

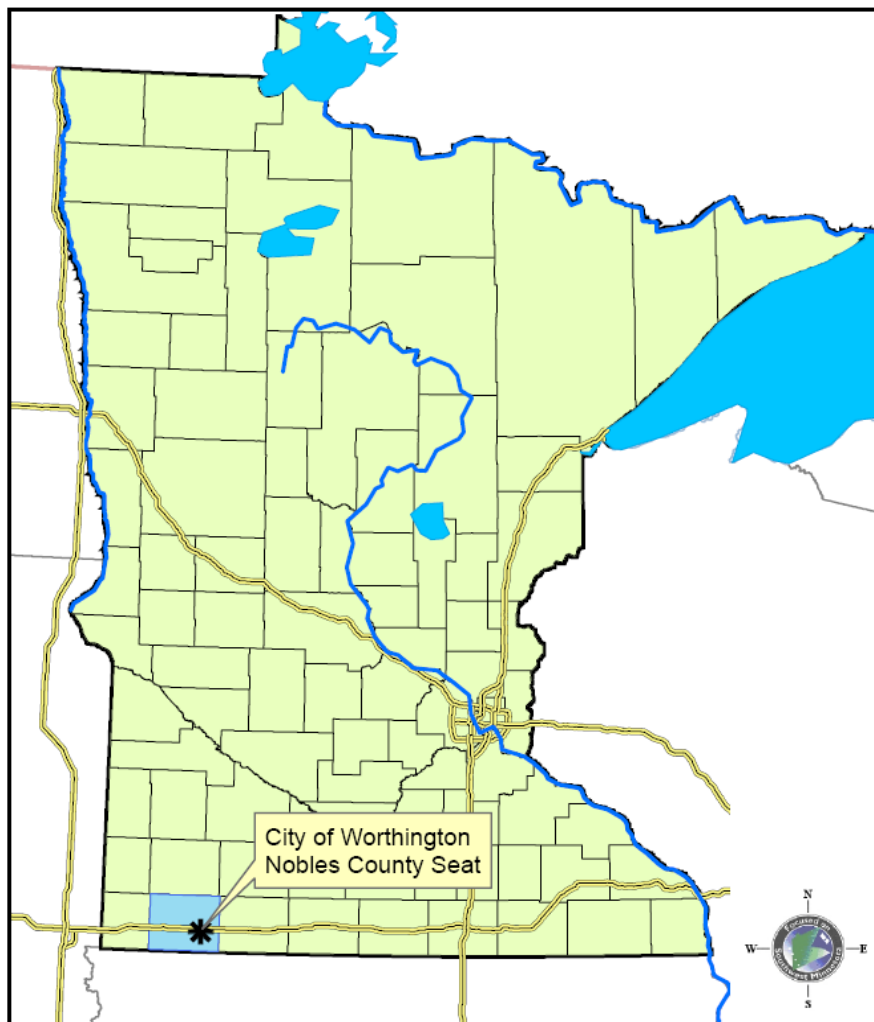
# NOBLES LOCAL WATER MANAGEMENT PLAN

*A 10-year plan with a five-year implementation schedule 2009-2018*

**2013 AMENDMENT**

Prepared for the Nobles County Local Water Management Plan Task Force  
By Nobles Soil & Water Conservation District and  
Nobles County Environmental Services

Covering Nobles SWCD, Nobles County Environmental Services,  
Kanaranzi-Little Rock Watershed District, Okabena-Ocheda Watershed District



*This page left blank for double-side printing.*

# NOBLES LOCAL WATER MANAGEMENT PLAN

*A 10-year plan with a five-year implementation schedule 2009-2018*

Prepared for the Nobles County Local Water Management Plan Task Force  
By Nobles Soil & Water Conservation District, Nobles County Environmental Services and Southwest  
Regional Development Commission

Covering the Nobles SWCD, Nobles County Environmental Services,  
Kanananzi-Little Rock Watershed District, and Okabena-Ocheda Watershed District.

## I. Table of Contents

## Page

A. Executive Summary.....	1
1. Purpose & Introduction	
2. Description of Priority Concerns	
3. Summary of Goals, Actions, and Projected Costs	
4. Consistency with Local, State and Regional Plans	
5. Summary of Recommended Amendments to Other Plans and Official Controls	
B. Priority Concerns.....	10
1. Identification of Priority Concerns	
2. Assessment of Priority Concerns	
Priority Concern 1. Surface Water Quality	
Priority Concern 2. Drainage Management	
Priority Concern 3. Public Water Supply	
3. Goals and Objectives to Address Priority Concerns	
C. Implementation to Address Priority Concerns .....	29
D. Implementation Schedule of Ongoing Activities .....	42
1. Cost-Share Needs Projection	

For additional information on water management in Nobles County, Minnesota, contact:

Nobles Soil & Water Conservation District  
1567 McMillan St., Ste 3  
Worthington, MN 56187  
(507) 376-9150

Nobles County Environmental Services  
960 Diagonal Road  
PO Box 187  
Worthington, MN 56187  
(507) 295-5322

Kanaranzi-Little Rock Watershed District  
PO Box 327  
Adrian, MN 56110  
(507) 483-2971

Okabena-Ocheda Watershed District  
960 Diagonal Road  
PO Box 114  
Worthington, MN 56187  
(507) 372-8228

Heron Lake Watershed District  
PO Box 345  
Heron Lake, MN 56137  
(507) 793-2462

## A. Executive Summary

Nobles County is located in southwestern Minnesota, adjacent to Rock, Murray, Cottonwood, and Jackson counties. Iowa's Lyon and Osceola counties are located south of the state line. The City of Worthington is the county seat. Nobles County's population in the 2010 U.S. Census was 21,378.

Nobles County is divided between the Mississippi and Missouri major water basins. The West Fork Des Moines major watershed flows east into the Heron Lake system. The Little Sioux watershed drains southeast into Iowa. The Rock River watershed drains the western part of the county south and west. Groundwater is the primary source of drinking water.

### A.1 Purpose & Introduction

**The *Nobles Local Water Management Plan* is intended to identify existing and potential water issues in the context of watershed units and groundwater systems, informing specific implementation actions to achieve goals for sound hydrological management of water and related resources.**

Nobles County developed a unified comprehensive water resources management plan for the entire county over a period from 1994 to 1998, incorporating the Nobles Soil and Water Conservation District (SWCD) comprehensive plan and watershed district plans for the Kanaranzi-Little Rock Watershed District (KLRWD) and Okabena-Ocheda Watershed District (OOWD). While not a formal member of this plan, the Heron Lake Watershed District (HLWD) is an important collaborator on water planning in Nobles County. The KLRWD also includes areas of Rock County.

#### A.1.a Plan Requirements

In 2008 Nobles County developed a unified comprehensive water resources management plan for the entire county incorporating the Nobles County Local Water Plan, Nobles SWCD comprehensive plan and watershed district plans for the KLRWD and OOWD. This was a collaborated effort to achieve goals for sound hydrological management of water and related sources. The plan is a ten-year plan effective until March 25, 2019. However it was developed with a five-year implementation schedule. The plan is now being reviewed and updated including a new five-year implementation schedule. The intent is that this plan is to continue to cover the four participating water management organizations.

Requirements of a local water plan are set forth in current state statute (Minnesota Statute §103B.311, Subd. 4.). The plan must address management of water, effective environmental protection, and efficient resource management, and must be consistent with local water management plans prepared by counties and watershed management organizations wholly or partially within a single watershed unit or ground water systems. This Water Plan is a ten-year management plan with a five-year implementation schedule.

SWCDs often adopt the local water management plan as their comprehensive plan required for certain state funding, as long as the plan has details of “high priority erosion problems” and “high priority water quality problems”. Watershed Districts have additional requirements to meet for their Watershed Management Plan, which like the SWCD are subject to Board of Water and Soil Resources (BWSR) guidelines and are implemented in more detailed work plans. Minn. Stat. §103D.405 requires that a revised watershed management plan include:

- (1) updates and supplements of the existing hydrological and other statistical data of the watershed district;
- (2) specific projects and programs to be considered for implementation;
- (3) a statement of the extent that the purposes for which the watershed district had been established have been accomplished;
- (4) a description of problems requiring future action by the watershed district;
- (5) a summary of completed studies on active or planned projects, including financial data; and
- (6) an analysis of the effectiveness of the watershed district's rules and permits in achieving its water management objectives in the watershed district.

This plan attempts to balance the requirements of each water management organization to achieve a useful, strategic document that is easily understandable and useful for decision makers and residents of Nobles County. It is intended to describe a vision for the future, not as an encyclopedic reference of the past. Historical information contained in previous editions of the water plan are incorporated by reference.

#### **A.1.b Accomplishments**

Major accomplishments under Nobles County’s previous water management plans included from 2009-2013:

- Appointed Co-Water Planners in the SWCD and County Environmental Office.
- Provided technical assistance for wellhead protection updates for the cities of Ellsworth, Adrian, Lismore, Worthington and the Community of Leota.
- Partnered with the HLWD for continuation of a Minnesota Pollution Control Agency (MPCA) Clean Water Partnership (CWP) grant.
- Supplied data and collected surveys for a Red Rock Rural Water project to bring water to the four townships in southeast Nobles County.
- Funded a conservation tillage cost-share program for the Upper Elk Creek.
- Provided Funding and staff time to an annual education program by the Prairie Ecology Bus Center for local schools.
- Participated in the multi-state Upper Des Moines River Watershed Accelerated Implementation Plan.
- Completion of 1 Critical Area Planting.

