

Bringing the world together,
one piece at a time!



Supercharge Your Work With MAPS

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&

Sally Wakefield, development
director

SharedGeo

Today's presentation

- About SharedGeo
- About GIS and Mapping
- GIS, Mapping and Non-Profits
- Project Examples
- A tour of Open Source Products and Software
- Final thoughts

About SharedGeo



SharedGeo is a **NON PROFIT** organization that specializes in building **CUSTOM** mapping applications utilizing **OPEN SOURCE** programs and software



SharedGeo's **MISSION** is to help government, nonprofit, education, and corporate entities use mapping technologies and share geographic data for the **public good**



SharedGeo provides a broad range of **project services** and **product development** to advance geospatial capacity in Minnesota and the nation

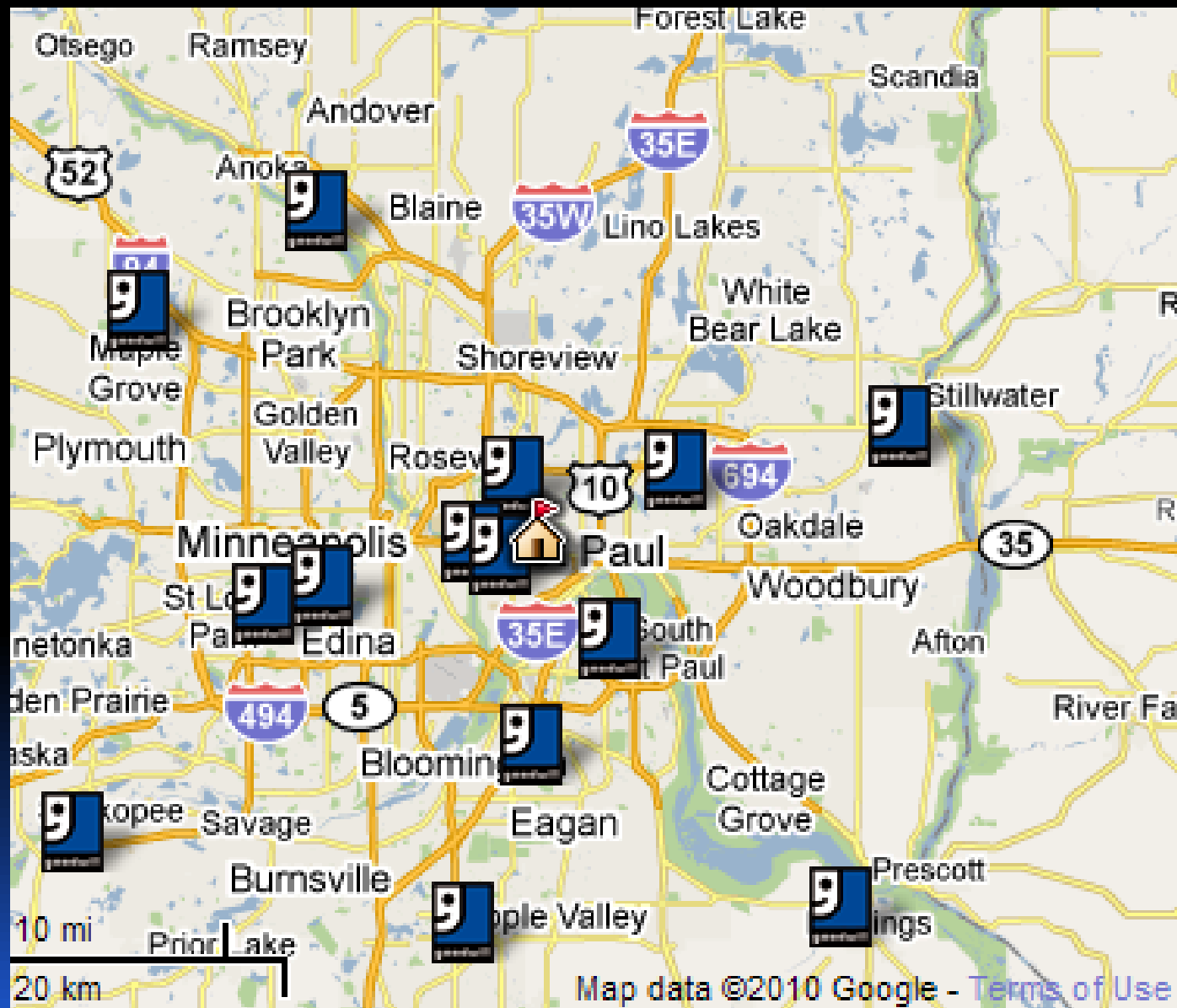


Maps

- Maps help us visualize and understand our world
- Maps support better decision-making and that has a positive impact on our world

Maps are useful in all aspects of our lives

- Where do I go to [vote, shop, park, volunteer, donate, get help]?



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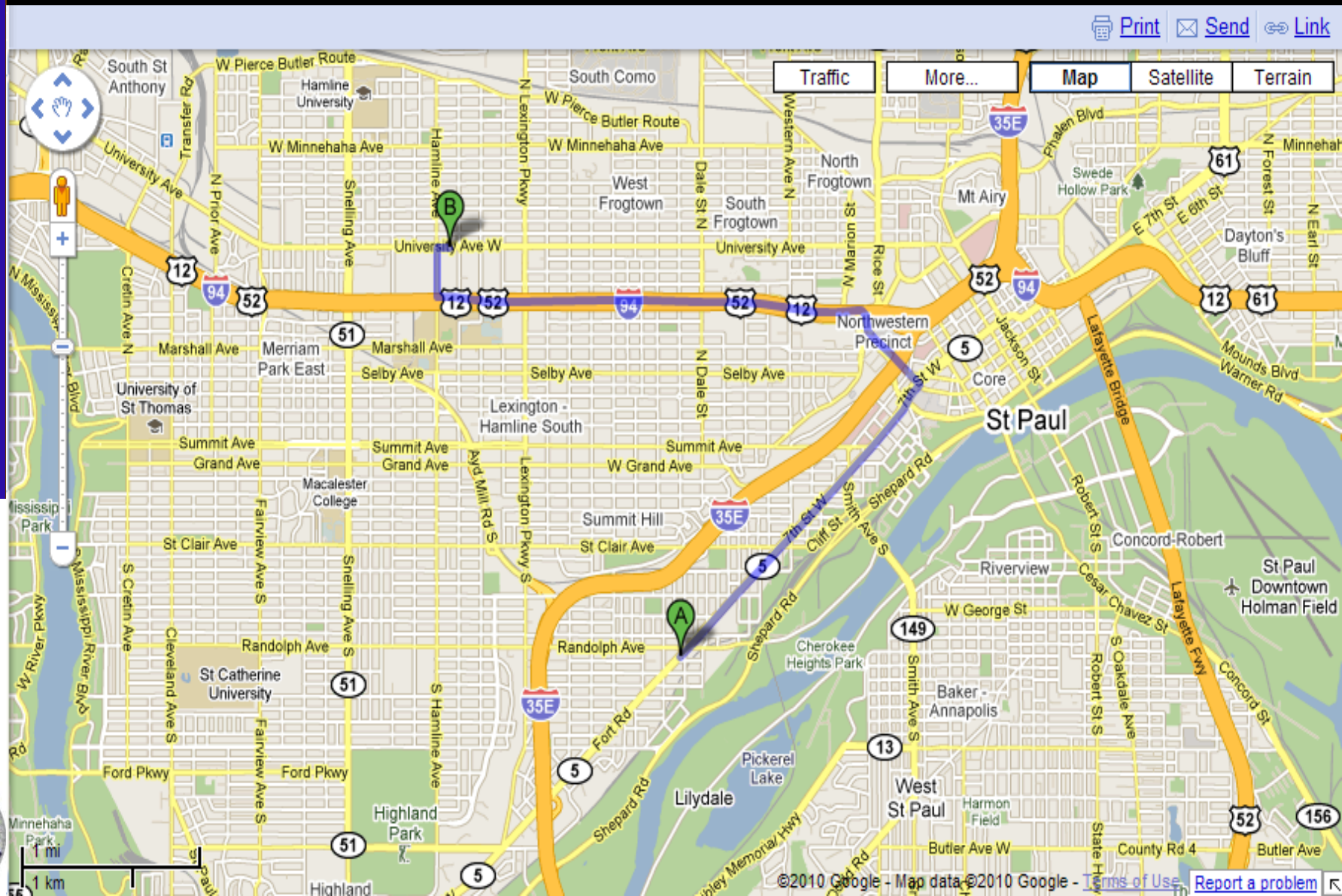


Map data ©2010 Google - [Terms of Use](#)



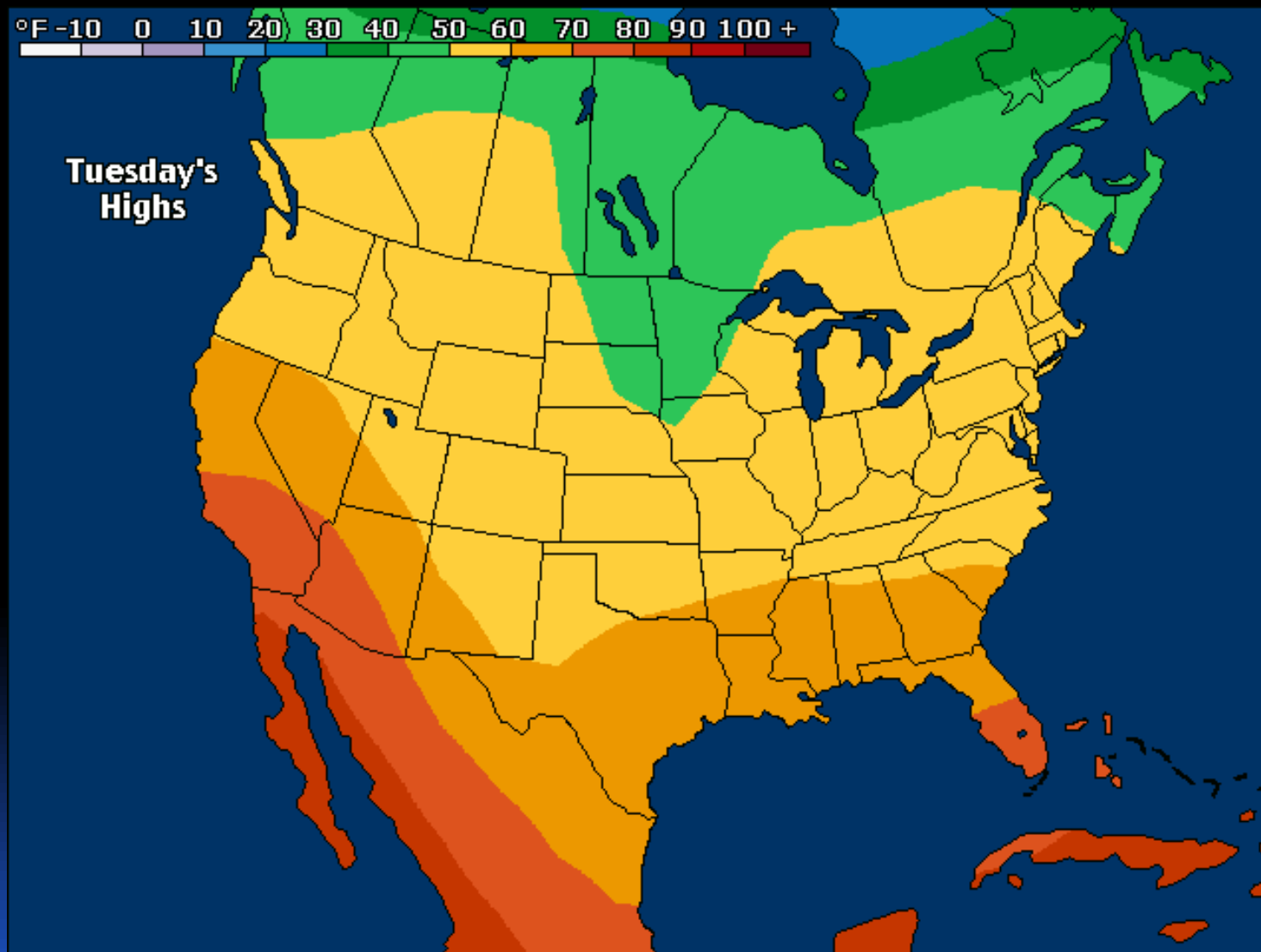
Maps are useful in all aspects of our lives

- How do I get there?



Maps are useful in all aspects of our lives

- What is it like there?

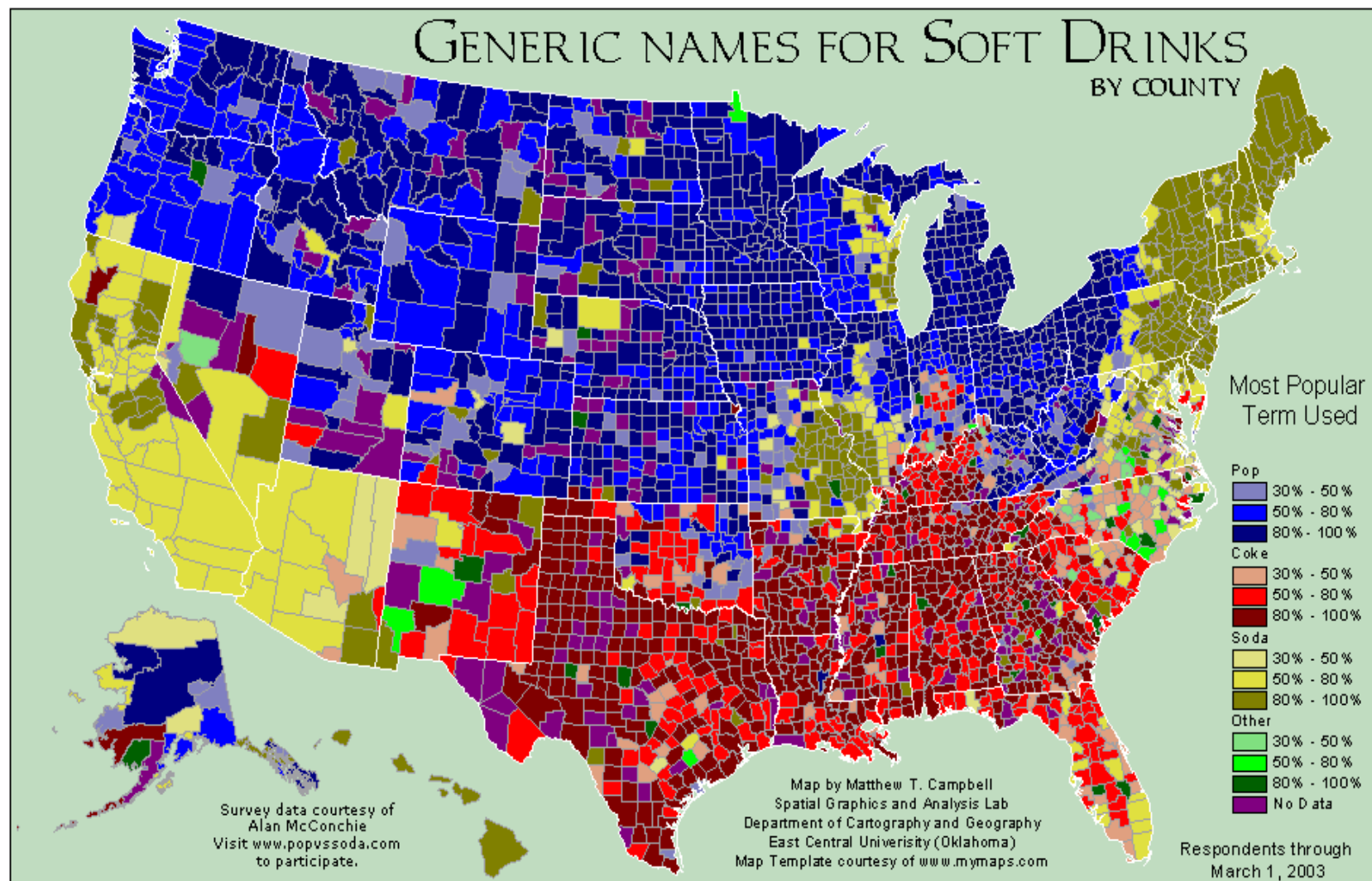


Maps are useful in all aspects of our lives

- What is it like there? What do they drink?

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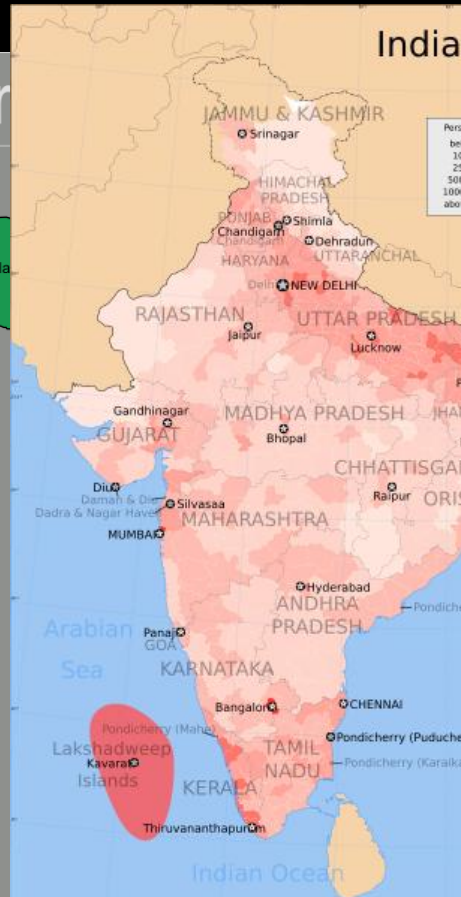
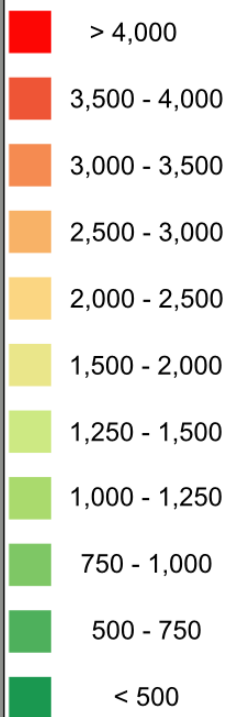


Maps are useful in all aspects of our lives

- What is it like there? What is the - population, crime, poverty, temperature, elevation, land use, preserved land -- there?

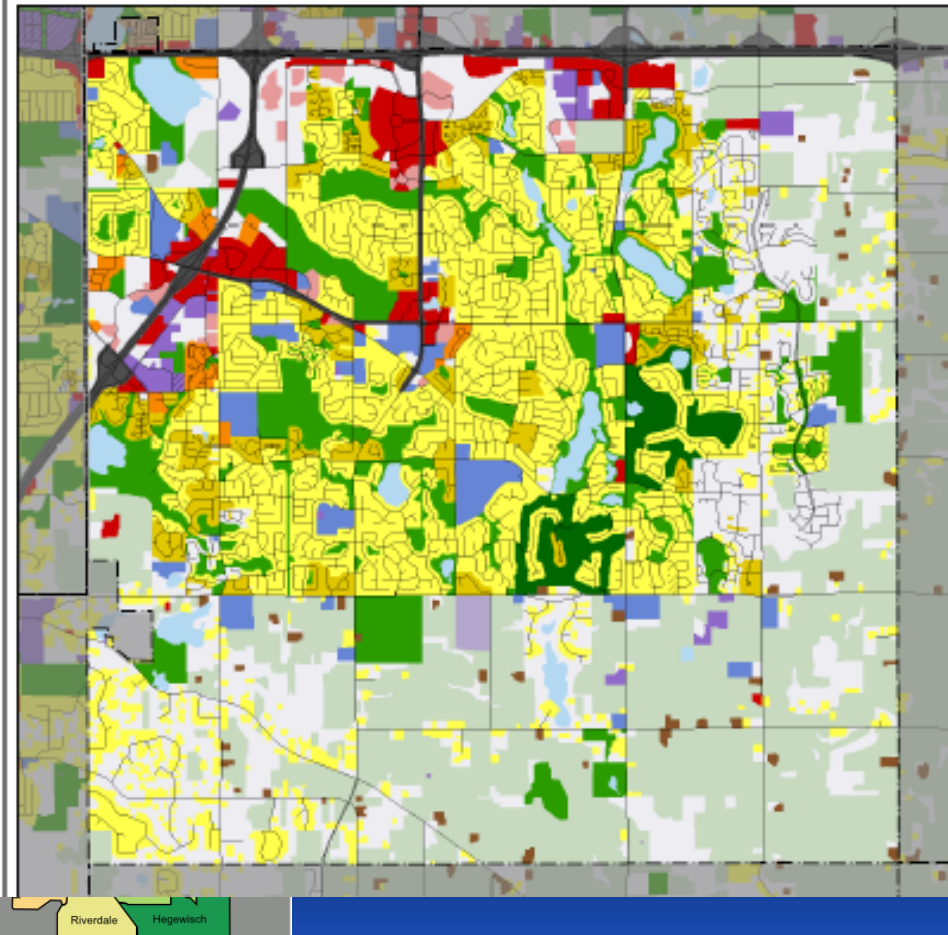
Violent Crime

Per 100,000 Residents in the year 2005



Based on 2005 Chicago Police Data

2005 Generalized Land Use Woodbury



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Maps & GIS

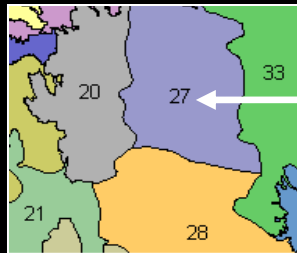
- Maps convey information in a way that is quickly understood and easily shared.
 - **GIS** lets us *analyze* the geographic map data so we can support better decision-making
- ... and that can have even more of a positive impact on our world

What is GIS

- **G**eographic **I**nformation **S**ystems
- GIS is a technology that helps answer questions and solve problems by *analyzing* data *geographically*.
- GIS can identify and analyze *spatial* patterns
- “**S**mart” **M**aps allow us to ask questions of the data

How does GIS work? The magic!

