Blue Earth County
Water Management Plan 2017-2026

Appendix B
Priority Concerns Scoping Document

Blue Earth County

Comprehensive Water Management Plan

March 4, 2016

Priority Concerns Scoping Document

BLUE EARTH
COUNTY

Blue Earth County
Water Management Plan 2017-2027
Priority Concerns Scoping Document

Submitted to the Minnesota Board of Water and Soil Resources – March 4, 2016

Introduction

Purpose of the Priority Concerns Scoping Document

Blue Earth County is coordinating the preparation of a Comprehensive Water Management Plan in accordance with the "Comprehensive Local Water Management Act," Minnesota Statute 103B.301 to 103B.315. Before writing the water management plan, the county must identify priority local water management concerns and prepare a Priority Concerns Scoping Document. As defined by Minnesota Statute 103B.305, ""Priority concerns" means issues, resources, subwatersheds, or demographic areas that are identified as a priority by the plan authority."

The process for identifying the county's priority water management concerns involved 1) notifying local units of government in the county and region and state review agencies that the county is updating the water management plan and inviting those interested to submit lists of priority concerns to the county, 2) a public survey and meeting, 3) meetings with local stakeholders, and the 4) water plan task force.

In accordance with Minnesota Statute 103B.312, the Priority Concerns Scoping Document must contain (1) a list of proposed priority concerns the plan will address, and 2) a description of how the priority concerns were chosen.

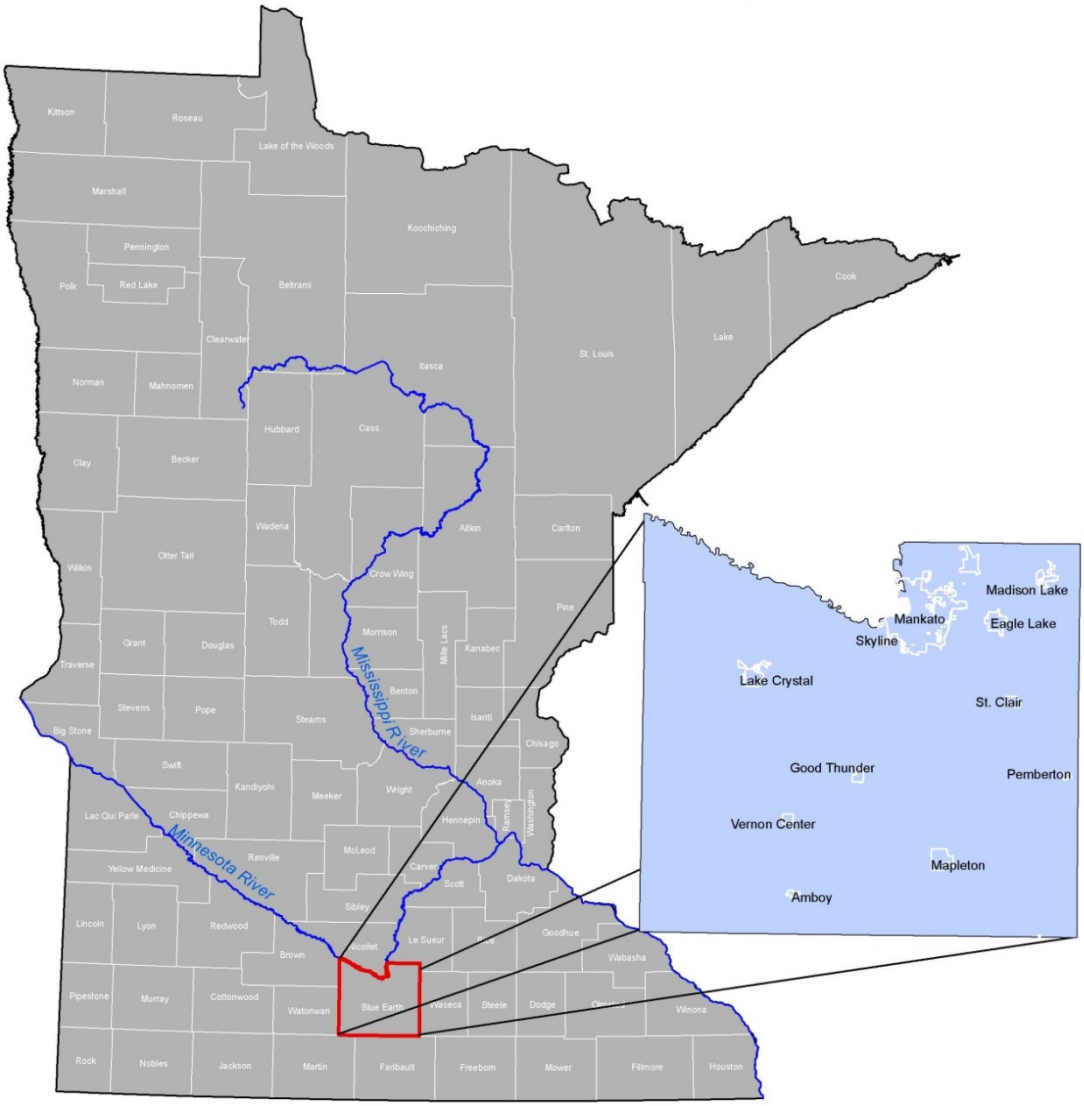
Priority Concerns Scoping Document Review and Approval

The Priority Concerns Scoping Document is submitted to the Minnesota Board of Water and Soil Resources (BWSR) for review and approval. The BWSR requests all counties' Priority Concerns Scoping Documents use the same format and outline.

General Description

Blue Earth County is located in south-central Minnesota approximately 75 miles southwest of the Twin Cities. The County is 765 square miles in area and had a population of 64,013 in 2010 according to the U.S. Census. The Minnesota River forms most of the northern border of the county. Located on the Minnesota River, the City of Mankato is the county seat and largest city in the county and the region with a population 41,198 in 2010. The County contains the confluence of three major rivers: the Le Sueur River, the Watonwan River, and the Blue Earth River. The Blue Earth River joins the Minnesota River at the "bend" in the Minnesota River in Mankato. Agriculture dominates the County's landscape as over 70-percent of the land in the County was used for cultivated cropland according to the 2012 United States Department of Agriculture's Census of Agriculture.

General Location Map



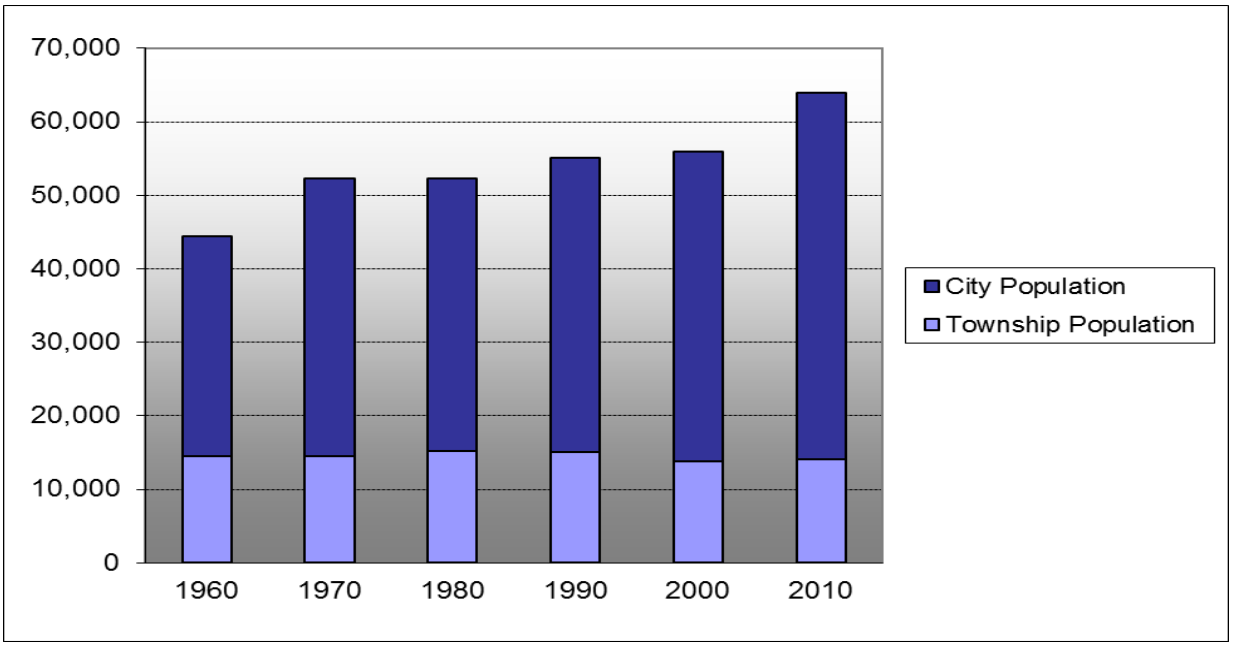
County Population

According to the Minnesota Demographic Data Center, the county population is 65,620; with 79 percent (52,237) living in municipalities. The rate of population growth in the County since the year 2000 has increased at a faster rate compared to previous decades. Much of the growth has occurred in the cities of Mankato, Eagle Lake and Madison Lake. Mankato had the greatest population increase, while the percent of population increase in Eagle Lake was higher. Mankato's population grew from 34,427 in 2000 to an estimated 41,128 in 2014 according to the State Demographic Data Center. Eagle Lake population grew from 1,787 in 2000 to an estimated 2,779 in 2014. Madison Lake grew from a population of 837 in 2000 to an estimated 1,137 in 2014.

