
II. ASSESSMENT OF PRIORITY CONCERNS

The priority concerns of the residents of Isanti County have been well documented through a survey process and a public meeting conducted for that purpose. Each of these concerns will be addressed at length in this chapter, with emphasis on surface and groundwater resources. These two resources were identified by survey as the most threatened. The Priority Concerns Scoping Document can be found, in its entirety, in the Appendix of this plan.

The 452 square miles (289,404 acres) of Isanti County is made up of gently rolling hills with 18,755 acres of water (lakes and wetlands).

Surface water flow in Isanti County is determined by a major basin boundary between the Upper Mississippi and the St. Croix River basins. As is shown in **Figure One**, 80% of the county lies within the Upper Mississippi River Basin. Land within this basin drains to the Rum River, which originates at Mille Lacs Lake in Mille Lacs County, and flows to the south and east to join the Mississippi River in Anoka. The far northeast corner and the eastern edge of the county lie in the St. Croix River Basin. The Snake River Watershed comprises 4.7% of the county and drains out of the county on the northeast edge and the St. Croix River Watershed drains to the east via the Sunrise River and contains the remaining 14.4% of the land.

Minor Watersheds, or lakesheds, lie within each major watershed. These watersheds, or drainage areas, flow to the lowest spot within the boundary, then out to another lakeshed. This area is usually a lake or waterway. Preservation of our water resources is a function of land use throughout the county.

Basin plans are available for the following watersheds and will be considered for common goals and action items:

- Upper Mississippi River Basin Information Document (adopted 2000)
- Upper Mississippi River Basin Water Quality Plan (adopted 2003)
- St. Croix Basin Water Resources Planning Status Report (presented 2003)

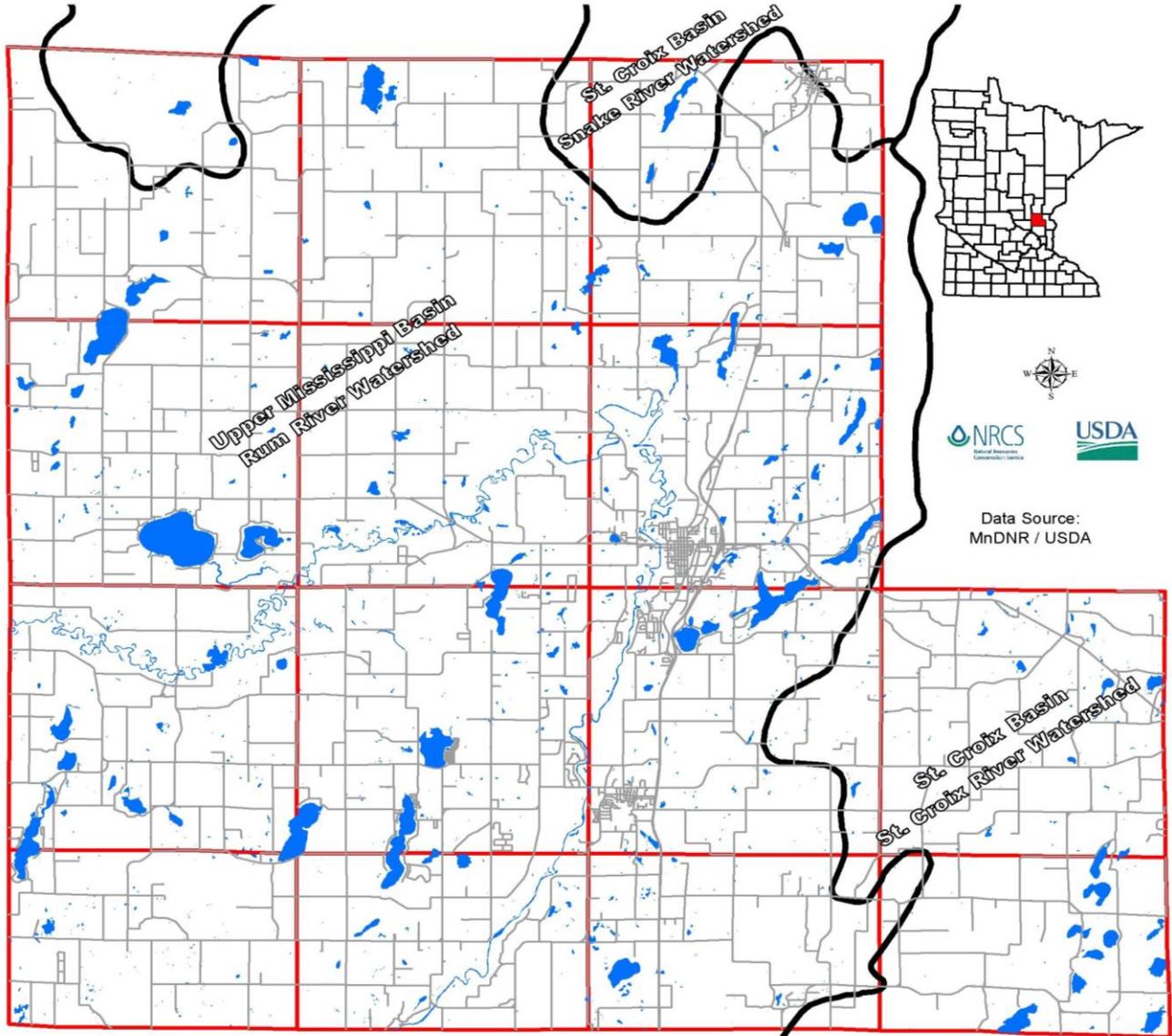
Common implementation strategies will be identified and noted in Section IV. Implementation Schedule. Isanti County recognizes the importance of utilizing watershed based implementation strategies.

Groundwater flows in a similar manner as surface water, but underground where it cannot be seen. Direction of flow of groundwater and surface water are not always related. Groundwater can flow across the major basin boundaries because the flow beneath the surface is not influenced by land forms on the surface. Groundwater sources, aquifer sizes and movement have been “mapped” by the Minnesota Department of Natural Resources (DNR) through the completion of a Regional Hydrogeologic Assessment of the entire Anoka Sand Plain in 1993.

Regional Hydrogeologic Assessment maps are available on the DNR website at: www.dnr.state.mn.us/waters/groundwater_section/mapping/status.html

The following sections will address the priority concerns in Isanti County. All maps and tables will show watershed boundaries, and assessments will take into consideration the drainage within the areas of concern.

Isanti County Lakes, Roads, & Hydrologic Map



October 11, 2005



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Figure One

A. Development Pressure

During the public input process, development and the pressures on the Rum River and area lakes created by development were the number one concern of residents of Isanti County. Concerns were that development is occurring too rapidly due to the proximity to the metro area and the desirable lakes and river area in Isanti County. Preservation of the lakes and river resources was a key concern. It was felt stormwater runoff from developments threatened the present water quality of the area lakes.

Population Trends

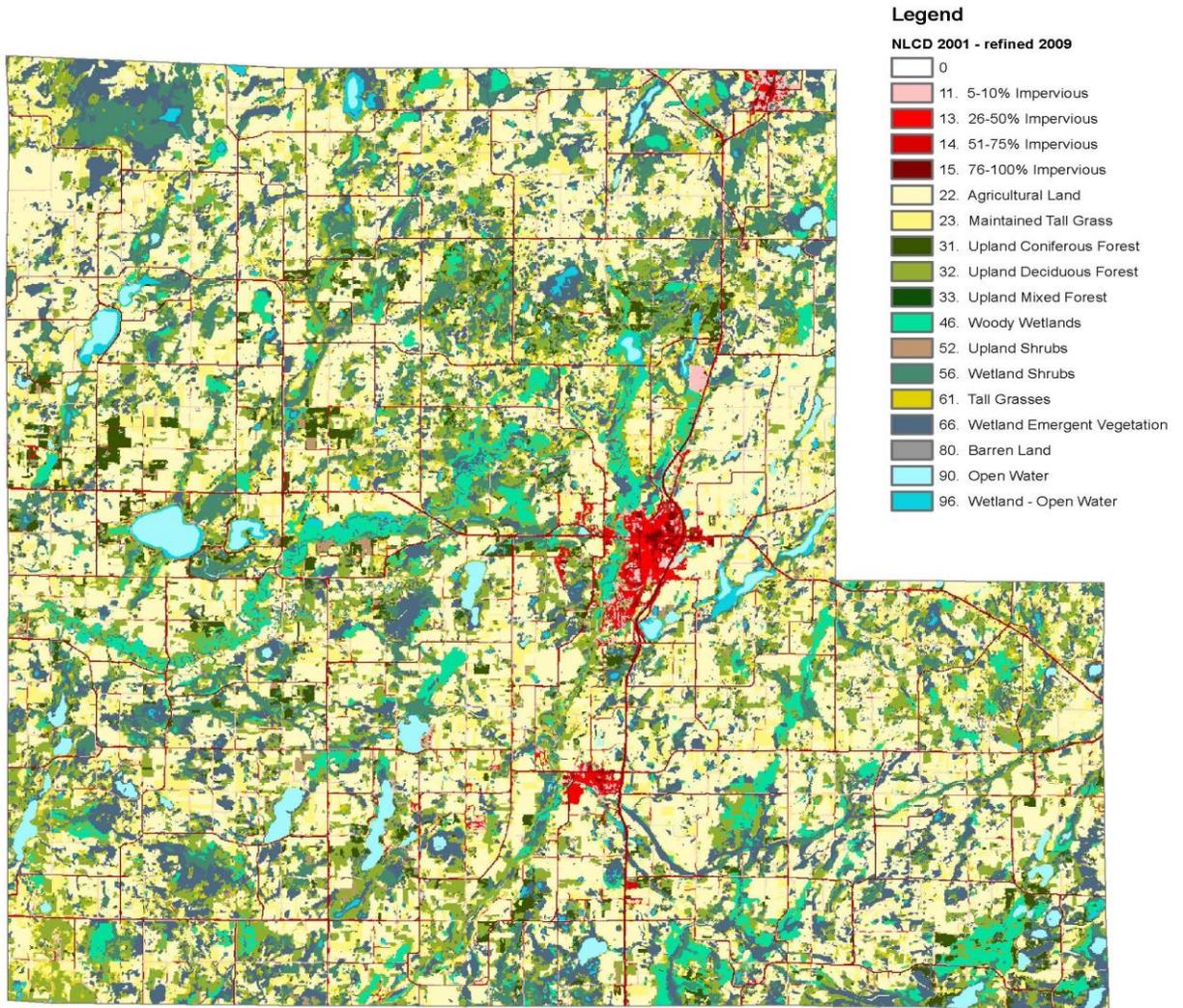
There has been a 20.7% population increase in Isanti County between 1990 and 2000 and a 20.9% increase in Isanti County between 2000 and 2010 as reported by the Minnesota Demographic Center.

The 2005 predictions for the City of Cambridge were exceeded in 2003 by 468, the City of Isanti by 377 and the part of Braham residing in Isanti County by 96. This rapid growth has shown up as an area of concern from almost all input sources for this document. Growth is encouraged in urban service areas, where services are available. Growth is also occurring around the lakes adjacent to the cities.

Landuse

Based on the 1989 landuse survey, shown in [Figure Three](#), cultivated land is the number one landuse in Isanti County, followed by deciduous forest, grassland and water. Cultivated land, as noted in [Figure Four](#), comprises almost thirty-six percent of the land area.

Isanti County Land Cover - 2001



Marybeth Block
 DNR EcoWat

Figure Three

Along the Rum River and around the lakes, grassland and forested areas still exist, along with development. Most of the forested areas are comprised of deciduous trees – almost twenty-four percent of the county’s area. Deciduous trees lose their leaves in the fall, like oak, maple, poplar, etc. Three percent of the area is coniferous, or pine trees.