- Completion of 28 Grassed Waterways
- Completion of 232 Terraces and Water and Sediment Control Basins
- Completion of 4 Clean Water Diversions
- Planted 52.7 acres of Farmstead Windbreaks
- Installed 600 feet of Field windbreaks.
- Planted 13.3 acres of private wildlife plantings.
- Enrolled and planted 41.5 acres of riparian buffers.
- Enrolled 29.7 acres of permanent easements.
- Enrolled/re-enrolled 1131.7 acres of non-wetland Conservation Reserve Program (CRP) acres.
- Enrolled/re-enrolled 90.4 acres of wetland practice CRP acres.
- Assisted with the completion of 20 Nutrient Management Plans.
- Assisted with the completion of 7 Ag. Waste Management systems.
- Protection of 2400 feet of streambank and shoreland areas.
- Partnered with neighboring counties with a MPCA funded Watershed Coordinator for the Missouri River Total Maximum Daily Load (TMDL).
- Completed water sampling needed for Missouri River TMDL.
- Completed MPCA Stream Water Assessment Grants related to streams and lakes in Nobles County.
- KLRWD received \$350,000 of American Recovery and Reinvestment Act (ARRA) Funds for watershed improvement projects.
- Applied for and received \$157,058 in Clean Water Assistance Grant Funds in 2010 for remaining projects that requested KLR ARRA.
- Applied for and received \$154,000 in Clean Water Assistance Grant funds in 2011 to restore/protect 1,600 feet of Lake Ocheda Shoreline.
- Applied for and received \$165,263 in Clean Water Assistance Grant funds in 2011 to improve a feedlot on a tributary of the Kanaranzi Creek.
- Applied for and received \$241,308 in Clean Water Assistance Grant Funds in 2012 to mitigate feedlot pollution problems on a tributary of the Kanaranzi Creek.
- Applied for and received \$285,508 in Clean Water Assistance Grant funds in 2013 for erosion control practices such as terraces, waterways, and streambank stabilization practices.
- Applied for and received \$176,933 to complete 2 feedlot improvement projects including mitigating one pollution sites adjacent to the City of Lismore's Wellhead Protection Area and one on Lake Ocheda.
- Provided technical assistance to the HLWD in developing the WFDNR and Heron Lake TMDL Implementation Plan which was approved in September of 2009.
- Entered into a Memorandum of Agreement (MOA) with Nobles, Jackson, Murray, Cottonwood, Martin, Pipestone, and Lyon Counties and SWCDs and the HLWD in October 2009 to leverage funds and resources by solidifying our commitment to the WFDNR watershed. This MOA allows those involved to

maximize resources more effectively, provide new opportunities, and establish a diverse, unique commitment. Coordination among local government units is needed to maximize the benefits of the efforts and available resources, while providing the best possible avenues to address the environmental, educational, economic, and agricultural needs of the watershed, its communities, and its residents.

- Offered cost-share for the installation of alternative tile intakes to replace open tile intakes through a CWP grant awarded to the HLWD. The grant ran until June 2013. Fifty-six alternative tile intakes were replaced in Nobles County.
- Partnered with county feedlot officers and SWCD staff in Nobles, Jackson, Murray, and Cottonwood Counties, and HLWD staff to complete an intensive, onsite inventory and inspection (Level III Feedlot inventory) of eighty percent of the feedlots (592) in the WFDNR watershed through in-kind contributions. The inventory is instrumental in order to gauge the need for funds to address the feedlots and ultimately decrease the bacteria concentrations in the streams and rivers. A staff person dedicated to the project was hired to promote the project and seek additional funding for implementation and education. Project partners will host a one-day manure management workshop for feedlot owners and operators, develop a project brochure and website, and conduct committee meetings.
- Partnership between Pheasants Forever, Department of Natural Resources (DNR), Worthington Public Utilities and OOWD to purchase 8 parcels of marginal agricultural land totaling 320 acres in the Bella wellhead protection area. Permanent prairie habitat and wetland restorations were completed to protect the aquifer from pollution and promote groundwater recharge.
- Provided cost-share to seal 19 unused wells and replace 8 non-compliant septic systems in the OOWD.
- Partnership between Minnesota West Community and Technical College, City of Worthington, Olson Trust and OOWD to enlarge a new regional storm water pond to slow flow and treat runoff from a 70-acre agricultural watershed.

Nobles Loans Water Management Plan								
AgBMP Loans -- New and Revolving Funds								
		Tillage Equipment		Ag Waste		SSTS Upgrades		Erosion Control
2005	7	222,900	1	31,500	4	20,800	2	16,900
2006	7	174,700	6	285,545	2	9,500		
2007	15	300,870	2	26,850	1	5,000		
2008	4	139,790	7	210,350	3	22,060		



2009	6	249,300	4	111,150	3	25,661	
2010	5	168,800	5	190,300	1	7,600	
2011	6	176,650	3	71,837	1	11,700	
Source: Nobles SWCD							

### **A.1.c Plan Update, Adoption and Amendment**

Nobles SWCD and Nobles County Environmental Services (ENVS) are responsible for local water management in Nobles County, including facilitation of public input and convening the Local Water Management Task Force. Nobles County Environmental Services and the Nobles SWCD were tasked with the Plan Amendment process.

Task Force membership included:

- Ed Lenz, Nobles Soil & Water Conservation District
- Wayne Smith, Nobles County Environmental Services
- Jane Steffl, Nobles Soil & Water Conservation District
- John Shea, Nobles Soil & Water Conservation District
- Paul Langseth, Nobles Soil & Water Conservation District
- Dawn Madison, NRCS Worthington F.O.
- Dan Livdahl, Okabena-Ocheda Watershed District
- Coleen Gruis, City of Rushmore
- Marvin Zylstra, Nobles County Commissioner
- Gene Metz, Nobles County Commissioner
- Mark Hiles, MN Board of Water & Soil Resources
- Jan Voit, Heron Lake Watershed District
- Bruce Heitkamp, Kanaranzi-Little Rock Watershed District
- Stephanie McLain, Natural Resources Conservation Service
- Jerry Lonneman, Lincoln-Pipestone Rural Water
- Eric Roos, Worthington Public Utilities
- Lynn Darling, Nobles Soil & Water Conservation District
- Ken Wolf, Nobles Soil & Water Conservation District
- James Knips, Nobles Soil & Water Conservation District
- Chessa Frahm, Missouri River Basin

Technical Committee

- Ed Lenz, Nobles Soil & Water Conservation District, Kanaranzi –Little Rock WD
- Wayne Smith, Nobles County Environmental Services
- Al Langseth, Nobles County Environmental Services
- Dan Livdahl, Okabena-Ocheda Watershed District
- Jan Voit, Heron Lake Watershed District
- Chessa Frahm, Missouri River Watershed Coordinator

The following public and internal forums and meetings were held to provide public input into the update process:

- 12/6/12 Update planning meeting w/SWCD, County ENVS Office, KLR and O-O watershed districts, BWSR (5 att.)
- 4/2/13 Nobles Board of County Commissioners adopts resolution to update.
- 7/9/13 Mail/email Notice to Revise and Update to BWSR routing list, adjacent counties, cities & townships.
- 8/1/13 Local Water Plan Public Update Information Meeting held at Nobles County Public Works Building, Worthington (22 att.)
- 9/18/13 Local Water Plan Public Update Information Meeting held at Nobles County Public Works Building, Worthington
- 9/30/13 First Draft of Water Plan Amendment published on SWCD website.
- 10/2/13 Worthington Daily Globe publishes article notifying public on water plan update and request for public comment.
- 10/11/13 Public comment period closed.
- 10/11/13 Second Draft of Water Plan Amendment published on SWCD website.
- 10/12/13 Notice of Public Hearing Published in *Worthington Daily Globe*.
- 10/17/13 Technical Committee Meeting Held at Nobles County Public Works Building, Worthington
- 10/22/13 Public Hearing before Nobles County Board of Commissioners.

Upon approval of this plan amendment by the Board of Water and Soil Resources (BWSR), the County Board has up to 120 days to pass an Adoption and Implementation Resolution. After final adoption, the plan may be amended in a similar process, by petitioning the BWSR Board, scheduling a public hearing, and sending notice to the required parties.

Approximately two years—and no later than 18 months—prior to the end of the five year management schedule, the County Board should consider a new Resolution to update this plan, according to the rules then in place.

## **A.2 Description of Priority Concerns**

The Priority Concerns listed below were selected by the Water Plan Task Force members by consensus, after carefully reviewing submitted concerns and comments, and then refined based on discussion in public meetings. While the assessment of priority concerns utilized the best available information, this plan rests solidly on data and analysis contained in previous editions of the county's local water management plan.

**Priority Concern 1. Surface Water Quality.**

Minnesota has an abundance of surface waters. A number of these waters in Nobles County and the region are listed as TMDL Impaired by MPCA and the U.S. Environmental Protection Agency (EPA). Impaired waters affect both the local environment and communities' ability to provide for their future. High priority soil erosion problems continue to be present, while management of nutrients, feedlots and sewage treatment systems require ongoing attention.

**Priority Concern 2. Drainage Management.**

The landscape of Southwest Minnesota has changed greatly since settlement. Management of the resulting drainage system—the modern hydrograph—is often disjointed and uncoordinated, leading to issues with both quantity and quality of water. Flooding and stormwater retention remain concerns across the county. There are also particular issues in the region with wetlands, habitat and critical species.

**Priority Concern 3. Public Water Supply.**

A long-term, sustainable supply of surface and ground water is essential to growth and development in Nobles County. There is particular concern with wellhead protection, protection of critical lands, and provisions for both urban and rural water supply systems.

**A.3 Summary of Goals, Actions, and Projected Costs**

Goals and Actions were selected to address priority concerns, with a focus on principles of sound hydrological management.

**Priority Concern 1. Improve Surface Water Quality.**

This concern will be addressed to prevent further degradation of stream and lake water quality, with a priority for shoreland areas, TMDL-listed waters, and unsewered communities. Objectives include addressing TMDL impaired waters, preventing soil erosion; promoting agricultural best management practices (AgBMPs), and facilitating compliance of nutrient management, feedlot and septic treatment systems with state and federal requirements.