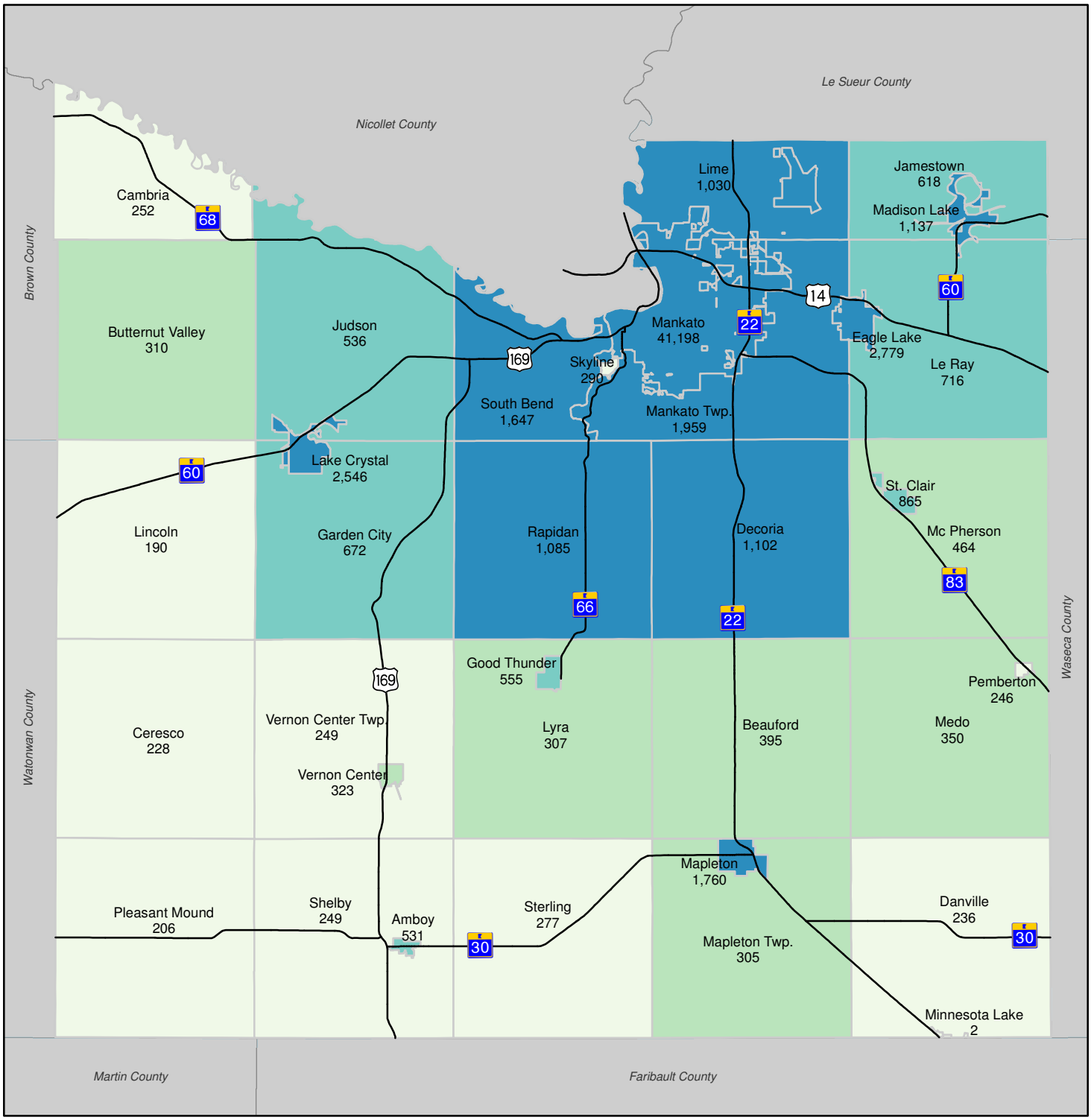
Population changes in the past fifty years show a clear shift in population from unincorporated areas in townships to municipalities. Figure 1 shows population changes between 1960 and 2010. This trend is common throughout agricultural regions of Minnesota as farms increased in size providing direct farm income to fewer people. In 1960, 33 percent of the total population was in townships. By 2010, townships represented 22 percent of the county population. While the total population of cities grew, the total population of the townships remained somewhat consistent. In 1960 the total township population was 14,512 and in 2010 the township population was 14,107. Population growth in the townships has been in the townships closer to Mankato. More recently, Lime Township's total population was reduced by an estimated 365 from 2010 to 2014 as subdivisions adjacent to the City of Mankato were annexed to the city. Jamestown Township also lost population from 2010 to 2014 as subdivisions around Duck Lake and Ballantyne Lake were annexed to the City of Madison Lake.

Maps 2 and 3 and Table 1 show these population changes in each city and township.

Figure 1. City and Township population 1960 to 2010 (*Source: United States Census Bureau)*



Map 2- Blue Earth County
City and Township Population - 2014 Estimate



2014 Population Estimate

- 0 - 300
- 301 - 500
- 501 - 1000
- 1001 - 41198

0 5 10 Miles

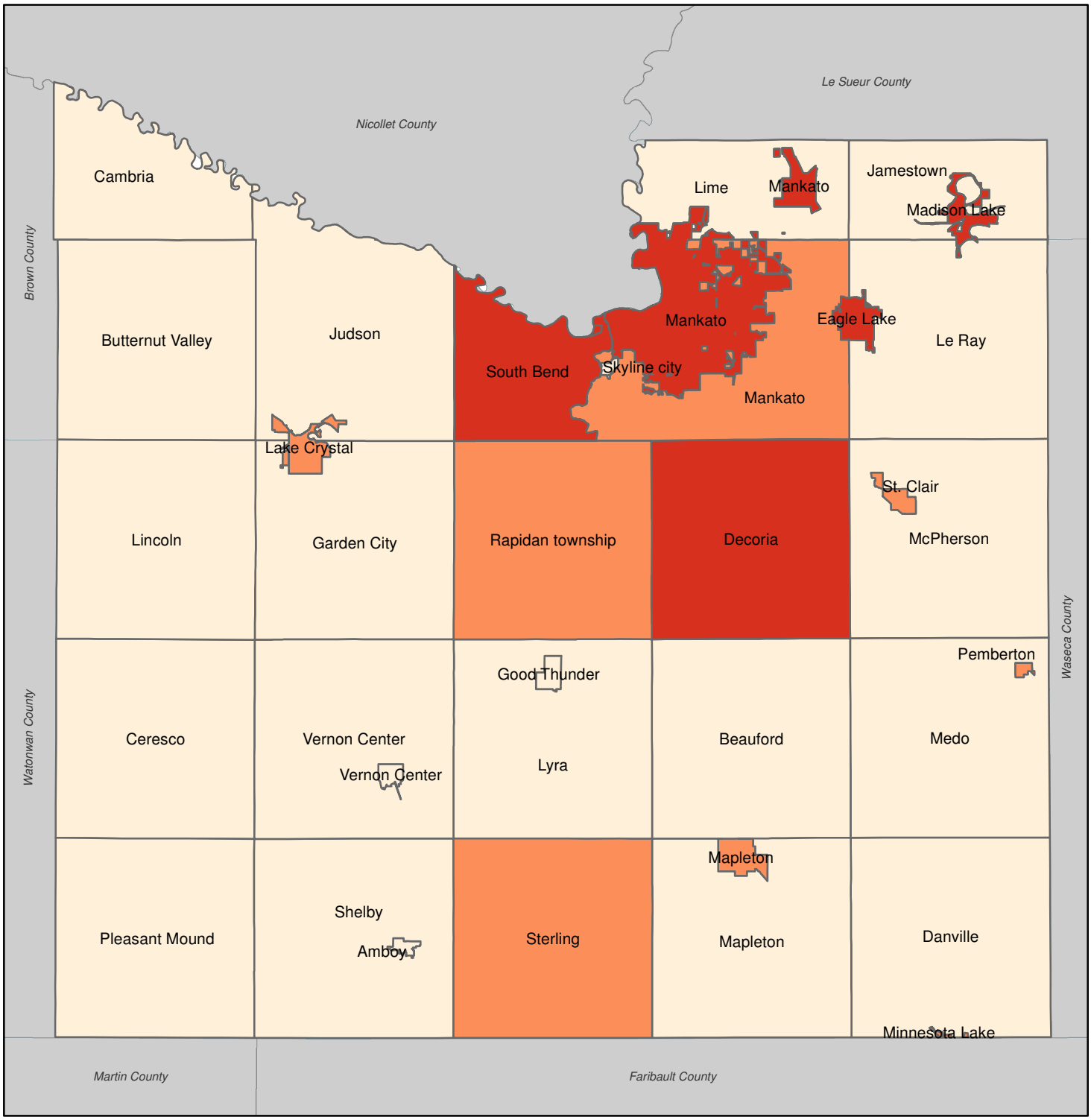
N

BLUE EARTH COUNTY

Prepared By: Blue Earth County

Source: MN Demographic Data Center

Map 3 - Blue Earth County City and Township Population Percent Change from 2000 to 2014



City or Township Percent Population Change from 2000 to 2014

- Population Decline
- Growth from 0 to 7 Percent
- Growth over 7 Percent

0 5 10 Miles

N

Prepared By: Blue Earth County

Source: MN Demographic Data Center

Table 1. City and Township population changes between 2010 and 2014

Source: U.S. Census - 2010 population Minnesota Demographic Center - 2014 population estimate (June 2015)

	2000 Population	2014 Population Estimate	2000 to 2014 Population Change	2000 to 2014 Population Percent Change
City				
Amboy	575	531	-44	-7.7%
Eagle Lake	1,787	2,779	992	55.5%
Good Thunder	592	555	-37	-6.3%
Lake Crystal	2,420	2,546	126	5.2%
Madison Lake	837	1,137	300	35.8%
Mankato	32,427	41,198	8,771	27.0%
Mapleton	1,678	1,760	82	4.9%
Minnesota Lake	0	2	2	-
North Mankato	0	5	5	-
Pemberton	246	246	0	0.0%
St. Clair	827	865	38	4.6%
Skyline	330	290	-40	-12.1%
Vernon Center	359	323	-36	-10.0%
City Total	***42,078***	***52,237***	**10,159**	**24.1%**
Township				
Beauford	442	395	-47	-10.6%
Butternut Valley	382	310	-72	-18.8%
Cambria	271	252	-19	-7.0%
Ceresco	255	228	-27	-10.6%
Danville	262	236	-26	-9.9%
Decoria	922	1,102	180	19.5%
Garden City	700	672	-28	-4.0%
Jamestown	628	618	-10	-1.6%
Judson	591	536	-55	-9.3%
Le Ray	846	716	-130	-15.4%
Lime	1,314	1,030	-284	-21.6%
Lincoln	227	190	-37	-16.3%
Lyra	378	307	-71	-18.8%
McPherson	470	464	-6	-1.3%
Mankato	1,833	1,959	126	6.9%
Mapleton	310	305	-5	-1.6%
Medo	374	350	-24	-6.4%
Pleasant Mound	235	206	-29	-12.3%
Rapidan	1,061	1,085	24	2.3%
Shelby	294	249	-45	-15.3%
South Bend	1,491	1,647	156	10.5%
Sterling	276	277	1	0.4%
Vernon Center	301	249	-52	-17.3%
Township Total	***13,863***	***13,383***	-480	-3.5%
County Total	**55,941**	**65,620**	9679	17.3%

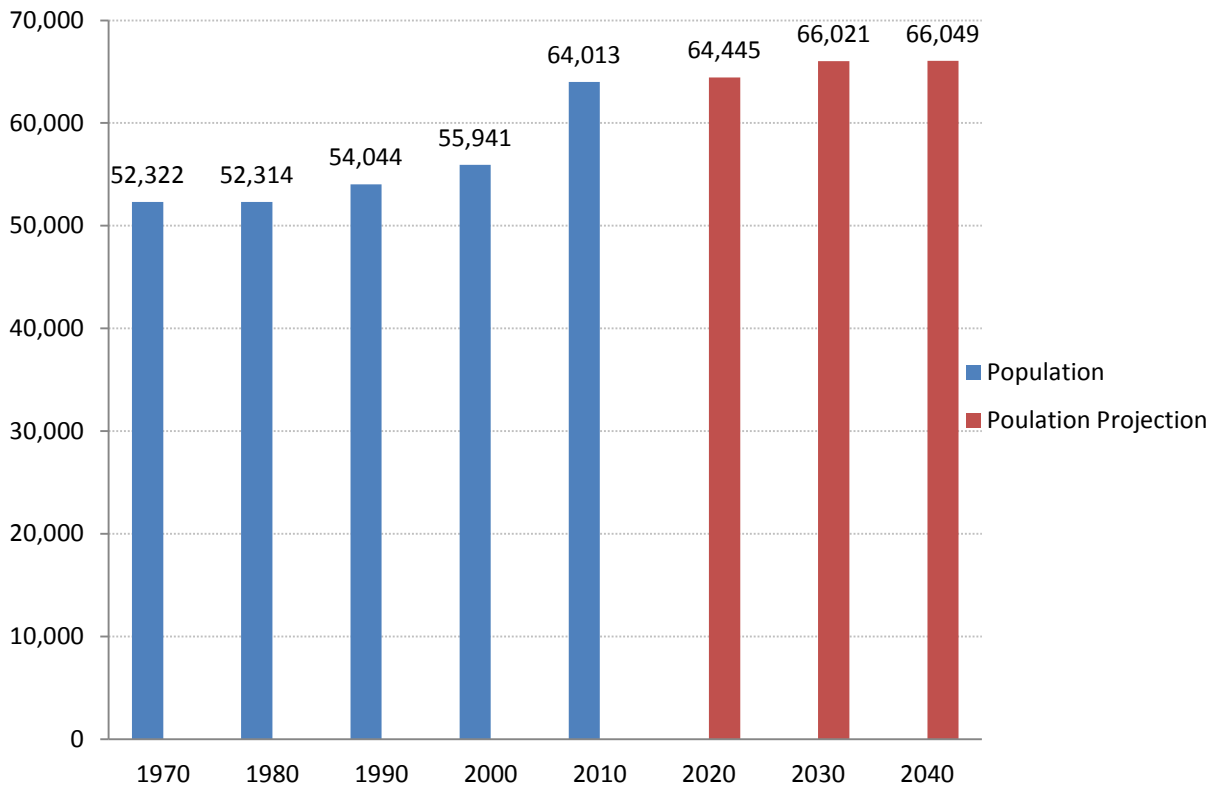
Population Projections

The Minnesota Demographic Data Center projects the county population to continue to grow, but at a slower rate than in the past. Their projections completed in 2014 projected that the county population would be 64,445 by the year 2020. A year later in 2015, the Demographic Data Center released their population estimates which showed the 2014 county population was estimated to have already exceeded the 2020 projected population. The 2014 estimate for the county population was 65,620.