Figure Four

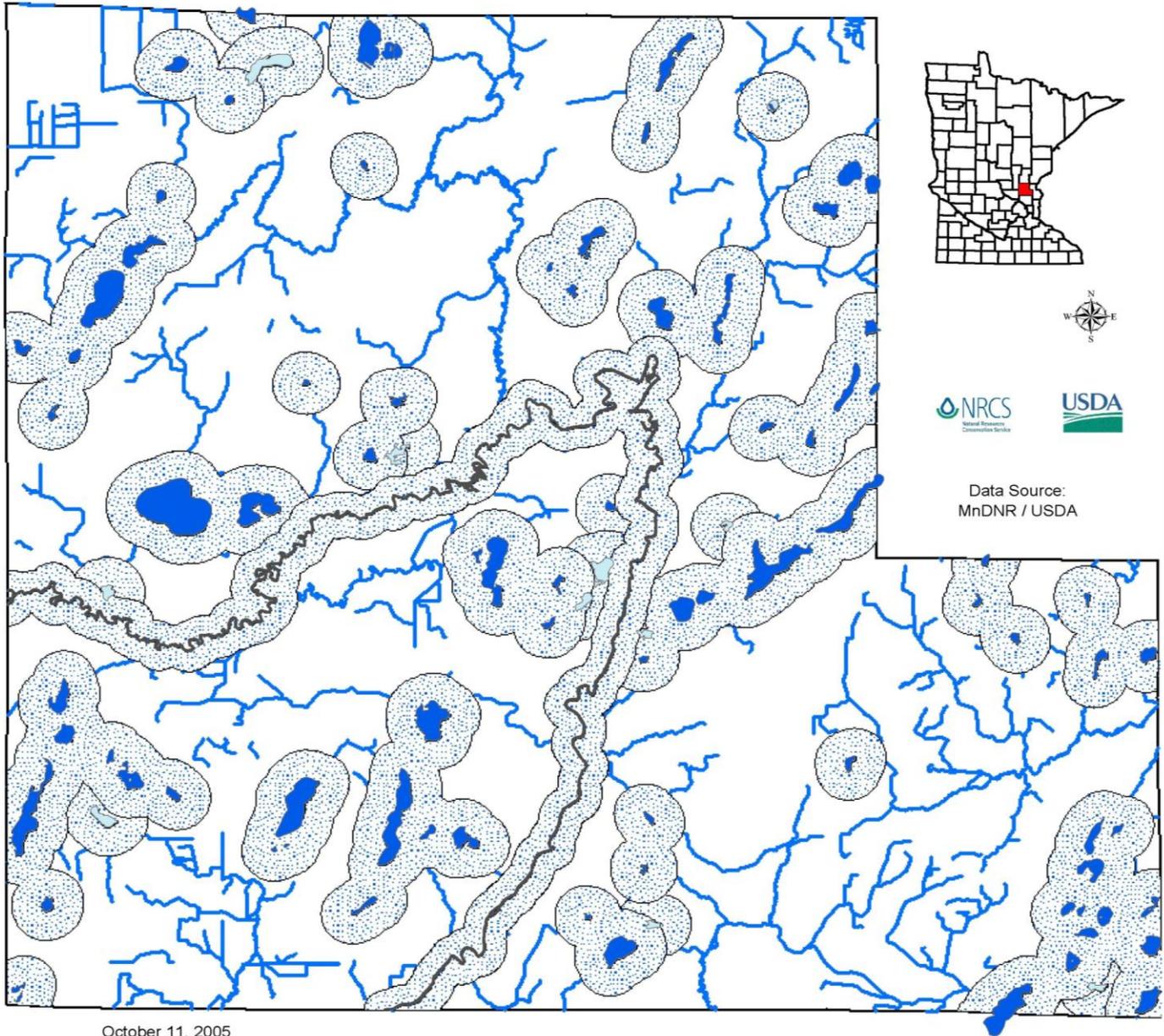
Land Use	Acres	Percent of Total
Coniferous Forest	9,083	3.1
Cultivated Land	103,358	35.7
Deciduous Forest	68,446	23.7
Exposed Soil, Sandbars, and Sand Dunes	13	0.0
Farmsteads and Rural Residences	6,216	2.2
Grassland	55,827	19.3
Grassland-Shrub-Tree	21,772	7.5
Gravel Pits and Open Mines	112	0.0
Other Rural Developments	413	0.1
Rural Residential Development Complex	1,145	0.4
Transitional Agricultural Land (pastures)	790	0.3
Unclassified	786	0.3
Urban and Industrial	2,668	0.9
Water	9,022	3.1
Wetlands (open water)	9,753	3.4
Total	289,404	100.0

Zoning and Ordinances

Lakes in Isanti County make up about three percent of the total land area, or 9,022 acres. Wetlands comprise 9,753 acres or 3.4 percent. Development within the 1000 feet of lakes, and 300 feet of rivers, as shown in **Figure Five**, is regulated by the Shoreland Management Ordinance of Isanti County. Known as “public waters” the land use surrounding lakes and wetlands is regulated with regards to preservation of the water resources. Five or six grading / filling permits within Isanti County have been issued per year over the past five years for building within this 1000 foot area. The community has expressed concern over perceived changes in development. The previous Zoning Ordinance was adopted in 1989 and was updated in 2010.

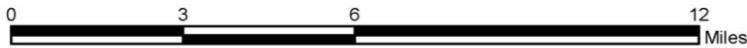
Platting, or splitting land into lots, is occurring throughout the county. In the past five years, the majority of development occurred within the city limits of Isanti and Cambridge. As shown in **Figure Six**, small splits occur outside this zone of infrastructure, where plats within the cities tend to be larger. Minor splits of 40-acre parcels into two occur on a regular basis county-wide. The City of Braham has no shoreland within its limits. Athens Township enforces its own zoning regulations but must adhere to Isanti County Zoning standards. It has had no development in the past five years. There is pressure to allow smaller lot sizes and larger developments in the agricultural areas. A new Comprehensive Plan, as completed in 2009 addressed this issue.

Isanti County Setback Buffer Map



Data Source:
MnDNR / USDA

October 11, 2005



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Figure Five

Major Plats (# of lots) within Isanti County

Figure Six

<i>Plats within Shoreland Area</i>	2000	2001	2002	2003	2004
Isanti County	5	8	0	6	3
City of Cambridge	2(3,40)	1(54)	2(44,86)	3(32,30,41)	4(7,10,77,121)
City of Isanti	1(111)	0	2(48,261)	1(153)	3(10,58,100)
City of Braham	0	0	0	0	0
Athens Township	0	0	0	0	0
<i>Plats outside Shoreland Area</i>					
Isanti County	103 small splits (2-4 lots) occurred between 2000 and present				
City of Cambridge	2(56,22)	2(414)(37)	1(20)	3(7,46,36)	2(19,13)
City of Isanti	6(29 Avg)	2(18,2)	1(14)	6(28 Avg)	2(191,4)
City of Braham	1(50)	1(53)	2(48)	1(16)	2(14)
Athens Township	0	0	0	0	1(8)

Based on data supplied by Isanti County Zoning, Cities of Cambridge, Isanti, Braham and Athens Township

The area within 1000-feet of a lake, 700-feet of the Rum River or 300 feet of a tributary or transition river, constitutes the shoreland area. Tributary and transition river buffers will be established by Isanti County Zoning in the near future. This area, minus the tributary / transition river data, makes up 48% of the area of Isanti County. The desire to be near these water resources may cause high density development in the most sensitive areas of the county. Unfortunately, the very resource that attracts development can be destroyed by it. Studies conducted by Bemidji State University show a direct correlation between quality of water and the property values on a lake. Continued nutrient flow into the lakes from poor stormwater management will cause degraded water quality and, subsequently, lower property values.

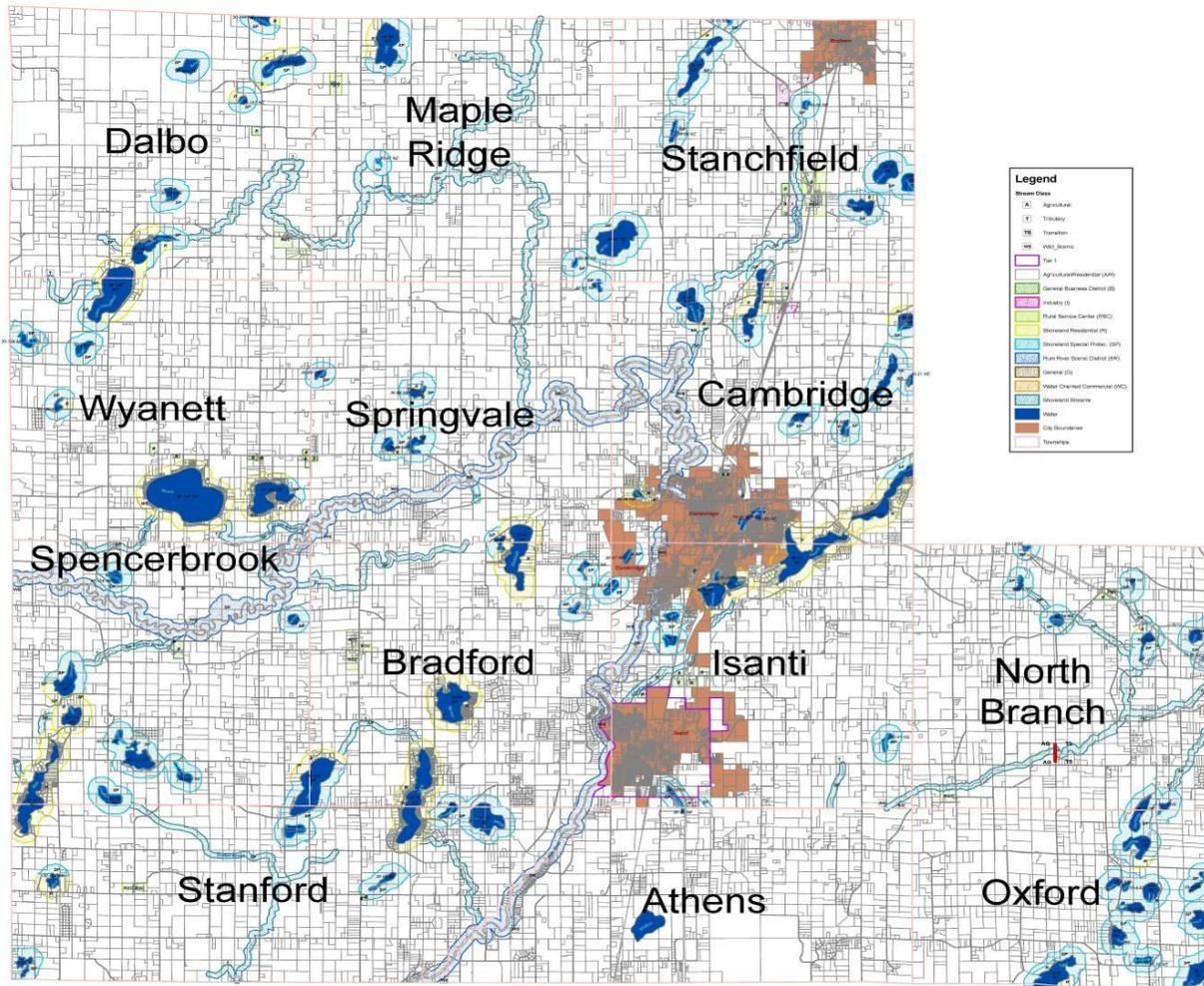
Isanti County has adopted protective ordinances in the Shoreland District, Rum River Scenic District, Floodplain Overlay District and Agriculture District. Within the Shoreland District, the county has developed four additional areas, including special protection, residential, water oriented commercial, and general. **Figure Seven** shows the districts approximate location. An official map posted in the planning and zoning office is utilized to determine the exact boundaries and the flood plain overlay. The classification legend is interpreted as follows:

A/R	Agriculture/Residential District	R	Shoreland - Residential
RSC	Rural Service District	G	Shoreland - General
B	General Business District	I	Industrial District
SP	Shoreland – Special Protection	USA1	Urban Service Area 1
WC	Shoreland – Water Oriented Commercial	SR	Rum River Scenic District

The Isanti County Zoning Ordinance can be found in its entirety on Isanti County’s website at: <http://www.co.isanti.mn.us/zoning/zonorddiv/zoningordinancefinalcopy2010.pdf>

Figure 7

Isanti County Official Zoning Map



Adopted by the Isanti County Board of Commissioners this _____ day of _____, 2010.

Signed: _____ Attest: _____
 Isanti County Board Chairperson County Administrator

This map is for zoning purposes only and is not a legal map.

Sensitive Areas

Areas sensitive to development pressures in Isanti County have unique features that contribute to groundwater or surface water pollution. Features contributing to sensitivity include high water table; sandy, porous soils; tight, clay soils; steep slopes / bluffs; and shallow, mucky shoreland areas.

The Rum River Scenic District is sensitive to development in many ways. This area is susceptible to flooding, the soils are porous and the groundwater is susceptible to contamination from land use on the surface, and the soils readily wash into the river, causing nutrients to contaminate the water. This area has protective development standards placed on it. **Figure Five** shows the area of this special Rum River District. It includes the area of the Rum River and 700 feet on either side of it. This district is located in the Anoka Sand Plain area, which is highly susceptible to erosion – both wind and water. Maintaining vegetation within this area is critical to controlling erosion and maintaining the integrity of the banks along the Rum River. It also helps to prevent nutrient runoff into the river itself.

A new floodplain map was completed in 2003 and is available from the DNR, NRCS, Isanti County Planning and Zoning office or FEMA. This map has not proven to be very accurate and numerous map amendments have been subsequently required. In the spring of 2010 the Minnesota Department of Natural Resources is proposing to do a LIDAR (Light Detection and Ranging) flight over Isanti County. This will produce an accurate contour map of the County with elevations accurate to two feet (2') which can be used to update the flood plain maps.

[Excerpts from the MN DNR "Wetland Guidance for the Anoka Sand Plain"] The Anoka Sand Plain (ASP) covers much of Isanti County is well known for flat topography, sandy soils, and shallow water table. Land use practices in this unique region have far reaching implications. In Isanti County the Anoka Sand Plain has many lakes, wetlands, streams and rivers. It also has diverse natural communities, including upland and floodplain forests; hardwood, shrub and conifer swamps; and marshes, meadows and fens. These aquatic and terrestrial habitats are home to many rare plants and animals. The Sand Plain is also well known as an important area for ground water use and recharge. It is one of the few areas of the state that is blanketed in large part by a sand and gravel surficial aquifer. In most areas of the ASP, bedrock aquifers occur beneath these surficial aquifers and are a major source of municipal drinking water for cities in the Sand Plain and the Twin Cities. Because of the highly permeable soils and lack of an impermeable layer below the sand plain, bed rock aquifers are at high risk for contamination from pollution. The Anoka Sand Plain is designated as a sensitive area in Isanti County and measures to protect surface and groundwater in this area is a high priority for the Isanti County Water Plan Task Force.

