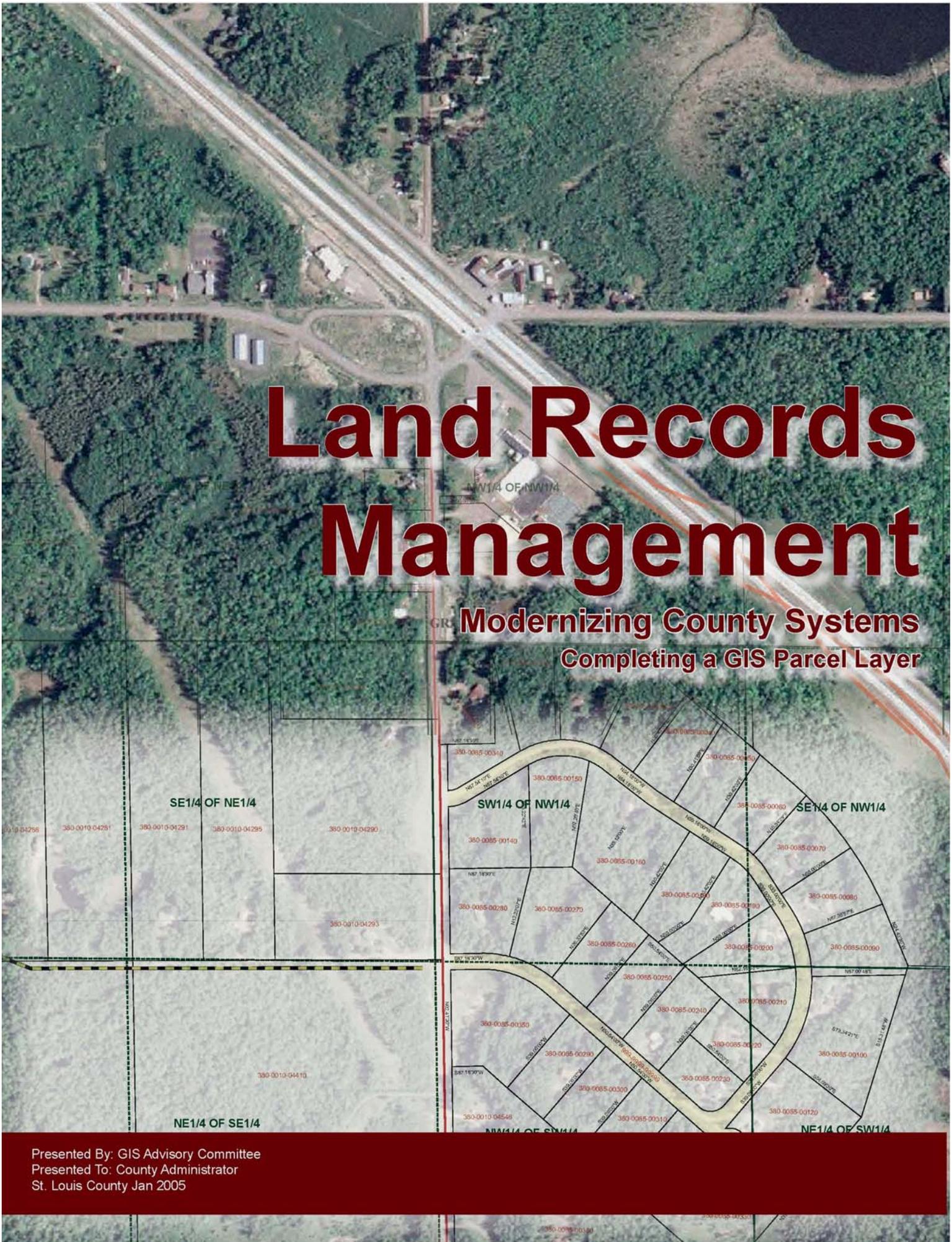


Land Records Management

Modernizing County Systems
Completing a GIS Parcel Layer



Presented By: GIS Advisory Committee
Presented To: County Administrator
St. Louis County Jan 2005

Mapping a Course



Introduction

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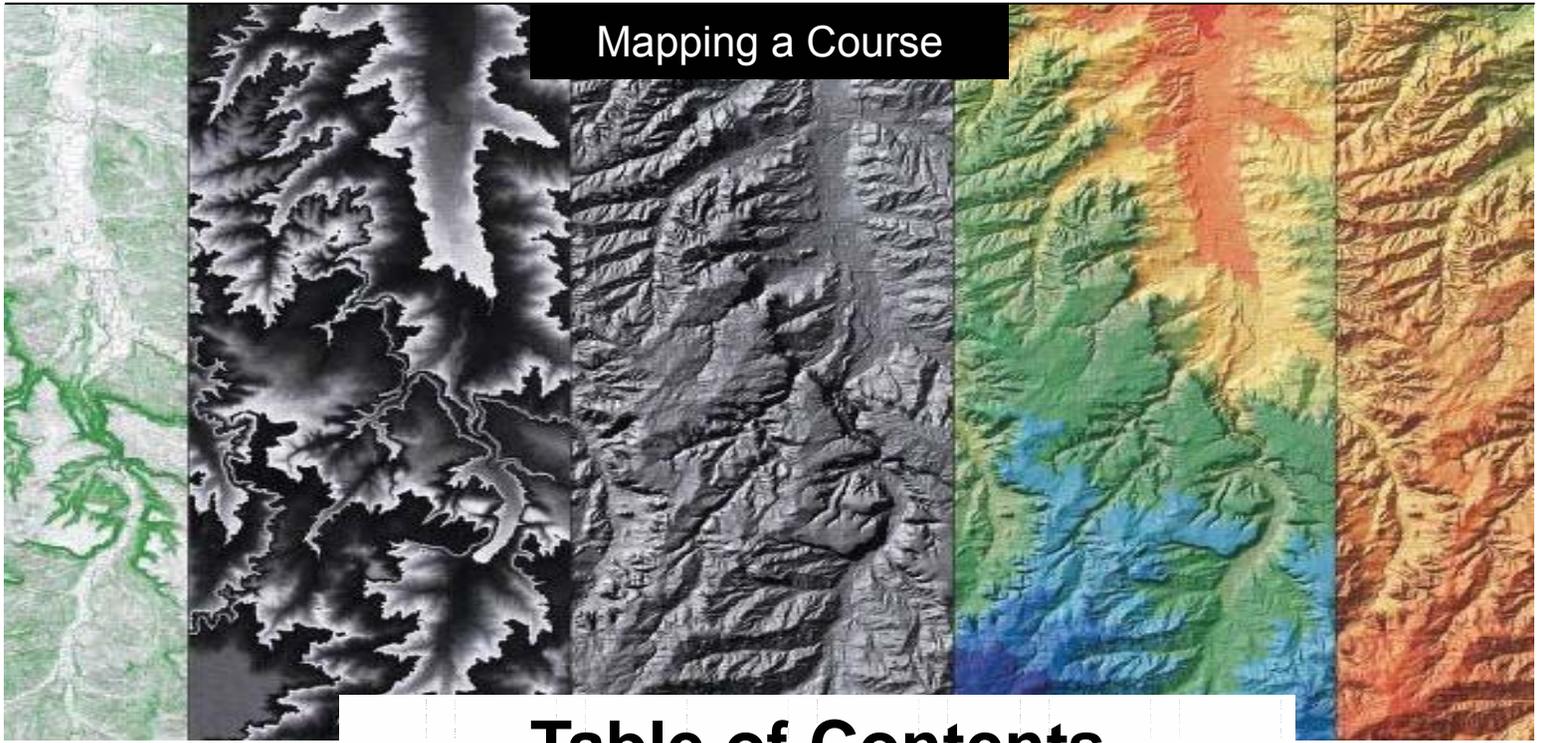


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Introduction

St. Louis County
2005

Introduction

The following report provides recommendations to improve and transform St. Louis County's land records management system to meet the demands of the twenty-first century.

Over the past several years, St. Louis County departments have undertaken steps to develop a Geographic Information System (GIS) parcel layer containing all information relating to real property in St. Louis County, including cities, townships, reservations, and unorganized townships.

In order to complete this parcel layer and address a variety of long-term issues for St. Louis County, the GIS Advisory Committee is requesting that the St. Louis County Administrator consider the following recommendations:

- 1 **Complete a GIS Parcel Layer for Improved Land Records Management:** Develop and maintain a parcel layer for the remaining areas in St. Louis County, including all cities, townships, unorganized townships, and reservations.
- 2 **Create a "Cost Recovery Program":** Research and develop a "Cost Recovery Program" to offset development and maintenance costs of the parcel layer (to the extent possible and practical) through a combination of new revenue streams such as: selling data, additional fees, mapping, access, and other forms of revenue generation.
- 3 **Establish an "Office of GIS":** Establish an "Office of GIS" to address St. Louis County's lack of long-term capacity to address, implement, and maintain an enhanced inter-departmental land records management system, as well as to provide technical assistance to county departments to expand GIS and other interface systems.

In conjunction with the parcel layer development, the committee will also begin planning efforts (which are not part of this plan) to:

Create a Land Records Portal: Develop a web portal (internet and intranet) that links all county databases together, with the ability to display, query, and analyze all types of data and GIS coverages.

The plan is to complete the remaining parcels in phases from 2005-2010, contingent upon funding and various challenges.

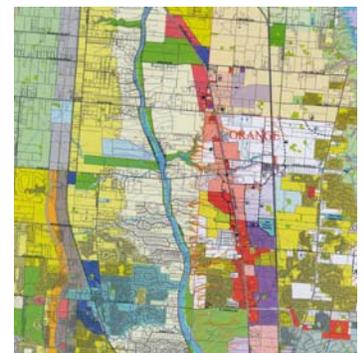
GIS and the development of a parcel layer has had significant support from the County Administrator and the St. Louis County Board of Commissioners through the following actions:

County Administrator

- **Jan 3, 2001:** Adoption of a Geographic Information System (GIS) Strategic Plan
- **July 9, 2001:** Establishment of a GIS Advisory Committee

County Board of Commissioners

- **Board Resolution #646,** Dec. 21, 2004, authorizes parcel layer grant submission and execute grant agreements for Hermantown and Proctor
- **Board Resolution #745,** Dec. 2, 2003, authorizes Canosia/Rice Lake Twp. parcel layer grant submission, acceptance and contract
- **Board Resolution #132,** Feb. 25, 2003, contract authorization for Duluth Twp. parcel layer
- **Board Resolution #712,** Nov. 12, 2002, authorizes



- Midway Township parcel layer grant submission
- **Board Resolution #713**, Nov. 12, 2002, accepts Duluth Township parcel layer grant
- **Board Resolution #700**, Oct. 22, 2002, county's role in economic development
- **Board Resolution #590**, Sept. 10, 2002, contract authorization for Beatty Township parcel layer
- **Board Resolution #853**, Dec. 18, 2001, authorizes parcel layer grant submission Duluth and Lakewood Townships
- **Board Resolution #861**, Dec. 19, 2000, contract authorization for Grand Lake/60-18 Township parcel layer
- **Board Resolution #193**, Mar. 21, 2000, contract authorization for Grand Lake and Sand Lake areas for parcel layer
- **Board Resolution #752**, Nov. 2, 1999, contract authorization for Leiding Township, and expand into 66-20, 66-19, 66-21 parcel layer
- **Board Resolution #226**, March 25, 1985, purchasing agent authorized to enter into a contract with Environmental System Research Institute (ESRI) for purchase of a geographic management information system
- **Board Resolution #210**, March 26, 1984, authorization to enter into a contract to provide design and cost alternatives that will lead to the acquisition and implementation of a computer graphics management information system for the Land Department

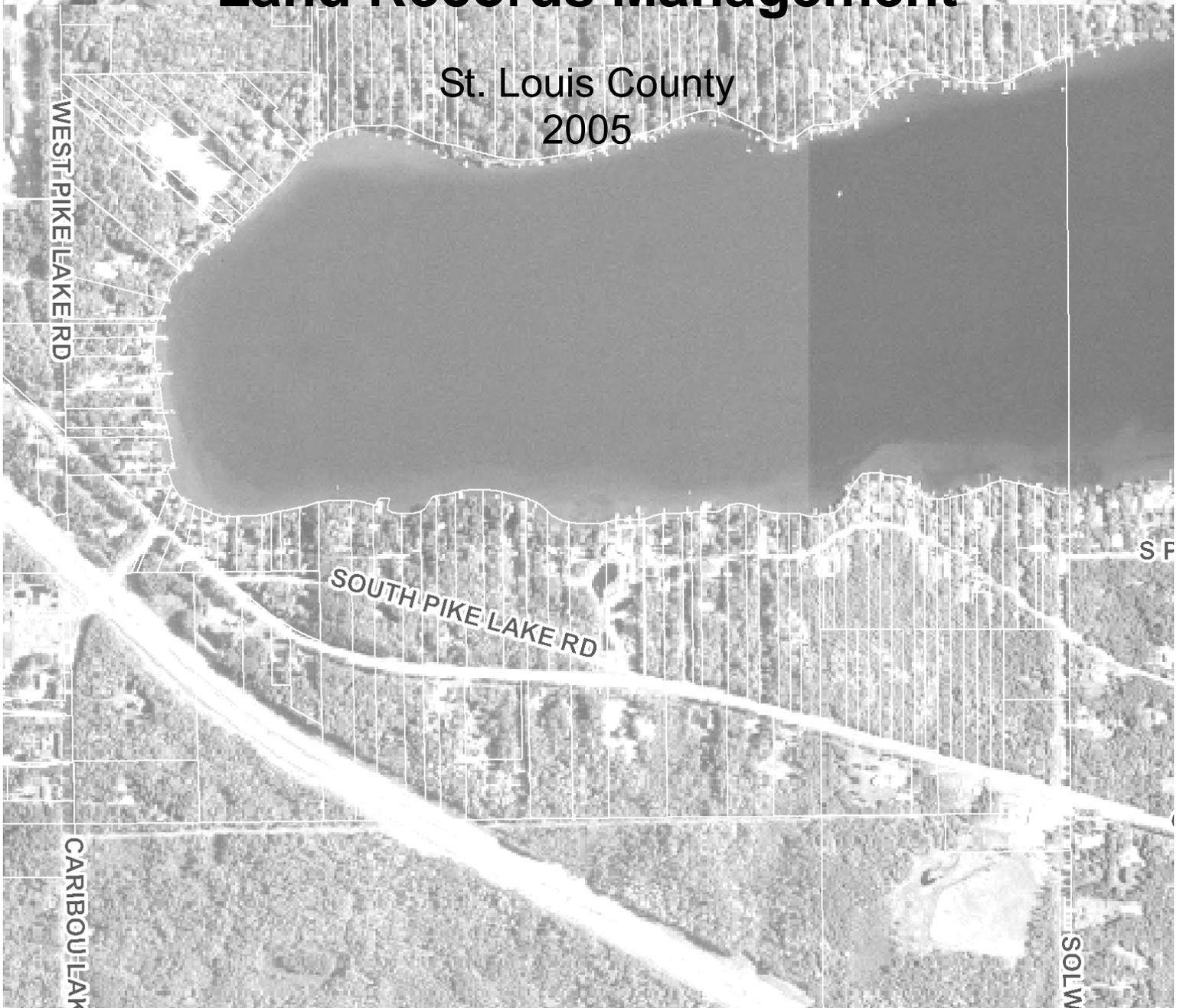
Local government is increasingly using GIS and E-Government initiatives to help it function more effectively and efficiently, formulate better decisions, improve data management, and improve community access to information.

The parcel layer is not only a useful tool for government functions, but is also an important tool for economic development and an array of business activities.

Therefore, the GIS Advisory Committee requests that the County Administrator consider the recommended actions and assistance necessary to successfully complete the projects identified in the plan.

PART I

Land Records Management



What is GIS and Land Records Management

What is Geographic Information System (GIS)

Geographic Information System (GIS) is a critical component to any land records management system. GIS is a package of computer software that links geographic information (where things are located) with descriptive information (what things are). Unlike a flat paper map, GIS can present many layers of different information.

GIS has layers of information that can be added on top of each other, or organized in a way that best suits the user's interests. The end-user controls the amount of information by stacking information on top of each other to create a theme for an area of geographic interest.

GIS is an organized collection of computer hardware, software, geographic data, and is designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information.

GIS helps policy makers and residents make better informed decisions. Data can be gathered on a population, project, service, or program and presented in a way that furthers organizational goals and planning efforts.

GIS is easy and fast at performing searches, queries, maintaining, and editing data. Most importantly, GIS facilitates the integration of a variety of data.

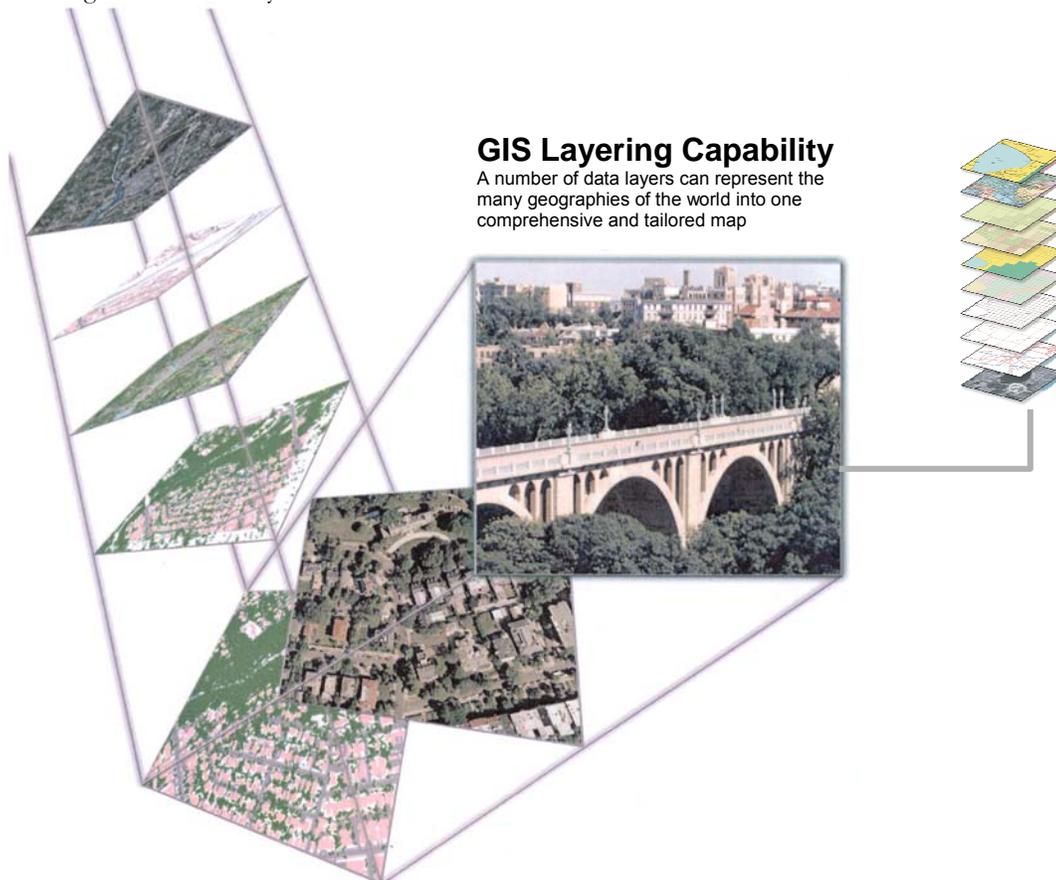
Land Records Management

Throughout history, a critical function of county government has been to track, record, and provide detailed information on land records at the parcel level.

Today, St. Louis County continues this role, but its system of data management has not been adequate or effective in an era of technology advances. This inadequate system has put a strain on County resources, hindered business and commerce productivity, and limited the effectiveness of getting information to the public.

Each County department has numerous sets of data that can be linked to create a well-administered and streamlined system of land records management, but currently no link exists because of difficulties in cost, commitment, and scope of challenges to develop a GIS parcel layer coverage.

A GIS parcel layer provides the ability to link databases (through an address, parcel identification number (PIN), or other method) and organize the data in a way that can be tracked, analyzed, or mapped for a variety of government, business, or resident functions.



Government Uses of GIS

St. Louis County and many other government agencies have a vital stake in implementing GIS technology to help people plan, design, engineer, research, measure change, analyze, build, and maintain the information systems and infrastructure that government maintains. Below are some of the potentials uses of GIS in county government:

Assessor's: Tracking and management of ownership and property tax data, locating and identifying ownership, establishing values, and assessments.

Public Works: Tracking the condition and location of roads, centerlines, signs, culverts, bridges, as well as generating concept plans and preliminary plans for highway projects, notification of constituents, and capital improvements.

Natural Resource/Land: Resource management, fire and disease assessment, growth rates, harvests, access roads, resource species, water quality, run-off, locating tax forfeit parcels for forest cover type mapping and other forms of resource mapping, tax forfeit distribution, and management of the Tax Forfeit Trust.

Planning/Economic Development: Land use, zoning, parks, neighborhoods, industrial sites, residential land, and areas for tourism and recreation, infrastructure,

flood zones, steep slopes, wetlands, digital zoning and comprehensive plan, economic and community development, capital improvements, and population.

Public Safety/911: Identify precinct boundaries, incident locations, beat maps, crime analysis, gang territories, incident history, evaluating the results of selective traffic enforcement plans, balancing workloads by drawing up more equitable beats, allocate resources based upon incidents, tracking calls, assisting in the process of assigning of rural addresses, identifying property owners of burglarized cabins, legal descriptions for search warrant applications, and certain search/rescue and law enforcement activities where property boundary and ownership information may be helpful.

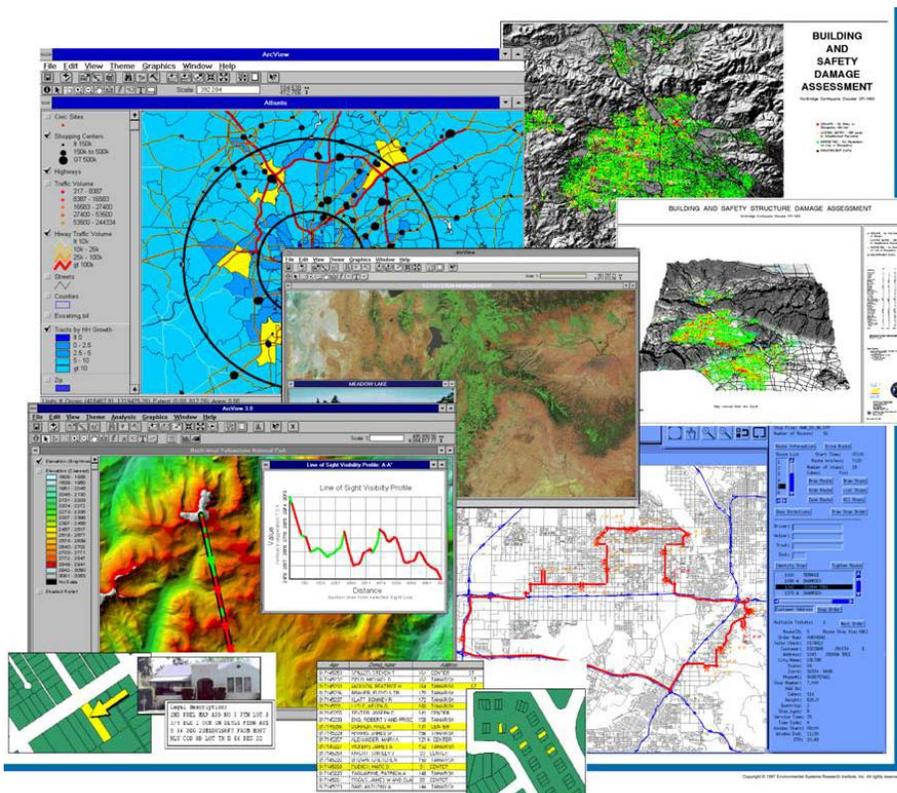
Solid Waste/Water: Tracking and inventory of calls for illegal dumping, litter and collection, water circulation, clarity, condition of facilities and pipes, flow, financing, pipe size, pipe type, slope, reference number, closed dumps, mailings for service fees updates, and locating new or different drop-off sites for solid waste or recyclables.

Health/Social Services: Tracking client and service provider concentrations and distributions, diseases and outbreaks, cancer clusters, wells, septics, and nutrient concentrations.

Recorder/Auditor: Land records for property taxation, records for real property, election administration, property taxation and tracking, tax rate distribution, redistricting, and precinct maps.

Property Management: Property assessment, distribution, cost, and effectiveness.

Other: Infrastructure: facility management, electricity, water, sewer, gas, telecommunications, cable television utilities, load management, trouble call analysis, voltage dropage, basemaps, line system analysis, and many others.



What is a Parcel Layer

A parcel layer is a digitally stored spatial representation of a legal description linked to many attributes about the property such as: land ownership, parcel size, configuration, land use, improvement values, and other related information contained in federal, state, local government, or public and private agencies. Also, a parcel layer can show right-of-way (fee and easements), road centerlines, and other relevant information.

It is said that “a parcel layer showing property ownership is the fundamental building block for an integrated system of land information.”

Generally, a parcel layer is an electronic version of a plat book that can be used in conjunction with other GIS layers.

A parcel is a contiguous interest by one or more entities in real property. Examples could include: an entire section of land, a forty, some area defined by metes and bounds, or a part of a subdivision plat.

To complete a parcel layer, parcel data and survey boundaries, points, and lines are entered and documented using coordinate geometry, along with attribute information associated with each parcel, including parcel dimensions and St. Louis County parcel identification numbers.

Once the parcel layer is complete, parcel identification numbers (PIN) are linked to each polygon (drawn parcels), or by other methods. This will enable the county to link numerous databases to the GIS parcel layer.

A Parcel Layer is Used for Delineation of Ownership

A parcel layer can show a parcel of land and its boundaries quickly and easily. Many governments agencies, along with St. Louis County, receive a large number of requests from the general public and private entities for property ownership and lot information.



A Parcel Layer is Used to Display Tax & Other Information

A parcel layer is interactive in that by clicking the parcel, an individual can review all data corresponding to that parcel and real property. By being interactive, information is easily accessible to the end-user.

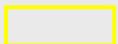


A Parcel Layer can be Combined w/other GIS layers: E.g. Aerial & Wetlands

A powerful feature of GIS is that it can combine various data layers (parcels, zoning, wetlands) to give a better picture representation of a parcel's potential for development or preservation.



Legend

 Parcels

The parcel layer is based upon a resident's legal lot description.

Why GIS & a Parcel Layer

GIS has many functions that make it an effective tool to further St. Louis County's goal of being a more responsive and better government. The following are some examples:

1 Better Decisions: More Informed and Quicker

GIS is a tool to query, analyze, locate, spot conditions, portray trends, identify patterns, and model scenarios to support the decision making process through increased quality and depth of information.

2 Improved Productivity and Efficiency

GIS has streamlined many common tasks of government and business operations. Ultimately, GIS and a parcel layer will increase efficiency and productivity. GIS has improved management of government and resources by creating a shared database. One department can benefit from the work of another. Essentially, data can be collected once and used many times by many departments.

3 Improved Data Management

A common by-product of GIS is that information is better managed and formatted to be user-friendly. It also provides the ability to link databases for a clearer understanding of a particular issue or project.

4 Improved Community Access to Information

The greatest number of requests for information on St. Louis County's web site was for parcel information from real estate businesses (e.g. appraisers, realtors, title search companies, developers) and residents.