Implementation actions include promotion and education, administration and review of plans and ordinances, working with state and federal agencies on measures to improve water quality, technical assistance with programs and best

management practices, financial incentives for conservation practices, and development of information systems.

Projected costs over the five years of the management plan to implement all actions would include about \$75,000 for TMDL plans and implementation, \$4,152,500 to complete projects including TMDL implementation projects, \$617,000 for technical assistance and administration, \$590,000 for buffer programs, \$300,000 for developing a soil loss ordinance, and \$51,250 for outreach and education, as well as annual in-kind services. All dollar figures are rough estimates and recognize approximate known costs of identified implementation partners.

### **Priority Concern 2. Drainage Management.**

This concern will be addressed to restore more natural flows in the drainage system, focusing on shoreland areas. Objectives include improving shoreland and impervious surface areas; improving flood control, drainage systems and stormwater retention; encouraging wetland restoration; and addressing habitat and critical species issues.

Implementation actions include providing education and outreach, administration and review of rules and ordinances, maintenance of GIS data, technical assistance with conservation and wetlands projects, and mitigation improvements in flood control.

Projected costs would include about \$6,165,000 for the flood control project on County Ditch 12 in Worthington, \$2,565,000 for best management practices (BMP's), \$1,500,000 for conservation practices and easements for wetland restorations, \$300,000 for development of a Comprehensive Drainage Management Plan, \$500,000 for Re-determination of benefits, \$95,000 for technical assistance and administration, and \$62,500 for outreach and education, as well as annual in-kind services.

### **Priority Concern 3. Public Water Supply.**

This concern will be addressed to assure long-term quality and quantity of water supplies, with a priority for drinking water supply management areas and areas not currently served by public/community systems. Objectives include encouraging well head protection, preventing groundwater contamination, facilitating land retirement, and supporting rural water systems and long-term water supplies.

Implementation actions include outreach and education, technical assistance and incentives for landowners and water providers, review of plans and ordinances, maintenance of GIS data, providing assistance to seal unused wells, cooperative efforts for land retirement, and working with cities and water providers for long-term water supplies.

Projected costs would include about \$2,600,000 towards land retirement partnerships including RIM, WRP, and other easement programs. \$20,000 for

assistance to landowners sealing unused wells, \$102,360 for technical assistance and administration, and \$12,250 for outreach and education, as well as annual in-kind services.

#### **A.4 Consistency with Local, State and Regional Plans**

Nobles County Environmental Services administers the County's comprehensive land use plan and zoning ordinance. This helps to maintain consistency between this plan and the County's other plans and ordinances. The County's *comprehensive plan* identifies goals and policies for the County, which has been reviewed for consistency with this water management plan. Task Force members are also familiar with HLWD management documents and operations procedures for KLRWD, and OOWD. While portions of the KLRWD are located in Rock County, Minnesota, this plan has fully considered (and is based on the format of) the *Rock County Water Plan* (revised and adopted 9/2011). No other formal plans were received for review.

#### **A.5 Summary of Recommended Amendments to Other Plans and Official Controls**

No specific amendments are recommended at this time. Action items include consideration of updates to zoning ordinances within this document's management timeline. It would be recommended to incorporate data from this plan into other local plans and controls when they are updated.



Lake Okabena. Photo by SRDC

## B. Priority Concerns

### B.1 Identification of Priority Concerns

Priority Concerns for local water management were selected by the Nobles County Local Water Management Plan Task Force members. While the assessment of priority concerns utilizes the best available information, this Amendment process utilizes priority concerns identified in the current plan without any alteration.

Agency and LGU input was requested at the August 1, 2013 Taskforce Meeting regarding the amendment process. Request for comments were sent to all local government units (LGU's) that share a political boundary with Nobles County, all State Agencies as required, as well as all the LGU's within Nobles County. Public Comment was requested after the September 18, 2013 Taskforce Meeting. Comments were received from the MDA and County Commissioners.

### B.2 Assessment of Priority Concerns

Nobles Local Water Management Plan		
Population		
Civil Division	2010 Census	2012 Estimate
Adrian city	1209	1211
Bigelow city	235	237
Bigelow township	373	368
Bloom township	158	156
Brewster city	473	473
Dewald township	254	251
Dundee city	68	68
Elk township	253	250
Ellsworth city	463	456
Graham Lakes township	218	221
Grand Prairie township	206	203
Hersey township	219	212
Indian Lake township	232	229
Kinbrae city	12	12
Larkin township	188	183
Leota township	390	383
Lismore city	227	228
Lismore township	175	171
Little Rock township	211	205

Nobles County has eleven (11) incorporated cities, four (4) unincorporated villages, and twenty (20) townships. The Minnesota State Demographic Center estimates that there are currently 21,474 residents and 8,535 households in the county.

Lorain township	297	300
Olney township	205	205
Ransom township	230	230
Round Lake city	376	375
Rushmore city	342	341
Seward township	208	206
Summit Lake township	323	328
Westside township	218	220
Wilmont city	339	338
Wilmont township	184	185
Worthington city	12764	12900
Worthington township	328	329
<b>County</b>	<b>21,378</b>	<b>21,474</b>
Source: Minnesota State Demographic Center		

Nobles County is well-served by transportation networks.

I-90 runs east-west through the City of Worthington, connecting I-35 at Albert Lea and I-29 at Sioux Falls, South Dakota. US Highway 59 runs north-south through Worthington. MN State Highway 60 runs on a diagonal through Worthington, providing a major link between the Twin Cities and Sioux City, Iowa. MN State Highway 91 runs north-south through Adrian. The Union Pacific Railroad runs parallel to Highway 60, while the Minnesota Southern Railway short line runs from the Union Pacific (UP) railway at Worthington through Luverne to the Burlington Northern Santa Fe (BNSF) railway near Manley in Rock County.

Agriculture is the primary economic driver in the county, with a good-sized industrial base in the city of Worthington. The University of Minnesota found that about 84.6% of the land area in Nobles County was cultivated, with 6% urban, 7% in grass/shrub/wetlands, 2% forest, and 1% covered by water in the year 2000 (Remote Sensing and Geospatial Analysis Laboratory). There were almost 7,800 acres considered impervious area, or almost 2% of the county overall.

Nobles County is considered a typical prairie environment, with large temperature variations and average annual precipitation of 26-28 inches (Minnesota's state-wide median since 1890 is about 26 inches). Typically, 70% of precipitation falls May to September. Annual precipitation can vary widely—while 22 inches was measured in 2003, over 37 inches of precipitation was observed during 2005 (State Climatology Office – DNR Waters at <http://climate.umn.edu/> ).

Nobles County is divided between the Des Moines-Mississippi and Missouri basins. The West Fork Des Moines major watershed flows east primarily into the Heron Lake system and eventually through Iowa to the Mississippi River. The Little Sioux River major watershed drains the southeast portion of the county through Iowa to the Missouri. The City of Worthington is split between the Des Moines and Little Sioux major watersheds.

The western half of Nobles County is primarily in the Rock River major watershed, draining through Iowa to the Missouri.

The surface of Nobles County is underlain by Quaternary glacial drift of Pleistocene age and some alluvial deposits of recent age, generally 100 to 600 feet thick. Cretaceous rocks composed of sandstone, shale and siltstone underlie the glacial drift for most of the county. Precambrian formation of Sioux Quartzite and granite lie generally about 200-400 feet below the cretaceous formations. Glacial aquifers are the most common source of drinking water in Nobles County.

The USDA NRCS *U.S. General Soil Map* (STATSGO2) delineates 14 general soil units in Nobles County. The NRCS *Soil Survey of Nobles County Minnesota* (2004), the Soil Survey Geographic (SSURGO) Database and the NRCS Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov/app/> describe much more detailed soil properties and interpretations. The most current soils data is available through the NRCS website at [soils.usda.gov](http://soils.usda.gov).

<p>Nobles Local Water Management Plan  <b>General Soil Units in Nobles County</b></p>
<p>Fairhaven-Dickman-Biscay  Fairhaven-Esterville  Flandreau-Everly-Dickman  Primghar-Galva  Spillco-Millington  Spilville-Millington-Comfrey  Storden-Everly  Talcot-Millington-Fairhaven  Trent-Sac  Vienna-Kranzburg-Hidewood  Waldorf-Lura-Collinwood-Clarion  Webster-Nicollet-Clarion-Canisteo  Webster-Nicollet-Glencoe-Crippin-Canisteo  Wilmonton-Letri-Everly</p>
<p>Source: NRCS STATSGO2</p>

**High priority water quality problems are seen in areas where sediment, nutrients, chemicals or other pollutants discharge to DNR designated protected waters or to any high priority waters as identified in this plan, or discharge to a sinkhole or ground water.** The pollutant delivery rate to the water source is in amounts that will impair the quality or usefulness of the water resource.

### **Priority Concern 1. Surface Water Quality.**

We often take surface water for granted. Surface water is easy to see and touch, in the creeks, streams, and lakes where we fish and play, and where we draw water for drinking and irrigation. Yet surface waters are also vulnerable to natural and man-made threats from pollution and erosion.

#### **a. TMDL Impaired Waters**

The federal Clean Water Act requires states to adopt water quality standards. A water body is considered “impaired” or polluted if it fails to meet these standards. Section 303(d) of the Act requires the State to conduct a TMDL Study to identify sources of each of pollutants, calculate the maximum amount of a pollutant a water body can receive, and allocate reductions necessary to meet water quality standards.



As BWSR has explained in water planning guidance, there is a straight-forward process for addressing impaired waters:

1. Monitor and assess the state's waters
2. List impaired waters
3. Identify sources and reductions needed (TMDL study)
4. Implement restoration activities (Implementation Plan)
5. Evaluate water quality.