Shoreland alterations, or grade and fill permits, in Isanti County have averaged around five to six per year for the past five years. While a single alteration may be

considered small, the cumulative effects of all alterations can be detrimental to a lake. With many Natural Environment lakes reaching full development and General Development and Recreational lakes going from “cabins to castles”, cumulative effects will become more obvious and more difficult to correct. Alterations typically increase amounts of phosphorus and sediment entering the lake, degrading water quality and clarity.

The following **Figures Eight A - D** reflect a study, conducted by the Wisconsin Department of Natural Resources, shows the effects of development. This image summarizes the runoff of water, sediments and phosphorus at the three levels of development. When landowners remove the natural vegetation to build a home and establish a lawn, the amount of phosphorus and sediments that can be carried into the lake by rains greatly increases.

These results do not include runoff of pollutants during the construction period. Using sediment barriers during construction can assist in limiting the movement of sediments into the lake.

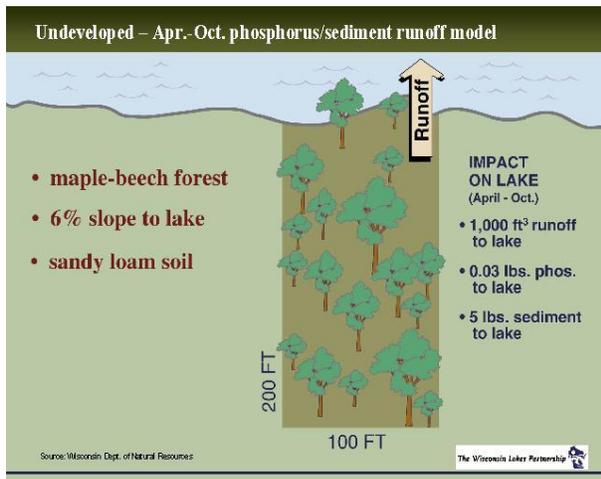


Figure Eight A - The first is a lot with its vegetation intact. Note the amount of phosphorus that enters the lake.

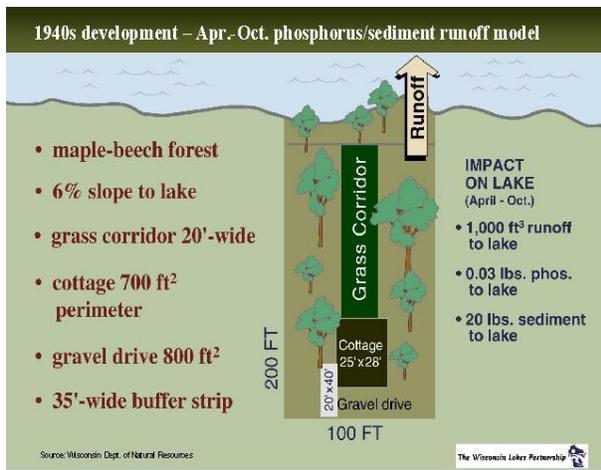


Figure Eight B - Depicted here is the same lot with a 1940s type cabin and a 20-foot wide grassy path to the lake. There is a 35-foot buffer of vegetation and much of the lot is still wooded. The grass corridor is a typical lawn turf. The model is based on vegetation after it has recovered from construction.

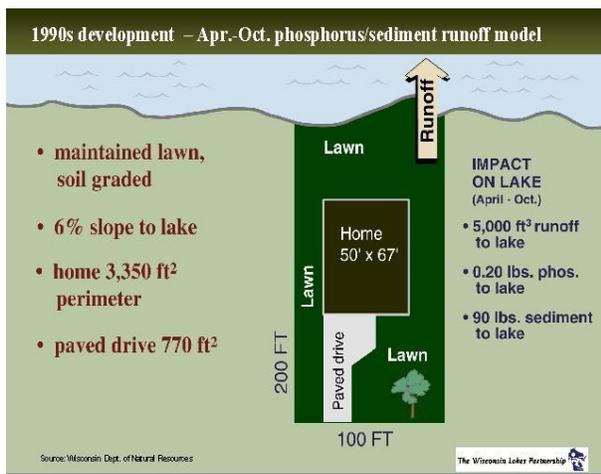
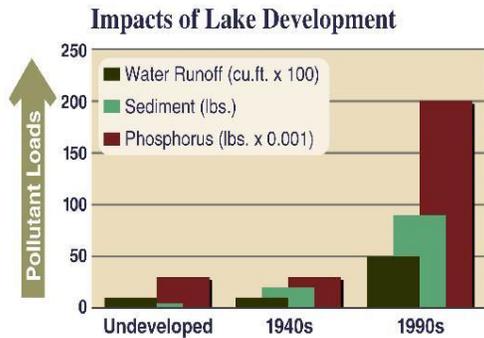


Figure Eight C - Here is the same lot with a 1990s type house, 50X67 feet: the 35-foot buffer of vegetation is gone, there is more impervious area and most of the trees are gone. Again the lawn is a typical grass turf. Note the amount of phosphorous that washes off the land and into the lake. Again, the model is based on vegetation after it has recovered from construction.

Data has been completed by the Wisconsin Department of Natural Resources.



Source: Wisconsin Dept. of Natural Resources

The Wisconsin Lakes Partnership

Figure Eight D - Change in runoff, compared to an undeveloped lot:

- 1940s
 - runoff, no change
 - sediments, 4X increase
 - phosphorus, no change
- 1990s
 - runoff, 5X increase
 - sediments, 18X increase
 - phosphorus, 7X increase

Topography and Erosion

A bluff, or hill higher than 25 feet and steeper than 30% slope, is unstable when vegetation is removed or development occurs too close to the edge. A 30-foot setback from the top of the bluff is required in Isanti County within the shoreland area. In addition to this, vegetation removal is regulated to protect the integrity of the bank. Undue pressure from a dwelling can cause instability on the bottom, or toe, of the bluff. This causes failure or slumping of the bank. There are areas in the northwest and southwest corners of the county that contain bluffs, as noted by the dark red and orange on the topographic map in [Figure Nine](#).

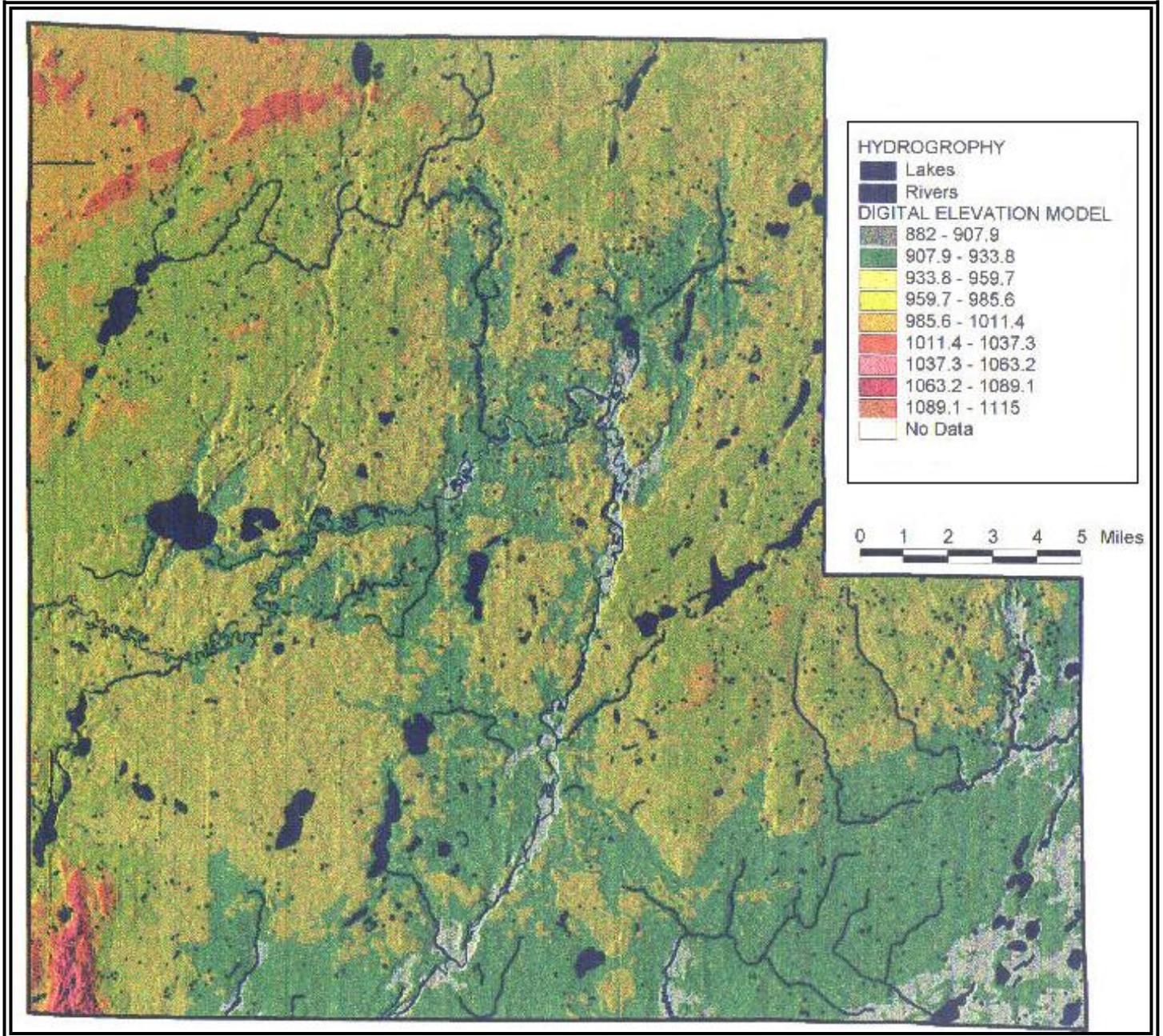
Movement of water is caused by rainfall and snow melt and is one of the leading contributors to water pollution. Topography, or land features, affects erosion potential. There is a 100-foot difference in elevation throughout the county. As noted on the topographic map, Moranic hills formed from material deposited during one of the earlier glacial periods exist throughout the county, most prominently in the northwest and southwest corners.

The extensive Anoka Sand Plain was formed by the Mississippi River as it followed the retreat of the Grantsburg sublobe when the glaciers melted. Relatively smooth relief and fingerlike depressions characterize this sand plain. Many small, isolated bogs and scattered dune like knolls of wind-deposited material are interspersed throughout. The soils are of loamy fine sand texture and vary in thickness from a few inches to many feet.

Soil loss occurs mainly during the construction process. Once a site is stabilized with vegetative cover, loss is minimized. It is important to protect our resources during this process. Stormwater management is regulated in Isanti County's Zoning Ordinance and the state NPDES permitting process to help eliminate sediment deposition in area lakes and rivers. Basic standards include impervious surface coverage of lots must not exceed 25% of the lot area and engineering for stormwater / sediment runoff is required on new developments.

Topography

Figure Nine



GIS / Cartography by Sean Vaughn, DNR
Source: USDA-NRCS STATSGO data

NPDES permitting

The Storm-water Program for construction activity is designed to reduce the amount of sediment and pollution entering surface and ground water both during and after construction projects. Storm-water discharges associated with construction activities are regulated through the use of National Pollutant Discharge Elimination System (NPDES) permits. NPDES permits are issued by the MPCA. Through this permit, the owner is required to develop a storm-water pollution prevention plan that incorporates specific best management practices (BMPs) applicable to their site.

Construction activities that disturb one acre or more of land require a permit. These activities may include road building, landscaping clearing, grading, excavation, and construction of homes, office buildings, industrial parks, landfills and airports. Both owners and operators are responsible for submitting the permit application. The permit is required of developers, builders, landscapers, architects, design engineers, surveyors, city/county highway departments, the Minnesota Department of Transportation and more.

The MPCA is in process of implementing a Storm Water Program for urbanized areas with a population greater than 10,000. This program is designed to reduce the amount of sediment and pollution that enters surface and ground water from storm sewer systems to the maximum extent practicable. Storm water discharges associated are regulated through the use of National Pollutant Discharge Elimination System (NPDES) permits. Through this permit, the owner or operator is required to develop a storm water pollution prevention program that incorporates BMPs applicable to their community.

An urban area may also be required to develop a Storm Water Program if it is located on sensitive waters or if it impacts waters. While some cities on the list currently have populations less than 10,000, the MPCA anticipates their populations will exceed 10,000 by the next census. Additionally, designation criteria can also be based on potential significant water quality impacts of storm water discharges to impacted waters. The City of Cambridge has developed a stormwater management plan. The cities of Braham and Isanti, Athens Township, and Isanti County have left enforcement to the MPCA at this time. With limited resources available at the state level, there is increasing reliance on local units of government to develop stormwater ordinances and / or achieve water quality protections by using permitting limitations and / or escrow accounts to ensure proper protective runoff measures.

More information is available on the MPCA website at:
<http://www.pca.state.mn.us/water/stormwater/stormwater-c.html#links>

Drainage

Minnesota drainage law (Minn. Stat., chapter 103E), established in 1887 and amended on a regular basis since, has allowed Isanti County Commissioners to regulate drainage within their borders. Delegation has been given to the County Highway Department. Map drawings of the original ditch system are shown in **Figure Ten**. Isanti County has 24 drainage systems. Miles of drainage are difficult

to determine as there are no existing GPS locations of the actual ditch system. Poor record keeping and no regular maintenance has made Isanti County's Ditch System difficult to manage.