Figure 2. Blue Earth County Population and Population Projection

Source: U.S. Census – 1970 to 2010 population

Minnesota Demographic Center – 2020 to 2040 population projections (2014)



Physical Characteristics

Blue Earth County is located in South Central Minnesota, at the bend in the Minnesota River. Natural features, such as lakes and rivers, play a significant role in the county's development patterns, land management and conservation. The Minnesota River forms the county's northern border and is one of Blue Earth County's most important features. Approximately 99 percent of the county is located within the Minnesota River Basin.

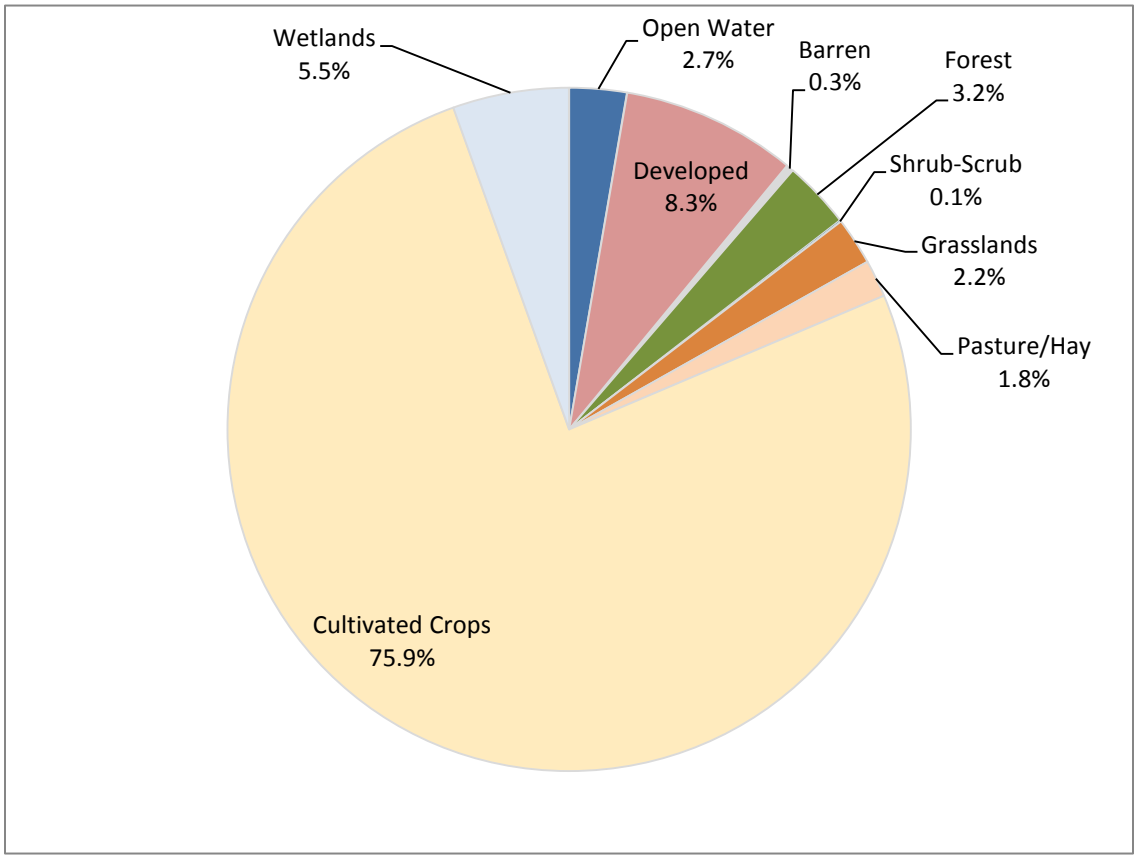
The relief of Blue Earth County is the product of a back-wasting continental glacier. Steep slopes and bluffs are common along the county's many deeply-incised river systems which developed during the retreat of the glacier. Most of the county ranges from nearly level on the lake plain and on ground moraines to rolling where the end moraines form a complex pattern. In areas where there were scattered ice block depressions, a few large lakes formed. There are also many small depressions throughout the county. Secondary drainage in much of the county is immature, and like much of southern Minnesota, the county has an extensive agricultural drainage system of open ditches and tile lines.

Land Use and Land Cover

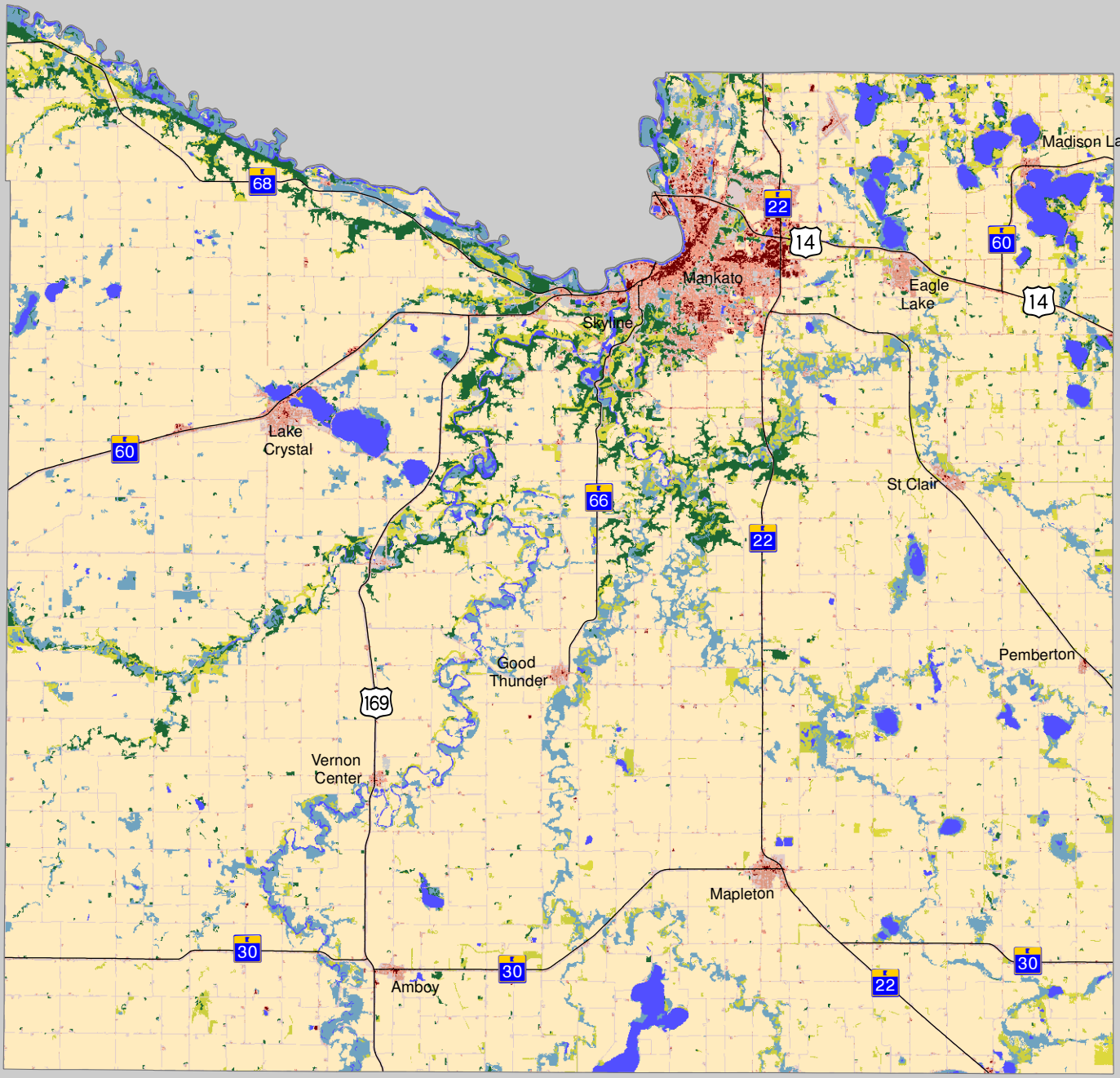
Blue Earth County's landscape is dominated by agricultural uses. Map 4 displays the land cover data from the 2011 National Land Cover Database which classifies land cover from the 2011 Landsat satellite data. Over 75-percent of the County was classified as cultivated crops in 2011. Deciduous forests, mostly along the steep slopes adjacent to the rivers, represented just over eight percent of the County. The various classes of developed land represented 8.3 percent of the land in the County in 2011. Figure 3 displays the percentage of each type of land cover classification.

Although a comprehensive land use analysis in the county has not been done, observable changes in land use have occurred. In Mankato, for example, there has been a great deal of residential, commercial, and industrial growth. In the smaller cities like Madison Lake, Eagle Lake, and Lake Crystal there has been residential growth. Much of this urban growth involves permanent conversion of agricultural land. Rural residential growth has slowed since the 1990's as the County's land use policies were revised to prevent scattered, residential development and preserve agricultural and environmentally sensitive land. Agricultural changes have also occurred since the early 1990's. The animal agriculture industry, primarily hog feedlots, has continued to grow in Blue Earth County.

Figure 3. 2011 Blue Earth County Land Use Classifications from 2011 National Land Cover Database



Map 4 - 2011 Land Cover



Land Cover Classification

- Wetlands
- Cultivated Crops
- Pasture/Hay
- Grassland
- Shrub/Scrub
- Forest
- Barren Land
- Developed, High Intensity
- Developed, Medium Intensity
- Developed, Low Intensity
- Developed, Open Space
- Open Water

0 — 5 Miles

N W E S

Prepared By: Blue Earth County
Environmental Services
February 2016

Source: National Land Cover Database 2011
United States Geological Survey

Watersheds

More than 99 percent of Blue Earth County is located in the Minnesota River Basin. The Minnesota River Basin and its major watersheds are shown in Map 5. Two-square miles in the northeast corner of the county drains east to the Cannon River watershed.

Blue Earth County is in four of the 13 major watersheds in the Minnesota River Basin: Blue Earth, Le Sueur, Watonwan and Middle Minnesota. The confluences of all four rivers are in Blue Earth County. The Le Sueur River and Watonwan River are tributaries of the Blue Earth River. The confluence of the Blue Earth River and its 3,133 acre watershed with the Minnesota River is in the City of Mankato in Blue Earth County. When combined, the Blue Earth, Le Sueur and Watonwan rivers (also referred to as the Greater Blue Earth River) covers more than 75% of the County's total land area.

Of the four watersheds in the county, the Le Sueur occupies the largest percentage of land in the county (48%). The Le Sueur River watershed contains a number of relatively large tributary streams including the Maple River, Cobb River, Little Cobb River, and Rice Creek.

The Middle Minnesota River Watershed contains first order streams discharging directly to the Minnesota River. Minneopa Creek, Indian Creek, Morgan Creek and many unnamed streams make up the Middle Minnesota River watershed in the county. Most of the recreational lakes in the county are in the Middle Minnesota River Watershed.