Nobles Local Water Management Plan 2012 Impaired Waters Requiring a TMDL				
Name	Stretch	Affected Use	Pollutant	Status
East Graham	Lake or Reservoir	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators	Not Started
Elk Creek (Rock River)	Headwaters to Rock River	Aquatic Life	Turbidity	EPA-Approved
Elk Creek (WFDR)	Headwaters to Okabena Creek	Aquatic Recreation	Fecal Coliform	EPA-Approved
Elk Creek (WFDR)	Headwaters to Okabena Creek	Aquatic life	Turbidity	EPA-Approved
Jack Creek, North Branch	Headwaters to Jack Creek	Aquatic Life	Turbidity	EPA-Approved
Judicial Ditch 13 (Skunk Creek)	Headwaters to West Fork Little Sioux River	Aquatic Recreation	Escherichia Coli	Started 2011
Judicial Ditch 13 (Skunk Creek)	Headwaters to West Fork Little Sioux River	Aquatic Life	Turbidity	Started 2011
Judicial Ditch 6 (Lake Okabena Outflow)	Okabena Lake to Ocheda Lake	Aquatic Life	Turbidity	Started 2011
Kanaranzi Creek	Norwegian Creek to MN/IA border	Aquatic Recreation	Escherichia Coli	Started 2011
Kanaranzi Creek	Norwegian Creek to MN/IA border	Aquatic Life	Turbidity	Started 2011
Kanaranzi Creek, East Branch	Headwaters to Kanaranzi Creek	Aquatic Recreation	Escherichia Coli	Started 2011
Little Rock River	Little Rock Creek to MN/IA border	Aquatic Life	Turbidity	Started 2011
Little Rock River	Little Rock Creek to MN/IA border	Aquatic Recreation	Escherichia Coli	Started 2011
Norwegian Creek	Headwaters to Kanaranzi Creek	Aquatic Recreation	Escherichia Coli	Started 2011

Ocheda (West basin)	Lake or Reservoir	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators	Started 2011
Okabena	Lake or Reservoir	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators	Started 2011
Okabena Creek	Unnamed Cr. To T102 R38W S6, north line	Limited Resource Value	Escherichia Coli	Not Started
Okabena Creek	Elk Creek to South Heron Lake	Aquatic Recreation	Fecal Coliform	EPA-Approved
Okabena Creek	Elk Creek to South Heron Lake	Aquatic Life	Turbidity	EPA-Approved
West Graham	Lake or Reservoir	Aquatic Recreation	Nutrient/Eutrophication Biological Indicators	Not Started
Source: MPCA				

Nobles SWCD has been monitoring surface waters of the Kanaranzi and Little Rock Rivers in the KLRWD, the SWCD has also been monitoring Indian Lake and Iowa Lake since the development of the current waterplan. OOWD has monitored water quality in Lake Okabena since 1998. OOWD performed a two year water quality study of Lake Ocheda in 2007-08 to collect data for a TMDL assessment. Parameters tested were total suspended solids, suspended volatile solids, total phosphorus, chlorophyll-a and Secchi transparency. In 2008, OOWD began sampling Lake Bella for the same parameters. Work continued on Bella through 2009. In 2007-2008, OOWD also monitored turbidity and transparency on Judicial Ditch 6, which has been placed on the TMDL list. It is expected that Bella lakes will be candidates for listing in the near future.

The West Fork Des Moines River (WFDMR) watershed TMDL addresses fecal coliform, turbidity, and pH, as well as excess nutrients in Heron Lake. Public meetings were held in April 2008 at Slayton (Murray County) and Heron Lake (Jackson County). EPA approved the TMDL in December 2008.

The Rock River TMDL study was approved by EPA in April 2008, and includes the Elk Creek in the Rock River watershed (there are two separate water courses named "Elk Creek" in Nobles County). The study found that "For turbidity, load duration curves and water quality data indicate the primary sources to be soil erosion in the riparian zone from livestock, stream bank erosion/slumping, upland soil loss from row cropland and algae growth." Representatives of Nobles County Environmental Services and Nobles SWCD participated in the study. Rock County Land Management has been leading planning for implementation.

The Missouri River basin began the Major Watershed Approach with PCA in the spring of 2011. This includes portions of the Rock River, Kanaranzi, Little Rock, and Little Sioux River watersheds in Nobles County. In 2012, 56 streams were added to the impaired waters list in the Missouri River basin and will have TMDLs completed on them. The goal is to be completed with the TMDLs by 2017. Major concerns for these streams and rivers are impaired aquatic life and recreation. Pollutants are primarily turbidity and E. coli. Representatives from Nobles

County Environmental Services, watershed districts, and other counties are participating in this process. It is being led by Nobles SWCD in partnership with PCA.

Current TMDL projects and schedules may be found on the MPCA website (<http://www.pca.state.mn.us/water/tmdl/tmdl-projects.html>).

#### **b. Soil erosion**

***High priority erosion problems occur in areas where erosion from wind or water is occurring equal to or in excess of twice the “tolerable rate” as defined by NRCS.*** High priority erosion problems also occur in any area that exhibits active gully erosion. As well, the focus areas for this local water management plan, including watersheds of impaired waters, should be considered high priority for erosion prevention.

The previous edition of the water plan estimated that 41% of the cropland within Nobles County is prone to excessive erosion from water (up to or exceeding 20 tons per acre per year). There is potential for severe wind erosion on about 5% of cropland (up to or exceeding 12 tons per acre per year). Simple conservation practices, such as grass waterways, terraces, and sediment basins, reduce impacts of soil erosion on surface waters and wetlands. Vegetative buffers separating cropland from bodies of water act as a last line of defense from runoff. These buffers should be a minimum of 33 feet wide and extend at least to the edge of the flood plain, with wider buffers further enhancing water quality. The SWCD has provided cost-share funds to establish natural cover and windbreaks; landowners could easily make greater use of this assistance.

#### **c. Agricultural Best Management Practices**

Voluntary conservation programs are a proven method to reward agricultural producers for doing their part to safeguard water quality and prevent soil erosion. CRP, Conservation Reserve Enhancement Program (CREP), Grassland Reserve Program (GRP), Environmental Quality Incentives Program (EQIP), Reinvest in Minnesota (RIM), Wetland Reserves Program (WRP) and other similar initiatives provide tools to return appropriate land to a native ecology that is better able to respond to erosion pressures. According to BWSR figures, as of January 2008, 2.3% of cropland acres in Nobles County are enrolled in these conservation programs. This is less than the 6.6% in Murray County, but more than the 1.3% in Rock County. Local efforts continue to assist producers with navigating the paperwork and time-factors involved in accessing these resources.

Conservation tillage—leaving adequate crop residue—provides a layer of protection from water and wind erosion and increases organic matter in the soil. Ridge till and strip till have become popular methods to protect soils. In the state of Illinois, for example, no-till soil conservation practices have surpassed conventional tillage, according to NRCS and state SWCD surveys. Nobles County SWCD has worked with MSU-Mankato to complete tillage transect surveys to better understand trends in local conservation tillage.

Changes in market economics for corn and soybean production have raised concerns among producers about the efficiency of conservation tillage. A sustained high price for corn may lead to more acres planted “corn-on-corn”, rather than the typical corn-soybean rotation. There is a constant need to balance program standards, such as national criteria which may conflict with mapped or actual conditions in the field. These concerns must be addressed by agricultural educators and advocates, such as the University of Minnesota Extension Service, watershed districts, SWCD, and other County officials, through promotion, education and demonstration.

**d. Nutrient management, feedlots & SSTS**

Nutrients such as phosphorus and nitrogen negatively impact surface water as well as groundwater. Nutrient management programs and regulations for treatment of waste are intended to prevent and mitigate contamination of water and soil resources.

Local trends in agriculture have been similar to other areas across southwestern Minnesota. The 2007 U.S. Census of Agriculture reported 1,094 farms on 422,300 acres in Nobles County. Of these, 363,247 acres were harvested cropland. The Ag Census reported Nobles County annual production of animals included 67,281 cattle produced, and 416,370 hogs produced, and 96,835 turkeys produced.

Technical assistance from County staff can help farm operators understand the variety of rules and regulations. While larger operations are required to develop formal management plans, more modest feedlots can also benefit from the same sound scientific management principles. The rising cost of commercial fertilizer is also raising awareness of producers of the need for professional management.

It can be difficult to balance the location of feedlots and other animal confinement operations with demand for rural residences. Trends in feedlot management, such as changing demographics; market trends for feed, beef and pork; and economics of fertilizer will effect growth in the industry. Population growth in some townships, however, may also lead to future land use conflicts with feedlots and manure management.

MPCA regulates the collection, transportation, storage and processing and disposal of animal manure. As of September 2013, there were 516 registered feedlots registered in Nobles County, with 6% having less than 50 animal units and 12% having more than 1,000 animal units. Sixty-one (61) registered feedlots are located on shoreland areas. Approximately 15% of registered feedlots and other livestock facilities should be considered high priority for improvements

Nobles County is delegated to administer the MPCA Animal Feedlot Rules (MN Rule Chapter 7020) for feedlots that are not required to have a National Pollutant Discharge Elimination System Permit. As noted above, the County

continues to implement Agricultural Best Management Practices (AgBMPs) in conjunction with MDA, such as feedlot improvements; upgrading manure storage facilities, and odor control; improved manure handling, and spreading and incorporation equipment. According to the University of Minnesota, land application of manure is potentially a larger contributor to nutrient loading of water than open lot feedlots. In many cases, issues are minimized simply by improving record keeping and regulatory compliance.

Most municipalities in Nobles County rely on traditional central sewer systems. Technology and regulatory requirements are constantly changing and improving, demanding professional and skilled management. Many households still rely on Subsurface Sewage Treatment Systems (SSTS, also known as ISTS or Individual Septic Treatment Systems), which often can provide a high degree of sewage treatment if properly sited, installed and maintained.