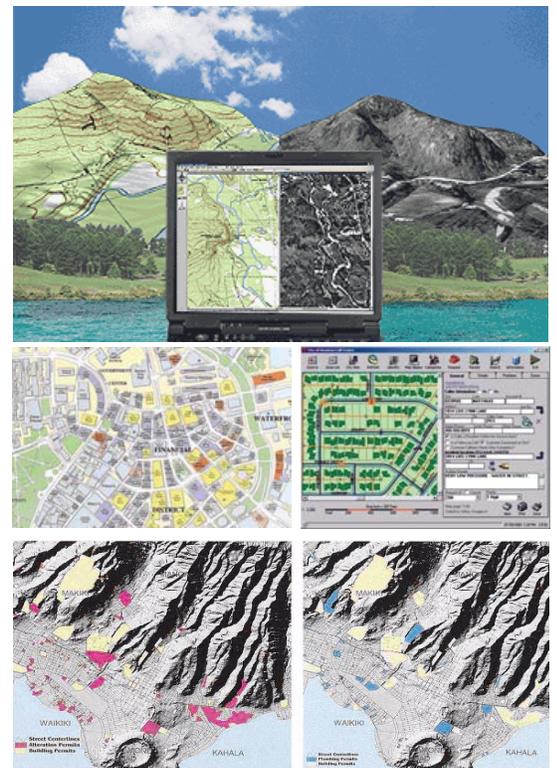
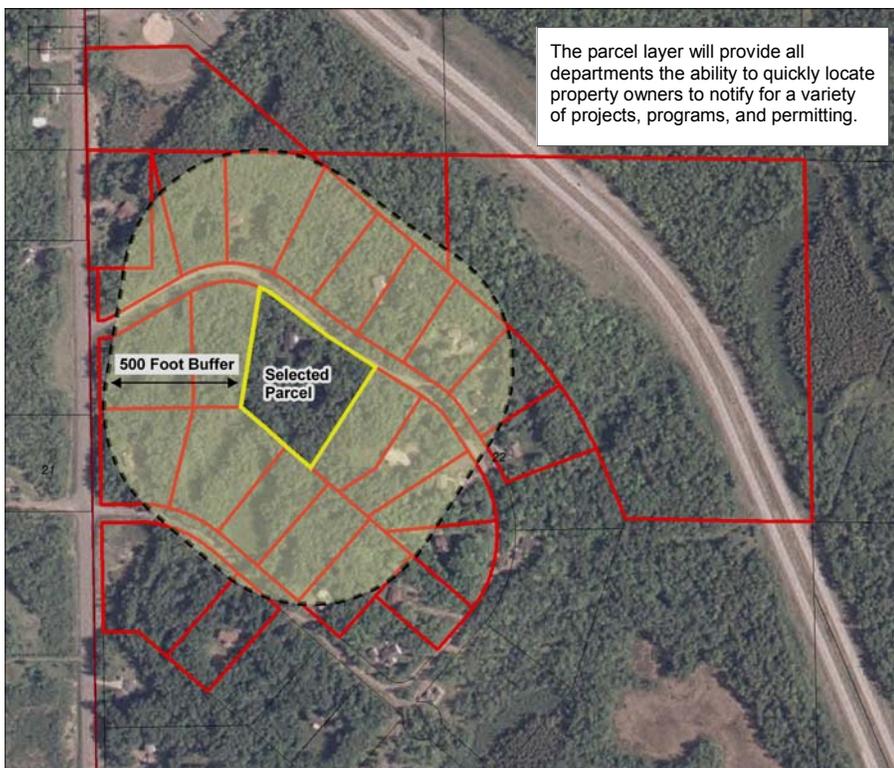
GIS parcel layer provides opportunities to quickly and efficiently get information to various end-users.

5 Additional Benefits

- Reduced data costs
- Improved data quality and standards
- Minimized data conflicts
- Improved participant operations
- Leveraged technology investments
- Reduced project costs

6 Unrealized Return-on-Investment (Revenue)

There are components to GIS and a parcel layer that offers enhanced revenue generation such as: locating undocumented structures, plat book internal creation, data purchases, challenges to federal allocations based upon better data, and many others. **(See Appendix for Example Return-on-Investment)**



Who Benefits from a Parcel Layer

There is a wide variety of uses and users outside of St. Louis County that can benefit from a completed parcel layer, such as:

- Federal and State Government
- Local Government (County, City, Township)
- Business & Commerce
- Non-Profit
- General Public: Residents

Below are a list of potential uses of a parcel layer by various users to further underscore the vital role of a digital parcel layer:

Government

A. Federal and State Government

Federal and state governments can use the parcel layer for a variety of functions, including:

- Natural resource and land management, homeland security, national and state park management, immigration, emergency planning and response, identifying needs, land-use planning, environmental impacts, conservation, recreation, health and human services, defense, commerce, transportation, and others.

B. Cities, Townships, and Unorganized Townships

Cities and townships can utilize a parcel layer for a host of reasons similar to St. Louis County to streamline local government functions, including:

- Public safety, property identification, planning, waste management, economic development, assessing, permitting, public works, land management, and others.

C. Agencies, Boards, Commissions

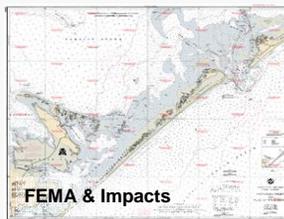
Agencies, boards, and commissions can conduct essential development functions. One such organization that could benefit extensively would be the *Iron Range Resources (IRR)*, with its focus on economic development.

With a parcel layer, economic development agencies could:

- Identify and promote sites through web-based applications,
- Identify infrastructure needs at a push of a button,
- Visually apply various information layers together for potential developers, and/or developments
- Reduce the time needed to supply information requests in a more useable format, and

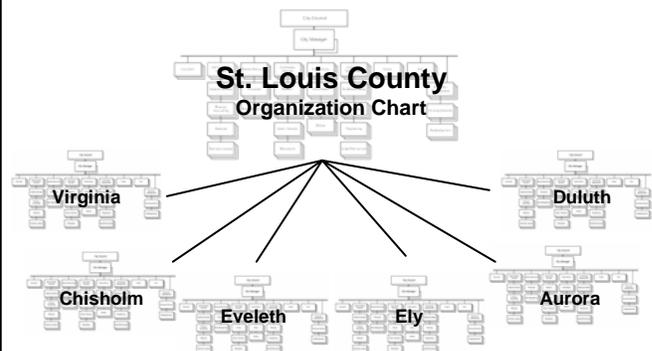
Federal and State Government

4th of July Storm Recovery



Federal and State Government: Federal and state government could utilize the parcel layer for a variety of activities from natural resource management, emergency management, and security.

Local Government

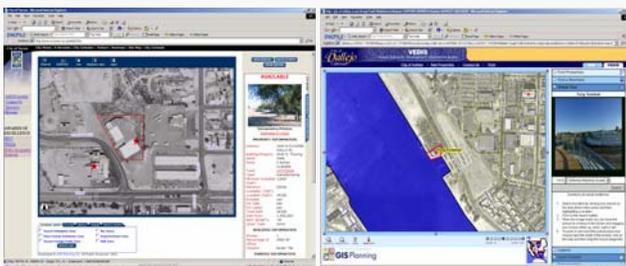
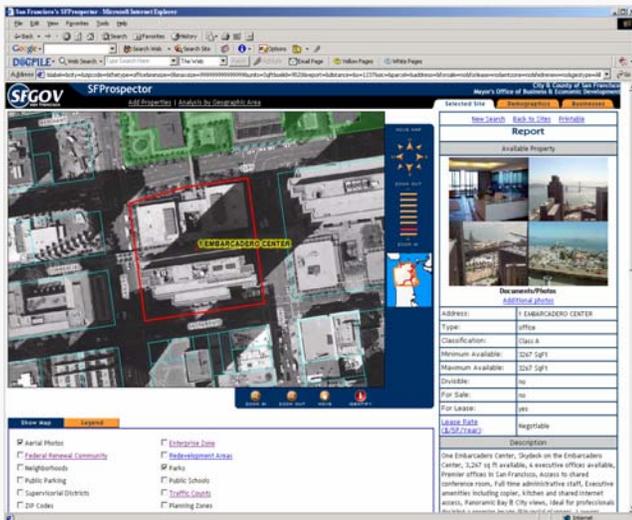


Cities and Townships: Cities and townships within St. Louis County could benefit from the parcel layer by utilizing it in similar fashion to St. Louis County, but to its own needs.

Who Benefits from a Parcel Layer

Economic Development

Agencies, Boards & Commissions: Helps promote and build economic and redevelopment strategies for activities related to site selection, retention, recruitment, and promotion. It assists economic developers in providing data quickly to potential clients, draws investors, provides decision support, and improves overall development efforts.



Draws Investors: Site Selection and Businesses: Assists economic development agencies catalog available properties (with site specs and demographics) to potential site selectors, businesses, and individuals.



Redevelopment: Assists counties, cities, towns, and agencies with development proposals, its scope, area, and impacts.

- Portray an image of an area with cutting edge GIS technology (becoming a standard across the nation) to promote economic development.

D. Tribal Governments

Tribal governments are implementing many aspects of GIS for their functions. The parcel layer would assist in further managing resources and conducting tribal functions in and around the tribal areas.

Non-Profit

A. Non-Profit

Many non-profit organizations conduct an array of activities such as: economic development, environmental advocacy, social advancement, educational programs and a host of others. These non-profits can use the parcel layer for activities such as:

- Land and property research
- Infrastructure costs for development
- Environmental assessments
- Project impacts and advocacy
- Housing development
- Population service area information

Who Benefits from a Parcel Layer

Business & Commerce

A. Real Estate Firms, Title Companies, Appraisers, Mortgage Companies, Surveyors

Many businesses rely on government systems for conducting commerce. Existing systems to access this information are antiquated and need to improve to meet the demands placed on the government system by businesses such as:

- Researching property owners and title holders
- Reviewing land and building assessments
- Searching legal boundaries and descriptions
- Researching property abstract, deed, torrens
- Comparing market values
- Parcel conformity and zoning
- Researching property attributes
- Acquiring plat information and attributes
- Providing control points for surveying
- Infrastructure support

General Public: Residents

A parcel layer in GIS is the best tool currently available to allow the public access to data held by government agencies and political subdivisions. In fact, approximately 80-90% of all government data is parcel-based information which is stored and can be easily accessed by the public.

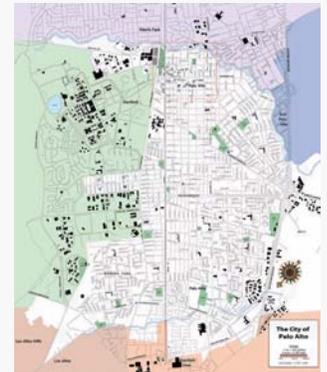
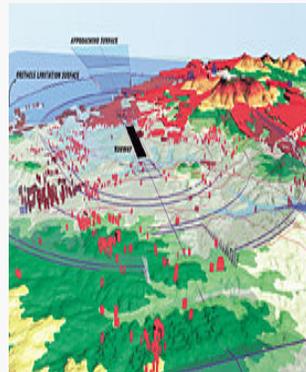
The general public uses this information for:

- Researching land for purchase (e.g. value, zoning acres, owner, dimensions, address, etc.)
- Locating property owners and taxpayers
- Locating parcel identification numbers (and legal descriptions) for permit applications and development
- Determining land issues
- Available infrastructure (sewer, water, telecommunication lines, etc.)

Interestingly, the most requested web page on the St. Louis County web site is property tax information provided by the Auditor's Office, representing approximately 37% (or 603,222) of all St. Louis County web site page requests from January-2003 to February-2004.

Definition of Request Page: A requested page is any *hit* that successfully retrieves content. Unlike hits, requests are related to content and user behavior. For example, if a user requests an HTML page that has three graphics files, the web server might make a log entry for the three graphics files, the HTML page, and perhaps add some lines for overhead. However, only one request is counted by Analysis.

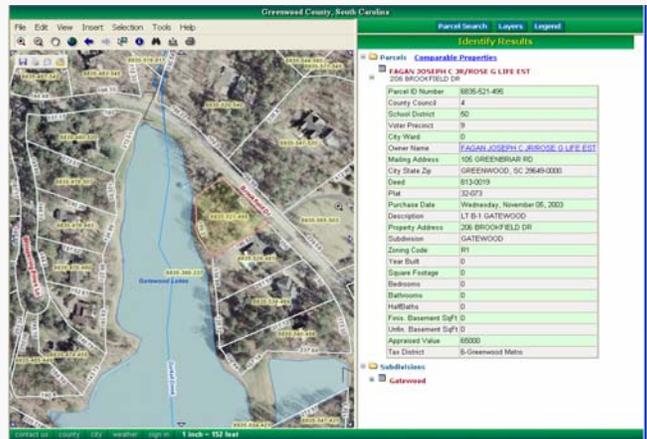
Business & Non-Profit



Business: Identify markets, risks, costs, customers, modeling, etc.

Non-profit: Advocacy, assistance, economic development, promotion, etc.

General Public



General Public Information: Information requested by the general public can be portrayed in a user friendly format rather than the current database driven format.

Top Requested Web Pages St. Louis County Date Analyzed: 1/1/2003 to 2/17/2004

Web Page	Requests	% of Total
1. /parcelInfo/st-louis (property tax info)	603,222	37.04
2. /civilservice_personnel/positions	114,946	7.06
3. /auditorsoffice/Board	29,244	1.80
4. /planning/pp_page	17,071	1.05
5. /PublicWorks/basemap_2001	13,916	0.85
6. /publichealth/Environmental	13,568	0.83
7. /planning/PPPPage	13,512	0.83

General Public- Residents: The general public has searched and retrieved a large amount of information related to property tax and parcels. This activity accounts for almost 40% of all requested pages on the St. Louis County web site.

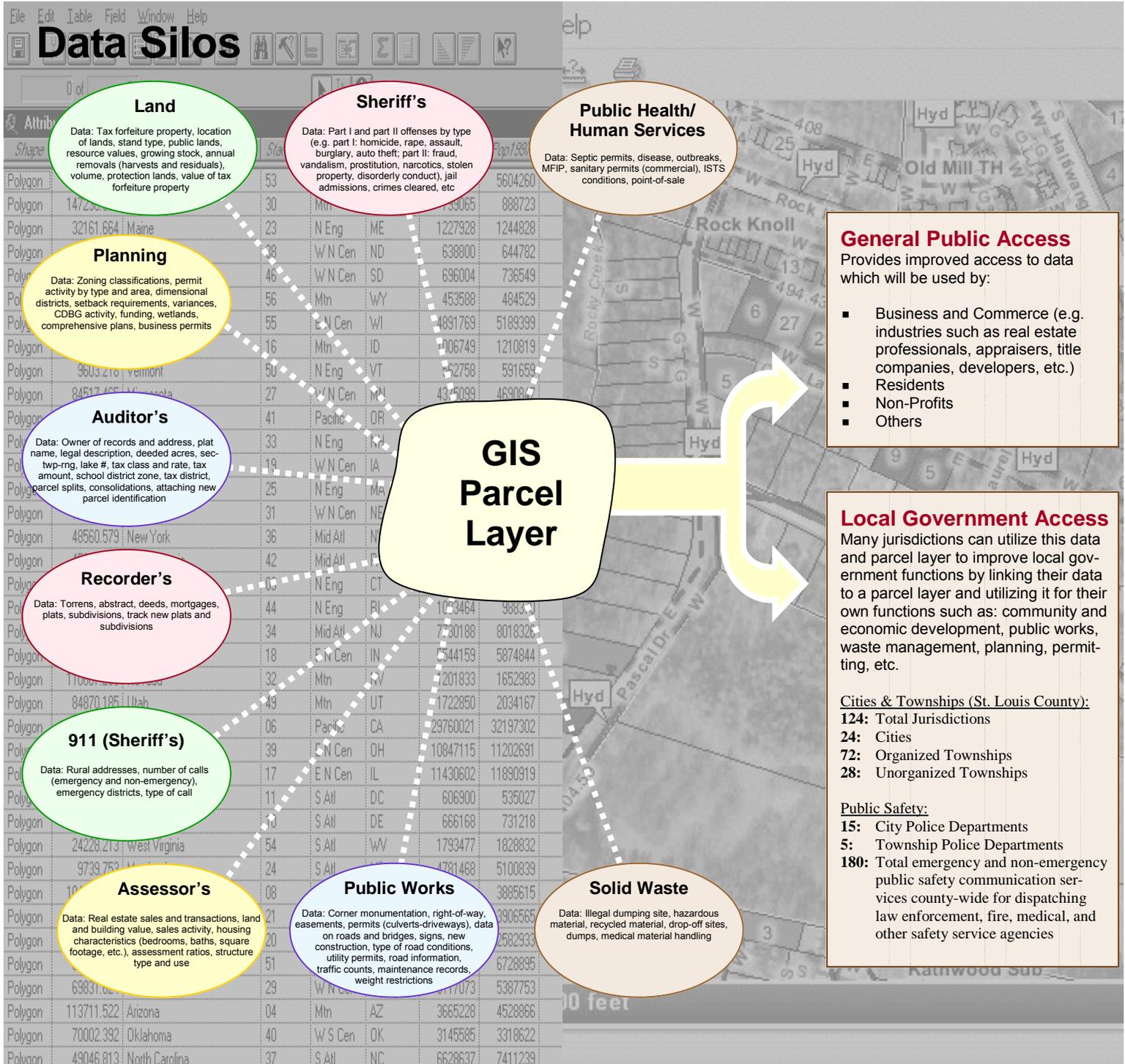
Benefits of a Parcel Layer: Improved Land Records Management

In general, county databases will be linked together by the Parcel Identification Number (PIN) or other information once the parcel layer is created.

Once linked, an internal portal can be created so that data can easily flow and be accessed throughout the county. This internal portal can be modified or simplified for the

web to be used by the general public for a variety of uses.

Furthermore, local government jurisdictions (e.g. cities, townships, reservations) and public safety agencies can link their data to the parcel layer to conduct core functions.



Problems with Current Systems

Currently, St. Louis County's technology systems to access, query, map, and disseminate land records is not utilizing available technology to its fullest extent possible to deliver information quickly and seamlessly to businesses, residents, and government units. This has caused many problems for St. Louis County, and its cities and townships. Highlighted below are some (but not all) general problems with the current land records system.

1 Poor Data Management

Poor Information Sharing Process

In many instances, each county department needs information from other departments in order to conduct its own operations. Currently, there is a limited system to share or access information.

Poor Data Integration—Data Silos

Without a system that integrates information, there is limited capability to mesh data together into a more interactive, powerful, and detailed databases and maps.

Continued Data Conflicts

Without common data formats, primary keys to link databases, and general rules for integration, conflicts will remain in data sharing and integration.

Poor Document Work Flow

In many instances within the county, once a new set of data is created, other departments have additional duties to follow-up with this new dataset.

Many of the notifications to other departments is paper based work flow (e.g. new lot/plat created: Auditor's Office must attach PIN/draw lot/tax class/legal, Recorder's Office files new lot/plat, Assessor's Office needs to assess, 911 attaches address, Planning needs to provide permits, etc.).

Paper documents are routed around, providing opportunities to create electronic work flow.

2 Poor Public Service

Fragmented Information

Currently, information is held by various departments, but many requests from residents, businesses, and governments are for information that is stored in databases by other departments. Thus, staff must either obtain this information by various methods, or refer the requestee to appropriate departments (which may be in different buildings, cities, and/or locations).

This results in slow service, a frustrated requestee, and poor data quality in various forms.

Poor Service Delivery

Systems are lacking within the county to deliver information quickly and efficiently to residents, businesses, and other government agencies because of undeveloped technology and dissemination avenues such as the web.

Poor Data Dissemination

Getting data to residents, businesses, and government agencies is slow, fragmented, and cumbersome. In many instances, people require data to be in electronic form, and combined with other datasets from various departments, which causes problems since systems are not developed to deliver combined data.

3 Lack of One-Stop-Shop

Currently, residents, businesses, and government agencies, when conducting their affairs, must seek information from multiple sources for relatively simple information.

A "one-stop-shop" (web portal) would be the solution. This would be accessible at any time on the web and used by departments for phone, fax, and e-mail requests.

This would minimize shuffling residents around from place-to-place and department-to-department.

4 Lacking County-Wide Technical Capacity

Overall, St. Louis County is poorly postured to capture land records and GIS technology advances and implement these systems county-wide.

With the economy transforming to digital information, St. Louis County also needs to transform its systems to digital formats that can provide data to various end-users.

Currently, technology is not implemented county-wide due to the lack of a point person/office to

coordinate activities. There is limited resources available to other departments to fully research, purchase, build, and implement GIS technology and its systems related to land records.

The resource available to county departments is the GIS Advisory Committee, which is represented by staff of various county departments.

The problem with this structure is that all committee members have full-time jobs dedicated to their own departments and lack the time and capacity to assist other departments or coordinate county-wide land records and GIS issues.

As a result, the limitation imposed by St. Louis County's current system(s) has caused many county-wide land records and GIS issues to not get addressed.

5 Limited Planning Capabilities

All department in St. Louis County, and its cities and townships, conduct short-term and long-term planning activities. With limited data integration and linkages, planning activities are somewhat lacking. Thus, planning capabilities are limited.

6 Poor Public Notification Process

Currently, the public notification process in St. Louis County is a problem. Many departments must notify the public for a variety of projects, programs, and permitting. The current process is time consuming and cumbersome.

Furthermore, the County provides services to some cities and townships in generating mailing labels for notification. This is done because the County tracks and records property owners (Auditor). With a parcel layer and web portal, this would provide the cities and townships the ability to conduct this query themselves.

Public Notification Process: A County, City, Township Problem



Existing Notification Process:

The current method takes up an enormous amount of staff hours per year to generate mailing labels. Staff must manually identify area, estimate buffer, look up parcel information in computer, determine which parcels are within buffer, and create mailing labels.



Time to Generate One (1) Notification List

Hours & Days

X

Over Thousand Times a Year



Proposed Notification Process:

The potential new process could take minutes. Staff simply selects a parcel, inputs buffer, and the system generates mailing labels. Also, cities and townships can create their own labels, thus eliminating staff time dedicated to this activity.



Time to Generate One (1) Notification List

Minutes

X

Over Thousand Times a Year

Improved Notification Process: Currently, the county, cities, and townships in St. Louis County must identify adjoining property owners and owners within specified buffers for variances, land sales, development requests, projects, etc.

= Increased Productivity

Minnesota: Parcel Layer Development

Nationally, many counties and cities have developed a parcel layer. Across the State of Minnesota, counties have been actively assessing, developing, and maintaining a digital parcel layer. In general, there is a wide range of activity, and varying levels of completion, which is a function of numerous factors.

Development Status of Digital Parcel Data by County

The trend of urban areas completing the digital parcel layer is due to many factors such as: number of known (and remonumented) corners, other Public Land Survey System (PLSS) corners, population density, financial capacity, and others.

Generally, the Twin Cities metropolitan area has a completed digital parcel layer, whereas St. Louis County and other rural areas are in the assessment and/or development stage.

Many metropolitan counties (e.g. Hennepin, Dakota, Ramsey, Scott) have developed internal capacity to develop and maintain their parcel layer.

Percentage of Parcel Data in Digital Form by County

Today, St. Louis County has less than 10% of its parcel data in digital form. Many metropolitan cities and counties around the Twin Cities have already converted over 75% of parcel data to digital form. This is reflected through the internal county functions and external web sites the general public can access.

Examples of Minnesota County's web sites using a parcel layer and GIS:

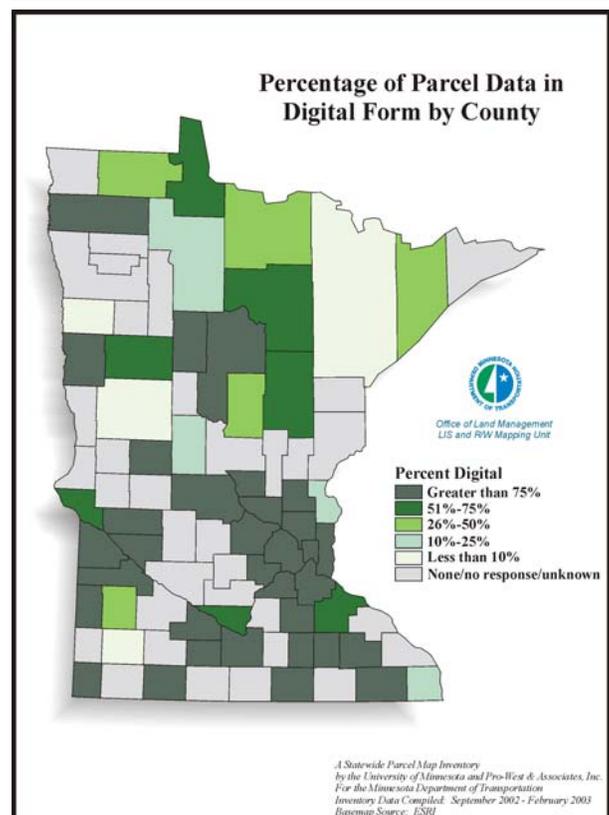
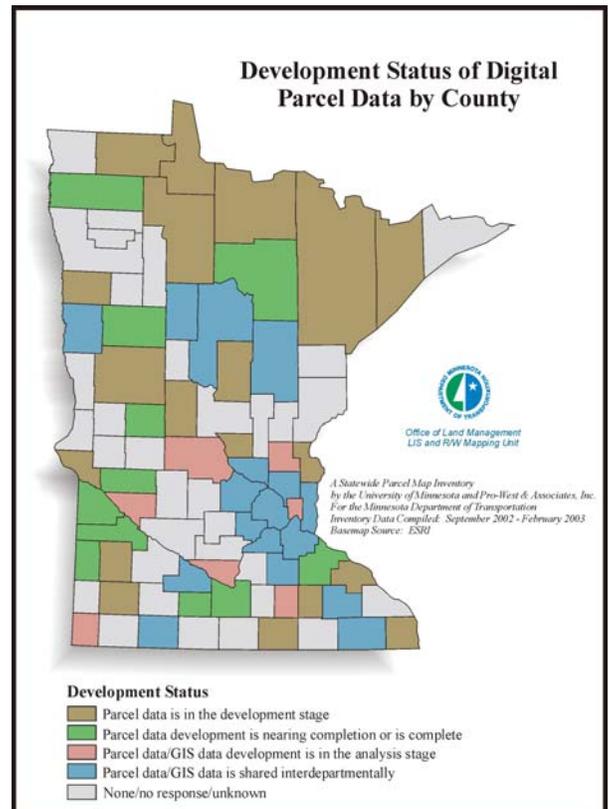
Ramsey County
<http://maps.metro-inet.us/RamseyCoGIS/Viewer.htm>

Carver County
<http://156.99.124.167/website/gishome/>

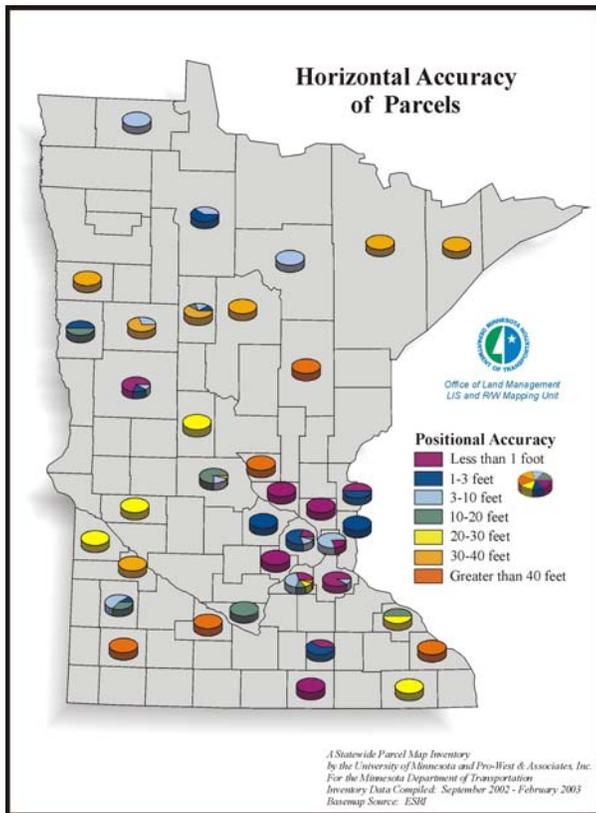
Dakota County
<http://207.171.98.200/scripts/esrimap.dll?name=WebQ1&Cmd=Map>

Scott County
<http://www.co.scott.mn.us/gis/imspage.htm>

Washington County
http://www.datafinder.org/website/DF_WashingtonCounty/Parcels/



Minnesota: Parcel Layer Development



Horizontal Accuracy of Parcels

In any parcel layer there are inaccuracies in the exact spot of parcel lines due to factors such as: inaccurate corner monumentation locations, legal description errors, and a host of others factors.

In a denser populated area, there are more known corner monuments. These monuments provide the basis to draw a parcel layer as accurately as possible. Accurate corner monuments allow for more accurate parcel lines.