This law was originally established to allow for productive agricultural use of low, wet areas. Today, the drainage law and cleanout rules provided within, can conflict with the need to protect area lakes and wetlands. This law does not take water quality and other environmental issues into consideration. Because of this, other federal and state laws have been passed that may cause conflict in the implementation of the original law. Some of these include

The Clean Water Act, section 404

Individuals cannot undertake activities involving filling, even on privately owned lands, if that land comes under the broad definition of "wetlands" without an Army Corps of Engineers permit. Wetlands that are not substantially attached to a body of water are not covered by 404.

"Swampbuster" Rules

The wetland conservation provisions of the 1985, 1990 and 1996 Farm Bills require agricultural producers to protect wetlands on the farms they own or operate in order to be eligible for USDA farm program benefits.

Minnesota Environmental Policy Act (MEPA)

This state law was passed in 1973 to promote efforts to prevent or eliminate damage to the environment. This program may require the drainage authority to prepare an environmental assessment worksheet (EAW) or environmental impact statement (EIS). An EAW or EIS may be required by the Environmental Quality Board (EQB) through a petition by interested landowners.

1991 Wetlands Conservation Act (WCA)

This "no-net-loss" legislation states that any drained or filled wetlands must be replaced with created wetlands or restored wetlands of equal or greater size and quality (Minn. Stat. 103G.222 subd.1). For wetlands regulated by the WCA and not covered by the DNR, the drainage authority must obtain approval of a wetland replacement plan, exemption, or no-loss determination from the appropriate local government unit. Isanti County's SWCD has been designated as the clearinghouse for wetland information. County Zoning has regulatory authority for WCA for unincorporated areas in Isanti County. Cleaning and clearing out of pre 1991 ditches is allowed if done per the Wetland Conservation Act (WCA) regulations.

These laws change periodically; check for updates.

More information regarding regulatory authority is available on the following website: <http://www.bwsr.state.mn.us/directories/WCA.pdf>

DNR Permit Requirements

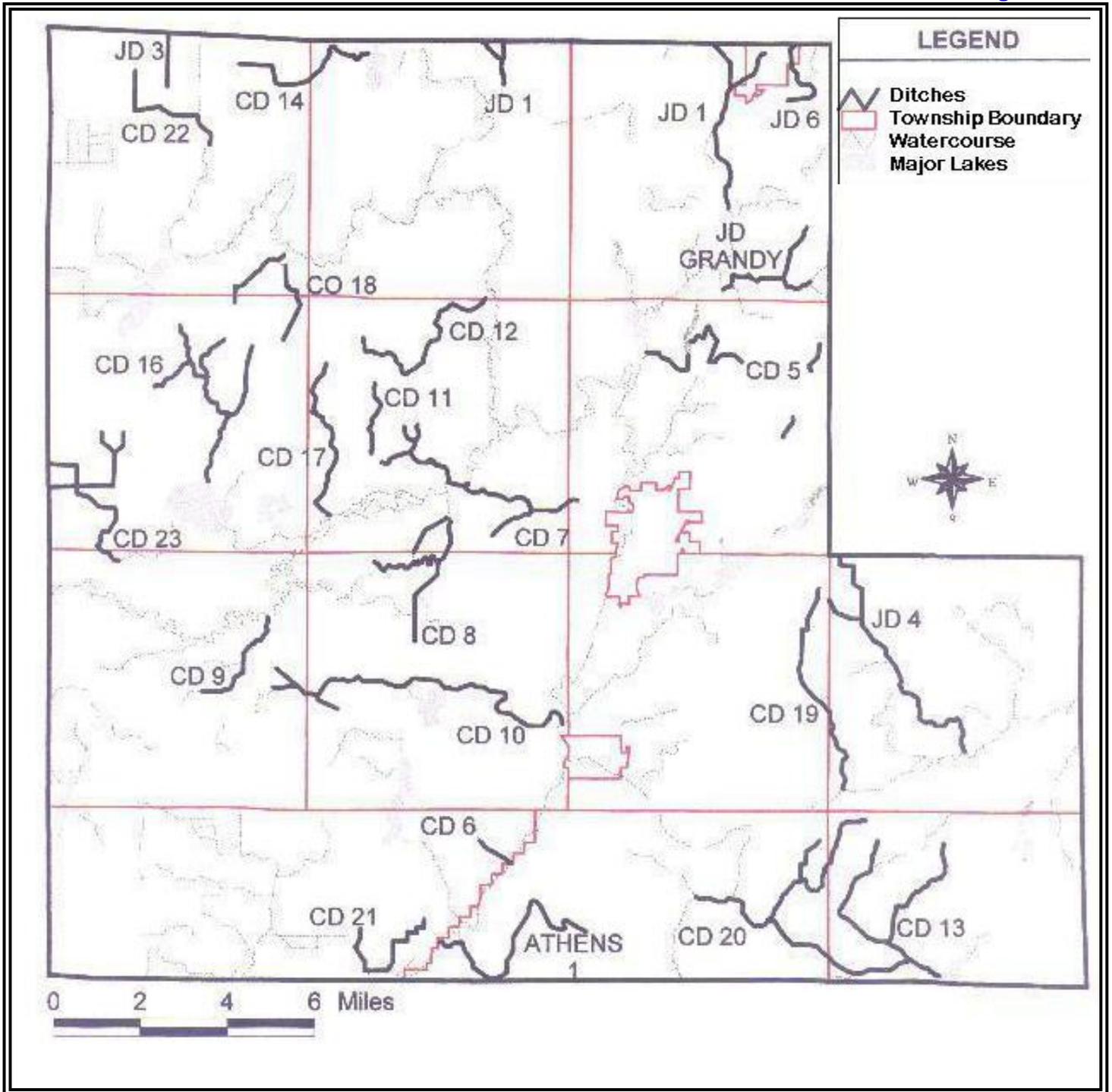
The DNR administers the state's public water permit program, under Minn. Stat. ch.103G. Any person proposing to change the course, current, or

cross-section of a public water, including draining or partially draining a lake or wetland, must obtain a permit from the DNR in the Cambridge Office.

DNR protected waters map can be accessed on the following website:
http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps_nw.html

Isanti County Ditch System

Figure Ten



10/98 Source – Isanti Water Plan
GIS / Cartography by Sean Vaghn

Comprehensive Plan

The 2009 Comprehensive Plan is being implemented at this time. Smart growth policies, transfer of development rights, conservation easements, agriculture/residential district density of four per quarter – quarter and requiring the underlying four per quarter – quarter density to apply for non – riparian lots on Natural Environment lakes are some of the tools that can be used to meet the growing needs of the County.

B. Natural Habitat / Impaired Waters

Land Conversion is occurring in Isanti County. Native Habitat and agricultural land throughout the county is being sold for dwelling sites and recreational land use. This breaking up of land destroys habitat for numerous types of wildlife and waterfowl. A better understanding of area lakes, their quality, and potential sources of degradation are important environmental issues in Isanti County.

Landowners wishing to create a “wildlife pond” from a type I or II wetland dig deeper for open water and create a type III wetland. This does not provide the same habitat and is not as beneficial to the area ducks and wetland animals. Contractors interested in mining of peat and black dirt will occasionally use this premise of “creating a wildlife pond” in an effort to increase their mining ability. Education, combined with regulation is required to contain this land use.

Wetlands are filled to create roads and driveways. Culverts drain water away from the road, and can divert wetland waters, altering the level. State and local agencies must work closely to determine maximum use for agricultural practices while still protecting the environment.

Wetlands

Filling of wetlands for farming or development depletes the areas of the county for groundwater recharge, flood and sediment control. These areas provide natural regulation of surface water runoff during times of heavy rains. They also provide habitat for waterfowl, frogs, turtles and other wetland animals. According to the National Wetland Inventory, as shown in [Figure Eleven](#) there are about 78,550 acres of wetland in Isanti County. Some of these areas are also designated public waters by the DNR and are regulated by the Shoreland Regulations. Breakdown by designation is shown in [Figure Twelve](#).

Figure Twelve

There are different wetland designations based on the amount of water, vegetation, soil type, and duration of saturation. The Circular 39 definition of wetlands as provided by the Board of Soil and Water Resources website is described below. This coincides with the wetland map and table at right.

Wetland Designation	Acres
Type One	3,524
Type Two	16,035
Type Three	15,103
Type Four	630
Type Five	8,405
Type Six	23,456
Type Seven	7,537
Type Eight	3,860
Total Acres	78,550

Type One wetlands are either **seasonally flooded basins or floodplains**. Vegetation varies according to the season and the amount of flooding. Benefits of Type One wetlands include seasonal waterfowl and wildlife habitat, water quality protection and groundwater recharge and discharge.

Type Two wetlands are **wet meadows**. The soil is without standing water during most of the growing season, but is saturated below the surface. Vegetation includes grasses, sedges, rushes and various broad-leaved plants. Type Two wetlands provide waterfowl and wildlife habitat, water quality benefits and groundwater recharge or discharge.

Type Three wetlands are **shallow marshes**. The soil is usually waterlogged early in the spring and often covered with six or more inches of water. Vegetation includes grasses, bulrushes, spikerushes, cattails, arrowheads, pickerelweed and smartweeds. Type Three wetlands protect water quality and shoreland, retain floodwater, provide habitat for waterfowl, amphibians and fish, and offer recreation, including hunting, fishing and canoeing.

Type Four wetlands are **deep marshes**. The soil is usually covered with water during spring and summer, anywhere from six inches to three feet. Vegetation includes cattails, reeds, bulrushes, spikerushes and wild rice. In open areas, pondweed, naiads, coontail, watermilfoils, waterweeds, duckweeds, waterlillies or spatterdocks may grow. These deep marshes may completely fill shallow lake basins, potholes, limestone sinks and depressions, or they may border open water. These wetlands provide water quality protection, floodwater detention, wildlife/ fisheries habitat, and recreation, including hunting, fishing and canoeing.

Type Five wetlands are **open water** wetlands, including shallow ponds and reservoirs. The water is less than six feet deep and fringed by a border of emergent vegetation. Type Five wetlands provide floodwater detention, wildlife and fish habitat and recreation, including hunting, fishing and canoeing.

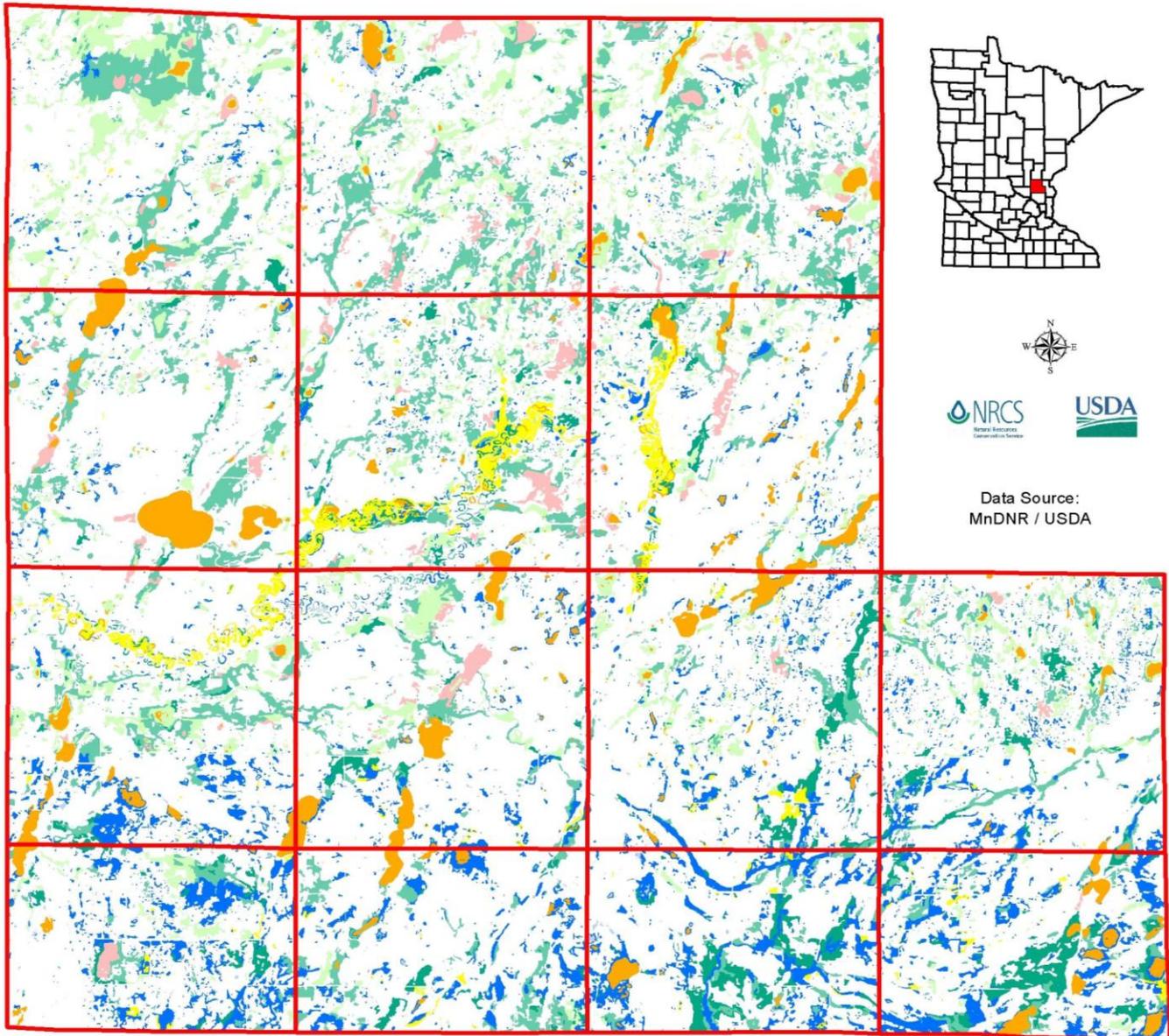
Type Six wetlands are **shrub swamps**. Soil is usually waterlogged during much of the growing season, and is often covered with as much as six inches of water. Vegetation includes alders, willows, buttonbush, dogwoods, leatherleaf and swamp-

privet. Typical benefits of type five wetlands include water quality, floodwater detention, low flow augmentation and wildlife habitat.

