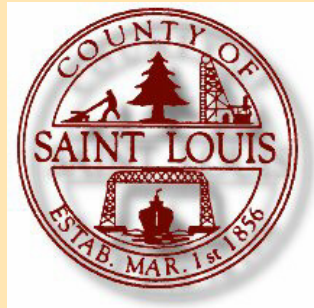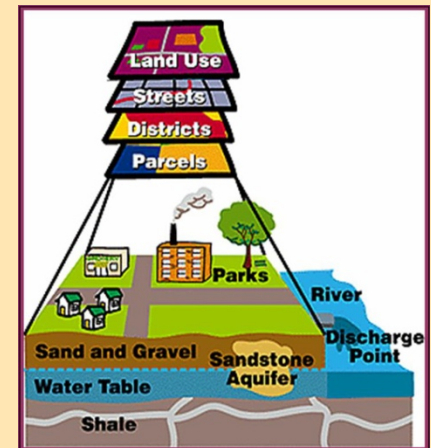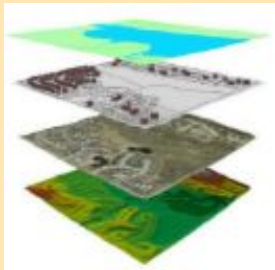# Locals Units of Government Cooperative Agreements for Implementing an Enterprise GIS and Enterprise Geospatial Data Infrastructure Standardization in Your Organization

City of Superior/ Douglas County, WI
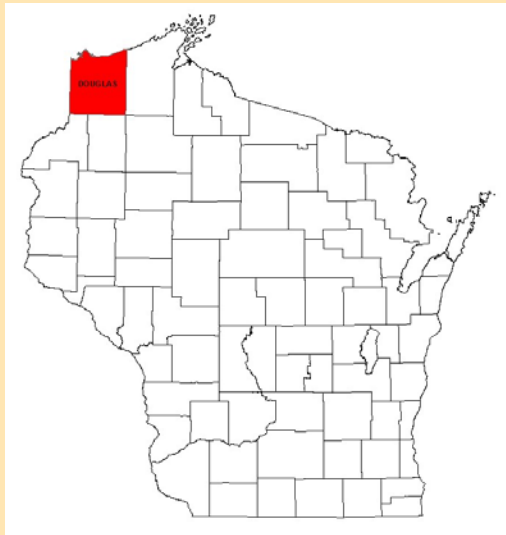
St. Louis County, MN

Cooperative Agreement Between the City of Superior and Douglas County

Douglas County, Wisconsin

2007 Douglas County Population = 43,721
        Land Area = 1309 Sq. Miles
        Water area: 170.8 sq. mi.

2007 City of Superior Population = 26,625
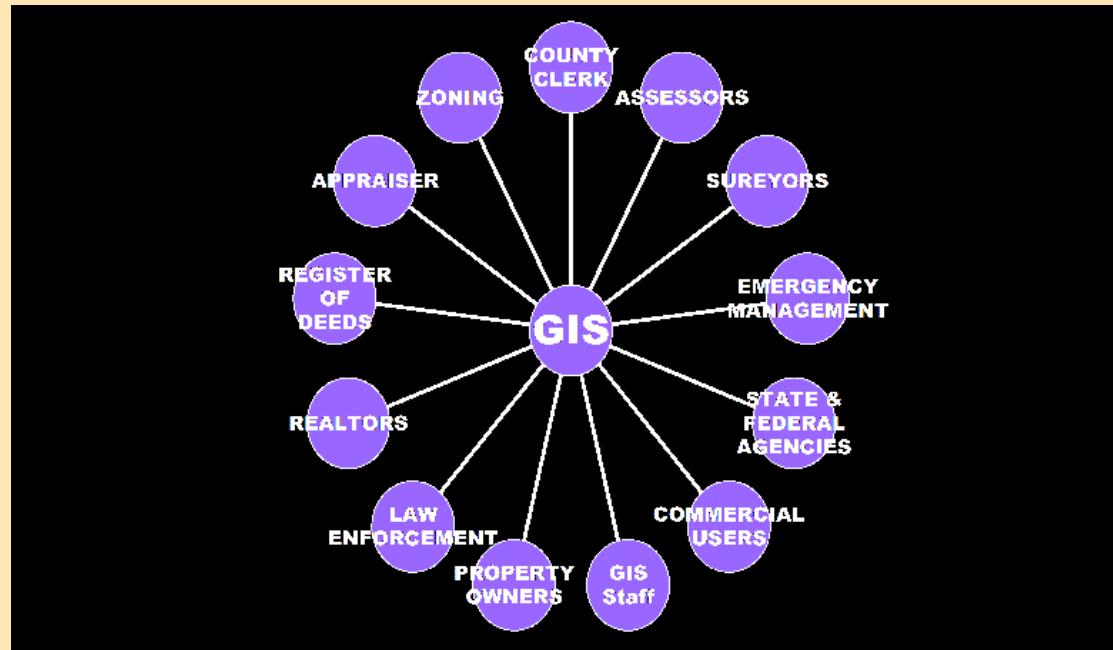   Land Area = 36.9 Sq. Miles

Other Douglas County Statistics
• 10 Cities/Towns/Villages
• Population density: 33 people per square mile

How the agreement was established Cooperative Agreement

City/County GIS Timeline

- **Early 1990's - Douglas County Parcel layer converted from AutoCAD to ESRI GIS**

- **1998 – City of Superior/Douglas County enter into a cooperative agreement for GIS Services**

- **2002-2003 – COS/DC build a Government Center to house both City and County employees**

- **2003-2007 – Data layers created and mapping web site brought online**

Cooperative Agreement Between the City of Superior and Douglas County

Cost Savings Realized

- **How money has been saved by the agreement**
  - Staffing, 2 GIS Techs at County and 1 GIS Coordinator at City
  - No Duplication in Systems, Coordinated Approach
  - Working Together
  - Areas of Expertise Being Utilized Better
  - Sharing of Technology and Information
  - Cooperative Interactive Mapping site between the city and county, shared maintenance costs and updates

- **Can do more with less**

- **"Unique" Agreement that shouldn't be "Unique"**

Cooperative Agreement:

Statement of Services

The **County** agrees to maintain Geographical Information System (GIS) hardware and software for the County and City users to include:

1. Host and maintain the GIS software on City hardware.

2. Perform system functions to transfer data into software upgrades or new software packages.

3. Perform GIS mapping and data entry support for all base map data.

4. Perform City parcel map edits.

5. Perform imaging and indexing of survey maps, drawings and plans of public infrastructure.

6. Surveyor review of mapping and field information.

7. Provide access to GIS data and software to any appropriate person, agency or entity.

8. Cost sharing for software and technical support that will benefit both parties.

Cooperative Agreement Between the City of Superior and Douglas County

Cooperative Agreement: Statement of Services

The **City** agrees to provide the following consultation services to the County provided by the City's Geographic Information System Coordinator:

- Identify and propose which hardware/software solutions should be implemented.
- Install, configure and manage the maintenance of GIS and Microsoft software on workstations.
- Assist with the transfer of data into software upgrades or new software packages as required.
- Evaluate and create procedures for data edits and data capture.
- Design custom macros and scripts that will be available to all GIS users.
- Represent the City GIS interests as a GIS liaison to departments and other agencies.
- Continue the training schedule and technical users group.
- Provide access to GIS data to any appropriate employee or agency.
- Facilitate public access to our spatial data through a GIS web site.
- Cost sharing for software and technical support that will benefit both parties.

ESRI Small Communities Enterprise License Agreement and the Cooperative Agreement - Timeline

- **May 2008 - Met with ESRI to discuss the existing Cooperative Agreement how COS and DC could go into the ELA together**

- **June 2008 – Signed Agreement with ESRI, licenses/software were shipped within 5 days and installations began**

- **July 2008 – ArcGIS Server Installed, Data converted to SDE, data infrastructure implemented from St. Louis County**

- **July to December 2008 – Beta testing SDE for performance, failures and bugs**
  - **Data delivery speeds and rasters, Land Use and Trees Example**

ELA Licensing Benefits over current System

- **Unlimited licensing for ArcMap, ArcEditor, ArcGIS Server and core extensions**

- **ArcGIS Server allows for better data management and performance**

- **Enterprise Geodatabases allow for multiple editors and viewers, minimizes system locks**

- **Versioning for multiple editors**

- **Raster load speeds greatly increased**
  - **Example: MRSID (Current) vs. Raster Mosaics (SDE)**

- **Backups – smaller and faster due to less redundant datasets and SQL server management**

- **Better permission capabilities**

- **Easier to replicate data in/out of off-site locations with proper server installs**

- **Map Services for templates and potential for Internet data delivery**

SGELA Acquisition/License Distribution

- **Determine user licensing needs**

- **Install licenses as needed throughout the City/County – In Progress so far 40+ licenses have been installed**

- **Setup training sessions in the Computer Training Center for City/County Users Training Sessions**
  - **July, August, October Intro to GIS training held**
    - *5 sessions 50+ staff have attended*
  - **Survey/Assess City/County Staff GIS Expertise for Training Needs**
  - **Train Users as needed individually**

- **Develop Implementation plan and steps**
  - **Server has been installed, permissions and data being put in place, St. Louis County has provided valuable data plans and catalog models**

SGELA Transition and Schedule

- **GIS Strategic Planning**
  - GIS Strategic Plan has been completed

- **Planning/Land Records Training**
  - Intro to GIS Trainings, held in July, August, October, November

- **Server Installation (SDE, SQL)**
  - Complete, now tuning and securing

- **Development and adoption of Data Catalog/Infrastructure**
  - Adoption of St. Louis County data model which follows NSDI/FGDC Standards \

- **Permission Development (Users, Editors, Administrators)**
  - Permissions being tested for user groups and capabilities

- **Standardization of GIS Data (Fields, naming, etc)**
  - SDE Naming conventions have been adopted using the St. Louis County Model
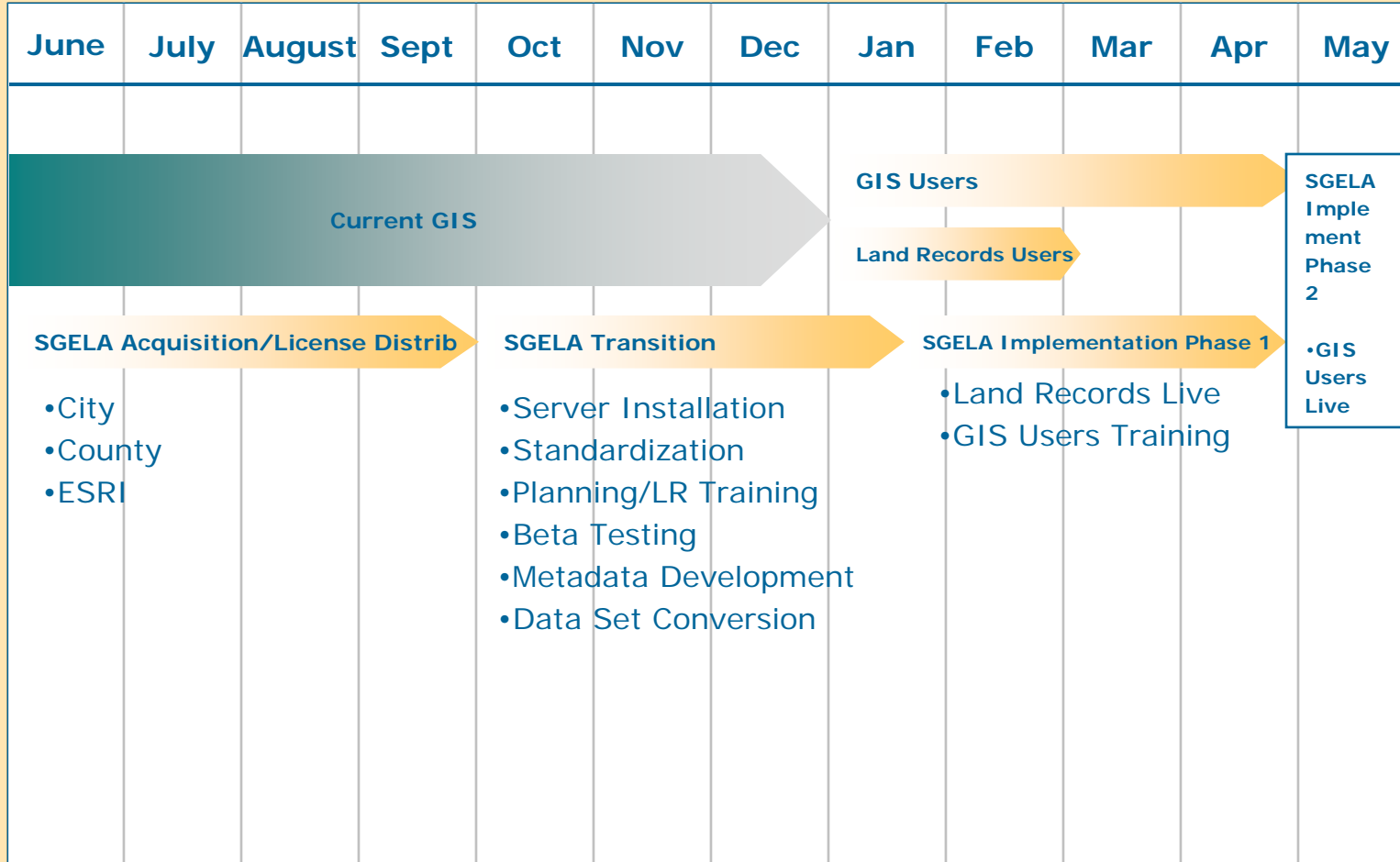 - Field Naming conventions to be determined if changes need to be made