State legislation governing SSTS is implemented at the county level. Failing and nonconforming sewage treatment systems are considered an imminent threat to public health. These systems can spread hepatitis, dysentery and other diseases that are spread by bacteria, viruses and parasites in wastewater. Untreated sewage also may contain toxic chemicals from household cleaning products. This wastewater can directly enter surface waters and spread to unsuspecting humans, as well as pets and wildlife. Excess nutrients reaching lakes or streams will also promote algae growth, making lakes unsuitable for swimming, boating and fishing. Over time, wastewater will reach down to groundwater as well.

Nobles County SSTS Ordinance is more restrictive than Minnesota Rules Chapter 7080 through 7083. It regulates the treatment and dispersal of sewage within the County to protect public health, groundwater quality, and prevent and eliminate the development of public nuisances. All systems are brought into complete compliance at a time of failure, addition of a bedroom or property transfer.

Development should be discouraged in areas where soils are poorly suited for SSTS systems. Enforcement of standards for on-site sewage treatment systems is necessary to protect public health and safety, as well as preventing pollution of public waters. Nobles County has a successful record of assisting landowners to upgrade their septic systems through a low-interest loan program. Public interest in assistance is expected to continue into the future.

## **Priority Concern 2. Drainage Management.**

Surface waters of Minnesota are managed under the doctrine of riparian rights. This means that riverbank landowners have equal rights to reasonable use of waters that border their property. The Minnesota DNR Division of Waters has the authority to issue permits for water use, and to limit withdrawals of surface water and groundwater in accordance with the public interest (see also the discussion of groundwater below).

The state of the art in drainage management has changed substantially over the years. The traditional approach sought to drain land as quickly and efficiently as possible. This lead to environmental issues that will take years to resolve. Modern, comprehensive drainage management can provide the private and public tools to stabilize the effects of both wet and dry weather cycles, reduce soil erosion, and improve water quality, while also providing additional benefits to plant and wildlife habitat.

Nobles Local Water Management Plan DNR Active Surface Water Appropriation Permits June 2013															
Permittee	Use	Water Resource Names	Permit Volume (MGY*)	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Elsing, Germaine	Agricultural Crop	Dug Pit/Holding Pond	10	0	0	0	0	0	0	0	0	600,000	1,200,000	0	3,600,000
Luettell, Mark; Luettell, Ruth	Agricultural Crop	Dug Pit/Holding Pond	31.5												
Rupp, D A	Agricultural Crop	Dug Pit/Holding Pond	44												
Adrian Country Club	Golf Course	OKABENA	15	8,717,300	12,250,600	12,268,900	10,873,500	11,813,600	14,923,100	13,938,000	10,225,500	10,176,200	12,015,500	9,429,100	15,770,700
Worthington, City Of	Golf Course	CREEK OKABENA	30	9,014,000	15,376,200	10,093,000	16,965,900	14,775,300	15,258,280	15,681,688	17,388,900	10,083,510	12,535,320	8,629,400	13,527,000
Worthington, City Of	Golf Course	CREEK OKABENA		0	0	0	1,885,100	1,641,700	1,701,940	1,561,930	1,162,490	1,587,500	1,392,780	1,539,020	1,853,790
Worthington, City Of	Other Special Categories	LAKE OKABENA	5	892,800	4,232,400	3,694,800	2,538,000	2,336,900	2,994,000	2,062,800	4,202,400	1,694,400	3,525,600	2,888,400	4,822,800
Worthington Country Club	Golf Course	LAKE OKABENA	34	33,593,000	27,989,000	32,471,000	28,715,000	23,110,000	32,328,000	30,457,543	24,769,000	20,560,000	19,072,000	20,000,000	33,885,000
R And G Construction Worthington	Sand/Gravel Pit	Quarry/Mine	25												44,121,000
Excavating Inc Duinick Brothers	Sand/Gravel Pit	Quarry/Mine	22												
Inc Worthington	Sand/Gravel Pit	Hamilton Pit OKABENA	80												
Rendering	Agricultural/Food Processing	CREEK	12	1,299,240	1,050,750	1,080,090	1,037,380	1,830,610	2,348,900	1,860,721	1,942,281	2,698,672	2,048,612	2,317,595	2,129,415

Source: DNR Div. of Waters

#### a. Shoreland and impervious surface areas

Water quality has a direct effect not only on the health of the environment but on the value of property and appeal of our communities. Unfortunately, effects of development are evident on many of the county's stream banks and lakeshores. Aquatic plants provide a natural buffer between windswept open water and fragile shores. Drainage and development have eliminated many of these plants, leading to bank erosion, runoff of fertilizer from fields and lawns, and other problems. The typical modern response has been "hard-scape" — concrete, rock rip-rap and other impervious surface areas. A concerted effort to replace riparian vegetation in shorelands, including tree windbreaks, would help protect lake shores and restore wildlife habitat.

Nobles County regulates the use of shoreland—land within 300 feet of a river or stream, within 1,000 feet of a lake, or to the full extent of a designated flood plain. The DNR identifies three types of lakes and wetlands—Natural Environment, Recreational Development and General Development. Nobles County has Natural Environment and General Development classifications. Guidelines for the development of shoreland areas were developed by the DNR and adopted by the County in its zoning ordinance in 1984. DNR is currently working on an update to statewide Shoreland rules.

Nobles Local Water Management Plan  
**DNR Lake Shoreland Classifications**

DOW Number	Resource Name	DNR Classification	County Classification	City Classification
53004500	Bella		Natural Environment	
53003200	Bigelow Slough	Natural Environment		
53002000	East Graham	Natural Environment	Natural Environment	
53002200	Fury Marsh		Natural Environment	
53003700	Groth Marsh	Natural Environment		
53000700	Indian	Natural Environment	Natural Environment	
53000100	Indian Lake Slough	Natural Environment	Natural Environment	
32008400	Iowa Lake	Natural Environment	Natural Environment	
53001900	Jack	Natural Environment		
53001600	Kinbrae (Clear)		Multiple	dry
53001800	Kinbrae Slough	Natural Environment	Natural Environment	Natural Environment
53000900	Maroney	Natural Environment	Natural Environment	
53002400	Ocheda	Natural Environment	Natural Environment	
53002800	Okabena		General Development	General Development
53002600	Peterson Slough	Natural Environment		
53003100	Sieverding Marsh	Natural Environment	Natural Environment	
53002300	Unnamed		Natural Environment	
53004800	Unnamed		Natural Environment	
53002700	Wachter Marsh	Natural Environment		
53002100	West Graham	Natural Environment	Natural Environment	
51004800	Willow Lake	Natural Environment	Natural Environment	

Lakes are divided into the following classes based on a combination of factors:

**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.

Source: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/shoreland/](http://www.dnr.state.mn.us/waters/watermgmt_section/shoreland/) and

DNR Final Inventory of Protected (i.e. Public) Waters and Wetlands for Nobles County, 1984.

Many lakes in the County have areas that are unsuitable for development, such as wetlands or soils not capable for development (poorly suited for septic systems, wet soils, strength, etc.). However, new development does not always lead to degradation of environmental quality. Conservation Design, for example, is a planning process which clusters development in a portion of the site so that other areas can remain in natural or agricultural use. Low Impact Development (LID) is another technique intended to manage stormwater by replicating natural filtration processes of a site's pre-development hydrology. Conservation Design and LID projects both rely on creative street and lot design, with runoff typically retained to minimize impervious surfaces and create attractive building sites.

The City of Worthington works with the OOWD and HLWD on stormwater education issues. Worthington's stormwater webpage (<http://www.ci.worthington.mn.us/stormwater/>) contains its stormwater ordinance, pollution prevention plan and educational materials for contractors and residents.

A number of jurisdictions address the specific impacts of construction activities on water quality. The Heron Lake and Okabena-Ocheda watershed districts require erosion and sediment control permits for small construction sites in areas drained by storm sewers. State stormwater permits and Stormwater Pollution Prevention Plans (SWPPPs) are required for all projects disturbing one or more acres of land. Worthington reviews project SWPPPs for compliance with its MS4 stormwater permit requirements before issuing building permits. Both the Heron Lake and Okabena-Ocheda watershed districts require permits for projects needing state permits and monitor construction site SWPPP implementation.

#### **b. Flood Control**

Areas in the county are known to be at risk of seasonal and storm-event flooding. Statewide, the DNR Division of Waters administers the National Flood Insurance Program (NFIP) of the Federal Emergency Management Agency (FEMA), now part of the Department of Homeland Security. Nobles County, and the cities of Adrian and Worthington, regulate development in their floodplains based on Flood Insurance Rate Maps completed in the 1980s. Steps to avoid flood damage are also addressed in the *Nobles County Comprehensive Land Use Plan* and *Nobles County All-Hazard Mitigation Plan*. Nationally, FEMA has embarked on a five-year initiative to update local flood hazard maps with a digital, multi-hazard approach, depending on funding and community priority. DNR, Nobles County and participating cities are working with FEMA to complete digital Flood Insurance Rate Maps. Nobles County maps are currently being finalized with formal county approval expected in 2014.

Nobles County has a history of flooding issues. A number of communities have experience with flooding, examined in detail in prior editions of this water plan.



These issues currently range from overland storm runoff entering Rushmore to the 650 properties threatened in the floodplain of a county ditch in Worthington.



**Flooding in Adrian.** *Photo by KLRWD*

The City of Adrian experiences annual high water flow problems from up-slope drainage areas during spring snowmelts or heavy rainfall events. Natural drainage was further restricted by construction of Interstate 90 on the north side of the city. The City has accommodated this natural flooding by development restrictions, easements, and zoning flood-prone areas for appropriate land uses such as parks. However, conflicts still occur. In June 2008, heavy rains caused the overland flooding of streets in the city. On July 16, 2008, Nobles County was added to a major disaster declaration for purposes of public assistance to repair and replace damaged public facilities from severe storms and flooding in the county.

