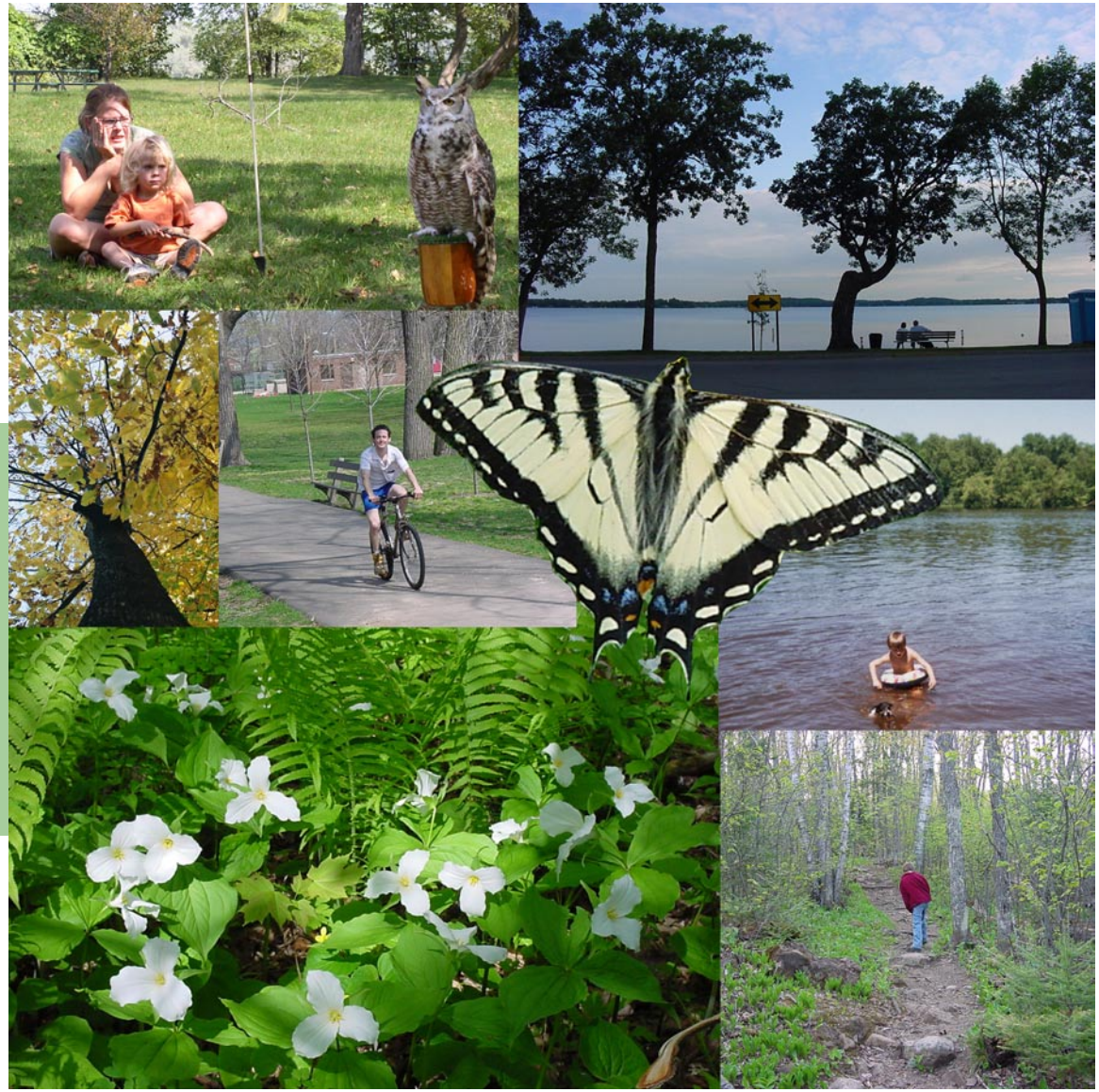
Using Natural Resources Information in Comprehensive Planning

January 2006



A companion to the Metropolitan Council's Local Planning Handbook

This handbook and the case studies described within were funded through a cooperative project of the Bush Foundation and the Minnesota Department of Natural Resources Central Region

Photo by Pamela Freeman

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Minnesota Department of Natural Resources Publication no. _____

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Project partners included: Ameregis; Anoka Conservation District; Benton County Soil and Water Conservation District; the City of Oak Grove; the City of Sartell; the City of Shakopee; CR Planning, Inc.; the Metropolitan Council of the Twin Cities; the Mid-Minnesota Mississippi RC&D; and the Stearns County Soil and Water Conservation District.

Target audience and use of this document outside the 7-county Twin Cities region: Minnesota law requires municipalities in the metropolitan seven county region to complete and periodically update comprehensive plans that are consistent with regional system plans of the Metropolitan Council. While these planning requirements are limited to the seven county area, the Metropolitan Council's *Local Planning Handbook* and this handbook are valuable planning resources for any communities interested in planning.

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January 2006

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SECTION 1

Introduction

Natural resources in your comprehensive plan

Imagine that your community is holding a kick-off meeting and is creating a new comprehensive plan. The kick-off meeting includes creating a "vision" for the future. When asked to describe their vision of the future, residents say things such as; "the lake is clean with lots of fish," "I see open spaces within developments," "parks are close to where people live," "I like seeing wildlife and hearing birds," and "the natural beauty of our community is protected." How do you as staff or a planning commission member create a new comprehensive plan reflecting these visions tied to natural resources? How do you balance these vision statements with vision statements about continued growth and development?

Communities in the Twin Cities metropolitan area are creating or updating comprehensive plans for Metropolitan Council review by 2008 as required by state law. Using examples from case studies, this handbook offers some answers for how to create a comprehensive plan that incorporates both natural resource visions and development visions. Starting with information about natural resources is key to considering natural resources in land use policies and decisions. Assessing natural resources creates the foundation for choosing where development should be encouraged and where resources should be protected; and where both can occur together.

Our case study communities reflect the diversity of communities found in the metropolitan area; from developing communities to rural residential areas to agricultural areas.

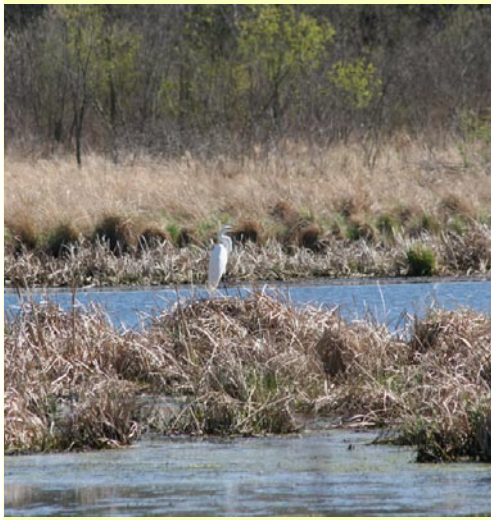


Photo by Pamela Freeman

Companion to the Local Planning Handbook

These communities, like your community, were asking questions such as:

- How do we get information about our natural resources?
- What resources are important in our community?
- Can development occur where resources are also protected?

Some of the answers they found to these questions are highlighted on the following pages.

This handbook is designed as a companion to the Metropolitan Council's *Local Planning Handbook* [1] for communities wishing to use natural resource information in their land use planning decisions. The suggested techniques for using natural resource information in this handbook follow the required sections for comprehensive plans outlined in the *Local Planning Handbook*. For example, the first required section for a comprehensive plan is the background chapter containing the municipality's vision, policies, and objectives. Suggestions on how to use natural resource information in creating visions, policies and objectives are discussed in Section 4. In Sections 5 through 7 are suggestions for using natural resource information in the required land use plan, water resources management plan, parks and open space plan, and implementation programs. This handbook suggests ways to use natural resource information within a larger comprehensive planning process. It does not present all of the steps a community would take to develop a comprehensive plan.

In Section 2, we begin by presenting a brief summary showing the importance of natural resource protection in the Metropolitan Council's region-wide goals and policies.

Find the *Local Planning Handbook* at: http://www.metrocouncil.org/planning/LPH/handbook.htm

Section 4, Vision, Policies and Objectives

Section 5, Land Use Plans

Section 6, Water, Parks and Open Space Plans

Section 7, Implementation Programs

[1] Metropolitan Council; Local Planning Handbook; September 2005.

SECTION 2

Do we need to consider natural resources in our 2008 comprehensive plan update?

How the *2030 Regional Development Framework* addresses natural resources

The Metropolitan Council's *2030 Regional Development Framework* guides development in the seven county region for the next 25 years. The *Framework* contains goals, policies and strategies informing the metropolitan system plans, called *Policy Plans*, for airports, transportation, regional parks and open space, and water resources.[2] Local comprehensive plans must conform to the metropolitan *Policy Plans*. The use of natural resource information and the integration of natural resource protection with development are basic tenets of the *2030 Framework*. Local comprehensive plan updates should be based on the best available natural resource information and should contain goals that achieve both development targets and natural resource protection.

In addition to accommodating population growth, preserving natural resources is one of the four goals adopted by the Metropolitan Council in the *2030 Regional Development Framework*.[3] To achieve the goal of preserving natural resources, the *Framework* recognizes the need to use natural resource data in the local comprehensive planning process. The *Framework* also recognizes that the choice of land use pattern can provide housing while also protecting natural resources.[4] Choices based on accurate data and community values can result in development patterns that protect local and regional natural resources.

2030 Regional Development Framework Natural Resource Goal

> **"Goal - Preserving vital natural areas and resources for future generations.** This metropolitan area boasts a unique combination of assets: three majestic rivers, 950 lakes, rolling hills, extensive wetlands, native prairies and woodlands, aggregate and a multi-layered aquifer system – assets that are essential to our region's quality of life and continued economic well-being." *Metropolitan Council's 2030 Regional Development Framework, page 3*

Find the *2030 Regional Development Framework* at:
http://www.metrocouncil.org/planning/framework/documents.htm

Find the metropolitan Policy Plans at:

2030 Transportation Policy Plan
http://www.metrocouncil.org/planning/transportation/TPP/2004/summary.htm

2030 Regional Parks Policy Plan
http://www.metrocouncil.org/planning/parks/2005/ParksPlan.htm

2030 Water Resources Management Policy Plan
http://www.metrocouncil.org/planning/environment/WRMPP/WRMPP2005.htm

[2] Ibid, pages 1-2.
[3] Metropolitan Council; *2030 Regional Development Framework*; January 14, 2005; page 3.
[4] Ibid, page 4.

New Approaches Emphasizing Natural Resources

Use natural resource inventories and assessments

Develop in a manner that conserves natural resources

"Encouraging the use of the metro-wide natural resources inventory and assessment to foster development that is more sensitive to the environment. An inventory and assessment of the region's natural resources, now documented in overlays of computerized maps, can help local governments plan development that respects the integrity of natural areas and incorporates environmental features into development projects. Conserving and restoring natural resources of regional or local importance contributes to a healthy natural environment and enhances our quality of life. Connecting regional and local features by natural-resource corridors helps sustain wildlife and plant habitat and shapes how development looks on the ground." *Metropolitan Council's 2030 Regional Development Framework, page 4*

"Offering greater flexibility in the location of new development in growing communities. This Framework will provide growing cities the flexibility to decide where development occurs within broader areas that are planned and staged for development, consistent with regional perspectives. It is vital that these cities will make efficient use of infrastructure and ***develop in a manner that conserves natural features*** and provides transportation options. This is intended to help local officials build communities in a more strategic and holistic way." *Metropolitan Council's 2030 Regional Development Framework, page 4* (***emphasis added***)

Find out how to access the regional Natural Resources Inventory and Assessment at: http://gis.metc.state.mn.us/

2030 Framework Policy Directions and Strategies

Integrate growth, transportation, housing, and natural resources in local comprehensive plans.