- The *magic* is that each feature has a database record associated with it



Attributes of Eco_tnc.shp

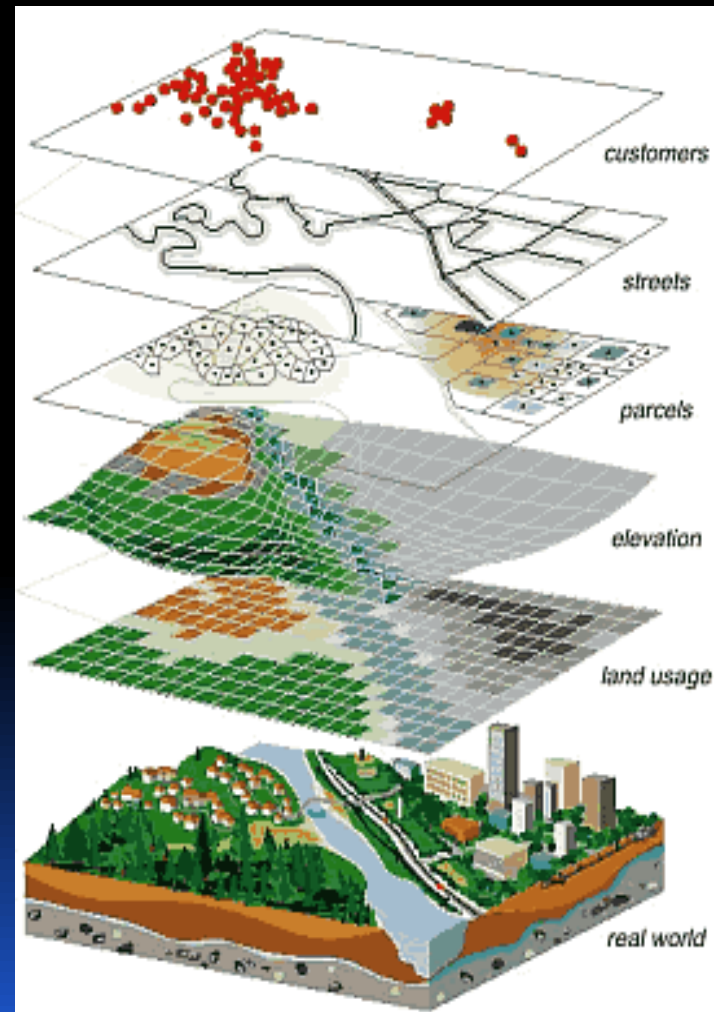
Shape	Area	Perimeter	Tnc0799g	Tnc0799g	Pu_num	Pu_name
Polygon	17.586358	38.477950	35	39	20	Colorado Rocky Mountains
Polygon	11.897627	31.534204	72	59	21	Arizona-New Mexico Mountains
Polygon	8.044949	43.019848	75	63	22	Apache Highlands
Polygon	21.320551	68.911531	76	78	23	Sonoran Desert
Polygon	45.855656	62.354678	79	7	24	Chihuahuan Desert
Polygon	1.491651	6.159067	26	30	25	Black Hills
Polygon	77.638587	73.779353	2	120	26	Northern Great Plains Steppe
Polygon	23.414331	25.458545	38	42	27	Central Shortgrass Prairie
Polygon	26.343777	28.019139	73	64	28	Southern Shortgrass Prairie
Polygon	7.315050	13.193192	90	78	29	Edwards Plateau
Polygon	15.273864	30.350438	97	82	30	Tamaulipan Thorn Scrub
Polygon	9.148133	41.219028	93	81	31	Gulf Coast Prairies and Marshes
Polygon	19.425867	52.014682	67	60	32	Crosettimmers and Southern Tallgrass Prairie
Polygon	24.859783	38.624634	32	38	33	Central Mixed-Grass Prairie

- 80% of data is estimated to have a spatial or geographic component

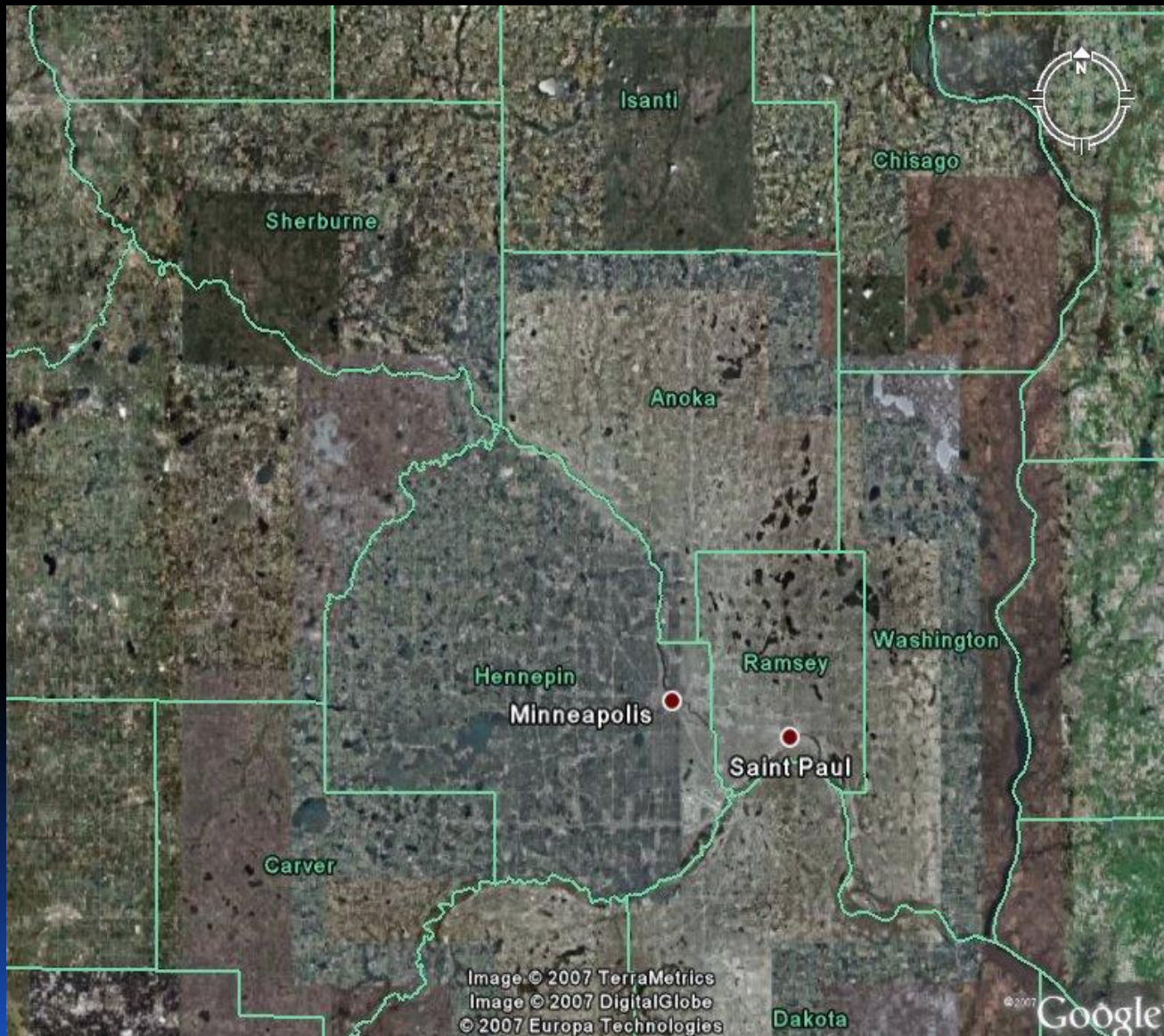


How does GIS work? Data Layers

- GIS separates real world features into **layers**
 - Layers allow us to model reality
- Georeferencing is the key
 - We need to know where each feature is in relation to all the others
- Makes implicit data explicit – reveals patterns and relationships
- Ability to combine multiple factors together for a result

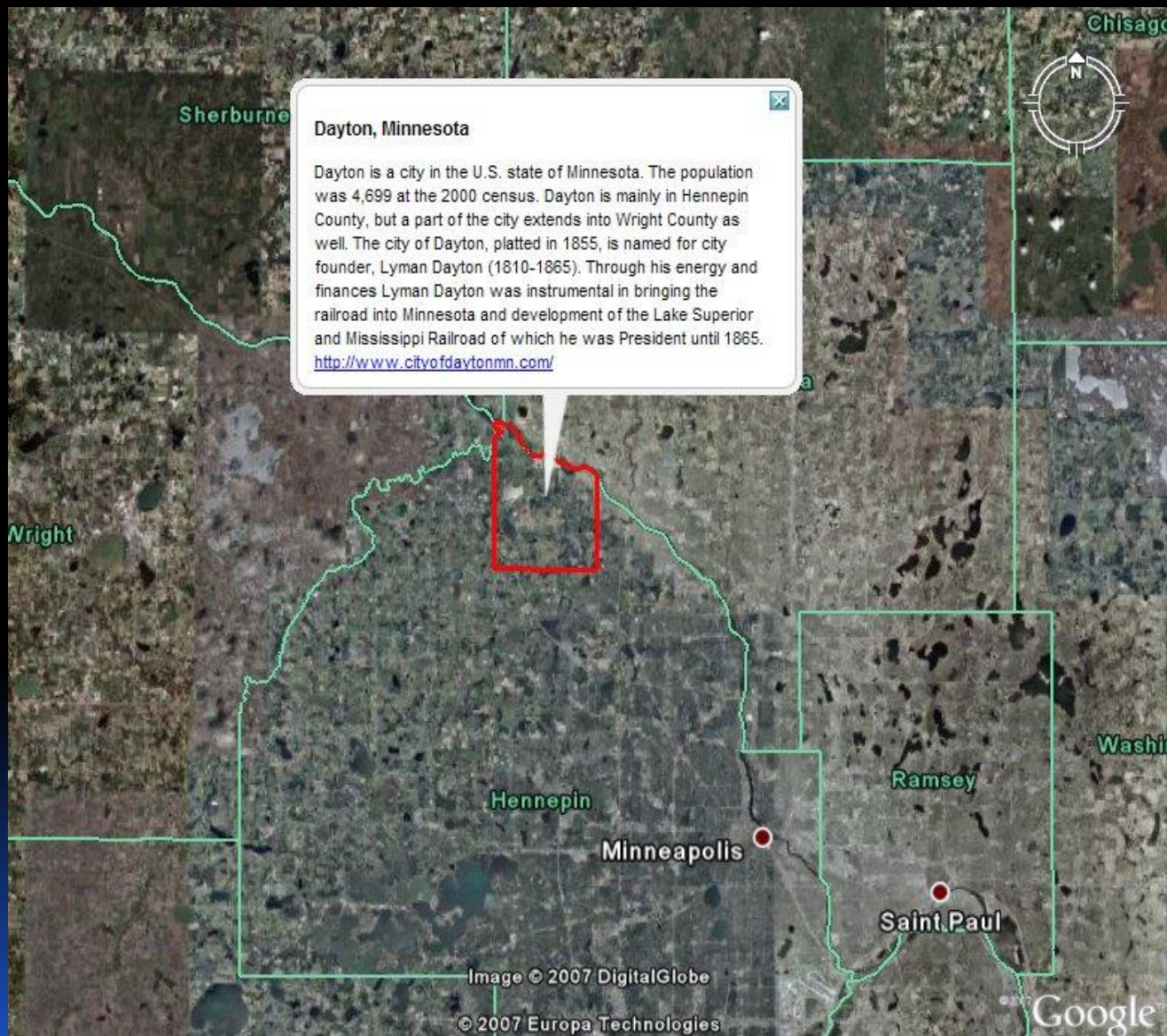


7 County Metro Area



Our Area of Interest

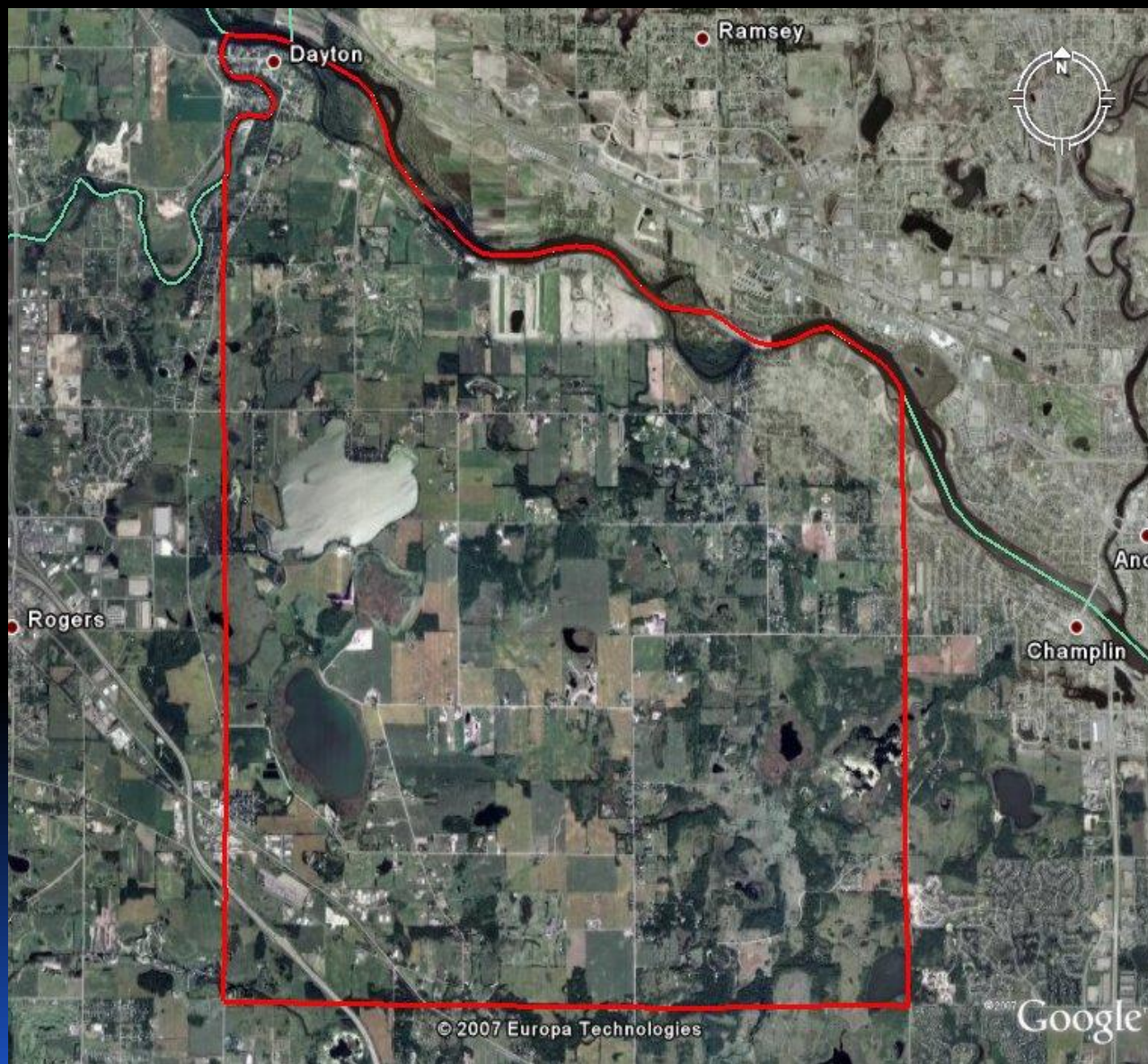
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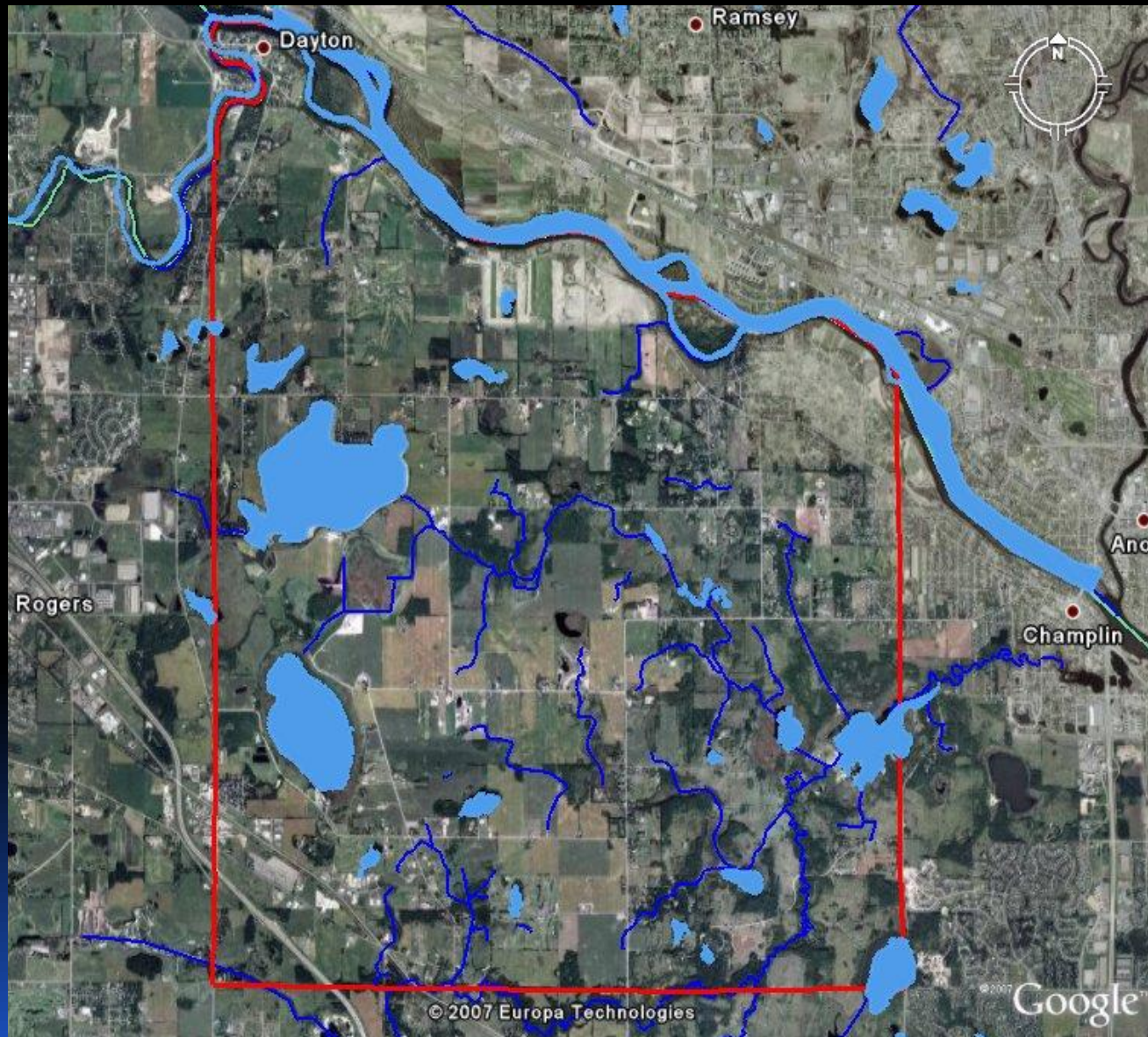
Bringing the world together,
one piece at a time!