Development activity in flood-prone areas should be avoided. For example, high-risk areas could receive a permanent vegetative cover in order to help alleviate erosion and sedimentation caused by flooding. Funds are available to help control flooding through NRCS (EQIP), BWSR (State cost-share), SWCD, watersheds and local cost-share. Some communities across the country have adopted a No Adverse Impact (NAI) floodplain management approach, which extends beyond the floodplain to manage development in the watersheds where flood waters originate. NAI requires new development to mitigate potential impacts before disaster strikes.

### **c. Drainage systems**

Agricultural drainage is intended to remove standing or excess water from land which does not drain naturally. These systems use surface ditches and permeable subsurface pipes to direct water off the land. Research continues to optimize strategies such as variable depth tilling, drainage structures and controlled intakes.

Alternative Tile Intakes, also known as rock inlets, are a drainage tool that is currently being implemented throughout Nobles County. A long trench is excavated and backfilled with a 6"-12" bed of small rock. A perforated tile is placed and covered with pea gravel to about 1' above grade for settling. These systems have been demonstrated in Minnesota to deliver "adequate drainage capacity and a 50% reduction of sediment and phosphorus loading into subsurface tile lines."

Drainage systems have been constructed since settlement to move runoff and melt water from private tile lines to public waters. A county drainage system is authorized and established through action of the County Board of Commissioners. A Judicial drainage system is authorized and established by the Courts. Both drainage systems are supported financially through assessments based on benefits received by the landowner. Nobles County currently has 47 miles of open ditches—15.2 miles are Judicial Ditches, and 31.8 miles are County Ditches. The County levies annual assessments to maintain the ditch system, and many residents feel the system is over-worked and under-sized.

Water retention projects in the region have demonstrated a method of reducing peak run off events, as well as providing other benefits. Restoration of small ponds and dams in appropriate locations (which are not barriers to fish movement) can help to stabilize the hydrograph and mitigate drainage impacts.

#### **d. Wetland restoration**

The Prairie Pothole Region of the Northern Tallgrass Prairie is a large grass and wetland complex which includes Southwestern Minnesota. The county's remaining wetlands act as natural filters, purifying water by recycling nutrients and reducing siltation, controlling erosion, recharging groundwater and storing carbon. These interrelated prairie potholes and wetland complexes provide habitat to a variety of plants and animals. Wetlands also reduce the size and scope of storm event and snowmelt flooding.

Nobles County will only see the greatest benefit from wetlands when integrated into management of the larger drainage system. State and federal funding sources such as WRP, CRP and RIM have been somewhat effective in promoting local wetland restoration. Wetland banking—restoring or creating a wetland as a "deposit" available for sale—has also shown some long-term potential. However, new drain tile installation will continue to accelerate water flow to the potential detriment of downstream users, unless new and/or replacement wetlands are created to balance flows within and between watersheds.

**e. Habitat and critical species**

Wetlands and other natural resources provide important habitat for wildlife, in addition to protecting waterways and aquifer recharge areas, on public and private lands. Native pre-settlement vegetation in Nobles County was predominately grasslands and wet prairie. Today, there are documented occurrences of rare species that depend on these ecological systems for survival. According to DNR, these include (but are not limited to) the Blanding's Turtle and Topeka Shiner. There has also been at least one calcareous fen identified in Nobles County, which has special protection under state law.

Regionally, there have been well-publicized instances where public and private projects in the region have encountered issues with habitat protection for the Topeka Shiner (*Notropis Topeka*) minnow. These fish reach about 3 inches in length, and inhabit the winding gravel streams and pools of the Missouri River watershed. The Topeka Shiner was listed as a federal endangered species in 1998. In 2004, the US Fish and Wildlife Service designated 836 miles of streams in Iowa, Minnesota and Nebraska as Critical Habitat for the Topeka Shiner. Policy and procedures for habitat protection will likely continue to demand attention.

**Priority Concern 3. Public Water Supply.**

Demand for water resources is expected to continue to grow for the foreseeable future. Groundwater is the primary source of drinking water in southwestern Minnesota. The original editions of the *Nobles County Comprehensive Water Plan* contain extensive information on the geology and aquifers of the county.

Groundwater is not as reliable a source in Nobles County as in some other areas of the region. Surficial formations in glacial outwash, a common groundwater source, have variable yield depending on local factors of grain size, degree of sorting and extent of deposit. Crataceous bedrock may provide adequate farm yields from deep wells, while Precambrian Sioux Quartzite typically gives small to moderate yields from fractures and loose sand zones. Quartzite deposits are known to be typically high in dissolved minerals (sulfate, iron, manganese) that many find objectionable for human consumption. In addition, the loss of surface wetlands has been cited in previous editions of the water plan for the negative impact on groundwater recharge quantities and quality, especially to glacial drift aquifers.

**a. Wellhead protection**

There are a number of sources in the Nobles County which are considered public water suppliers by the Minnesota Department of Health (MDH), such as municipal systems, restaurants or churches. MDH has completed source water assessments on 23 public water systems in the county, including several non-community systems.

The Wellhead Protection program is designed to protect drinking water from becoming polluted by managing potential sources of contamination. As explained on the MDH website, “A capture zone for the well (called the wellhead protection area) is designated and a plan is developed and implemented for managing potential contamination sources within the wellhead protection area.” A Drinking Water Supply Management Area (DWSMA) provides a geographic focus for securing the water supply.

Nobles Local Water Management Plan <b>Public Water Suppliers</b> July 2008	
City of Adrian	Adrian
City of Bigelow	Bigelow
Blue Line Travel Plaza	Worthington
City of Brewster	Brewster
City of Dundee	Dundee
City of Ellsworth	Ellsworth
Fury's Island	Dundee
Hubbard Feeds, Inc.	Worthington
Immanuel American Lutheran Church	Fulda
Indian Lake Baptist Church	Worthington
Kinbrae Supper Club	Dundee
Leota	Leota
City of Lismore	Lismore
Makaouci Park	Dundee
Nobles Cooperative Electric	Worthington
Prairie View Golf Course	Worthington
Reading	Reading
Round Lake	Round Lake
City of Rushmore	Rushmore
City of Wilmont	Wilmont
City of Worthington	Worthington
Worthington Ag Parts	Worthington
Travel/Information Center MNDOT	Worthington
Source: Minnesota Dept. of Health	

Wellhead Protection Plans have been completed or are in process for the cities of Worthington, Ellsworth, Adrian, and Rushmore, as well as the unincorporated community of Leota. As Wellhead Protection Plans are completed, DWSMAs will become priority areas for local water management.

#### **b. Abandoned wells and gravel pits**

There are many potential sources of groundwater contamination outside of the immediate wellhead and near-term aquifer supply areas. For example, there are concerns expressed about pollution entering the water supply by way of gravel pits with standing water. Some counties in the region have worked with the mining industry to more clearly outline water management practices both for active operations and for reclamation after a gravel pit is abandoned.

Nobles Local Water Management Plan		
Wells Sealed with Assistance		
	Wells	Cost Share
1999	36	\$4,685
2000	25	\$4,070
2001	14	\$2,874
2002	22	\$2,863
2003	12	\$1,668
2004	16	\$2,545
2005	26	\$4,355
2006	18	\$3,865
2007	17	\$3,982
2008	18	\$4,823
2009	21	\$5,515
2010	29	\$7,337
2011	19	\$5,441
2012	14	\$3,672

New wells drilled today have an established permitting process, which allows the public to track well locations and characteristics. However, there are an unknown number of wells put in place since settlement that continue to provide pathways for potential pollutants to reach the county's aquifers. Established farmstead sites are often abandoned as agricultural operations consolidate into larger units and rural residents choose different home locations. Each of these sites typically has a well that needs to be correctly sealed by a licensed contractor. Property owners who connect to rural water systems should decommission their existing wells if the wells will no longer be used, to prevent pollution from entering aquifers.

Watershed districts in the county offer cost share programs to financially assist landowners in the proper closure of unused wells. They will reimburse 50% of the cost to seal a well to a maximum of \$250 to \$300 (depending on the district). Public demand for this assistance is likely to continue into the future.

### c. Land retirement

Voluntary conservation practices are essential to achieve broad water and soil conservation goals, as discussed previously. Local organizations are often able to achieve multiple goals—such as surface and groundwater protection—by making existing programs more attractive. For example, the OOWD offers incentive payments in addition to landowners CRP payments.

There are times, however, when the most effective, efficient and equitable approach requires purchase of property in order to retire land from active production or conversion to urban uses. In 1971, OOWD first purchased land and

established Lake Bella and well fields nearby, to provide water for the City of Worthington. They also purchased land by Lake Ocheda and on the east side of Worthington.

While the priority concerns of this water plan focus on water quality, management and supply, there are opportunities to address these concerns with cooperating organizations to achieve benefits outside of soil and water concerns. US Fish and Wildlife Service and DNR, often working in partnership with private non-profit conservation organizations, have acquired marginal land to take out of production, planting native prairie grasses to promote habitat and conservation. According to the *Worthington Daily Globe*, the local chapter of Pheasants Forever has facilitated the restoration of approximately 1,200 acres of marginal land in Nobles County over the last 25 years. Other likely partners for land retirement include Nobles County, Worthington Public Utilities (WPU), BWSR, MPCA, the Olson Trust, Okabena-Ocheda-Bella CWP Joint Powers Board and the Nobles SWCD.

**d. Rural water system and long-term water supply**

There is growing concern in the region about the quantity and quality of available ground water.