The *2030 Framework* policies and strategies integrate growth, transportation, housing, and natural resource policies[5]. In addition, the *Framework* encourages integration of these issues in local comprehensive plans.

Policy 1: Work with local communities to accommodate growth in a flexible, connected and efficient manner.

- Strategy for all communities – Promote development strategies that help protect and sustain the regional water supply.
- Strategy for Developing Communities – Use natural resource conservation strategies to help protect environmentally sensitive areas and shape development.
- Strategy for Rural Areas – Support development in rural areas in clusters or at low densities to preserve these areas for future growth and to protect the natural environment.

Metropolitan Council's 2030 Regional Development Framework, pages 6-9.

Policy 4: Work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources.

- Encourage the integration of natural resource conservation strategies in regional and local land use planning decisions.
- Work with other regional partners to protect regionally important natural resources identified as unprotected in the Natural Resources Inventory and Assessment.
- Work to preserve the quality of the region's water resources.
- Work with our regional partners to remain in compliance with federal air quality standards for carbon monoxide, ground level ozone and fine particulate pollution.

Find the regional Natural Resources Inventory and Assessment at: http://gis.metc.state.mn.us/

[5] Ibid, page 6.

- Designate additional areas for the regional park system that enhance outdoor recreation opportunities and serve important natural resource functions.

Metropolitan Council's 2030 Regional Development Framework, page 14.

To achieve the Framework policies, there is a role for both the Metropolitan Council and local communities.[6]

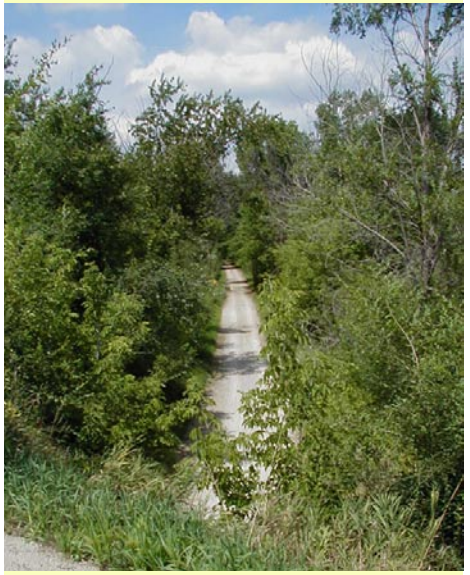
2030 Framework

Role of Metropolitan Council in protecting Natural Resources

Policy 4: Work with local and regional partners to reclaim, conserve, protect and enhance the region's vital natural resources.

Metropolitan Council Role

- Partner with state agencies, counties, communities, builders and developers, and non-profits to conserve, maintain and restore natural resources identified in regional and local natural resource inventories. Integrate natural resource conservation strategies into regional system plans for infrastructure improvements and development and to restore degraded natural resources of regional importance to support an interconnected network of natural resources.
- Coordinate and provide technical assistance to communities as they develop local stormwater management plans consistent with Minnesota Rules Chapter 8410 and the Metropolitan Land Planning Act.
- Expand the regional park system, as appropriate, to conserve, maintain and connect natural resources identified as high quality or of regional importance. Invest in acquisition and development of land for the regional park system.
- Develop and promote the use of best management practices for abating, preventing and removing point and nonpoint source pollution; reducing soil erosion; protecting and improving water quality; and maximizing groundwater recharge.



[6] Ibid, page 19.

2030 Framework

Role of Local Community in protecting Natural Resources

- Provide technical assistance to communities regarding the adoption and enforcement of environmental preservation and conservation techniques and ordinances.
- Work with public and private entities to maintain the quality of regional water resources.

Community Role

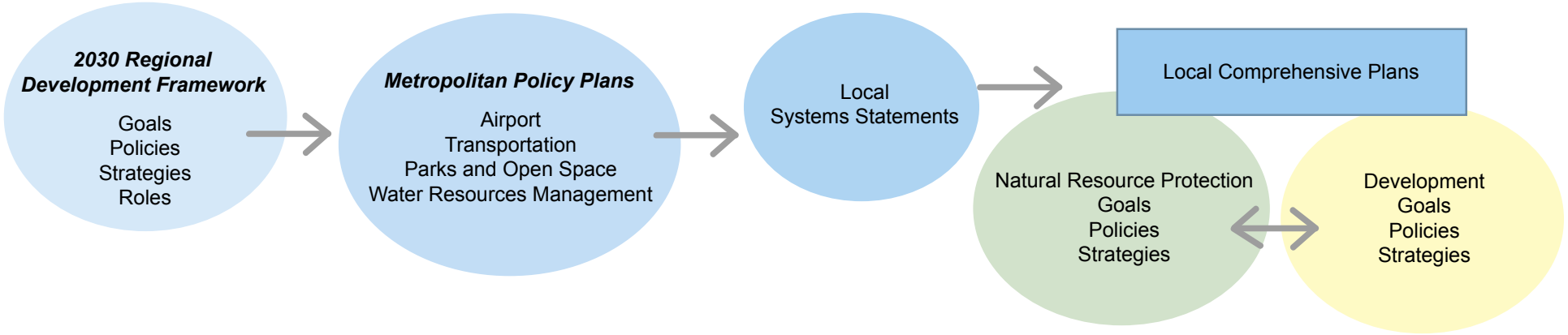
- Complete local natural resource inventories as they deem appropriate. Give strong consideration to integrating natural resources, including aggregate, identified in regional and local natural resources inventories into local land use decision-making.
- Adopt and enforce erosion control ordinances and other environmental preservation and conservation techniques and ordinances.
- Prepare and implement local stormwater management plans consistent with Minnesota Rules Chapter 8410 and the Metropolitan Land Planning Act.
- Include as a part of local park systems natural resources that are identified as high quality or of local and regional importance.
- Implement surface water management practices geared to protecting and maintaining the quality of local water resources.
- Adopt and implement best management practices for abating, preventing and removing point and nonpoint source pollution; reducing soil erosion; protecting and improving water quality; and maximizing groundwater recharge through surface water infiltration.

Metropolitan Council's 2030 Regional Development Framework, page 19.

Metropolitan Policy Plans and Local Systems Statements

Using the *2030 Regional Development Framework*, the Metropolitan Council developed policy plans for four metropolitan systems: airports, transportation, regional parks and open space, and water resources.[7] The metropolitan *Policy Plans* are long-range comprehensive plans for regional systems similar to local comprehensive land use plans. Based on the metropolitan *Policy Plans*, a system statement is developed for each community in the metropolitan area. A system statement is a document informing each community how it is affected by the *Policy Plans*. System statements were delivered to every community in September 2005. Under state law[8], local communities must develop a comprehensive plan that is consistent with the metropolitan *Policy Plans*.[9] System statements help communities understand the local impacts of the region-wide *Policy Plans.*

Find the local *System Statements* at: http://www.metrocouncil.org/planning/assistance/systemstatements.htm



[7] Ibid, pages 1-2.
[8] Minn. Stat. 473.864
[9] Metropolitan Council; 2030 Regional Development Framework; January 14, 2005; page 2.

SECTION 3

Where are natural resources considered in our comprehensive plan?

The Metropolitan Council's *Local Planning Handbook* outlines the specific sections of a comprehensive plan required by the Metropolitan Land Planning Act (MLPA).[10] The required sections listed in the *Handbook* include several sections where natural resource information can be used and several sections where natural resource issues take center stage. They are:

- Background chapter – The Foundation of the Comprehensive Plan[11]
- Land use plan[12]
- Water resources management plan[13]
- Parks and open space plan[14]
- Implementation programs[15]

The following sections show how natural resources can be considered in each of these required comprehensive plan sections.

A transportation section is also required by the MLPA but is not addressed in this document. Many communities include additional sections in their comprehensive plan even though the sections are not required by the MLPA. These additional sections may include; economic development, intergovernmental coordination, and urbanization and redevelopment areas. Intergovernmental coordination can be an important issue in addressing natural resources that cross political boundaries. Examples of intergovernmental coordination for the purpose of managing or protecting natural resources are included in Section 8.

Metropolitan Land Planning Act Minn. Stat. 473.852.869.

Find the *Local Planning Handbook* at: http://www.metrocouncil.org/planning/LPH/handbook.htm

Section 4, Vision, Policies and Objectives

Section 5, Land Use Plans

Section 6, Water, Parks and Open Space Plans

Section 7, Implementation Programs

Section 8, Intergovernmental Coordination

[10] Metropolitan Council; Local Planning Handbook; Sept. 2005; pages 1-6 to 1-8.
[11] Ibid, Section 2.
[12] Ibid, Section 3.
[13] Ibid, Section 5.
[14] Ibid, Section 6.
[15] Ibid, Section 7.

SECTION 4

How do we decide what resources are important to our community?

Using natural resource information in creating the Foundation of the Comprehensive Plan

Vision, Policies and Objectives

Natural resources often play a starring role in the first section of the comprehensive plan; the vision, policies and objectives. A common visioning technique is to ask people to imagine themselves at some point in the future on a balloon ride over their community. As they imagine passing slowly over their community, they are asked to describe the future they want to see. Clean air and water, parks and open space, and other natural features are often part of their vision.

Developing a shared vision and agreeing on how to achieve the vision helps communities address hard issues such as how can development and natural resource protection occur at the same time. At its most basic, a comprehensive land use plan is comprised of three basic components:

- A description of what your community is now;
- A description of what you want your community to be in the future; and
- A plan for how to get from where you are now to where you want to be.

Background studies, including natural resource information, document your community as it is today. A community vision describes what you want your community to be in the future. Policies and objectives outline the plan for how to get from where you are now to where you want to be. Visions are usually brief, general and positive. Policies and objectives add detail to the vision. They address specific issues and guide land use decisions.

For a general guide to comprehensive planning in Minnesota, see:

Under Construction: Tools and Techniques for Local Planning
http://server.admin.state.mn.us/resource.htm

Example of a Natural Resource Vision

Strategic Vision for the City of Shakopee

Twenty years from now Shakopee will be known and valued as a unique city:

Where a vital and historic downtown anchors an active riverfront district; and where the Minnesota River serves as a beacon for residents and tourists;

Where distinct neighborhoods and business areas connect with each other through greenways and trails to protected natural habitat, recreational attractions, and other destinations; . . .

Techniques for Educating Citizens About Natural Resources

Your comprehensive plan vision establishes what community residents' value; what is important to retain and enhance, including natural resources. In order to think about the future, people should know the quality of natural resources in your community now. You can use natural resources information as part of an education process at the beginning of the comprehensive planning process, or even before the official planning process begins. Consider one of the following techniques for educating people on the natural resources in your community:

- An open house with information on natural resources and land use
- A series of articles in your community newsletter or newspaper highlighting local natural resources
- A community event to get people directly experiencing local resources, like the BioBlitz held along the Mississippi River and described below
- Create a committee of residents' with the job of reaching out to their neighbors, like the Growing Oak Grove Committee described below

Photo by Pamela Freeman

Natural resource information is available from many sources. The information ranges from examples of local flora and fauna to computerized, geo-coded information about the quality and location of natural resources. Specific sources of natural resource information are included in Sections 5 and 6.