Type Seven wetlands are **wooded swamps**. Soil is waterlogged to within a few inches of the surface during the growing season and can be covered with as much as a foot of water. Typical trees include tamarack, white cedar, arborvitae, black spruce, balsam, rd maple and black ash. Type Seven wetland benefits include water quality, low flow augmentation, floodwater detention and timber harvesting.

Type Eight wetlands are **bogs**. Soil is usually waterlogged and has a spongy covering of mosses. Typical plants include heath shrubs, sphagnum moss, sedge leatherleaf, Labrador-tea, cranberries and cotton grass, and scattered, often stunted, black spruce and tamarack. Typical benefits include peat harvesting, water quality, low flow augmentation and shoreland protection.

Isanti County National Wetland Inventory Map



October 11, 2005

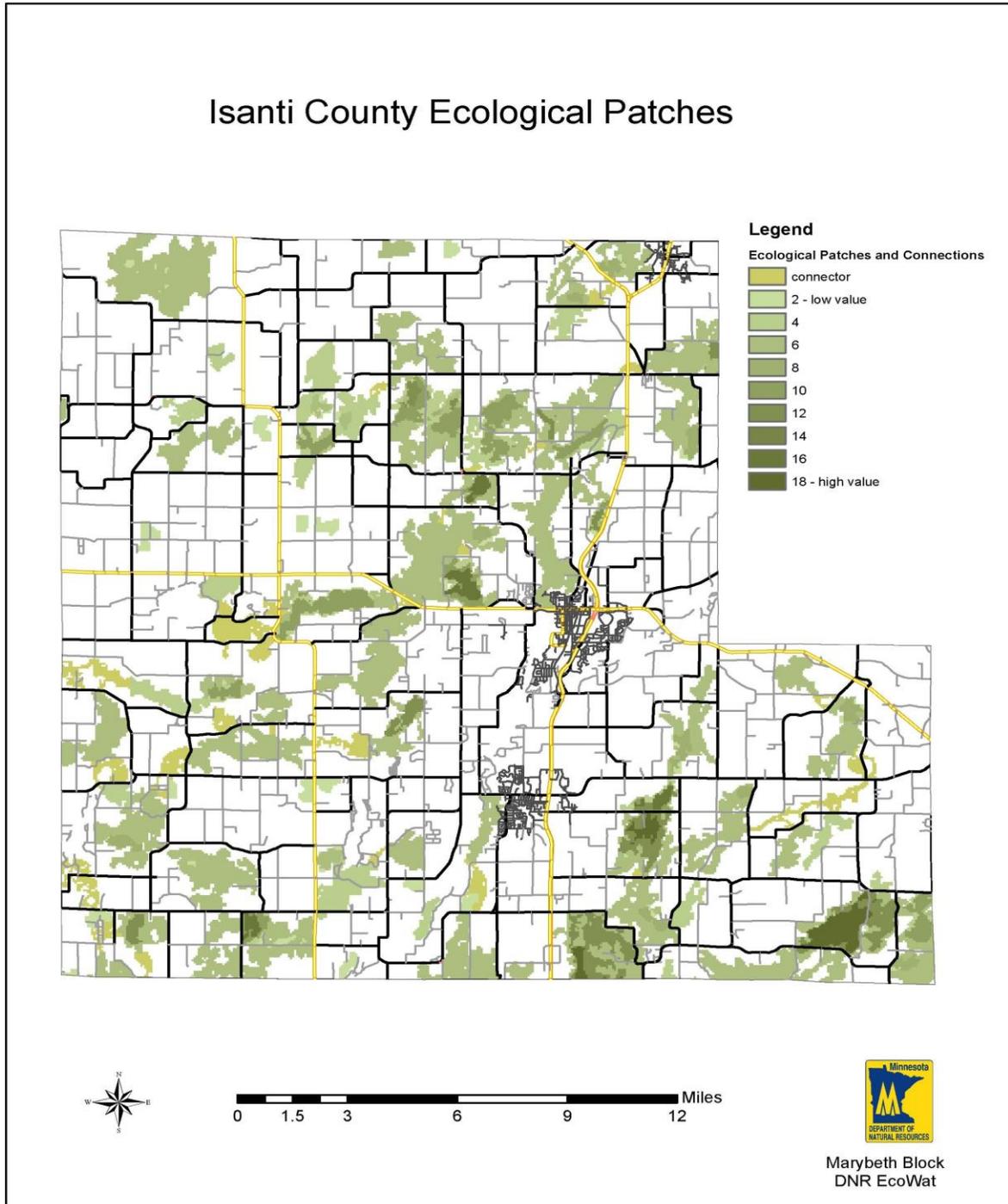


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Wetlands	
4	Light Blue
5	Orange
1	Yellow
2	Light Green
3	Blue
6	Medium Green
7	Dark Green
8	Pink

Green Corridors

The Public Lands in Isanti County consist of Natural Communities and Rare Species, County Parks and Recreation, DNR Forestry, Trails and Waterways and Wildlife Management Areas. As you can see by the map, there are no corridors of natural habitat for wildlife. The areas are patchy and spread apart.



A map of the Native Plan Communities and Rare Species is available at the SWCD and the DNR.

In addition to this open space preserved for wildlife habitat, the county also utilizes several programs available to set land aside by means of easement or acquisition. These programs include:

CRP (Conservation Reserve Program)

The CRP program is a federal program administrated through the Farm Service Agency (FSA) office. The landowner receives an annual payment and cost-share assistance for enrolling environmentally sensitive cropland for a period of 10 to 15 years. Acres are planted to a conserving cover consisting of a variety of grasses and/or trees.

CCRP (Continuous Conservation Reserve program)

The CCRP program is a federal program administrated through the Farm Service Agency (FSA) office. The landowner receives an annual payment and cost-share assistance for enrolling high-priority conservation practices on eligible land for a period of 10 to 15 years. These acres are planted to either a mixture of grasses or trees. Wetlands can be restored through the program.

Both the general CRP CCRP are administered by FSA with NRCS providing technical land eligibility determinations, conservation planning, and practice implementation. CRP provides technical and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost effective manner. The program provides assistance to farmers and ranchers in complying with Federal, State, and Tribal environmental laws, and encourages environmental enhancement.

RIM (Reinvest In Minnesota)

The RIM program is a state program administrated through the Soil & Water Conservation District (SWCD) office. The landowner receives a one-time payment and cost-share for enrolling lands in a 30-year or perpetual easement. These acres can be seeded to conserving cover consisting of either/or native grasses and forbs, trees and shrubs. Wetlands can be restored through the program.

CSP (Conservation Security Program)

CSP is a voluntary program administered by the Natural Resources Conservation District (NRCS) that provides financial and technical assistance to promote the conservation and improvement of soil, water, air, energy, plant & animal life, and other conservation purposes on Tribal and private working lands. Working lands include cropland, grassland, prairie land, improved pasture, and range land, as well as forested that is an incidental part of an agriculture operation. The program provides equitable access to benefits to all producers, regardless of size of operation, crops produced, or geographic location.

EQIP (Environmental Quality Incentive Program)

EQIP is administered by the NRCS. It provides technical assistance, cost share payments, and incentive payments to assist crop, livestock, and other agricultural producers with environmental and conservation improvements to their operations.

WHIP (Wildlife Habitat Incentive Program)

The WHIP program is a voluntary program for people who want to develop or improve wildlife habitat on tribal and private lands. It provides both technical assistance and cost share to help establish and improve fish and wildlife habitat. It is administered by the NRCS.

Preservation activity in Isanti County is shown in **Figure Thirteen**.

Conservation acres in Isanti County **Figure Thirteen**

Program	Acres	Program	Acres
CRP	531	Isanti County Parks	505
CCRP	293	Scenic Rum River Easements / DNR owned land	1,289
DNR WMA	4,839		
EQIP	6,982	USFWS Easements/Acquisitions	116
CSP	0	Cedar Creek Natural History Area	2,120
WHIP	63	Total Acres	16,738

Prepared by Isanti County NRCS

The County Park Comprehensive Plan was included by reference in the new Isanti County Comprehensive Plan in 2009.

Habitat degradation also occurs during development around shorelines. Removal of vegetation diminishes habitat for biota that live in the near shore area. This vegetation also prevents sediment from entering the surface water. Sediment contains phosphorus. One pound of phosphorus can cause the growth of 500 pounds of aquatic vegetation and algae. Sediment degrades fish habitat and is especially damaging to spawning areas. By filling in the cracks in the small rock, or cobble, fish eggs become smothered by silt or lie on top and are eaten by other fish. Restoration of shoreland vegetation buffers is essential to the improvement of water quality in the area lakes. Education to show new developments why they need to leave a buffer is also important.

Lakescaping, or returning shorelines to their native state, needs to be encouraged on the lakes of Isanti County. This program is available for cost-share through the DNR and the success of the program is dependant on education and assistance from Local Water Management staff.

Agriculture Preservation

Agriculture plays an important role in maintaining open space and preservation of large tracts of land containing trees and wetlands, in addition to providing food resources. According to *Minnesota Agricultural Statistics 2003*, compiled by the

Minnesota Department of Agriculture, Isanti County ranked in the lower half of the agricultural counties in the following areas:

- **2002 Crop Production** – 55th/ corn, 61st/ soybeans, 46th/ wheat, 72nd/ oats and 58th/ hay.
- **2001 Cash Farm Receipts** – 70th/ crops, 69th/ livestock and 71st/ total cash receipts.
- **As of 01/01/03** – 74th/ cattle, 62nd/ hogs and pigs, 61st/ beef cows, and 58th/ milk cows.

These statistics are ranked based on 87 counties in Minnesota. Agricultural land preservation and conservation, along with maintaining the farm and farm-related economy in Isanti County is a priority in the County Comprehensive Plan. With the development pressures the county is experiencing, this portion of the plan will be re-visited during the upgrade planned for 2006.

Tree farming has become a viable agricultural occupation. This is a sustainable occupation, with harvest for paper, wood, etc. A nine-county regional forest management plan has been completed and adopted for Isanti and the surrounding counties. A total of 3.7 million acres of forest land is found in this nine-county area. Assistance for farmers interested in this program is available through The DNR – Forestry division.

Surface Water Quality

There are 54 protected lakes and 151 protected wetlands in Isanti County. Lakes are designated by the Department of Natural Resources according to their ability to assimilate development pressures. Only four lakes in Isanti County are designated as General Development, or able to handle maximum development. Ten are designated Recreational Development and seventy-seven are Natural Environmental Lakes. Lake Classifications are defined by the DNR as follows:

- **Natural Environment Lakes** usually have less than 150 total acres, less than 60 acres per mile of shoreline, and less than three dwellings per mile of shoreline. They may have some winter kill of fish; may have shallow, swampy shoreline; and are less than 15 feet deep.
- **Recreational Development Lakes** usually have between 60 and 225 acres of water per mile of shoreline, between 3 and 25 dwellings per mile of shoreline, and are more than 15 feet deep.
- **General Development Lakes** usually have more than 225 acres of water per mile of shoreline and 25 dwellings per mile of shoreline, and are more than 15 feet deep.

Several of the protected wetlands have lake names and shoreland designations. **Figure Fourteen** lists the lakes with their DNR designation, along with acres and lake number.