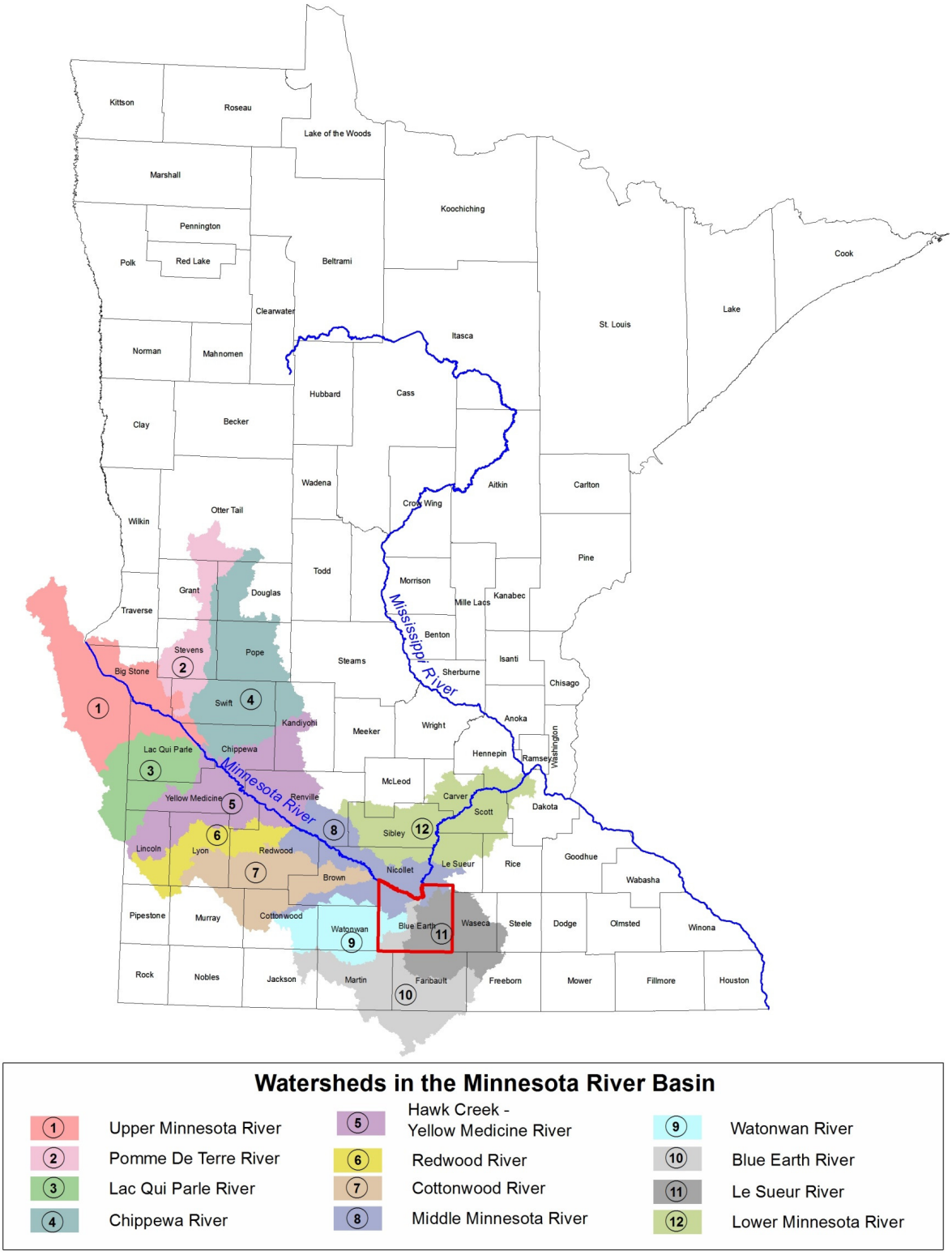
The portion of the county in each of the four watersheds and the portion of each watershed in Blue Earth County is shown in Table 2. Map 6 displays the portions of each watershed in Blue Earth County.

Table 2. Comparison of Major Watersheds

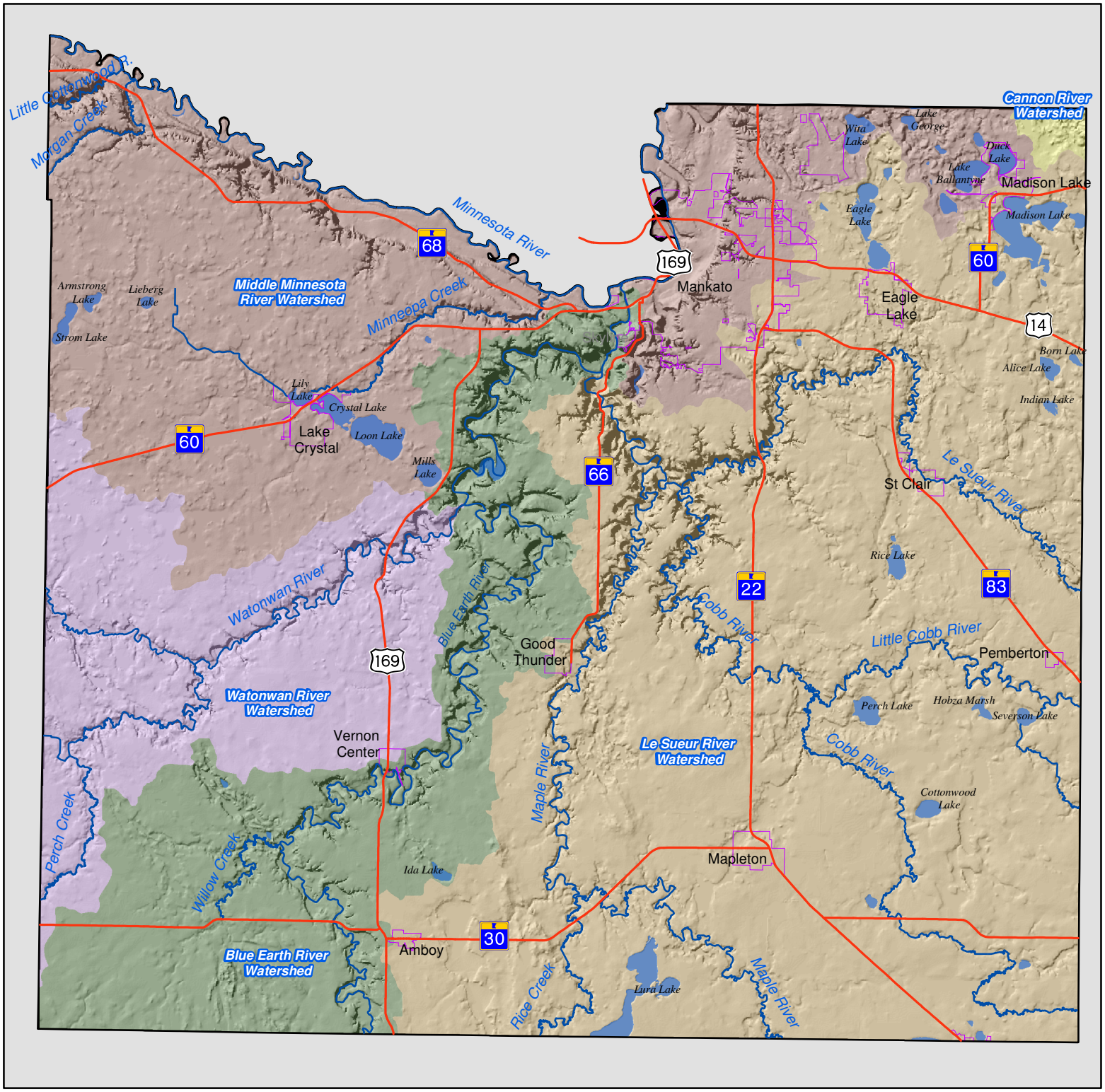
Source: Blue Earth County Environmental Services Department

Watershed	Total Square Miles	Square Miles in Blue Earth County	Percentage of Watershed in Blue Earth County	Land Coverage In Blue Earth County For Each Watershed
Blue Earth River	1,205	124	10.2%	16.2%
Cannon River	1,482	2	0.1%	0.2%
Le Sueur River	1,078	368	34.1%	48.1%
Middle Minnesota River	1,385	178	12.8%	23.3%
Watonwan River	850	93	10.9%	12.2%

Map 5. Major watersheds comprising the Minnesota River Basin.



Map 6 - Major Watersheds - Blue Earth County



Major Watershed

- Blue Earth River
- Cannon River
- Le Sueur River
- Middle Minnesota River
- Watonwan River

- U.S. or State Highway
- Stream
- City
- Lake

N W E S

0 5 Miles

BLUE EARTH COUNTY

Prepared By: Blue Earth County
Environmental Services
July 2015

Water Management Plan Information

Local Government Units – County/SWCD/Municipalities and Townships

Blue Earth County is responsible for coordinating preparation of the comprehensive water management plan. The Soil and Water Conservation District and some of the municipalities and townships in the county are participating in development of the plan. Much of the plan implementation will be the responsibility of the county and SWCD. Municipalities and townships are also responsible for some plan objectives related to their jurisdiction.

Original Plans and Updates

The Comprehensive Water Management Plan 2017-2027 will be the fourth water management plan or update prepared by the county, the third update to the first water plan. The current plan expires December 31, 2016. The following is a list of the county's water plans.

1. Comprehensive Water Plan 1990-1997 (first plan)
2. Comprehensive Water Plan 1998-2007 (first update/second plan)
3. Water Management Plan 2008-2012/2015/2016 (second update/third plan)

List of Priority Concerns 2017-2027

There are three main priority water management concerns:

- Protect drinking water supplies and groundwater quality and quantity.
- Protect and restore the quality and manage the quantity of surface water.
- Protect and manage wetlands for multiple benefits

Each of these priority concerns has many subparts. The main priority concerns and their subparts are summarized briefly in the following sections.

Priority Concern:
Protect drinking water supplies and groundwater quality and quantity

Maintaining a good supply of high quality drinking water is the highest priority in the water plan. Since the first water management plan was adopted in 1990, protecting drinking water quality has ranked the number one concern among county residents responding to the local water plan survey.

Drinking water in the county is supplied from groundwater aquifers by private wells and public water supply wells. Private water wells are regulated by the County in accordance with the State Well Code under a delegation agreement with the Minnesota Department of Health. Public water supply wells are regulated and monitored by the Minnesota Department of Health (MDH). Municipalities are in various stages of developing wellhead protection plans with the MDH.

Geologic sensitivity, well construction, and land use influence the quality of ground and drinking water supplies.

The water plan update will address protection of drinking water and groundwater by assessing the following:

- Public water suppliers Well Head Protection Plans and Drinking Water Supply Management Areas (DWSMAs)
- Areas with moderate or high pollution sensitivity as shown in the newly updated Blue Earth County Geologic Atlas, Part B
- Mount Simon aquifer
- Mankato shallow groundwater wells
- Local groundwater protection programs
    - Subsurface sewage treatment systems (SSTS) program
    - Continue MDH well delegation agreement and local well sealing

Priority Concern:
Protect and restore the quality and manage the quantity of surface water

Reduce nitrogen, phosphorus, turbidity and bacteria in impaired watersheds.

Nearly every recreational lake, river and stream in the county is on the Minnesota Impaired Waters List maintained by the Minnesota Pollution Control Agency (MPCA). The main pollutants causing these impairments are turbidity, excess nutrients, and bacteria. Map 7 displays waters in the county on the current MPCA Impaired Waters List and those proposed forlisting. In some lakes water quality impairments are worsened by aquatic invasive species.