SGELA Transition and Schedule

- **Data Set Conversion**
  - **Geodatabase, Shapefile to SDE**
  - **400+ files have been converted over to SDE**
- **Beta Testing**
  - **Ongoing identification of bugs and issues**
- **Metadata Development**
  - **Many Records have been created. Researching and Developing Metadata for existing data sets**
- **Updating/Editing Process**
  - **Testing of editing continues**
- **Data Distribution Policies and Licenses**
  - **Policies/licensing in place**
- **Setup of Map Services (Templates)**

Enterprise GIS Implementation 2008-2009

June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May

Current GIS

GIS Users

Land Records Users

SGELA Implement ment Phase 2

•GIS Users Live

SGELA Acquisition/License Distrib

•City
•County
•ESRI

SGELA Transition

•Server Installation
•Standardization
•Planning/LR Training
•Beta Testing
•Metadata Development
•Data Set Conversion

SGELA Implementation Phase 1

•Land Records Live
•GIS Users Training

SGELA Implementation Phase 1

- **Land Records Live – Getting Closer to a reality**

- **GIS Users Training**
  - **Beginner/Novice - July, August & October**
  - **Intermediate – TBD**
  - **Advanced Sessions – TBD**

- **"Help Desk" Creation**
  - **Email Address gishelp@ci.superior.wi.us for taking GIS questions for City/County employees**

SGELA Implementation Phase 2
(April 09 – December 09)

- **Implement ArcGIS Servers at off-site locations (ESD, County Forestry, Etc.)**

- **Pictometry Imagery Implementation, training and use**
  - **Example: City/County Mapping site and Bird's Eye App**

- **Develop a "syncing" routine, check-in/check-out system**

- **ArcPad use for field data entry**

Database Software Connectivity
  - **GCS, ZonePro, Etc.**
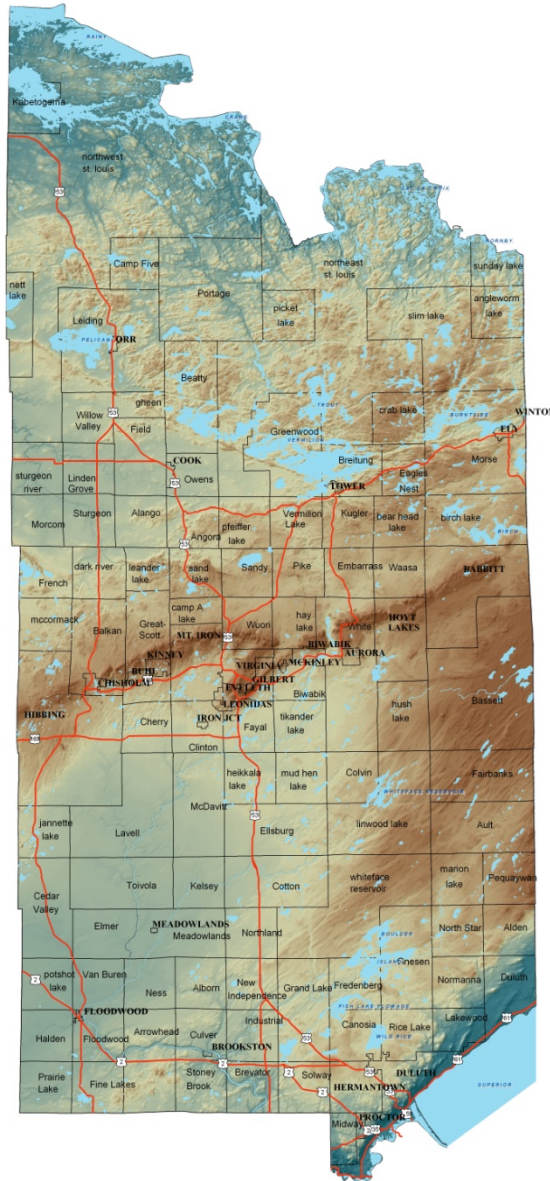
St. Louis County Enterprise Geospatial Data Infrastructure