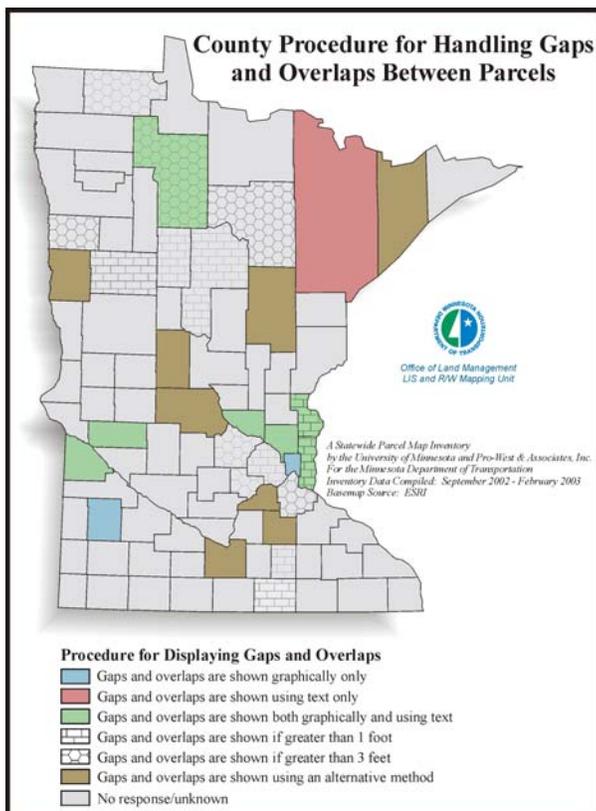
Where corner monuments are missing, software is available to calculate corner monuments through mathematics, thus horizontal accuracy of parcel lines vary by area.

In St. Louis County, horizontal accuracy currently is estimated at 30-40 feet. However, this can be reduced in higher populated areas through additional surveying of corner monumentation, which the GIS Advisory Committee identifies as a critical need.

Gaps and Overlaps

Gaps and overlaps are generally caused by inaccurate legal descriptions describing its location in relation to a spatial area of the earth. For example, many legal descriptions describe or refer to roads, fences, railroads, and other buildings that no longer exist today.

Most counties develop the parcel layer as a seamless representation of the intent of the legal description. Thus, counties either note the line adjustments within the metadata, code data within the parcel layer, or show gaps as they become larger. St. Louis County currently shows gaps and overlaps through text, meaning the discrepancies are written by Parcel ID in Excel.



St. Louis County Potential Benefits and Uses of a Parcel Layer

Sheriff's & 911

The Sheriff's Office and 911 Communications would benefit by using the parcel layer for a variety of public safety issues. The following are examples:

Sheriff's

- Improves Emergency Response
- Improves Crime Analysis
- Improves Regional Public Safety- ARC
- Enhances Planning Efforts for Raids, Seizures, and Monitoring
- Improves Court Room Evidence
- Improves Public Safety Policy
- Helpful in Search and Rescue Situation
- Improves Property Owner Notification
- Provides Public Information

911 Communications

- Improves Emergency Response
- Assists in Determining Appropriate Response
- Improves Dispatching and Tracking Emergency Response
- Identifies Location of Cellular Callers
- Assists Dispatchers Determine Location of Calls with Little Information
- Improves Identifying Owners at Site of Incident
- Limits Mobilizing Search and Rescue, and Tragedy
- Improves Evacuation Notification
- Improves Process to Assign Rural Addresses

Auditor's & Recorder's

The Auditor's and Recorder's Offices would benefit by using the parcel layer for tracking, recording, and assessing parcels. The following are examples:

Auditor's

- Converts Parcel Recording from Paper to Digital
- Eliminates Book Deterioration
- Improves Drawing Accuracy
- One Update: Eliminates Multiple Modifications
- Improves Service and Efficiency
- Improves Response Time to Data Requests
- Enhances Tracking and Updating Information
- Eliminates Antiquated Process for Variance Notification
- Enhances Access 24/7
- Assists in Election Process

Recorder's

- Improves Review Processes
- Assists in Certificate or Title Determination
- Enhances Business Interaction
- Assists Cleaning-Up Parcels with Clouded Property Titles
- Improves Service and Efficiency
- Quick Drill Down-Improves Ability to Review Documents Quickly and Easily
- Improves Response Time to Data Requests
- Enhances Web Access 24/7

Planning

The Planning Department would benefit by using the parcel layer for a variety of land-use and planning functions. The following are examples:

Planning

- Streamlines the Land-Use Permitting Process
- Eliminates Zoning-Parcel Overlap
- Improves Long-Range Planning
- Enhances Economic Development
- Improves Map Generation and Dissemination
- Improves Public Notification

Property Management & MIS

Property Management and MIS would benefit by using the parcel layer for a variety of management functions. The following are examples:

Property Management

- Improves Management of County Facilities and Fee Lands
- Assists in Assessing New or Expansion of Facilities
- Improves Review and Sale of County Facilities or Fee Lands
- Improves Notification of Adjoining Land Owners
- Provides Public Information
- Provides Details of Services at Facilities

MIS

- Improves Existing Infrastructure Support
- Improves New Infrastructure Support
- Provides Quick Drill Down
- Identifies Existing Services and Gaps in Services and Barriers

St. Louis County Potential Benefits and Uses of a Parcel Layer

Health & Human Service

Health and Human Services (includes Public Health) would benefit by using the parcel layer for a variety of environmental, health and well-being functions. The following are examples:

Public Health & Human Services

- Improves Medical Prevention & Intervention
- Improves Emergency Medical Response
- Improves Permitting, Tracking, and Monitoring
- Monitoring Vulnerable Adults
- Improves Long-Range Human Service Planning
- Improves Resource Allocation
- Improves Public Notification

Assessor's

The Assessor's would benefit by using the parcel layer for a variety of tracking and assessing of parcels. The following are examples:

Assessor's

- Fair and Equitable Assessment
- Improves Real Estate Record Analysis
- Improves Assessment Tracking and Analysis
- Improves Sales Trend Tracking
- Provides Ability to Match Undocumented New Construction to a Parcel
- Improves Auditing Assessment Functions
- Enhances Administrative Functions
- Provides Equalization Support
- Assists Board of Appeal and Equalization
- Improves Service and Efficiency
- Improves Response Time to Data Requests
- Improves Public Notification

Solid Waste & Public Works

Solid Waste and Public Works would benefit by using the parcel layer for a variety of waste and transportation projects. The following are examples:

Solid Waste

- Improves Landfill Planning
- Improves New Site Development
- Enhances Planning Efforts to Expand and/or Modify Sites
- Track Closed Dump Sites
- Provides Planning Support
- Enhances Illegal Dump Tracking
- Improves Public Notification & Service Fee Updates
- Improves Services & Efficiency

Public Works

- Improves Parcel Research & Right-of-Way Acquisition
- Assists in Parcel Research
- Preliminary Determination of Right-of-Away Acquisitions
- Minimizing Property Impact
- Improves Identifying Right-of-Way Encroachment
- Survey Monuments
- Improves Entrance & Utility Permit Process
- Improves Public Access to Information
- Improves Public Notification

Land & Others

The Land Department and overall County would benefit by using the parcel layer for a variety of trust land management, and county wide applications. The following are examples:

Land

- Improves Forest Resource Management
- Assists in Suitability of Sale and Exchange
- Improves Management of Urban Tax Forfeit Parcels
- Enhances the Tax Forfeit Land Sales Process
- Improves General Administration
- Locating Tax-Forfeit Parcels
- Improves Notification of Adjoining Land Owners

County-Wide

- Create Plat Book Internally
- Participate in State Wide Projects



Roles and Responsibilities

The St. Louis County Sheriff's office is responsible for all law enforcement activity in the unincorporated areas of St. Louis County and the cities of Mountain Iron, Aurora, and Buhl/Kinney.

Law enforcement activities and divisions include: administration, patrol, criminal investigations, narcotics, investigations, criminal records, prisoner transportation, identification bureau, photo lab, court services, boat and water safety, medical examiner, rescue squad, maintain jail lockups, and emergency management.

Arrowhead Regional Corrections (ARC) provides correctional services to all juvenile and adult correctional clients in the region (Carlton, Cook, Koochiching, Lake, and St. Louis Counties).

Department Potential Benefits & Use

Improves Emergency Management

1. **Planning**- Analyze and document potential emergencies or disasters, consequences or impacts upon life, property, environment, and assessing the hazards and risks.
2. **Mitigation**- Activities that actually eliminate or reduce the probability of a disaster.
3. **Preparedness**- Develop plans to save lives, minimize disaster damage, enhance disaster response operations, stockpiling vital supplies, preparing routes and response teams.
4. **Response**- Emergency assistance for victims (e.g. search and rescue, shelter, medical care, food), stabilization of situation, reduce secondary damage (e.g. shutting off contaminated water supply sources, securing and patrolling looting-prone areas).
5. **Recovery**- Security, cleanup, recovery, temporary housing, and access to food/water.

Improves Crime Analysis

Crime statistics portrayed geographically have the power to solve crimes or assist in patrolling to enhance public safety. By using a parcel layer and mapping crime by category, the Sheriff's Office can determine crime intensity, solve potential crimes, determine "hot spots," create strategies to be proactive, and spot trends. In some cases, the parcel layer was used to solve drug cases by linking sales data of cough medicine or cold tablets and found that a "bench chemist" was producing drugs with certain ingredients in the area.

Improves Regional Public Safety- ARC

Public safety agencies, such as the Arrowhead Regional Correction (ARC), use mapping to monitor registered child sex offenders. They can also compare the locations of child sex offenders with the locations of the town's schools. A buffer zone is drawn around each school to observe how close the known offenders live to these potential target areas.

Enhances Planning Efforts for Raids, Seizures, and Monitoring

A parcel layer provides background data and layout for law enforcement raids, seizures, and monitoring. It can provide quicker research and identification by showing property boundary and ownership information, improved access to legal descriptions for search warrant applications, and identify property owners for burglarized cabins and property.

Improves Court Room Evidence

Mapping capabilities can show a jury the spatial location of evidence and victims which provide a more comprehensive assessment of the situation.

Improves Public Safety Policy

GIS and the parcel layer make it possible to track the effectiveness of law enforcement programs such as: comparing accident data to determine the effectiveness of sobriety checkpoints, comparing service calls before and after setting up a neighborhood patrol program, balancing workloads by drawing up more equitable patrol areas, and evaluating the results of selective traffic enforcement plans.

Helpful in Search and Rescue Situations

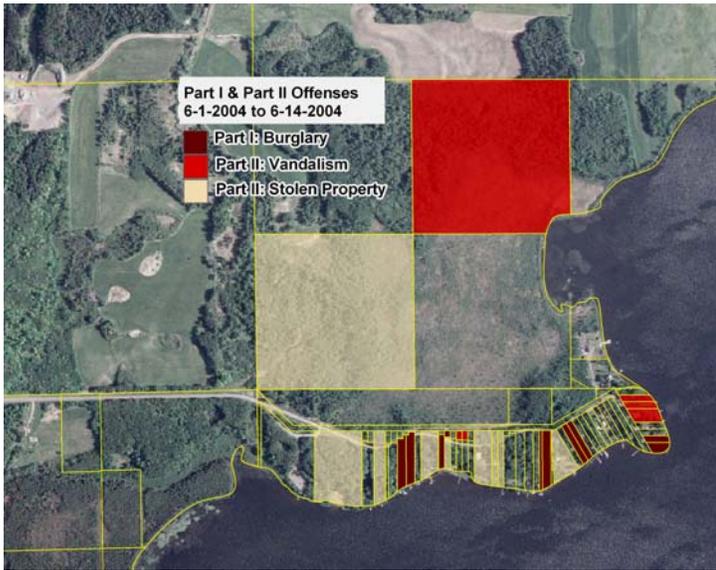
Search and rescue situations require background information to set up search parameters, area details, property ownership, elevation, terrain, and many other factors that can be useful in finding the missing person.

Improves Property Owner Notification

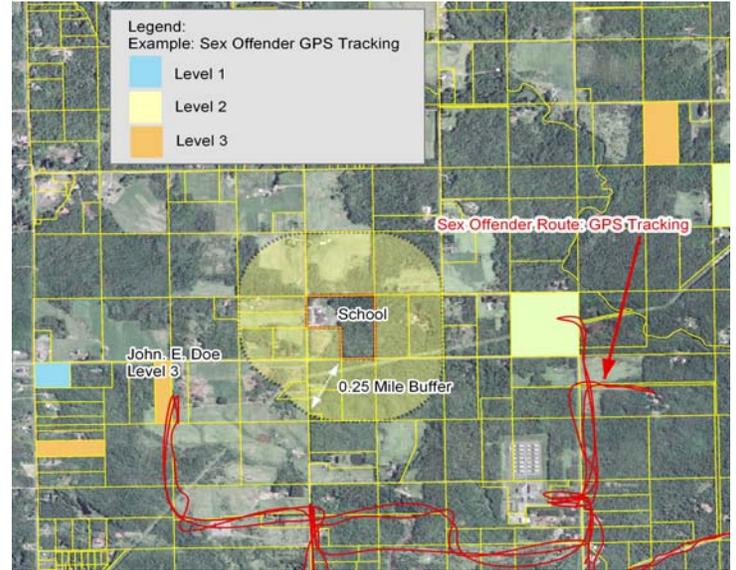
Assists in identifying and notifying property owners who have been burglarized, vandalized, or other forms of property destruction, etc.

Provides Public Information

Citizens can use Law Enforcement GIS information to identify their closest emergency shelter, determine evacuation routes in the event of a natural disaster, or get information on registered sex offenders. Citizens can also develop community policing programs and other initiatives based on shared police and demographic information.



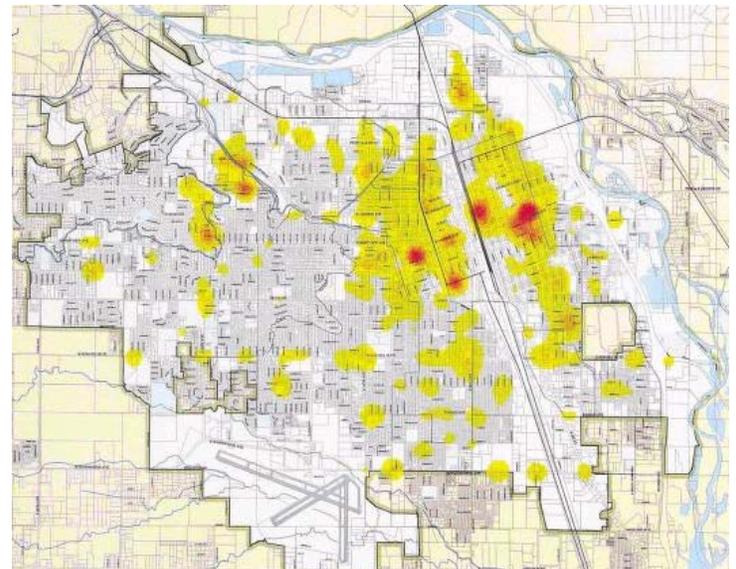
Property Owner Identification: Assists in identifying and notifying property owners who have been burglarized, vandalized, etc.



Improves Public Safety: ARC can use the parcel layer to potentially map and monitor registered child sex offenders. The system can create buffers around areas (schools, day care centers, etc.) so that the system can alert the probation officer of an encroachment into these area by a registered sex offender.



Emergency Management and/or Assists in Search and Rescue: With GIS and the parcel layer, emergency management and/or search and rescue situations can provide detailed information about an area that is experiencing an emergency, or conducting a search and rescue operation.



Crime Analysis: Crime statistics portrayed geographically have the power to solve crimes or assist in patrolling to enhance public safety. Varying methods can be used to display different data in various formats preferred to the end-user.



Roles and Responsibilities

St. Louis County's 9-1-1 Emergency Communications Division provides county-wide emergency and non-emergency, public safety communications services through a consolidated system for dispatching law enforcement, fire, emergency medical, and other public safety services agencies.

Also, 911 conducts rural addressing functions, and provides engineering, technical and administrative support to the County's wireless communications network.

Department Potential Benefits & Use

Improves Emergency Response

In emergency situations, it is critical to respond in the quickest time possible with the best resources to reduce injury or potential tragedy. Matching telephone calls to parcels would improve 911 operations and response.

Assists in Determining Appropriate Response: Provides Dispatchers Enhanced Details about Situation and Landscape

There are 182 different emergency response agencies, thus determining the situation can improve response and save potential resources. With GIS and the parcel layer, dispatchers have the ability to further assess the situation (e.g. aerial photography, water, elevation/terrain, access, nearby trails, wetlands, and nearby property owners for assistance) so that emergency response can be better prepared.

Improves Dispatching & Tracking Emergency Response

Possibilities exist to provide real-time mapping information on police/ambulance locations, its destination, possible routes of travel for the shortest time interval to site, and can identify the distance the emergency response is from the callers location and update the caller as the emergency vehicle approaches.

Identifies Location of Calls or Property Owners

Identifies Exact Location of Cellular Phone Callers

There is an ability for the parcel layer and GIS to combine technology that will pinpoint the location of cell phone callers (lost/injured) in relationship to the overall landscape and situation (GIS/parcel layer). Through this call, a dispatcher can direct emergency response based upon landscape.

Assists Dispatcher Determine Location of Calls with Little Information

There are calls that have no information attached, so dispatchers must determine location of calls or locate property. Callers may not know the exact locations, but do know the property owner of the land they are on. This can quickly help identify or pinpoint the proverbial "hunting shack" to assist in locating the "lost, missing, or late" hunter.

Improves Identifying Owners at Site of Incident

The parcel layer would be particularly useful for burglary & break-in situations by helping locate information.

Limits Mobilizing Search and Rescue Situations & Potential Tragedy

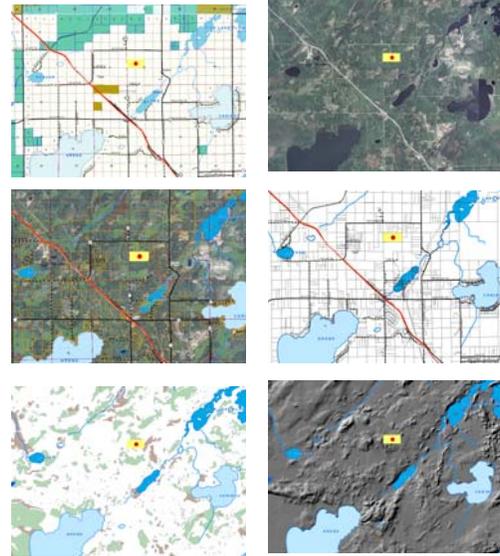
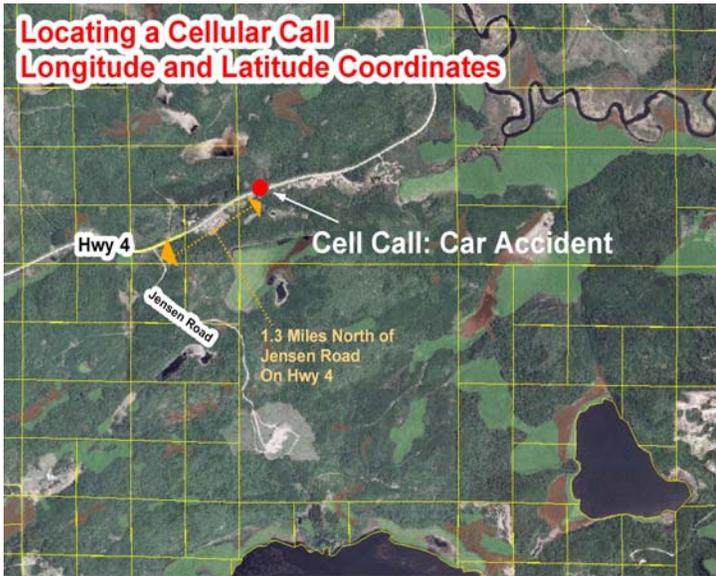
A dispatcher can locate a lost hunter/hiker/camper, watch progress through GPS, and direct them out to safety (around lakes, wetlands, through trails) or to nearby property owners for further assistance. This could limit mobilizing search and rescue operations and potential tragedy.

Improves Evacuation Notification

Provides a method of notifications in situations requiring evacuations (e.g. clearing a particular area due to a gas line break, etc.) by identifying (flagged) vulnerable adults within area for further assistance.

Improves Process to Assign Rural Addresses

Assists in the process of assigning rural addresses to new structures both commercial and residential. Currently, addresses are stamped on a paper map and inserted into the 911 dispatch system.



Identifies Cellular Call Location: GIS can pinpoint the location of a cell phone call by the coordinates in each phone call. In many instances, the call can be linked to a parcel or property if needed.

Assists in Determining Emergency Response: Provides dispatchers enhanced details about situation and landscape, as well as, determines surrounding area through the use of: aerial photography, water, terrain/elevation, access, trails, wetlands, and nearby property owners for assistance.



Current Rural Addressing: Currently, rural addressing is manually put onto a map by typing address on a transparency, then cutting it out, and pasting the typed address onto the map. Prior to addressing the new site, a general lot line or entrance point must be represented.



Digital Rural Addressing: Potential exists to digitally insert new addresses into a parcel layer and automatically transfer into the 911 dispatch system for emergency response. Data can be used by all departments immediately for other activities.

Assists in Rural Addressing: Assists in process of assigning rural addresses to new structures, both commercial and residential. Currently, addresses are stamped on a paper map and inserted into the 911 dispatch system.

1

Dispatcher activates the emergency dispatch system.

2

The system uses the phone number to look up and display the caller's address or location.

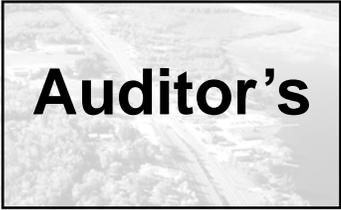
3

Dispatch clicks a button to zero in on the location. The system shades the caller's lot red and displays surrounding lot lines, building locations, and streets. Aerial photography and other GIS layers can be turned on or off.

4

Another button is pushed to display the shortest path from the police or fire station to scene of emergency, or progress of emergency response if Global Positioning System (GPS) is used. Dispatcher can watch as emergency vehicles get closer and determine ETA.

Improves Emergency Response – Dispatching & Tracking: In any emergency response situation, it is critical to respond in the quickest time possible to reduce injury or potential tragedy.



Auditor's

Roles and Responsibilities

The Auditor's Office performs financial accounting administration for St. Louis County and for other agencies; maintains property tax records; and computes, bills, collects and accounts for property and other taxes levied on behalf of the County and its taxing authorities.

The County Auditor maintains the official records of the County Board of Commissioners and handles motor vehicle licensing, driver's license renewals, and passport applications.

The Auditor's Office also conducts fair and impartial elections, redistributing, and other aspects of the election process.

Department Potential Benefits & Use

Converts Parcel Recording from Paper to Digital

Converting parcel recording from drawing on paper to digital form will improve all areas of the Auditor's Office and the County.

Eliminates Book Deterioration: The plat books have deteriorated due to all the handling, erasing, drawing, moving, photocopying, tracing, and shuffling of the books by both staff and residents. Over time, plat book pages turn color, ink fades and bleeds, pages rip, fold, and crumble, and pages fall out, requiring the county to purchase and/or restore the books.

Improves Drawing Accuracy: The Auditor's Office maintains the original county plat books by drawing in new splits, consolidations, and plats by pencil (to scale) onto the existing plat books. This drawing is completed by 3 to 4 staff, increasing the likelihood of errors in drawing angles, lengths, size of parcels, and others. With a digital parcel layer, drawing is precise and easily modified.

One Update: Eliminates Multiple Modifications: As the Auditor's Office updates the paper plat books, other paper plat books across the county are immediately outdated, thus causing conflicts when providing up-to-date information to businesses and residents. There is no current system in place to update all paper maps, since it's an intensive endeavor. With a digital parcel layer, the update is immediate and can be accessed and used by all departments and the public.

Improves Service and Efficiency

Improves Response Time to Data Requests: Every year, thousands of requests are received from residents, appraisers, lawyers, real estate professionals, title companies, and others for parcel data on ownership, parcel location, acreage, last sale date, abstract/torrens, last date document recorded, original plats, maps, land delineation, and lot dimensions (hundreds per month). Difficulties arise when this data is stored in various departments, data platforms (Excel, Access, MCIS, etc), and maps (plat books, range book, Carson maps, half-section maps, U.S.G.S., Certificate of Survey, Township maps, etc.), and cannot be easily accessed. The end result is slower service to customers due to inefficient and outdated technology systems.

Enhances Tracking and Updating Information: A parcel layer can easily track and modify information as new and additional information is recorded and provided by the residents. This information could be easily and immediately accessed by all.

Eliminates Antiquated Process for Public Notification (Generating Owner Labels): The Auditor's Office assists cities in developing mailing labels for public notification for variances and other development activities in order to notify adjoining property owners within a certain buffer. This antiquated process takes up hours to days for each query request. A parcel layer would significantly reduce the time for this process or can be completed by requesting city.

Web Portal: Enhances Access 24/7: To some degree, access is available through the current parcel information web site. However, many of the data requests are geographically based and are not easily accessible by the current setup. Through a geographically based parcel layer coverage, a business or resident can use the web site any time of the day to conduct research that otherwise would be handled by county staff on the phone or at the front counter. This will greatly enhance services for commerce and residents who request data.

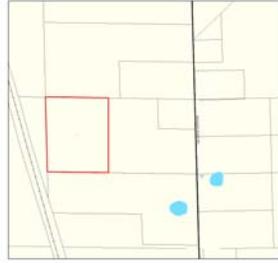
Assists in Election Process

The parcel layer and GIS assists the planning efforts in redistricting, reprecincting, projected growth for each precinct, voter analysis, voter education, voter counts, voter turnout, precinct election support, determine optimal polling sites, improving voter registration process, election day support of volunteers, and others.



Current Process (Drawing Parcels): Currently, parcels are drawn by a pencil and a ruler on a scale that is almost impossible to get accurate.

Property lines, arcs, lengths, angles are all drawn by staff. Difficulties arise as the maps deteriorate.

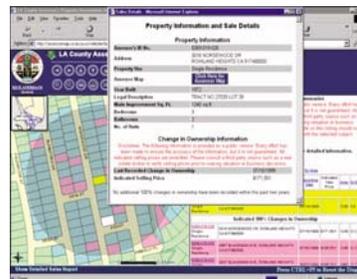


Proposed Process (Drawing Parcels): With digital drawing, the exact lengths, angles, and arcs can be specified and drawn with precision. In this scenario, a parcel is highlighted and the split is drawn in at the exact length, arc, or angle. Once drawn, all county departments and jurisdictions can use or access this new parcel for additional county functions such as: assessing, permitting, addressing (911), taxing, and a host of other functions.

Paper to Digital (Parcel Drawing): The Auditor's Office draws new splits, consolidations, and plats by pencil (to scale) onto the existing plat books. This is completed only for the Auditor's set of maps. Drawing is completed by 3 to 4 staff, increasing the likelihood of errors in drawing angles, lengths, size of parcels, and others. With a digital parcel layer, drawing is much more accurate, and can be used by all.



Current Data Lookup- Books, Files, and Databases: Information is stored in various formats such as: books, files, databases, and in other departments. Each request is a time consuming endeavor. A simple request can actually be complex.



Potential Data Portal: Potentially, the parcel layer will be able to link and provide data in one-stop-shop format. Each county department can link databases to the system, thus providing information quickly and seamlessly.

Assists in Election Process: GIS and the parcel layer can assist in the election process of St. Louis County by providing assistance in polling locations, redistricting, reprecincting, distribution, growth forecasts, voter education, voter turnout, registration, and much more.

Improved Service and Access: Thousands of information requests are processed for businesses and residents. However, the current system is antiquated and needs updating. Staff must cross-reference numerous databases and maps such as: Plat maps, U.S.G.S, 1/2 Section maps, Range books, Carson map, Certificate of Survey, and Township maps.



Assessor's

Roles and Responsibilities

The Assessor's Office is responsible for equalization of assessments throughout St. Louis County, excluding the City of Duluth. This is accomplished by listing, classifying, valuing all real property and personal property subject to the property tax, advising the local jurisdictions on assessment matters, conducting statistical studies to test the accuracy of the assessment ratios, providing programs, procedures, policies, and maps to assist and audit staff and local assessors in their work, preparation of appraisals and supporting documentation for the County Board of Equalization and Tax Court appeals, and advising the County Board of the uniformity of assessments to accomplish county-wide equalization.