WPU has 12 wells used to supply water to the City of Worthington's residential, commercial and industrial users. Seven of these wells are around Lake Bella, three in the Malcolm well field and two on the south edge of Worthington. Industry accounts for slightly over half of water used in the city. A long-term, sustainable water supply is essential to future growth and development in Nobles County. With limited supplies of groundwater, rural water systems will be an increasingly important asset for communities, livestock producers and rural residents. Lincoln Pipestone Rural Water (LPRW) serves portions of all of Nobles County and the cities of Adrian, Brewster, Leota, Lismore, Round Lake, Wilmont and Worthington. LPRW has a buy/sell agreement with Adrian and generally purchases water from Adrian rather than selling water to Adrian. The Water Contract with Worthington does not contain an obligatory guaranteed amount of water to be available. LPRW contracts to buy water from Osceola County Rural Water System (OCRWS). This has lifted the moratorium on rural water hookups in Nobles County. Recent maximum flow tests from OCRWS in September, 2013 show that there is long-term, sustainable ample water for the Nobles County area and for a reasonable amount of growth.

The City of Worthington and LPRW, among others, are participating in the Lewis & Clark Regional Water System. This project will bring Missouri River water to Southeast South Dakota, Northwest Iowa, and Rock and Nobles counties in Southwest Minnesota. Groundbreaking occurred in August 2003, and by July 2008, construction had reached Harrisburg, South Dakota. The project has an estimated completion date of 2019 depending on continued federal funding.

Recent growth of renewable energy facilities has brought the need for sustainable, long-term water supplies to the forefront. An average rural residence may use about 100,000 gallons of potable water a year. An average feedlot may use 1,000,000 gallons of water a year. With current technology, corn-based ethanol refineries use water at an average rate of four-to-six gallons, per gallon of fuel produced; therefore, a 100 million gallon plant will require at least 400,000,000 gallons of water each year. Moreover, where potable drinking water supplies must meet basic standards for public safety, ethanol plants require further pre-treatment to remove minerals and chemicals commonly found in groundwater in the region. Further growth in animal agriculture and renewable energy will require careful balancing of interests in economic development and residential water supply.

Nobles Local Water Management Plan

**DNR Active Groundwater Appropriation Permits**

June 2013

Permittee	Permit Use Types	GPM	MGY	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Ellsworth, City Of	Public Water Supply	150	20	814.0	3.1	5.9	7.2	7.7	7.7	7.1	5.9	5.8	0.2	4.6	1.9
Ellsworth, City Of	Public Water Supply			89.1	14.2	12.0	8.4	8.1	9.5	7.9	6.4	6.2	11.4	7.7	10.7
Worthington, City Of	Public Water Supply	130	1100	3.7	0.0	10.3	39.7	34.8	26.9	54.3	41.8	50.1	0.3	0.0	0.0
Worthington, City Of	Public Water Supply	120		5.7	45.1	56.8	49.6	77.8	75.0	61.3	42.8	40.2	0.0	0.0	0.0
Worthington, City Of	Public Water Supply	140		3.6	42.8	37.3	50.5	62.3	45.5	28.2	32.1	45.1	62.1	41.4	43.1
Worthington, City Of	Public Water Supply	100		3.9	32.3	38.0	52.0	58.3	54.9	49.8	29.3	50.6	54.0	5.2	22.5
Worthington, City Of	Public Water Supply	140		3.6	20.4	22.6	6.2	0.0	16.9	23.8	28.0	15.3	0.0	0.0	0.0
Worthington, City Of	Public Water Supply	400		2.4	5.2	6.8	7.3	6.0	12.1	21.2	10.9	26.7	33.2	32.8	37.2
Worthington, City Of	Public Water Supply	500		174.1	170.8	190.2	183.9	167.1	138.6	188.1	194.0	204.0	220.4	194.3	212.5
Worthington, City Of	Public Water Supply	500		28.7	12.0	67.1	52.7	66.4	70.5	73.5	144.6	165.6	152.5	175.4	165.1
Worthington, City Of	Public Water Supply	500		64.2	119.2	100.9	199.2	140.8	186.6	209.5	200.8	177.1	214.8	186.3	163.7
Worthington, City Of	Public Water Supply	500		180.3	169.2	95.1	119.9	93.8	111.8	94.2	143.1	188.0	213.1	208.5	197.0
Worthington, City Of	Public Water Supply	500		140.5	199.4	187.6	173.8	140.3	137.8	177.5	133.8	64.5	32.9	86.3	91.9
Worthington, City Of	Public Water Supply	0inactive		200.8	190.3	188.3	131.2	159.9	187.1	85.1	56.1	0.0	0.0	0.0	0.0
Worthington, City Of	Public Water Supply	750										59.3	81.3	150.9	154.0
Adrian, City Of	Public Water Supply	150	60.5	311.2	26.1	19.1	20.4	19.0	22.0	15.9	11.0	6.6	13.9	8.6	8.2
Adrian, City Of	Public Water Supply	180		16.1	21.0	24.6	22.5	23.6	26.4	20.5	11.4	12.3	4.8	8.3	9.2
Adrian, City Of	Public Water Supply	180								14.6	26.4	26.8	24.5	22.7	23.8
Round Lake, City Of	Public Water Supply	200	22	18.4	15.6	17.3	15.9	13.4	13.1	14.8	15.5	19.9	20.6	20.1	17.9
Wilmont, City Of	Public Water Supply	75	9.5	0.5	0.5	0.4	0.5	0.4	0.4	0.5	0.1	0.4	0.5	0.6	0.8
Wilmont, City Of	Public Water Supply														
Rushmore, City Of	Public Water Supply	130	19	13.2	14.2	13.1	11.1	11.8	12.5	12.3	11.7	13.1	11.8	11.5	9.6
Luettel, Mark; Luettel, Ruth	Crop Irrigation	500	16.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brewster, City Of	Public Water Supply	95	22	3.8	6.9	7.3	6.8	6.8	6.6	6.2	6.7	6.3	6.7	5.7	0.0
Brewster, City Of	Public Water Supply	110		7.9	8.0	8.7	7.8	7.9	7.7	7.1	7.8	7.3	7.8	6.6	0.0
Prairie View Golf Links Golf Course		80	10	13.1	7.6	13.0	6.7	4.1	8.8	6.1	7.7	4.6	3.0	8.6	
Adrian Area Country Club	Golf Course	200	20	0.0	7.9	6.9	0.0	2.9	5.3	5.9	0.0	2.5	0.0	0.0	7.2

Source: DNR Water Div.



<b>Goals and Objectives</b>
<b>Priority Concern 1. Improve Surface Water Quality</b>

### C. Implementation to Address Priority Concerns

This section establishes the implementation program for local water management to address priority concerns by watersheds. Action items describe specific measures that the County intends to implement, in cooperation with appropriate local, state and federal agencies and organizations. Action items listed below were reached by consensus and are not necessarily in rank order.

<b>Goals and Objectives</b>				
<b>Priority Concern 1. Improve Surface Water Quality</b>				
<b>Goal 1:</b> Prevent further degradation of stream and lake water quality, with a priority for Shoreland, TMDL-listed waters, and unsewered communities.				
<b>Objective 1.a Address TMDL Impaired Waters.</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
1.a.1	Review land use plans and ordinances to insure minimal development impacts on surface waters.	ENVS	2013-2018	In-Kind
1.a.2	Provide public information on water quality. Outreach – Booths and Displays at County Fair and Farm & Home Shows, Direct mailings, news releases, personal contacts Audience – 2,500 landowners, operators and residents /year; \$2,500/year	ENVS, SWCD	2013-2018	12,500 contacts \$12,500
1.a.3	Provide technical and administrative assistance to MPCA on impaired waters listings and water monitoring Outreach – Provide Technical Assistance. Target-Assist with water quality assessments and monitoring; \$5,000/year	ENVS, SWCD, WD, MPCA	2013-2018	\$25,000
1.a.4	Work with MPCA, BWSR, DNR and USFWS to improve quality of waters entering Heron Lake. Target- Targeting and prioritizing water quality projects and activities; \$5,000/year	SWCD, ENVS, MPCA, DNR, USFW, WD, BWSR	2013-2018	\$25,000
1.a.5	Work with MPCA and private wildlife and sportsmen's organizations to improve quality of waters entering Okabena, Ocheda and Bella lakes Target- Targeting and prioritizing water quality projects and activities.; \$5,000/year	SWCD, ENVS, MPCA, DNR, USFW, WD	2013-2018	\$25,000
1.a.6	Provide technical assistance for the Des Moines River TMDL, Rock River TMDL, Missouri River TMDL and other TMDL preparation and implementation plans as needed. Outreach – Provide Technical Assistance	SWCD, ENVS, WD, MPCA	2013-2018	In-Kind
1.a.7	Promote, assist and seek funding to implement BMPs towards improving the water quality of the Heron Lake Watershed. Outreach – Direct mailings, news releases, personal contacts and provide technical assistance. Target-7 projects per year @ \$4000 each	HLWD, SWCD, ENVS, MPCA, NRCS, BWSR	2013-2018	35 projects \$140,000
1.a.8	Promote, assist and seek funding to implement BMPs towards improving the water quality of the Des Moines River. Outreach – Direct mailings, news releases, personal contacts provide technical assistance. Target-7 projects per year @ \$4000 each	HLWD, SWCD, ENVS, MPCA, NRCS, BWSR	2013-2018	35 projects \$140,000
			<b>Total</b>	<b>\$367,500</b>