- **History of the "Infrastructure"**

- **Why it is needed**

- **Departmental "Buy-In"**

- **Development Process**

- **Adoption by the County**

- **Willingness to Share**

    - **"Why reinvent the wheel?"**

    - **The more users of the Infrastructure the stronger it becomes**
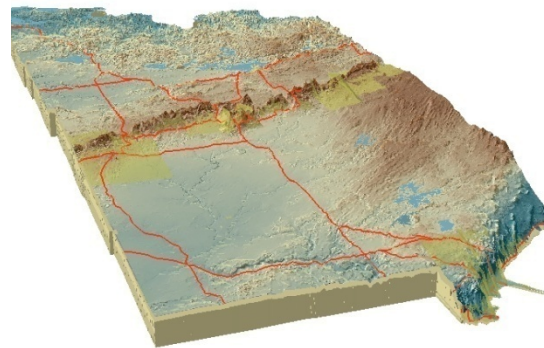
    - **There are no "boundaries" to the Infrastructure**
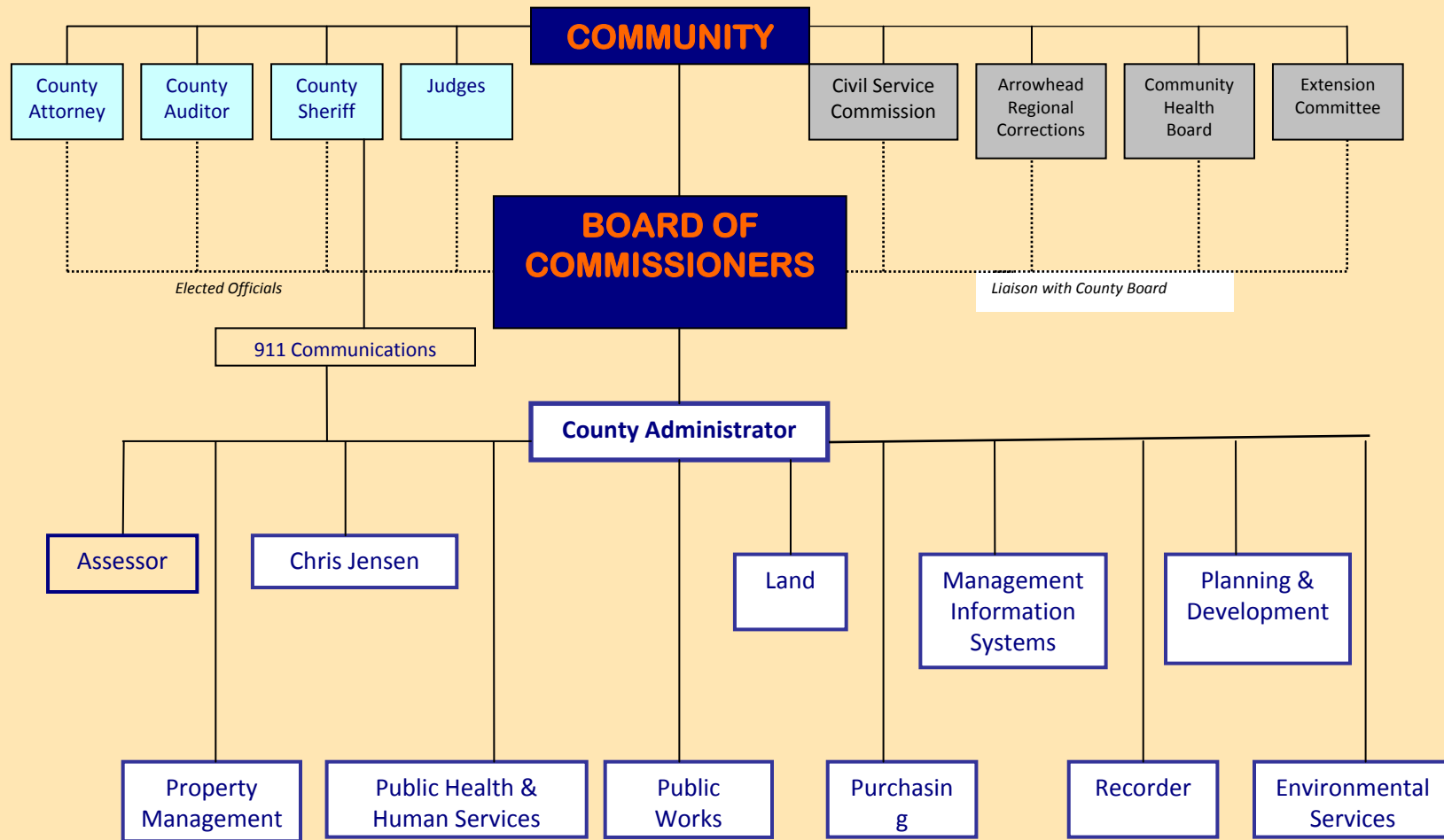
About our County & Area

St. Louis County
How Large is it?

Facts:

- About 7,000 square miles
  (Larger than DC, Rhode Island, Delaware, and Connecticut)

- Over 1,000 lakes

- Hundreds of emerging lakes (Mine Pits)

- Jurisdictions: 124
  Cities: 24
  Townships: 72
  Unorganized Townships: 28

- Urban & Rural

- Seasonal & Non-Seasonal

- Mining & Mineral Exploration

County Organizational Chart

COMMUNITY

| County Attorney | County Auditor | County Sheriff | Judges | | Civil Service Commission | Arrowhead Regional Corrections | Community Health Board | Extension Committee |

BOARD OF COMMISSIONERS

Elected Officials

Liaison with County Board

911 Communications

County Administrator

- Assessor
- Chris Jensen
- Land
- Management Information Systems
- Planning & Development

- Property Management
- Public Health & Human Services
- Public Works
- Purchasing
- Recorder
- Environmental Services

• Historically (since about 1984) several county departments managed their own GIS per business needs.

• Over time, many roles & LOTS of data came into play…coordination was difficult, with duplication of effort appearing everywhere.

Coordination

- The Size and Diversity of Users & Uses, and Geography of the County requires a different approach- It requires a **Global** or **Enterprise** approach to GIS for Planning.

- You essentially need many other departments/stakeholders spatial and non-spatial data to conduct effective & ongoing planning activities and analysis <u>for housing, community/economic development, transportation, recreation, parks, emergency, and much more.</u>

- Again this required a global and enterprise approach

Step 1: Planning a GIS System

- **Planned Comprehensively** (Future Build Out)