Land use and altered hydrology in local watersheds and changes in climate trends are contributing factors to water quality impairments affecting aquatic life as well as the use and enjoyment of property and local surface water bodies. Flooding and erosion in watersheds and near channels contributes to water quality impairments and also affects property and infrastructure. Managing land, water and soil to adapt to increased overall annual precipitation, larger rainfall events, flash floods and drought can reduce erosion, excess nutrients, turbidity and nutrients in local watersheds.

Protect relatively high-quality unimpaired waters at greatest risk of becoming impaired.

There is one recreational lake in the county that is not on the Minnesota Impaired Waters List; however, recent monitoring shows water quality in this lake has declined.

Conserve and manage soil health with best practices

According to the USDA NRCS, "Managing for soil health is one of the most effective ways for farmers to increase crop productivity and profitability while improving the environment."

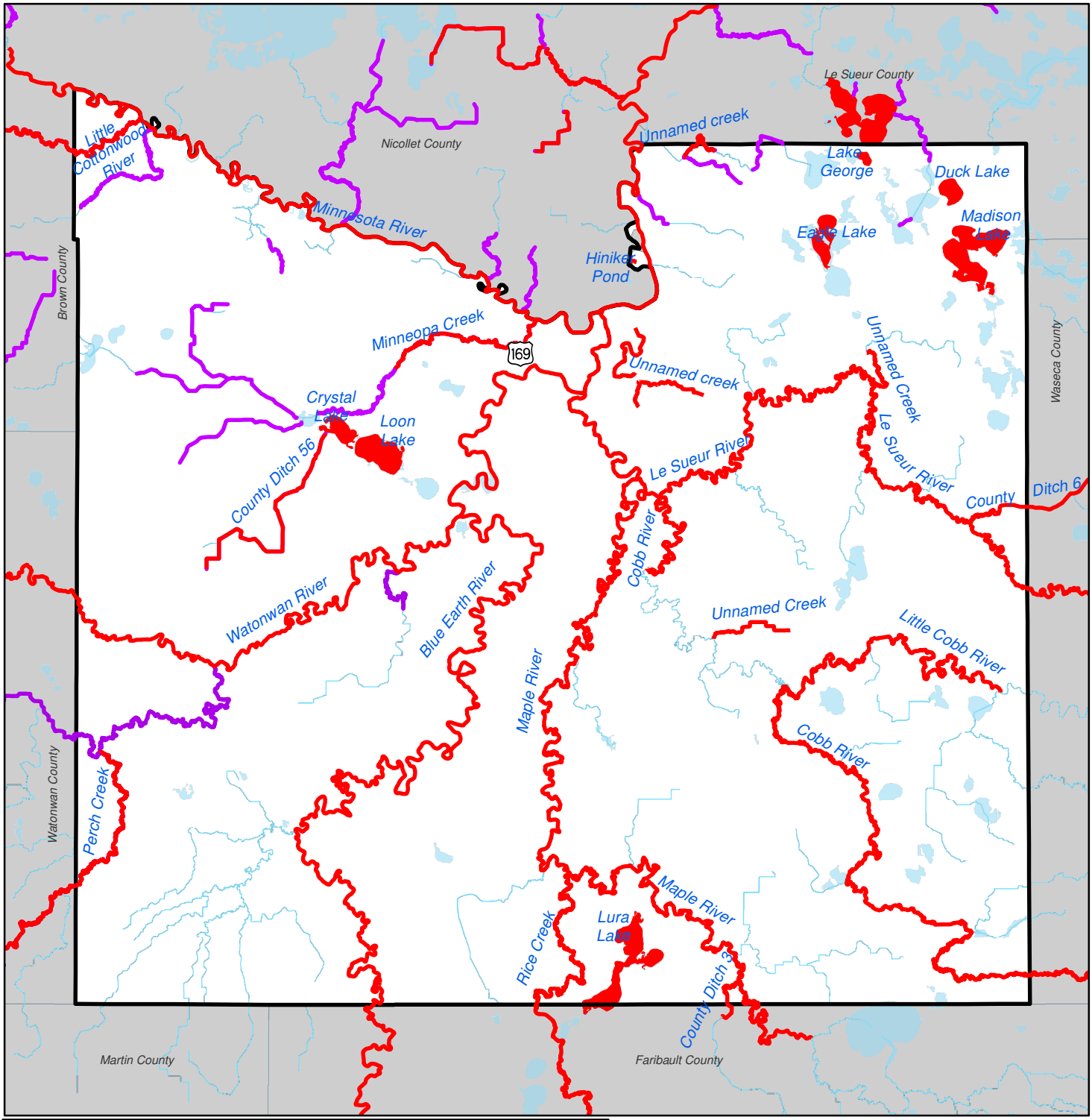
"Healthy soils hold more available water. The soil's water-holding capacity reduces runoff that can cause flooding, and increases the availability of water to plants during droughts. Good infiltration and less need for fertilizers and pesticides keep nutrients and sediment from loading into lakes, rivers, and streams. Groundwater is also protected because there is less leaching from healthy soils."

Soil health management systems include:

- Conservation Crop Rotation
- Cover Crops
- No Till
- Mulch Tillage
- Mulching
- Nutrient Management
- Pest Management

Conservation practices such as grassed waterways, filter strips, vegetated buffers, etc. help retain topsoil and agricultural productivity during extreme weather events. Wetland restoration and similar practices can provide water treatment, reducing nitrogen and other pollutants.

Map 7 - Minnesota Impaired Waters - Blue Earth County



Impaired Lake

Impaired Stream

Proposed Impaired Stream in the Watonwan or Middle Minnesota River Watershed

N W E S

0 5 Miles

Source: Impaired Lakes and Streams: MPCA Impaired Waters Assessment 2012
Proposed Impaired Streams: MPCA

Note: Impaired waters include impairments for biology, recreation and fish consumption.

Manage hydrology

The natural hydrologic cycle is altered by removal of wetlands, perennial vegetation, ponds and depressions, draining soils, impervious surfaces, and collecting or conveying stormwater runoff from land to ditches, channels and storm sewers in urban, rural and agricultural landscapes. These activities affect the way that the landscape stores and releases water. The result is increased peak flows, lower base flows, and increased nutrient and sediment concentrations in streams, rivers, and lakes. Water quality is usually degraded when storage is removed, and improved when storage is added.

Drainage systems managed under Minnesota Statute 103E as well as tile drainage systems can consider environmental, land use and multipurpose drainage opportunities and alternatives before establishing drainage projects. Use of alternative drainage practices can help make working lands, as well as artificial and natural drainage systems, more resilient to extreme weather events and improve water quality.

Water storage in municipalities, shoreland areas and small developments can improve water and become more resilient to extreme weather events. Some municipalities and townships stormwater systems are regulated by the MPCA. Those include Mankato, Eagle Lake, Skyline, Minnesota State University-Mankato, Mankato Township, Lime Township and South Bend Township.

Flooding, near channel erosion, ravine erosion, landslides

Flooding is a concern in all municipalities in the county located near rivers and streams, and flash flooding is a concern in all areas of the county. Floods affect public safety, property and infrastructure and cause erosion and sedimentation in surface water.

Near channel erosion consists of eroding stream banks, bluffs, ravines and landslides. Near channel erosion is common on every river and stream in the county. Near channel erosion is priority concern for two reasons:

- Eroded soils contributing sediment to rivers causing water quality impairments in local watersheds as well as downstream
- Erosion hazards, loss of property and infrastructure

  Erosion hazard - As stated in the 1999 FEMA Riverine Erosion Hazard Mapping Feasibility Study, erosion hazard area is defined by Section 577 of National Flood Insurance Reform Act (NIFRA):

  > *"Erosion hazard area means, based on erosion rate information and other historic data available, an area of erosion or avulsion is likely to result in damage or loss of property or infrastructure within a 60 year period."*

Much attention has been given to near channel erosion in all the major rivers in the county. Numerous State of Minnesota agencies and universities from all over the country are conducting research on this problem in all watersheds of the county. Results of these studies so far show the soils and geologic conditions in the county are predisposed to erosion, and altered hydrology and changing climate trends are contributing factors.

Aquatic Invasive Species

Invasive species are defined as a nonnative species that: (1) causes or may cause economic or environmental harm or harm to human health; or (2) threatens or may threaten natural resources or the use of natural resources in the state.

It is generally recognized that the most effective strategy against invasive species is to prevent their introduction and establishment. Preventive measures typically offer the most cost-effective means to minimize or eliminate environmental, societal, and economic impacts. Prevention relies on a diverse set of tools and methods, including inspections, outreach, regulations, and enforcement.

Management of water bodies in a way to decrease their susceptibility to invasion by invasive species (e.g., maximizing diversity and reducing disturbance of in-lake and near shore vegetation) may also constitute an element of prevention. There is a growing need to examine how we can increase our understanding of managing ecosystems with invasive species as part of the picture. Management should focus on maintaining resilient systems that can act to slow the establishment, spread, and dominance of invasive species. This could lead to a basic shift from focusing solely on control, by adding management of the site to limit invasion as a part of the whole management package.

The current DNR list of water bodies in the county with aquatic invasive species includes:

- Ballantyne Lake - Eurasian watermilfoil
- Eagle Lake (North and South) - Eurasian watermilfoil
- Lura Lake - Eurasian watermilfoil
- Madison Lake - Eurasian watermilfoil

All recreational lakes in the county are infested with common carp and curly leaf pondweed. These aquatic invasive are so common the DNR does not include them on the list of infestations.

Shoreland Development

Protecting natural shorelines is important for water quality, wildlife and the use and enjoyment of public lakes and rivers by all. Shoreland areas of lakes, rivers, streams and wetlands are critical habitat for most aquatic and many terrestrial wildlife species. Natural vegetation in shoreland areas are important for wildlife and for protecting shorelands from erosion caused by waves and ice.

Runoff to lakes and rivers from development is a concern in shoreland areas. Runoff from lawns and impervious surfaces typically contains more nutrients per acre compared with farmland. Enforcement of shoreland development regulations and treating stormwater runoff are important for protecting water quality. The Blue Earth County Shoreland Buffer Initiative and Governor's new buffer initiative are important for protecting shoreland areas and may improve water quality.

Targeting implementation

The ability to identify and prioritize potential projects in local watersheds to improve water quality is better than ever before. Millions of dollars from federal, state and other sources has been and will continue to be spent studying water quality, preparing plans and reports and developing and applying

targeting tools for use in the Greater Blue Earth River watershed and Minnesota River Basin. Knowledge of water quality problems in local watershed is continuously evolving.

Blue Earth County and the SWCD are already using and developing targeting tools to identify priority areas and watersheds to direct resources. Recent BWSR Clean Water Fund grants are being used to prioritize wetlands and conservation practices in watersheds using information about soils, topography and hydrology. Even with the availability of tools to target practices on the field scale, how the county and local partners target and prioritize local resources to achieve local goals is a concern when resources to address those goals are limited.

Priority Concern:
Protect and manage wetlands for multiple benefits

Blue Earth County is in the process of developing a Comprehensive Wetland Protection and Management Plan for incorporation in the water plan update. Developing a wetland plan is a recommendation of the Blue Earth County Comprehensive Water Management Plan 2008-2015 and the local Greenprint planning efforts in 2006. The local Greenprint was a county led project that involved local citizens. The Greenprint analyzed landscape position, proximity and connectivity of natural resources to identify wildlife habitat complexes and conservation corridors along rivers in the county to provide multiple benefits and green infrastructure.

The ultimate goal of the Blue Earth County Comprehensive Wetland Protection and Management Plan is to improve the quality, number of acres, and biological diversity of wetland resources in Blue Earth County by protecting, enhancing and restoring wetlands with the greatest local public value.