After people are familiar with the natural resources around them they will easily form a vision for the future of those resources. The future can include protection, management and restoration. The future can include natural resources within developments, within parks, along trails, and in special protected areas.

Example of natural resource polices

Natural Resource Policies –

- To preserve and protect the natural environment with emphasis on the conservation of needed and useful natural resources for the present and future benefit of the community.
- To use natural resource areas to provide an overall open space system to satisfy the physiological and psychological needs of the people, considering their needs as individuals and as community.
- To create a livable community where future development respects and integrates natural resources.
- To have continuous green corridors that connect existing natural resource areas, thus providing a more ecological system of open spaces.

City of Shakopee Comprehensive Plan Update, 2005, page 159

Section 5, Land Use Plans

Section 6, Water, Parks and Open Space Plans

Example of natural resource objectives

Natural Resource Objectives -

- Protect wetlands, excessive slopes, woodlands, significant natural habitats, and scenic views, as identified in the Natural Resource Inventory from environmentally insensitive development.
- Encourage re-vegetation and management of areas to restore native habitat and natural aesthetic qualities that contribute to environmental quality.
- Encourage and support tree planting and restoration efforts.
- Ensure natural resource open space areas planned in conjunction with subdivisions be coordinated with and contiguous to the open space areas of existing adjacent development.
- Use natural resource open space to physically separate uses which are incompatible by scale or function.
- Encourage through development incentives, the preservation and management of all natural resource amenities.
- Establish and maintain conservation areas for wildlife management and education and scientific purposes.
- Encourage the assistance of metropolitan, state, and federal agencies to preserve natural resource areas within the city that may serve functions outside.
- Support and encourage community efforts in environmental awareness and education.

City of Shakopee Comprehensive Plan Update, 2005, page 159

What is a Natural Resource Inventory?

A Natural Resource Inventory (NRI) is the information collected to identify the location and character of natural resources. It can include anything from a simple hand-drawn map to comprehensive GIS-based land cover maps.

What is a Natural Resource Assessment?

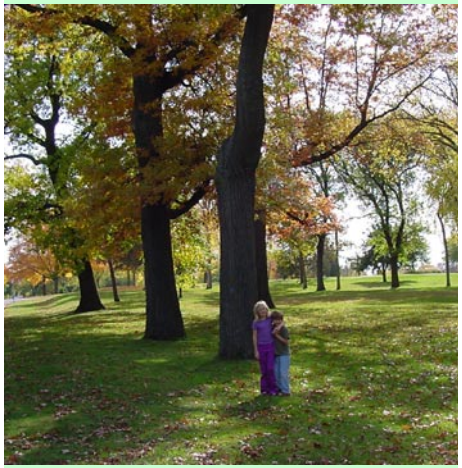
A Natural Resource Assessment (NRA) is an analysis of the NRI to aid in decision-making and management efforts. An NRA can range from a simple visual analysis to detect patterns on a map to a complex rainwater runoff model.

Protecting the Future: A Quick Guide to Using Natural Resource Information, MnDNR, 2004
http://www.dnr.state.mn.us/nrig/index.html

Creating the Vision

Educating people on the natural resources in their backyards

**Case Study -
Growing Oak Grove**



"The abundance of natural resources is why we live here."

The Growing Oak Grove Committee

Oak Grove is a township-sized city in Anoka County with a population of 6,903 in 2000. Oak Grove is preparing to update its comprehensive plan for 2008 as required by the Metropolitan Land Planning Act. As a designated "diversified rural" city, Oak Grove is characterized by large-lot residential housing, developed shoreland around Lake George, agriculture and other rural uses.

When asked why they live in Oak Grove, residents invariably describe the natural resources that they see every day. In addition to Lake George, the Rum River and Cedar Creek flow through the community. High-quality woodlands, wetlands, and grasslands are found throughout Oak Grove. These natural areas provide residents with glimpses of many waterfowl, mammals and other animals including, Sandhill Cranes, Black Bears, and beavers.

When asked what they see for the future of Oak Grove, many residents see new residential development. The average number of building permits for the past five years has doubled the pace of the previous two decades. Platted lots over the same period have averaged 3 acres per dwelling.

In early 2005, a task force was created to develop and sponsor education events about natural resources and land use. This task force was endorsed by the City Council but did not have any official review authority. There were two reasons the task force chose to focus on educating residents. First, the city was beginning to develop a parks and open space plan as the first step in updating its comprehensive plan. Second, there was negative history to overcome. Several years ago, the city hosted a community meeting to discuss cluster development as a way of protecting natural resources and

Information booths at the Oak Grove Open House included:

Natural resource information

- Anoka Conservation District – the Oak Grove natural resources inventory; and managing your wetlands, shoreland and other natural areas
- Minnesota Department of Natural Resources – local plants and animals; and how to manage backyard habitat

Land use information

- City of Oak Grove – local trends in development and land use
- Ameregis – regional trends in development and how Oak Grove compares to the region

The overlap of land use and natural resources

- University of Minnesota Extension Service – how to manage your septic system

Keys to success:

- **A group of committed people sharing the work-load.** Oak Grove is still a small community with only one staff person dedicated to planning and reviewing development applications. To make events happen the staff person needed to expand capacity by working with the volunteers of the Growing Oak Grove committee. Committee members organized and staffed the event.
- **Saturation advertising.** If anyone in Oak Grove was not notified at least once about the open house, it was not for lack of trying. A flyer inviting people to the open house was created by one committee member, copied by another, and distributed by others over two weekends to residents coming to the recycling center and the community sponsored vet clinic. The local weekly newspaper ran an article. Flyers were handed out at city hall and posted by committee members around the community, including in churches, stores, and the post office. The invitation was also posted on the community bulletin board.

meeting development goals. The meeting disintegrated when several people loudly objected to cluster development as "too dense for Oak Grove." The meeting was perceived as promoting an already made, top-down decision. The task force wanted to support the comprehensive planning efforts and overcome the negative history.

The task force members recognize that Oak Grove is becoming home to more people. They also realize this growth affects the natural resources people move to Oak Grove to enjoy. Balancing development and natural resource protection became the focus of the education events. Even the name chosen by the task force members reflects the balance between natural resources and development. Committee members felt "Growing Oak Grove" conveyed both a sense of growth in nature and growth in population.

Community open house. The first education event was an open house with information about local natural resources, how landowners could manage natural resources, and how Oak Grove is developing. Over 60 people attended the open house making it a success in the eyes of the committee.

House parties. At the Oak Grove open house, people were asked if they might be interested in attending a small house party to discuss natural resources and land use. Nearly half of the open house attendees signed up. The house party format was chosen because of the negative history in Oak Grove and a desire to provide a safe forum for discussion. The goal of the house parties was for people to talk about their future vision for natural resources in Oak Grove. This goal directly supports the Parks and Open Space planning process and the comprehensive planning process.

Keys to success:

- Providing local information. Information about natural resources and development in Oak Grove is what brought people to the open house.
- Make it convenient. An open house format was chosen so people could drop in at their convenience. No one was expected to attend a two-hour meeting.
- Provide something for all ages. Overcoming barriers to attendance was important to the open house planning team. One barrier is what to do with the kids. Activities for children were provided outdoors at the park next to City Hall where the open house was held.

The results of the Growing Oak Grove committee's low-key education efforts include:

- People know more about the natural resources in their back-yards
- People know more about how development may affect natural resources
- More people will participate in the Parks and Open Space planning effort and in the coming comprehensive planning effort
- Meetings where only negative reactions are heard will not happen again because people are better informed and better organized

Did you know the City of Oak Grove has 5 of the top 15 natural areas in Anoka County?

Can you tell a Dry Oak Savanna from a Rich Fen? Who is Rich Fen?

Have you ever canoed Cedar Creek?

What is the difference between a Sandhill Crane and a Heron?

The Growing Oak Grove Committee invites you to a special Open House

Kids' Activities

Monday June 6th
7:00-8:30
Oak Grove City Hall

Fun For Kids

Come and learn about the unique and special natural resources in Oak Grove. The council chambers will be filled with information about Oak Grove. You will have the opportunity to talk with people who know and have experienced Oak Grove natural resources. Come, learn and share your experiences.

Growing Oak Grove is a City Council endorsed committee working to facilitate discussions of natural resources and land use in Oak Grove. This special event is part of a series of discussions about our natural resources. Come and let us know what you think about Oak Grove.

If you have any questions call Sam Lucast, Oak Grove City Planner, 753-1920

Case Study

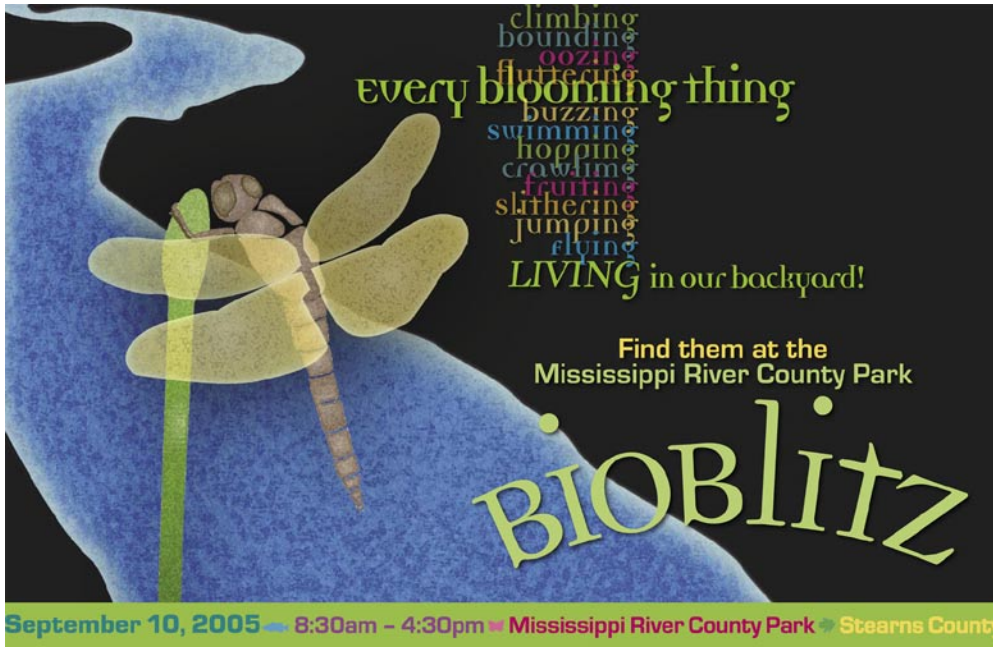
A "BioBlitz"

Photo by Stephen Saupe/Maria Fosado

"They hardly know it's here."