- **Then Started with Small Incremental Steps**

- ***** Started with a Plan: Wrote it down**
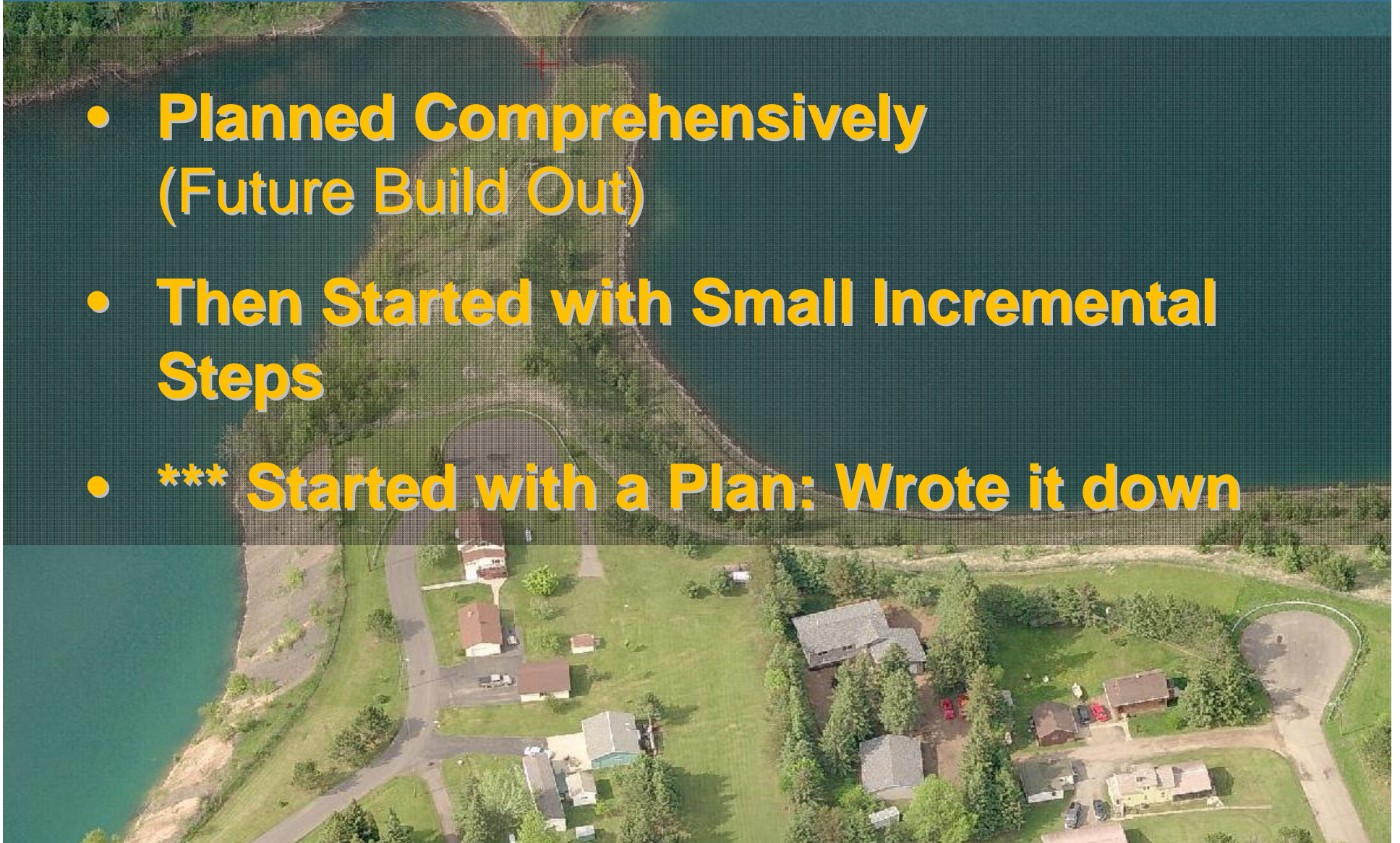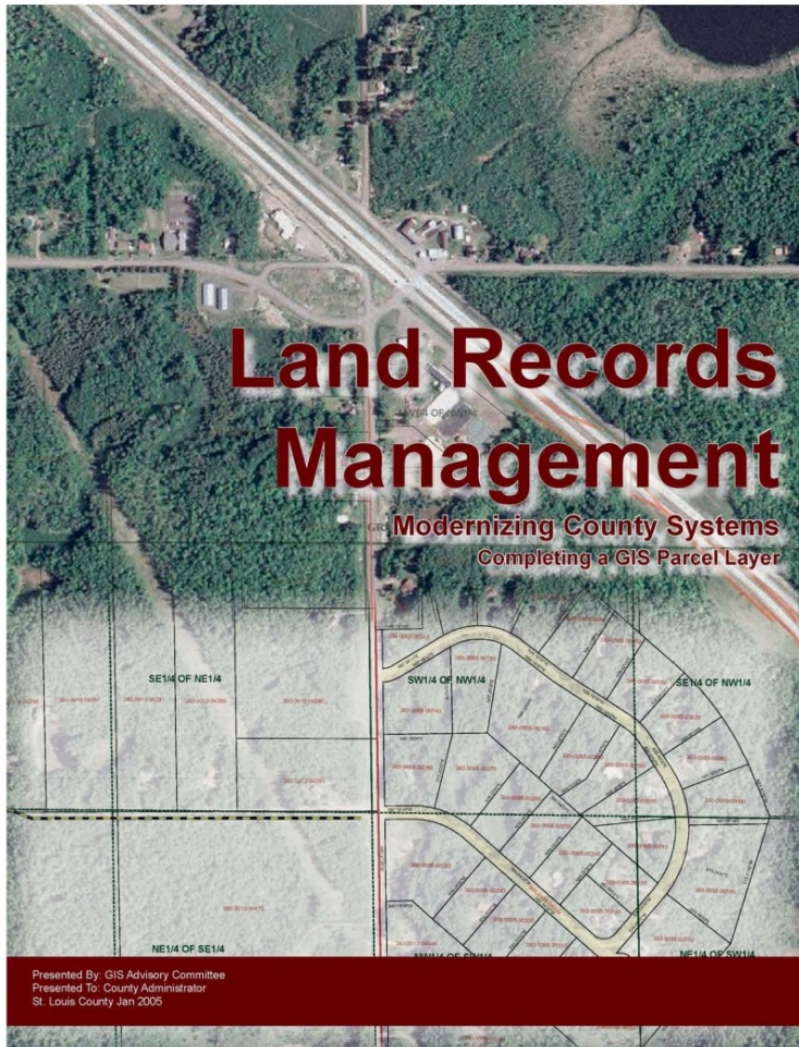
- **Helped Everyone to be on Same Page**

- **Financial, Political WILL followed**

Step 2: Identified Enterprise Components

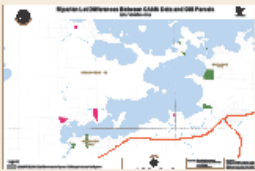## PORTAL UPDATES
A Team Approach
Enterprise Common Operating Picture

St. Louis County, Minnesota

Data

Tabular Data Validation
Develop and maintain a strong non-geospatial (tabular) data for all land records.

GIS Geospatial Data Dev.
Develop and maintain a strong geospatial data infrastructure.