Department Potential Benefits & Use

Fair and Equitable Assessment

A parcel map would help both county and local assessors to locate parcels from various points of view that affect value and classification. Such points of view include location with regard to access (roads, water, trails); location with regard to man-made features both good (parks, malls, hospitals, schools) and unpleasant (active gravel pits, junkyards); location with regard to natural features both good (lakes, rivers, panoramic views) and bad (erosion areas, low lands subject to seasonal flooding); location with regard to market trends (changes in demographics, investment opportunities); and location with regard to legal use (zoning laws, habitat restrictions).

Improves Real Estate Record Analysis:

The Assessor's Office receives innumerable amounts of data requests from real estate professionals researching information on comparable sales, acreage, bath and bedroom counts, assessments, taxes, land values, price per acres, and a host of other facts. Such data requests have made the Assessor's staff de facto research assistants. A parcel layer could substantially reduce the number of these requests.

Improves Assessment Tracking and Analysis

Improves Sales Trend Tracking: A parcel map can be used to display such sales trends as price paid per acre or front footage, depreciation of existing buildings as markets heat up or cool off, effects of recent changes in legal use on a market, influx of out-of-county buyers, conversion of parcels from one use to another. Such displays can be used by assessors to write valuation schedules and by taxpayers to judge the reasonableness of their market values and the reasons behind increases/decreases.

Provides Ability to Match Undocumented New Construction & Structures to a Parcel:

An appraiser who comes across undocumented structures, or first-time new construction, can use the parcel layer to identify the parcel and its owner.

Improves Auditing Assessment

Enhances Administration Functions: A parcel map offers a visual auditing tool to establish plans for and signs of progress in such assessor functions as property re-inspections, homestead processing, sales verification, requests for review, appraiser work loads, responding to appeals, and taxpayer notification.

Provides Equalization Support: Parcel maps can display assessed values of parcels side-by-side throughout a neighborhood, township, or region. Assessors can compare, for instance, the consistency of their estimated market values on contiguous 40-acre parcels, or platted lots.

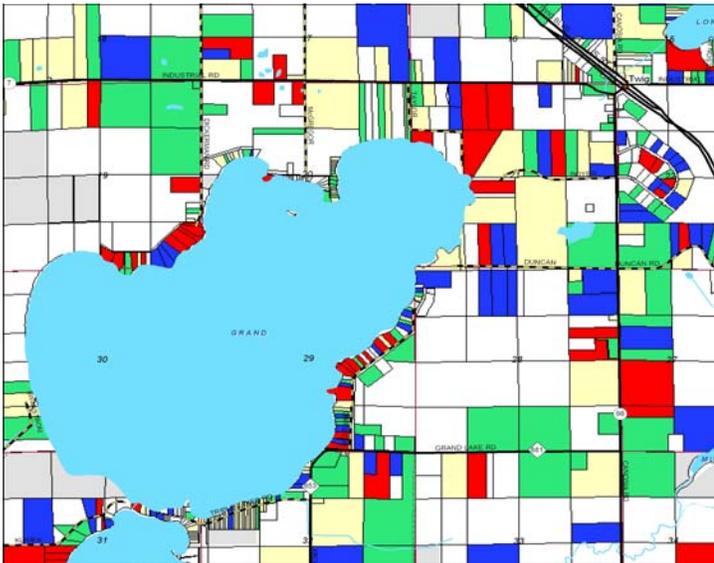
Assists Board of Appeal and Equalization: A parcel map would help appeal board members to "get their bearings" as taxpayers come in one at a time and appeal the value/class on a particular parcel. The map would also help the board make judgements with regard to locale, neighboring influences, and so on.

Improves Service and Efficiency

Improves Response Time to Data Requests: With a parcel layer, data can be linked through a web portal to reduce information requests by phone calls, walk-in, and e-mail questions regarding basic assessment data. A web site using a parcel map allows the internet user to drill down to the parcel level to find such information and compare properties. This would significantly reduce employee time devoted to data gathering.

Improves Public Notification

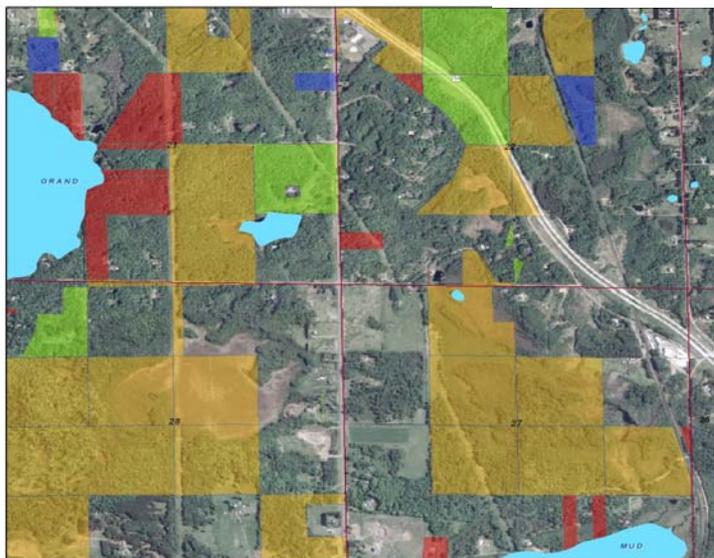
Improves the process of public notification for a variety of activities.



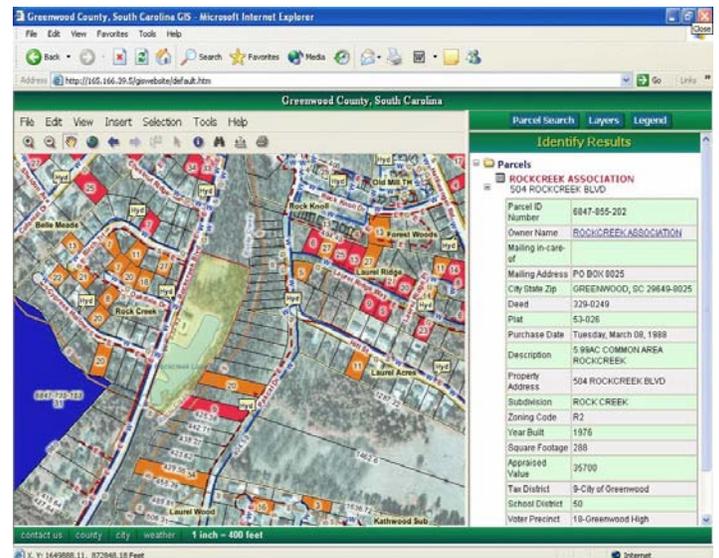
Analysis: Sales to Assessment Ratios: By law, assessments must be within 90-105% of sales prices. The parcel layer will assist in determining areas above or below ratios, and the potential need for adjustments.



Fair and Equitable Assessment: Locating comparable properties with building and land features can be difficult. This process is simplified with a parcel layer by being able to link comparable properties with similar features, improvements, and sales activity.



Analyzing Sales Trends: A history of the sale prices paid per acre for unimproved land can be shown and analyzed for better assessment equality.



Improves Real Estate Records Management: The Assessor's Office provides information to real estate professionals such as appraisers, title companies, real estate agents, etc. Information includes comparable sales, acreage, bath and bedroom counts, assessments, taxes, land values, price per acre, and a host of others. The parcel layer can automate most of these requests.



Roles and Responsibilities

The Planning Department is responsible for a broad range of activities from infrastructure improvements to traditional land-use planning, administration and enforcement of traditional land-use zoning regulations and associated permitting requirements, housing development, economic development, administration of CDBG, ESG, FHPAP funds, SuperNOFA, and working with other county departments to conduct planning studies and analyses.

Department Potential Benefits & Use

Streamlines the Land-Use Permitting Process

Currently, land-use permitting requires residents to provide a lot description when applying for a permit, and to determine setback requirements for each proposal. Problems arise when residents have lengthy legal descriptions with various dimensions and angles, making it difficult to determine lot dimensions over the phone or e-mail. By developing a digital parcel layer, staff can quickly identify parcels and their geographical representation in relation to lakes, rivers, roads, and other features.

Eliminates Zoning—Parcel Overlap

Many times outlines of zoning districts conflict with resident lot lines for a particular parcel. This causes residents to have multiple zoning classifications for one parcel, resulting in confusion and frustration. In the past, some parcels have had up to 3 different zoning classifications for one parcel. This creates potential legal ramifications for the county. A digital parcel layer would make it easier to have zone classifications follow parcel lines, rather than through parcels.

Improves Long-Range Planning

Every community in St. Louis County has a comprehensive plan that is administered by the county or local jurisdiction. These plans are based upon an array of information, trends, and input. A digital parcel layer further assists residents and government in making informed decisions based upon sound data, such as an existing land-use map, proposed zoning map, etc.

Enhances Economic Development

St. Louis County has expanded its role in economic development over the past several years through the adoption of economic development strategies. However, its capacity to conduct pre-planning and research to bring development into reality is limited without a parcel layer map. A digital parcel layer will assist business research and assess potential sites for business and commerce. All entities are limited in assessing sites because of the research needed to determine ownership, routes of infrastructure to minimize impacts and cost, and many others.

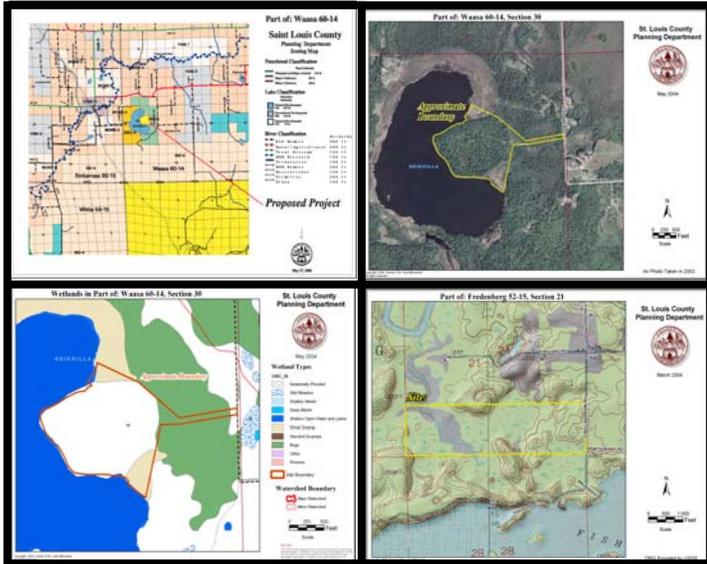
Improves Map Generation and Dissemination

The Planning Department prepares a general set of maps for the Board of Adjustment (BOA) and Planning Commission. These maps identify the site with various backgrounds such as: zoning, wetlands, aerial photography, elevation, etc. Currently, staff must draw in the legal representation of the parcel and then create the maps. A digital parcel layer will reduce the amount of time it takes to generate the maps since all parcels are stored electronically. This process is done over a hundred times a year.

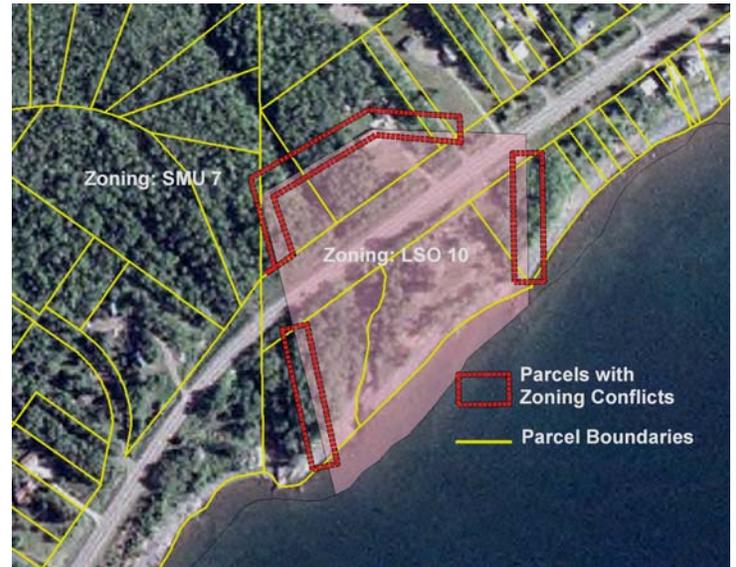
Improves Public Notification

Public notification methods for conditional-use and variance requests are antiquated. Currently, when the Planning Department receives a request for a conditional-use permit (e.g. commercial, sales, service) or variance, the department must notify adjoining landowners and landowners within a specified vicinity. For example, to do a plat notification (1/2 mile radius from project), staff must: 1) highlight the area on paper copy from the plat book and identify 1/2 mile radius; 2) identify plats through the plat index book; 3) list plats, sections, etc., of area specified on paper; 4) identify homeowners from Minnesota Counties Information System (MCIS) and copy them to a document to generate labels. This process takes an enormous amount of staff time and is a process conducted several hundred times a year.

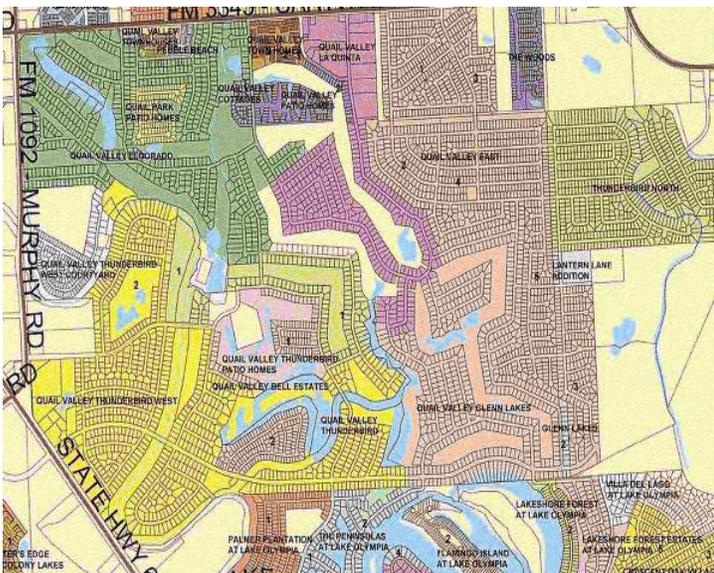
A digital parcel layer will greatly reduce the amount of staff time it takes to determine and notify adjoining property owners.



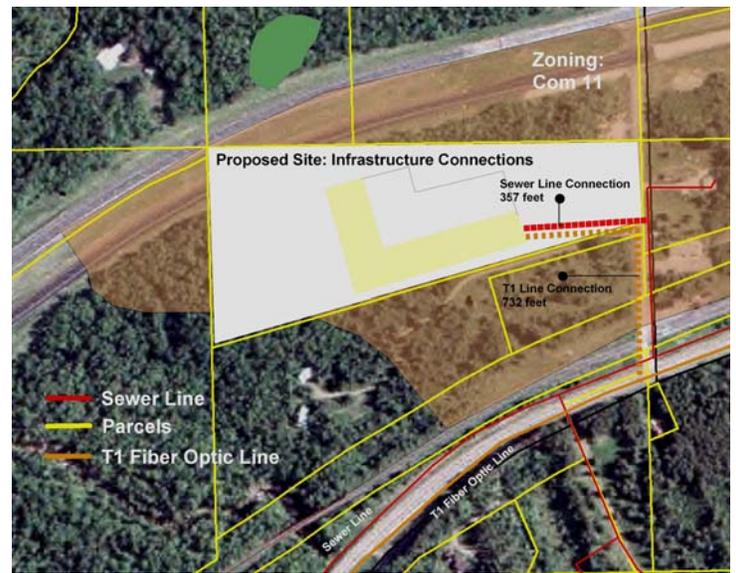
Site Review and Information: The BOA and Planning Commission require a set of basic maps that identify the site with various backgrounds such as: zoning, wetlands, aerial photography, elevation, etc.



Zoning—Parcel Conflicts (Overlap): In many instances across the county, zoning outlines do not follow property lines causing confusion in determining correct zoning district based upon intention.



Long Range Planning: A parcel layer is a useful tool in assisting to develop long-range plans for communities. Any type of data can be attached to a parcel, and maps generated. These maps can show trends, problem areas, density, and a host of other details.



Economic Development: The parcel layer can quickly identify property boundaries and distances to infrastructure hook-ups. It can be useful for businesses retention, recruitment, and expansion.



Recorder's

Roles and Responsibilities

The St. Louis County Recorder provides protection and public notice by recording, indexing, maintaining and displaying records of legal Documents, and issuing and updating certificates of title.

The County Recorder accepts for recording over 150 types of legal documents, most of which pertain to real estate or personal property. The office maintains many indexes where one may research information by legal description, name or document number. The office accepts for filing and issues copies of military discharges, and state and federal tax liens. The department also issues certified copies of birth and death records.

Department Potential Benefits & Use

Improves Review Processes

Currently, when examining documents, the Recorder's Office in many instances must access maps and data in other departments to complete a review and determination of a document. This method slows down the process and ties up staff in several departments. For example: the Examiner of Titles and the Recorder's staff must review maps from scattered sources when examining and reviewing documents. Often they must physically go to the Auditor's Tax Department or call the County Surveyor's office, causing additional staff workload in all departments. With the parcel layer, Recorder's staff can internally review documents, saving time for both departments.

Assists in Certificate of Title Determination

A review of a parcel layer will assist Recorder's staff in assessing the need for a residue certificate of title as part of a transaction.

Enhances Business Interaction

The Recorder's Office records documents and creates certificates that many businesses seek for its normal business transactions. These businesses are title companies or attorneys doing title searches, abstracts, owners and encumbrance reports, title insurance, and much more. With the parcel layer, a business can quickly query and locate a person or property (by address, legal description or clicking on property—the latter of which currently does not exist), and begin the review process. This improves the efficiency of the businesses and reduces the amount of time county staff spends helping businesses locate a site.

Assists Cleaning-Up Parcels with Clouded Property Titles

Many developments are well down the road of securing private and public dollars, permits, and bids only to hit an obstacle of a clouded property title. Title problems can be expensive, cause delays, or kill a project. There are key parcels in Duluth and other communities that remain undeveloped in part because clearing the title can be cumbersome, and the city or developer is unwilling to take on the responsibility of clearing title.

Improves Service and Efficiency

The parcel layer will assist Recorder's Office staff in their daily work. Any tool that allows improved efficiency in the Recorder's Office will help to diminish the County's liability for an extended backlog.

Quick Drill Down- Improves Ability to Review Documents Quickly & Easily:

The parcel layer will dramatically improve the ability of Recorder's staff, businesses, and residents to quickly search, locate, and review a wide range of legal documents. Currently, there is no ability for searches by address, which causes problems (additional research) of locating the correct documents filed on a particular property.

Improves Response Time to Data Requests:

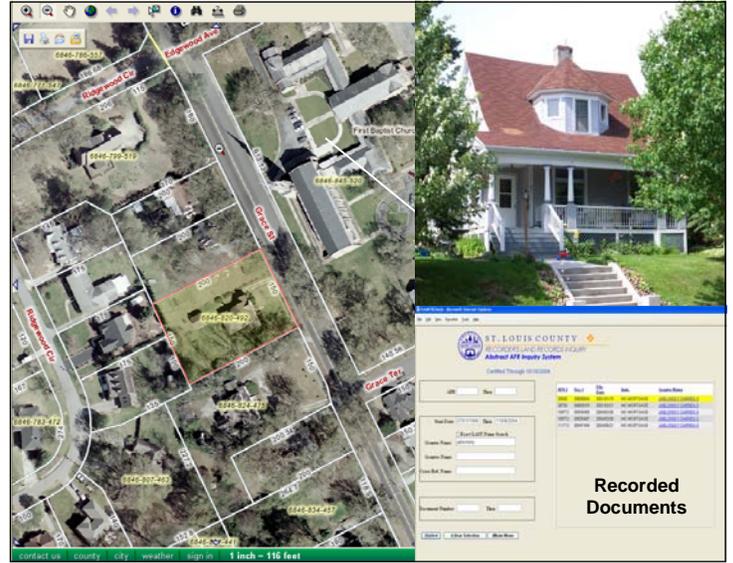
The Recorder's Office receives innumerable phone calls, e-mails and written requests from people looking for objective data such as lot size, recording data of documents, whether Torrens or Abstract, and the existence of liens or encumbrances. With the parcel layer, recorded documents and data can be quickly searched and located, thus reducing the amount of time for each request.

Web Portal: Enhances Access 24/7:

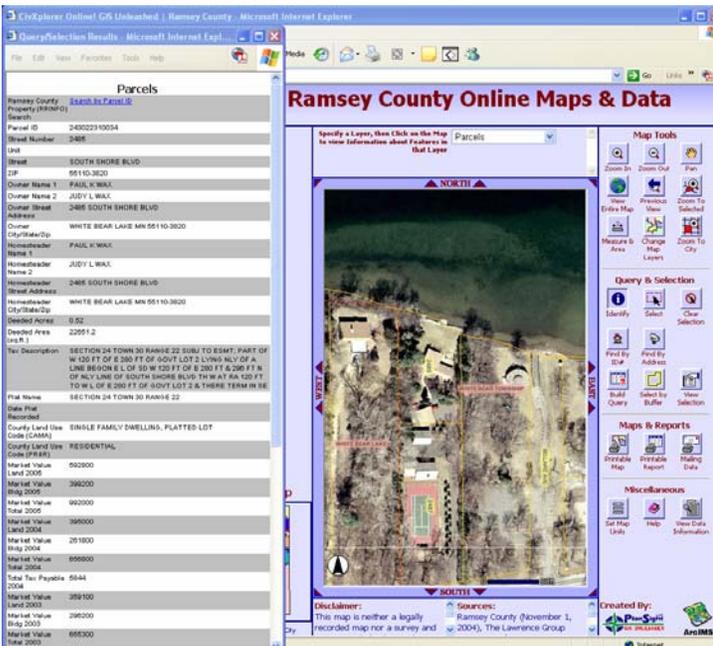
A web site using a parcel map that allows the internet user to drill down to the parcel level to find such information would significantly reduce employee time devoted to such mundane data gathering. With the web portal, many queries can be conducted when County offices are closed, thus providing an invaluable service to businesses.



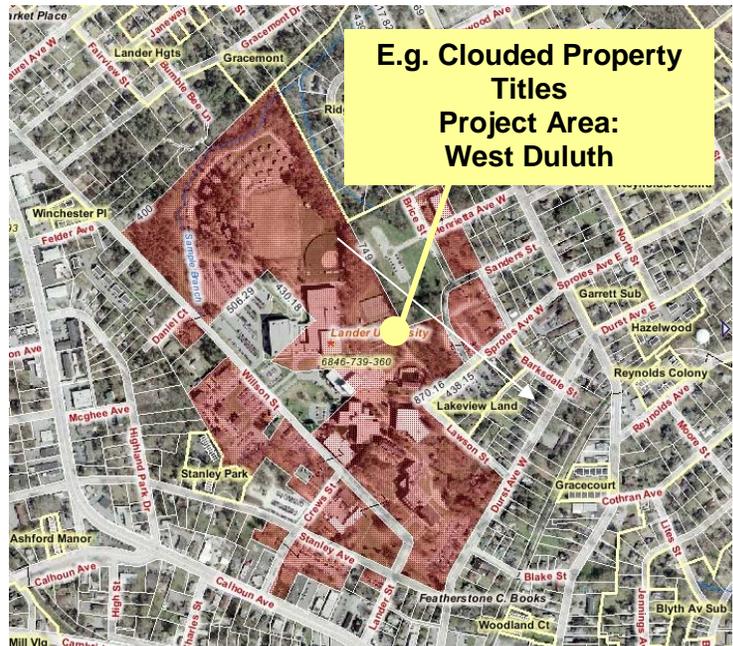
Improves Review Process: The parcel layer provides the possibility for the Recorder's Office to conduct a review and determination of a document prior to recording. This will save the time of going to the Auditor's Office and tying up staff of both departments.



Quick Drill Down: Improves Ability to Review Documents Quickly and Easily: Business and county staff can quickly drill down to locate a property for any recorded documents, saving county time and improving business productivity.



Improves Service and Efficiency: The Recorder's Office receives many questions regarding other aspects of the property outside of its core responsibilities. The parcel layer provides the Recorder's Office with the ability to quickly provide Recorder data and other data, thus improving service and efficiency.



Assists Cleaning up Parcels with Clouded Property Titles: The City of Duluth has many properties with clouded title problems in areas such as: Bayfront, Spirit Valley, Oneota, and others. The parcel layer will provide some assistance in cleaning the problems up.



Land

Roles and Responsibilities

The St. Louis County Land Department is an enterprise operation which generates a cash flow that exceeds expenses. This direct financial return is distributed to the County, cities, school districts, and townships. The Department is responsible for the management of 900,000 acres of tax forfeit trust lands. Income sources include land and timber sales.

The Land Department's professional staff is responsible for maintaining a modern and progressive land management system, to protect the availability of resources to help meet local demand, and to contribute to local economic stability. The goal of the Department is to protect and nurture St. Louis County's natural resources for future generations.

Department Potential Benefits & Use

Improves Forest Resource Management

Currently, the Land Department maintains its own tax forfeit trust lands parcel layer which serves as a base for the forest cover type layer. The cover type layer is the principle layer the department uses for managing 900,000 acres of tax forfeit trust lands. A county wide parcel layer would eliminate the need for the department to maintain its own parcel layer, and would help the department in its landscape level planning efforts in identifying adjacent owners whom the department can take into consideration in developing its long and short term plans.

Assists in Suitability of Sale and Exchange

One of the responsibilities of the Land Department is to classify the tax forfeit lands as to their suitability for management, sale, exchange or conveyance. Knowing the public and private ownership patterns adjacent to tax forfeit lands greatly assists in this classification.

Improves Management of Urban Tax Forfeit Parcels

Currently, urban tax forfeit parcels are indicated on paper maps or not at all. A parcel layer would assist in identifying areas where trash and trespass on tax forfeit parcels is a problem. Having a readily available map of the parcel locations would improve the efficiency of inventory and periodic inspection of these parcels. Overlaying the parcels with topographic features, water features and aerial photos would assist with the classification of these parcels as to future disposition.

Enhances the Tax Forfeit Land Sales Process

A parcel map would help in the land appraisal process by enabling the appraiser to use the County Assessor's data and other location data more efficiently. Adjacent and similar parcels could be easily brought up for display and analysis. Sale maps would be easier to prepare and automated processes could be set up to display these maps on the internet. Many of the processes the Land Department now has to manage its tax forfeit parcel database would be eliminated or simplified as these processes would become part of the county wide parcel layer database. Duplication of databases would be eliminated as a parcel layer would provide a link to the other parcel related databases in the Auditor's and Recorder's office.

Improves General Administration

Locating Tax Forfeit Parcels: Locating tax-forfeit parcels can be challenging at times. Many residents and businesses want information regarding public lands. The parcel layer will allow county staff, residents, and businesses to quickly identify parcels and details about the land.

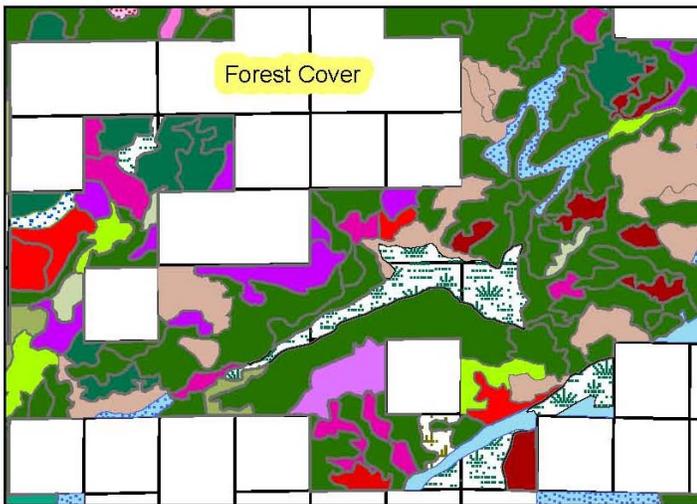
Improved Notification of Adjoining Land Owners: Public notification systems for land sale requests are antiquated. The parcel layer would provide the ability to quickly and easily identify adjoining property owners for public notification.