A Closer Look



Here Comes the Data - Water

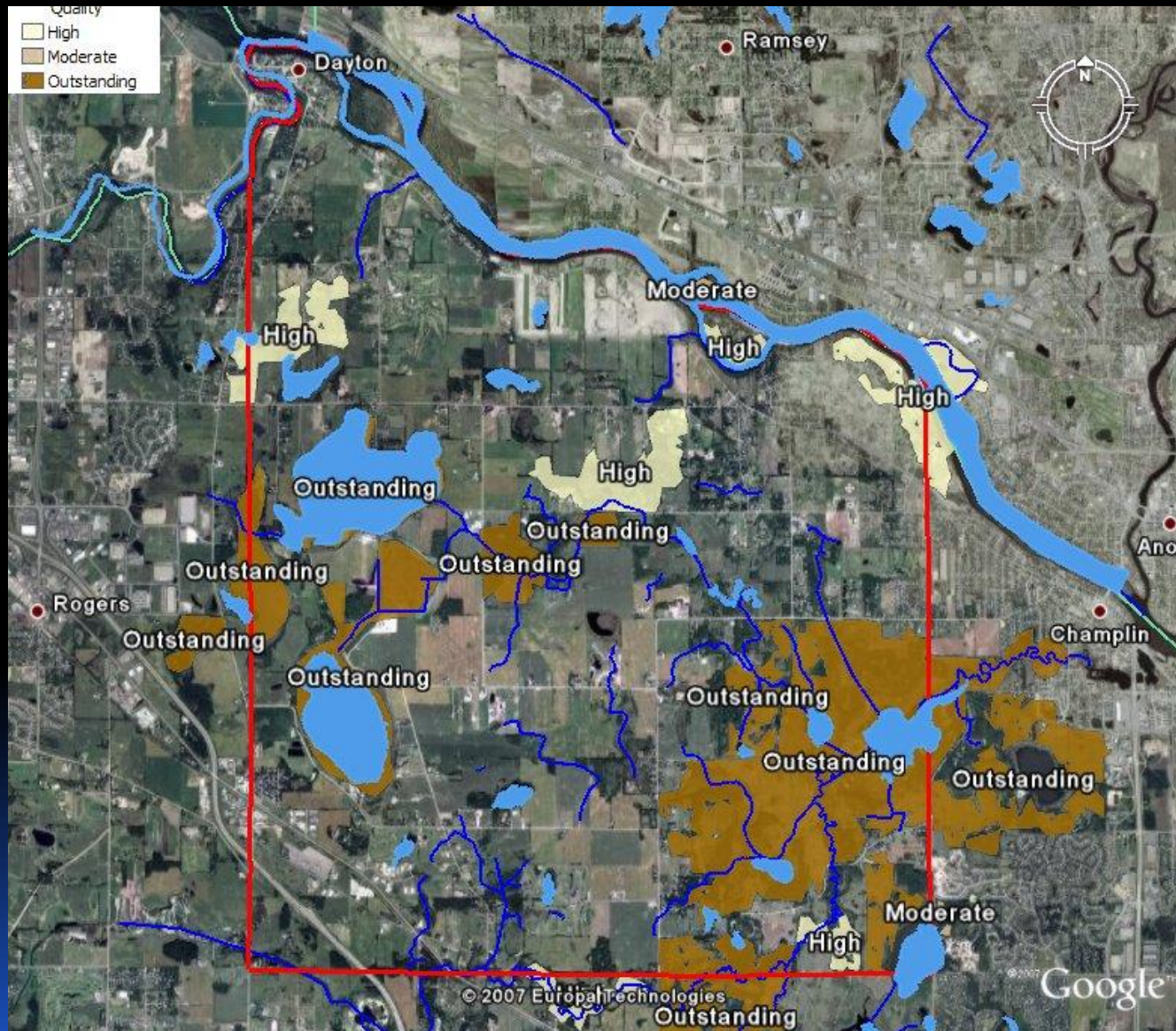


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one piece at a time!



**Bringing the world together,
one piece at a time!**

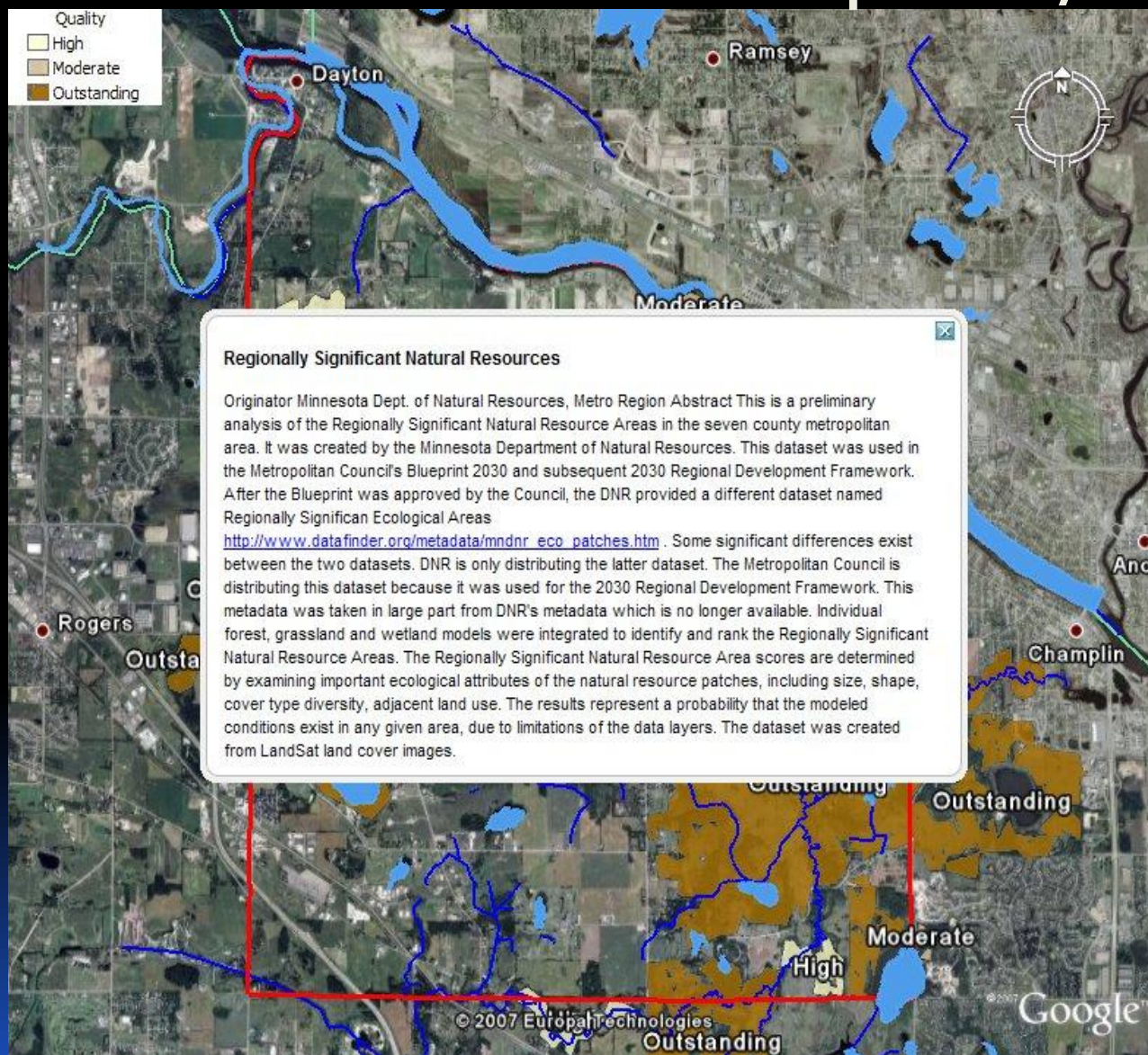
SharedGeo



Embed Data Description/Links

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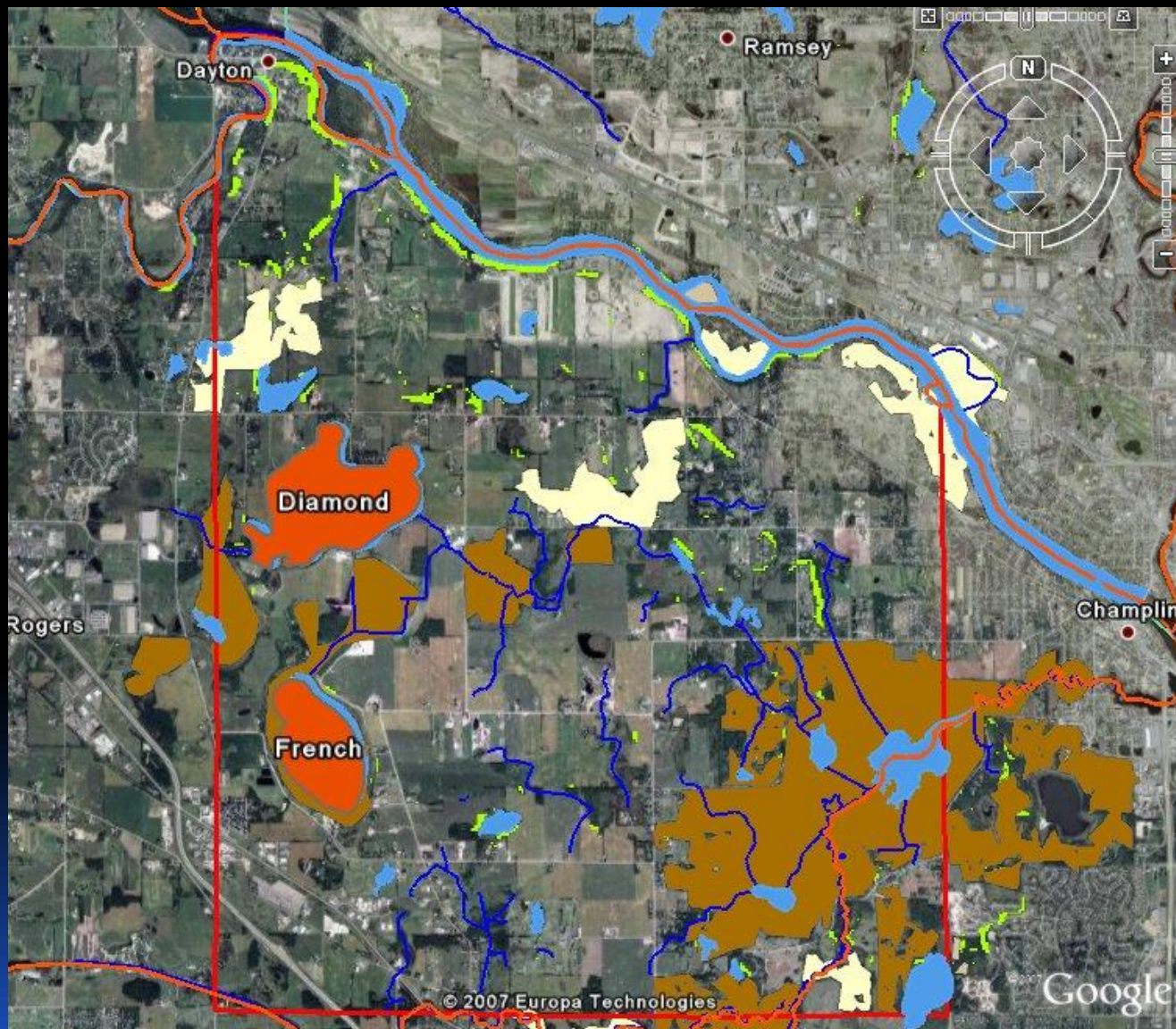
SharedGeo



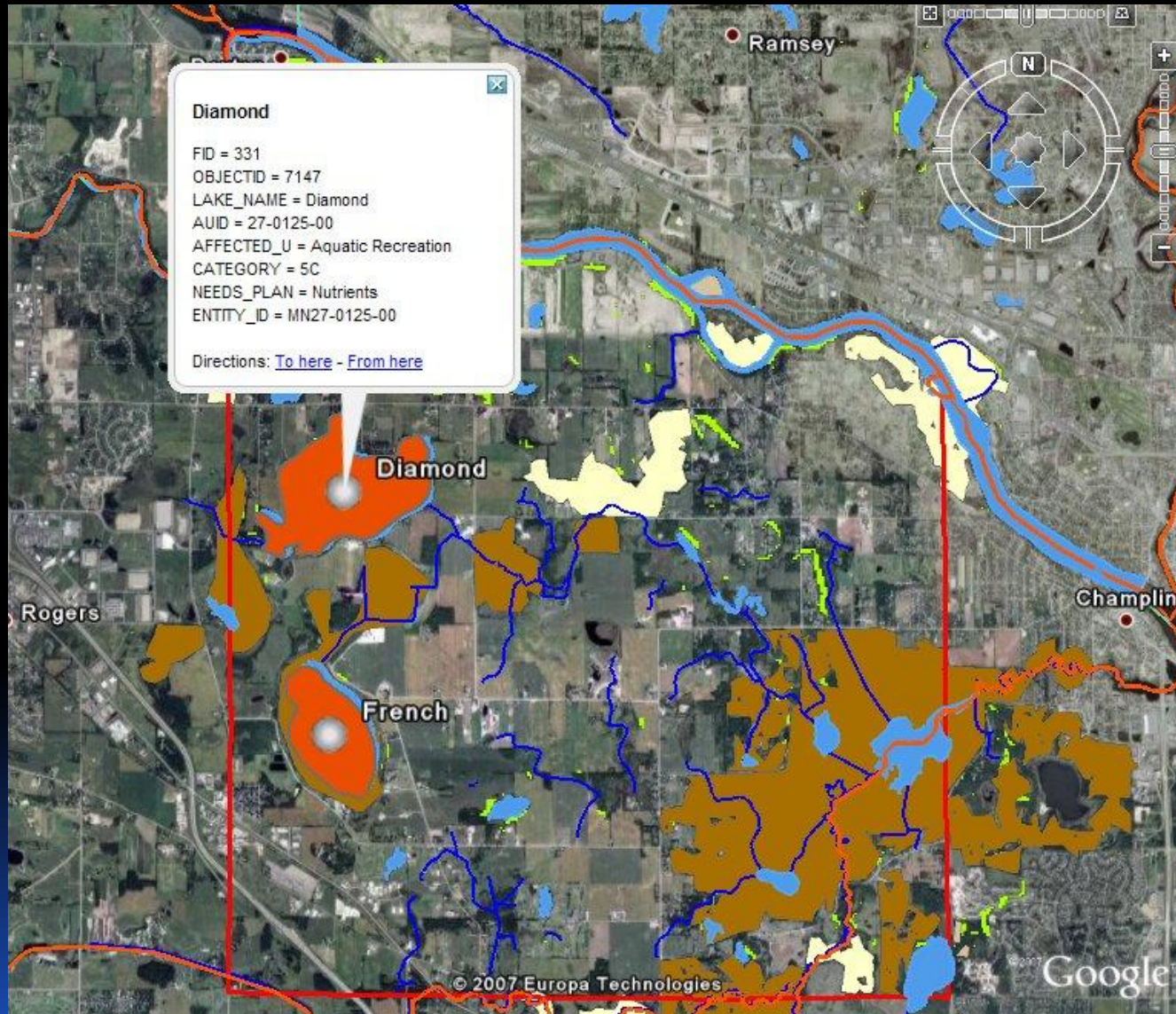
Impaired Waters

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Tell Me More!

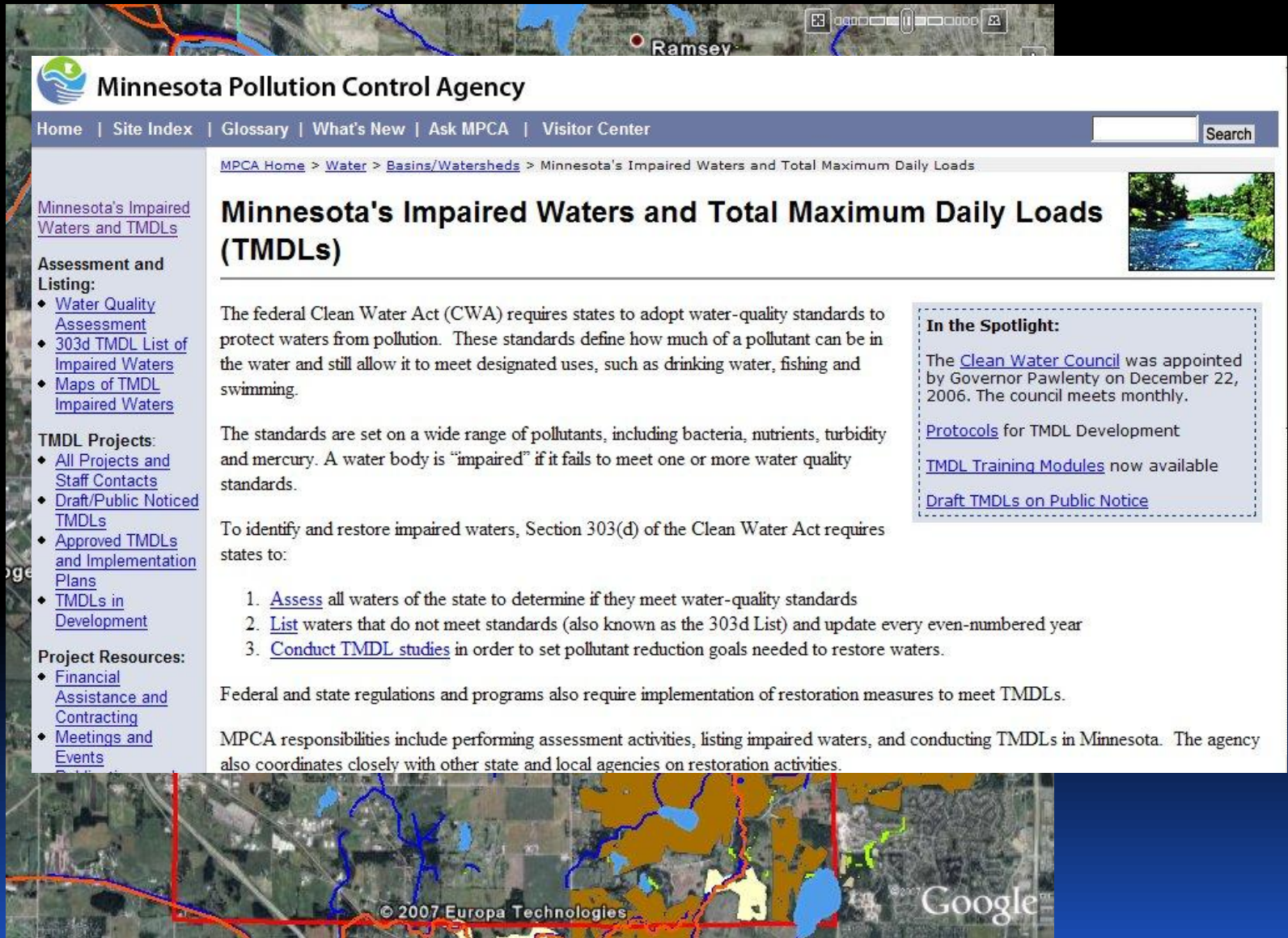


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Link to more information....



Minnesota Pollution Control Agency

Home | Site Index | Glossary | What's New | Ask MPCA | Visitor Center

Minnesota's Impaired Waters and TMDLs

Assessment and Listing:

- [Water Quality Assessment](#)
- [303d TMDL List of Impaired Waters](#)
- [Maps of TMDL Impaired Waters](#)

TMDL Projects:

- [All Projects and Staff Contacts](#)
- [Draft/Public Noticed TMDLs](#)
- [Approved TMDLs and Implementation Plans](#)
- [TMDLs in Development](#)

Project Resources:

- [Financial Assistance and Contracting](#)
- [Meetings and Events](#)

MPCA Home > [Water](#) > [Basins/Watersheds](#) > Minnesota's Impaired Waters and Total Maximum Daily Loads

Minnesota's Impaired Waters and Total Maximum Daily Loads (TMDLs)

The federal Clean Water Act (CWA) requires states to adopt water-quality standards to protect waters from pollution. These standards define how much of a pollutant can be in the water and still allow it to meet designated uses, such as drinking water, fishing and swimming.

The standards are set on a wide range of pollutants, including bacteria, nutrients, turbidity and mercury. A water body is "impaired" if it fails to meet one or more water quality standards.

To identify and restore impaired waters, Section 303(d) of the Clean Water Act requires states to:

1. [Assess](#) all waters of the state to determine if they meet water-quality standards
2. [List](#) waters that do not meet standards (also known as the 303d List) and update every even-numbered year
3. [Conduct TMDL studies](#) in order to set pollutant reduction goals needed to restore waters.

Federal and state regulations and programs also require implementation of restoration measures to meet TMDLs.

MPCA responsibilities include performing assessment activities, listing impaired waters, and conducting TMDLs in Minnesota. The agency also coordinates closely with other state and local agencies on restoration activities.

In the Spotlight:

The [Clean Water Council](#) was appointed by Governor Pawlenty on December 22, 2006. The council meets monthly.