GIS (SDE) Data Load & Org.

Tabular Data Load & Org.
(Portal Test Database)

Data Sharing
Data Distribution
Data Privacy
Data Standards
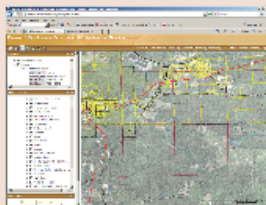**Data Disaster Recovery**

Applications

Main Portal Development (Proof of Concept)
Proof of concept in development.

Temporary GIS Application
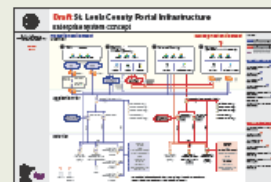Developed a temporary application.

Enterprise Mapping & Analysis On-Demand
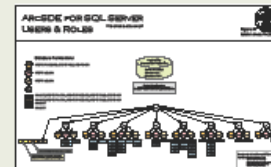Develop enterprise on-demand applications to compliment land record department needs.

Assessors Land Grading

Infrastructure

Infrastructure Design

Data Access & Security-GIS

Servers
GIS Migrated Oracle (Land) to SQL (MIS)

Mapping Servers
Servers for the web mapping is installed on to run the mapping component and image generation once a request is created from either the data or web server.

Database Servers
Server in which data is stored and managed. Database servers for both geospatial and non-geospatial data.

Web Servers
The server in which the information applications will be installed upon which acts as the main navigation panel to querying and map data.

Political

Board of Commissioners
Coordinate the political needs in order to foster an effective land records system.

Administration
Coordinate land record needs to administration which reflect in budgets.

Departments
Coordinate land record needs with each other for a intergrate enterprise system.

Policies & Procedures
Develop policies and procedures for the administration of data, access, security, services, subscriptions, and delivery of services.

Data Distribution Policy
On hold/pending per request

Fee Schedule
On hold/pending per request

Licensing Agreements
On hold/pending per request

Active Representation
Actively participate or assign personnel on committees, work group, and other areas related to a integrated enterprise land records system.

Financial

Budget/Financial
Coordinate the financial needs of an intergrate enterprise land records system.
Contracts:
Parcel Layer Development: Pro-West
Programming & Infrastructure: ESRI, Inc.
Geo-Spatial Data: ARDC & Community GIS

CDBG: Utilitiy/Infrastructure requirement in contract language

MIS Enterprise Fund
MIS has established an enterprise fund to cover the dispurse costs related to the entreprise portal development and associated costs.

Upcoming:

Cost Recovery Program
Coordinate and administer a cost recovery program.

Technical

Communication & Coordination
Create effective coordination and communication of projects across the land records departments.

Web Updates

GIS & MIS Integration

Programming (Desktop & Web)
Transferring GIS functions to MIS in programming in VB.NET, ASP.NET, DNN, etc.

Server Hardware Support
Transferring GIS fuctions to MIS to install and maintain servers that support GIS.

Server Software Support
Transferring GIS fucntions to MIS to install and maintain software on servers such as Oracle and SDE.

Software Installation Support
Transferring GIS functions to MIS to install and maintain ArcGIS, Landview and otehr GIS software.

Mobile Applications
Transferring GIS fucntions to MIS to oversee the planning and development of mobile applications.

Addressing Standard
Develop standards across all activities from data to applications.

Training & Skill Sets
Provide and coordinate training on the capabilities and functionality of the land records system(s).

Core Enterprise Geospatial Data Infrastructure

St. Louis County has developed, following national models and standards, a geospatial dataset structure to be used when developing and organizing geospatial data that is interoperable and cataloged along federal, state, and local structures.

CATEGORIES

Imagery
NSDI, MSDI, GN

Imagery typically refers to aerial photography, which is used for many purposes at St. Louis County. It is effective as a "background" layer to other geospatial data, and can be used by GIS specialists to delineate real-world features.

Cadastral (Parcels)
NSDI, MSDI, GN

The Cadastral (Parcel) layer at St. Louis County is the fundamental tool for analyzing land ownership information. The County is in the process of developing parcel data. This data will provide the foundation for many applications across the county pertaining to land ownership.
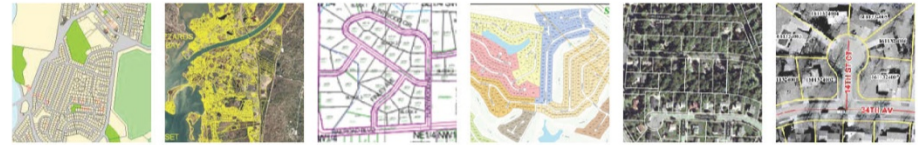
Transportation
NSDI, MSDI, GN

Transportation features typically include roads (centerlines), trails, airports, shipping ports, and other representations of features that depict the transportation systems in the county. The centerline layer is particularly important because it provides the necessary information for emergency dispatch and public works maintenance.

Addressing
GN

The County is planning for the development of an official Address Point layer for use in GIS systems across departments. The Address dataset will be used for emergency dispatch and other law enforcement purposes, as well as a further piece of information for land use planning with the parcel data layer.

Elevation
NSDI, MSDI, GN

Elevation data, typically in the form of contour maps and Digital Elevation Models, is used extensively for modeling the surface of the earth. This type of information is useful for departments such as Land, Planning, Public Works, and others as they determine appropriate land uses, forestry and construction processes.
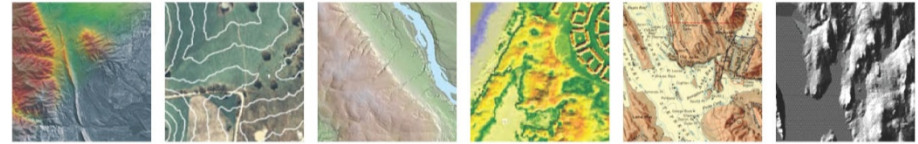
Structures
GN

Structural data, often known as planimetrics, will be developed in the future to highlight the locations and dimensions of buildings and important structures throughout the county. Along with parcel and address data, this information will be particularly useful for law enforcement, planning, and assessment purposes.

Utilities
GN

Utility data will be utilized for site planning, economic development, land use planning, emergency / homeland security, and many other operations at St. Louis County. Having an unerstanding of the locations of utility features (electric, gas, sewer, water) is key to development and emergency response.