The Mississippi River "BioBlitz"

Although the Mid-Minnesota stretch of the Mississippi River is not within the Twin Cities Metropolitan region, it is very similar to designated "diversified rural communities" and "agricultural areas" within the region. The area along the Mississippi River north of St. Cloud to Little Falls is seeing unprecedented housing growth next to a river with tremendous natural resources. It is part of a major continental flyway for migratory waterfowl, a top-notch fishery, a scenic route for an afternoon's paddle by canoe, and a living natural history museum of birds, bugs, plants and other wildlife. The Mississippi provides drinking water for the three largest cities in Minnesota; Minneapolis, St. Paul and St. Cloud. But for many people living near the River, it's just Old Man River, rolling quietly along, largely taken for granted.



Keys to success:

- **A dedicated event planning team.** The event planning team consisted of both local volunteers and local government staff.
- **Outreach, media, and more outreach.** Presentations were made to city councils and county boards asking for support for the event and inviting residents. Special invitations were sent to local public officials and owners of land adjacent to the river. An eye-catching poster was created, posted in public buildings and gathering places throughout the area, and mailed to science teachers in all area schools. A press release was sent to local media prior to the event and following up on the event. The editor for the regional newspaper was contacted personally resulting in two editorials. An event website was created. A colorful display advertisement ran three times before the event.

Photo by Benton County SWCD

Opinion

Our view: BioBlitz raises awareness of river

St. Cloud Times Editorial Board
9/13/05

Photo by Stephen Saupe/Maria Fosado

Seeing the potential impact of housing and other land uses on water quality, fisheries and surrounding upland, the Benton and Stearns County Soil and Water Conservation Districts wanted to raise awareness about the River. A long-term goal is to create a vision and influence how land use decisions are made in the area. Raising awareness is a first step toward this goal.

Working in a multi-jurisdictional, three-county area is a challenge. To raise awareness, any region-wide education event had to be well-planned and compelling. A planning team decided to host a "BioBlitz," a day of discovery and exploration designed to get people to take a closer look at what's living in their "backyard."

The Mississippi River BioBlitz was part contest, part festival, part educational event and scientific endeavor. The contest part was for the public to join in with scientists to count as many species of plants and animals as possible during the course of one day. The count was to find out what kinds of species live along this stretch of the river and what their existence means to the river's health. Walks, river trips to count fish and bugs, and demonstrations were held throughout a glorious day in September at two county parks opposite each other on the river. The Minnesota Raptor Center provided up-close visits with live birds of prey. DNR Fisheries crews offered boating expeditions on the river, and the Heart of the Beast Puppet Theater celebrated the link between land use and water.

Over 200 people enjoyed the day and over 300 plant and animal species were identified.

The BioBlitz planning team hopes that by immersing people in the river's history and biology, they can encourage land use decisions and activities that maintain and improve its quality.

Keys to success:

- **Local scientists with local knowledge.** Local, well-known scientists and naturalists were recruited to lead the nature walks and species hikes. They knew the area and were able to talk about local species.
- **Combining the BioBlitz with a natural resources inventory (NRI).** An NRI is underway for the river area. The preliminary results helped develop a species check-list that was used at the BioBlitz. We weren't starting from scratch.
- **Making it fun!** People came out because it sounded like fun. People came to ride along with the DNR shocker boats, see raptors up close, and play around with the Heart of the Beast Puppet Theatre. They came to hold fish in their hands, see giant puffball mushrooms, and get their shoes muddy in the river bottoms.

SECTION 5

If we protect natural resources does that mean we can't develop in those areas?

Deciding where to grow and where to protect natural resources and where to do both – The Land Use Plan

Inventory of existing land use and surface water

Using natural resource information in the inventory of existing land use and surface water: Small steps

Successful communities plan for where people can live and where important natural resources can be protected. The *Local Planning Handbook* outlines the requirements for the land use plan for metropolitan communities.[16] Of the required land use plan elements, natural resource information can play a role in the following areas:

- The inventory of existing land use and surface water
- The future land use plan
- In developing strategies for special resources including solar access, aggregate resources

The inventory of existing land use and surface water, based on standard land use categories, includes some natural resource features such as; lakes, wetlands, rivers, streams, drainage courses, parks, trails, and open space. In addition, the inventory of existing land use can include land use information that goes beyond standard land use categories. Additional existing land use information about natural resources could include:

- Stormwater management systems, including drainage courses and constructed stormwater facilities
- More specific land use information about parks, such as: active recreational areas, passive recreational areas, and natural areas within parks
- More specific land use information within the open space category, such as: agriculture or working lands; wooded areas; open non-forested areas; and utility easement areas
- More specific land use information about lakes, wetlands, rivers and streams, such as: showing a category for waters listed on the impaired waters list; indicating high-quality wetlands based on information from a natural resources inventory

Find the *Local Planning Handbook* at: http://www.metrocouncil.org/planning/LPH/handbook.htm

Find the MPCA Impaired Waters List at: http://www.pca.state.mn.us/water/tmdl/

[16] Ibid, Section 3.

Using natural resource information in the inventory of existing land use and surface water:

Creating a Natural Resources Map

Another approach is to create a natural resources companion map to the existing land use inventory. Used together, the existing land use map and natural resources map form a sound basis for developing the future land use map. Whereas existing land use maps usually show land use on a parcel by parcel basis; a natural resources map shows resources where they are regardless of parcel boundaries.

Use the best information available to you to create the natural resources map. Start with the regional *Natural Resources Inventory and Assessment* and other mapping resources on the Metropolitan Council's website (http://gis.metc.state.mn.us/ and http://www.datafinder.org/catalog.asp). Additional information is available from the Minnesota Department of Natural Resources. The best information is a local natural resources inventory. A ground-truthed, local natural resources inventory (NRI) based on the Minnesota Land Cover Classification System (MLCCS) is available to many communities in the region. Contact the Minnesota Department of Natural Resources, Metropolitan Council or your county soil and water conservation district to find out if a local NRI has been completed for your community.

Resources for creating a natural resources map

Minnesota Land Cover Classification System - Summary

The Minnesota Land Cover Classification System (MLCCS) is a tool for natural resource managers and planners. The MLCCS is a standardized methodology for categorizing land cover rather than land use. A natural resources inventory created using the MLCCS can be compared to other MLCCS inventories. MLCCS consists of five levels. At the simplest level, land cover is divided into either "natural/semi-natural" or "cultural" cover types. Within these two cover types more specific information is added with each additional level.

To find out if a natural resources inventory (NRI) based on the Minnesota Land Cover Classification System (MLCCS) has been completed for your community, contact:

MnDNR Central Region –
Sharon Pfeifer
sharon.pfeifer@dnr.state.mn.us
651-772-7982

Metropolitan Council –
Ann Beckman
ann.beckman@metc.state.mn.us
651-602-1669

Your county Soil and Water Conservation District

Hennepin Environmental Services -
DESMail@co.hennepin.mn.us
612-348-3777

Anoka Conservation District –
Anokaconservation@msn.com
763-434-2030

Washington Conservation District -
jayriggs@mnwcd.org
651-275-1136

Dakota County SWCD -
651-480-7777

Summary of Minnesota Land Cover Classification System (MLCCS), continued

Minnesota Land Cover Classification System - Summary, continued

Natural/semi-natural classes

The natural/semi-natural classification system is a hybrid of the National Vegetation Classification System (NVCS) and the Minnesota Natural Heritage plant communities. The NVCS is used for the top three levels of the system, while the fourth and fifth levels rely on Minnesota Natural Heritage community types.
Level 1 - General growth patterns (e.g., forest, woodland, shrubland)
Level 2 - Plant types (e.g., deciduous, coniferous, grasslands, forbs)
Level 3 - Soil hydrology (e.g., upland, seasonally flooded, saturated)
Level 4 & Level 5 - Plant species composition (e.g., floodplain forest, rich fen sedge, jack pine barrens)

Cultural classes

The cultural classification system is designed to identify built-up or vegetation patterns and an area's imperviousness to water infiltration. This system distinguishes among land cover types at five levels. This cultural classification is unique in that it emphasizes vegetation land cover instead of land use, thus creating a land cover inventory especially useful for resource managers and planners.
Level 1 - Presence of built-up elements (i.e., built-up vs. cultivated land)
Level 2 - Dominant vegetation (e.g., trees, shrubs, herbaceous)
Level 3 - Plant type (e.g., deciduous, coniferous)
Level 4 - Percent of impervious surface or soil hydrology
Level 5 - Specific plant species

Source: http://www.dnr.state.mn.us/mlccs/index.html

More information on MLCCS:

The Minnesota Department of Natural Resources Central Region developed the MLCCS in cooperation with other state, federal and local agencies.

For more information, contact:
GIS Project Coordinator,
DNR Central Region,
(651) 772-6150

Natural resources map helps to choose development areas

The natural resources map should contain information that will help in developing the future land use map. The presences of some natural resources, such as steep slopes and some soil types, make development difficult and costly. Other natural resources, such as wooded areas and lakes, are important for the character of your community or to protect economic activities like tourism. Some natural resources, such as clean water, are important for health. Other resources are important for protecting habitat and basic ecological health. If built upon, aggregate resources are effectively lost for any economic use.

Local community values and natural resources

Local community values, defined in the visioning process, help in making choices about what natural resources are important and why they are important. The level of importance of a resource within a community will help determine future land use choices. The Shakopee case study on page 29, illustrates a process for using natural resource information to determine areas of importance based on community values. This process can be used within a comprehensive planning process to determine where natural resources are most important, where development should occur, and where development should incorporate natural resource protection.

The future land use map should reflect the vision for the community. Knowing as much as possible about natural resources and existing land use will help in creating a future land use map that reflects the vision.

Using Natural Resource Information in The Future Land Use Plan

The Future Land Use Plan

The future land use plan shows land use patterns that accommodate growth, make efficient use of existing and planned infrastructure, provide a mix of housing opportunities and protect natural resources.[17] A logical process begins with identifying areas where resources should be protected, then identifying areas for development. Development plans must then be designed conforming to the regional planning area designation for the community. The development plans

The Metropolitan Council suggests using standardized land use categories and definitions. See page 3-3 of the *Local Planning Handbook* at: http://www.metrocouncil.org/planning/LPH/handbook.htm

Photo by Benton County SWCD

[17] Ibid, page 3-4.

must also accommodate the forecasted growth for the community. In creating the future land use plan, communities need to follow the planning strategies from the Metropolitan Council. These strategies include many using natural resource information.

Planning strategies that depend on natural resource information

- NRIs
- Erosion control ordinances
- Environmental protection ordinances
- Stormwater management plans
- Protect locally-important natural resources
- Protecting water quality
- Maximizing groundwater recharge

Metropolitan Council planning strategies for all metropolitan communities (Additional strategies are listed in the *2030 Regional Development Framework* for each community classification.)

- Complete local natural resource inventories as they deem appropriate. Give strong consideration to integrating natural resources, including aggregate, identified in regional and local natural resources inventories into local land use decision-making.
- Adopt and enforce erosion control ordinances and other environmental preservation and conservation techniques and ordinances.
- Prepare and implement local stormwater management plans consistent with Minnesota Rules Chapter 8410 and the Metropolitan Land Planning Act.
- Include as a part of local park systems natural resources that are identified as high quality or of local and regional importance.
- Implement surface water management practices geared to protecting and maintaining the quality of local water resources.
- Adopt and implement best management practices for abating, preventing and removing point and nonpoint source pollution; reducing soil erosion; protecting and improving water quality; and maximizing groundwater recharge through surface water infiltration.

Metropolitan Council's 2030 Regional Development Framework, page 19.