[Protocols](#) for TMDL Development

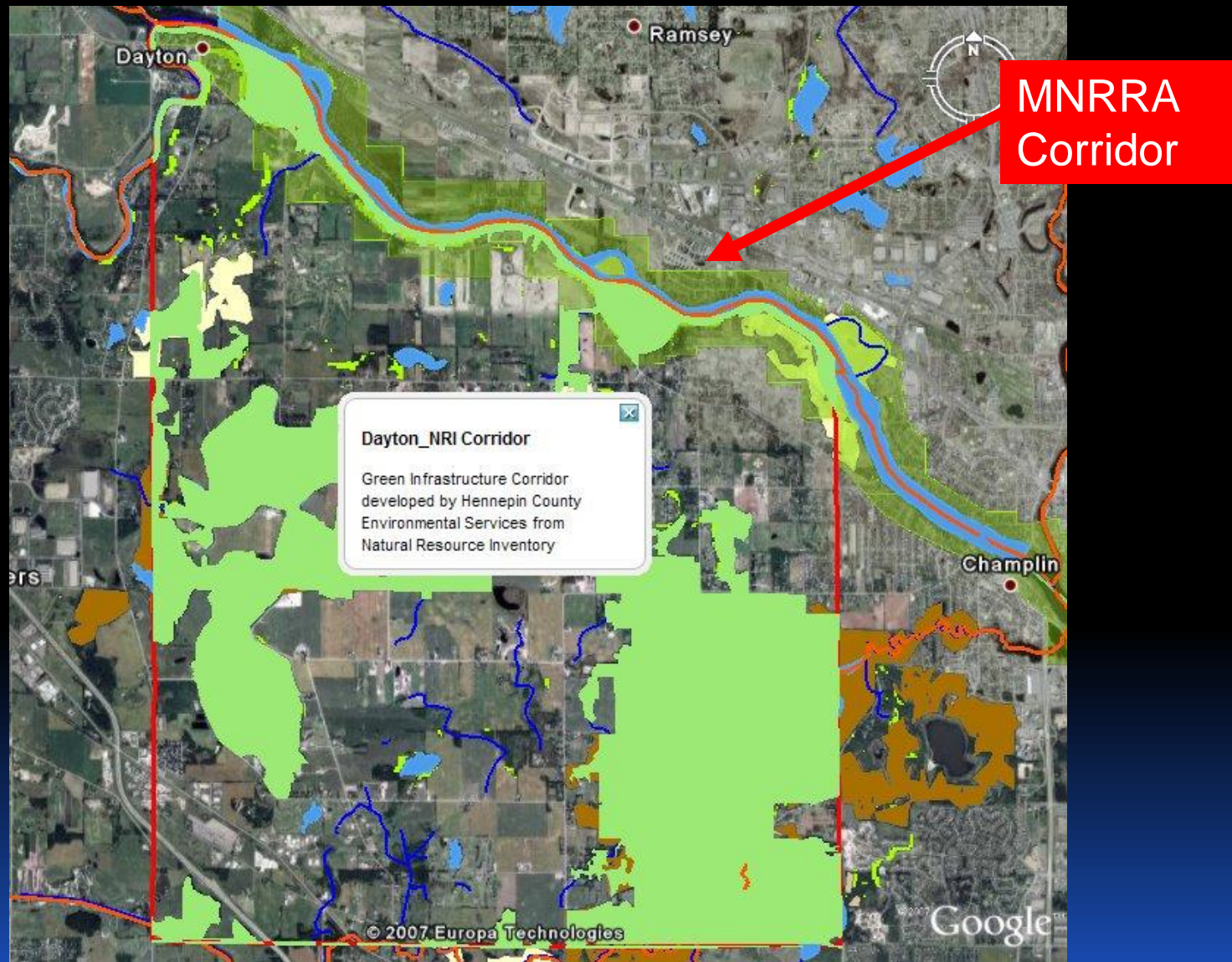
[TMDL Training Modules](#) now available

[Draft TMDLs on Public Notice](#)