Administrative Boundaries
NSDI, MSDI, GN

Many administrative boundaries exist within St. Louis County. Examples include municipalities, state and federal management areas, county zoning districts, emergency response districts, and many more. Geospatial analysis depends on these boundaries to render accurate results.

Geodetic Control
NSDI, MSDI, GN

Geodetic control refers to precise surveys covering very large areas such as the High Accuracy Reference Network (HARN) developed in Minnesota in 1996. The Public Land Survey System is the basis for all land titles and property descriptions in Minnesota.
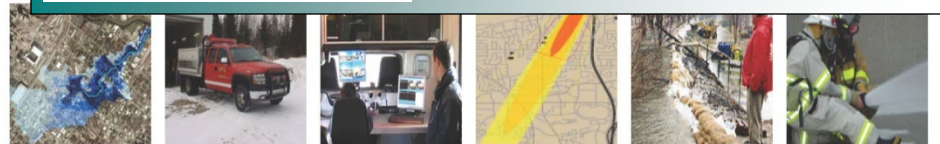
Environmental
NSDI (Hydrography), MSDI (Hydrography), GN (Hydrography & Environmental)

The physical world within and around St. Louis County will be represented with numerous environmental layers. Lakes, rivers, streams, wetlands, soils, land cover, geomorphology, mining areas and many other physical earth features will be available for use in mapping and analysis. Hydrography: NSDI, MSDI. Soils: MSDI

Emergency Operations
GN

In addition to the layers listed above, the Sheriff's and 911 Communications departments will have unique information to be used in case of emergency. Response districts, crime information databases, and sensitive homeland security data can be utilized in a geospatial environment for critical response and mitigation purposes.

Reasons to share: MN & WI
Northshore Express
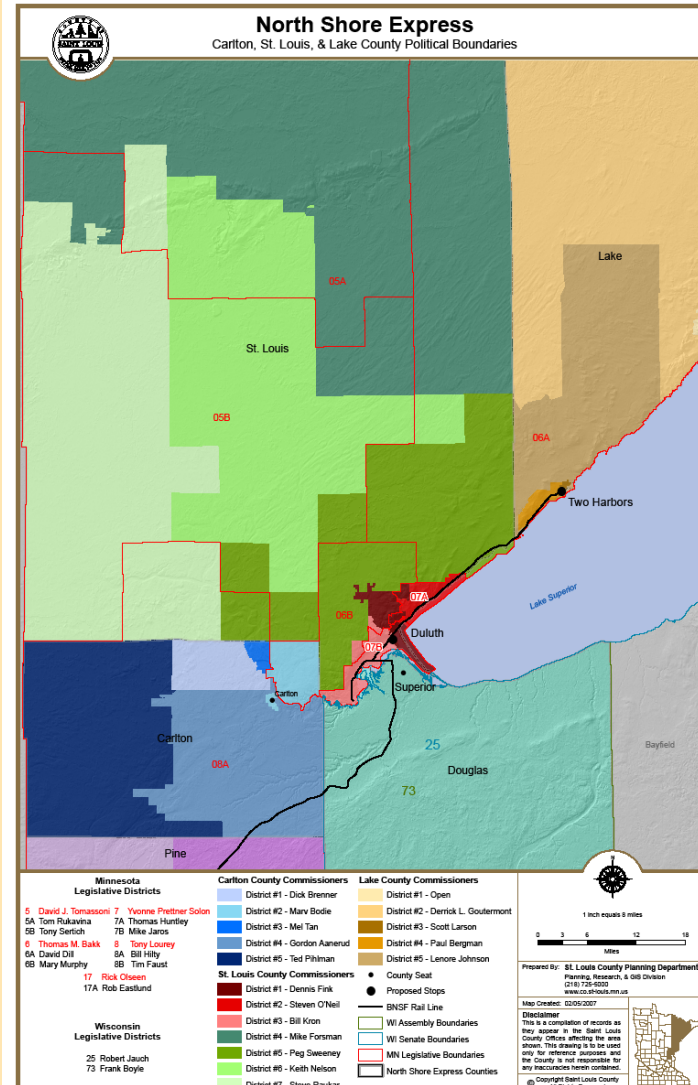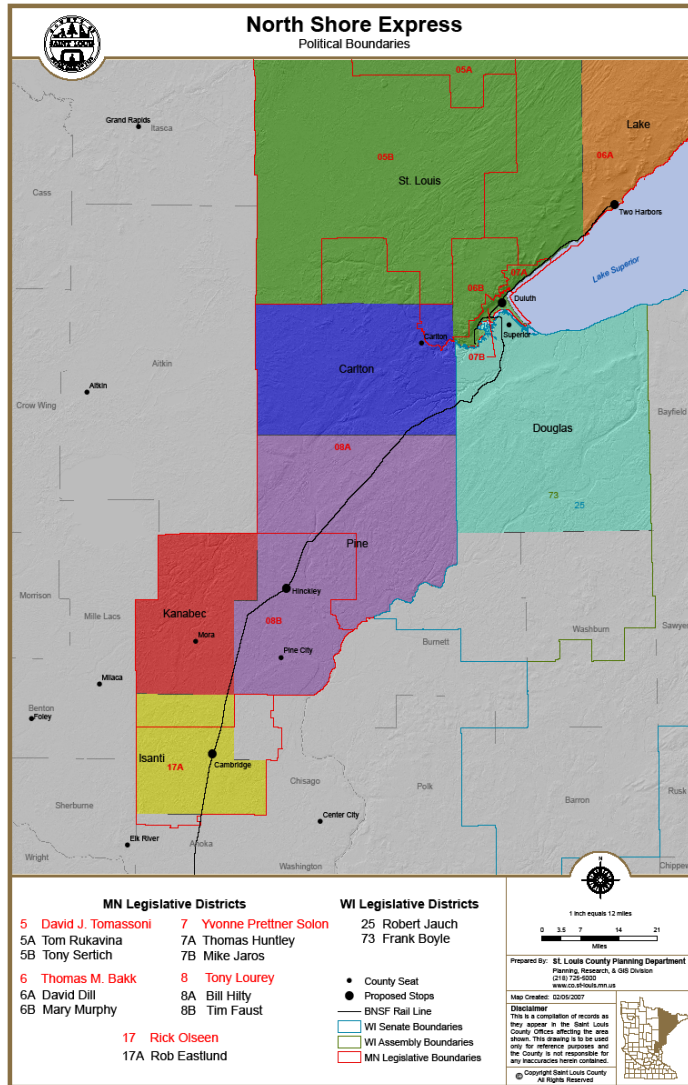
Reasons to share: MN & WI
Coordinated Emergency Response

50,000 Flee Toxic Vapors Released as Train Derails

Published: July 1, 1992

At least 50,000 people were forced to evacuate their houses and businesses in Wisconsin and Minnesota today after a freight train, including a tank car containing benzene, derailed early this morning, sending a cloud of toxic vapor over sections of the two states along Lake Superior.