Additional planning strategies are found at: http://www.metrocouncil.org/planning/framework/Framework.pdf#page=20

Using natural resource information in the land use plan

In developing the land use plan, natural resources information can be used to:

- **Define where to encourage resource protection**

  For example: Encourage resource protection in areas where parks or trails are planned; in areas of high erosion potential such as steep slopes and bluffs; in well-head protection areas; or areas with high ecological value such as native forests and connected high-quality habitat areas.

- **Define where to encourage development**

  For example: Encourage development in areas where soils are best suited for septic systems or development; in areas with low erosion potential; or in areas with best access to utility and transportation infrastructure.

- **Define where natural systems can work with development and define neighborhoods**

  For example: Existing topography can be used to manage stormwater; Wooded areas can be used to establish boundaries between neighborhoods or developments; Trails, natural corridors and open spaces can be used to connect neighborhoods to each other, to parks, or to schools.

- **Define how natural resources can be protected within development areas**

  For example: Promote development that locates structures so they have minimal impact on floodplains, wetlands, or high-quality natural areas; Promote development that includes habitat restoration.

For a detailed description of how to combine GIS and community values to define protection and development areas, see:

Environmentally Based Regional Smart Growth Planning and Design
http://www.crplanning.com/environplanning.htm

Photo by Benton County SWCD

Strategies for special resources - solar access, aggregate resources

The *Local Planning Handbook* contains information on addressing solar access, aggregate resources and the MNRRA corridor in the future land use plan.[18] Following are a couple of additional items on using natural resource information in planning for solar access and aggregate resources.

Planning for Solar Access

Solar access. Natural resource information can be used to develop strategies for protecting solar access. Using topographic and land cover information, a map can be created showing the best and poorest locations for solar access. Solar access will be best where houses can be southerly-oriented without obstructions such as wooded areas. South facing rises and slopes will provide the best access. Directing development to these areas and encouraging roadway and structure orientation that maximizes solar access are specific strategies that can be adopted in a land use plan.

Example of Solar Access Implementation

SOLAR ACCESS PLANNING:

A. The purpose of this Section is to encourage energy conservation and the use of solar energy in order to help alleviate the growing energy shortage and lessen dependence on increasingly uncertain energy sources.

B. Development Objectives: All new subdivisions should be designed with the following objectives in mind:

1. All buildings should be oriented to take maximum advantage of passive solar energy.
2. Reasonable assurance should be given that some or all of the buildings will be able to incorporate active solar energy systems.
3. Roads should be oriented to maximize snow melt by passive solar energy.
4. Consideration should be given to easements and/or restrictive covenants to preserve solar access.

Cottage Grove Subdivision Ordinance, Section 10-4-4

Example of Solar Access Goal

New residential, commercial, and industrial developments should have access to sunlight for solar energy systems. Solar access should be provided or maintained for existing development to the extent possible.

Energy and Solar Access Element, City of Cottage Grove Comprehensive Plan 2020, page 152.

[18] Ibid, page 3-11.

Planning for Aggregate Resources

Example of Aggregate Resource Plan Implementation

Aggregate resources. Aggregate resource planning is mandatory in the seven county metropolitan area. Planning for aggregate resources means planning to allow this resource to be extracted. Placing structures on top of aggregate resource areas prevents access to the resource or at least makes access difficult and very expensive. Maps of aggregate resource locations are available from the Metropolitan Council and the DNR. See the Minnesota Geological Survey, Aggregate Resources Inventory of the Seven-County Metropolitan Area at http://www.dnr.state.mn.us/lands_minerals/metroaggregate.html or http://www.datafinder.org/cafe.asp.

An example of using aggregate resources in land use planning is the Clay County aggregate resources protection district. Clay County adopted an aggregate resources protection overlay district with boundaries based on an aggregate resources inventory. The overlay district requires site design that avoids placing structures on or near areas with identified aggregate resources. Separation distances for structures from open mining pits are required. In addition, landowners wishing to build in an aggregate overlay district are required to sign an aggregate notification document prior to the issuance of a development permit. The aggregate notification states that the applicant acknowledges that they are building in an area where dust, noise, and heavy traffic from mining may occur.

RP-AGG Resource Protection Overlay District – Aggregate Resources:

The Aggregate Resources Overlay District is intended to protect areas with existing significant aggregate resources as shown in the Aggregate Resources Inventory completed pursuant to Minnesota Statutes.

Find the Aggregate Resources Inventory of the Seven-County Metropolitan Area at: http://www.dnr.state.mn.us/lands_minerals/metroaggregate.html or http://www.datafinder.org/cafe.asp.

SECTION 6

Can we develop specific plans for important natural resources?

Plans for water, parks and open spaces

Water resources management plan

Surface water management plan

Stormwater management system

Comprehensive plans often have specific plans for community-wide systems. The Metropolitan Land Planning Act requires specific plans for two natural resource based systems: water; and parks and open spaces.

Water Resources Management Plan

Section 5 of the *Local Planning Handbook* includes exact standards and specific direction for developing a Water Resources Management Plan for metropolitan municipalities. Natural resource information is fundamental to developing this plan, particularly the surface water management plan. The location and extent of development can affect surface water quality and quantity. Larger amounts of impervious surfaces can cause increases in the volume, velocity and pollutant level of stormwater runoff. Natural resource inventories (NRIs) can be used to calculate the amount of impervious surface in your community. NRIs and other resource data can also be used to locate natural features that can become part of a stormwater management system. These features include soils with high permeability, natural land cover, and natural swales and sinks.

The *Local Planning Handbook*[19] lists many great sources for water data and water management techniques. Additional sources for techniques used in developing surface water management plans include:

- **The Center for Watershed Protection,** http://www.cwp.org/, is a non-profit organization providing technical tools to local governments for protecting water and watershed resources. The Center provides resources on watershed planning and restoration, stormwater management, and site design for protection of water.
- **The Low Impact Development Center,** http://www.lowimpactdevelopment.org/, is a non-profit organization dedicated to the advancement of Low Impact Development (LID) technology. Low Impact Development is a comprehensive land planning and engineering design approach with a goal of maintaining and enhancing the pre-development hydrologic regime of urban and developing watersheds.

Low-Impact Development (LID) Site Planning Techniques

- Use natural drainage/ hydrology as a design element
- Define a development envelope and protected areas
- Minimize clearing and grading
- Minimize total impervious areas
- Minimize connected impervious areas
- Use LID practices: bioretention, dry wells, filter strips, vegetated buffers, grassed swales, infiltration trenches, etc.

Low-Impact Development Design Strategies: An Integrated Design Approach, 1999

The Center for Watershed Protection website: http://www.cwp.org/

The Low Impact Development Center website: http://www.lowimpactdevelopment.org/

[19] Ibid, Section 5.

Plans for water, parks and open spaces

Parks and Open Space Plans
Natural Resources Plans

Natural resource data plays a starring role in developing a parks and open space plan. The Metropolitan Land Planning Act requires communities to create a parks and open space plan that is consistent with the *2030 Regional Parks Policy Plan*. At a minimum, the community plan must show existing and planned regional parks and trails. Many communities, however, choose to include parks and trails information in a comprehensive natural resources plan. The natural resources inventory and plan becomes the foundation for the land use plan that includes development areas and protection priorities.

The following two metro-area case studies illustrate some of the steps in identifying protection priorities and development areas within a comprehensive planning process.

Find the *2030 Regional Parks Policy Plan* at: http://www.metrocouncil.org/planning/parks/2005/ParksPlan.htm

Case Study

Getting from a Natural Resources Inventory to a Natural Resources Assessment

Identifying your local natural resource protection priorities

City of Shakopee Natural Resources Protection Plan

In 2005, the City of Shakopee updated its comprehensive plan for review by the Metropolitan Council. For the first time a natural resources plan was included in the comprehensive plan update. The natural resources plan included a graphic greenways map. The graphic map showed very general areas of important natural resources and connections forming a greenways system. One of the objectives in the plan was to refine the graphic greenways map using the detailed data in the newly available Natural Resources Inventory (NRI). The refined greenways map would then be used to determine priority areas and develop strategies for protecting priority areas.

An NRI documents the composition and quality of natural resources on the ground. The NRI does not determine which resources are important to a community. Community members must say what resources are important to them. This can occur in a visioning process or community survey or be written in the goals of a comprehensive plan. A natural resources assessment (NRA) combines the data of the NRI with the values of the community.

The Shakopee Environmental Advisory Committee (EAC) was given the task of refining the greenways map by creating a natural resources assessment. The EAC is an official body that reviews development applications to make sure they meet the requirements of the city's environmental ordinances. In preparation for choosing important characteristics of natural resources, the EAC reviewed the information in the NRI. To best represent local values, they also reviewed the important natural resources listed in the comprehensive plan. The EAC then chose natural and recreational resources to map. They were:

- Slopes
- Lakes and Streams
- Wetlands

What is a Natural Resource Inventory?

A Natural Resource Inventory (NRI) is the information collected to identify the location and character of natural resources. It can include anything from a simple hand-drawn map to comprehensive GIS-based land cover maps.

What is a Natural Resource Assessment?

A Natural Resource Assessment (NRA) is an analysis of the NRI to aid in decision-making and management efforts. An NRA can range from a simple visual analysis to detect patterns on a map to a complex rainwater runoff model.

Protecting the Future: A Quick Guide to Using Natural Resource Information, MnDNR, 2004
http://www.dnr.state.mn.us/nrig/index.html

The City of Shakopee

Moving from a Natural Resources Inventory to a Natural Resources Assessment

- Endangered Species
- Wildlife Habitat
- Woodland/Forested Areas
- Non-woody Upland Vegetation
- Recreation Opportunities (Parks, Trails and connections)
- Natural Infrastructure for Stormwater Management

The EAC met again to discuss characteristics of each resource category. They chose characteristics that made the resource less important or more important for preservation. These characteristics were used to rank importance of resource areas. For example, slopes are important generally in Shakopee because of their relative scarcity and because of the erosion potential if they are disturbed. But not all slopes are the same. The EAC determined that the most important slopes were those that had the following characteristics:

- They were steep – over 18% grade
- The length of the slope was relatively long – over 1/8 mile in length
- The slope vegetation had native species present
- The erosion potential was high

Specific characteristics were similarly identified for all of the important resources. These characteristics were then assigned a ranking number and mapped. The detailed criteria matrix used to rank the resource characteristics and create a natural resources priorities map is attached as Appendix A. The attributes in the NRI and other data sources used for each criteria are described in the cells in the criteria matrix. Several iterations of the map were created before the final natural resource priority map was produced. The EAC adjusted and added criteria based on the availability of data.

Implementation Strategies

Using a detailed NRI combined with local values created what one city council member described as a "defensible" map. The original greenways map in the Shakopee comprehensive plan was conceptual and based more on individual knowledge rather than science. After the work of the EAC, the final natural resources priorities map was science-based and "defensible." Documenting the choices of resource characteristics in the criteria matrix also made the process "transparent" to people who did not participate in making the map. An illustration of the mapping process is on page 33.

After the natural resource priority map was completed, the EAC considered implementation strategies for protecting the resources identified in the map. The following text box contains examples of implementation tools considered by the EAC. The tools range from education to incentives to regulation. As its first step toward implementation, the city is developing a set of "Natural Resources Design Standards." The standards will become part of the subdivision ordinance and will be used in review of subdivision applications. Like roadway design standards, the natural resources design standards will set minimum requirements for protecting and restoring natural resources in subdivisions.