Lake Number	Lake/Wetland Name	Acres	Classification	Township	Section(s)	Watershed	Trophic Status / Remarks
30-0080	Francis Lake	308	GD	Bradford	21,22,27,28	Rum	H / TMDL - Excessive Nutrients / Dam at outlet
30-0136	Green Lake	866	GD	Wyanett	26,27,28,33,34,35	Rum	E / TMDL - Mercury, PCB / Eurasian Milfoil / Dam at outlet
30-0072	Long Lake	376	GD	Bradford/Stanford	4,5/28,32,33	Rum	E / Dam at outlet
30-0135	Spectacle Lake	280	GD	Wyanett	25,26,35,36	Rum	M
30-0026	Athens WMA	101	NE	Athens	5,8	Rum	
30-0114	Baxter Lake	81	NE	Spencer Brook	20,29	Rum	
30-0015	Big Pine Lake	165	NE	North Branch	4,9	Lower St. Croix	
30-0115	Boettcher Lake	51	NE	Spencer Brook	27,34	Rum	
30-0054	Brobergs Lake	57	NE	Cambridge	30	Rum	
30-0021	Classon Lake	29	NE	Cambridge	18,13	Rum	
30-0097	Diesslin Marsh	28	NE	Maple Ridge	20	Rum	
30-0050	Dollar Lake	32	NE	Cambridge	23	Rum	
30-0083	Elizabeth Lake	323	NE	Bradford/Springvale	2,3,11/34,35	Rum	
30-0100	German Lake	340	NE	Stanford/Bradford/ Spencer Brook	30,31/36/1	Rum	
30-0017	Grass Lake	107	NE	North Branch	12,13	Lower St. Croix	
30-0142	Grass Lake	33	NE	Dalbo	22,27	Rum	/ Affected by CD#22
30-0124	Gunnik Lake	57	NE	Wyanett	7	Rum	
30-0012	Horseleg Lake	95	NE	Oxford/North Branch	4/35	Lower St. Croix	/ Affected by ditch
30-0003	Horseshoe Lake	119	NE	Oxford	2,11	Lower St. Croix	
30-0006	Hurley Lake	39	NE	Oxford	12	Lower St. Croix	
30-0055	Joe's Lake	49	NE	Cambridge	33,34	Rum	
30-0095	Johnsons Slough	57	NE	Springvale/Maple Ridge	1/36	Rum	
30-0020	Krans Lake	47	NE	Cambridge	1,12	Rum	
30-0140	Krone Lake	142	NE	Dalbo	3,10	Rum	/ Affected by CD#14 & JD#3
30-0098	Larson Marsh	36	NE	Maple Ridge	36	Rum	
30-0125	Leisure Health Lake	55	NE	Wyanett	8	Rum	
30-0010	Lillegren Lake	30	NE	Oxford	23	Lower St. Croix	
30-0023	Linderman Lake	70	NE	Stanchfield	19,24	Rum	/ Also in Chisago County
30-0144	Lindgren Lake	75	NE	Dalbo	1,2	Rum	/ Also in Kanabec County
Lake Number	Lake/Wetland Name	Acres	Classification	Township	Section(s)	Watershed	Trophic Status / Remarks

30-0084	Line Lake	25	NE	Bradford/Springvale	3/34	Rum	
30-0019	Little Pine Lake	29	NE	North Branch	4	Lower St. Croix	Also in Chisago County
30-0044	Little Stanchfield	155	NE	Cambridge	5	Rum	H
30-0002	Long Lake	199	NE	Oxford	24	Lower St. Croix	Also in Chisago and Anoka Co.
30-0047	Long Lake	136	NE	Cambridge	12,13	Rum	
30-0056	Long Lake	114	NE	Cambridge/Stanchfield	4,9/33,34	Rum	/ Level affected by CD#5
30-0007	Lower Birch Lake	75	NE	Oxford	14	Lower St. Croix	
30-0038	Magnuson Lake	35	NE	Isanti	8	Rum	
30-0070	Marget Lake	188	NE	Bradford/Athens	3/34	Rum	
30-0141	Matson Lake	89	NE	Dalbo	11,14	Rum	/ Affected by CD#14
30-0011	Mud Lake	51	NE	Oxford/North Branch	1,2/36	Lower St. Croix	
30-0065	Mud Lake	300	NE	Maple Ridge /Stanchfield	30,31/25,26	Rum	/ Affected by ditch
30-0117	Mud Lake	165	NE	Spencer Brook	28,33	Rum	
30-0143	North Stanchfield Lake	153	NE	Dalbo	27,28,33,34	Rum	
30-0105	Reimann Marsh	45	NE	Stanford	19	Rum	
30-0018	Rice Lake	54	NE	North Branch	11,14	Lower St. Croix	
30-0048	Rum Lake	53	NE	Cambridge	22	Rum	
30-0130	Sandy Lake	31	NE	Wyanett	17,18,19,20	Rum	
30-0060	Section Lake	130	NE	Stanchfield	24	Rum	
30-0059	Seventeen Lake	43	NE	Stanchfield	17	Snake	
30-0041	Splittstoesser Lake	30	NE	Isanti	25	Lower St. Croix	
30-0014	Spring Lake	33	NE	North Branch	2	Lower St. Croix	/ Affected by ditch
30-0102	Stahlberg Marsh	77	NE	Stanford	1	Rum	/ Affected by ditch
30-0104	Stony Lake	41	NE	Stanford	7,8	Rum	
30-0027	Stratton Lake	230	NE	Athens	17,18,19	Rum	/ Affected by CD#20
30-0001	Tamarack Lake	135	NE	Oxford	18	Lower St. Croix	/ Also in Chisago County
30-0113	Tennyson Lake	164	NE	Spencer Brook	17,19,20	Rum	
30-0061	Trollin Lake	118	NE	Stanchfield	25,26	Rum	
30-0004	Twin Lakes	59	NE	Oxford	10,11	Lower St. Croix	
30-0005	Upper Birch Lake	83	NE	Oxford	11,12	Lower St. Croix	
30-0057	Upper Rice Lake	208	NE	Stanchfield	4,5,8	Snake	/ Affected by ditch
Lake Number	Lake/Wetland Name	Acres	Classification	Township	Section(s)	Watershed	Trophic Status / Remarks
30-0091	Walbo Lake	47	NE	Springvale	20,21	Rum	/ Affected by CD#11
30-0139	West Lake	154	NE	Dalbo	1,11,12	Rum	/ Affected by CD#14

30-0088	Williams Lake	35	NE	Springvale	16,17	Rum	
30-0016	Unnamed	40	NE	North Branch	9,10	Lower St. Croix	
30-0029	Unnamed	34	NE	Athens	17	Rum	
30-0031	Unnamed	47	NE	Isanti	32	Rum	
30-0037	Unnamed	93	NE	Isanti	6	Rum	
30-0039	Unnamed	59	NE	Isanti	17	Rum	
30-0058	Unnamed	31	NE	Stanchfield	10,15	Rum	
30-0063	Unnamed	55	NE	Athens	7,18,12,13	Rum	
30-0064	Unnamed	71	NE	Bradford/Isanti	6,7,1,12	Rum	
30-0066	Unnamed	42	NE	Athens	8	Rum	
30-0071	Unnamed	45	NE	Bradford/Athens	4,33	Rum	
30-0073	Unnamed	31	NE	Bradford	1	Rum	
30-0076	Unnamed	31	NE	Bradford	12	Rum	
30-0089	Unnamed	83	NE	Springvale	18	Rum	/ Affected by CD#17
30-0090	Unnamed	40	NE	Springvale	20	Rum	
30-0109	Unnamed	37	NE	Spencer Brook	4	Rum	
30-0116	Unnamed	36	NE	Spencer Brook	28	Rum	
30-0162	Unnamed	80	NE	Maple Ridge	4,5	Rum	
30-0107	Blue Lake	309	RD	Stanford/ Spencer Brook	6/29,30,31	Rum	E / Dam at outlet
30-0036	Elms Lake	53	RD	Isanti	4	Rum	E
30-0043	Fannie Lake	345	RD	Isanti/Cambridge	2,3/34,35	Rum	E
30-0035	Florence Lake	135	RD	Isanti	4,5,8,9	Rum	E / Dam at outlet
30-0008	Hoffman Lake	187	RD	Oxford	14,23	Lower St. Croix	
30-0096	Lory Lake	341	RD	Maple Ridge	5,8	Rum	E / Dam at outlet
30-0106	Mud Lake	81	RD	Stanford/ Spencer Brook	4/32,33	Rum	/ Affected by ditch
30-0022	Skogman Lake	226	RD	Cambridge	25,35,36	Rum	E
30-0138	South Stanchfield Lk	433	RD	Wyanett/Dalbo	4,5,/32,33	Rum	H / Dam at outlet
30-0009	Typo Lake	273	RD	Oxford	21,22	Lower St. Croix	H / TMDL - Excessive Nutrients / Also in Anoka Count

Quality of the lakes of Isanti County is affected by water flowing from the land into the lake. Beyond the obvious stream that flows directly into the lake, overland flow carries sediment, nutrients, and anything land owner's use on the land. It is important to realize the connection each property owner within a minor watershed has on the quality of a lake. It is not usually one single "point source" causing the degradation of a lake, but many sources, including septic systems, agriculture practices, domestic pets and farm animals, individual and agriculture fertilizer use, and shoreline erosion.

Regulations to protect this resource are in effect, however it is difficult to "police" the use of the land. Education efforts of the stakeholders surrounding a lake help landowners to understand the connection between what they do and the effect it has on the lake and future generations' ability to enjoy the resource of a swimmable, fishable body of water. It is up to the individual property owner and the LWM needs to facilitate this process.

Carlson's Trophic State Index - In Figure Fourteen, the Trophic Status designation of H, E or M is shown. There is a known correlation between the sampled parameters of lakes. It is

"Increased phosphorus = increased chlorophyll = decreased secchi disk depth"

Trophic Status is defined as follows:

- Eutrophic, or "E" designated lakes: a nutrient-rich lake - usually shallow, "green" and with limited oxygen in the bottom layer of water.
- Hypereutrophic, or "H" designated lakes: a very nutrient-rich lake characterized by frequent and severe nuisance algal blooms and low transparency.
- Mesotrophic, or "M" designated lakes: a moderately nutrient-rich lake with late summer algae blooms. May have oxygen loss in hypolimnion in late summer.

Only thirteen lakes have the data available to make this determination. This lack of data on area lakes makes the quality of the lakes in the county difficult to assess. A secchi monitoring program, called the **Citizens Lake Monitoring Program** exists through the MPCA. Lake water quality data has been gathered on eight area lakes through the years, as shown in **Figure Fifteen**.

Secchi Depth in Feet (Annual Average)							Figure Fifteen	
	1997	1998	1999	2000	2001	2002	2003	2004
Blue	4.7	5.8	5.6	7.4	5.6	3.7	4.8	5.8
Fannie						2.4		
Francis	0.8	0.4	0.9	0.6	0.5			
German				2.3	1.7			
Green	6.3	4.3	3.8	3	5.3	4.4	7	7.4
Skogman				7.9	4.7	4.7	5.2	6
Spectacle	13.4	10.6	10.4		10.2			
Typo	1	0.5	0.6	0.6				

Current gathering and reporting techniques have changed for the Minnesota Pollution Control (MPCA) Citizens Lake monitoring program. Current readings refer to the summer mean average instead of annual averages. See [Figure 15\(A\)](#).

Secchi Depth in Feet (Annual Average)						Figure Fifteen (A)		
	2005	2006	2007	2008	2009	2010		
Blue (south)	5.9							
Blue (north)	3.8			5.1				
Elms					8.2	6.3		
Fannie	2.6	3.6			7.2			
Florence					5.1	4.8		
Francis	0.5	0.7	0.9	2.3	1.4			
Green	5.6	3.6	7.0	5.4	5.1	6.3		
Long	1.7	1.0	1.3	2.2	1.5	1.5		
Skogman	4.9	4.3	4.1	4.2	5.1	4.8		
Spectacle	11.9	14.8	13.4	13.9	14.6	12.3		
Typo	0.7		0.4		0.5			

Consistent data has been submitted on Blue and Green Lakes. Skogman Lake has participated since 2000. It is important to have long-term, consistent information gathered on area lakes to determine trends in water quality. We need to ask the question “Is my lake water quality improving or degrading?” Lakes can have “good” or “bad” years for secchi monitoring. Only long-term data (ten years or more) can adequately show these trends.

More volunteers are needed to add to the lakes data base.

Information on the Citizen Lake Monitoring Program can be found at: <http://www.pca.state.mn.us/water/volunteer-monitoring.html>

This data is also submitted to the MPCA data base called EQUIS, where state-wide lake data is maintained.

To view all lake data either gathered by or submitted to the state, access the DNR’s website at: <http://www.dnr.state.mn.us/lakefind/index.html>

Lake Water Quality Assessment Program, or LAP studies, is conducted by the MPCA to assess the overall condition of a lake. The MPCA works closely with lake associations, collecting lake data (including chlorophyll-a, phosphorus and secchi, watershed and historic information. Seven lakes have completed this program in Isanti County. These lakes include Typo, Florence, Francis, Blue, Green and the Skogman, Fannie chain. Green was completed in 1991, and re-analyzed in 1998 for

trends. Education involving LAP studies should be presented to lake associations with encouragement to apply to the program.

Further information on LAP's completed is available at:
<http://www.pca.state.mn.us/wfhy94d>

Lake Management Planning is an important tool for individual lake associations and LIDs to take a look at the needs of property owners vs. needs of the lake. Taking an in-depth look at the immediate watershed of the lake, noting potential contaminant sources, and devising a systematic plan to alter land use to benefit the water resource is one of the actions of this process. The other is involving the landowners in the process. Providing guidance and support for implementation of prioritized goals and action items is an important part of Isanti County's Local Water Management Plan. The Initiative Foundation works with individual lake associations, giving them the tools and financial resources to develop a lake management plan and begin the implementation of the priority projects determined by the citizens concerned about the lake. This is an important opportunity for the lake associations to help themselves and the quality / quantity of their lake.

The **Citizen Stream Monitoring Program**, developed by the MPCA, works with citizens to monitor the waterways of the county. A transparency tube, 100 cm. long with a secchi disk on the bottom, is used to measure clarity of streams on a weekly or event based schedule. A citizen stream monitoring network increases our understanding of how human activities such as land use affect water quality. In turn, we gain insight on how human activities affect the benefits we gain from clean water such as swimming and fishing. Increased stream monitoring helps identify problems, develop strategies and prioritize activities for improving water quality, and tracks progress toward improvement. This program should be expanded in Isanti County.