The authorities lifted the evacuation order about 3:30 P.M., except in an area within about a mile of where the spill happened south of Superior, Wis., just across Superior Bay from Duluth. Rain helped clear the toxic vapor from the air, said Mayor Gary Doty of Duluth.

At least 25 people were taken to hospitals in the two states, and the National Guard and Army Reserve mobilized about 260 soldiers.

The incident began about 2.:30 A.M. when 14 cars of a Burlington Northern freight train derailed on a bridge over the Nemadji River about five miles south of Superior. The car containing benzene tumbled into the river and leaked. Downtown Duluth Deserted

Crews worked to contain the leak, but by about 5:30 A.M. the authorities began asking people to leave. "They woke us up about 5:50 A.M. using the P.A.'s in their police cars," said Louis T. Willie, an official in Douglas County, Wis., which includes Superior. "They said: 'Evacuate. There has been a chemical spill.' "

Huge traffic jams resulted from the evacuations as residents moved away from the spill site and the lake, with some going to evacuation centers set up at schools. downtown Duluth was left deserted.

"It's an absolute ghost town," Mayor Doty said at an emergency command post outside the city. "It's eerie what's going on down there."

Benzene is a flammable liquid used as a solvent and in making plastics, insecticides, detergents and paints. The vapor was not considered life-threatening, but people exposed to it complained of dizziness, headaches and burning eyes and skin.

Estimates of the number of people evacuated varied widely. The police in Duluth put the

Reasons to share: MN & WI
Lots of "border" counties
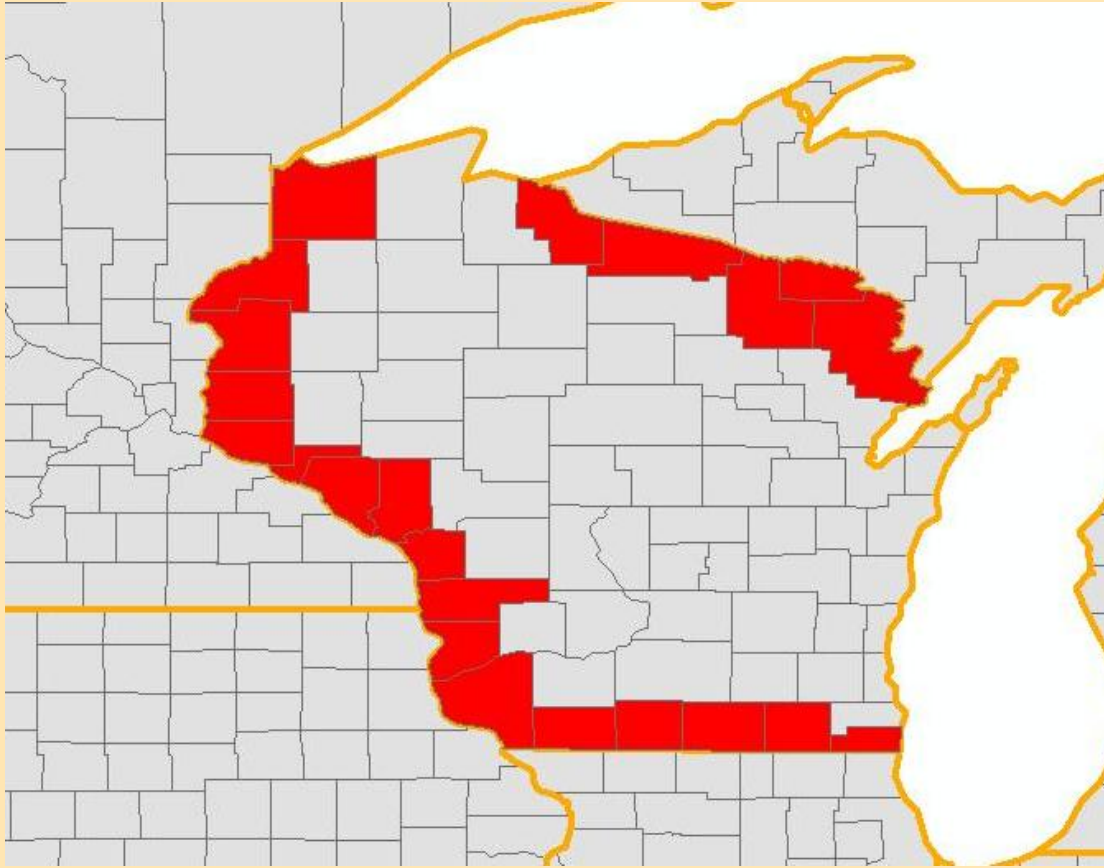
- Many counties and other units of government share interstate borders.

- Not interstate? Good chance there is a "regional" or other administrative boundary near you.

- Not a bad idea to at least have a sense of how your neighbor operates…if coordination can occur, that's even better.

City of Superior/Douglas County Enterprise Geospatial Data Infrastructure

- **History and need of the "Infrastructure"**

- **Departmental "Buy-In"**

- **Development Process**

- **Adoption by the County**
  - **City Department Heads**
  - **County Zoning Board**

City of Superior/Douglas County Enterprise Geospatial Data Infrastructure

Differences from St. Louis County's Infrastructure

- Recreation Category

- Some SDE specific Information for COS and DC

- A Geography Identifier, COS, DC, SLC, etc

- Credit to St. Louis County

- Minor differences regarding data types

City of Superior/Douglas County Enterprise Geospatial Data Infrastructure

What's Next?

- **Pictometry for Parts of St. Louis County and all of Douglas, Bayfield, Burnett, Washburn**

- **Formal sharing agreements established with LUG's, utilities and other agencies for easy access to data and scheduled updates (maintenance) of data**

- **LIDAR for the City of Superior**

Thank You

Any Questions?

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