Implementation strategies considered by the Shakopee EAC to protect priority resources

Ecological Protection and Restoration: Ecological protection and restoration is a voluntary process where a landowner receives resource management education and technical assistance from an appropriate agency. The result is private protection of resources.

Conservation Easement: A conservation easement is a voluntary, negotiated agreement between a landowner and a nonprofit or agency to limit the use of land in perpetuity because of its resource value. A landowner may donate a conservation easement or, in some cases, may be compensated for its value.

Creating a Natural Resources Plan

- Identify important resources
- Identify criteria for ranking important resources
- Use criteria to create priority map
- Develop strategies to protect specific priority resources
- Implement strategies in official controls and programs

Implementation Strategies, continued

Site Suitability Analysis: Site suitability analysis is a process that is codified in a subdivision and/or zoning ordinance. A site that is proposed for development or subdivision is first analyzed for the presence of particular resources, such as those identified in the Shakopee Natural Resources Priority Map. The location of structures is then designed to have minimal impact on the identified resources.

Modified Floodplain and Shoreland Overlay Ordinances: Floodplain and shoreland ordinances are required by federal and state law. The authorizing legislation establishes minimum requirements that must be adopted by the local jurisdiction. Shakopee has adopted floodplain and shoreland ordinances that overlay many priority natural resource areas. These ordinances could be updated to increase protection of priority resources above the minimums.

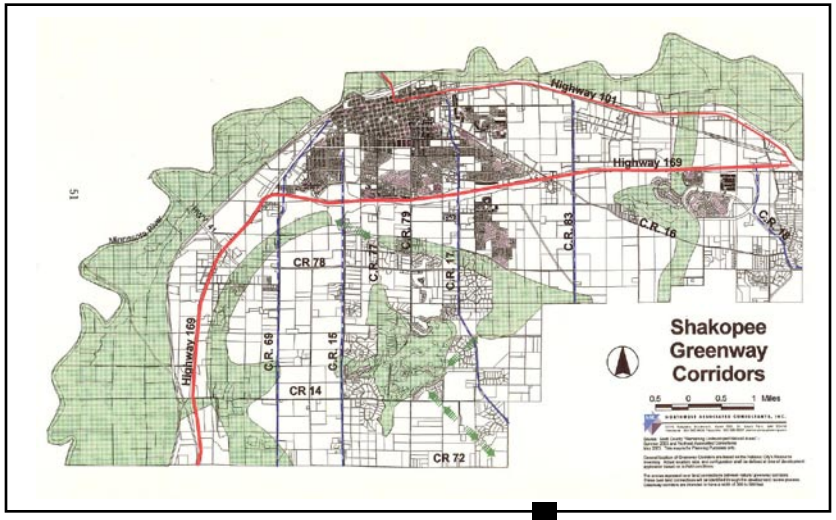
Tree/Forest Preservation Ordinance: Shakopee has adopted tree and woodland preservation standards for new development. These could be strengthened by requiring restoration and management to protect tree and forest resources in the natural resource priority areas.

Natural Resources Overlay Ordinance: A Natural Resources Protection Overlay District could be created. The District would require protection and restoration of priority resources through site design, setbacks, etc.

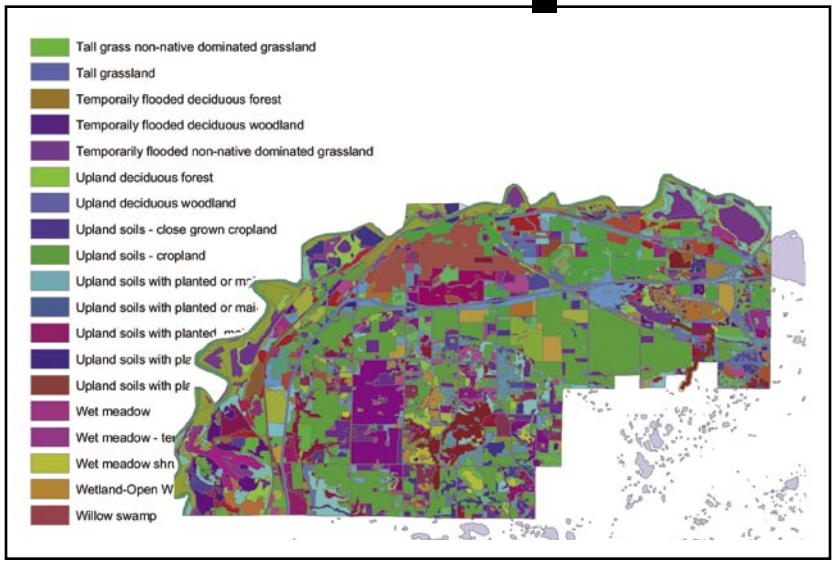
Acquisition for Public Ownership/Park Dedication: Public ownership offers control by an agency over the use and maintenance or restoration of a parcel. A few parcels may be appropriate for public ownership because of high public values for education or recreation or because of a high threat to the resource. Acquisition could occur through the use of park dedication, expenditure of park dedication fees, or other allocation of funds.

Moving from Natural Resource Inventory to Natural Resource Assessment

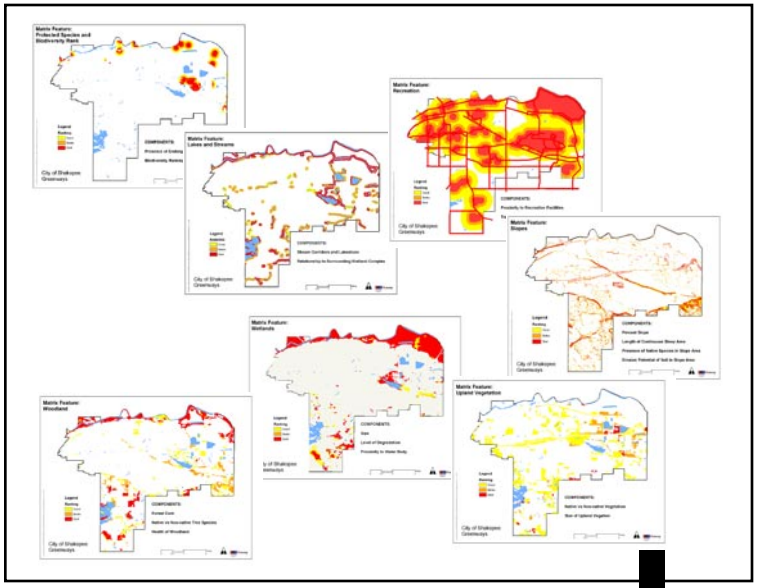
Graphic Greenways Map



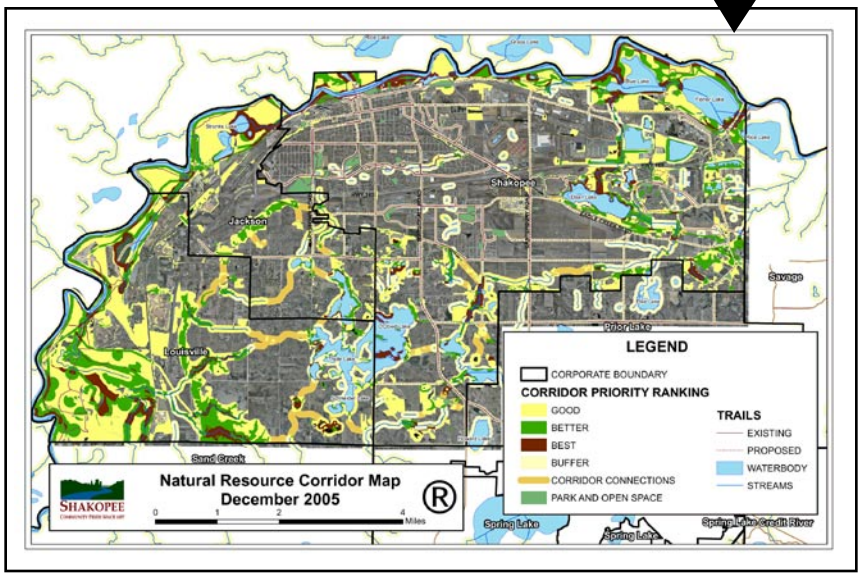
Natural Resources Inventory



Layers of Important Resources



Natural Resources Assessment with Priorities



Case Study

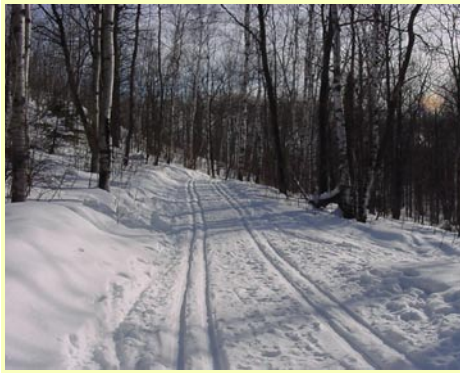
The City of Oak Grove Natural Resources Inventory and Assessment

The City of Oak Grove Natural Resources Inventory and Assessment

A starting point for the Parks and Open Space Plan and comprehensive plan update

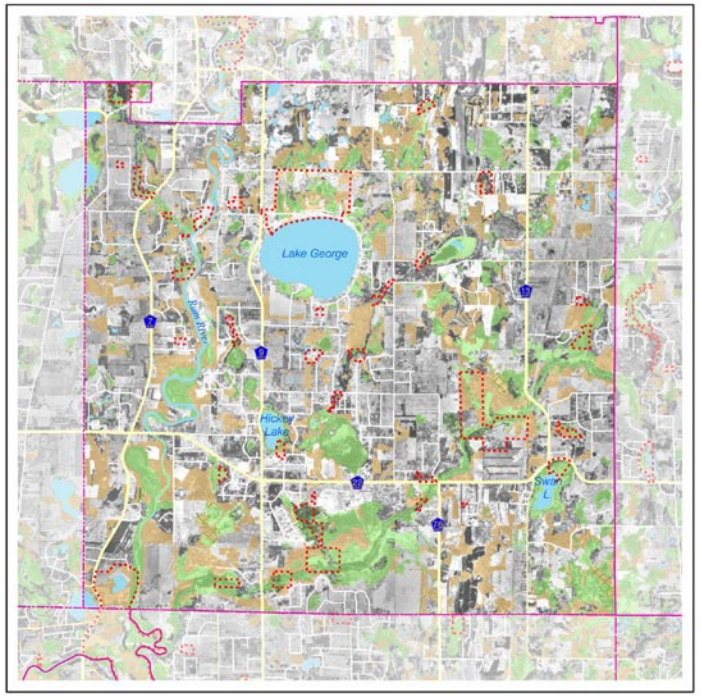
The City of Oak Grove is preparing to update its comprehensive plan for 2008 review by the Metropolitan Council. The first step was to educate people on the community's natural resources and land use trends. These education efforts are described on pages 14 to 16. Education is leading directly to the creation of a Parks and Open Space Plan. The Parks and Open Space Plan is the first component of the overall comprehensive plan update.