More than 90% of the pre-settlement wetlands in the county have been drained for agriculture and urban development, so there is an abundance of potentially restorable wetlands in Blue Earth County. All wetlands provide important functions for people and wildlife while human values and priorities drive policy and management decisions. Restoration of the pre-settlement landscape or protecting all wetlands is not desirable or consistent with local, long-range comprehensive land use plans. At the same time there is interest in protecting, enhancing and restoring wetlands in the county to improve water quality and provide wildlife habitat in a way that serves all interests.

The wetland plan is a plan for protecting, enhancing and restoring wetlands in both voluntary and regulatory contexts. The intent is to link non-regulatory conservation goals with mitigation to the benefit of both. Proactive planning allows for selection and advance comparison of opportunities. This is an advantage compared with the current one-size-fits-all approach of the Minnesota Wetland Conservation Act.

Priority Concerns Identification Process

1. Notice of Plan Revision and Invitation To Submit Priority Concerns

As required by Minnesota Statutes 103B.313, the county sent notification of the plan update and invitation to submit priority concerns to the following:

- Soil and Water Conservation District (SWCD)
- All 34 local government units in the county, including 11 municipalities and 23 townships
- All nine adjacent counties
- The five state review agencies, including the Board of Water and Soil Resources (BWSR), the Department of Agriculture (MDA), the Department of Health (MDH), the Department of Natural Resources (DNR), and the Pollution Control Agency (MPCA)

All five state review agencies submitted priority concerns.

One local government in the county, the City of Mankato Public Works Director, submitted priority concerns related to drinking water and groundwater.

Nicollet County and Waseca County water plan staff submitted the same priority concerns recommended by state review agencies and local government units in the county.

List of Priority Concerns Recommended:

- Drinking water and groundwater protection
- Mankato shallow groundwater
- Altered hydrology
- Drainage
- Stormwater management
- Wetlands and water storage
- Excess nutrients
- Soil erosion
- Soil health
- Aquatic invasive species
- Structure setbacks from rivers

2. Local Water Plan Survey

To help determine priority concerns to address in the water plan, the county administered an 11-question online survey using Survey Monkey in September and October 2015. The survey was promoted using the county website, press releases and emails to township and city officials. There were 123 survey respondents. Half of the respondents live “in Lake Crystal” or “in Madison Lake.”

Most of the respondents (79%) think the quality of groundwater is good or very good."

Most of the respondents (83%) think the water quality of lakes is "poor" or "very poor."

Most of the respondents (72%) think the water quality of rivers and streams is "poor" or "very poor."

Survey respondents ranked the importance of four water management concerns. The following is list of concerns in the priority order as ranked by survey respondents:

1. Drinking water or groundwater quality
2. Water quality of lakes
3. Water quality of rivers
4. Flooding

Survey respondents' level of concern about water management issues was highest about loss of wetlands, aquatic invasive species, drinking water quality, and eroding river or streambanks.

Survey respondents' level of concern about non-farm development was highest for discharge from septic systems, residential use of pesticides, stormwater runoff and residential development near lakes.

Survey respondents' level of concern about agriculture was highest about drainage ditches and subsurface drainage tile, runoff from farm fields, and livestock manure.

Survey respondents think improved soil health and more enforcement of ordinances to protect sensitive areas near surface water to be most effective, and more education and training for citizens about water related issues to be least effective.

3. Local Work Sessions and Internal Forums

Soil and Water Conservation District

Dates and Participants:

July 13, 2015 water plan workshop - SWCD Manager, Jerad Bach, and Julie Conrad
November 4, 2015 – Jerad Bach and Julie Conrad
February 10, 2016 water plan workshop – Jerad Bach, John Billings, Tina Warta and Julie Conrad

Issues Identified:

- Prioritizing and targeting sub-watersheds, staff resources needed
- Soil health
- Drainage systems 103E.015
- Buffer and Soil Loss Legislation

City of Mankato - Public Works Department

Dates and Participants:

May 11, 2015 - Mary Fralish, Kyle Hinrichs and Julie Conrad
February 24, 2016 – Mary Fralish and Julie Conrad

Issues Identified:

- City of Mankato Drinking Water Supply Management Areas
- City of Mankato shallow groundwater wells
- Well sealing

City of Mankato - Community Development Department

Dates and Participants:

November 24, 2015 – Mike McCarty, Mark Konz, Molly Westman, Julie Conrad, Scott Salsbury
December 11, 2015 – Kristin Prosinski and Julie Conrad
December 11, 2015 - Mark Konz and Julie Conrad

Issues identified:

- Wetland Conservation Act and wetland replacement in wetland banks outside of the county
- River corridors
    - Streambank erosion at Land of Memories – Blue Earth and Minnesota River
    - Streambank erosion at Riverfront Park – Minnesota River
- Planned greenways and stormwater runoff in watersheds draining to the city
    - Indian Creek watershed
    - Wilson Creek watershed

Blue Earth County - Drainage Committee

The Blue Earth County Drainage Committee meets periodically to discuss issues related to ditches managed by 103E.

Date: February 16, 2016

Participants:

County Commissioners: *Kip Bruender, Will Purvis, Mark Piepho*
County Administrator: *Bob Meyer*
County Taxpayer Services Department Director: *Mike Stalberger*
County Drainage Authority staff: *Craig Austinson, Acacia Wytaske*
Soil and Water Conservation District Manager: *Jerad Bach (guest*)
County Environmental Services Department: *Julie Conrad (guest)*

List of issues identified:

- 103E.015 Subdivision 1 and 2
- Buffer and Soil Loss Legislation and implementation

Blue Earth County Wetland Plan Ad hoc Technical/Stakeholder Committee

Blue Earth County is in the process of preparing a Comprehensive Wetland Protection and Management Plan. An ad hoc technical stakeholder committee was appointed to develop the plan. A draft plan was completed in December 2015.

Dates:
October 6, 2015
October 20, 2015
November 3, 2015
November 17, 2015
December 15, 2015
December 29, 2015

Participants:
Blue Earth County Citizens: *Ken Saffert, Joe Smentek, Wayne Krosch*
Local Consultants: *Bill Douglass, Nick McCabe, Travis Fristed*
City of Mankato: *Mark Konz, Mike McCarty, Molly Westman*
Blue Earth County: *Julie Conrad, Scott Salsbury, Mike Krosch, Dean Ehlers, Tim Grant, Mike Schulte*
SWCD: *Jerad Bach*
DNR: *Joe Stangel, Stein Innvaer, Randy Schindle, Scott Macenthun, Dan Gorolamo*
USFWS: *Mike Malling, Matt Stasica*
BWSR: *Jeremy Maul*

List of Issues:
The comprehensive wetland protection and management plan will address the following issues of concern identified during the process

- WCA export of wetlands outside the county
- Determining wetland functions with the greatest public value
- Defining priority areas for wetland protection and restoration in river corridors and priority wetland complexes for wildlife and special planning areas (Greenprint)
- Identifying and prioritizing potential wetlands and BMPs for water storage
- Identifying and prioritizing potential wetlands and BMPs for nutrient treatment
- Difficulty siting wetland banks
- Classifying wetlands for management
- Incentives and disincentives for WCA wetland replacement in priority areas

Blue Earth County Public Works/Parks

Date: October 29, 2015

Participants: Dean Ehlers and Julie Conrad

Issues identified:
- Aquatic Invasive Species- boat landings and signage in county parks and campgrounds, number of campers from Iowa

- Erosion sites in county parks
    - Rapidan Dam Park, erosion in camping areas and near boat landing
    - Schimek Park, Maple River stream bank erosion
    - Daly Park Lura Lake shore erosion and tile drainage outlet in Daly Park
    - Bray Park, Madison Lake shore erosion, ravine and gully erosion, erosion in park from foot traffic
    - Wildwood Park, area of severe bluff erosion/landslide on east side of Le Sueur River, Le Sueur River channel migration throughout the park
    - Canoe landings, erosion at most canoe landings from stream channel migration and/or impervious surfaces in some areas

4. Water Management Plan Task Force

A water plan task force was appointed to work with local staff preparing the water management plan.

Meeting Date:
February 29, 2016

List of participants:
The February 29, 2016 task force meeting was attended by 12 of 14 task force members and 7 local staff.

Task Force
Kip Bruender, County Commissioner
Will Purvis, County Commissioner
Emily Javens, Soil and Water Conservation District Supervisor
Eric Anderson, City of Mankato Mayor
Kathy Seys, St. Clair City Administrator
Sandy Hooker, Medo Township Board of Supervisors
Scott Morgan, Mankato Township Board of Supervisors
Doug Meixell, Lincoln Township Supervisor, Farmer
Kris Duncanson, Mapleton, Duncanson Growers
Joe Smentek, Mankato and Blue Earth County Planning Commissions, Minnesota Soybean Growers
Mike Roll, Crystal Waters Project, Lake Crystal

Local staff
Dan Fogal, Mankato Township Planner
Jerad Bach, Manager, Soil and Water Conservation District
John Billings, Soil and Water Conservation District
Tina Warta, Soil and Water Conservation District
Julie Conrad, Blue Earth County Environmental Services
Scott Salsbury, Blue Earth County Environmental Services
George Leary, Blue Earth County Environmental Services

Summary of Proceedings and Supporting Data:
The purpose of the first task force meeting was to review the proposed list of priority concerns and ensure input from citizens, local, state and regional entities was considered.

List of issues:
Task force members accepted the list of priority concerns presented by local staff. There was some discussion to clarify the following related to the priority concerns:

- The number of surface waters and draft surface waters on the Minnesota Impaired Waters List and the listing process
- Regional stormwater management planning in MS4 and other watersheds.
- Drinking water and groundwater quality and monitoring
- Near channel erosion - bluff erosion and structure setbacks

5. Public Meeting

Date: A public meeting was held from 4:00 pm to 6:00 pm, on Monday, February 29. The meeting was publicly noticed ten days prior in the Mankato Free Press on Friday, February 19, 2016.

Participants:
The Blue Earth County Environmental Services Department and Soil and Water Conservation District staff conducted the meeting. One citizen, a resident of a rural subdivision near the Le Sueur River, attended the open house.

Meeting Summary:
The meeting was a two-hour open house. The citizen who attended was concerned about water management issues in the county in general.

6. Consideration of current state and local watershed, water management and other local plans and planning efforts

Blue Earth County staff reviewed other local plans and state priority concerns described in these studies and plans:

- Blue Earth County Comprehensive Water Management Plan
- Blue Earth County Hazard Mitigation Plan – Near channel erosion and landslides
- BWSR's Nonpoint Priority Funding Plan 2014
- MPCA Le Sueur River Watershed and Protection Strategies (WRAPS)- Le Sueur River only watershed with an MPCA WRAPS at this time
- MPCA Nitrogen in Minnesota Surface Waters: Conditions, trends, sources and reductions 2013
- MPCA Minnesota Nonpoint Source Management Program Plan 2013-2017
- MPCA Identifying Sediment Sources in the Minnesota River 2009

Priority Concern Selection Process

The steps used to choose the priority concerns were:

1. County staff prepared a list of all priority concerns submitted by LGUs and state agencies.
2. County staff analyzed the survey results and written comments.
3. County and Soil and Water Conservation District staff reviewed the list of priority concerns and survey results and had a workshop to discuss all the priority concerns and suggest additional priority concerns. The group recommended all priority concerns submitted be included in the water plan.
4. The water plan Task Force was convened to review the list of recommended priority concerns to ensure the list was complete and if the recommended priority concerns should be included in the water plan. The Task Force recommended no additions or changes to the recommended list of priority concerns.

All priority concerns were addressed.

There were no differences between the plan's priority concerns and other state, local, and regional concerns.

Attachment

A summary of the water plan survey results is attached.