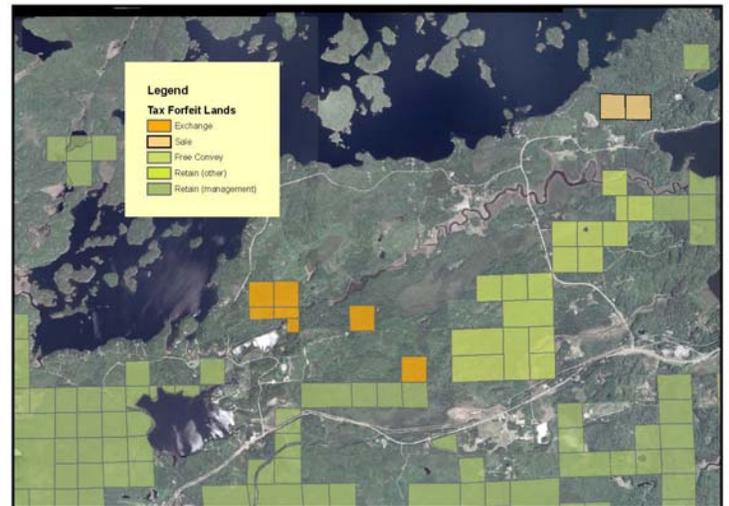
Tax Forfeit Land Sales: One of the key components to the Land Department's land sale program is the preparation of sale maps available both in paper form and on the county's web site.



Management of Urban Tax Forfeit Parcels: Knowing the location of the urban tax forfeit parcels is important both for efficient scheduling of inventory and inspections of parcels, but also for their classification as to their future disposition.



Improved Forest Management: A parcel layer is the foundation for all of the department's spatial data layers, the principal of which is the forest cover type layer. This spatial database is used for the departments forest management activities ranging from long term landscape level planning to daily on-the-ground activities.



Suitability for Sale or Exchange: Classification of tax forfeit lands for management, sale or exchange is one of the duties of the Land Department. A county wide parcel layer would improve this process by providing more information on the nature of adjacent parcels.



Public Works

Roles and Responsibilities

Public Works provides safe and well-maintained road and bridge systems that will insure reliable and convenient access to County services, facilities, recreational and natural resource areas and employment centers, to enhance the quality of life of St. Louis County residents, and to promote the economic development of the area.

Public Works is responsible for planning, surveying, designing, constructing, and maintaining a road system encompassing 3,000 miles of County highway and 938 bridges.

Department Potential Benefits & Use

Improves Parcel Research and Right-of-Way Acquisition

Assists in Parcel Research: The parcel layer will be useful in gathering data and details on a parcel quickly and easily through a future web portal. Currently, Public Works accesses various forms of information from various county departments, which takes considerable time and effort. This information includes: *Assessor's*- parcel sale information, value, classifications; *Auditor's*- ownership, legal description, size, plats, board resolutions; *Communications*- addressing and road names for notification; *Health*- septic information; *Land*-Tax forfeit land information for borrow pits, etc; *Planning*- zoning, set backs, lot requirements, etc.; *Recorder's*- recorded documents (deeds, etc.).

Preliminary Determination of Right-of-Away Acquisitions: In county road projects, right-of-way needs are assessed and researched. The parcel layer provides the ability to quickly determine preliminary impacts.

Minimizing Property Impact: With a parcel layer, any new road plans, expanded roads, capital improvements, or borrow pit development can be routed or drawn preliminarily to minimize parcel impacts. It can help in assessing the potential level of administrative duties needed, based upon number of properties impacted.

Improves Identifying Right-of-Way Encroachment

The parcel layer has the ability to highlight areas where property owners who are encroaching (building structures, or impacting) on public right-of-ways.

Survey Monuments

The parcel layer can be useful in identifying locations of survey monuments in relationship to township, section, quarter-quarter, and parcel lines. Survey monuments will be used to draw the parcel layer and updated as new survey monuments are obtained.

Improves Entrance and Utility Permit Process

Provides expanded ability to improve the overall process for businesses and residents to determine road classification and contact numbers to obtain a road entrance permit. It also assists staff in determining culvert sizes of adjacent property, history of area culverts and upgrades, development activity (new plats, structures) for assessing potential additional run-off, and determining culvert sizes for a particular project.

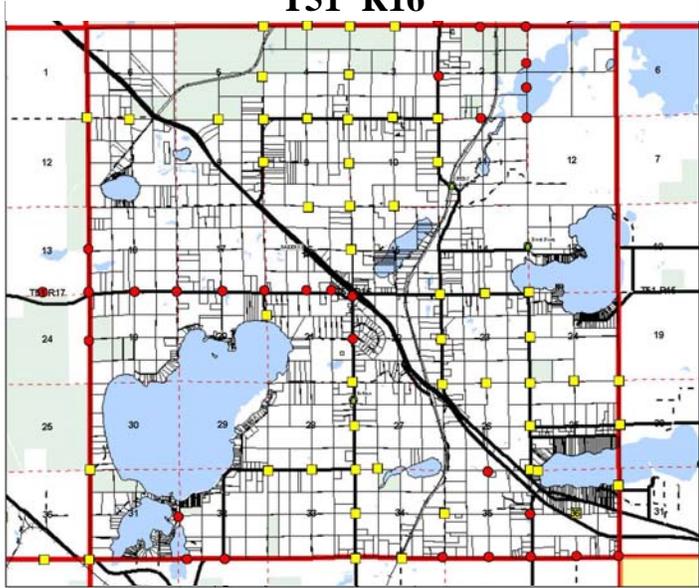
Improves Public Access to Information

The public seeks a host of information regarding existence of right-of-way, width, scope, impacts, and other general questions relating to right-of-ways, projects, etc. A future web portal can answer many of these questions quickly and easily.

Improves Public Notification

Public notification would be improved for a variety of road and bridge projects. Currently, Public Works expends hundreds of hours a year sending public notifications to adjoining or impacted property owners. The parcel layer would dramatically reduce the number of hours staff allocate to this notification process.

T51 R16



SLC LAND SURVEY DIVISION/PUBLIC WORKS
 Jun 12, 2003
 Legend:
 - GOVERNMENT CORNER CERTIFICATE WITH GPS COORDINATES
 - GOVERNMENT CORNER CERTIFICATE NO GPS COORDINATES
 - PUBLIC LAND PARCEL
 - FBN HARN
 - HARN TIE
 - HARN
 - SLC Secondary Control
 - Utah County Public Works GIS

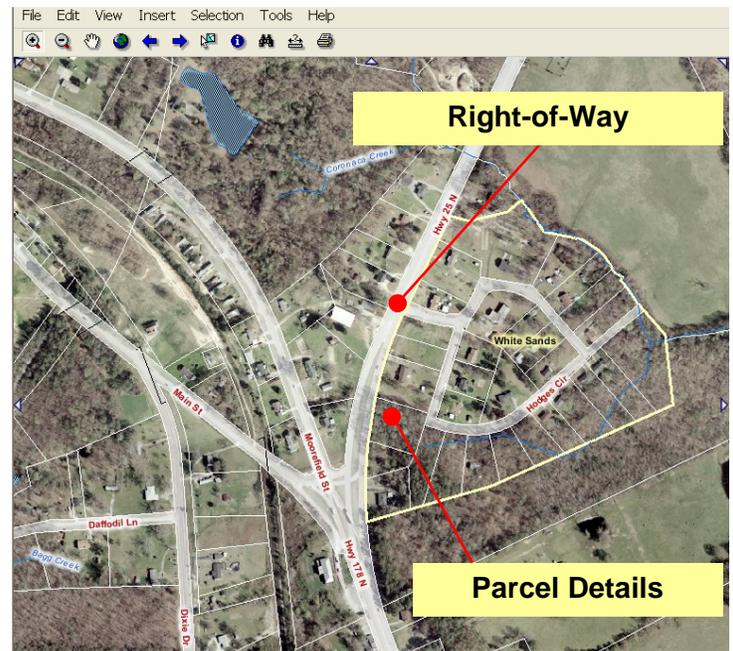
Identifying Monumentation: Identifying monuments is critical in all aspects of surveying. A parcel layer can identify monumentation in relation to property. Parcel layer will be adjusted to reflect recertified monuments.



Preliminary Design and Planning: The parcel layer offers some planning and analysis activities (that could be used in conjunction with AutoCAD) to maximize resources while minimizing impacts. The parcel layer could be exported to AutoCAD and used as a reference guide for further planning activities and design functions.



Identifying Property Encroachment: The parcel layer helps identify property encroachment on public right-of-ways (fee and easement) and assures that buildings, septs, wells, etc. are not built on the right-of-ways.



Verifying Right-of-Way and Researching Parcel Details: In many instances, Public Works must gather information on right-of-ways and impacted adjacent properties. The parcel layer could provide a quick and easy avenue to research and verify various forms of information.



Roles and Responsibilities

The Management Information System (MIS) Department, an internal service, plans and provides information systems for St. Louis County Departments. This is accomplished by providing systems and programming, computer hardware and operations, telecommunications and technical support for the entire County.

Department Potential Benefits & Use

Improves Existing Infrastructure Support

To support existing facilities, MIS needs to know where telecommunication wires (fiber optics, cable, T1, etc.) and utility lines (electric, gas, water, sewer, etc) are coming across the property, and where they are connected to the building. The parcel layer would provide additional details of where these lines exist in relation to parcel boundaries, line connections into building, ownership of parcels, and distance of lines. Problems of drilling into lines in the ground have occurred in the past.

Enhances New Infrastructure Planning

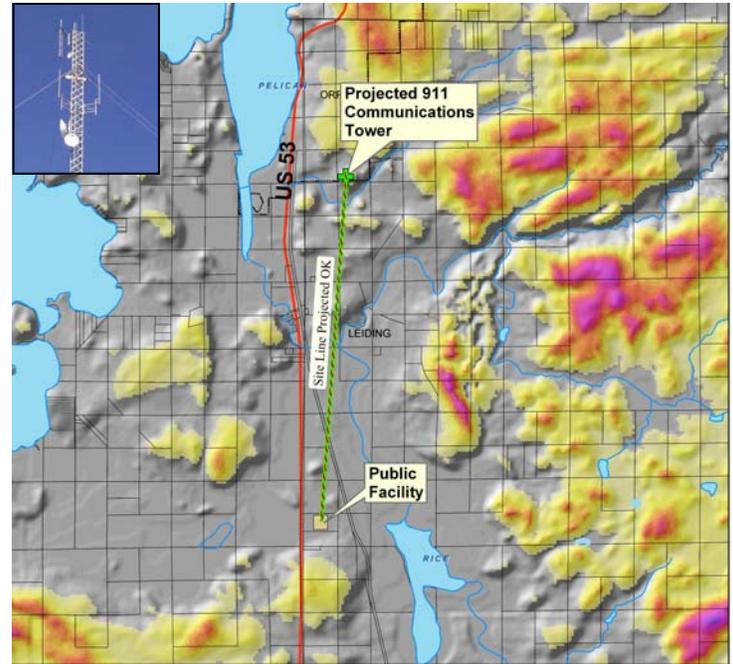
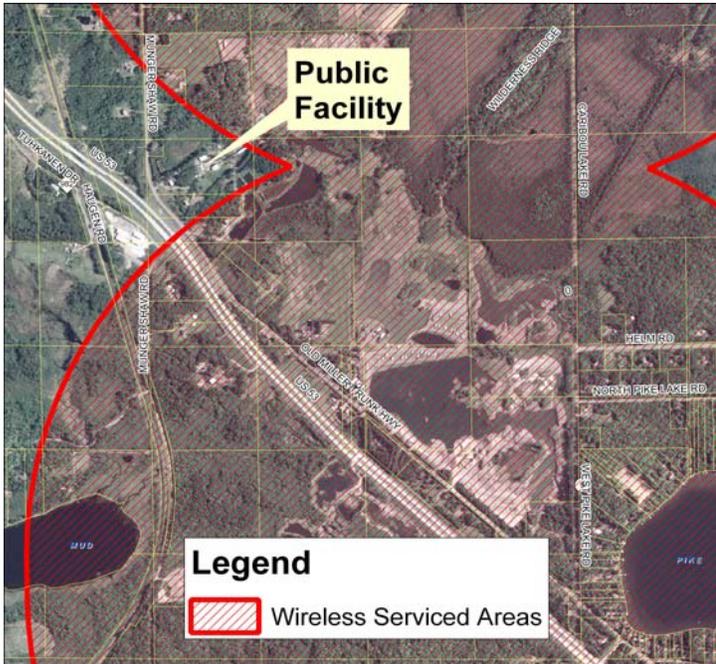
In any new facility, MIS must determine the cost and availability of telecommunication wires, wireless capabilities, and utility lines to a new site. A parcel layer would provide assistance in determining route of new lines based upon parcel boundaries, cost based upon distances, potential gaps in wireless transmission, ownership of land, and many other details needed to assess a site for telecommunication technology.

Provides Quick Drill Down

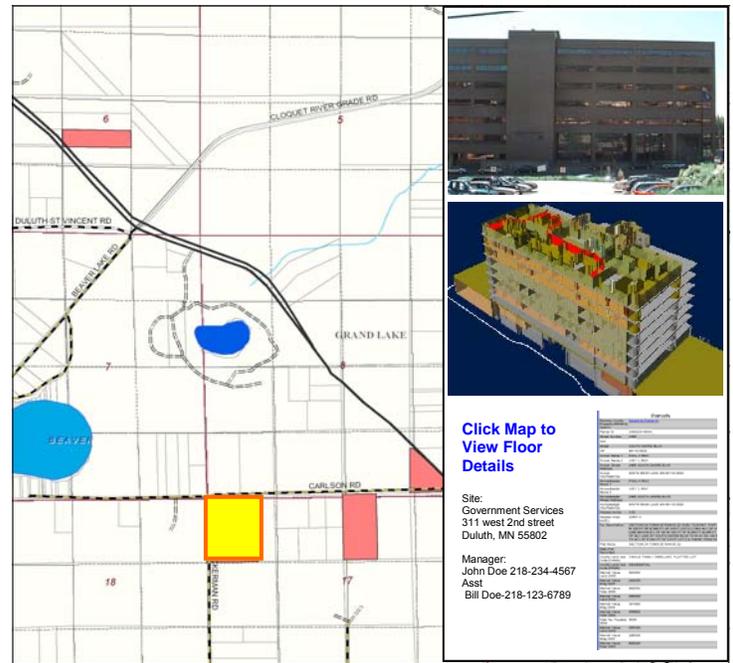
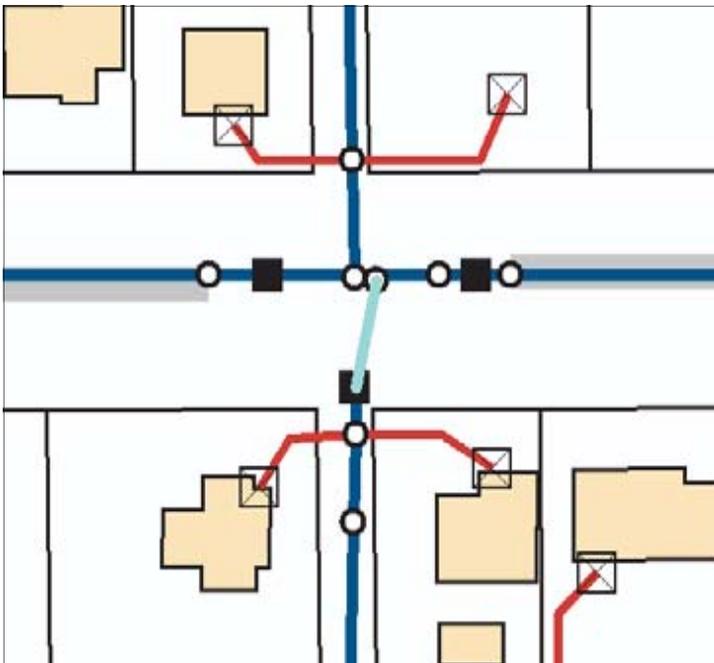
MIS could use the parcel layer as a mechanism to quickly drill down to determine existing and needed infrastructure at sites and in the building. MIS has many requests (phone calls, e-mail, etc.) on building and site infrastructure. With the parcel layer, staff can quickly drill down to a particular building to determine the requested information across the entire county, enhancing department productivity and efficiency.

Identifies Existing Services & Gaps in Services and Barriers

In many instances, MIS is implementing wireless, radio, and other technology for an array of county functions. However, for it to work properly, many barriers or challenges (terrain, elevation, etc.) must be addressed. With the parcel layer and additional GIS layers, this review and research will be improved by assisting MIS in determining gaps in service (wireless), terrain barriers for radio line-of-sight, and a host of other details.



Identifies Existing Services & Gaps in Services and Barriers: In many MIS duties, it is critical to identify existing gaps in service or identify service needs such as wireless services or terrain issues for line-of-sight frequencies. With the parcel layer, MIS can overlay and display potential barriers in terrain and areas with service delivery problems.



New and Existing Infrastructure Support: The parcel layer provides the ability for MIS to identify where existing telecommunication infrastructure comes into buildings and the relationship to parcel boundaries. By identifying existing infrastructure, MIS can quickly determine how to route a new telecommunication lines or minimize potential damage to existing utility and other infrastructure in the ground.

Quick Drill Down: The parcel layer provides MIS with the ability to quickly drill down to facilities and bring up details and specification regarding those facilities, saving time searching for facilities when questions arise.

Maps are only for example purposes



Property Management

Roles and Responsibilities

Formerly a division of Administration, the Property Management Department is entrusted with administering and maintaining St. Louis County's public buildings. These include the County's National Register of Historic Sites, Courthouses in Virginia and Duluth, the Hibbing Courthouse, the Ely Government Services Building, the St. Louis County Heritage and Arts Center (The Depot), and numerous other owned or rented facilities.

Department Potential Benefits & Use

Improves Management of County Facilities and Fee Lands

St. Louis County owns an estimated 200 buildings, including the Courthouses in Duluth, Virginia, and Hibbing. Property Management is creating a database which will contain information on all County facilities, such as square footage, year built, HVAC data, parcel size, address, and photos.

Furthermore, the County has approximately 1,200 parcels of fee land. Property Management has created a database with information such as parcel size, address, legal description, and miscellaneous notes. The parcel layer will provide an effective and beneficial tool to manage these buildings and fee lands.

Assists in Assessing New or Expansion of Public Facilities

In many instances, Property Management must research and review many variables in a new site or expansion of a site. The parcel layer and GIS will enhance the ability to review sites quickly and more thoroughly, and provide the department with the ability to overlay other GIS layers (gas, water, sewer, cable, telecommunication, electric, zoning, elevation, wetlands), with new layers based upon distances to day care, medical facilities, amenities, etc.

The parcel layer will also assist in determining needed property acquisition, facility impact and analysis, right-of-way needs, utility costs based upon distances, and much more.

Improves Review and Sale of County Facilities or Fee Lands

By developing a parcel layer, staff can quickly identify county facilities and fee lands, and geographical representation in relation to lakes, rivers, roads, gravel pits, utilities, State forest lands, tax forfeited lands, and municipal lands. Staff will be able to access zoning restrictions, covenants, and easements. This information will help determine if a parcel must be retained by the County, or can be sold.

Improves Notification of Adjoining Land Owners

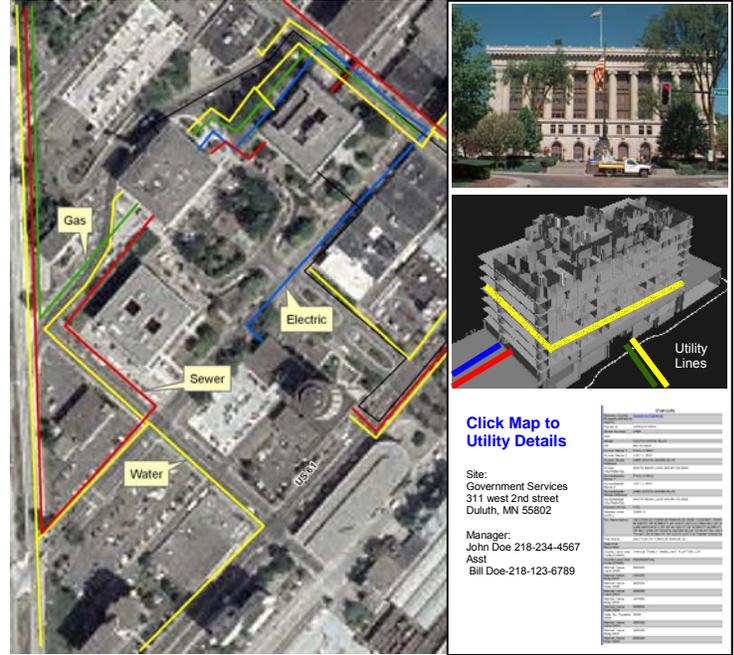
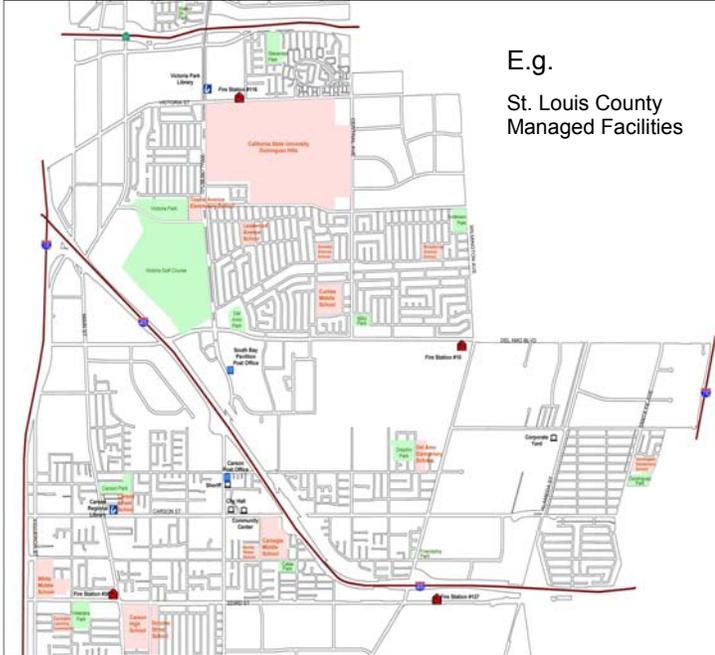
A parcel layer will assist in identifying and notifying adjoining and nearby land owners who may want to bid on County fee land, or facilities that are for sale.

Provide Public Information

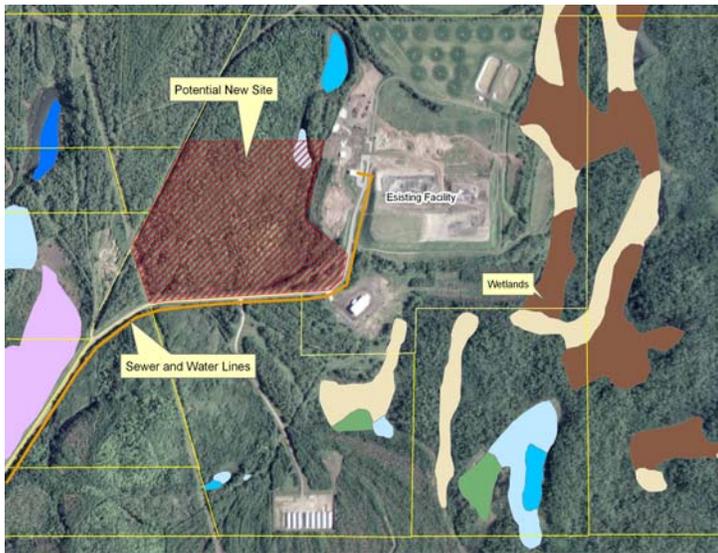
Citizens can use the Property Management GIS information to identify County fee lands for further details.

Provides Details of Services at Facilities

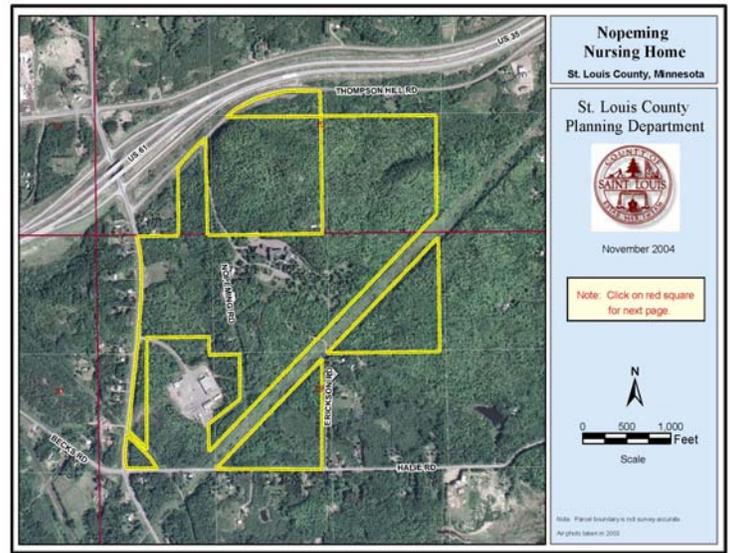
A parcel layer containing the location of County owned or leased facilities and what County services are provided at each facility will be beneficial if it displays service area coverages and locations. That information could be overlay on a population density map or a demographic map to further planning efforts.



Improves Management of County Owned Facilities: The parcel layer will provide the county with the ability to identify, track, and detail all public facilities. Property Management can turn on/off additional GIS layers for more powerful display such as utility lines (sewer, water, gas, electric) and other characteristics about the property.



Assist in Assessing New or Expansion of Public Facilities: A parcel layer and other GIS coverages would assist in assessing the potential and limitations of a new or expanded site.



Sale of Public Facilities: The parcel layer provides the ability to obtain and map parcels for sale to the general public and others.

Public Health & Human Services

Roles and Responsibilities

The St. Louis County Public Health and Human Services Department administers and implements Federal, State, and County public policies and mandates involving the protection, support, and rehabilitation of families and individuals. The department is responsible for administration of all social service forms of public assistance, child support collection enforcement, employment and training initiatives, child and adult protection, and community social services for the developmentally disabled, elderly, mentally ill, and chemically dependent.

Public Health Services include: immunization information and clinics, prenatal and postpartum education and support; communicable disease prevention control and surveillance, parent and child health services, health education and epidemiological services; monitoring establishments to assure safe drinking water and clean indoor air; enforcement of rules governing restaurants, lodging facilities, swimming pools, beaches and individual sewage treatment systems.

Department Potential Benefits & Use

Improves Medical Prevention & Intervention

The parcel layer provides the ability to map large amounts of data to track, monitor, and improve health conditions by alerting medical facilities early to prevent or minimize sickness or disease through intervention. Examples include: early detection and analysis of disease and alerting the community; ability to track sick cases caused by unsanitary conditions by address; map asthma information to target problems and address solutions; tracking of dead animals (an indicator of underlying problems), and a host of others.

Improves Emergency Medical Response

A parcel layer will provide capabilities to further emergency medical response time by locating supply and emergency response centers near the population concentrations, providing evacuation routes, identify vulnerable adults, critical areas, and others.

Improves Permitting, Tracking, and Monitoring

Public Health ensures safe food and drinking water, sewage treatment, and water cleanliness for commercial businesses (restaurants, lodging), residential property, and public recreation areas (swimming pools, beaches). A parcel layer could streamline the entire process of permitting, tracking, and monitoring.

Permitting: Assists in identifying property boundaries, land issues, and property specifications to improve permitting response time for commercial businesses, residential property, and public recreation areas.

Tracking: Tracking ISTS permits (where they are, when they expire, permit requirement compliance) and point-of-sale inspections (where they are, when they were done, repair/upgrade compliance, inspection results: failing systems, definitional failures, non-conforming systems, compliant systems), well locations, and food/water for commercial businesses.

Monitoring: Monitoring radon test results, well water tests (areas that have naturally occurring high nitrate or flouride levels), commercial establishments, and others.

Monitors Vulnerable Adults

Monitoring people in isolation (ill people) and quarantine (well but exposed people) is critical to on-going operation (checking how they are doing) and emergency situations. Public Health must ensure they have food, water, communications, etc.

Improves Long-Range Planning

Demographics are constantly changing, thus long-range planning for public health and human services is an ongoing endeavor. A parcel layer would identify and assess gaps in service, programs, sites, distances, outlining problems for grant resources, locating mass clinics, and much more.