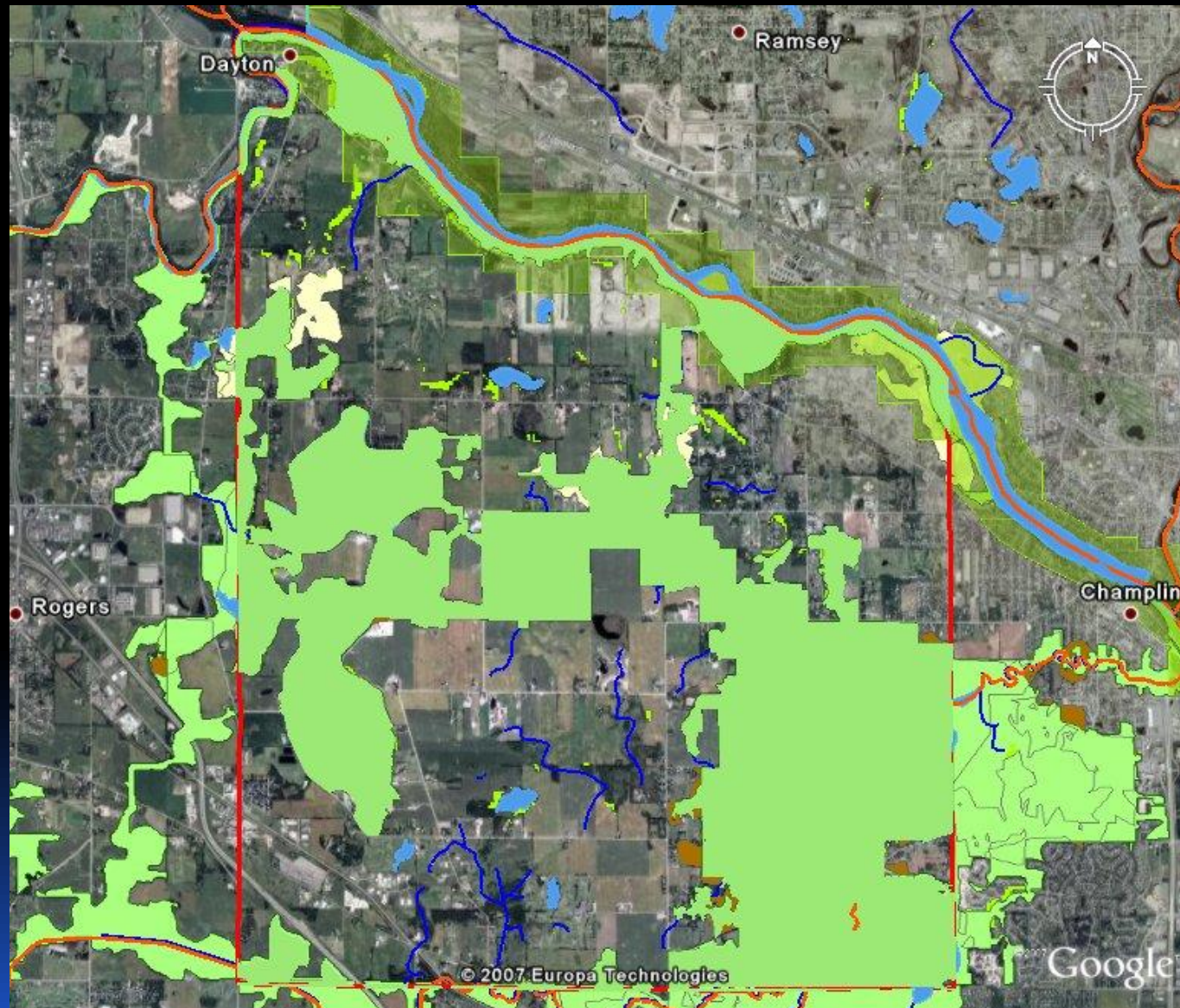
© 2007 Europa Technologies

Google

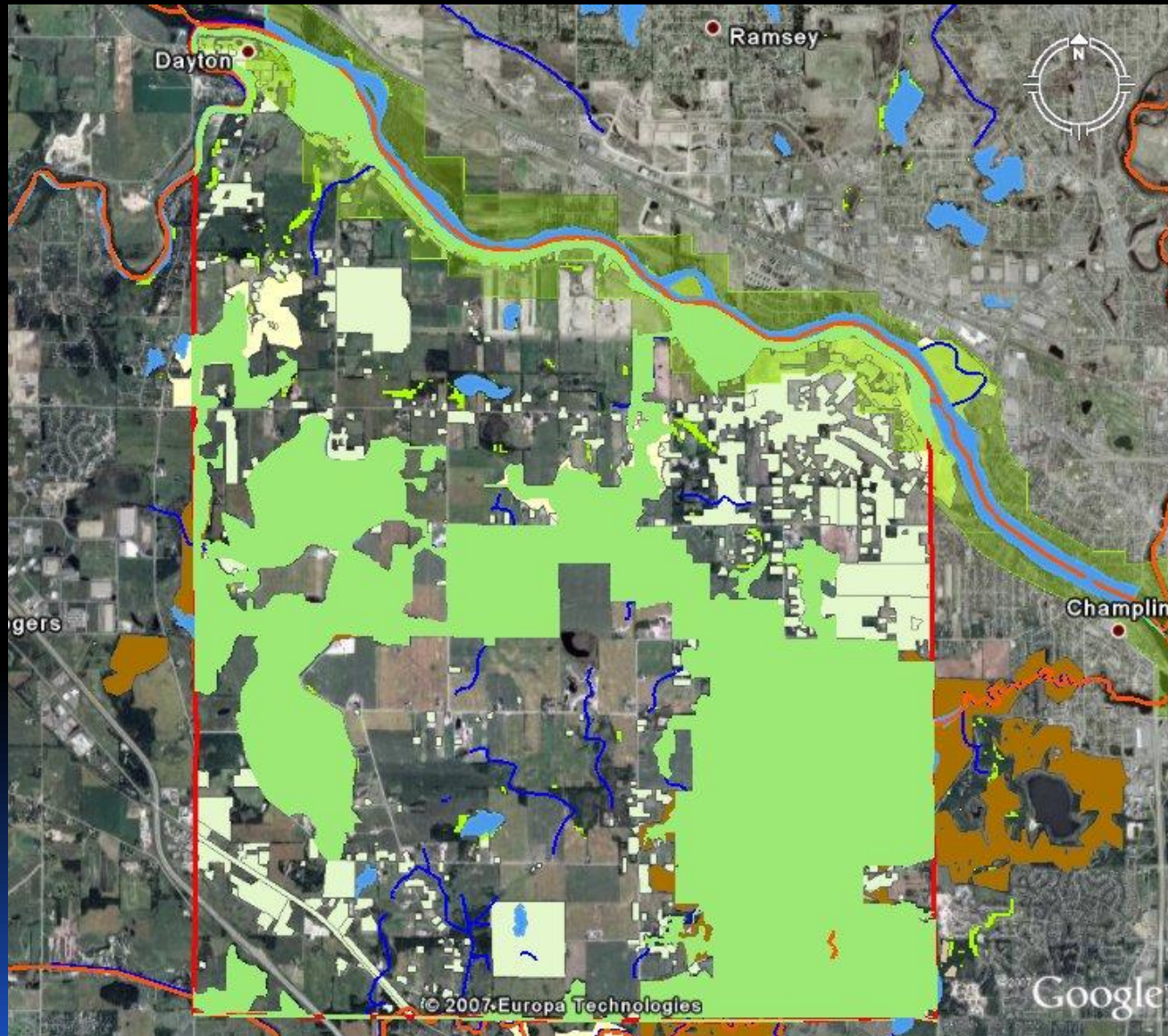
Green Infrastructure



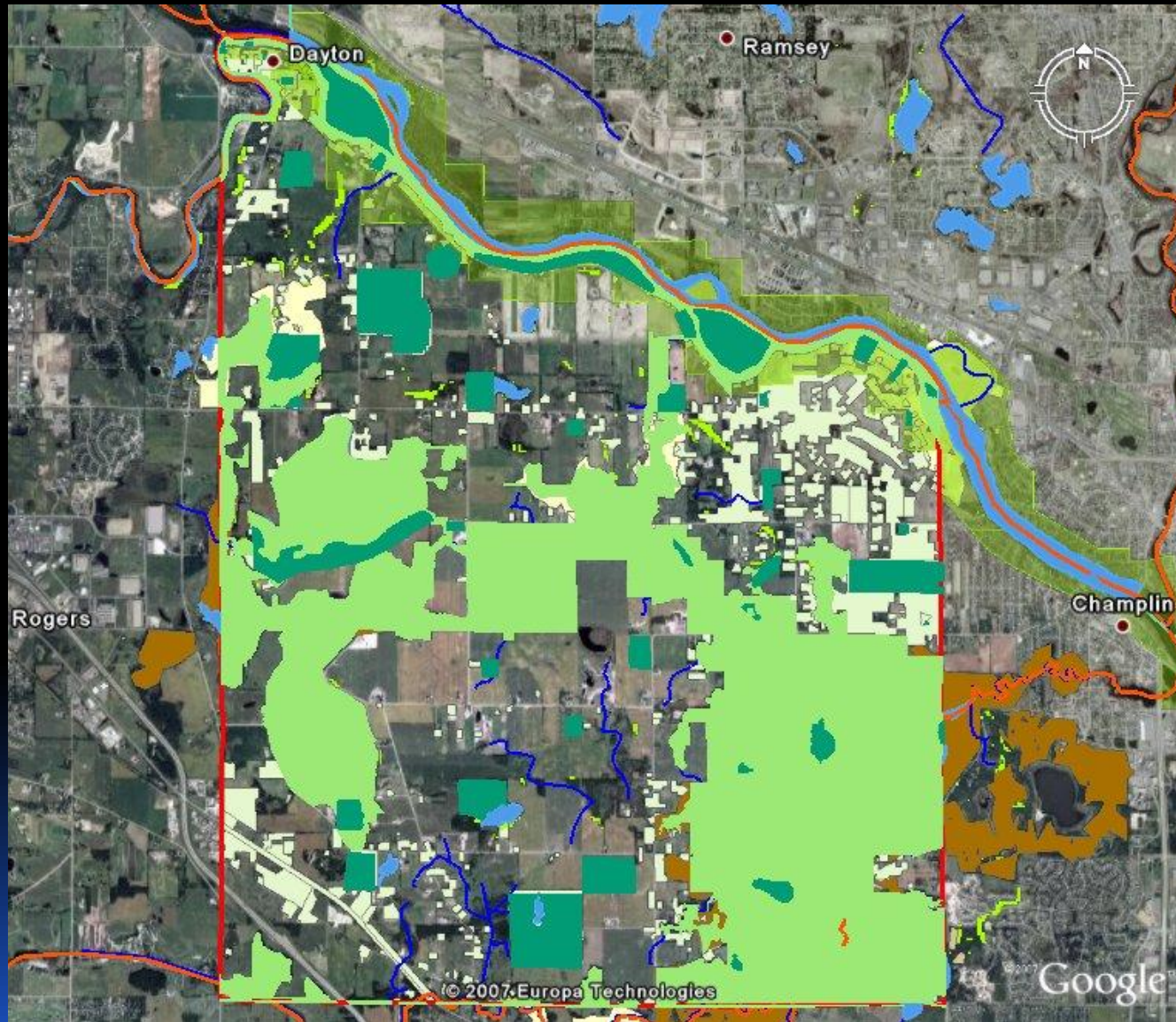
A Regional Connection



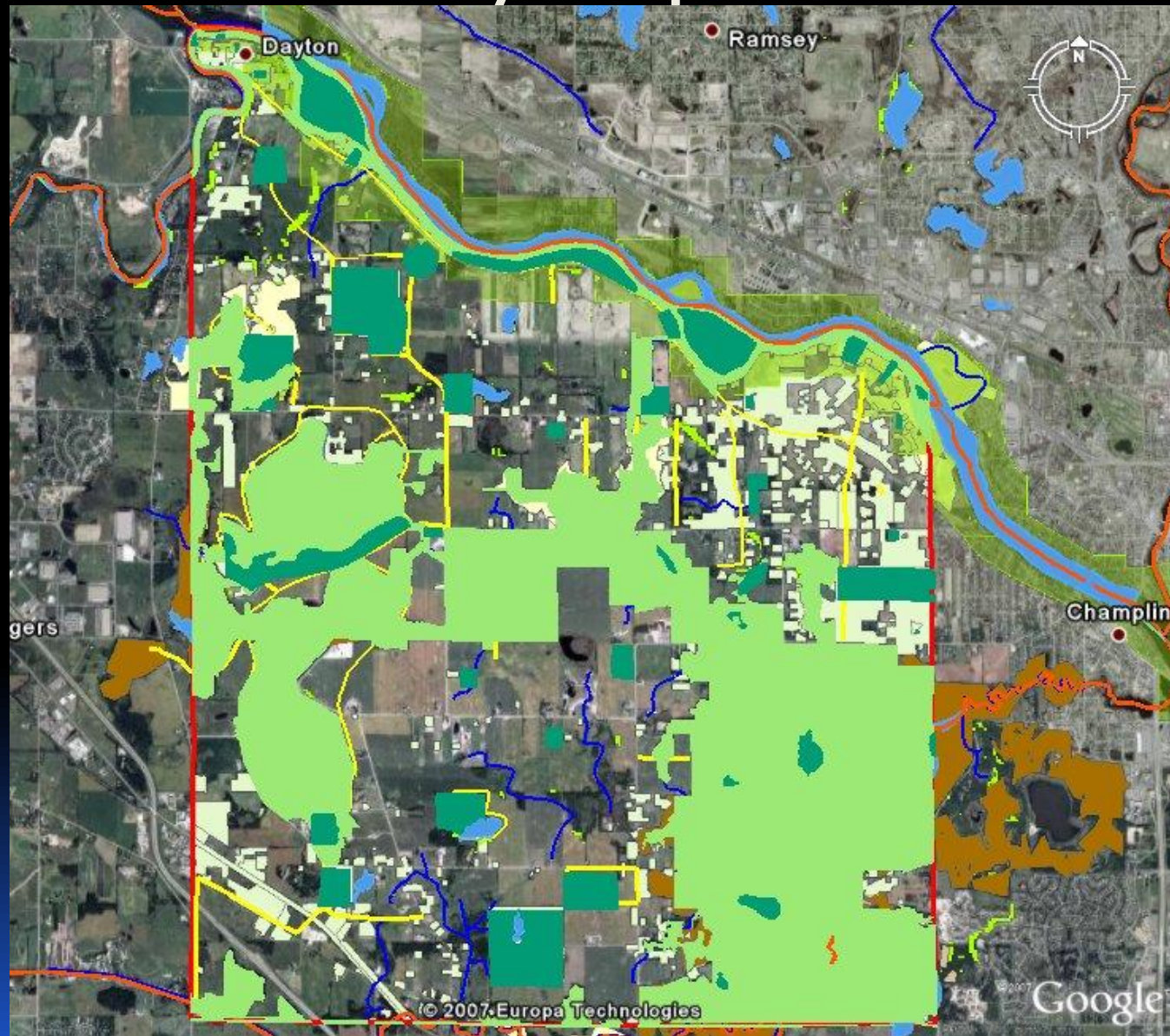
Current Land Use



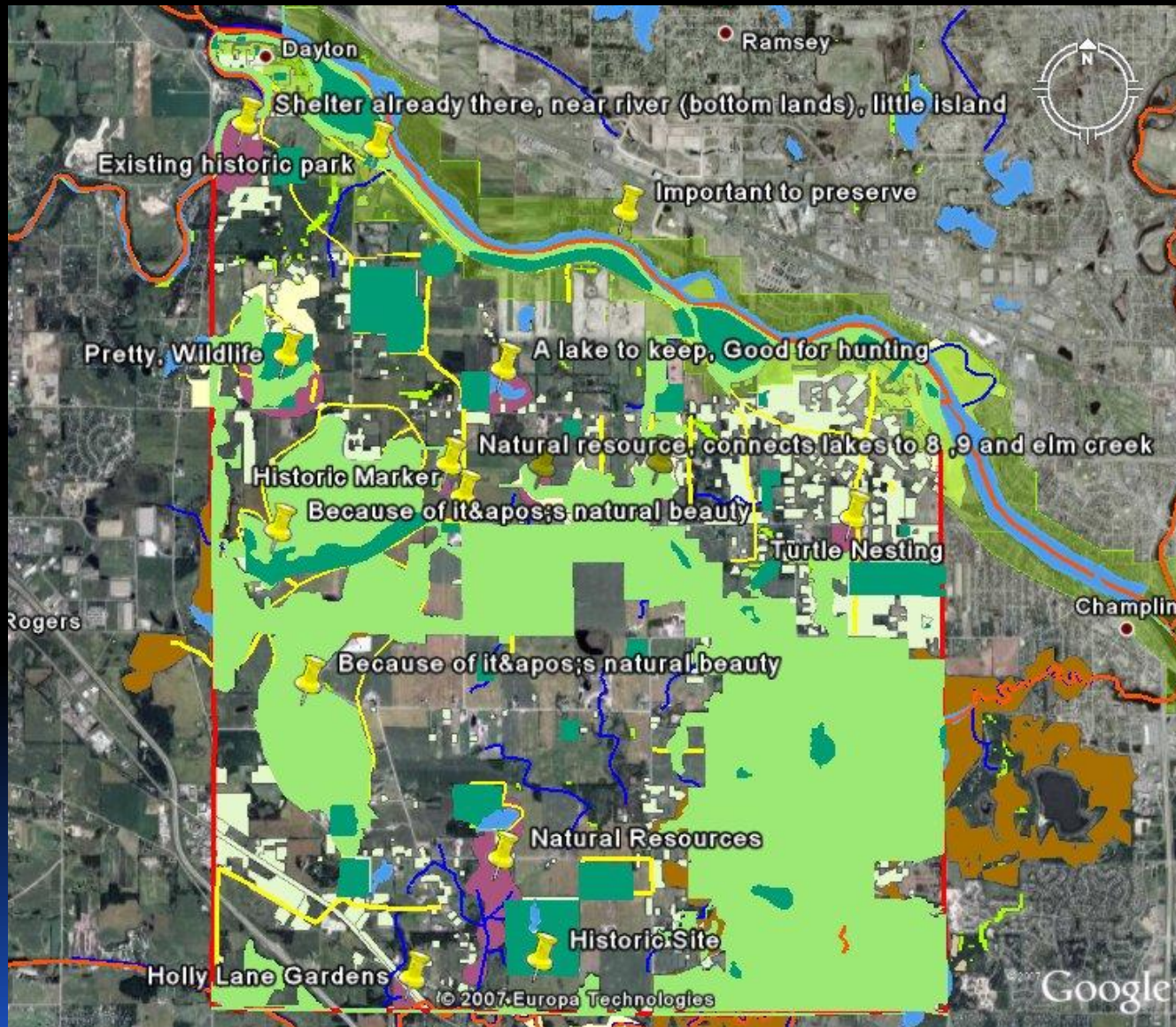
Community Input - Parks



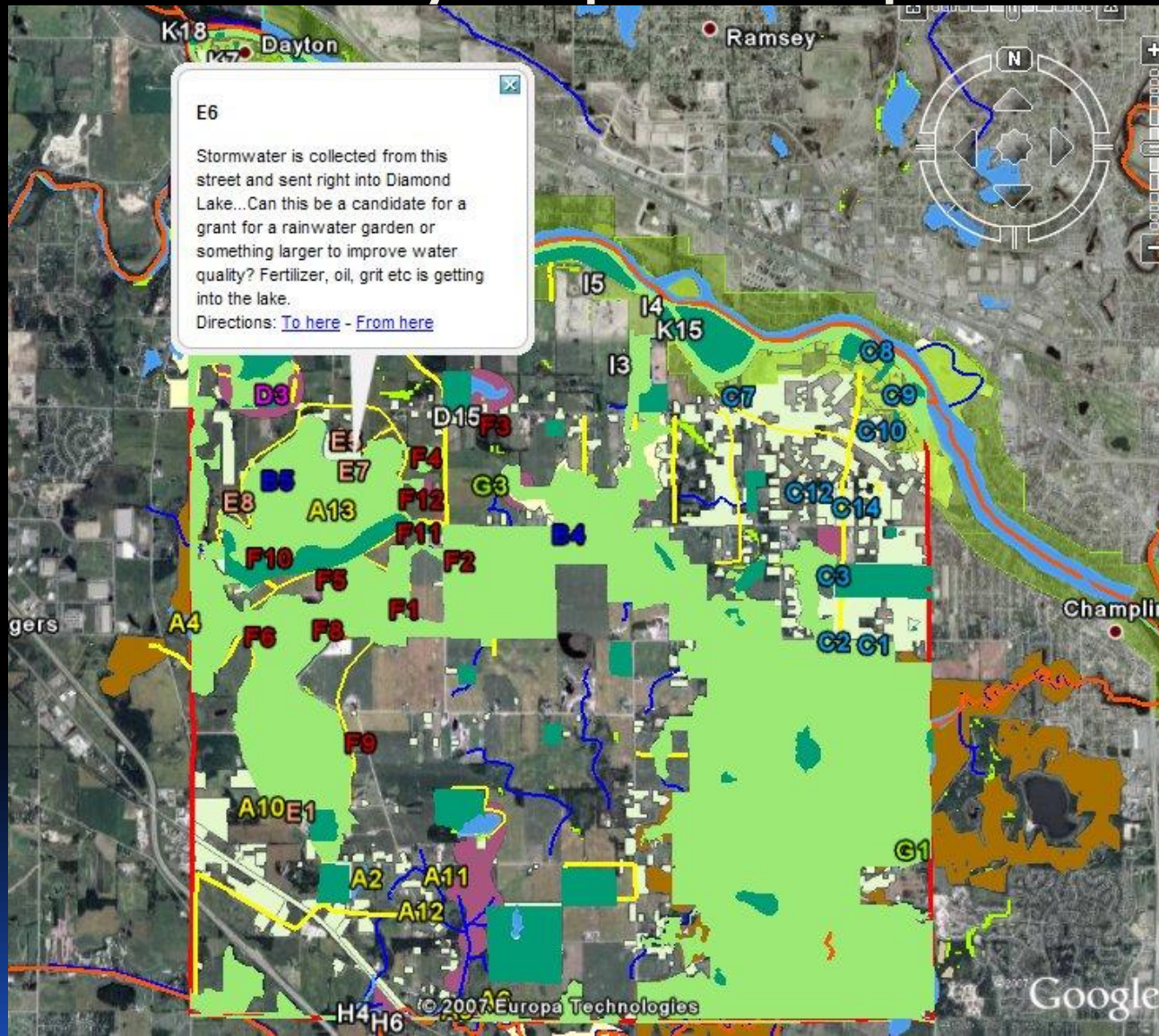
Community Input - Trails



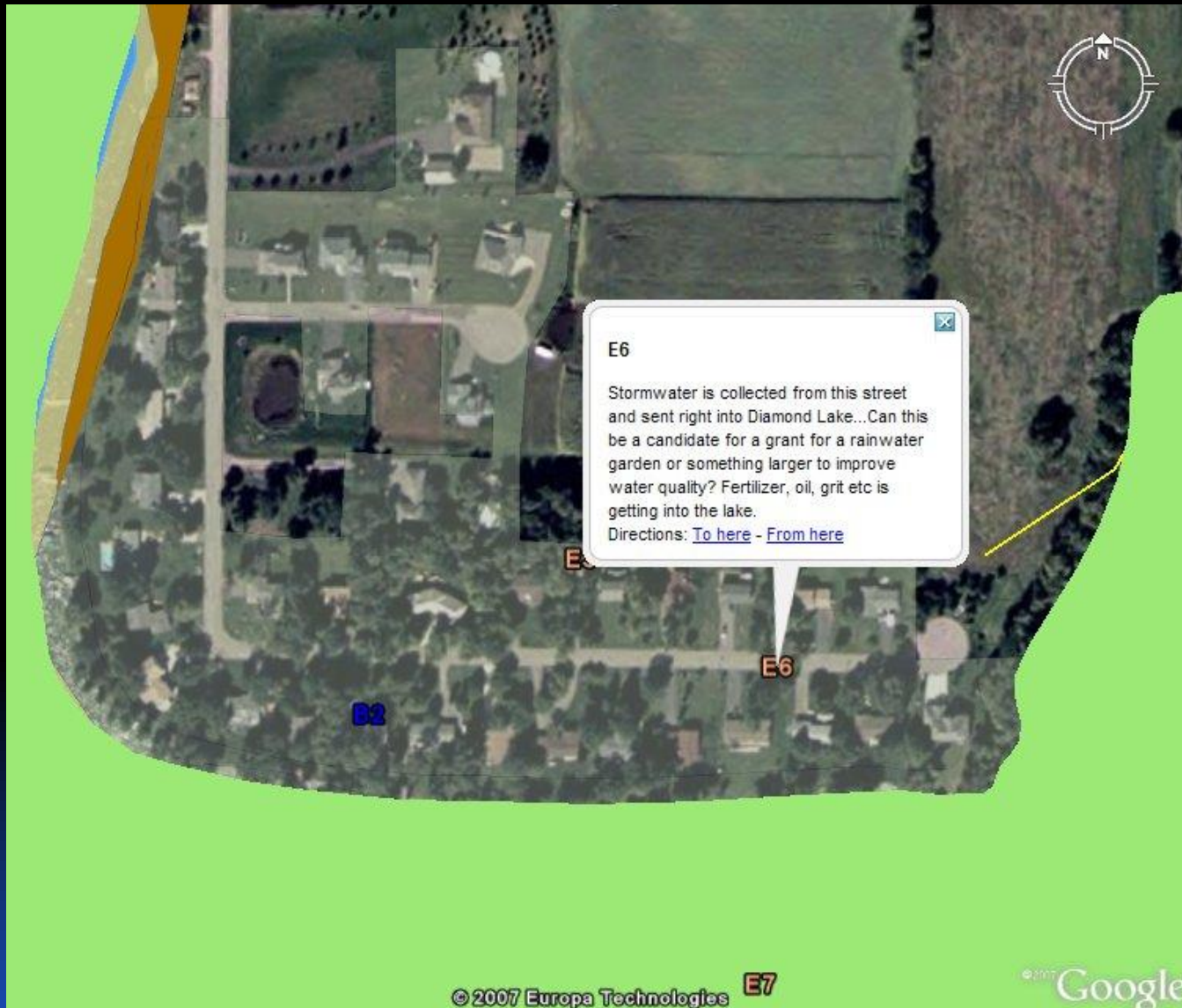
Community Input – Special Places

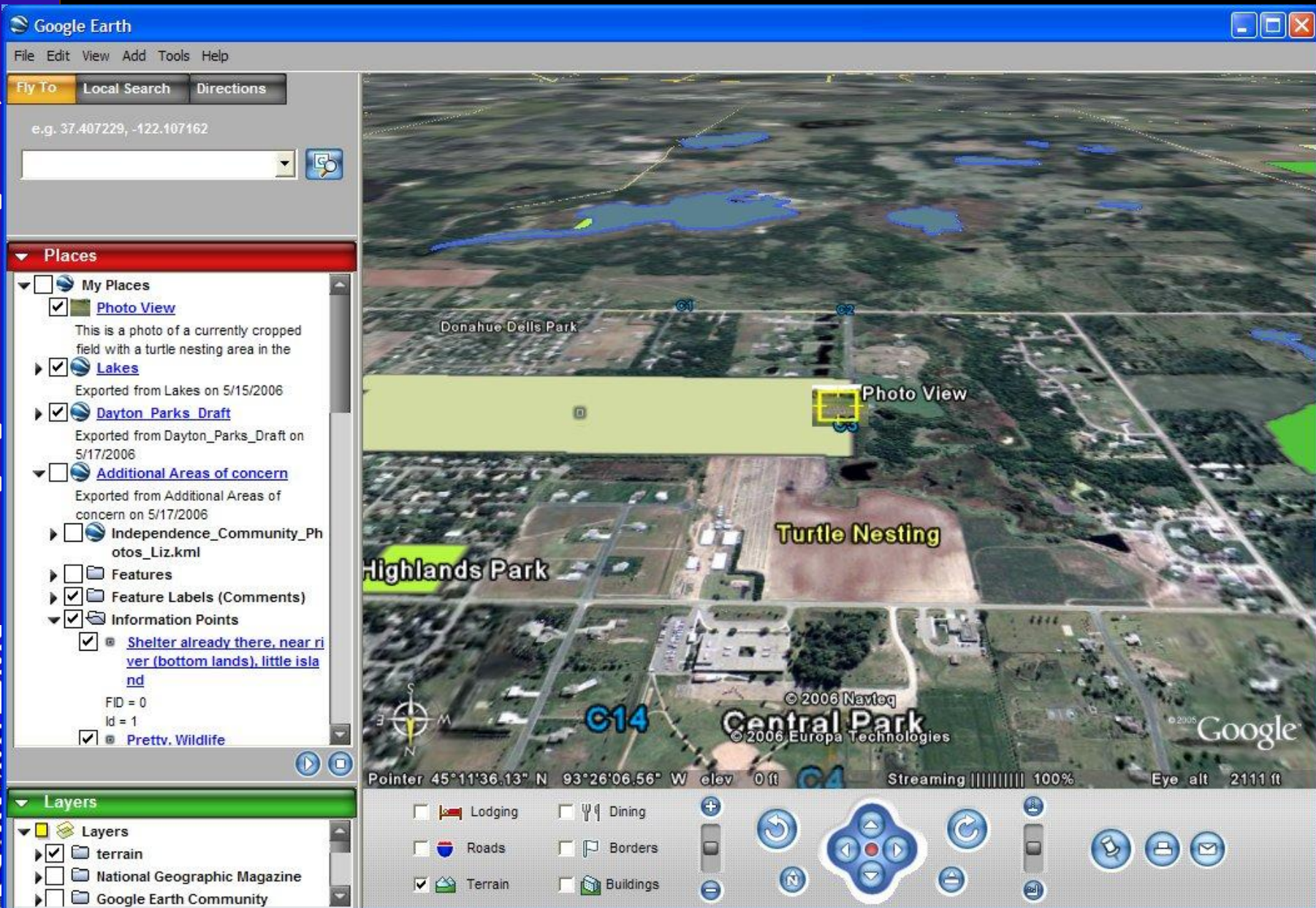


Community Input – Spatial Notes



Let's Look Closer





Google Earth

File Edit View Add Tools Help

Fly To Local Search Directions

e.g. 37.407229, -122.107162

Places

- ☐ My Places
 - ☒ Photo View
 - This is a photo of a currently cropped field with a turtle nesting area in the
 - ☒ Lakes
 - Exported from Lakes on 5/15/2006
 - ☒ Dayton Parks Draft
 - Exported from Dayton_Parks_Draft on 5/17/2006
 - ☐ Additional Areas of concern
 - Exported from Additional Areas of concern on 5/17/2006
 - ☐ Independence_Community_Photos_Liz.kml
 - ☐ Features
 - ☒ Feature Labels (Comments)
 - ☒ Information Points
 - ☒ Shelter already there, near river (bottom lands), little island

FID = 0
Id = 1


☒ Prettv. Wildlife

Layers

- ☒ Layers
 - ☒ terrain
 - ☐ National Geographic Magazine
 - ☐ Google Earth Community

Photo View

This is a photo of a currently cropped field with a turtle nesting area in the background. In the distance is Elm Creek Park Reserve.



[Download large image](#)

Directions: [To here](#) - [From here](#)

Pointer 45°11'40.00" N 93°26'06.56" W elev 0 ft Streaming 100% Eye alt 2111 ft

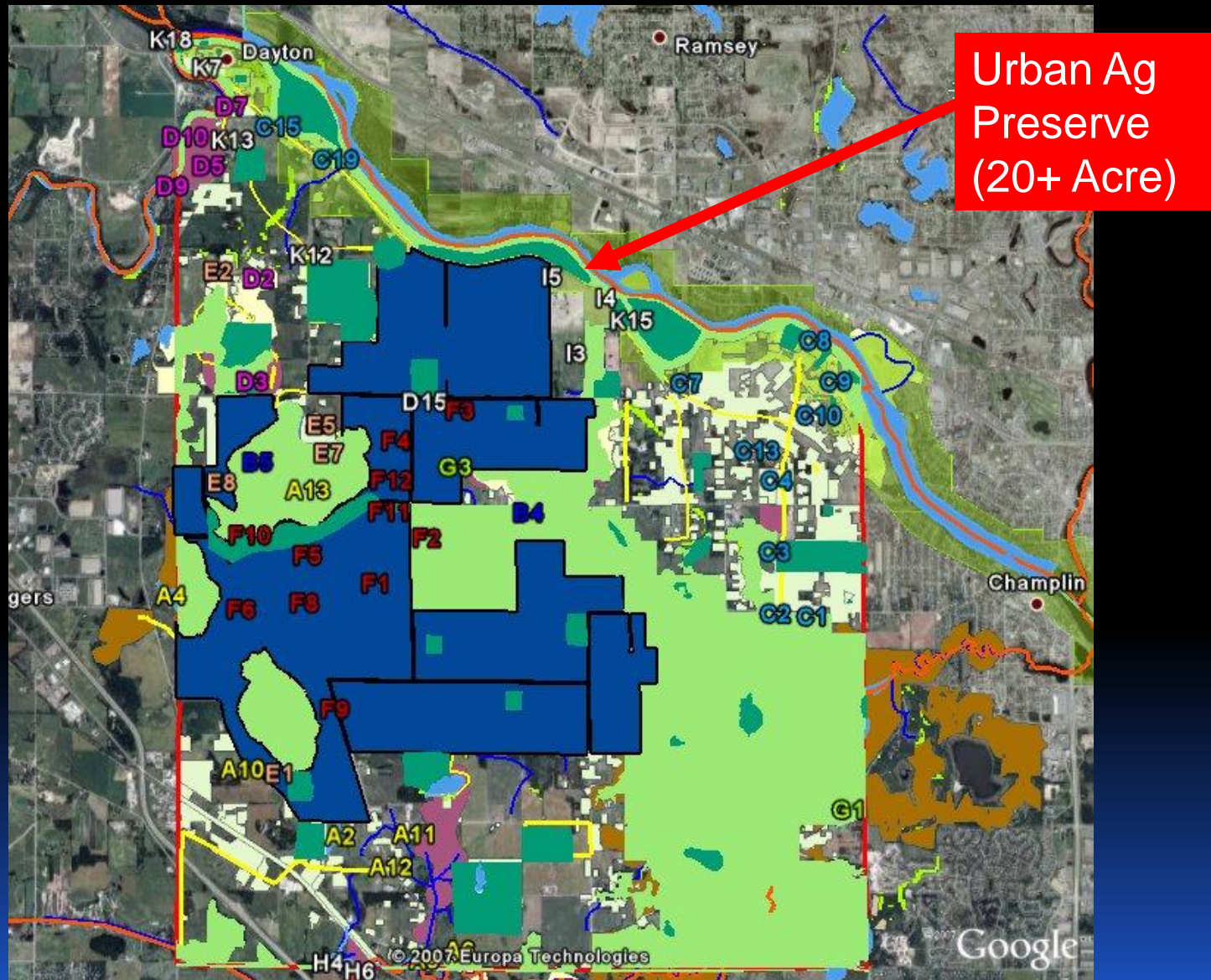
Central Park

© 2006 Europa Technologies

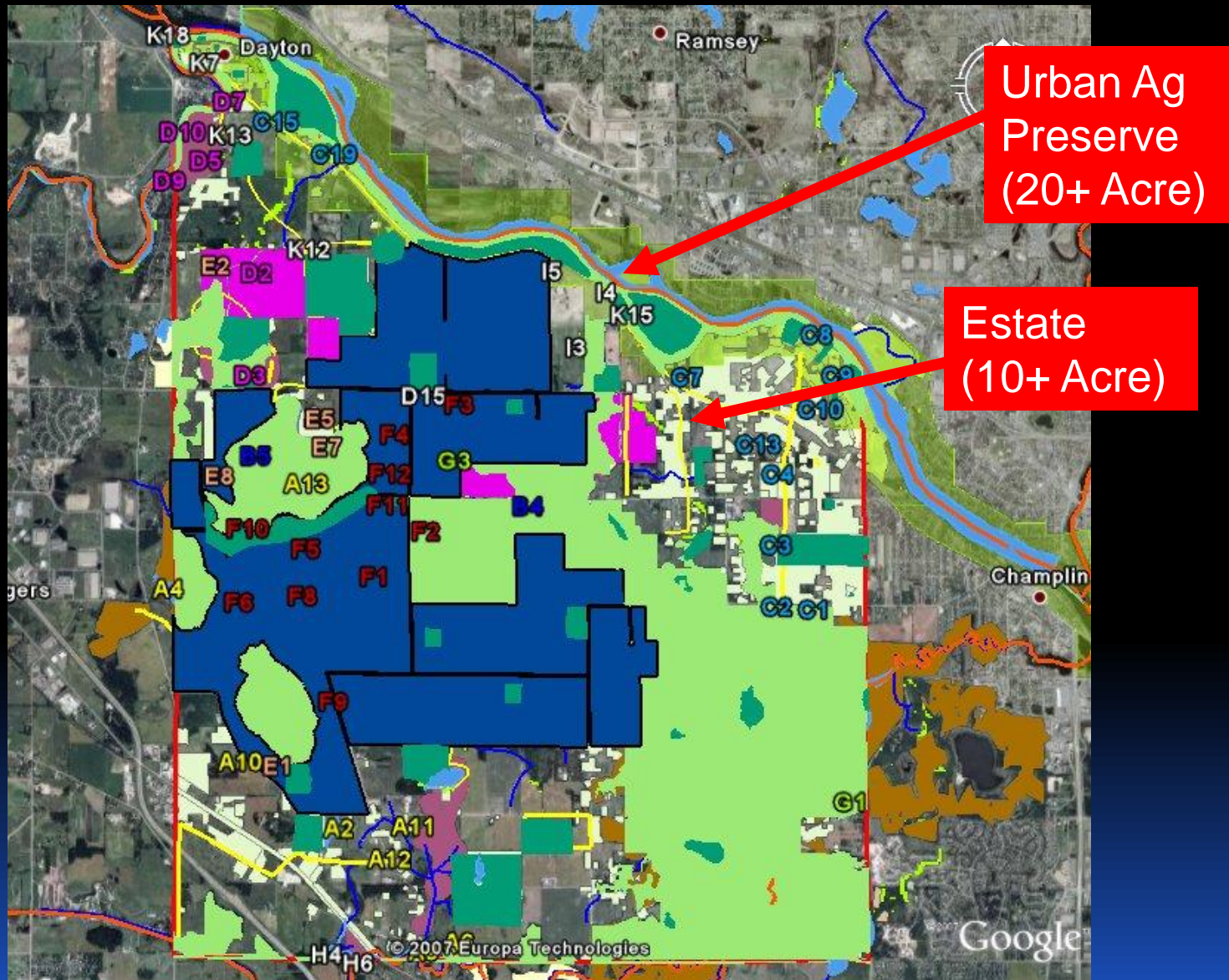
© 2005 Google

Lodging Dining Roads Borders Terrain Buildings

Future Land Use – Current Plan



Future Land Use – Current Plan



e.g. 37.407229, -122.107162



Places

- ☐ My Places
 - ☐ **Development Demonstration**
Mocked up example...not a real proposal...for visual experiment only
 - ☒ Conventional Development Sce
 - ☐ Conservation Development Sc
 - ☐ Activity Centers Scenario
 - ☒ **Photo View**
This is a photo of a currently cropped field with a turtle nesting area in the
 - ☒ **Lakes**
Exported from Lakes on 5/15/2006
 - ☒ **Dayton Parks Draft**
Exported from Dayton_Parks_Draft on 5/17/2006
 - ☐ **Additional Areas of concern**
Exported from Additional Areas of concern on 5/17/2006
 - ☐ Independence_Community_Photos_Liz.kml
 - ☐ Features
 - ☒ Feature Labels (Comments)

