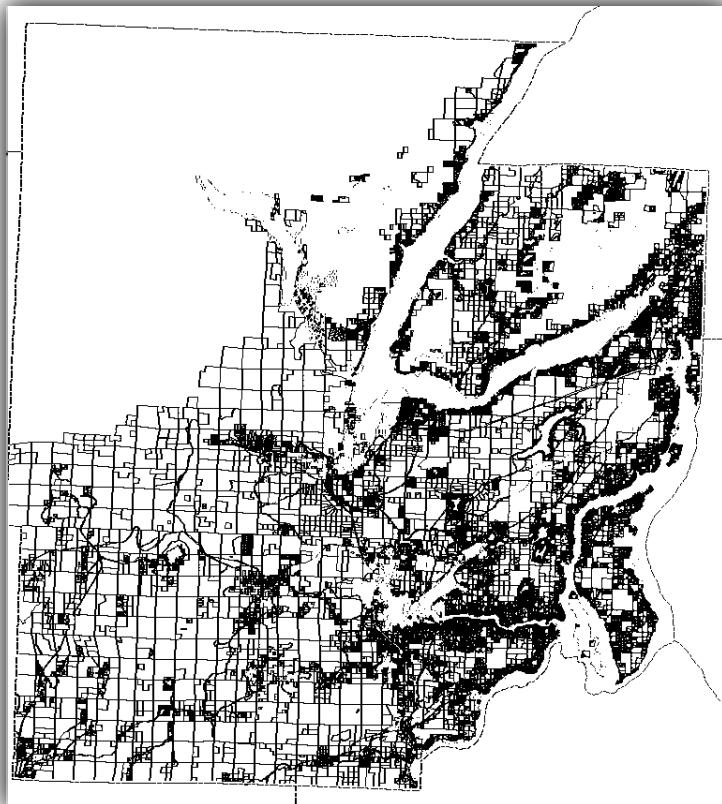


Join tabular attributes
to spatial file



Identify development



Where to get help

- Esri help and forums
- Free and paid online courses through Esri and others
- Thorough documentation within ArcMap
- GIS StackExchange