BLUE EARTH COUNTY

Comprehensive

Water Management Plan

Survey Results – Fall 2015

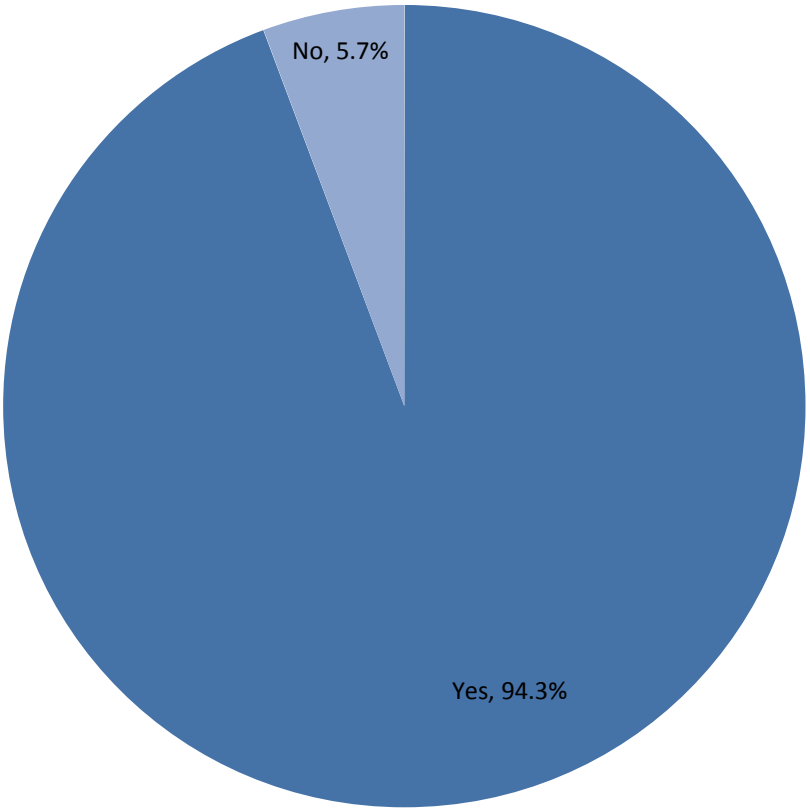
BLUE EARTH
COUNTY

Background

In 2015 Blue Earth County initiated the process of updating the Comprehensive Water Management Plan. To help determine priority concerns to address in the plan, the county administered an 11 question online survey using Survey Monkey in September and October 2015. The survey was promoted using the county website, press releases and emails to township and city officials. There were 123 survey respondents. The survey and results are summarized in this document.

Question 1 - Are you a resident of Blue Earth County?

Answer Options	Response Percent	Response Count
Yes	94.3%	116
No	5.7%	7
	answered question	**123**
	skipped question	**0**

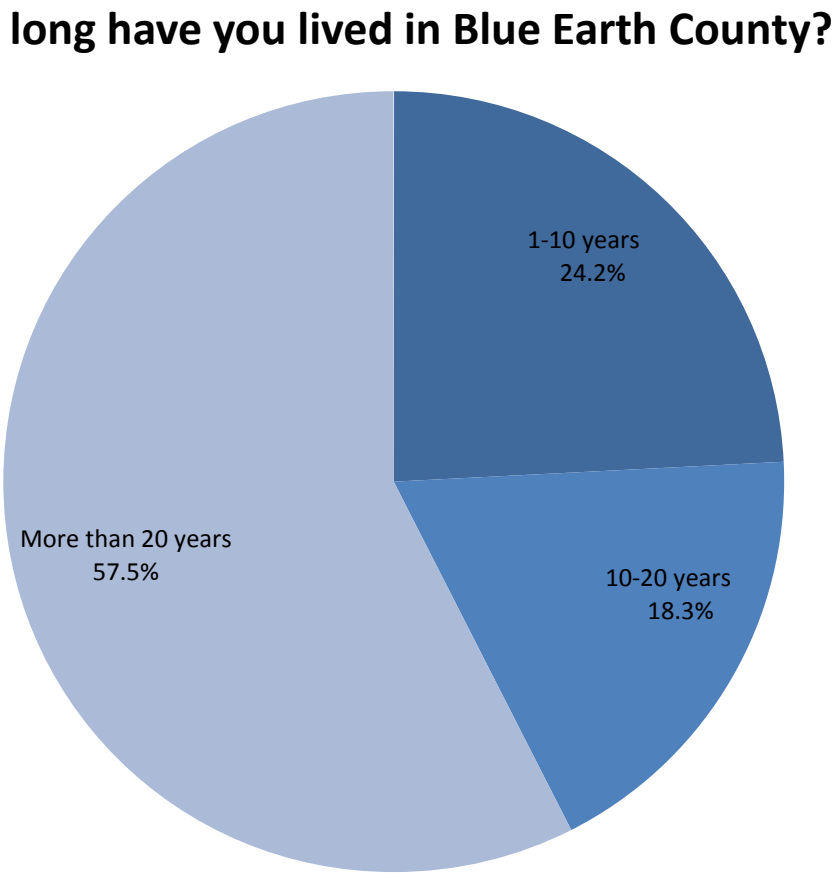


Question 2 - Choose one that best describes where you live:

Answer Options	Response Percent	Response Count
In Lake Crystal	41.0%	50
In the country or rural subdivision	18.0%	22
In Mankato	16.4%	20
In Madison Lake	9.0%	11
On a farm	7.4%	9
Other (please specify)	4.1%	5
In Skyline	1.6%	2
In Mapleton	0.8%	1
In St. Clair	0.8%	1
In Vernon Center	0.8%	1
	answered question	**122**
	skipped question	**1**

Question 3 – How long have you lived in Blue Earth County?

Answer Options	Response Percent	Response Count
1-10 years	24.2%	29
10-20 years	18.3%	22
More than 20 years	57.5%	69
	answered question	**120**
	skipped question	**3**

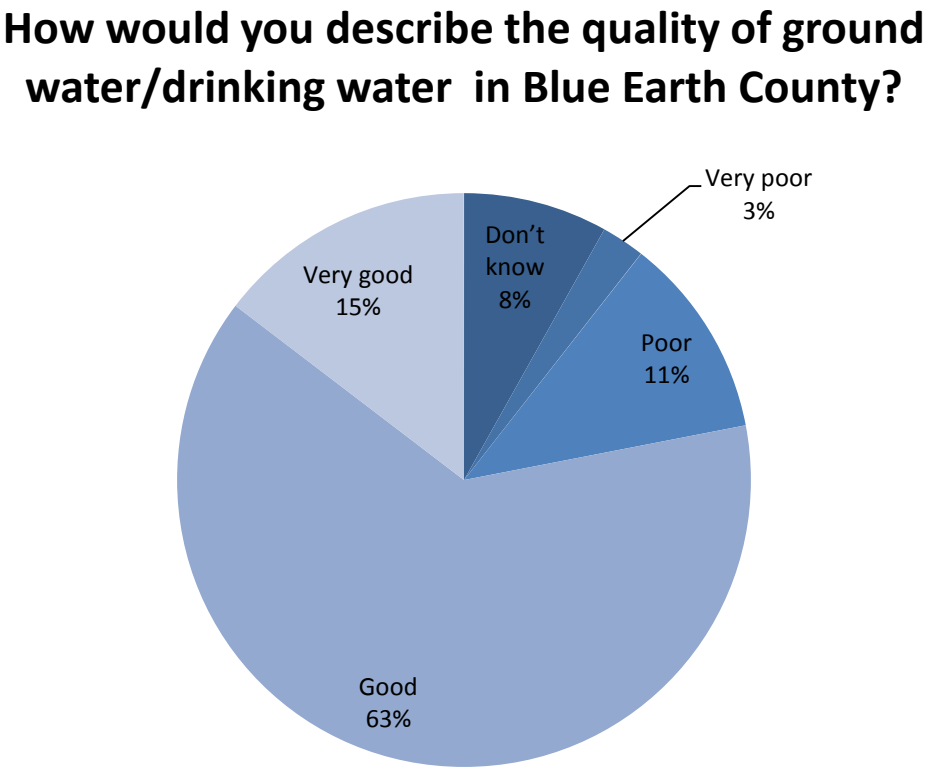


Question 4 - In a typical year, how often do you do the following types of recreation in Blue Earth County?

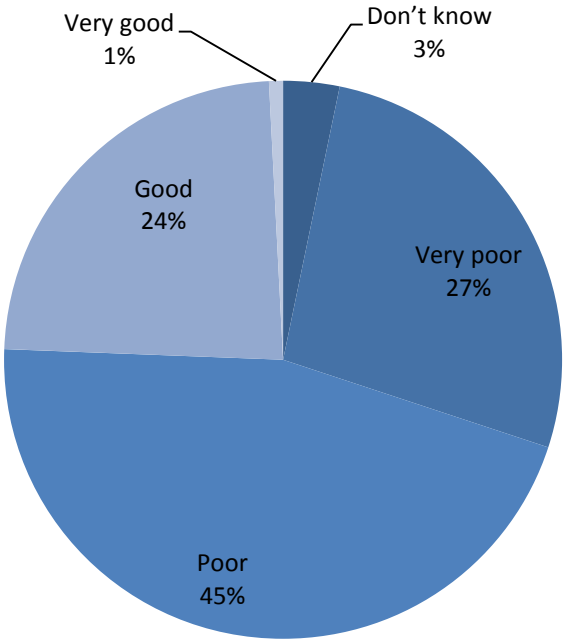
Answer Options	Rarely or never	1-5 times year	More than 5 times a year	Response Count
Swimming in lakes, rivers or streams	54	36	31	121
Canoeing or kayaking	57	42	13	112
Boating, water skiing, etc.	33	35	47	115
Fishing	27	51	39	117
Camping or using trails	32	44	40	116
Hunting	65	22	27	114
			answered question	**123**
			skipped question	**0**

Question 5 - How would you describe the quality of the following in Blue Earth County?

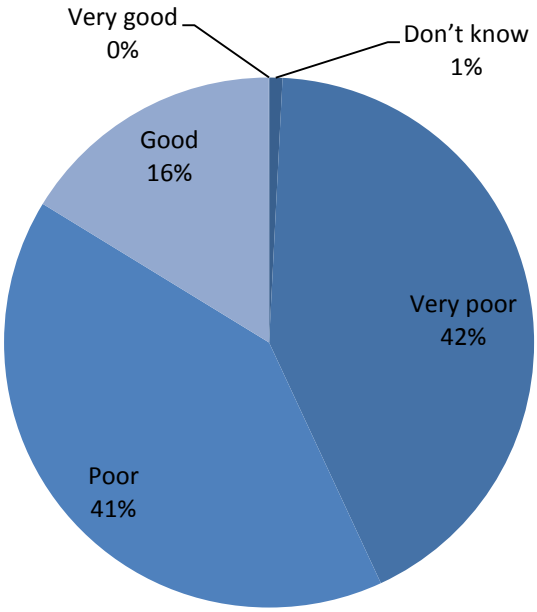
Answer Options	Don't know	Very poor	Poor	Good	Very good	Response Count
Ground water/drinking water	10	3	14	78	18	123
Rivers and streams	4	33	56	29	1	123
Lakes	1	52	50	20	0	123
					answered question	**123**
					skipped question	**0**



How would you describe the quality of rivers and streams in Blue Earth County?



How would you describe the quality of lakes in Blue Earth County?