Layers

- ☒ **Layers**
 - ☒ terrain
 - ☐ National Geographic Magazine
 - ☐ Google Earth Community



Pointer 45°14'37.28" N 93°34'22.57" W elev 0 ft Streaming 100% Eye alt 7582 ft

- | | |
|---|------------------------------------|
| <input type="checkbox"/> Lodging | <input type="checkbox"/> Dining |
| <input type="checkbox"/> Roads | <input type="checkbox"/> Borders |
| <input checked="" type="checkbox"/> Terrain | <input type="checkbox"/> Buildings |



e.g. 37.407229, -122.107162

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Layers

- ☒ Layers
 - ☒ terrain
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 - ☐ Google Earth Community



Pointer 45°14'38.51" N 93°34'30.64" W elev 0 ft Streaming 100% Eye alt 3040 ft

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Navigation controls: compass, zoom in (+), zoom out (-), pan (directional arrows), fly (circular arrow), home (house icon), print (printer icon), link (envelope icon).



e.g. 37.407229, -122.107162

Places

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Layers

- ☒ Layers
 - ☒ terrain
 - ☐ National Geographic Magazine
 - ☐ Google Earth Community



Pointer 45°14'38.51" N 93°34'30.64" W elev 0 ft Streaming ||||| 100% Eye alt 3040 ft

<input type="checkbox"/> Lodging	<input type="checkbox"/> Dining	+
<input type="checkbox"/> Roads	<input type="checkbox"/> Borders	
<input checked="" type="checkbox"/> Terrain	<input type="checkbox"/> Buildings	-

Navigation controls: a central directional pad with a red center button, surrounded by circular buttons for zoom in, zoom out, and other map functions.



e.g. 37.407229, -122.107162

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<input type="checkbox"/> Roads	<input type="checkbox"/> Borders	<input type="button" value="-"/>
<input checked="" type="checkbox"/> Terrain	<input type="checkbox"/> Buildings	





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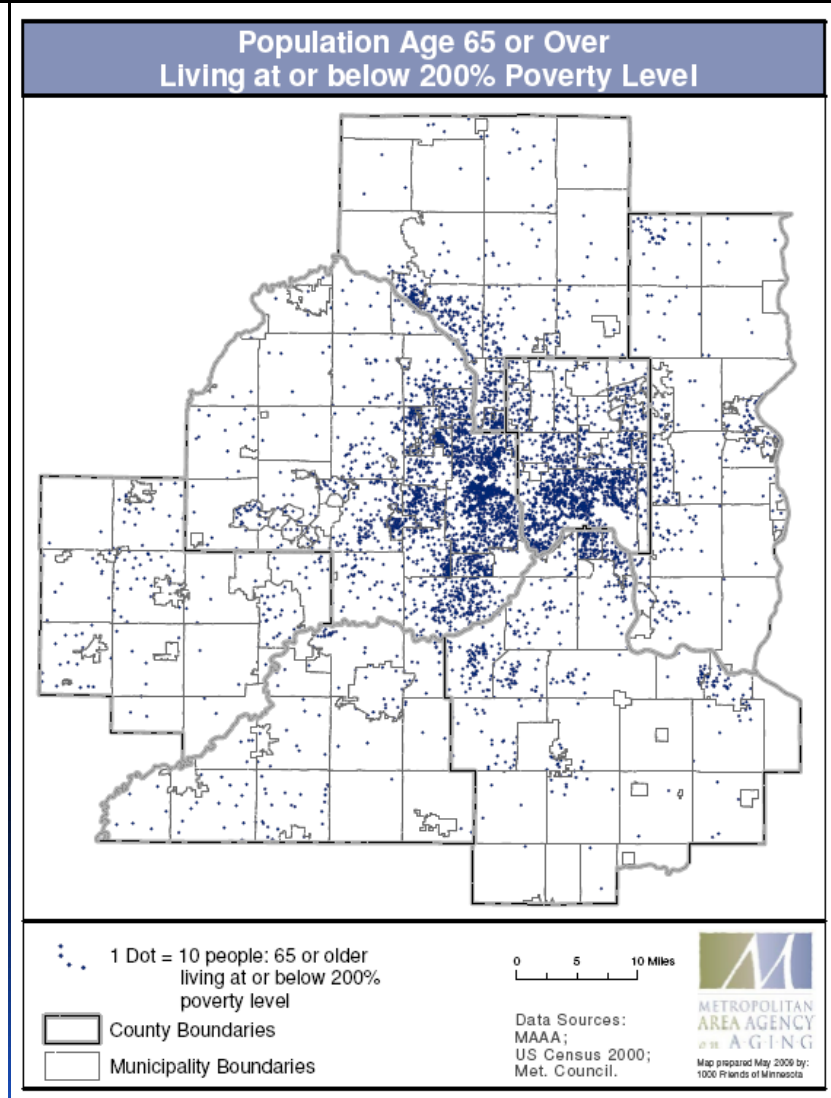
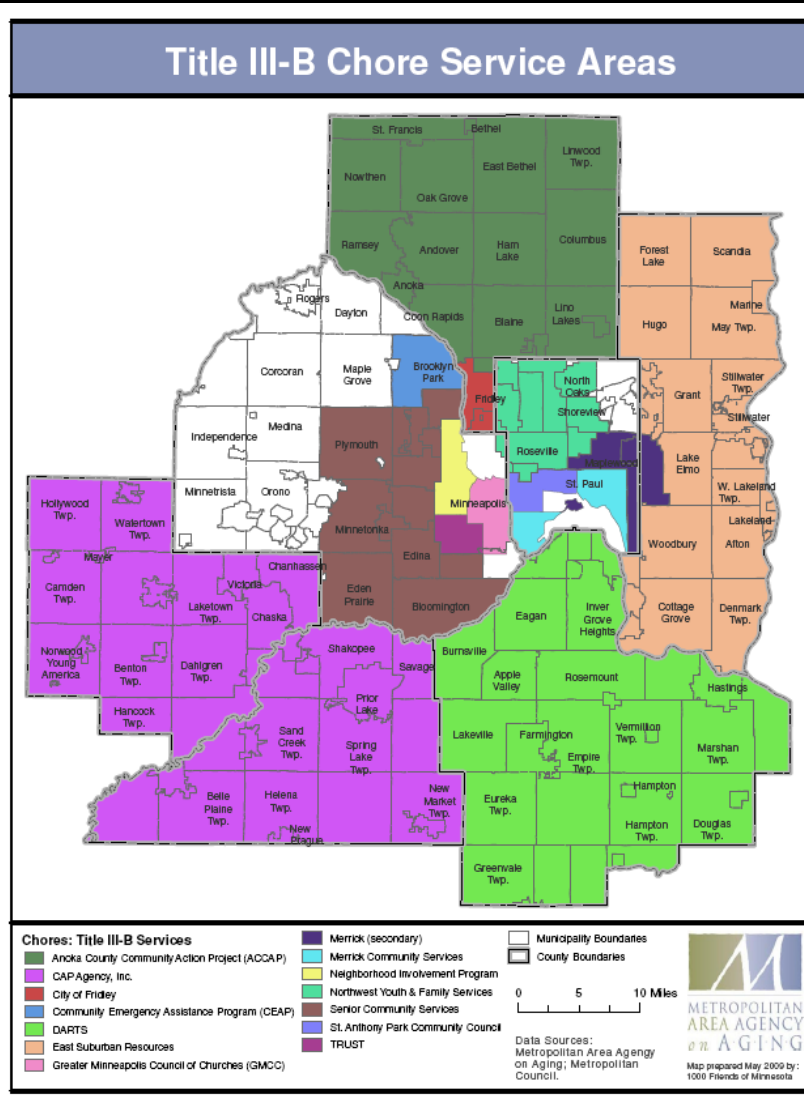
GIS, Mapping and Non-Profits

*How can GIS serve us?
Let me count the ways...*

- Program and service development
 - Where are services needed?
 - Where are clients and who are they? Demographics
 - Research and development
- Member development & fundraising
 - Where are my members?
 - Are there members near this current project?
- Communications
 - Customer interactions/awareness
 - Web Communications
 - Story telling
 - “map”-tivism – advocacy and activism through maps

Program and service development

- Maps show service areas and client base



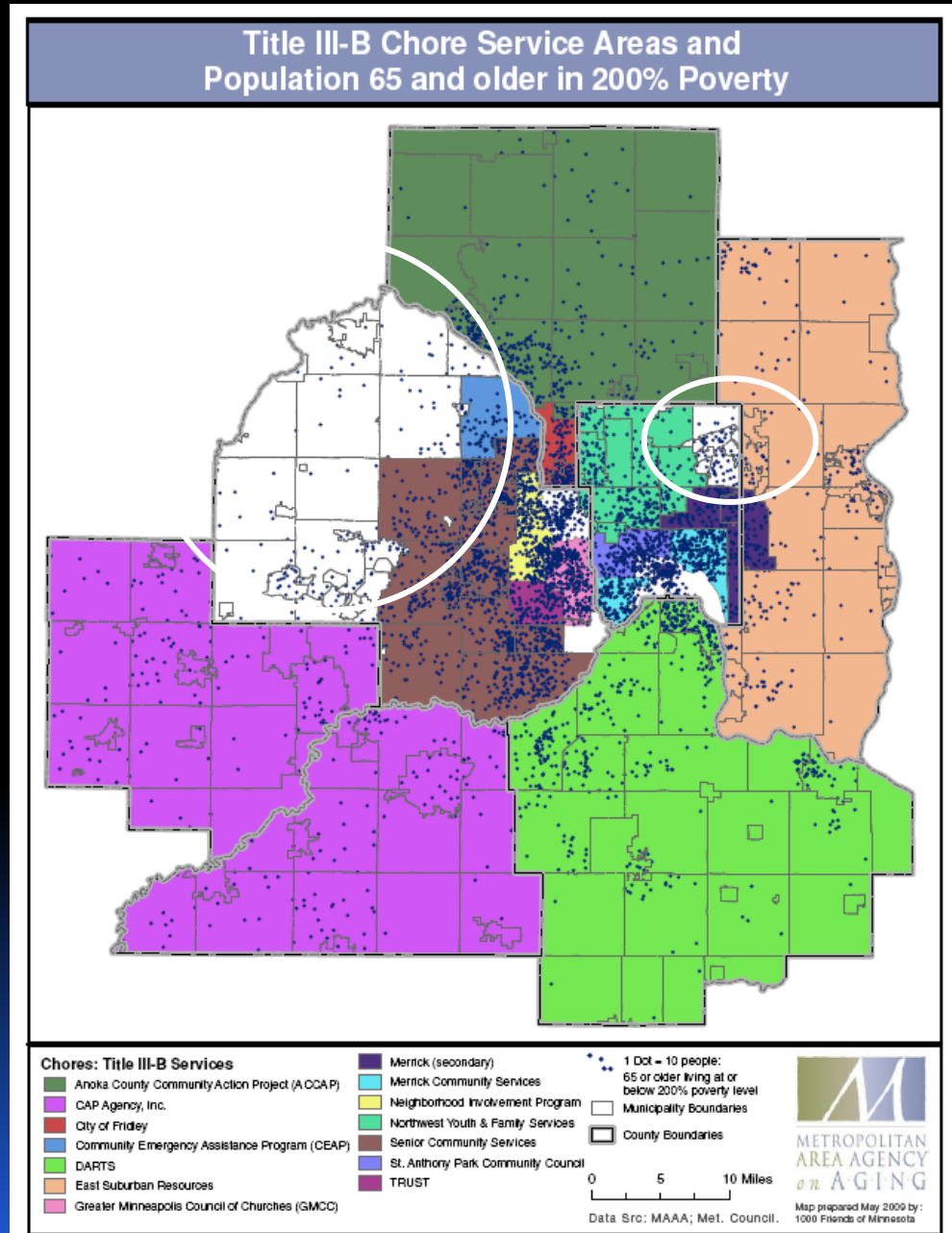
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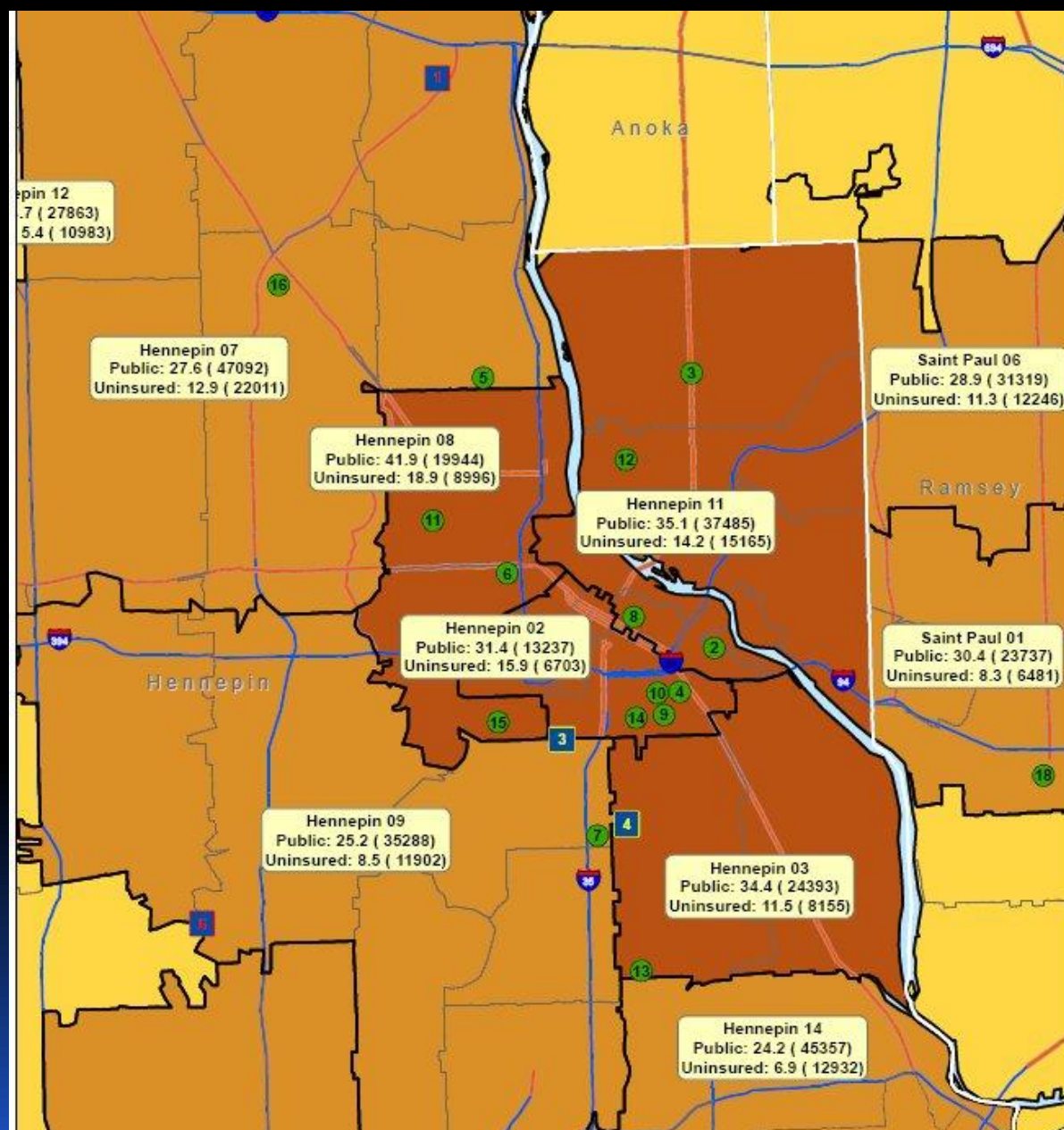
Program and service development

- Maps show service areas and client base
- Analysis shows the gaps in the service areas – where clients are not being served



Program and service development

Where are
services
needed the
most?



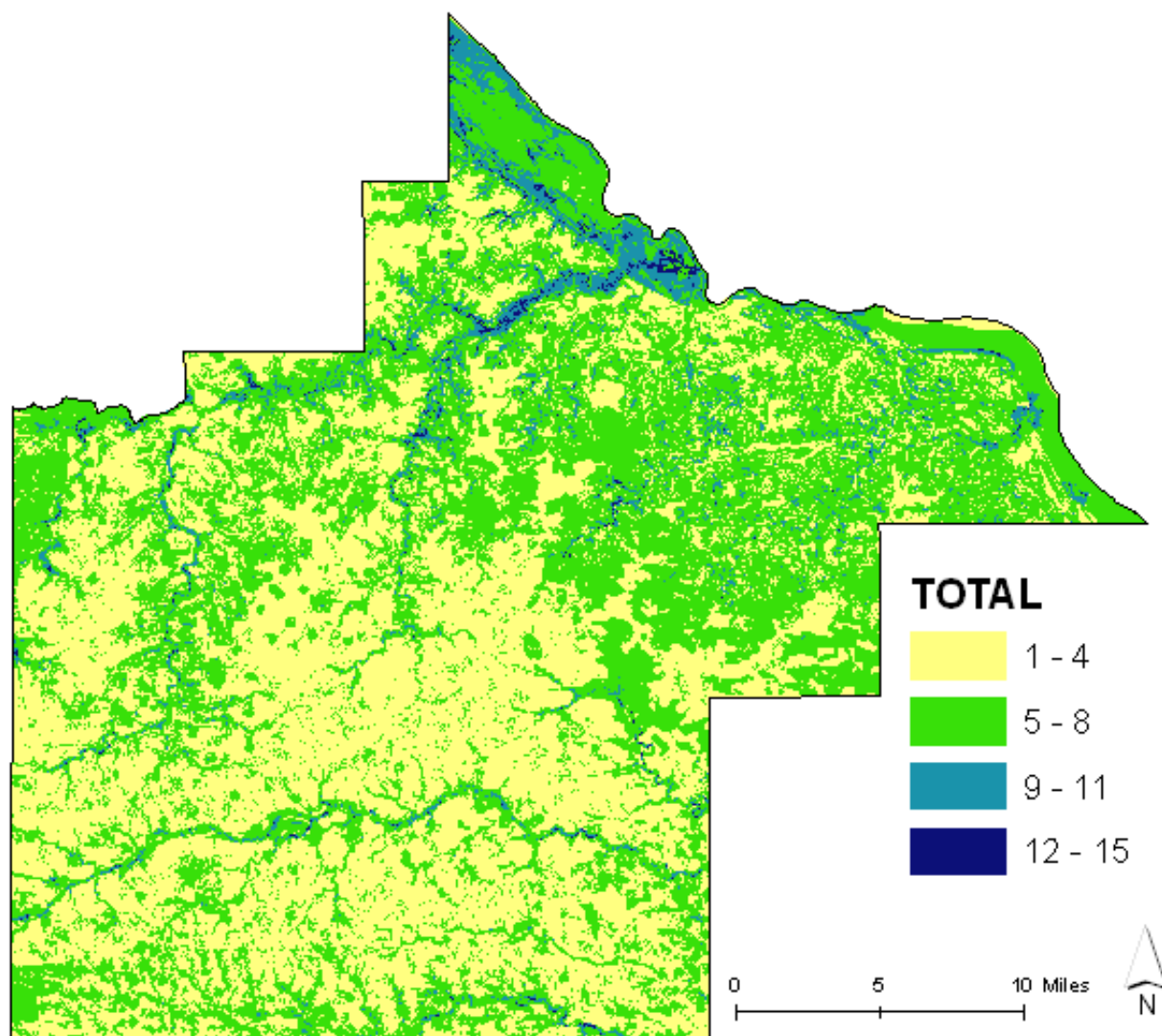
GIS Analysis Example

- Combine characteristics related to planning in Goodhue County

	Regulatory	Additional Considerations
1. High Quality Ecological Areas	1. Steep Slope & Hydric Soils	1. Aggregate Resources
2. Riparian Habitat	2. Cannon River Wild & Scenic Area	2. Registered Mining Locations
3. Bluff Land	3. Shoreland Areas (around protected water features)	3. Prime Agricultural Soils
4. Rivers and lakes	4. Floodplain Areas	4. Potential Green Corridors
5. Streams	5. Areas Around Bluff Land	5. Wind Power Potential
6. Wetlands	6. Registered Feedlots	6. Publically-owned Land
7. Sinkholes		
8. Sensitivity to Groundwater Pollution		
9. Geologic Edges		