Improves Resource Allocation

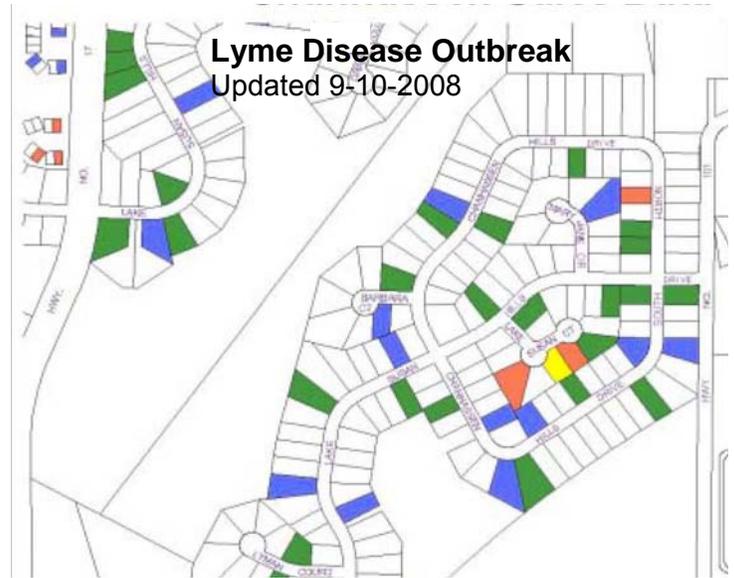
One aspect of the parcel layer is the ability to allocate resources based upon spatial data to determine service area assignments, workloads, resource distribution, caseloads, etc.

Improves Public Notification

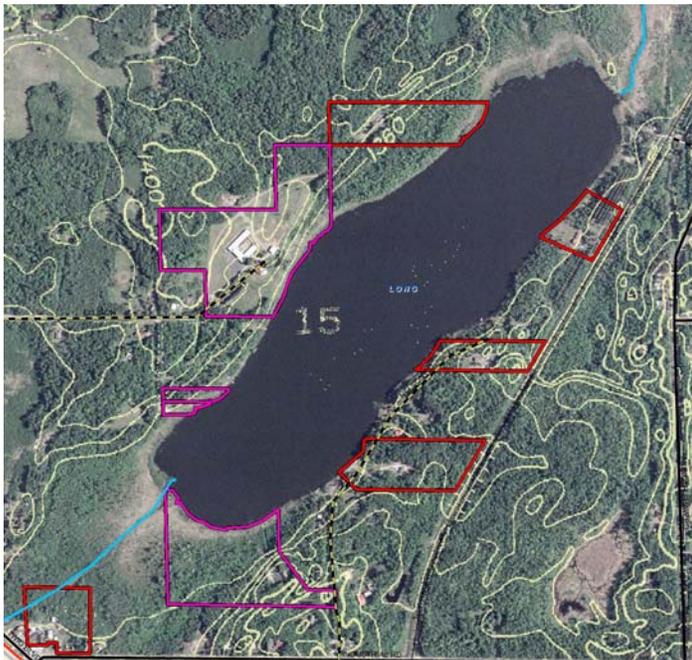
Public notification would be enhanced for a variety of projects, programs, and alerts. The current system of notification can make it difficult to conduct thorough planning and intervention.



Long-Range Planning: The parcel layer assists in identifying gaps in service and other program planning to help deliver services.



Medical Prevention & Intervention: The parcel layer provides the ability to map large amounts of data to track, monitor, and improve health conditions by alerting medical facilities early to prevent or minimize sickness or disease through intervention.



Monitoring: Identifying the source of the pollution is a challenge. With a parcel layer, source pollution can be identified, and layered with other GIS data to get a better picture of the root cause to better correct the situation.



Emergency Medical Response: A parcel layer will improve emergency medical response by providing the capability to plan and respond to chemical/biological emergencies, or other outbreaks.



Solid Waste

Roles and Responsibilities

The Solid Waste Department is responsible for all solid waste services in St. Louis County outside of the Western Lake Superior Sanitary District (WLSSD). Solid Waste operates the St. Louis County Regional Landfill, five transfer stations, and 18 canister sites.

Department Potential Benefits & Use

Improves Landfill Planning

Land fill planning would be improved with a parcel layer through enhanced research and analysis of regional landfill property.

Improves New Site Development: Any new site requires extensive review of all site characteristics such as: distance to population centers, proximity to private property, zoning, proximity to roadways, topographical features (wetlands, streams and rivers, and elevation), location for fill placement, environmental monitoring concerns, and future expansion options, including buffer areas to sensitive areas.

Enhances Planning Efforts to Expand and/or Modify Sites: Any expanded or modified site requires review of all operations and impacts. The parcel layer provides this expanded analysis of all environmental and topography features.

Track Closed Dump Sites: The parcel layer will assist in determining proximity to waterways, population centers, general information on age of landfill, cover type, volumes, and legal boundaries.

Provides Planning Support: Assists Solid Waste in producing administrative maps of sites such as: general outline of site, directions, relation to other property, and site setup.

Enhances Illegal Dump Tracking

There are many complaints regarding illegal dumping sites across the county, from small dump sites to extensive (chemical) dump sites. Sites have varying impacts on lakes, rivers, wetlands, adjoining property owners, and others. The overlay of a parcel layer allows staff to better track details of the site, prioritize, and notify adjoining property owners who could realize negative impacts on property.

Improves Public Notification & Service Fee Updates

The public notification process would be enhanced for a variety of activities such as: illegal dump sites, site impacts, program information, service fee updates, and a host of other information. Querying data in various formats, distances, and areas with the parcel layer has many advantages over existing formats.

Improves Service and Efficiency

With a parcel layer, data and site location information can be easily portrayed in a fashion that can reduce information requests by phone calls, walk-ins, and e-mails.



Landfill Planning (New, Expanded, Closed): The parcel layer and GIS provides expanded capabilities to assist in the review process of a new, expanded and/or closed site.



Planning Support: The parcel layer provides the ability to produce administrative maps of sites such as: general outline of site, directions, relation to other property, site setup, and others.

Illegal Dumping: Solid Waste can track illegal dumping and level of impacts these sites have to surrounding property and population centers.

Maps are only for example purposes



There are various other duties by St. Louis County that could also benefit from the parcel layer.

Other Potential Benefits & Use

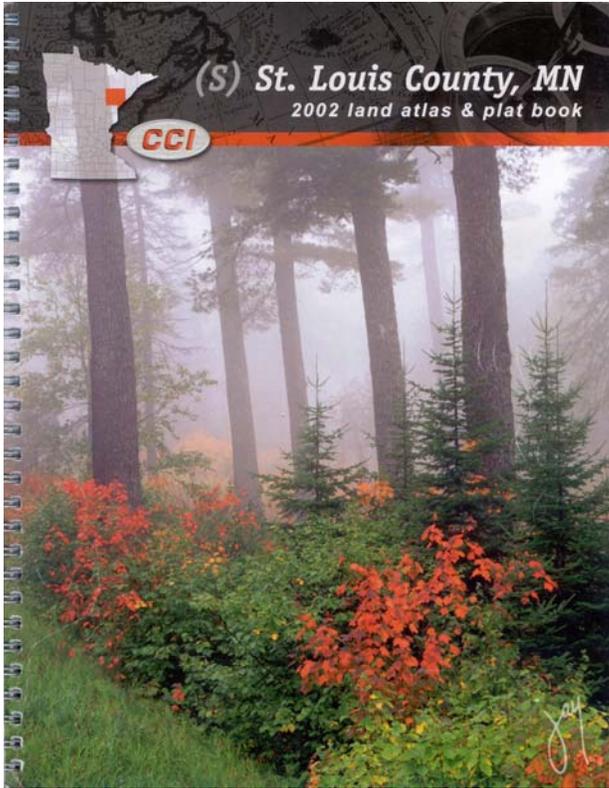
Plat Book

The parcel layer will allow the county to develop the county plat book internally rather than hiring a contractor to research and develop the plat book. The county could further modify the plat book to suit county needs.

Currently the plat book has limited information. With the county producing the plat book, it is possible to incorporate cities, additional GIS layers, and data into the new book, making it more useful.

Participate in Statewide Projects

The parcel layer is increasingly being used by the state to map issues at the state level. The parcel layer will provide St. Louis County with additional details on trends, estimates, projections, etc.



Plat Book: The plat book essentially portrays parcels and is produced by an outside vendor. With the parcel layer, this plat book could be produced internally by St. Louis County staff to better suit its needs.

History of St. Louis County GIS/LIS (Land Information System)

St. Louis County began to implement the use of GIS in 1985 with the Land Department to improve the management of lands in the Tax Forfeit Trust.

St. Louis County was one of the first counties to implement GIS based software in the nation. In fact, the county was the 69th customer of ESRI, which today is the world's leader in GIS, with millions of customers in government and business.

Over the years, St. Louis County departments have created, obtained, acquired, modified, and/or maintained many GIS layers and datasets, including layers for internal planning and management of departmental needs.

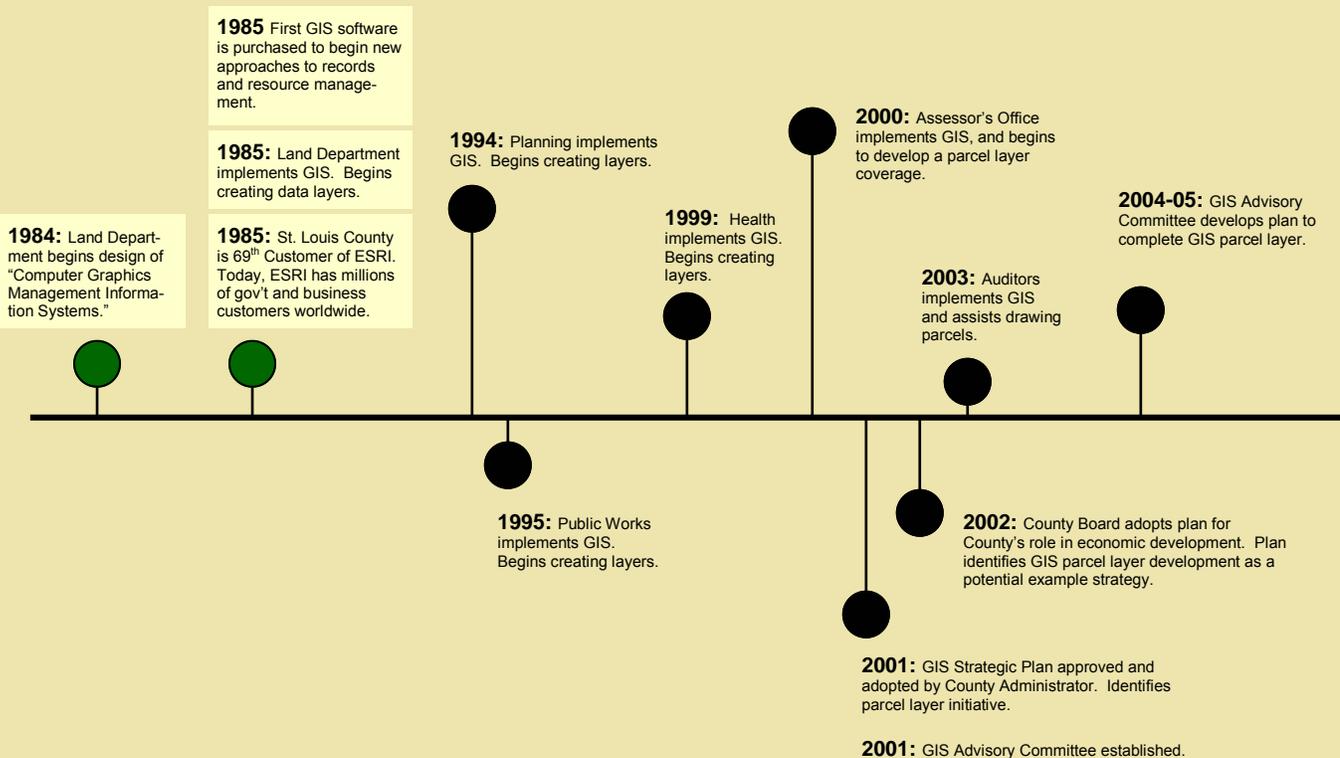
Below is a timeline of how and when county departments began implementing GIS.

Sample of General GIS Layers

Developed, Attained, or Acquired

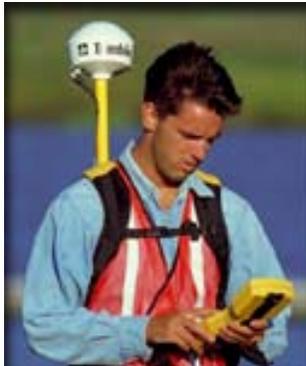
- Administrative**
 - School District Boundaries
 - County, City, and Township Boundaries
 - Reservation Boundaries
 - Precinct Boundaries
 - Legislative Districts
 - County Commissioner Districts
 - Zoning Boundaries
 - PLSS corner monuments, points, lines
 - Section, quarter-quarter, etc.
 - Federal and State Lands
 - National and State Forests and Parks
 - Zip Codes
 - Addresses (Partial)
- Land Base**
 - Land Use (forest, urban, etc.)
 - Railroads
 - Place Names
 - Trails
 - Others (borrow pits, etc.)
 - Colleges and Universities
 - Hospitals
- Street Network (Transportation)**
 - Roads and classification, Highways, etc.
 - Road Ownership
 - Trails
- Topography**
 - Elevation: (Contours, Shaded Relief)
- Utility**
 - FAA and Cell Towers
- Photography**
 - 2003 Color Aerial Orthogonal
 - 1991 B & W Aerial Orthogonal
 - 1997 Mesabi Range
- Land Records**
 - Parcels
 - Dimensions
 - Right-of-Way
 - Subdivisions
- Census**
 - Tracts, Block Groups, Blocks
- Environment**
 - Lakes, Rivers and Streams
 - Wetlands
 - Watersheds
 - Flood Plain
 - Soils
 - Hydrology
 - Biophysical Regions
 - Iron Ore Deposits
- Other (tax forfeit lands, dumps, etc.)**

History of County GIS and Parcel Layer Development



How a Parcel Layer is Created

A quality parcel layer is difficult to develop and maintain due to various challenges. Prior to any development of a parcel layer, standards must be established for how to draw and rectify problems that arise, structure of the parcel layer, and a host of others. Below is a general overview of how a parcel layer is created from researching to drawing.



General Steps to Develop a Parcel Layer

Step ①: Obtain Existing Digital and Paper Data

Corner Monumentation: Locate township, section, quarter-quarter monuments (if known) from a host of sources from the federal, state, and local government. This may include finding, digging up, and recertifying old monumentation corners that are in roads, swamps, forests, etc.

Legal Descriptions: Obtain legal description used to draw parcels.

Plats, Original Survey, Government Roads: Obtain any digital or paper plats.

Road Centerlines: Locate road centerlines through existing data.

Right-of-Way/Easements: Locate right-of-way/easement digital form or paper files.

Railroads: Locate railroad and right-of-way in digital form or paper maps.

Step ②: Obtain New Data: Survey & GPS

Corner Monumentation: Locate new township, section, quarter-quarter monuments by finding, digging up, and recertifying old monumentation corners that are in roads, swamps, forests, etc.

Road Centerlines: GPS roads with high grade accuracy.

Step ③: Interpret & Draw Parcel Layer

Begin drawing in general order of townships, sections, quarter-quarters, water bodies, railroads and its right-of-ways, quarter-sections, plats, parcels, and right-of-ways.

All drawings could have attribute, annotation, and metadata attached to each parcel, coverage and/or files.

Step ④: Rectify Errors and Problems

As a parcel layer is developed, errors in legal descriptions, right-of-ways, easements, and others begin surfacing. These errors must be addressed and researched before the remainder of the parcel layer can be drawn.

Step ⑤: Deliver Product & Test

Once all of the errors and issues are resolved, the parcel layer will be delivered to the County. The County will then begin testing the product to ensure all details and functionality are preserved.

Parcel Layer Development Challenges

St. Louis County has many challenges when developing and maintaining a parcel layer. The following are general issues that have hindered completion:

County Size

St. Louis County's size of 6,860 square miles plays a major role in developing a geographically based parcel layer. With a large geographical size, there are more monumentation corners to verify and recertify, thus requiring increasing staff time and resources to complete the task.

Number of Jurisdictions

St. Louis County is comprised of 124 jurisdictions including 24 cities, 72 organized townships, and 28 unorganized townships. The large number of jurisdictions create complications in organizing and coordinating the development of a parcel layer.

Lack of County-Wide Land Records Office

St. Louis County lacks a county-wide office to assist, integrate, and implement GIS on a level that impacts all departments. A parcel layer is needed to integrate databases and GIS applications. As an example, the Sheriff's Office and 911 Communications are areas that need help to implement components of GIS, but the county lacks that point person to assist in integration and implementation.

Monumentation Number

There are approximately 23,000 monuments across St. Louis County. Monuments include 4 township, 49 section, 169 quarter, 625 quarter-quarter corners per township.

Monuments are located in swamps, forests, fields, ridges, bluffs, covered by many feet of dirt, under roads, missing due to excavation or mining, and located miles off any access.

It should be noted that not all corners need physical monuments. Approximate corner locations can be calculated by software when properly determined. This can reduce the overall project cost.

Lakes

St. Louis County has over 1,000 lakes. Complications arise when developing parcel lines for lakes since many lakes lack close corner monumentation, and many lake lot lines vary in every direction (diagonal, polygon, trapezoid, others), and follow the lake shore.

Wetlands

The abundance of wetlands and other naturally saturated areas caused difficulties many years ago when surveying. Today, GPS and other techniques have changed or challenged some corners and assumptions of placement.

Taconite Belt

The Taconite Belt consists of cities that form a narrow band from Hibbing to Hoyt Lakes. Drawing parcel lines for this band of cities is difficult since compasses were skewed by iron ore deposits underground when platting property a century ago. Furthermore, many monuments have been dug up when minerals were extracted.

New techniques for drawing parcel lines can minimize this problem, but would be a time-consuming endeavor.

Data

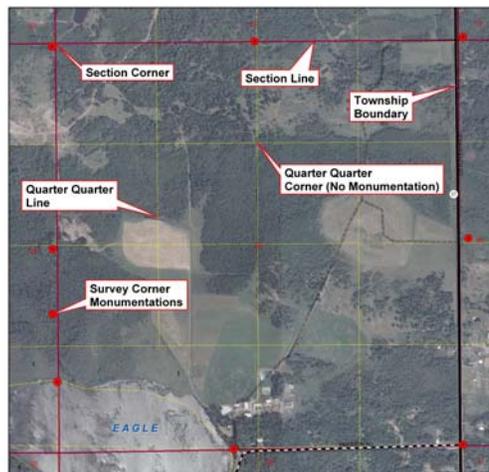
GIS makes spatial comparisons much easier than the compilation of hand-drafted maps. However, difficulty arises when additional GIS data layers are placed on top of each other and whether monument data match with other data layers for referencing.

Cost

Over the years, the cost has been a barrier to developing a parcel layer. No one department can cover the costs alone. Early estimates of the cost ranged from \$2-10 million dollars, causing the project to be shelved. However, lower prices, secured grant funds, and a renewed commitment by St. Louis County has made parcel layer development feasible.

Spatial Accuracy

Limitations associated with the parcel layer include spatial accuracy. Parcel layers have varying degrees of accuracy based upon the best available monumentation data (see page 19, "Horizontal Accuracy of Parcels" chart).



Corner Monumentation: This is an example of a section of land with potential issues involving missing and accuracy or monumentation.

The continued concern is that the GIS parcel layers may not be spatially accurate enough to reasonably determine such locations, particularly when those determinations will have a financial impact on the property. However, long-term accuracy will generally improve as the parcel layer is adjusted to reflect new recertified and GPS'd corners.

Accuracy Needs of County Departments

County departments have varying uses for a parcel layer which dictate the need for accurate parcel lines. As an example, the Public Works, Planning, Public Health/Human Services Departments, and Auditor's Office are searching for more accurate parcel lines based upon existing departmental functions.

These existing departmental functions include obtaining setback criteria for side yards, shoreline, roads, wells, septic, rear yard, and others. The more accurate the portrayal of these lines, the easier it is to conduct an array of functions such as permitting for commercial and residential construction, or surveying.

Surveyors' uses of parcel data may differ from other users. A surveyor may be more interested in the history, placement and geometry of a parcel than in its use or value. The surveyor's perspective tends to be a detail-oriented technical view of the construction and geometry of a parcel, such as where a particular line originated, and its length and direction for various construction projects.

In contrast, the Assessor's Office and Land Department's perspective tends to be with the characteristics and attributes of these parcels such as: location, value, class of property, acreage, units, land cover, and others. Therefore, accuracy does not need to be a significant factor in developing a parcel layer.

Establish Standards, Processes, and Procedures

The difficulty in developing and maintaining a parcel layer is to establish criteria for how the parcel layer will be developed and maintained. Criteria includes setting standards, processes, and procedures. The difficult aspect is that each department will utilize the parcel layer differently, which requires varying standards.

Long-Term Maintenance

A past barrier was who (what department or staff) would maintain the parcel layer once developed for property splits and consolidations, as well as update the coverage as new monumentation is acquired. This barrier has been addressed, with the Auditor's Office taking the lead role.

PART II

1 Complete a GIS Parcel Layer

St. Louis County

Introduction

The first component of the plan is to complete the development of the parcel layer for the identified remaining areas.

Coverage

St. Louis County's intent is to develop and maintain a parcel layer for the entire St. Louis County, including all cities, townships, unorganized townships, and reservations.

Cost

To complete the development of the parcel layer for the remaining parcels, it will cost approximately \$2 million dollars above and beyond what currently has been developed and incurred.

Development

The GIS Advisory Committee will oversee the overall parcel layer development and maintenance. Furthermore, a Technical Standards Committee (a sub committee of the

GIS Advisory Committee) will address the technical standards of the parcel layer, selection process, and departmental roles and responsibilities.

Each department has general duties in the development phase. Some duties may be refined and transferred, however, the general duties are as follows:

Planning Dept.– General administration

Auditor's– Maintain parcels, legal descriptions, parcel drawing, rectify errors

Recorder's– Legal description, rectify errors

Assessor's– Parcel drawing, rectify errors

Public Works (Surveyors/Right-of-Way)– Potential surveying, right-of-way research

Land Dept.– Technical assistance, maintain software, database, and hardware

Overview

Goal: Complete Parcel Layer (including all cities, townships, unorganized townships, and reservations)

Parcels: Total County Parcels– 196,406
Complete/In-Progress/Predicted– 89,813
Remaining Parcels to Draw– 106,593

Funds: Funds Needed to Complete: \$2 million

Funding Source to Date: Grants, In-kind, Departments

Future Funding Source to Complete: Combination

Timeline: 5+ years

Estimated Costs Per Parcel: \$16-20

Development: Vendor/County Departments

Maintenance: Auditor's Office: 1.5 Full-Time Equivalent (FTE) Shift

Long-Term Maintenance

St. Louis County will maintain the parcel layer on an ongoing long-term basis for the entire County. The following departments will have the primary responsibility in maintaining the parcel layer:

Auditor's Office: Due to the Auditor's Office responsibilities to track parcels for taxing purposes, the office will continue to track parcel changes, but in a digital format.

The Auditor's Office will provide 1.5 FTE (full-time equivalents) to maintain the parcel layer. This staff will shift from existing duties of drawing digital parcels in the northwest St. Louis County, and updating paper maps to maintenance of the digital parcel layer. Therefore, no additional staff is needed at this time.

The staff will be separated into two focus areas as follows:
Splits and Consolidations: One staff person will main-

tain parcels as splits and consolidations (new plats) occur.

New Monumentations: One staff person will be dedicated to adjusting the parcel layer when new monumentation is attained from County Surveyors.

However, there will be some additional costs that the Auditor's Office will incur on a long-term basis such as:

1. Staff training
2. Computer and software upgrades

Potential funds for training, computers, and software for parcel maintenance could be paid for by the future establishment of a "Cost Recovery Program".

Note: It should be noted that all other GIS layers will continue to be maintained by the respective departments.

Guiding Principles



General

- The GIS Advisory Committee will coordinate parcel layer development, including:
 - Updating the County Board, departments, and other stakeholders on the progress
 - Funding, township priorities due to circumstances, maintenance, and others
- The GIS Advisory Committee will coordinate the research, review and creation of a "Cost Recovery Program"
- The GIS Advisory Committee will coordinate the establishment of a county-wide "Land Information Office"



Funding

- Seek the maximum amount of grant funding
- Minimize the financial burden on St. Louis County
- Seek city and township financial support to create the parcel layer
- Seek any funds available to conduct survey work to attain the best possible parcel layer
- Strengthen competition between contractors to reduce costs and improve accuracy



Parcel Layer Development

- Develop parcel layers by Minor Civil Division (MCD)
- Strive for the best possible accuracy by MCD
- Ensure that consultants have the latest and best monumentation data prior to developing the parcel layer
- Test for parcel accuracy and functionality once township parcel layer is complete



Long-Term Maintenance

- Maintain parcel layer for the entire county, including all cities, townships, reservations, and unorganized townships in St. Louis County
- Solidify procedures on maintenance, transfer of parcel data to county from cities, and are roles and responsibilities of each county department

1

Complete Parcel Layer

Parcel Layer Progress

St. Louis County 2005

Parcel Layer Progress

Currently, there are several areas completed in St. Louis County, but a majority of areas have yet to be completed. The following map shows progress of the parcel layer creation by Minor Civil Division (MCD).

St. Louis County has completed numerous townships in northwest and southeast St. Louis County. Funding for parcel completion to date has come from a combination of internal staff development, county funding, city funds, and the Minnesota Lake Superior Coastal Program grant funds.

Hibbing and Ely have been approached to transfer its parcel layer to the County for long-term maintenance and updates. However, there are many obstacles that must be addressed before this occurs.

Definitions

Completed: Parcel layer is completed and the County has taken control of the parcel layer.

Completed: Anticipated Transfer-to-County: The jurisdiction that is funding the creation of a parcel layer and the County anticipates transfer to the County for long-term maintenance.

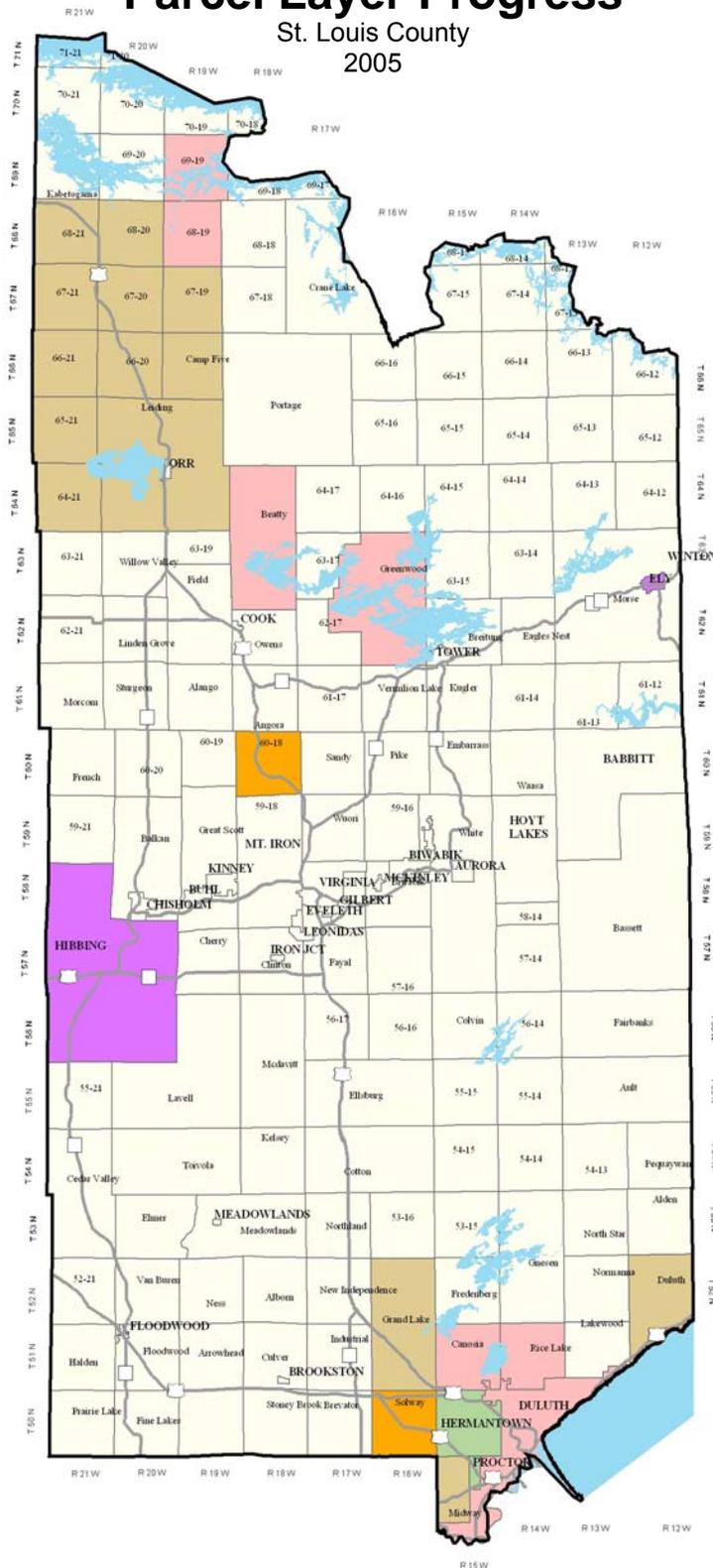
In-Progress: Parcel layer has been either funded and work has started, or County staff are working on an area.