Question 6 - Thinking about Blue Earth County, please rate your level of concern with the following water management issues:

Answer Options	Not Concerned	Somewhat Concerned	Very Concerned	Response Count
Quantity and use of groundwater	23	55	45	123
Drinking water quality	22	45	56	123
Flooding	53	54	16	123
Eroding river or stream banks	21	48	52	121
Eroding ravines or bluffs	24	49	50	123
Loss of wetlands	21	31	70	122
Aquatic invasive species such as zebra mussels, Eurasian water milfoil, curly leaf pondweed, invasive carp, etc.	15	40	67	122

Question 7 - Thinking about Blue Earth County, please rate your level of concern with the following water management issues related to development:

Answer Options	Not Concerned	Somewhat Concerned	Very Concerned	Response Count
Water pollution from industry	19	64	40	123
Stormwater runoff and stormwater management	7	48	68	123
Runoff from construction sites	19	72	32	123
Residential development near lakes and rivers	15	41	67	123
Discharge from municipal sewage treatment facilities	23	46	54	123
Discharge from failing septic systems to groundwater or lakes and rivers	15	37	71	123
Road salt runoff to lakes, rivers and streams	16	59	48	123
Residential use of fertilizers and pesticides	11	43	69	123

Question 8 - Thinking about Blue Earth County, please rate your level of concern with the following issues related to agriculture:

Answer Options	Not Concerned	Somewhat Concerned	Very Concerned	Response Count
Drainage ditches and subsurface drainage tile in agricultural areas	15	25	83	123
Pesticide containers storage and disposal	24	50	48	122
Agricultural use of fertilizers and pesticides	16	41	66	123
Runoff from farm fields	15	28	80	123
Runoff from feedlots	18	37	68	123
Livestock manure runoff from farm fields	18	33	71	122

Question 9 - Thinking about Blue Earth County, please rank the relative importance of the following water management issues (Rankings are from 1 to 4 with 1 being most important)

Answer Options	1	2	3	4	Response Count
Drinking Water or Ground Water Quality	56	16	13	16	101
Water Quality of Lakes	32	44	16	11	103
Water Quality of Streams or Rivers	12	35	51	17	115
Flooding	16	14	26	62	118

Question 10 - How effective do you think the following practices are?

Answer Options	Don't know	Not effective	Somewhat effective	Very effective	Response Count
Vegetated buffers along lakes, rivers and streams	10	7	49	57	123
Increased water storage to reduce runoff and flooding	13	5	54	50	122
Improved soil health with nutrient management, tillage practices	10	7	47	58	122
More enforcement of ordinances to protect sensitive areas near lakes, rivers and streams	11	12	39	58	120
Directing or targeting local staff, grant funding and other financial resources to areas where science shows potential problems	11	11	45	56	123
More education and training for citizens about water related issues	6	19	58	40	123

Question 11 - If you are concerned about specific water bodies in Blue Earth County or have other suggestions or concerns about water resources in Blue Earth County, please describe below.

Number	Response Text
1	I am concerned about the effect of mining aggregate and other materials on groundwater quality and quantity. Mining will expand in many areas of the county, and it seems no local governments are prepared to address the water quality effects.
2	Blue Green Algae is hazardous - Lake Crystal
3	Very concerned about the water quality in Crystal Lake. Soil characteristics make runoff worse in its watershed, so farmers need help to minimize runoff. In additions, we need more beneficial aquatic plants (e.g., bulrushes) and vegetated buffers all around the lake (on private and public land).
4	Crystal Lake in Lake Crystal & Minneopa Creek.
5	I lived in Lake Crystal for 30 t years. Our children had swimming lesson in the lake. A pontoon & swimming occurred almost daily during the summer months kids at the park with Lifeguards and parents watching groups of kids of their docks..A small speed was purchased and skiing& boarding began. Later came the ski boat. Some days there were 30 boat craft on the lake not that many years ago. Sadly today we have no water craft & I have not been in this lake for over 3 years..When you ask what's a typical year in your questions it's difficult to answer because that was typical maybe 6 years ago. I'm saddened to see our Lake So empty because of water quality. We have made some improvements with hard work in our community...More is needed from a larger source..You are needed to help make these changes begin Blue Earth County
6	You need to work on reduction of nutrients entering Ida and Lura lakes, especially Ida. When I see Ida I am embarrassed to call B.E. Co. my home.
7	improving everything about madison lake..
8	Weed problems on Madison Lake. Can't use the lake until July because of the weeds.
9	Get rid of above ground field tile intakes they are a direct line of pollution to our lakes and streams and ultimately to our ground water.
10	Madison Lake
11	Concerned with agricultural run-off into the lake. . .needs to be filtered and monitored to stop the growth of non native weeds and algae
12	Crystal Lake
13	most lakes and rivers in southern Minn. buffer strips may work on ditches for erosion and sediment control but the tiling run off still comes in below that with chemical run off.
14	I live on Madison Lake and am concerned about Eurasion millfoil, Pond Weed, Carp and farm run off. Southern MN lakes continue to detieriate.
15	I'm concerned about current agriculture practices and the effect they're having on our fresh water supply.
16	The Minnesota and Blue Earth Rivers.

Number	Response Text
17	I've recently noticed some development surrounding Duck Lake, Lake Ballantyne and Madison Lake and am concerned that required stormwater management, both temporary and permanent, isn't being properly address and that State shoreland rules are not being followed. I'm highly concerned with the permitting process of the city of Madison Lake and do not believe that these areas are properly addressed. I also believe that setbacks from bluffs and water features needs to be increased from the current County setbacks. New setback regulations should be designed to vary depending on the percent slope and the presence of water features, particularly at the base of the slope. I'd recommend a minimum setback of 100 feet from the top of the bluff and increase from there. I recommend no development occurring within the flood fringe area; I believe the county floodplain ordinance should be updated and prohibit any development in the flood fringe, even if it is built up above the regulatory flood plain elevation (RFPE). I would like to see wetland delineations required for any shoreland alteration permit issued within county. County staff should be reviewing and regulating wetland determinations, not conducting them. I'd suggest that ordinary high water level determinations be completed by licensed surveyor during the permitting process.
18	Non point source water contamination must be addressed, and that means agriculture practices. Farming is no longer a mom and pop operation like Monsanto and Cargill would like the general public to believe. Modern day farming is truly an industry that demands additional regulation (not self regulation). Fresh water is a scarce resource and we must develop / enforce new regulations to protect our underground aquifers / lakes and rivers. When did it become okay to irrigate corn? Who regulates this practice? As you can tell, I'm tired of agriculture getting a free pass with regards to our fresh water.
19	consistent buffering plan will help but holding systems more effective
20	Crystal/Loon Lakes Lake Ida (Amboy)
21	The bluff setback for structure construction needs to be revised to take into account the height of the bluff and the steepness of the slope. For example, a 30-ft setback doesn't do a lot of good when the starting point is the top edge of a nearly-vertical bluff that is inherently unstable. If you have a 100 ft tall bluff, and a stable slope is 2:1 (Horizontal to Vertical), the starting point for the setback should be 100 x 2 = 200 feet from the base of the bluff. Just an idea. Or make developers acknowledge the precarious nature of the lots they are trying to sell along high bluffs or (even worse) high bluffs on the outside bend of a river.
22	lakes around Lake Crystal and county ditches
23	Major areas of wetlands were lost 30 to 50 years ago when cattail marshs were drained and are now farmed. It would be good to see some of these restored. With the price of farmland this restoration will not likely happen.
24	All the lake around Lake Crystal are horrible as everyone knows. I would like to see more info out out as to what officials believe the problems are. Keep up the good work!
25	The LeSueur River east of St. Clair needs a holding area to avert more frequent flooding in St. Clair. Certainly, an area near the bridge just east of St. Clair is conducive to this effective, low-cost remedy.
26	I am concerned about the quality of the lake crystal watershed. We need help to clean it up.
27	Store more water and filter runoff before it gets to lakes and rivers. Also protect drinking water supplies should be number one priority.

Number	Response Text
28	Treatment of city storm water and upgrading city sanitary sewer systems especially in the older parts of town.
29	Drainage from farm land into ditch 56 which runs into Crystal and Loon Lakes
30	Crystal Lake algae bloom and overall water quality. Leading with ditch 56 management.
31	Concerned about Crystal Lake and Loon Lake.
32	Crystal Lake in Lake Crystal is the nastiest lake in Blue Earth County! I feel sorry for those that live right on it. It would be a much more enjoyable lake if it could be used without coming out of it needing to be disinfected! It's gross! There is too much chemical contaminants from nearby farming that is being allowed to run off into steams that run into the lake, as well as other lakes too!
33	As for buffers a small one is needed for sluffing otherwise water does not run uphill
34	Crystal Lake
35	Don't mow the only public pedestrian area on the point at Robinson Park in Lake Crystal. It is used very often throughout the summer when mowed. Must contend with goose dropping, which is a concern early to mid summer.
36	Crystal lake in lake crystal needs help!-
37	Silt on the bottom of Southern MN Lakes. County ditches that drain to recreational lakes.
38	I live in Lk Crystal and there is a lot of concern of the Crystal Lake Quality... Personally I think there should be more regulation on the beautiful green plush lawns around the lake... They are fertilized by Green Care or whomever... Do they ever check how much fertilizer is being put down?? AND there are some lawns that use the lake water to water their lawns... ? Just seems like a small (or large) place to look into..... Thank You!!
39	City run off into crystal lake. City lawns are fertilized too much. Plus the dirt and sludge reduce water clarity!!!
40	I have a concern of the water quality on Crystal, Loon, and Lily Lakes in Lake Crystal
41	Until the land use issues are corrected the water quality issues will remain unresolved.
42	Crystal Lake, Lake Crystal
43	Crystal lake
44	Crystal Lake and Loon Lake
45	Crystal lake needs to be cleaned up
46	Lakes in Lake Crystal
47	I grew up swimming in our lakes in Lake Crystal, and it saddens me that I cannot make the same memories with my children.
48	Crystal lake
49	Get the rich people on the lake side of Humphrey Street in Lake Crystal to stop using lawn services who use chemicals and poison the lake!
50	Crystal Lake
51	I would love to see Crystal Lake be cleaned up and beautiful again. We are making progress, but can always use more help.
52	Please concentrate more of the funding in blue earth county on crystal and Loon lake. Thank you.
53	Crystal Lake

Number	Response Text
54	I'm extremely concerned that there is no regulation or even records of farm tile. Every year I see more and more tile going in. Every year, the flooding/water run off gets worse and worse, causing more pollution and more damage. I am specifically concerned about drainage ditch 56 in Lake Crystal and would like to see that rerouted so it no longer runs into the lakes. My father was born in the 1920s and grew up here in the 1930s. He used to tell us kids stories about how clean and clear Crystal Lake was, and how deep it was and spring fed. It's a shame we are killing all of our lakes and streams with big ag.
55	Please help fund the project to clean up the lakes in Lake Crystal. It would greatly help the health and well being of the residents and wild life but it would also help the local economy by bringing more people to our shores to fish all season.
56	Loon and crystal lakes as well as Minneopa creek are in terrible condition.
57	Lake Crystal is NASTY
58	Thank you for all you are doing to improve water quality. Very much appreciated. Keep it up, spread the word. Thank you!!!
59	Crystal lake and Loon Lake in Lake Crystal
60	I am concerned with the quality of Crystal lake. While recent efforts seemed to be helping there is a long way to go to make that lake usable again. It would be wonderful if more funding could go to help improve that lake.
61	Consistent enforcement of laws and ordinances is needed. I fish on many lakes in this county and others near by and lake shore development is impacting the water. There are too many lawns and patios being built next to the lakes. There does not appear to be consistent enforcement of laws for zoning.
62	Crystal Lake in Lake Crystal has blue algae blooms.
63	Lake Crystal should be a higher priority for the County. Jared Bach of the SWCD and his staff have been extremely active in our community. More County funding is needed to support the extensive volunteer efforts taking place within the community by the Crystal Waters Project. Question 10 is unclear. Is the rating for how it is being managed in BE County or how effective are the practices in general?
64	Agriculture practices are destroying the lakes and rivers and ground water will soon become a major related issue.
65	Measures should be taken to control algae bloom in lakes in MN
66	Crystal Lake in Lake Crystal.