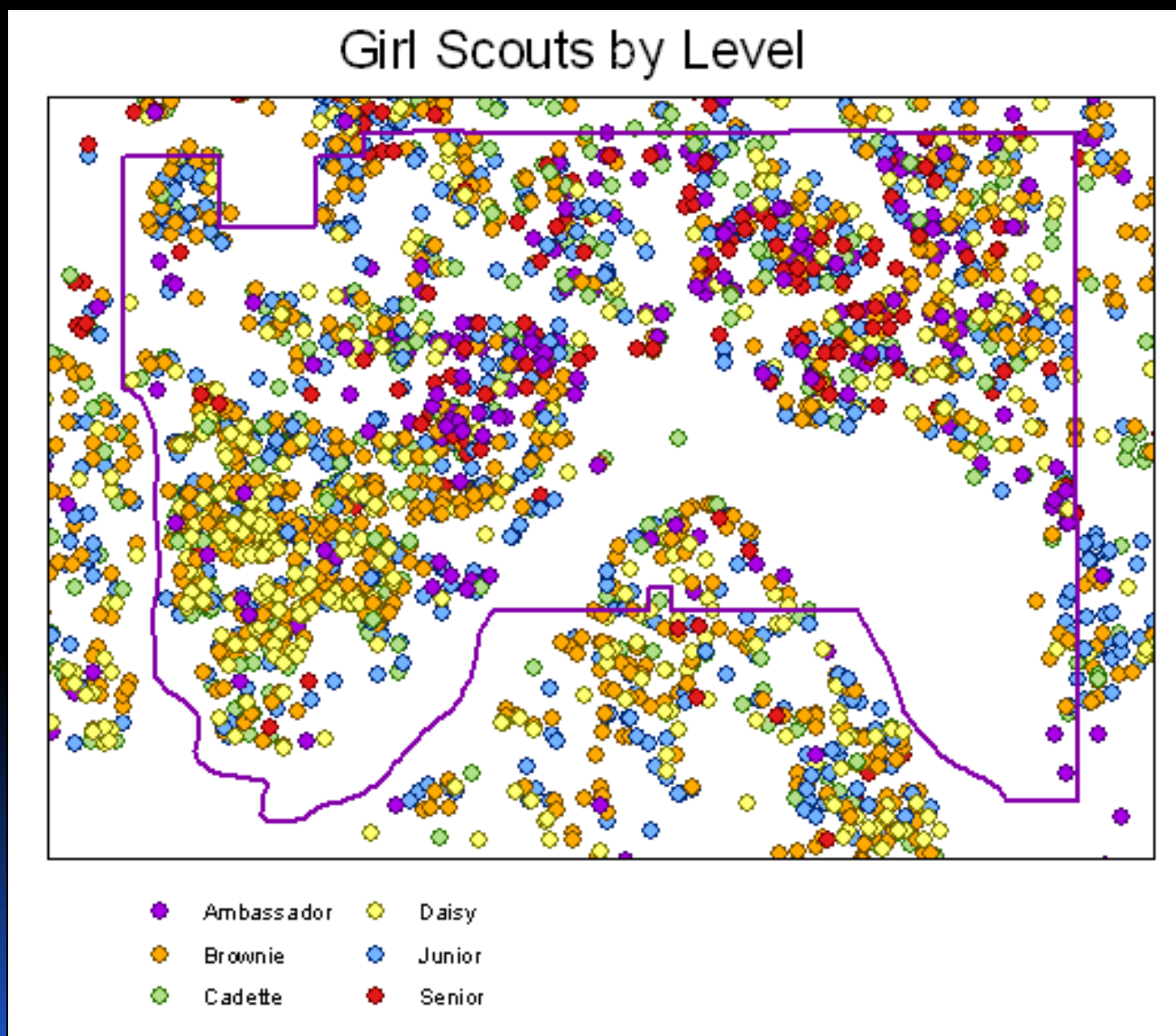


Full Model Results



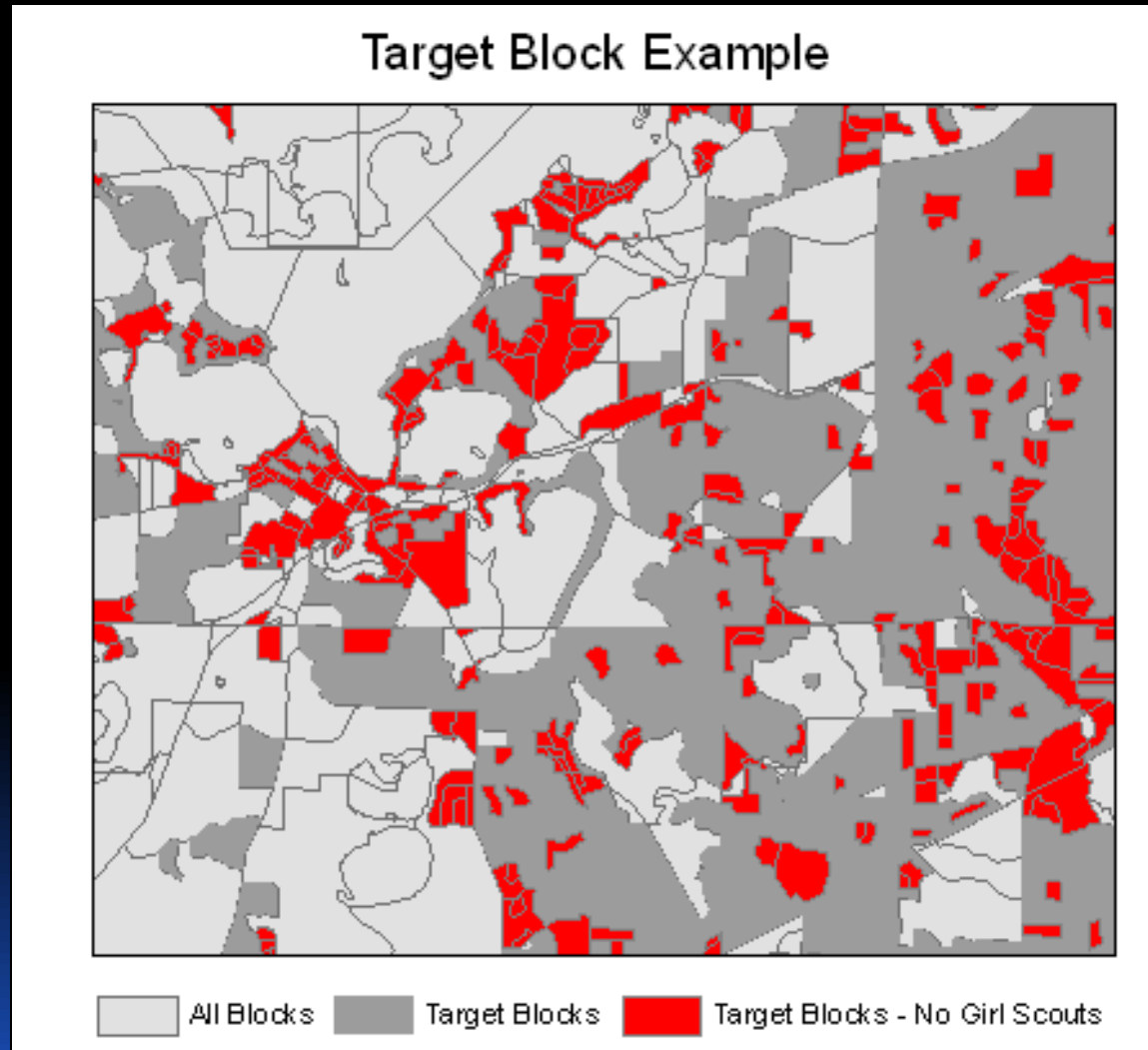
Program and service development

- Girl scout locations



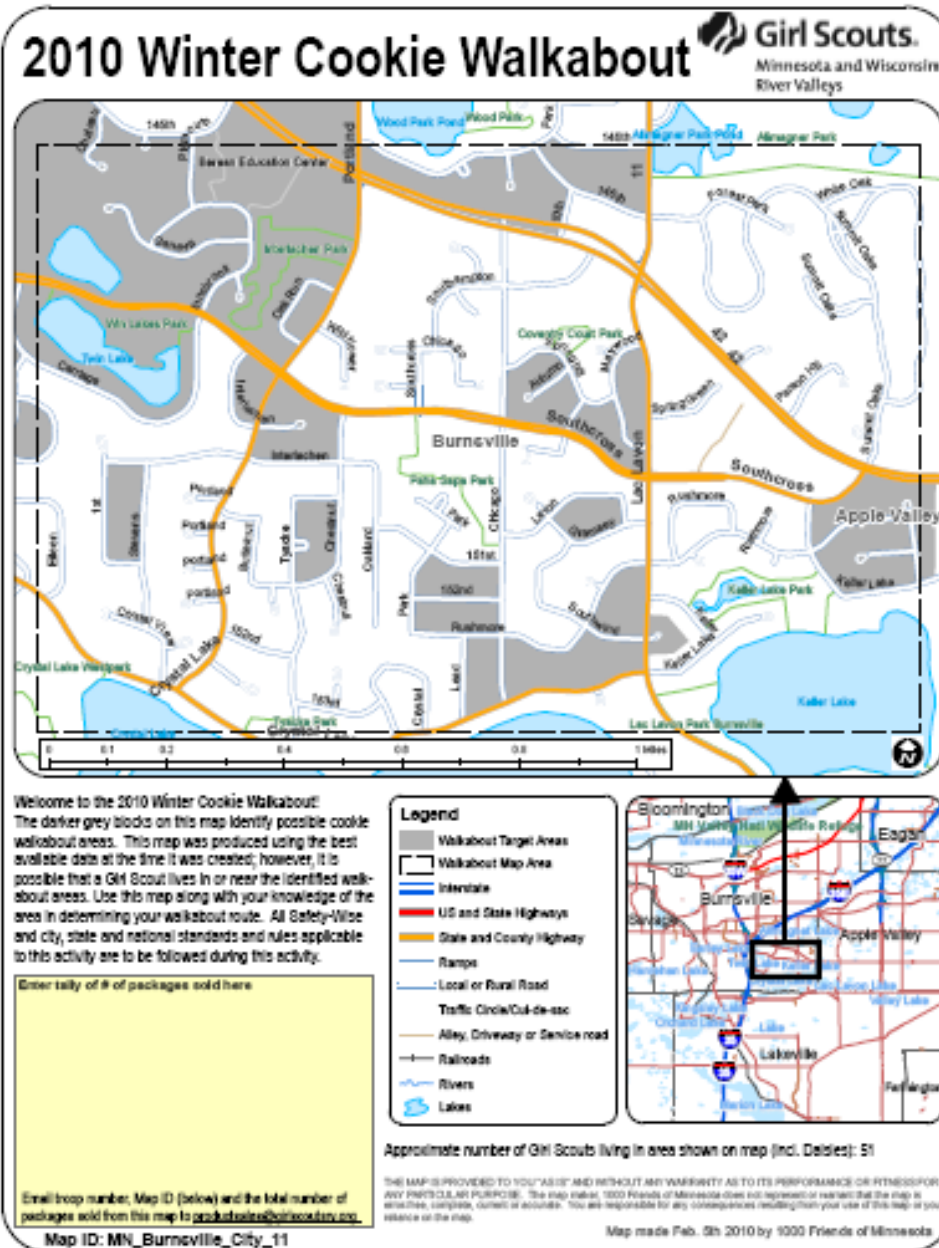
Program and service development

- Girl scout locations & target block groups



Program and service development

- 1,194 maps created



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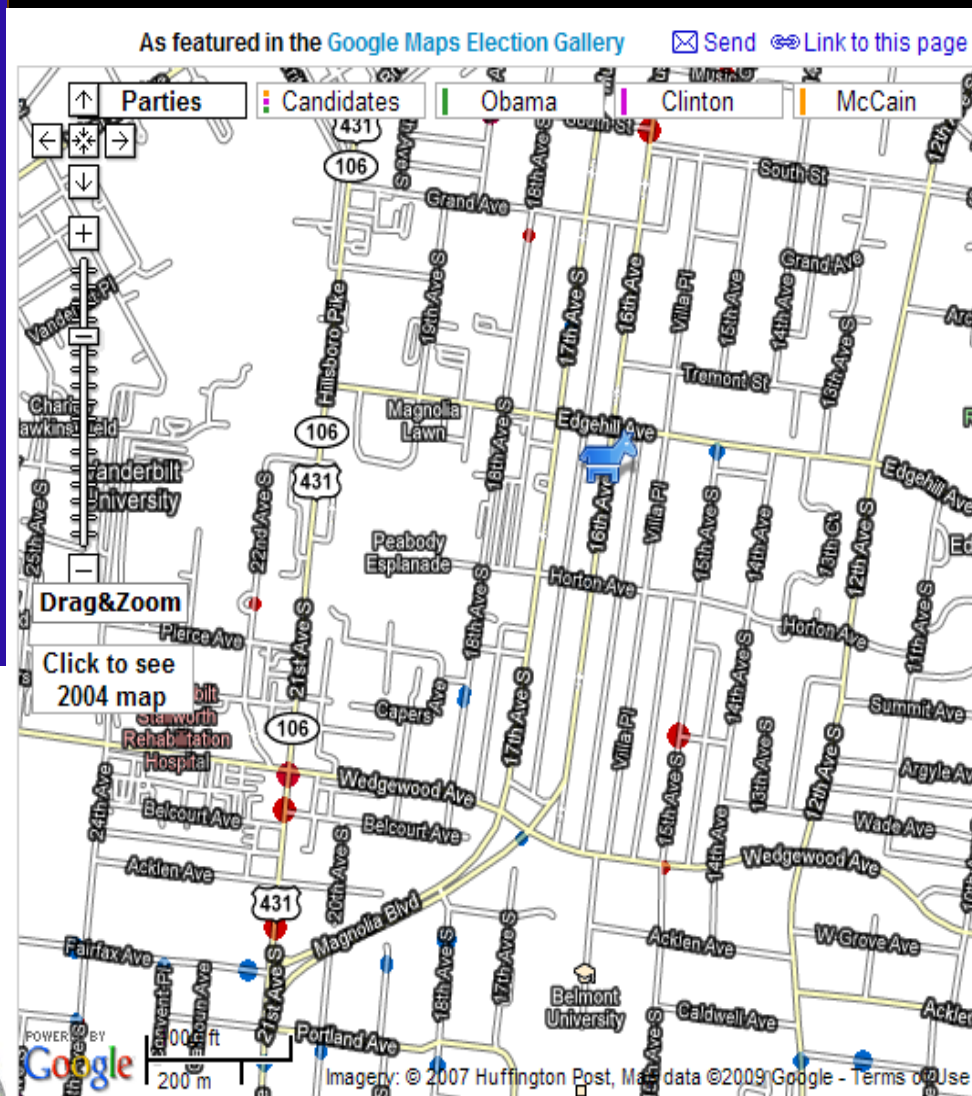
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Program Information

West 7th Meals on Wheels
265 Oneida St.
St. Paul MN 55102

Emily Fugere

Phone: 651-298-5493

Fax: 651-298-5729

Email: efugere@west7th.org

URL: www.west7th.org

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Ice Age National Scenic Trail, Wisconsin

The Ice Age Trail winds along Black Earth Creek, one of the top 100 trout streams in the country. Threatened and endangered species like the pine marten, timber wolf, and trumpeter swan call this area home. The 1,000 mile trail is an ideal escape for the region's urban dwellers.



The serious threat of forest fragmentation, as well as rising development and road building pressures will harm this habitat's natural history.

The Sierra Club is working with local groups to permanently protect the Trail corridor and promote smart growth by asking local governments to preserve farmland, forests, wildlife habitat and the IceAge Trail.

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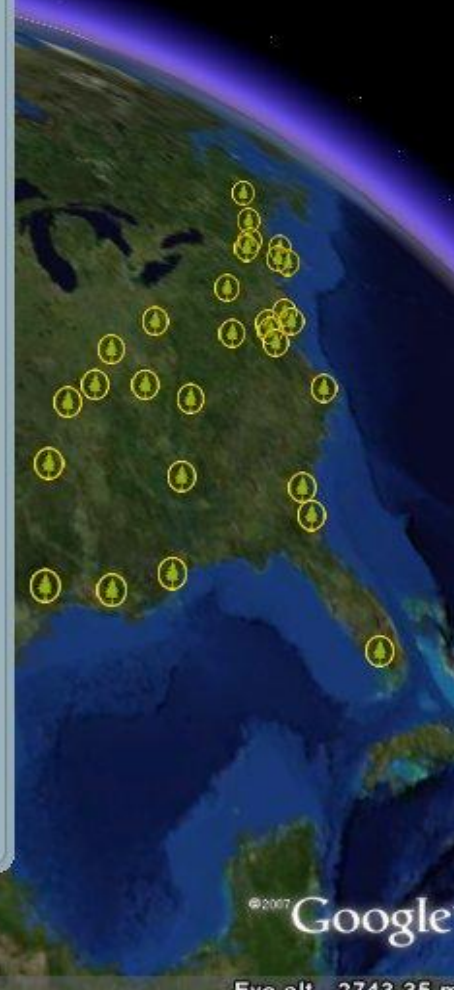
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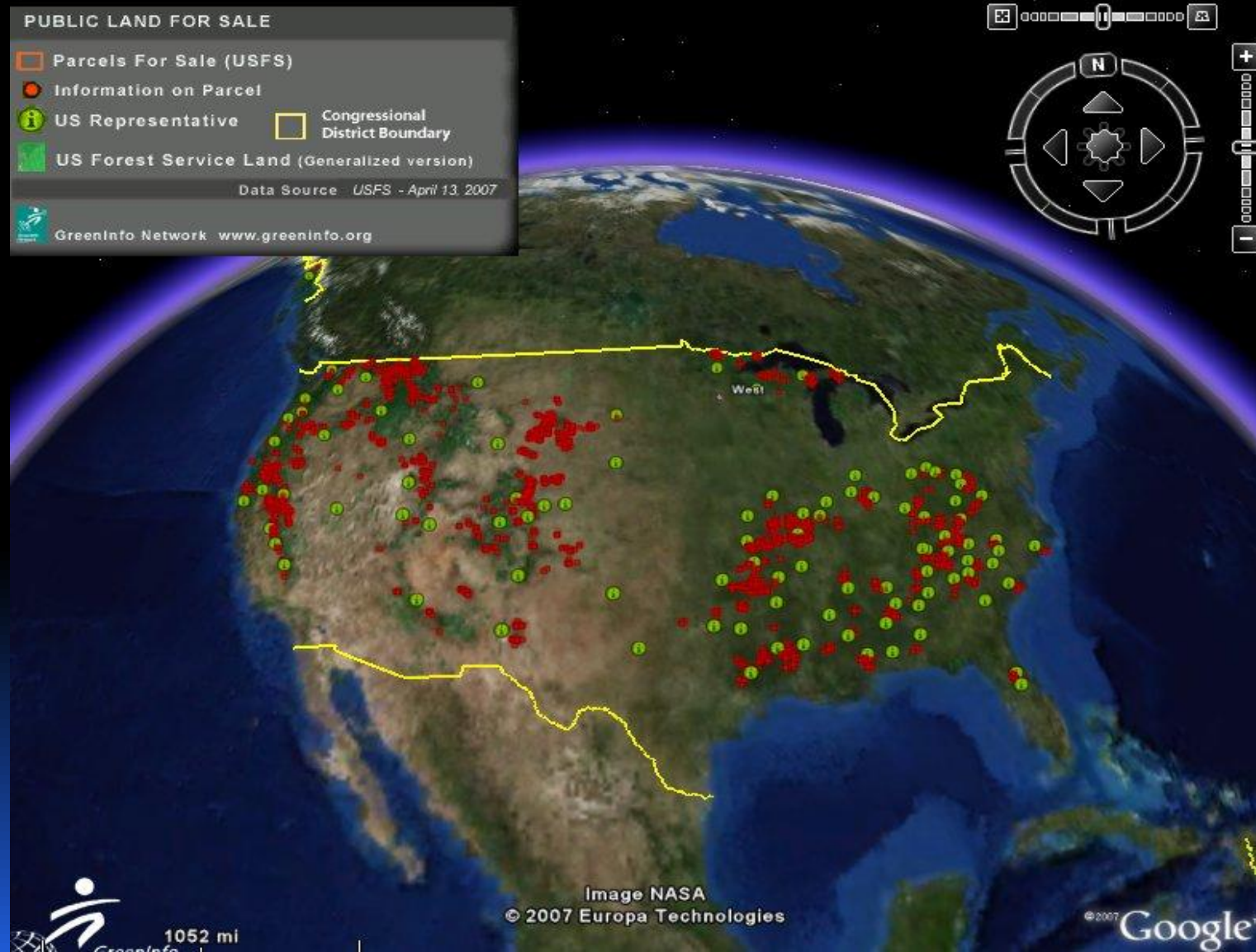
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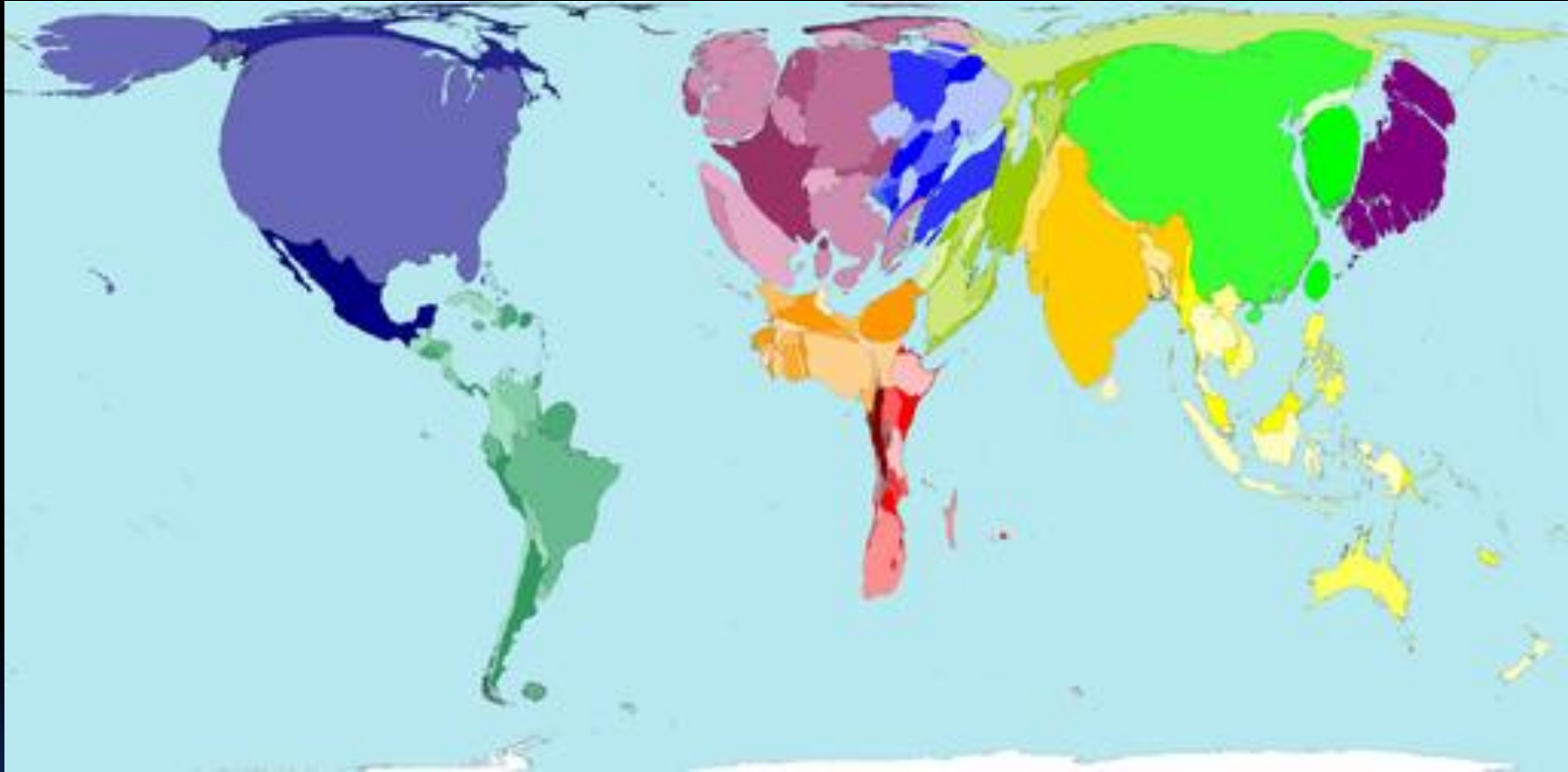