TMDLS /IMPAIRED WATERS - A TMDL, or Total Maximum Daily Load, is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the sources of the pollutant. The MPCA has established a list of impaired (or contaminated) waters called the 303d list. In Isanti County, this includes the entire reach of the Rum River. The identified pollutant or stressor is Mercury, affecting aquatic life. A TMDL study on this reach of the river is required, monitoring both point and non-point pollution sources. The Minnesota Pollution Control Agency will conduct all Mercury TMDL assessments.

More information is available regarding this process on the MPCA website:
<http://www.pca.state.mn.us/water/basins/305briver.html>

Two lakes have been placed on the impaired waters list due to not meeting standards for nutrients. These lakes, Frances and Typo, are considered hypereutrophic. They have an abundance of nutrients in the form of phosphorus feeding the algae of the lake. An impaired waters study is in process on Typo Lake through the MPCA and Anoka County Conservation District. Phosphorus reduction goals include an 80% reduction through work on the nutrients carried to the lake from county ditch systems throughout the watershed. Isanti County needs to become involved in the implementation phase of this plan. Best Management Practices are being offered to land owners within the watershed of this lake through programs in the NRCS and SWCD such as EQIP and CCRP.

Lake Francis has completed a Phase I Clean Water Partnership through the MPCA. This lake has identified the problems, such as erosion and worked with landowners and agencies to correct problems within the watershed. The lake remains hypereutrophic. The property owners are forming a Lake Improvement District, and with the help of local water management personnel, will be ready to complete their TMDL when money is available.

Green Lake is impaired for PCBs and Mercury. According to the U. S. EPA, impacts of mercury are mainly regional in expression, and initial studies will be completed by the EPA for regional TMDLs. While the impacts of mercury are a cause for concern in the consumption of fish, there is no accepted approach to remove this pollutant, and airborne deposition will likely continue to occur.

A TMDL in Chisago County on the Sunrise River for fecal coliform will have load allocations in Isanti County. Poor management of feedlots and cattle in the stream have been identified as contributors to this problem. The development of this TMDL is in the public comment stage and Isanti County has had limited input up to this point. Approval of the final report by the U.S. EPA is anticipated in early 2006, and a planning committee will then be formed to develop a detailed plan for the implementation of the recommended pollution reduction strategies. The MPCA invites and strongly encourages Isanti County representation and participation in this process.

A complete listing of these lakes is available on the MPCA website:

<http://www.pca.state.mn.us/water/basins/305blake.html>

Invasive Species - The headwaters of the Rum River, Mille Lacs Lake in Mille Lacs County, was found to have Eurasian watermilfoil in 1998 and Zebra Mussels in 2005. These invasive species will likely move down the river system. Green Lake has Eurasian watermilfoil and many area lakes are plagued by Curly-leaf pondweed in varying degrees of nuisance. Purple loosestrife is found in many waterways and along shorelines. These plants not only invade and clog the waterways and boating corridors, they also compete for the same habitat as the native species – often taking over. Mapping aquatic vegetation in priority lakes is an important first step in identifying problem areas. Working with the DNR Aquatic Plant Management Permit

Authority, a program to prevent spread of these invasive species should be considered. Education programs are important in both preventing the spread to other lakes and rivers, and in the control of existing invasions.

Eurasian watermilfoil has difficulty becoming established in a lake with healthy native aquatic vegetation. It forms thick underwater mats in nutrient-rich lakes. Thick underwater mats are also formed by Curly-leaf pondweed. It often interferes with boating.

A biological control for Purple loostrife in the form of a European beetle has been used with some success. This beetle feeds only on the loostrife plant.

Lake / River Associations - Friends of the Rum River is a group formed to “Provide a base of knowledge that we can use to help make wise decisions concerning the Rum River Watershed”, according to their mission statement. A bi-monthly newsletter has been started in May of 2005 to educate property owners living in the watershed. This is a good tool to bring educational information to numerous households within the Rum River Watershed.

Lake Associations formed in Isanti County Include Skogman / Fannie, Pauls / Elms, Francis, Spectacle, Blue, Long (in Bradford and Stanford Township) and Typo. Organized lake associations have the opportunity to use their membership to complete priority projects. These associations present an opportunity to the LWMP for education through newsletters and offering workshops and/or speaking at annual meetings. Assistance in acquiring grants for priority implementation projects identified will be essential to their effort to improve water quality. The MNDNR, Minnesota Pollution Control Agency (MPCA), Onanegozie, Isanti County Soil and Water Conservation District and the Isanti County Water Plan Staff work closely with these associations on water quality and quantity issues.

Lake Improvement Districts

Pursuant to [Minnesota Statutes Chapter 378](#), a lake improvement district (LID) is a local unit of government established by resolution of the county board or commissioner of natural resources. A LID provides the opportunity for greater landowner involvement in lake management activities by actions initiated at the local unit of government. Authority through the county board is given to levy taxes within the LID, among other funding options, for projects specified by the membership. Lakes groups interested should discuss this option with the MNDNR and local water manager.

Green Lake, Long Lake and Lake Fannie in Isanti County have established LIDs. These lakes have structured leadership and the funding source has allowed them to complete diagnostic projects. Lake Francis has looked into the process of forming a LID to assist in implementation of their known poor water quality issues.

Surface Water Quantity

Ordinary High Water Level - The established OHWL for eighteen lakes in Isanti County have been completed by the DNR. Alterations in aquatic vegetation,

addition or removal of sediment, or any work completed below the OHWL of lakes requires a permit from the DNR.

Lake Level Minnesota is a citizen volunteer program set up by the DNR and the MN MPCA. Citizens monitor lake levels and send the information to the DNR area hydrologist. More volunteers are needed in this area.

This data is compiled and accessible for individual lakes through the lakefinder website.

River Flow of the Rum River is measured at a United States Geologic Survey station located near St. Francis in Anoka. Measurements are available from 1934 to the present. Data from this site is very dependant on the amount of rainfall. The designated flood plain has been established to protect properties from floodwaters during times of high flow.

Complete information can be found at:
<http://www.usgs.gov/state/state.asp?State=MN>

- Sunrise River Watershed Restoration (TMDL) and Protection Study – Working with the Chisago County SWCD as the lead. This concerns Isanti County because there is a biological impairment on the North Branch of the Sunrise River. The goal is to have the study done by 2013.
Link to webpage: <http://www.pca.state.mn.us>
- Snake River Watershed Restoration (TDML) and Protection Study – The MPCA is working through the Snake River Watershed Management Board to collect monitoring data on impaired streams and unimpaired streams in the watershed. The member SWCD's (Kanabec, Aitkin, Mille Lacs and Pine) are currently working on collecting samples, landuse information, and holding meetings about the project. The goal is to have a draft report by 2013.
Link to webpage: <http://www.pca.state.mn.us/hqzq9ff>
- Typo and Martin Lake TMDL – This TMDL report was worked and put into draft from in 2006. However, since that time MPCA staff have reviewed the report and found that it lacks vital information to be approved by US EPA. So, within the last year the MPCA has redeveloped the modeling and assigned allocations required by the TMDL program. The goal is to have the TMDL approved by the Spring of 2012 or sooner. This will affect Isanti County since a larger portion of the drainage for Typo Lake comes from Isanti County. Current numbers show a watershed reduction of 91% to bring Typo Lake back to meeting WQ standards.
Link to webpage: <http://www.pca.state.mn.us/pyri9fd>

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- Lake St. Croix TMDL – The MPCA, WI DNR, and St. Croix Basin Team are in the process of wrapping up a TMDL for Lake St. Croix, which is impaired for excess nutrients. The plan is to have an approved TMDL by the Spring of 2012. This TMDL is important to Isanti County since the Sunrise River Watershed was identified as one of the highest Phosphorus loading watersheds in the St. Croix Basin. This means that any work that Isanti County does to reduce nutrient runoff to the North Branch of the Sunrise River will benefit Lake St. Croix.

Link to webpage: <http://www.pca.state.mn.us/gp0r9fc>

- Sunrise River Watershed SWAT Model – The MPCA has contracted with the St. Croix Research Station to develop a Surface Water Assessment Tool. This model will help identify current landuse practices and activities and tell us what they are loading to the St. Croix. It will also go one more step to look at different BMPs, and tell us what type of reduction they will give us and if that will help us reach the necessary reduction for Lake St. Croix. Link to the report is on the Sunrise River Watershed Page.

- North Branch of the Sunrise River Bacteria TMDL and Implementation Plan – The MPCA has completed and approved the TMDL for the Bacteria impairment on the TMDL. The report was approved by US EPA on February 22, 2007. Since the report was approved, the MPCA requires that an Implementation Plan for the TMDL be completed within one year of approval. The implementation plan was then approved by the MPCA in February of 2007. Since this time Chisago County and Isanti County have received 319 Implementation Funds to implement activities that reduce bacteria runoff to the river.

Link to webpage: <http://www.pca.state.mn.us/qzqha00>

To find more information about TMDLs and the process use the link below.

Link to TMDL Webpage: <http://www.pca.state.mn.us/0agxa04>

The MPCA is now moving away from conducting individual TMDL reports, and is instead developing a process for looking at an entire 8-digit watershed. This affects Isanti County since the Snake River watershed and the Lower St. Croix watershed have both been assessed already. The Rum River is scheduled to be assessed in 2013. This all starts with step 1 below.

Link to the MPCA's new Watershed Approach (Watershed Restoration and Protection Plan): <http://www.pca.state.mn.us/irypabf>

Ditches - The actual amount of miles in the county ditch system is unknown due to additional drains added into the original system and poor mapping. Ditches were originally constructed to assist in crop production on wet soils. These ditches have been poorly maintained and no longer function as intended. They do, however, bring runoff from far out in the watershed to area lakes. This contributes to lakes level and clarity.

Permitted Withdrawals from Lakes and Streams – There are six permitted withdrawals from surface waters in Isanti County. Three consist of withdrawal from a holding pond or dug pit, one from Skogman Lake, and the last from Gunnik Lake. These are regulated by the MNDNR and annual reports are required on the amount used. The permitted amount, along with the reported actual use is shown in **Figure Sixteen** below. The withdrawals from Skogman and Gunnik Lakes have not occurred since 1989, but are still permitted for potential future use. The Major Crop Irrigation and Orchard uses with no reporting since 1999, have not reported any use since permitted. Total permitted use, or potential future use is 64 million gallons per year (MGY), but actual use is significantly less.

Figure Sixteen

Use	Source	--- Permitted ---			----- Actual Use (MG) -----					
		Acres	GPM	MGY	1999	2000	2001	2002	2003	2004
Golf Course	Dug Pit	12	200	4		2.4	0.8	0.8	0.8	0.1
Major Crop Irrigation	Skogman	80	500	13						
Major Crop Irrigation	Gunnik	50	500	8						
Major Crop Irrigation	Dug Pit	100	550	29						
Orchard	Dug Pit		600	7						
Orchard	Dug Pit	8	185	3	0.8	1.7	1.2	1.6	2.2	1.4

C. Groundwater Quality and Quantity

The third Priority Concern of the residents of Isanti County is groundwater contamination. This concern was discussed at length at the public meeting and issues relevant to groundwater included concerns regarding failing septic systems, agriculture contamination, potential for well contamination, education, effects of land use, and the natural / artificial contamination from arsenic and radon. In this section precipitation, soils, groundwater (hydrogeology and wells), and surface water will be discussed regarding their interrelationship with each other and their ability to protect from vs. contributions to groundwater contamination.

Precipitation

The total annual precipitation averages 34.4 inches per year. Of this, 21 inches, or about 61 percent, usually falls in May through September. The growing season for most crops falls within this period. Locations and rainfall information is listed in [Figure Seventeen](#), and normal growing precipitation is shown in [Figure Eighteen](#).

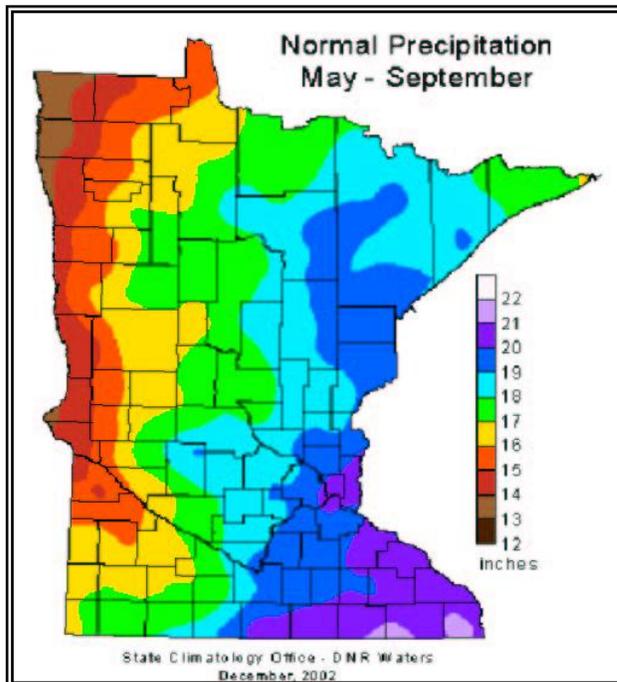
Average Annual Precipitation 1997 - 2002

[Figure Seventeen](#)

Agency	Year Sampled	Location	Annual Precipitation	Annual Snowfall	May - September	Year of Sample
DNR	2000	Cambridge	25.5	43.7	13.5	2000
DNR	2001	State	39.1	26.0*	22.4	2001
SWCD	2002	Hospital	42.1	58.6	28.6	2002
SWCD	2003	↓	26.4	54.5	17.7	2003
SWCD	2004	↓	38.8	48.9	22.9	2004
5-year Average			34.4	51.4	21.0	

*Missing information for one month – not considered in average

[Figure Eighteen](#)



The Department of Natural Resources (DNR), Isanti County Soil and Water Conservation District (SWCD) and the National Weather Service (NWS) all monitor precipitation throughout Isanti County.