Natural resources information was used by the Growing Oak Grove citizens' committee in the education events. The Anoka Conservation District has completed a Natural Resources Inventory (NRI) for all of Anoka County. The NRI was used to identify high-quality upland, high-quality wetland, and important natural communities. Maps of the Oak Grove NRI and natural resource assessment (NRA) are inlcuded on page 35. These resources combined with the city's lakes, streams, and existing and planned parks, create a draft natural resources assessment that was used in small group discussions. The discussion participants identified their vision and values about natural resources in Oak Grove. The assessment will also be the starting point for the Parks and Open Space Plan.

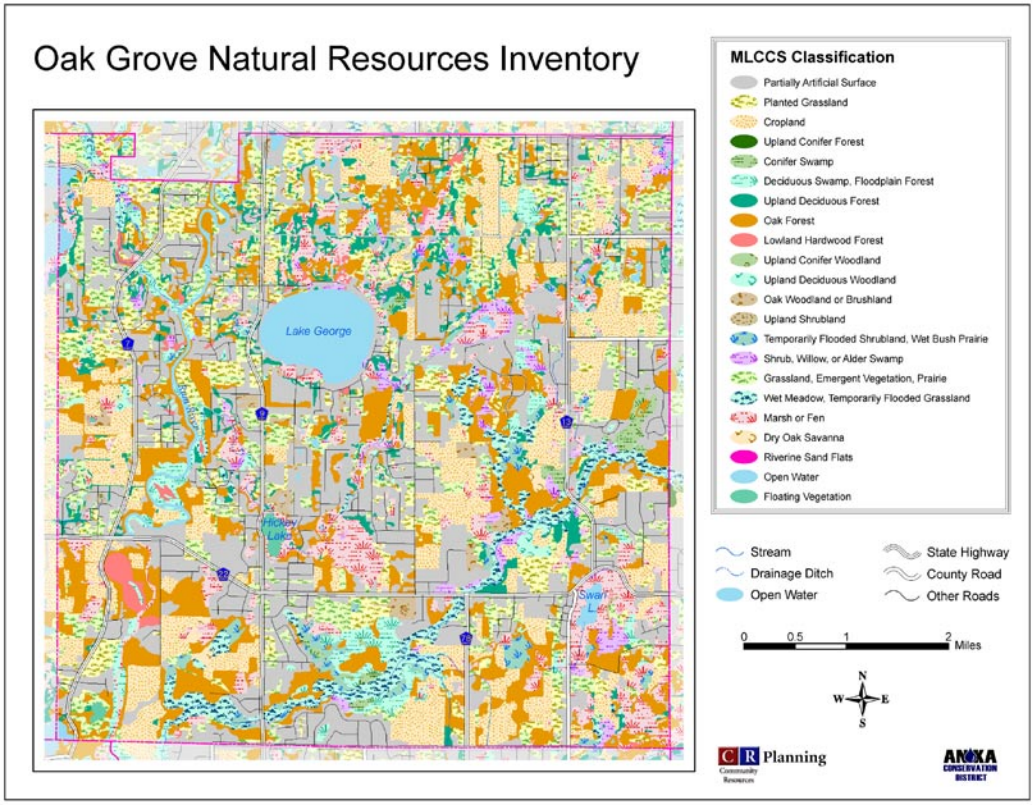


Building a constituency supporting the comprehensive plan is important to ensure the plan will be implemented. The Growing Oak Grove citizens' committee was formed to lead the education effort. Many members of this committee have volunteered to serve on the advisory board for the Parks and Open Space Plan. This group of citizens is committed to bringing other residents into the planning process. Their mission is to make sure everyone knows about the process and knows that there are multiple ways to participate.

Oak Grove Natural Resources Assessment



Oak Grove Natural Resources Inventory



SECTION 7

What happens after the Comprehensive Plan is finished?

Implementation programs

The implementation programs section of the comprehensive plan describes implementation activities to be undertaken after the plan is adopted. Official controls and programs to protect natural resources should be part of the implementation programs. Section 7 of the *Local Planning Handbook*[20] includes a number of good resources for examples of official controls and programs to protect natural resources, including:

The Metropolitan Council's Natural Resources Task Force report
http://www.metrocouncil.org/planning/landuse/NRProtectionStrategy.pdf#page=16

The Local Government Environmental Assistance Network
http://www.lgean.org/html/toolbox.cfm

Find the *Local Planning Handbook* at: http://www.metrocouncil.org/planning/LPH/handbook.htm

Sources for model implementation programs

Additional sources for examples or models of Minnesota ordinances to protect natural resources include:

The Minnesota Department of Natural Resources' *Guide to Using Natural Resource Information* contains examples of ordinances and programs for protecting natural resources. *The Guide* also provides additional information on using natural resource information in comprehensive planning. The Guide is available at: http://www.dnr.state.mn.us/nrig/index.html

MN DNR
Guide to Using Natural Resource Information
http://www.dnr.state.mn.us/nrig/index.html

Northland NEMO (Non-point Education for Municipal Officials) offers a set of model natural resource ordinances for Minnesota, including stormwater, erosion and sediment control, and shoreland ordinances. The NEMO models suggest ways to protect resources beyond the minimum state requirements for each of these ordinances. The NEMO models also include commentary for how to adapt these ordinances in communities of differing sizes and capacities.

Northland NEMO
Model natural resource ordinances for Minnesota
Contact: Julie Westerlund, Minnehaha Creek Watershed District, 952-471-0590 ext. 209
jwesterlund@minnehahacreek.org

[20] Ibid, page 7-2.

Examples of official controls to protect natural resources

- Natural resource protection ordinances
- Natural resource overlay districts
- Base zoning districts that require resource protection
- Buffer requirements
- Conservation subdivision requirements
- Natural resource identification and protection plans required for conventional subdivisions
- Area-wide master planning requirements
- Restoration requirements
- Bluff protection ordinances
- Park dedication tied to parks and open space plan
- Woodland protection ordinances

To obtain the model NEMO ordinances, contact Julie Westerlund, Communications and Outreach Coordinator, Minnehaha Creek Watershed District, 952-471-0590 ext. 209, jwesterlund@minnehahacreek.org

A model natural resources protection overlay district is part of the model sustainable development ordinances developed by the Minnesota Environmental Quality Board. The ordinances are available at: http://server.admin.state.mn.us/resource.html?Id=1927

A detailed description of how to use local values and natural resource data to determine development areas and resource protection areas is provided in *Environmentally Based Regional Smart Growth Planning and Design.* This publication was prepared by the University of Minnesota (Sept. 30, 2002) for the Metropolitan Council and uses Washington County as a case study. The document is available at http://www.crplanning.com/environplanning.htm.

MN EQB Model sustainable development ordinances http://server.admin.state.mn.us/resource.html?Id=1927

Environmentally Based Regional Smart Growth Planning and Design http://www.crplanning.com/environplanning.htm

Examples of programs to protect natural resources

- Education on the value of natural resources
- Education on restoration
- Backyard habitat management programs
- Cost-share programs for restoration
- Capital investment in trails and parks
- Purchase of development rights programs
- Natural area acquisition programs

SECTION 8

Natural resources don't stop at our border, so how do we work with our neighbors?

Steps in cooperative natural resource planning

- Meet often with neighboring communities
- Collect regional natural resource information
- Share local plans and visions
- Coordinate plans for resources that cross jurisdictional boundaries

A requirement of the Metropolitan Land Planning Act is that comprehensive plan updates and amendments must be reviewed by adjacent jurisdictions.[21] This requirement can be viewed as an opportunity when considering natural resources. Many natural resource systems cross political boundaries. Watersheds follow topography and migratory waterfowl follow water and related habitat. When planning for the protection of natural resources it makes sense to work with your neighbors.

Cooperative planning on natural resources involves a commitment of time and sharing. As early as possible during the comprehensive planning process, meet with your neighboring communities. Also, meet with your county's parks and natural resource management staff; review the Metropolitan Council's regional *2030 Regional Parks Policy Plan* and the *2030 Water Resources Management Plan*; and get information about regional conservation corridors from the Minnesota Department of Natural Resources.

Each of your neighbors will have information on their current natural resource management efforts and future plans. Collect and compare information on plans for trails, open space, habitat protection, and surface water management. Identify opportunities for connections and compatible land use patterns. Continue to meet with your neighbors throughout the planning process to share additional information and to discuss planning decisions. Some neighboring communities have histories of not agreeing on land use decisions. Natural resource protection can be an issue where there is room for agreement and an opportunity to improve relationships.

As cities grow they often annex land from adjacent townships. During the comprehensive planning process communities identify areas for future growth, including areas outside their current boundaries. Orderly annexation agreements for these growth areas, with timeframes for annexation, offer another opportunity to plan for the protection of natural resources. Natural resource information can be used

Find the *2030 Regional Parks Policy Plan* at:
http://www.metrocouncil.org/planning/parks/2005/ParksPlan.htm

Find the *2030 Water Resources Management Plan* at:
http://www.metrocouncil.org/planning/environment/WRMPP/WRMPP2005.htm

Find the *Regional Conservation Corridors* at:
www.dnr.state.mn.us/greenways

[21] Ibid, page 1-14

Photo by Benton County SWCD

in developing land use plans for growth areas. These undeveloped areas offer more choices for natural resource protection and management than already developed areas. Corridors and resource management plans can be created and incorporated into new development.

Examples of working together

In developing its natural resource plan, the City of Shakopee worked with Scott County, the Prior Lake-Spring Lake Watershed District, the Metropolitan Council, DNR and two adjacent townships. Scott County provided information on planned regional trails. The Watershed District provided information on planned improvements to outlet channels and streams. The City and the two townships have developed orderly annexation agreements. The annexation agreements allow Shakopee to use natural resource information to plan where resources will be protected around and within future development areas. Shakopee included the orderly annexation areas in its natural resource priorities map and included information from Scott County, the Metropolitan Council, the watershed district and DNR to develop corridor connections in the plan.

In preparing for a collaborative planning process, the communities along the Mississippi River north of St. Cloud are working together to create a natural resources inventory (NRI). Early on, the absence of detailed natural resources information was identified as an obstacle to making informed land use decisions. Acting on this need, the county soil and water conservation districts led the way in raising funds and hiring a consultant. The NRI will collect detailed land cover information to be used by counties, townships and cities in creating comprehensive plans, parks and open space plans, and natural resource protection ordinances. By using the same natural resource information, the communities will have a common understanding of the resources along the Mississippi.

Conclusion

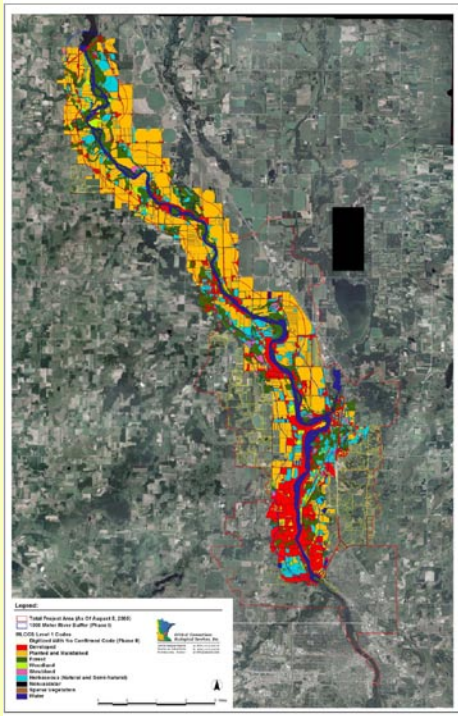
The City of Sartell is one community that will use the Mississippi River NRI. In early 2005, the owner of a parcel of land at a high-profile intersection removed all the trees from the parcel during one day. People familiar with the wooded area and the birds nesting on the site were shocked. The question of how could this be allowed to happen was asked over and over again. The answer was simple. There were no rules that prevented it from happening. Learning from this event, the City of Sartell has convened a task force to develop an environmental protection overlay ordinance. The ordinance committee will use the NRI to prioritize natural areas in the city. The ordinance will define how natural resources will be managed within new developments. Without the natural resources information in the NRI, the ordinance would be less specific and more open to interpretation. The NRI clearly establishes the quality and values of the resources to be protected.