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Communication: story-telling & Map-tivism

- Carbon footprint by country



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Attack Summary

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Attacked: Early 2003

Destroyed Homes/Structures: N/A

Hide destroyed structures

Destroyed Structures: 110




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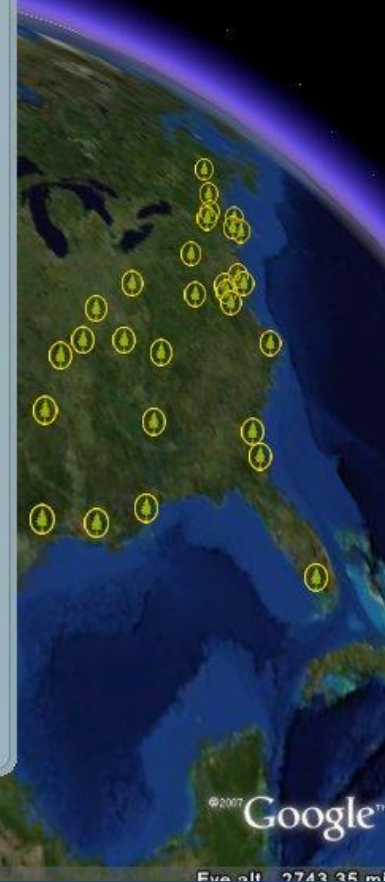


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Organize and Educate



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Where to start

What is my mapping need?

- What do I want my map to show?
 - ▣ Are the data available?
 - ▣ Will I have to create my own data?
- Who is my audience? How do I want to present my data?
 - ▣ Share “hard copy” map – print or via email, or on website
 - ▣ Presentation – present data in live map
 - ▣ On my website - interactive map for user to discover info

GIS Software, Tools & Data

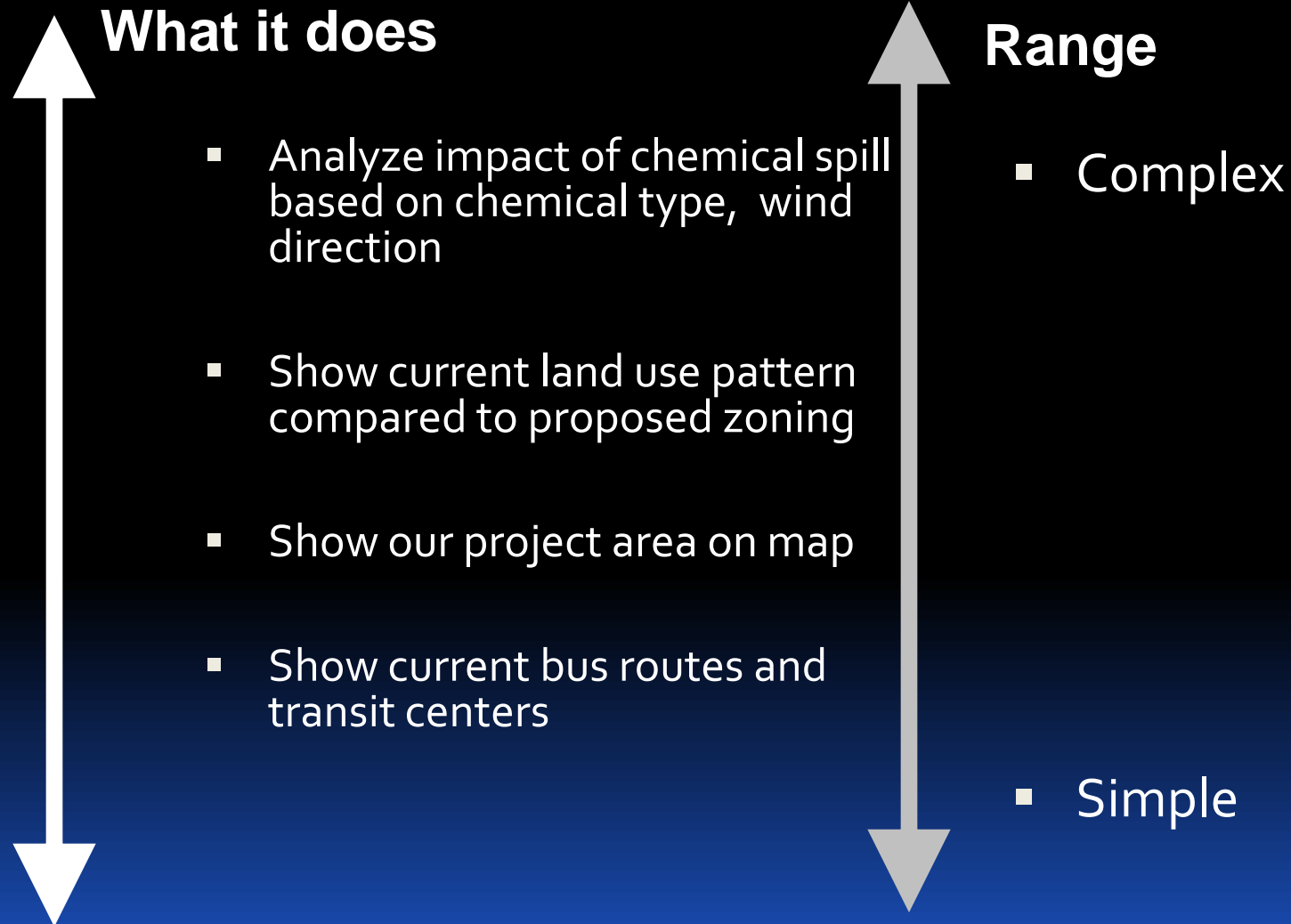
2 parts to consider:

- Data: what is shown on the map
- Tools: the “way” the map is shown
aka: software, tools, functionality, application, web
page etc.

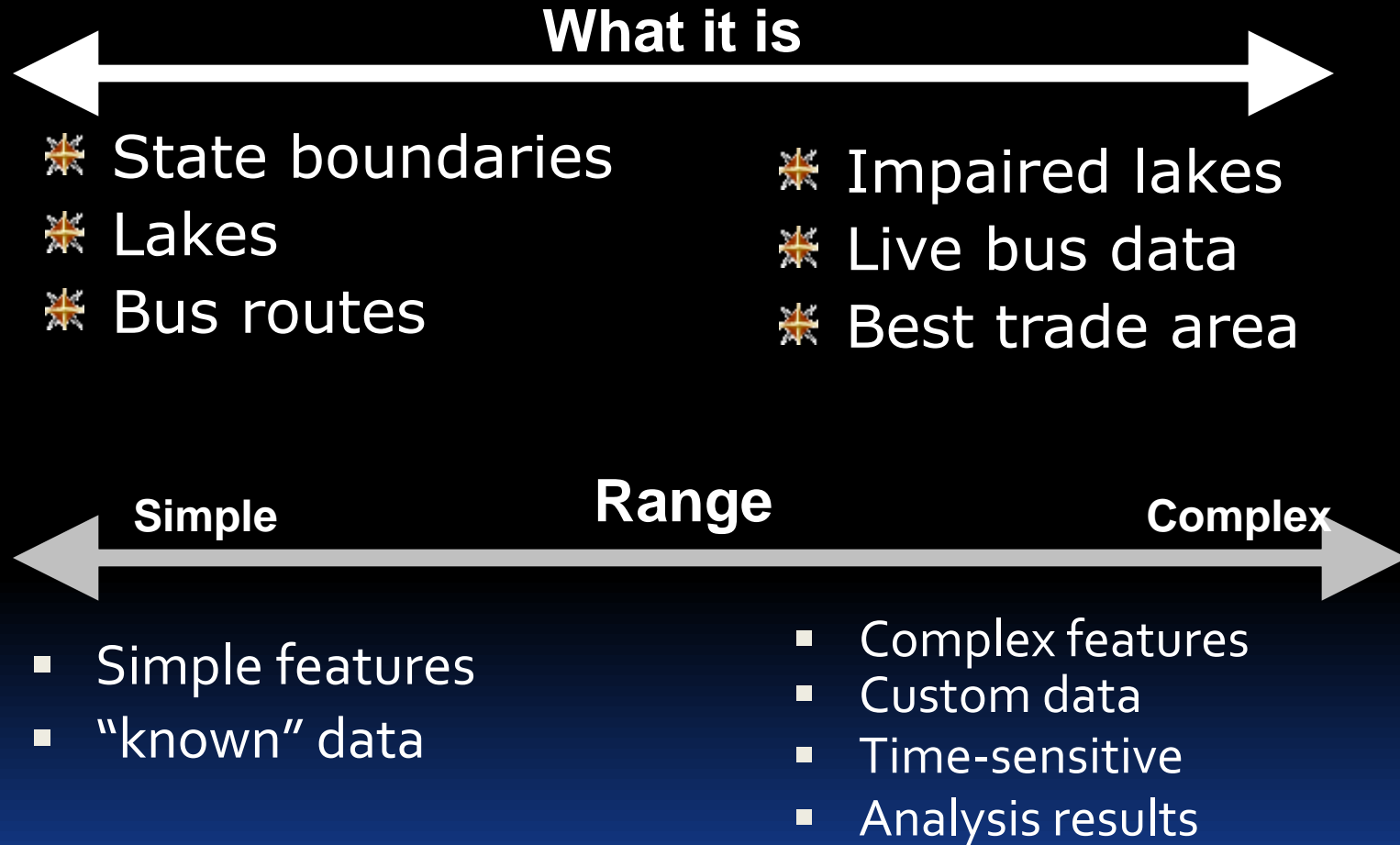
Where does the data come from?

- Federal Government
 - Census
- State Government
 - All state agencies create data, much of it in GIS useable formats
 - DNR, DOT, DEED, Health and Human Services, etc
- Regional Government
 - Metropolitan Council/MetroGIS
- Local Government
 - Land use, Tax Data
- Custom Data
 - Data collected for a specific project or organization
 - Membership, facilities, clients, etc

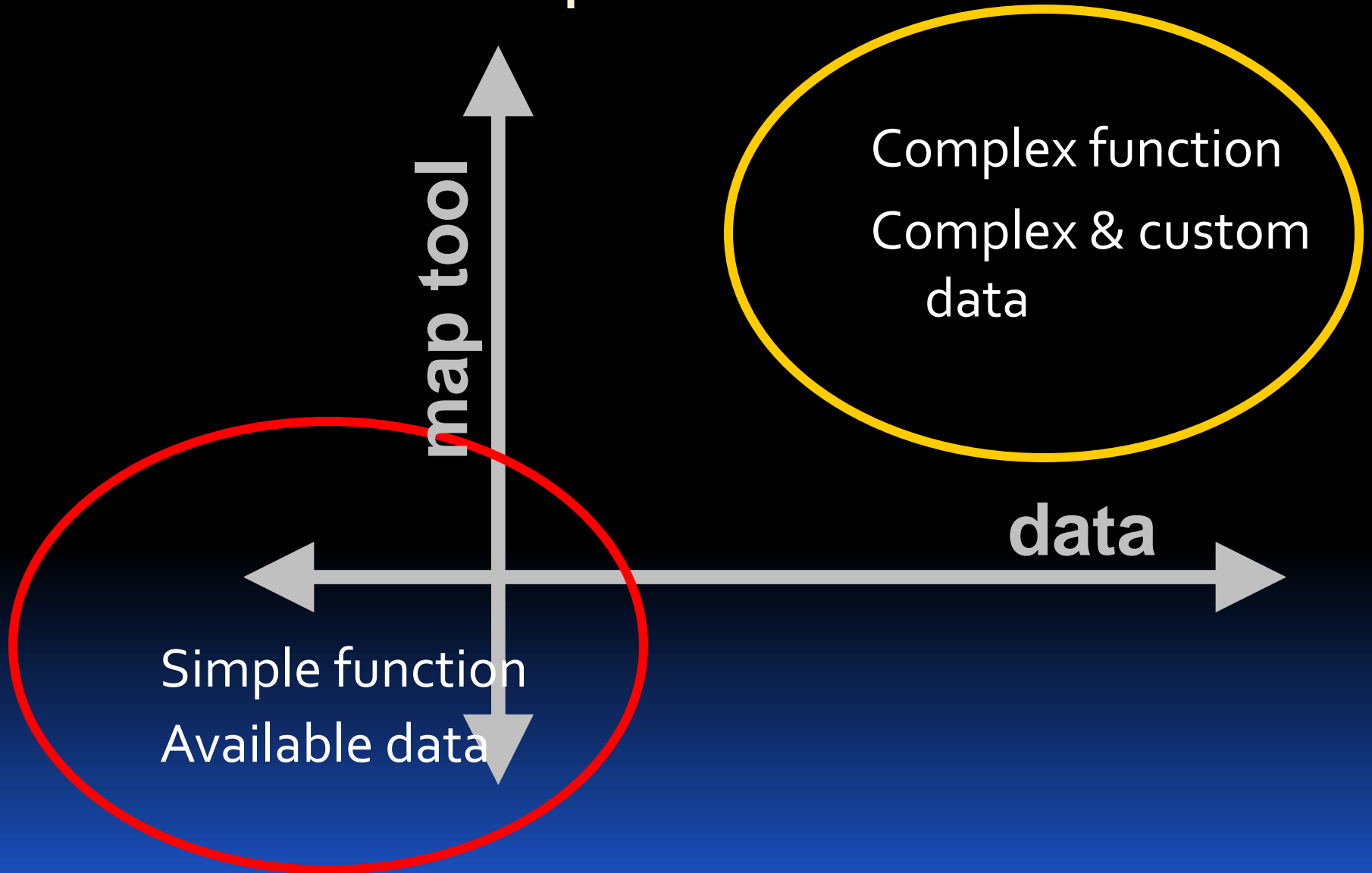
Range of map tools



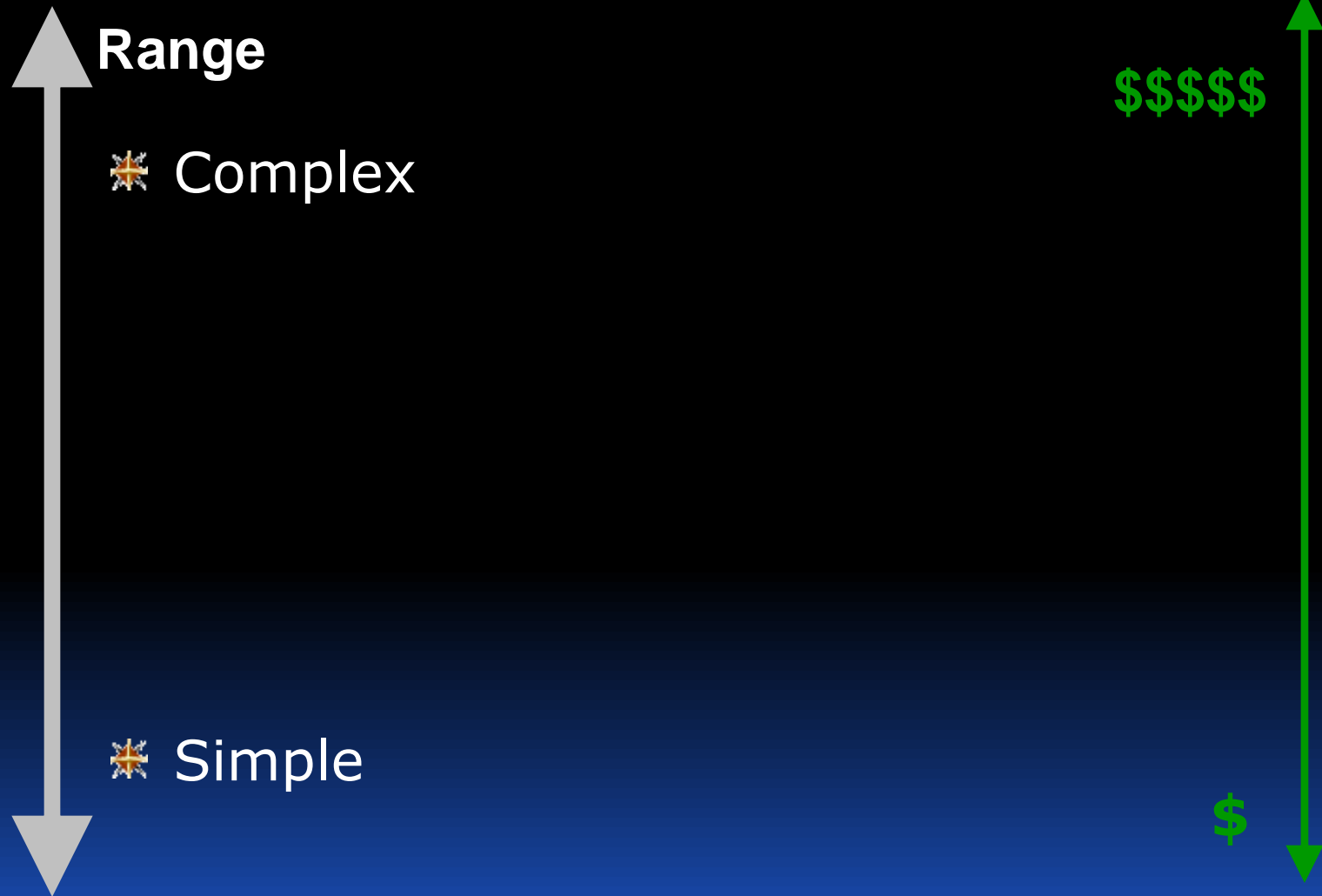
Range of map data



Available Map Tools & Data



GIS Software and Tools



Summary

- GIS and Maps can be used in many ways to improve the effectiveness of work at non-profits
- A variety of tools offers many options and price points for entry into the mapping world

How to get connected & get help

- SharedGeo, OSGeo and other community supported GIS organizations
- Minnesota GIS/LIS Consortium
(www.mngislis.org)
- County, Regional and State GIS organizations
- Local Consultants

Closing thoughts!

- Visualizing data helps build a common frame of reference and promotes shared vision!
- Analyzing spatial data helps answer questions and inform decision making!
- Open Source tools make this technology available to ANYONE!

Thank you!

Questions?

www.sharedgeo.org