Pending Application: Funding application into a federal, state, local, or other agency to fund a parcel layer.

Future Grant Application: Potential grant sources available.

Partial: Parcel layer is partially completed in the area.

Incomplete: Parcel layer has not been started and/or no funding is in place to complete the layer.



Legend

GIS Parcel Layer Status

STATUS

- Completed
- Completed: Anticipated Transfer to County
- In Progress
- Pending Application
- Future Grant Application
- Partial
- Incomplete

Note:

City of Duluth: The City of Duluth has received Minnesota Lake Superior Coastal Program grant funds to develop a parcel layer. However, funding does not allow Duluth to complete the entire city at once, therefore, the city will complete parcels in phases based upon funding levels and acceptance of grant applications.

Parcels by MCD

Parcel Numbers by Minor Civil Division

St. Louis County has approximately 196,400 total parcels in all of its cities, townships, and unorganized townships.

Generally, the largest share of parcels are located within urban areas such as Duluth, Hibbing, Hermantown, Virginia, and others.

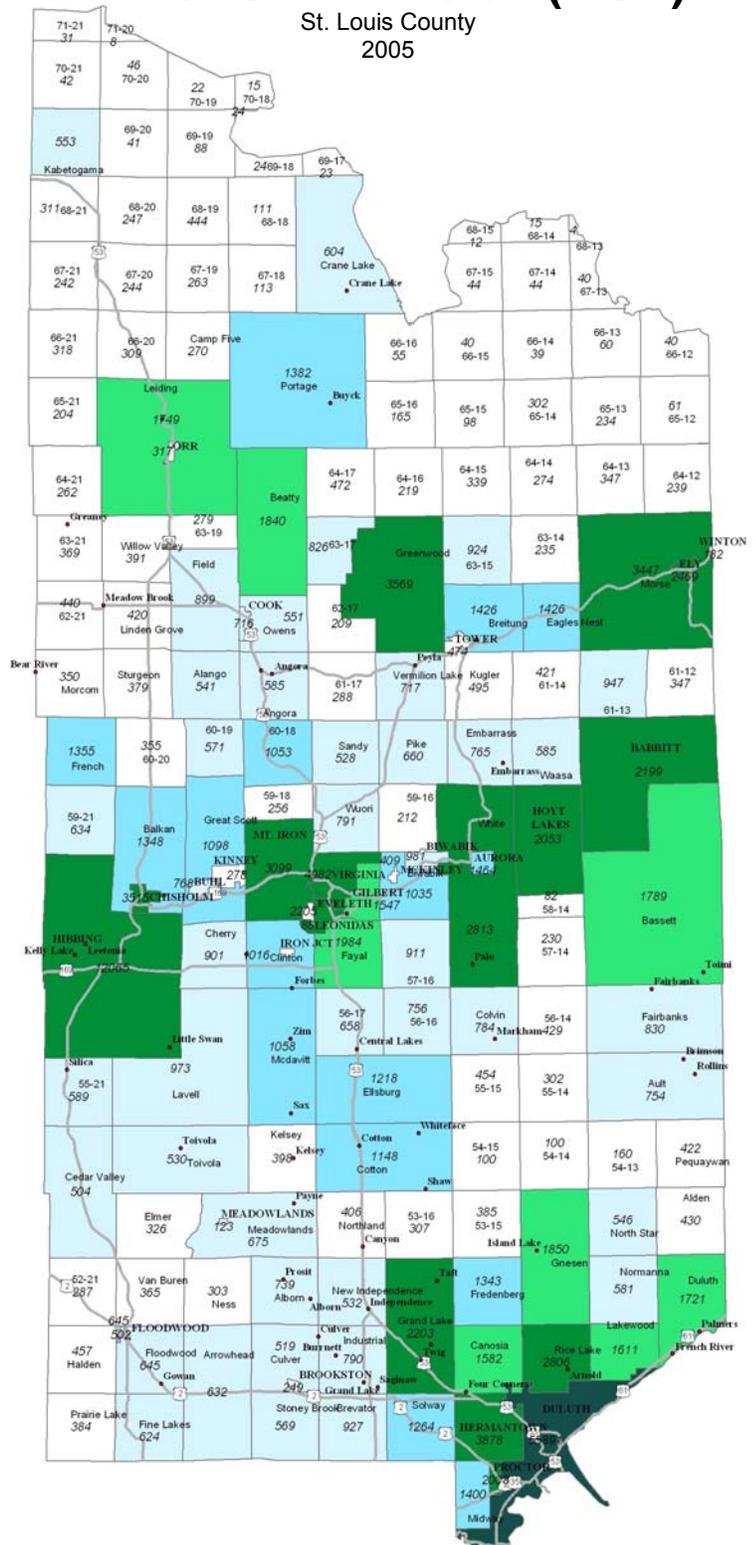
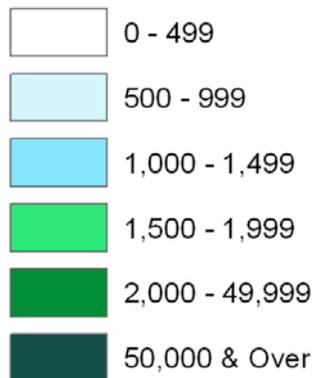
Other areas that have higher levels of concentrated parcels include lakeshore areas such as Island Lake and Lake Vermillion.

Number of Parcels by Minor Civil Division (MCD)

St. Louis County
2005

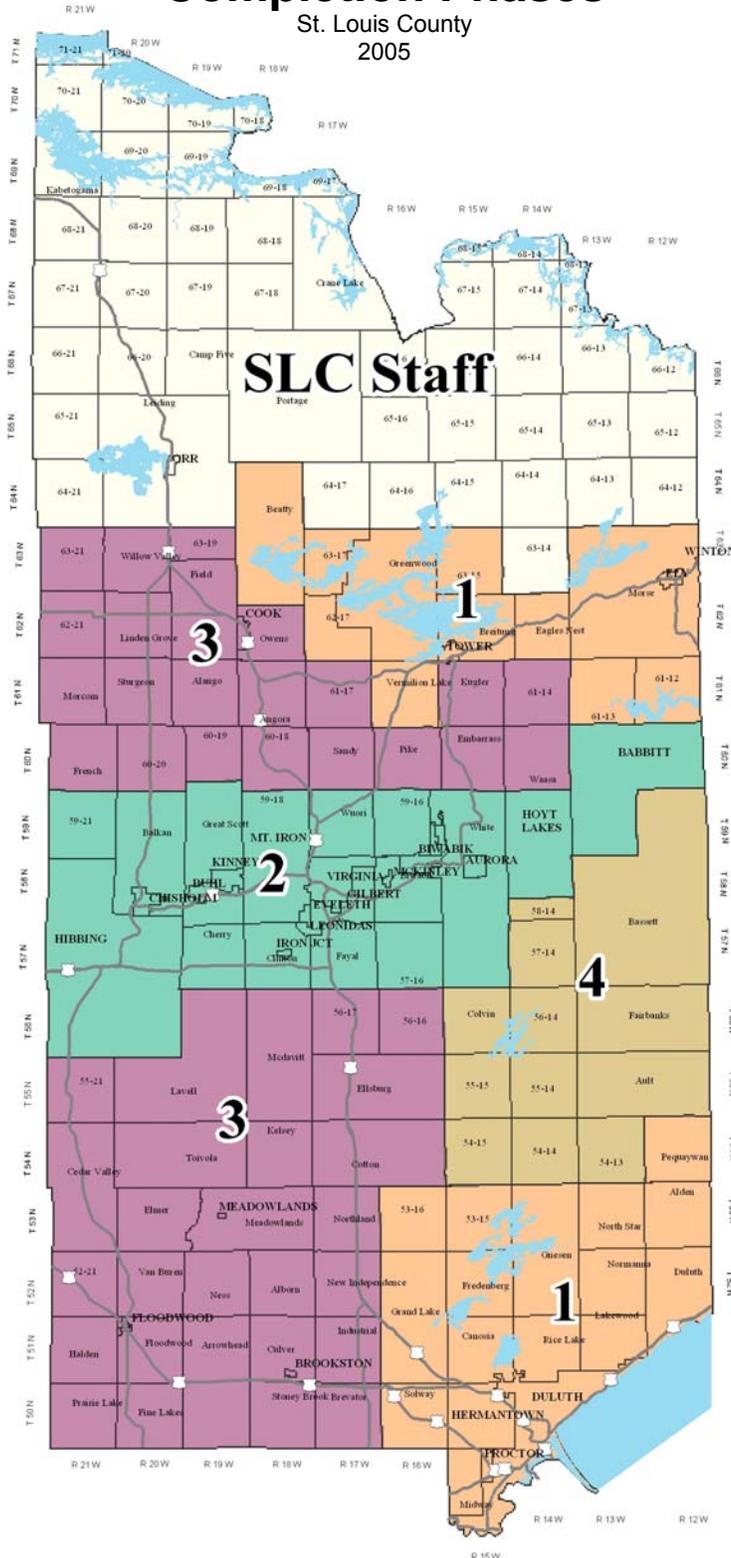
Legend

Number of Parcels



Recommended Completion Phases

St. Louis County
2005



Parcel Layer Completion Phases

It is recommended that the GIS parcel layer be completed in phases as outlined on the adjacent map.

Phase 1:

Duluth, Duluth suburbs, and the Lake Vermilion-Burntside-Shagawa Lake area. All areas would be conducted at the same time due to potential funding sources, general development, and lake activity.

Phase 2:

Taconite Belt. Potentially difficult area to complete, due to extensive challenges with accurate legal descriptions based upon skewed township, section, quarter, quarter-quarter lines, and others.

This problem arose due to iron ore deposits causing compasses to be incorrect when surveyed many years ago. However, the mining companies have a wealth of survey data and much of it was based on State Plane Coordinates of 1927 that can be used to expedite this phase.

The U.S. Forest Service also has a wealth of survey information that can also be integrated.

Phase 3:

North of Taconite Belt & Southwest St. Louis County. These areas have moderate activity and many county maintained roads.

Phase 4:

Central East St. Louis County. This area has low activity and high percentage of Federal, State, and County lands.

Legend

Phases

- SLC Staff
- Phase 1
- Phase 2
- Phase 3
- Phase 4

1

Complete Parcel Layer

Estimated Expenditures To Date

St. Louis County, Hibbing, Ely and the City of Duluth have undertaken steps to develop and complete a parcel layer for their respective jurisdictions. The chart below highlights estimated costs to date that have been incurred to develop a parcel layer.

Hibbing, Ely, and the City of Duluth are funding its parcel layers without county assistance. Other cities and townships have had significant assistance from the County. (See below for estimated costs incurred to date by type of assistance.)

Estimated Expenditures to Date (\$) St. Louis County

UT- Unorganized Township Twp- Township ¹ Estimated ² Includes City of Proctor	County Attained Grants			Other County Commitments			City/Township Attained Grants			Other City/Township Commitments			Total
	Grant Cash	County Grant Match		Cash	In-Kind	Other	Grant Cash	City/Twp Grant Match		Cash	In-Kind	Other	
		Cash	In-Kind					Cash	In-Kind				
Beatty Twp.				15,000									\$15,000
Camp Five					860								\$860
Canosia and Rice Lake Twps.	50,000	15,000 ¹	50,150										\$115,150
Duluth (City)							99,000		99,000				\$198,000
Duluth Twp.	50,000		143,336		2,525								\$195,861
Ely													
Grand Lake Twp.				30,000	8,190								\$38,190
Hermantown ^{Pending}	77,560 ²		80,428 ²										\$157,988
Hibbing													
Leiding Twp.				10,000	12,285								\$22,285
Midway Twp.	43,670		46,500										\$90,170
Proctor ^{Pending}		Part of Hermantown Application											
Solway Twp.													
UT 60-18				Part of GL									
UT 64-21					1,800								\$1,800
UT 65-21					1,340								\$1,340
UT 66-21				Part of Leiding	160								\$160
UT 67-21					2,680								\$2,680
UT 68-21					725								\$725
UT 66-20				Part of Leiding	1,260								\$1,260
UT 67-20					820								\$820
UT 68-20					575								\$575
UT 67-19					600								\$600
UT 68-19													
UT 69-19													
Other (Software, Hardware, Training, etc.)						35,000							\$35,000
Total	\$221,230	\$15,000	\$320,414	\$55,000	\$33,820	\$35,000	\$99,000		\$99,000				\$878,464

1

Complete Parcel Layer

² Includes City of Proctor

Parcel Summary & Estimated Cost

The total cost to complete the parcel layer for St. Louis County is estimated to be between \$1.6-\$2.0 million dollars. This excludes the City of Duluth, which is undertaking funding of a parcel layer, and other completed areas. The majority of parcels are in Duluth, Duluth suburbs, Taconite Belt cities and northern lakes region.

Phase I, which includes Duluth, Duluth suburbs, and Vermilion-Shagawa Lake areas, will cost an estimated \$410,000-\$515,000 dollars to complete.

Phase II, which includes the Taconite Belt cities, will cost an estimated \$585,000-\$730,000 dollars to complete.

Phase III, which includes areas north of the Taconite Belt and Southwest areas, will cost an estimated \$495,000-

\$620,000 dollars to complete.

Phase IV, which includes the central east areas, will cost an estimated \$100,000-\$125,000 dollars to complete.

Note: Cost may fluctuate if the county determines to have additional work performed by the contractor above and beyond what has been identified.

Estimated costs include drawing, research, data gathering, acquiring approximately 15-20 additional survey control points (surveyed and/or GPS'd) for each township above and beyond what currently exists, providing additional coverages, additional attribute and annotation data attached to each file, and more.

Parcel Summary & Estimated Cost: By Phases

St. Louis County

	Total Parcels	Completed, In-Progress Parcels	Remaining Parcels	Estimated Costs (\$)		
				Low (\$16/per parcel)	Medium (\$18/per parcel)	High (\$20/per parcel)
① Phase #1	99,031	73,329	25,702	411,232	462,636	514,040
Vermilion-Shagawa Lake	18,803	1,840	16,963	271,408	305,334	339,260
Duluth	55,891	55,891 ¹	0	-	-	-
Duluth Suburbs	24,337	15,598 ²	8,739	139,824	157,302	174,780
② Phase #2	48,591	12,065	36,526	584,416	657,468	730,520
Taconite Belt	48,591	12,065	36,526	584,416	657,468	730,520
③ Phase #3	30,882	0	30,882	494,112	555,876	617,640
North of Taconite Belt	12,996	0	12,996	207,936	233,928	259,920
Southwest	17,886	0	17,886	286,176	321,948	357,720
④ Phase #4	6,241	0	6,241	99,856	112,338	124,820
Central East	6,241	0	6,241	99,856	112,338	124,820
Phase Sub-Total	184,745	85,394	99,351	\$1,589,616	\$1,788,318	\$1,987,020
Staff: Northern SLC	11,661	4,419	7,242			
Total County Parcels	196,406	89,813	106,593			

¹ Minnesota's Lake Superior Coastal Program grant in 2004 for Duluth (55,891 parcels) and anticipated grant application in 2005, 2006, 2007.

² Includes Minnesota Lake Superior Coastal Program grant in 2004 for Rice Lake (2,806 parcels) and Canosia (1,582 parcels) and Application in 2005 for Hermantown (3,878 parcels) and Proctor (2,008 parcels).

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Complete Parcel
Layer

Funding: 5-Year Plan

Development: A Balanced Approach

The parcel layer could be developed and funded over a 5 year period from 2005-2010.

Funding for the development stage could come from a combination of county, city and township funds, grants, agencies, and department funds. There will also be a significant portion of in-kind assistance from county departments for the development of the parcel layer.

The 5-year timeline will give County staff and contractors the ability to address a host of complications and issues that arise in order to attain the best layer possible.

It is important to note that due to unforeseen

circumstances, it is possible that the timeline could be shortened or lengthened.

County: General Fund

The General County Fund provides opportunities to assist the development of the parcel layer through general tax dollars.

County: Other Funds

St. Louis County has various funding sources that can be used to fund the parcel layer development. Many of these funds are managed by various departments and will need to be carefully examined. However, one such fund that could be tapped immediately is:

Potential Parcel Layer Funding— 5 Year Plan

Based upon High Cost Estimate
(\$20/per parcel)
St. Louis County

	Potential Sources	2005	2006	2007	2008	2009	2010	Total
Funding								
County: General Fund		\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$300,000
County: Other Funds	Economic Development Fund	-	\$100,000	\$50,000	\$50,000	\$50,000	\$50,000	\$300,000
Cities, Townships	All County Cities and Townships	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$12,020	\$137,020
Agencies, Commissions	Examples: Iron Range Resources (IRR) Arrowhead Regional Development Commission (ARDC)	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$300,000
Grants	MN Lake Superior Coastal Program Homeland Security	\$100,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$350,000
Recorders Office ¹	Recording Fee—Technology Fund (pending legislation)	-	\$200,000	\$200,000	\$200,000	-	-	\$600,000
Total Costs		\$225,000	\$475,000	\$425,000	\$425,000	\$225,000	\$212,020	\$1,987,020

¹ Contingent upon successful passage of legislation. If this legislation passes, which is based upon increased recording fees for technology, the Recorder's Office is willing to commit additional recording funds to complete the parcel layer.

Note: Private firms may be approached to assist in funding of the parcel layer, however, caution will be used due to various complications, etc.

Economic Development Fund: This fund is dedicated toward a wide range of economic development projects, in which the parcel layer is a critical component to economic development. There is a substantial portion of yearly funds available to develop the parcel layer.

Cities and Townships

There are a total of 124 jurisdictions in St. Louis County, consisting of 24 cities, 72 townships, and 28 unorganized townships. The parcel layer will provide great benefit to these jurisdictions, and they should provide a small portion of the development costs—though small. Possibilities exist to approach many of these jurisdictions for funding, however, much coordination and presentation must be conducted in order to secure these funds. Possibilities exist that these jurisdictions could provide funds to access the parcel layer for the maintenance side of the equation.

Agencies and Commissions

Solid possibilities exist to approach area agencies and commissions to help fund the parcel layer such as:

Iron Range Resources (IRR): IRR is involved in many economic development projects, and the parcel layer could provide a valuable resource to the agency and its cities within its jurisdiction to put together development projects.

Arrowhead Regional Development Commission (ARDC): ARDC is a regional planning agency that could provide some assistance in the development of the parcel layer. In the past, ARDC has been interested in developing a regional parcel layer. Furthermore, ARDC can access funds that the County may not be eligible for.

Grants

There are various grant sources available at the federal, state, and local level, as well as through local private firms. It is anticipated that the search for additional funds for the parcel layer will be heightened once the plan is approved. One such source that has been accessed is the:

Minnesota Lake Superior Coastal Program: This grant source is currently being tapped by the County and City of Duluth. St. Louis County has obtained funding to develop the parcel layer through this source for Duluth, Midway, Canosia, and Rice Lake Townships. St. Louis County has submitted applications for Hermantown and Proctor, with strong support from those jurisdictions. The City of Duluth will continue to apply for this funding until Duluth's parcel layer is complete. The only drawback for this funding is that there are only certain jurisdictions available for funding based upon program boundaries. Consequently, this funding is almost expended. Lakewood Township is the only remaining jurisdiction eligible for funding in St. Louis County.

Recorder's Office

The Recorder's Office, pending successful passage of legislation for increased recording fees, is committing a substantial portion to developing the parcel layer. The increase in the recording fee is based upon the statewide goal to improve technology access and utilization.

Long-Term Maintenance

The long-term maintenance of the parcel layer will be conducted by the County Auditor's Office by reassigning staff to update the parcel layer as splits and consolidations occur, as well as updating the coverages as new monumentation is received from the Public Works Surveyor's Department. Therefore, additional funding will not be needed at this time for long-term maintenance. However, future circumstances may arise where training and technology upgrades will be needed and could be addressed through a potential "Cost Recovery Program".

Phase #1

Vermilion-Shagawa Lake,
Duluth, and Duluth Suburbs

2003

Vermilion-Shagawa Lake Area	
Beatty Twp	1,840
Greenwood Twp	3,569
Breitung Twp	1,426
UT 63-17	826
UT 62-17	209
Vermilion Lake Twp	717
UT 63-15	924
Morse Twp	3,447
Eagles Nest Twp	1,426
UT 61-13	947
UT 61-12	347
Tower	474
Ely	2,469
Winton	182
Sub-Total	18,803

Duluth & Duluth Suburbs

S. Grand Lake Twp	1,837
N. Grand Lake Twp	366
Duluth Twp	1,721
Midway Twp	1,400
Duluth City	55,891
Rice Lake Twp	2,806
Canosia Twp	1,582
Hermantown	3,878
Proctor	2,008
Lakewood Twp	1,611
Gnesen Twp	1,850
Fredenber Twp	1,343
UT 53-15	385
Solway Twp (Partial Complete)	1,264
Normanna Twp	581
North Star Twp	546
Alden Twp	430
Pequaywan Twp	422
UT 53-16	307
Sub-Total	80,228

¹ City of Duluth will seek Coastal Zone Grant funds for multiple years.

Completed
 In-Progress
 Grant Application

All areas in St. Louis County

Phase #2

Taconite Belt

2004

Taconite Belt	
Hibbing	12,065
Virginia	4,982
Chisholm	3,515
Mountain Iron	3,099
White Twp	2,813
Eveleth	2,205
Babbitt	2,199
Hoyt Lakes	2,053
Fayal Twp	1,984
Gilbert	1,547
Aurora	1,464
Balkan Twp	1,348
Great Scott Twp	1,098
Biwabik Twp	1,035
Clinton Twp	1,016
Biwabik	981
Tikander Lake UT 57-16	911
Cherry Twp	901
Wuori Twp	791
Buhl	768
McCormack Lake UT 59-21	634
McKinley	409
Kinney	278
Camp A Lake UT 59-18	256
Iron Junction	151
Leonidas	88
Sub-Total	48,591

Phase #3

North of Taconite Belt & Southwest

2007

North of Taconite Belt	
French Twp	1,355
UT 60-18 (Partial Complete)	1,053
Field Twp	899
Embarrass Twp	765
Cook	716
Pike Twp	660
Waasa Twp	585
Angora Twp	585
UT 60-19	571
Owens Twp	551
Alango Twp	541
Sandy Twp	528
Kugler Twp	495
UT 62-21	440
UT 61-14	421
Linden Grove Twp	420
Willow Valley Twp	391
Sturgeon Twp	379
UT 63-21	369
UT 60-20	355
Morcom Twp	350
UT 61-17	288
UT 63-19	279
Sub-Total	12,996

1

Complete Parcel Layer

Phase #3

North of Taconite Belt & Southwest

2007

South West	
Ellsburg Twp	1,218
Cotton Twp	1,148
McDavitt Twp	1,058
Lavell Twp	973
Brevator Twp	927
Industrial Twp	790
Mud Hen Lake UT 56-16	756
Alborn Twp	739
Meadowlands Twp	675
Heikkila Lake UT 56-17	658
Floodwood Twp	645
Arrowhead Twp	632
Fine Lakes Twp	624
Janette Lake UT 55-21	589
Stoney Brook Twp	569
New Independence Twp	532
Toivola Twp	530
Culver Twp	519
Cedar Valley Twp	504
Floodwood	502
Halden Twp	457
Northland Twp	406
Kelsey Twp	398
Prairie Lake Twp	384
Van Buren Twp	365
Elmer Twp	326
Ness Twp	303
Potshot Lake UT 52-21	287
Brookston	249
Meadowlands	123
Sub-Total	17,886

Phase #4

Central East

2010

Central East	
Bassett Twp	1,789
Fairbanks Twp	830
Colvin Twp	784
Ault Twp	754
UT 55-15	454
UT 56-14	429
UT 55-14	302
UT 57-14	230
Hay Lake UT 59-16	212
Marion Lake UT 54-13	160
UT 54-15	115
UT 54-14	100
UT 58-14	82
Sub-Total	6,241

- Completed
- In-Progress
- Grant Application

Staff Focus

Assessor and Auditor Staff
North St. Louis County

2003

Leiding Twp	1,749
UT 66-21	318
UT 66-20	309
Camp 5 Twp	270
UT 67-21	242
UT 65-21	204
UT 64-21	262
UT 67-20	244
UT 67-19	263
UT 68-21	311
UT 68-20	247
UT Twp 68-19	444
UT Twp 69-19	88
Orr	317
Kabetogama Twp	553
UT Twp 69-20	41
UT Twp 70-19	22
UT Twp 70-20	46
UT Twp 71-20	8
UT Twp 70-21	42
UT Twp 71-21	31
Portage Twp	1,382
UT Twp 64-17	472
UT Twp 67-18	113
Crane Lake Twp	604
UT Twp 68-18	111
UT Twp 69-18	24
UT Twp 70 18	15
UT Twp 69-17	23
UT Twp 64 16	219
UT Twp 65 16	165
UT Twp 66 16	55
UT Twp 64 15	339
UT Twp 65 15	98
UT Twp 66 15	40
UT Twp 67 15	44
UT Twp 68 15	12
UT Twp 63-14	235
UT Twp 64 14	274
UT Twp 65 14	302
UT Twp 66 14	39
UT Twp 67 14	44
UT Twp 68 14	15
UT Twp 64 13	347
UT Twp 65 13	234
UT Twp 66 13	60
UT Twp 67 13	40
UT Twp 68 13	4
UT Twp 64 12	239
UT Twp 65 12	61
UT Twp 66 12	40
Sub-Total	11,661

All areas in St. Louis County

1

Complete Parcel Layer

PART III

② Establish a “Cost Recovery Program”

St. Louis County

Introduction

The GIS Advisory Committee recommends establishing a “Cost Recovery Program” to offset development and long-term maintenance costs of a parcel layer to the extent possible and practical, and potentially support the long-term upgrade and maintenance of a land records web portal.

What is a “Cost Recovery Program”

A “Cost Recovery Program” is a program established to capture costs in developing or maintaining a service, project, and/or program.

User charges allows for an equitable approach to financing government projects and programs by fairly charging businesses and individuals who benefit by improving their own productivity and efficiency.

A parcel layer provides the potential ability to generate revenue through a combination of avenues such as:

- Selling of raw and integrated data
- Mapping
- Specialized access
- Advanced querying
- And much more

Examples of common sets of data sold to businesses and

general public are: orthophotos, half section maps, plats, contour maps, street maps, addressing, parcel and property maps/info., road centerlines, utility infrastructure, and more.

Timeline

The GIS Advisory Committee suggests that the “Cost Recovery Program” be developed in tandem with the development of a web portal. Many aspects of the parcel layer will be used to generate revenue through the web portal. Therefore, these projects go hand-in-hand.

Potential Revenue

It is suggested that the revenue generated by the “Cost Recovery Program” be used to:

1. Offset development and maintenance costs of the parcel layer;
2. Support the “Office of GIS” operations;
3. Support the long-term upgrade and maintenance of the web portal.

Next Steps

1. Approve the development of the “Cost Recovery Program” along with the web portal. The web portal will be developed over the next several years, and implemented based upon funding level and a host of other challenges.

Overview

Goal: Create “Cost Recovery Program”

Timeline: In conjunction with the development of the web portal. The web portal will be developed and implemented over the next several years depending upon funding and other challenges.

Revenue Generation: Combination of selling data, mapping, querying, specialized requests, and other products.

Project Lead: GIS Advisory Committee and potentially new “Office of GIS.”