Conclusion

Understanding your natural resources is the starting point for any comprehensive planning project. The Metropolitan Council encourages using natural resource information in the comprehensive plan update process for metropolitan area communities. Natural resources will be part of your overall vision, policies, objectives, and implementation strategies. The wider availability of local and regional natural resources inventories will make it easier to consider the protection of natural resources while choosing development areas. As your community develops your comprehensive plan use the best natural resources information available and call upon resources listed in this document. We hope you achieve your community's vision including both natural resource goals and development goals.

Mid-Minnesota Mississippi River

Natural Resources Inventory
MLCCS Level 1



APPENDIX A City of Shakopee natural resources data matrix for ranking locally-important resources

Natural Feature	Priority Ranking	Selection Criteria			
1 Slopes		**1A Percent slope/ steepness**	**1B Length of continuous sloped area**	**1C Presence of native species on the slope area**	**1D Erosion potential of soil in the slope area**
	Best	> 18% slope[22]	>= 1/8 mile in length (660')	Forest and herbaceous cover with native "high quality" and "medium quality" species[23]	Highest level of erosion potential for all three steepness categories
	Better	12 - 18 % slope	>= 1/8 mile in length (660')		
	Good	10- 12 % slope	< 1/8 mile (660')		

[22] Lower Minnesota River Watershed District Management Plan, 1999
[23] Northern Scott County NRI: Figure 3.35: High quality forested parcels

Natural Feature	Priority Ranking	Selection Criteria	
2 Endangered Species		**3A Presence of Endangered or Protected Species**	**3B Biodiversity Ranking** (recommend on-site evaluation be done by City Staff)
	Best	Area adjacent to and within 300 feet of "Documented rare and endangered plants, animals or natural communities" Excluding polygons rated "artificial" in the NRI	Located within the CBS's Area of Biodiversity Significance with a rating of Outstanding or High
	Better	Area within 300 to 600 feet of "Documented rare and endangered plants, animals or natural communities" Excluding polygons rated "artificial" in the NRI	Located within the CBS's Area of Biodiversity Significance with a rating of Medium
	Good	Area within 600 to 900 feet of "Documented rare and endangered plants, animals or natural communities" Excluding polygons rated "artificial" in the NRI	Located within the CBS's Area of Biodiversity Significance with a rating of Below

Natural Feature	Priority Ranking	Selection Criteria			
3 Lakes and Streams		**2A Stream corridors and Lakeshore (300' buffer)**	**2B Relationship to surrounding wetland complex**	**2C Drainage function**	**2D Ability to restore**
	Best	Vegetated stream corridor and lakes with natural shoreline, less disturbed, higher value for wildlife habitat , high potential for recreational use (NRI land use category for 300' shoreline buffer: "undeveloped")	Wetlands immediately adjacent to streams and lakes which form a complex of open water and wetlands	High connectivity to and from other water bodies, efficiently captures and routes runoff to stormwater basins, provides a major drainage system between south Shakopee and the river valley	Low level of exotic species, minor improvements in landscape would positively affect water and habitat quality
	Better	Stream corridors and lakeshore with natural functions and cultivated shore vegetation (NRI category for shoreline: "agriculture")	Isolated setting in landscape. Awayfrom and unconnected to wetlands.	Artificial functions. Minimal connectivity Control structures (dams, culverts) impede	Contains non-native species, history of alterations; major restoration efforts would bring back original functions.
	Good	Stream corridors and lakeshore with natural or artificial functions with maintained shore vegetation, little or no value for wildlife habitat (NRI: "maintained")	No relationship to surrounding wetland complex.		Long-term abuse and neglect require major restoration efforts to recreate a functioning, healthy resource.

Natural Feature	Priority Ranking	Selection Criteria			
4 Woodland / Forested		**4A Forest Core**	**4B Species – type of trees – native vs. non-native**	**4C Health of woodland – healthy vs diseased**	**4D Ability to restore**
	Best	Forest core distance from edge: 400' – 600'[24]	Oak forest, maple-basswood, Floodplain forest	Forest/Woodland ranked "High" or "Medium" [2]	Restoration will result in high value, high functioning forest. Desired outcome of improved forest health, improved habitat, etc. is achievable.
	Better	Forest core distance from edge: 200' – 400'	Similar to species in High class but with greater percent of exotic species, degradation such as compacted soils, deer browse, lack of woody debris and native species in ground layer	All Forest/ Woodland ranked "Low"[25]	Fair potential for restoration Desired outcome of improved forest health, improved habitat, etc. is marginally achievable.
	Good	Forest core distance from edge: 0- 200'	Box Elder-Green Ash Disturbed, Buckthorn, high value trees have been removed	Young trees, sparse tree cover, diseased or stressed trees, exotic species	Low potential for restoration. Desired outcome of improved forest health, improved habitat, etc. is not possible without great expense and time.

[24] Northern Scott County Natural Resource Inventory 2002: Figure 3.34 "Forest Woodland Core"
[25] Northern Scott County Natural Resource Inventory 2002: Figure 3.35 "Forest Woodland Quality"

Natural Feature	Priority Ranking	Selection Criteria				
5 Non-Woody Upland Vegetation		**5A Species – Native/non-native**	**5B Size of area**	**5C Area disturbed / maintained**	**5D Density of species in native patches**	**5E Ability to restore**
	Best	NRI based selection: Herbaceous vegetation considered "Natural" based on native plants being dominant Savanna	10 acres and greater	NRI polygons (areas) identified as the "Highest Quality Natural Areas" See Figure 3.3 pg 18 of the NRI	"These areas tend to be larger in size, and/or with few adjacent land cover type/ uses that could adversely affect the area; may have greater diversity of vegetation cover types; or it may be an isolated native plant community mapped and given a score of outstanding biodiversity significance by MCBS." [1]	Good potential for restoration And/or Desired outcome of improved forest health, improved habitat, etc. is achievable
	Better	NRI based selection: Herbaceous vegetation considered "Semi-natural" based on non-native plants being dominant	5 – 10 acres	NRI areas with MLCCS code in the 60,000 and designates "non-native"	"These areas tend to be moderate in size, and/or with more adjacent land cover types/uses that could adversely affect the area; may have greater diversity of vegetation cover types; or it may be an isolated native plant community mapped and given a score of outstanding biodiversity significance by MCBS." [26]	Fair potential for restoration And/or Desired outcome of improved forest health, improved habitat, etc. is marginally achievable
	Good	NRI based selection: Herbaceous vegetation considered "planted" "maintained", "non-row crops", and "pasture".	1 - 5 acres	NRI polygons with a 10,000 or 20,000 (Artificial Surfaces and Planted or Cultivated Vegetation) with impermeable surfaces of not more than 10%	"These areas tend to be smaller in size while still meeting the minimum size requirements (minimum size is variable based on cover type) for regional significance; may have less diversity of vegetative cover types; may have more adjacent cover type/uses that could adversely affect the area; or it may be an isolated native plant community mapped and been a score of moderate biodiversity significance by MCBS."[27]	Low potential for restoration and/or Desired outcome of improved forest health, improved habitat, etc. is not possible without great expense and time.

[26] Scott County Parks, Trails and Open Space System Policy Plan 2004, Figure 8 (Source: Mn/DNR)
[27] Shakopee NRI, 4.1, pg 23
Source: Silver Creek Corridor Management Plan….

Natural Feature	Priority Ranking	Selection Criteria				
6 Wetland		**6A Size**	**6B Level of degradation as determined by presence of invasive species**	**6C Relationship to wetland complex**	**6D Function as floodplain storage area**	**6E Proximity to water body** (see Lakes and Streams)
	Best	Greater than 2 acres.	Native dominated per NRI categories with modifier indicating high quality. High proportion of native species and little evidence of human disturbance. "lack of exotic species"[2]	High potential for intense land use activities to adversely affect wetland functions – such as regulating and filtering runoff, providing habitat, etc.	"Parcel located at outlet of subwatershed to corridor and/or encompasses significant storrmwater ponding, infiltration or other feature(s) critical to surface and groundwater management."[1]	Adjacent to or connecting with a water body that provides important hydrologic and / or habitat functions (e.g. floodplain, littoral zone of a lake or pond).
	Better	1 – 2 acres.	NRI categories with modifier indicating medium quality: "weedy species may be evident but they are not dominant over typical native specie"	Medium potential for intense land use activities to adversely affect wetland functions – such as regulating and filtering runoff, providing habitat, etc.	"Parcel in direct drainage subwatershed of impaired lake or highly sensitive wetland community within or abutting the inner corridor."	
	Good	Less than 1 acre.	Non-native dominated per NRI categories and modifier indicating "natural processes are highly altered". High percentage of exotic species such as reed canary grass, quackgrass, Kentucky bluegrass, stinging nettles [2]	Little potential for intense land use activities to adversely affect wetland functions – such as regulating and filtering runoff, providing habitat, etc.	"All other parcels that border the inner corridor."	Isolated situation in the landscape with little or no opportunity to be connected in a functioning manner to other water features.

Natural Feature	Priority Ranking	Selection Criteria			
7 Recreation Opportunities		**7A Proximity to park facilities**	**7B Trail provides connectivity to recreation and open space resources**	**7C Proximity to proposed recreation facility**	**7D Potential of site for passive recreation[1] or as access to such an area**
	Best	1/8 mile (within 660') Adjacent to existing parks.	Existing and proposed trails	Adjacent and nearby to proposed facility.	Site provides good access recreation activities such as birding, hiking.
	Better	Proximity of 1/8 (660') to ¼ mile (1,320')	All trails evaluated as High		
	Good	¼ to ½ mile proximity	All trails evaluated as High		

8 Infrastructure / Accessibility		8A Provides stormwater function	8B Accessible because of existing easements or roadway
	Best	Provides stable and effective storm water runoff functions	Existing utility or roadway easements which allow public access and conditions are favorable for recreation
	Better	Planned storm water runoff functions.	Planned utility easements, and trail corridors needing implementation
	Good	No stormwater purpose	No permission to use or safety issues eliminating possibility for access

9 Wildlife		9A Wildlife habitat quality: upland	9B Habitat value: wetland
	Best	High diversity and number of bird species and mammals "Although not documented, good potential for rare and endangered plants and animals to occur"	Provides high quality food source and cover. "Excellent wildlife habitat due to composition, quality and proximity of natural communities to local/regional elements (e.g. Minnesota River Valley). Provides habitat for habitat specialist species" [29]
	Better	"Provides barrier-free movement"	Moderate wildlife habitat, generally not associated with local/ regional elements. Habitat supports "habitat generalists" species.
	Low	Dominated by livestock or domestic animals "Current land uses may not serve as a wildlife corridor"	Generally low quality habitat that is substantially fragmented and supports limited numbers of "habitat generalists" species