This information is available on the State Climatology website at:

<http://www.climate.umn.edu/>

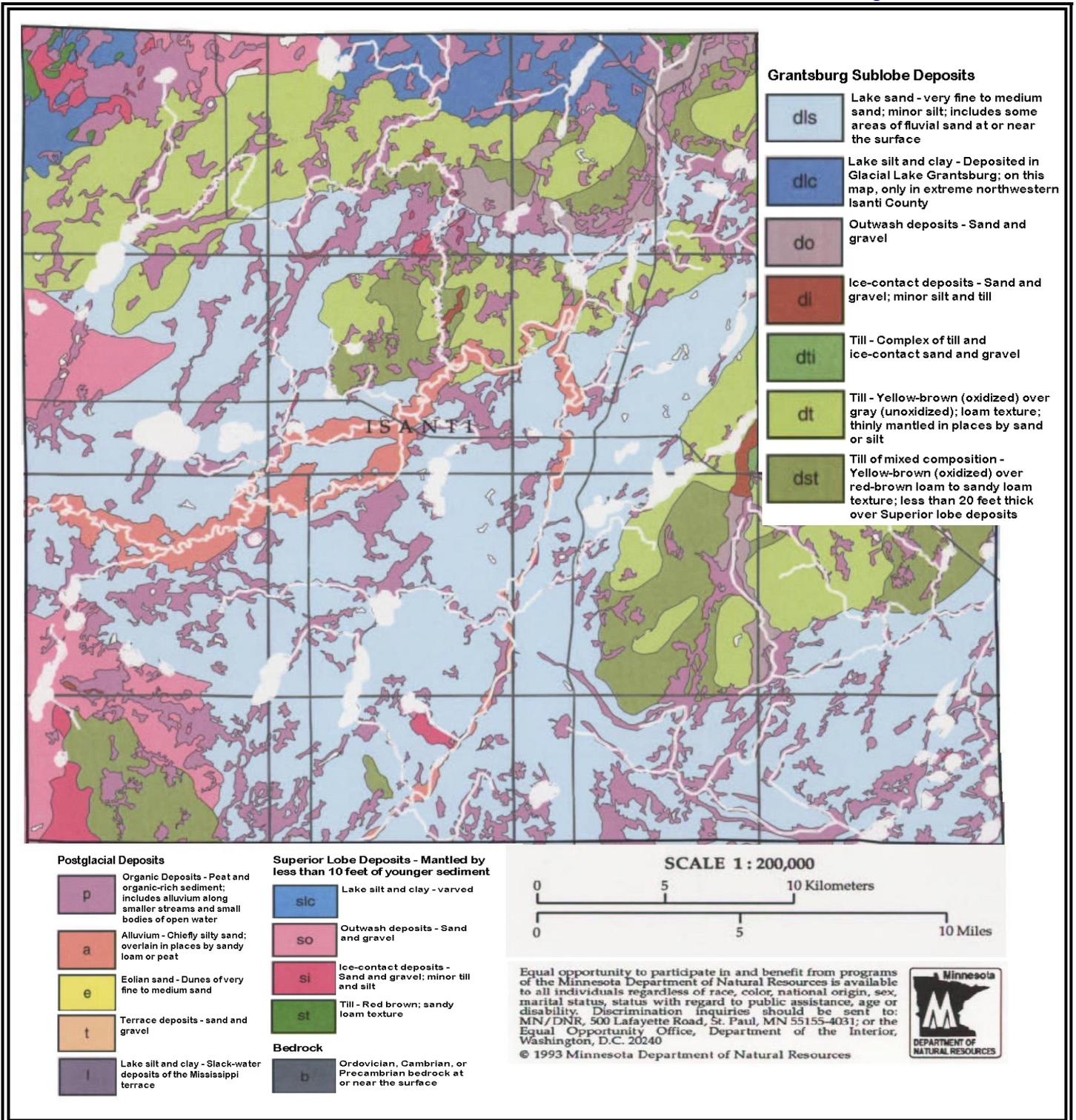
Geology and Soils

The surficial sediment across the county was laid down during or after the last glaciation, between 10 to 35 thousand years ago. This glaciation was called the late Wisconsinian. [Figure Nineteen](#) shows the surficial geology map, completed as part of a

four-county Hydrogeologic Assessment completed in 1993. As shown, the Anoka Sandplain covers large portions of the county.

Surficial Geology of the Anoka Sandplain

Figure Nineteen



Hydrogeology

Regional Hydrogeologic Assessment maps are available on the DNR website at: http://www.dnr.state.mn.us/waters/groundwater_section/mapping/status.html

Groundwater flows in a manner similar to surface water, but underground where it cannot be seen. Direction of flow of groundwater and surface water are not always related. Groundwater can flow across the watershed boundaries because the flow beneath the surface is not influenced by land forms on the surface.

Programs have been established throughout Isanti County to monitor well water for Nitrates. The presence of Nitrates in groundwater can be a valuable indicator of environments that are susceptible to contamination. The MDA has been funding testing to communities and lake associations at no cost since 1995. The opportunity for developing a nitrate probability map, showing areas of concentration of nitrates, is available through the MDH.

Arsenic in drinking water wells is an existing issue to Isanti County. Glacial deposition of certain shale materials and thick clay layers from the Des Moines Lobe have contributed to naturally caused arsenic levels occurring over state drinking water standards of ten parts per billion. Areas within Bradford and Oxford Township could easily have higher than safe limit levels of Arsenic. Monitoring wells within this designated lobe to identify areas in excess of 10 ppb Arsenic would verify or eliminate this issue. Landowners with wells containing arsenic at or beyond the health concern level of 10 ppb could be provided with information and / or assistance in determining if another aquifer exists nearby with a sand lens and no arsenic. There may be other localized areas where arsenic occurs due to land use activities. These areas will be dealt with on a case-by-case basis, determining the extent and location of the source.

Another concern within the Cities of Isanti, Cambridge, East Bethel, and Braham water supplies is the presence of radium above drinking water standards. This is naturally occurring in groundwater, but not with elevated levels found in these aquifers. Attention needs to be paid when development occurs to minimize new wells in these identified aquifers. MDH is interested in partnering with the LWMP to develop education programs. A Geologic Atlas could help identify aquifers of concern.

DNR Water Appropriation Permits for high capacity wells are given for various purposes. More than fifty permitted high capacity wells exist in Isanti County. They are for irrigation, industry, and public water supplies, to name a few. As shown in **Figure Twenty**, reported water use from these wells is increasing. High capacity wells in a wellhead protection area may be of concern for both potential contamination and, in some instances, for quantity of available water in the aquifer. New permit applications within a Drinking Water Supply Management Area should be reviewed by the Planning and Zoning Office for potential conflicts with the protection of the wellhead area. A listing of the permits is supplied in the Appendix.

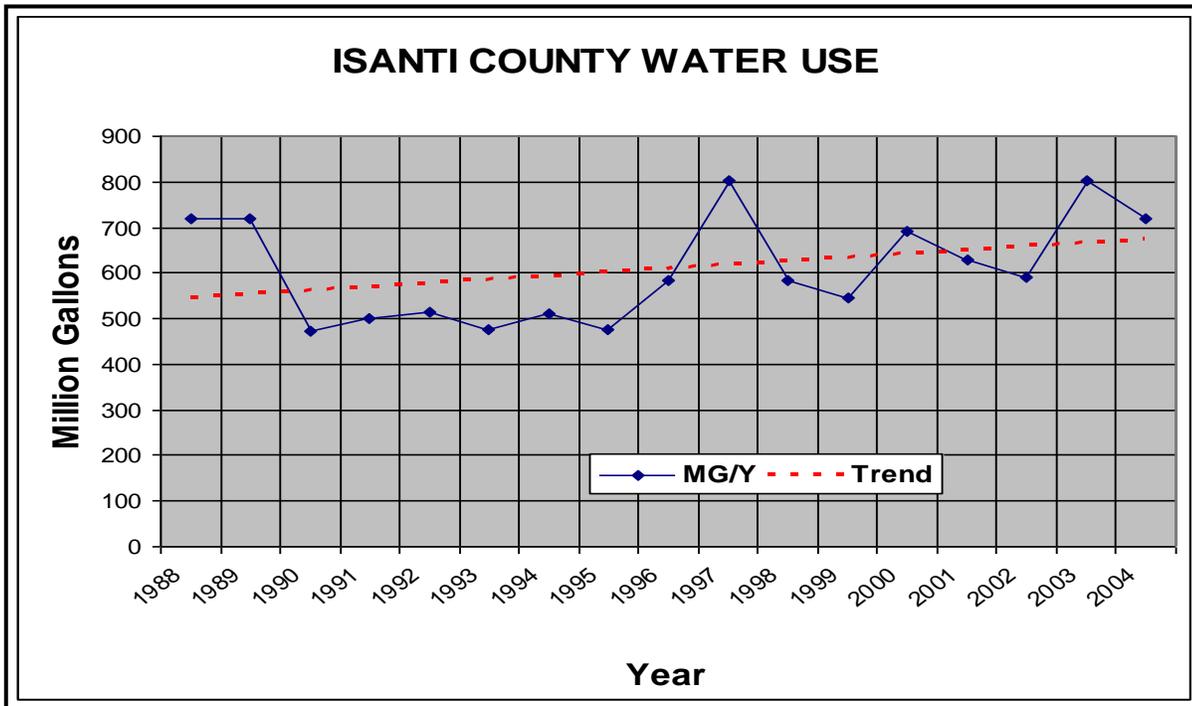


Figure Twenty

Wellhead / Sourcewater protection

A Source Water Assessment is a document produced by MDH staff intended to provide basic information to public water suppliers and the general public regarding:

- 1) Where their drinking water comes from, and
- 2) The degree to which it may be impacted by potential sources of contamination.

A complete listing of source water assessments for Isanti County is available at:
<http://www.health.state.mn.us/divs/eh/water/swp/swa/index.htm>

Wellhead protection is a method developed by the MDH to prevent well contamination by effectively managing potential contaminant sources in all or a portion of a well's recharge area. This area is known as the wellhead protection area. Sourcewater protection uses this concept when water is used from a surficial source, instead of a well. This could include a lake, river or reservoir.

The MDH is systematically requiring a wellhead protection plan in all public water supply sources in Minnesota. In Isanti County, the Cities of Cambridge, Isanti and Braham have completed and approved wellhead protection plans. Nutrient management, public education and inventory of ISTS and underground tanks are high priorities within these plans. There are a total of 77 public water suppliers that, eventually, must complete a WHP Plan. It is important to protect these zones of susceptibility by controlling land use in these designated areas.

Groundwater contamination in Isanti County exists due to Leaking Underground Storage Tank, or LUST sites. When these tanks leak, potential contaminants leach into the soil, and eventually reach the groundwater. The MPCA is the lead agency responsible for remediation and monitoring of these sites.

Failing Septic Systems

ISTS, or individual sewage treatment systems, is the term used by state and local units of government for septic systems. Regulations regarding ISTS are mandated by the State of Minnesota. Isanti County has adopted and administers Minnesota Rules Parts 7080.0010 to 7080.315, 7080.0700, and 7080.0910. This rule regulates the Individual Sewage Treatment Systems (ISTS) throughout the State of Minnesota. This rule is in the process of being updated and new regulations will soon be in effect. Until Isanti County adopts the new rule, the above rule is in affect.

Performance Based Standards

Isanti County adopted the optional Performance Based Standards of Minnesota Rules 7080. This allows properties with difficulty using a standard ISTS the opportunity to try a system that is new and not fully accepted by the state. Frequently used in Isanti County are aerobic tanks and re-circulating sand filters. These require a monitoring plan with annual reports on their performance submitted to the Planning and Zoning office.

Septic System Conditions

Septic system conditions for the county were derived based on the SURGGO soils for Isanti County. These conditions were determined mainly by utilizing permeability of the soil and depth to water table. Slope and susceptibility to flooding is also considered. As shown in [Figure Twenty-one](#), most of the county is in the severe category. This does not necessarily mean no septic systems will provide treatment within these areas, but it does mean special attention needs to be paid when assessing the soils and designing the treatment system. Mounds, or above ground sewage treatment systems, may be needed in this area. All new sewage treatment systems installed in Isanti County must meet ISTS MN State 7080 rules.

Hazardous Waste

Isanti County has a contract with Chisago County to utilize their permanent facility. Vouchers are given out at the Isanti County Zoning Office for free household hazardous waste drop off. This partnership with Chisago County works well – it provides for year-round hazardous waste collection instead of the annual events other communities have.

Geologic Sensitivity of The Uppermost Aquifer to Pollution

Figure Twenty-one