②

Cost Recovery
Program

PART IV

③ Establish an “Office of GIS”

St. Louis County

Introduction

In order to address both current and anticipated future challenges to land records management and GIS, the Committee recommends establishing an “*Office of GIS.*”

What is an “Office of GIS”

The *Office of GIS* will be responsible to coordinate and lead county-wide efforts to plan, develop, and maintain a comprehensive GIS system to improve department and overall county management.

This includes: long-range planning, county-wide coordination, develop standards, assist in building coverages, general administration (communication, access, data dissemination, security, map generation, information requests, etc.), assist county departments with their GIS needs, coordination with other government units, and assist in portal development and maintenance.

Why “Office of GIS” is Needed

As the digital world continues to expand, many businesses, residents, and government units are requesting (in some cases demanding) that information be displayed, integrated, portrayed, and queried in various forms.

St. Louis County lacks a central GIS figure/area to address county-wide issues of integration and implementation.

Suggested Number of Staff

The GIS Advisory Committee suggests that the *Office of GIS* be staffed by a total of four staff persons to be phased in over five years. This is based on anticipated level of work activity over time.

Phase I (Immediate Need): One GIS Manager/Administrator is needed immediately with a focus on several strengths such as: overall management and organizational skills, GIS knowledge similar to a GIS Specialist, and public relations. This will assist the office establish itself and begin to assist in current needs and projects.

Phase II (6-12 months): One additional GIS Specialist to assist in the development of a web portal, assist other county departments build capacity and systems, specialized projects, and much more.

Phase III (1-3 years): One additional GIS Specialist to assist in the development of a web portal, assist other county departments build capacity and systems, specialized projects, and much more.

Phase IV (4-5 years): One additional Information Specialist I to assist in working with departments, communities, businesses, and residents on questions, data requests, and documentation.

Overview

Goal: Establish an “Office of GIS”

Timeline: 2005-2010

Suggested Office Location: Administration, Planning, Land, or MIS

Suggested Number of Staff: 4 staff persons phased in over 5 years

Suggested Job Class:

- (1) GIS Manager/Administrator
- (2) GIS Specialists
- (1) Information Specialist I

Start-up Costs:

Total \$138,000
Start-up: \$50,000
Wages/Benefits \$88,000

Long-Term Budget (Estimated): Approximately \$300,000 (after completion of all 4 phases)

Funding Sources: New Budget Allocation, Staff Reallocation, “Cost Recovery Program”

Suggested Job Class

- Phase I:** GIS Manager/Administrator
(No County job description currently exists)
- Phase II & III:** GIS Specialist
(A County job description exists)
- Phase IV:** Information Specialist I
(A County job description exists)

Office of GIS Estimated Costs

In order to establish an *Office of GIS*, the following estimated funds are needed:

Phase I

Start-up Costs: \$50,000. This includes cost of start-up items such as: hardware and software, printers, plotters, desk/chair, material supplies, telecommunication connections, phone, etc. Also, space will need to be determined. This amount can be partially reduced if the office is located within an existing department that has such items as: plotters, space, etc.
Wages and Benefits (GIS Manager/Administrator): \$88,000. This includes wages and direct employee paid benefits.

Phase II

Start-up Costs: \$5,000. This includes cost of startup items such as: hardware and software, desk/chair, material supplies, telecommunication connections, phone, etc.
Wages and Benefits (GIS Specialist): \$60,000. This includes wages and direct employee paid benefits.

Phase III

Start-up Costs: \$5,000. This includes cost of startup items such as: hardware and software, desk/chair, material supplies, telecommunication connections, phone, etc.
Wages and Benefits (GIS Specialist): \$60,000. This includes wages and direct employee paid benefits.

Phase IV

Start-up Costs: \$5,000. This includes cost of startup items such as: hardware and software, desk/chair, material supplies, telecommunication connections, phone, etc.
Wages and Benefits (Information Specialist I): \$33,000. This includes wages and direct employee paid benefits.

**“Office of GIS”
Estimated Costs²**

	2005	2006	2007	2008	2009
Phase I					
Start-up Costs	\$50,000				
Wages and Benefits (GIS Manager/Administrator)	\$88,000	\$88,000	\$88,000	\$88,000	\$88,000
Phase II					
Start-up Costs		\$5,000			
Wages and Benefits (GIS Specialist) ¹		\$60,000	\$60,000	\$60,000	\$60,000
Phase III					
Start-up Costs			5,000		
Wages and Benefits (GIS Specialist) ¹			\$60,000	\$60,000	\$60,000
Phase IV					
Start-up Costs					\$5,000
Wages and Benefits (Information Specialist I)					\$33,000
Annual Costs (Supplies, printing, hardware, software, licenses, travel, etc.)		\$35,000	\$40,000	\$45,000	\$50,000
Total Costs	\$138,000	\$188,000	\$253,000	\$253,000	\$296,000

Estimated Costs

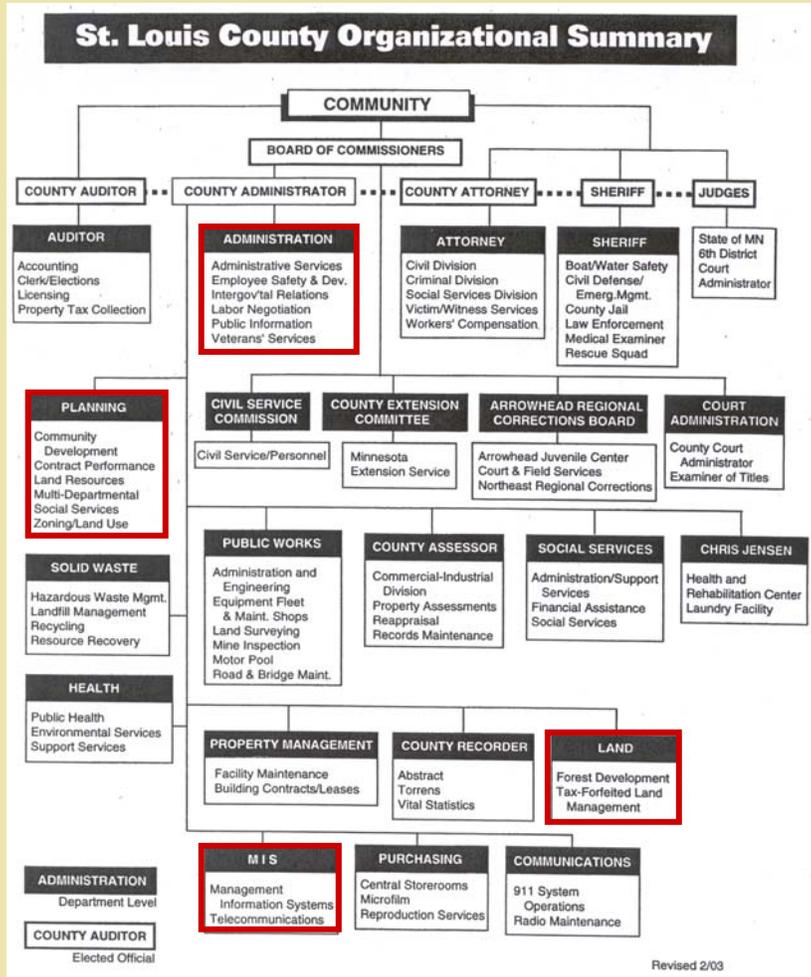
The start-up costs for Phase I is estimated at approximately \$138,000.

The long-term *Office of GIS* budget is estimated at approximately \$300,000 after all Phases (1-4) are completed.

Note: The *Office of GIS* could also experience small amounts of revenue from the potential “Cost Recovery Program”.

¹ Based upon a GIS Specialist with experience.

² Excluding cost-of-living and step increases.



Suggested Structure

It is suggested that the "Office of GIS" be placed in one of the following departments: **Administration, Planning, Land, or MIS.**

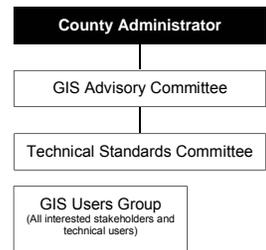
The placement of the *Office of GIS* in Administration, Planning, Land, or MIS is suggested because land records and GIS is an overarching county-wide component to all departments and is unique in its use and application.

It is suggested that the *Office of GIS* personnel report on activities, and facilitate (become chair and secretary) the GIS Advisory Committee to ensure the county issues are addressed.

The GIS Advisory Committee has no authority over staff, but provides guidance on policy and through an *Office of GIS* strategic plan.

The placement of the new office should take into consideration the existing GIS Advisory Committee structure, which currently reports directly to the County Administrator (see adjacent chart).

It is recommended that all departments would maintain their own department GIS capabilities and would not report to this office.



Advantages and Disadvantages

Administration

Advantages

- Maintains existing structure and reporting
- Authority and clout
- Autonomous
- Above department politics

Disadvantages

- Not in environment that has existing technical/GIS support or capacity
- GIS new to department

Land

Advantages

- Supervisory/Administrative structure in place
- Already providing GIS expertise/software support
- GIS is critical component of department operations
- Knowledgeable staff is available immediately
- Department can pay for part of operation out of Tax Forfeit Trust funds
- Currently administering GIS data and server
- Minimum number of new staff need to be hired initially

- Been involved with GIS from the beginning

Disadvantages

- Fund must be set up to cover non-department costs
- Project time and other costs must be accounted for and paid out of proper accounts
- Budget procedure must be established
- Department functions may take priority
- Some complications in billing hardware costs

Planning

Advantages

- Global view
- Existing hardware, plotters
- Critical interest
- Grant writing capabilities

Disadvantages

- Budget cuts may impact new office and become issue with other departments
- Support for other departments may over-ride importance of new office
- Planning functions may take priority

MIS

Advantages

- Access to programming staff
- Hardware and software support and expertise
- Network support
- Internet and intranet support

Disadvantages

- Budget cuts may impact new office and become issue with other departments
- MIS structure not compatible with GIS structure
- New office may be low authority or priority in MIS
- MIS functions may take priority
- Support for other departments may over-ride importance of new office.
- Complications in billing

Duties of the "Office of GIS"

The following is a general outline of the duties of staff in the *Office of GIS*. It should be noted that as the office expands capabilities, county departments may transfer some of their duties to the new office such as: software licensing, and server maintenance.

The general *Office of GIS* duties are:

Leadership and Planning

- Develop a formal structure that facilitates leadership, policy development, resolution of technical issues, administration, and implementation of land records system and applications on a county-wide level.
- Create a forum to identify current and future applications and coordinate planning efforts among stakeholders.
- Identify and coordinate with county departments and agencies for development of systems and the dissemination of geographic and land record information.

- Provide assistance to departments that lack the technical capacity to improve, integrate, or implement GIS technology for functions within the department.

Enhance Standards

- Identify technology needs for a robust, accessible system.
- Define standards to ensure land records and GIS data integrity.

Building and Maintaining the Foundation

- Identify, build, and maintain the foundation upon which the land records and GIS system will be based.
- Coordinate county-wide layers, and update county-wide GIS layer needs.

Communications, Access, Data, and Security

- Develop and implement a plan to disseminate available geographic information to various end-users.
- Provide access, fee structures, network access, and security.

Technical Knowledge Sharing and Training

- Promote GIS use by facilitating information and knowledge sharing among stakeholders.
- Identify and prioritize County GIS training needs.

Note: The *Office of GIS* will address county-wide issues and assist departments research, develop, and integrate new systems to improve productivity and efficiency, but the *Office of GIS* should not be used to conduct department ongoing mapping and duties.

Appendix

Return-on-Investment

St. Louis County

2000

Return-on-Investment

Introduction

Many government entities across the nation have utilized GIS and the parcel layer for many improvements in productivity and efficiency. Others have used it to generate revenue. Below is an example of return-on-investment payoff over time based upon use of GIS and the parcel layer.

Return-on-Investment

Greater Return-on-Investment (ROI) is achieved by licensing certain system functions and information access by the public.

Applications with Rapid Payoff



GIS Application

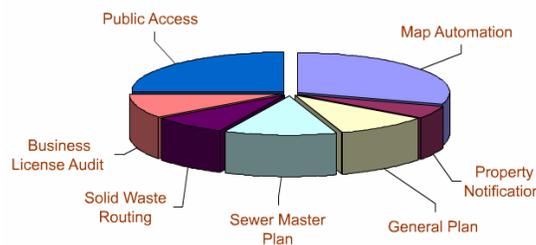
In many instances the end-user is more than willing to pay for improved services such as: advanced real estate analysis.

Following Charts

The following charts show how government jurisdictions have used GIS and the parcel layer to improve services, reduce costs, and generate revenue.

Overall, government has used GIS in a wide variety of innovative ways such as: tax evasion (mobile homes), locating property that was not before being taxed, and licensing GIS data as part of county’s Cost-Recovery Program (Richland County’s Internet Mapping).

Wide GIS Applications Portfolio



Return-on-Investment

Organization	Discipline	Problem	Solution Using Parcel Layer and GIS	Return on Investment
Newport News Waterworks, Virginia	Water Department	State permits require right-of-way view, profile, and vicinity maps. Hand drawing these maps was very time-consuming.	The State automated map production using ArcView GIS.	Production time for each map was reduced from between two to four hours to just 15 minutes using ArcView GIS.
City of Washington, Illinois	Planning Department	Need to reduce the cost of plat map production by streamlining the process.	The City used the County GIS to prepare annexation plats for forced annexations.	Eliminated the need for outsourcing annexation plat creation and saved an estimated \$1,000 per plat.
City of Bartlett, Tennessee	Planning and Finance Departments	A review of the City budget revealed that the City sticker fee of \$25 per vehicle was not keeping pace with the estimated number of households in the City.	The City found that the County Trustees Office had vehicles listed as located in unincorporated Shelby County. City staff performed a simple address match against these addresses and identified a gap between the County and City record caused when a revised annexation was not communicated.	Geocoding 16,000 additional records by ZIP Code yielded 2,100 households that were not paying the required City sticker fee. The inclusion of these households will generate \$52,500 annually in revenue.
Pierce County, Washington	Sheriff's Department and County GIS Division	Pierce County wanted to supply citizens with information on sex offenders residing in the County.	The Pierce County Sheriff's Crime Unit developed an online sex offender registry.	Pierce County offers a greater level of citizen service in a cost-effective manner. The registered sex offender Web site receives 5,000 visitors per month. Since each visitor represents an estimated five minutes of staff time, without the Web site, the County would need an additional 12 employees to handle these requests.
State of Indiana	State Department of Health	Screening of all children on Medicaid for lead poisoning is federally mandated. However, such large-scale screening is prohibitively expensive, so State health officials wanted a more efficient and targeted method of screening.	Officials geocoded State health records and developed an application that provides regression analysis and predictive modeling so that high-incidence areas can be identified.	This analysis revealed that the majority of cases of elevated blood lead in children were concentrated in just a few counties. By redirecting screening efforts to these areas, the State saved nearly \$2 million and secured a grant from the Center for Disease Control for \$239,980 that will fund the State's lead poisoning prevention program.
City and County of Honolulu, Hawaii	Honolulu Wastewater Information Management System (WIMS)	Maps of sewer, infrastructure facilities were needed to support facility maintenance and management programs. Updated and comprehensive maps were also needed for facilities master planning that would support capital improvement program funding, planning, scheduling, and tracking.	Created digital model of sewer infrastructure facilities for the island that supports data maintenance procedures, capacity modeling programs, and production of work order maps.	Avoided more than \$6 million in federal fines while providing more accurate assessments of facility capacity requirements, creating more effective preventive maintenance programs, and developing more accurate budgeting for projects.
City of St. Paul, Minnesota	Information Systems, GIS Division	City was participating in the Local Update of Census Addresses (LUCA) program to ensure a more accurate census count.	City staff, using GIS, identified 1,099 housing units that the Census Bureau had missed.	The 2,900 people residing in the identified housing will give the City an additional estimated \$5 million in federal funding over a 10-year period.
City of St. Paul, Minnesota	Public Works and Information Systems	Right-of-way permit system needed.	GIS-based right-of-way permit system sets fees for permits to dig up or obstruct street right-of-way in Saint Paul. These fees are based on street characteristics stored in the GIS.	The Public Works Department now uses GIS to set fees that yield revenue of \$800,000 annually.
Duval County, Florida	Duval County School District, Transportation Department	The school district needed improved school bus routing.	School district automated routing using a GIS-based solution, SMARTR for Schools Transportation Module.	The adoption of the system eliminated 20 bus routes. This will save the district an estimated \$700,000 annually.
Spokane, Washington	Central Valley School District	The school district needed improved school bus routing.	School district automated routing using a GIS-based solution, SMARTR for Schools Transportation Module.	The school district reduced the time needed for State-mandated reports by one week and eliminated six routes by enforcing the school district walking policy. These changes save the district \$125,000.
City of Vallejo, California	Economic Development	The City needed to attract companies to increase revenues and employment.	Developed a GIS-based internet site that supplies information on available commercial and retail buildings and land, demographics, and traffic counts to companies looking for relocation sites.	Retail vacancy rate was reduced 45.3 percent between 1998 and 2000 after the economic development Web site was introduced.
Fairfax County, Virginia	Solid Waste and Recycling Department	Needed to optimize routes for 38,400 residential customers.	Used RouteSmart, an ArcView GIS-based solution from ESRI business partner RouteSmart, to optimize vehicle routing.	The County reduced the number of crews from 16 to 10 and had an estimated annual savings of \$200,000.
Martin County, Florida	County Assessor and Information Services Department	County Commissioners requested an inventory of telecommunications towers to assist them in writing a new ordinance.	Geocoding an FCC telecommunication database against County parcel data revealed many parcels with towers that were under assessed.	The parcels were reassessed and generated an additional \$3.5 million in tax revenue for the County.
Lucas County, Ohio	County Auditor	Need to streamline map production of subdivision maps by migrating from Mylar maps to GIS.	The County reduced average map production time from 10 hours to two hours.	Saved \$10,000 per year on map maintenance and recaptured 570 man-hours that are now devoted to serving the public.
City of Sacramento, California	Solid Waste Department and Administrative Services Department	Improve efficiency in routing and balance the workload of the solid waste fleet.	Developed a GIS-based routing methodology.	In two phases the City reduced the number of drivers from 39 to 29 and realized an annual saving of \$250,000 in fleet and equipment costs. Drivers no longer needed for the solid waste fleet were reassigned to new duties thus providing necessary resources for City programs

Return-on-Investment

Organization	Discipline	Problem	Solution Using Parcel Layer and GIS	Return on Investment
City of Newton, Massachusetts	Public Works	Customers connected to the sewer system were not being billed because the properties were not in the sewer billing system.	Mapped those properties not entered in the City sewer system and rectified customer billing for properties connected to the sewer system.	More accurate billing system's database generates an additional \$8,000 in revenue annually.
City of Newton, Massachusetts	School Department	Need to improve school bus routing.	Developed custom tools in ArcView GIS to assist the school department with transportation planning.	Improved bus stop assignments and saved \$49,000 annually.
Clark County, Washington	Weed Management Department	Difficulty in identifying the owners of properties needing weed abatement.	The weed control officers now use laptop computers with access to a custom GIS application that uses GPS to locate each parcel with noxious weeds and identify the property owner.	Weed control officers now identify more than 100 outbreaks of noxious weeds per day compared to eight to 10 before using the GIS.
Tualatin Valley, Oregon	Fire and Rescue Department	With the population growth in the 10 cities in the region, several fire stations were no longer optimally sited.	The agency switched from traditional modeling that combined drive times and located stations using a two-mile radius scheme to a method that analyzes the timing and locations of the 25,000 calls per year the district receives. The agency compared both nonfire and fire-related calls using ArcView, ArcView Spatial Analyst, and ArcView Network Analyst.	By citing fire stations based on demand analysis, the agency reduced the budget by \$4 million.
City of Sunnyvale, California	Community Development Department	The City wanted to develop an e-government one-stop permitting application to better serve the community.	The City implemented an ArcIMS-based application providing online permitting.	Despite the fact that Sunnyvale construction valuations increased from \$240 million in 1997 to \$320 million in 2000, the Building Safety Department has not had to increase staff. Building Department officials estimate that application time has decreased from approximately two hours (including driving to the City Hall, standing in line, and filling out forms) to just a few minutes when permits are obtained using the online system.
County of Orange, Florida	County Auditor/GIS Division	Comptroller's Office requested an audit of the County's cable TV customers.	The GIS Division did a complete audit of the auditor's database by geocoding and comparing jurisdictional boundaries.	Traditional random or partial audits performed by Comptroller's Office typically resulted in \$2,000 per year in revenues. The GIS audit netted \$63,000 in franchise fees and identified customers that had been assigned to wrong county and/or whose locations were erroneously reported in incorporated or unincorporated areas. Subsequently, a cellular telephone audit netted \$650,000, and a resort tax audit of condominiums collected \$700,000.
City of Richmond, Virginia	Community Development Department/Division of Land Use Administration	The City needed to automate map and data maintenance. Traditional methods required separate maps with varying scales for property, zoning, and land use. These maps were manually updated.	GIS was used to simultaneously update both maps and data	Map and database maintenance was coordinated resulting in an optimized work process. Individual map production went from 5 to 7 hours to 30 minutes with an overall productivity increase of 90 percent.
District of North Vancouver, Canada	GIS Department	The District needed to automate routine data maintenance and entry tasks.	The GIS Department decided to design, develop, and implement two new components that would allow them to work more efficiently.	The system has resulted in a 75 percent reduction in staff hours.
District of North Vancouver, Canada	GIS Department	District mandate required improved citizen services.	The District established a Web portal, GeoWeb, that provides access to spatial data. Using ArcIMS, the District has created four applications that supply information to citizens—Property Information Explorer, Parks Online, Air Photos, and North Vancouver Public Art.	Maps are the Department's most popular product. The automated mapping system produces more than 75 percent of the District's cartographic products. GeoWeb, which averages more than 100 visitors each day, improves GIS staff productivity by allowing staff members to work on other projects and administer the system instead of filling counter requests.
Grason County, Texas	Planning Department/ 911 Emergency Center	The County wanted to develop other uses for the GIS database.	The County automated production of emergency center map books using the street and structure information from databases maintained by the Planning Department.	By applying the GIS database to ongoing processes, the County was able to save approximately \$4,000 by producing the map book in-house rather than outsourcing it.
City of Portage, Michigan	Community Development Department	Tasks associated with the notifications process performed by the Department were time intensive.	The City developed an ArcView application that reduced the time clerical staff spent handling the notification process.	The City has realized a staff savings of two man-hours per notification.
City of Riviera Beach, Florida	Community Development Department	City staff wanted to increase productivity and efficiency.	The staff developed a centralized GIS resource center that assists employees in performing routine project research.	The resource center has made staff research more efficient and saves approximately 520 staff hours per year. Now staff members have time to perform additional tasks.
Summit County, Colorado	GIS Department	The County was charged with identifying new methods for increasing staff efficiency and productivity.	GIS was chosen as the technology that would enable County staff members to do more with less.	A cost-benefit analysis estimates that the County realized cost savings of \$2,146,000 during the 10-year period between 1991 and 2001.

Return-on-Investment

Organization

Discipline

Problem

Solution Using Parcel Layer and GIS

Return on Investment

City of Tucson, Arizona	Tucson Water District	Implement City mandate for cost cutting and increased efficiency.	Implemented GIS that is saving staff time associated with information gathering, planning map production, and inspection activities.	Over a five-year period, the water district expects to realize a net return from the investment in GIS of \$5,356,943 due to increased staff efficiency.
Citrus County, Florida	County Property Appraiser	Increase the accuracy of the property improvements database to account for all improvements so properties will be properly assessed.	Used GIS in combination with digital orthophotography to detect unreported new construction.	The project added tax revenue of \$200 million (or about 5 percent of the annual tax base) from unrecorded property improvements.
State of Montana	Department of Environmental Quality	The State wants to reduce carbon monoxide emissions and demonstrate these reductions so that cities can move from non-attainment to attainment status.	Average daily carbon dioxide emission data for Billings and the surrounding area was modeled to a much higher degree of accuracy using ArcInfo.	This data will be used to support a redesignation request to the U.S. Environmental Protection Agency for a change in status.
City of Lincoln, Nebraska	Police Department	Formulate an effective response to numerous complaints relating to drinking parties held near the University of Nebraska.	Mapped party complaints to target areas with high-risk drinking parties and started media campaign to create perception of risk of arrest. Established special enforcement projects.	Complaints reduced 27 percent within one-mile radius of the campus.
City of Lincoln, Nebraska	Police Department	Need to identify high crime areas and reduce burglaries in those areas.	Identified problem neighborhoods and trends. Monitored program results. Initiated community outreach programs to targeted neighborhoods.	Crime reduced in target neighborhoods 67 percent in seven weeks.
City of Lincoln, Nebraska	Police Department	Solve child sexual assault case.	Identified patterns of indecent exposure incidents in the area and georeferenced reports of matching descriptions to sexual offender list.	Suspect was arrested one week after the incident.
County of Bernalillo, New Mexico	County Assessor	Unrealized revenue caused by undervalued properties.	Overlaid digital orthophotography to GIS parcel base and verified the use status of properties with the tax rolls. Uncovered \$1.4 billion dollars worth of unsurveyed or undervalued properties.	Increased tax revenue by \$6 million per annum.
Winnebago County, Wisconsin	County Assessor	Limited precision of County maps led to delays in permit issuance and misidentification of properties located in the floodplain.	Cooperative data project created a much more accurate basemap while reducing redundant data capture.	Accurate maps sped up permitting, will produce savings of \$300-\$500 per year, and increased property values by more than \$1 million for approximately 1,100 property owners whose homes were erroneously designated as in a flood zone.
Citrus County, Florida	County Assessor	Properties not assessed because building permit information is inaccurate or missing.	Used image analysis to identify changes in property improvements.	\$200 million in unrecorded property improvements and building additions detected, causing adjustments to 5 percent of the tax base.
Lucas County, Ohio	County Assessor	County unable to defend assessed values using standard appraisal models.	ArcView GIS with the ArcView Spatial Analyst extension to create continuous sales price surfaces for factoring location into valuation model.	A 60 percent increase in the success of valuations defense.
Elsmore Valley Water District, California	Public Works Department GIS Division	Need to determine which parcels in the district are subject to annual stand-by-assessments.	A standby charge on unimproved parcels is used to fund the maintenance and replace the District's current facilities.	Improved parcels were identified and assessed, generating \$5,000 in revenue.
Culver City, California	Public Works Sanitation Division	Desire for increased efficiency in special pickup routing.	Routed trucks more efficiently using ArcLogistics Route.	Decreased overtime and lowered vehicle maintenance costs, producing savings of \$15,000 in first six months in addition to improving service to residents.
City of Los Angeles, California	Emergency Management	Need to ensure quicker response times during emergencies.	Developed GIS Internet-based solution for quick access to data.	Response times decreased by 25 percent, and operations were more efficient during year 2000 drills.
City of Sacramento, California	Fire Department	Need for more productive method for map book generation.	Used the Map Book extension for ArcView GIS.	Saved \$20,000 a year on the reproduction of maps. Maps are updated more frequently and are more accurate.
Western Australia, Australia	Fire and Emergency Services Authority	Choosing the best of three possible sites for a fire station.	Loss and response time modeling showed all sites were equal.	Saved more than \$300,000 on the cost of the land by choosing the least expensive parcel.
City of Newton, Massachusetts	Information Technology Department	Production of labels for abutter notifications was time-consuming.	GIS used to generate mailing labels for abutter notifications required by zoning board of appeals, traffic council, conservation commission, and other city agencies.	Savings of approximately 500 hours of staff time annually across four departments.
City of Newton, Massachusetts	Inspections Department	Need to streamline permit assistance procedures.	Developed automated front counter system using GIS.	System saves approximately 250 hours of staff time annually.

Parcel Layer Support

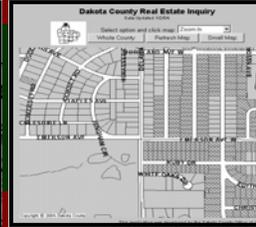
The support for the development of the parcel layer has been through the following avenues such as: letters, resolutions, etc. It should be noted that not all government organizations across the county have been approached for support due to the large undertaking (presentations, etc.) to 124 jurisdictions.

Government Jurisdictions' Support

City of Duluth
City of Hermantown
City of Proctor
Duluth Township
Midway Township
Rice Lake Township
Canosia Township



Field #	Area	Area
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St. Louis County
2005