<b>Objective 1.b Prevent soil erosion</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
1.b.1	Assist with coordination and funding of environmental education events for the students of Nobles County. These include (but not limited to) Environmental Fair, Fifth Grade Conservation Days, Earth Day and Arbor day Events. Target Audience - 2,500+ area students/year; \$2,000/year	ENVS, SWCD, NRCS, USF&WS, DNR, HLWD, PEBC	2013-2018	12,500 students \$10,000
1.b.2	Promote, assist, seek funding and install field windbreaks, living snow fences and farmstead windbreaks to reduce the amount of wind erosion. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 0.5 miles windbreaks and 10 acres shelterbelts/year; \$10,000/year	SWCD, NRCS, WD	2013-2018	\$10,000
1.b.3	Promote conservation practices and programs to landowners in Nobles County. These include State Cost-Share, RIM, RIM/WRP, CRP, EQIP, CSP and others. Outreach - Direct mailings, news releases, personal contacts. Target Audience – 2,500 landowners/year – 20 sign-ups/year; \$3,000/year	SWCD, ENVS, NRCS, WD, BWSR	2013-2018	12,500 contacts 100 sign-ups \$15,000.00
1.b.4	Promote, assist, seek funding and install practices that reduce erosion in ravines, on working lands, reduce gully erosion, decrease sediment as well as reduce flooding. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – 20 projects/year; \$6000/project	SWCD, ENVS, NRCS, HLWD, BWSR, WD	2013-2018	100 projects \$600,000
1.b.5	Promote, assist, seek funding and install Critical Area Plantings on meandered intermittent streams with less than 0.5% grade. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 1000 feet/year; \$4,000/year	SWCD, ENVS, NRCS, BWSR	2013-2018	5,000 feet \$20,000.00
1.b.6	Promote, assist, seek funding and install practices that reduce erosion on working lands, reduce gully erosion and decrease sediment loading to surface waters. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – 5 projects/year; \$6,000/project	SWCD, ENVS, NRCS, BWSR	2013-2018	25 projects \$150,000
1.b.7	Promote and seek funding for the installation of alternative tile intakes. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 10 intakes/year; \$3,500/year	SWCD, ENVS, NRCS, BWSR, WD	2013-2018	50 contacts \$17,500.00
1.b.8	Promote, assist and seek funding for the installation of streambank stabilization projects. Outreach-Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment-5 projects/year; \$20,000/project	SWCD, ENVS, WD, NRCS, BWSR	2013-2018	25 projects \$500,000
1.b.9	Inventory status of all stream and ditch buffers on DNR Protected Waters and Public Ditch Systems. Target – Assist in identification and mapping of existing buffer systems \$10,000/year	SWCD, ENVS, WD	2013-2018	\$50,000
1.b.10	Enforce filter strips according to state statutes Outreach - Direct mailings, news releases, personal contacts. Target – Compliance with existing state statutes relating to buffer requirements \$1,000/year	County Ditch Authority, DNR	2013-2018	\$5,000
1.b.11	Develop a Soil Loss Ordinance, for Nobles County, that addresses soil loss related to agricultural production, drainage and other possible causes of reductions in water quality. Hiring of technical personnel to investigate and resources to complete work by present staff in developing plan. New Staff-\$60,000/year Technology – Data collection Research – Compiling information and data Outreach - Direct mailings, news releases, personal contacts. Target Audience –Nobles County residents and County officials	ENVS, SWCD, County Auditor/Treasurer's Office and other County Departments, NRCS, WD, USF&WS, MPCA, DNR, other LGUs	2013-2018	\$300,000
			Total	\$1,677,500

<b>Goals and Objectives</b>				
<b>Priority Concern 1. Improve Surface Water Quality</b>				
<b>Objective 1.c Promote Ag Best Management Practices (AgBMPs).</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
1.c.1	Promote buffer strips along ditches, streams and lakes within Nobles County utilizing available conservation programs and incentives. Technology – LiDAR, Stream Power Index, others Outreach - Direct mailings, news releases, personal contacts, provide technical assistance. Target Audience – 300 landowners/year; \$1,000/year	SWCD, ENVS, NRCS, BWSR	2014-2018	\$5000
1.c.2	Assist, seek funding and install acres into a buffer strip program along ditches, streams and lakes. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – Provide Incentive 20 acres/year; \$40,000/year	SWCD, ENVS, NRCS, BWSR	2014-2018	100 Acres \$40,000
1.c.3	Assist and seek funding to enroll riparian land into a perpetual buffer program. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – 15 acres/year; \$6,000/acre	SWCD, NRCS, BWSR	2014-2018	75 Acres \$450,000
1.c.4	Assist producers in applying for cost share opportunities for conservation practices Outreach – personal contacts, provide technical assistance.. Target – 100 landowners/year; \$10,000/year	SWCD, NRCS, WD, ENVS, BWSR	2014-2018	\$50,000
1.c.5	Promote, assist and seek funding to establish cover crops. Outreach-Direct mailings, news releases, personal contacts Enrollment – 500 acres/year; \$30/ac	Extension, SWCD, NRCS, WD, BWSR	2014-2018	\$75,000
1.c.6	Provide incentives for sign up of 100 acres of buffer strips along ditches and streams within the Des Moines, Rock, Kanaranzi-Little Rock Watersheds. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – \$15,000/year	WD, SWCD, NRCS, BWSR	2014-2018	\$75,000
1.c.7	Promote and Provide incentives for 300 acres of filter strips in Okabena-Ocheda Watershed. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – \$45,000/year	O&O, SWCD, Worthington, BWSR	2014-2018	\$225,000
1.c.8	Promote Cost share programs and designate funds to watershed district cost-share programs Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – \$75,000/year	WD, SWCD, NRCS, ENVS	2014-2018	\$375,000
			<b>Total</b>	<b>1,295,000</b>

<b>Goals and Objectives</b>				
<b>Priority Concern 1. Improve Surface Water Quality</b>				
<b>1.d – Facilitate compliance of nutrient management, feedlots &amp; SSTs with state and federal requirements.</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
1.d.1	Conduct yearly meetings with township officials to discuss nutrient management. Outreach – Direct mailings and personal contacts Audience – 100 township officials/year	ENVS	2014-2018	In-Kind
1.d.2	Promote, assist and seek funding for livestock producers with feedlots containing 300-999 animal units to develop and maintain a compliant manure management plan. Outreach - Direct mailings, news releases, personal contacts Plans – 20 plans/year; \$12,000/year	SWCD, ENVS, NRCS	2014-2018	100 plans \$60,000
1.d.3	Inspect 10% of all registered feedlots per year to verify they are in compliance with MN Statute 7020. Outreach – Direct mailings and personal contacts Audience – Feedlot Owners and Operators 30 inspections/year; \$6,000/year	ENVS, MPCA	2014-2018	\$50,000
1.d.4	Provide technical assistance for feedlot improvements. Outreach –personal contacts, provide technical assistance. Enrollment – 10 projects/year; \$3,000/project	ENVS, SWCD, NRCS, MPCA, BWSR	2014-2018	\$30,000
1.d.5	Promote, assist and seek implementation funding through EQIP, CSP, State Cost-Share and Clean Water fund for livestock waste management BMPs. Outreach - Direct mailings, news releases, personal contacts Enrollment – 2 BMPs/year; \$200,000/year	SWCD, NRCS, ENVS, BWSR	2014-2018	10 BMPs \$1,000,000
1.d.6	Maintain a GIS layer of all registered feedlots and manured acres. Audience – Feedlot Owners and Operators Target – 125 feedlots/year \$5,000 year	SWCD, NRCS	2014-2018	\$25,000
1.d.7	Continue Delta reporting for registered feedlots in Nobles County. Outreach - Personal contacts Audience – Feedlot Owners and Operators Target - 80 records/year; \$4000/year	SWCD, ENVS, BWSR, MPCA	2014-2018	400 records \$20,000
1.d.8	Provide manure sample kits to livestock producers. Outreach - Direct mailings, news releases, personal contacts Kits –50 kits/year; \$5,000/year	SWCD, ENVS, NRCS	2014-2018	250 kits \$25,000
1.d.9	Assist the HLWD with a Level III Inventory and onsite inspection for the WFDNR and Heron Lake TMDL Implementation Plan. Outreach - Direct mailings, news releases, personal contacts Audience – Livestock producers Sites – 32 sites/year; \$6400/year	SWCD, ENVS, NRCS, HLWD, MPCA	2014-2015	160 sites \$32,000
1.d.10	Promote, assist and seek funding to help livestock producers in the WFDNR watershed that need waste management upgrades as found with the Level III Inventory. Outreach - Direct mailings, news releases, personal contacts Audience – Livestock producers	SWCD, ENVS, WD, MPCA, BWSR	2014-2018	7 BMPs \$700,000

	Sites – 25% of those inventories – 1 BMPs/year; \$100,000/year			
1.d.11	Provide an informational packet regarding septic system maintenance to every landowner who installs a new SSTS. Outreach-Personal Contacts Target-50 New and Replacement SSTS Homeowners; \$250/year	ENVS, UMN, MPCA	2014-2018	\$1,250
1.d.12	Inventory all individual sewage systems locations in Nobles County in a GIS-compatible database. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Target – 4 townships/year; \$10,000/year	ENVS, MPCA	2014-2018	\$50,000
1.d.13	Upgrade 15 non-compliant septic systems per year. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Enrollment – 3 upgraded systems/year; \$10,000/system	ENVS, WD, MPCA	2014-2018	\$150,000
1.d.14	Seek additional funding from USDA and other sources for SSTS improvements. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance.	ENVS, WD, MPCA	2014-2018	In-Kind
1.d.15	Work with cities to assure appropriate sewage treatment is available. Outreach – personal contacts, provide technical assistance.	ENVS, MPCA	2014-2018	In-Kind
1.d.16	Proactively inspect SSTS and enforce compliance by complaint and zoning trigger such as property transfer. Pending County Commissioner approval, an inspection schedule for county wide inspections will be arranged. Outreach – Direct mailings, news releases, personal contacts, provide technical assistance. Target – 4 townships/year; \$60,000/year	ENVS, County Attorney, MPCA	2014-2018	300,000
1.d.17	Keep public informed on the Nobles County SSTS Ordinance and Ordinance changes. Outreach - Direct mailings, news releases, personal contacts Audience – 2500 county residents/year; \$500.00/year	SWCD, ENVS, MPCA	2014-2018	12,500 contacts \$2500
			Total	\$2,445,750

<b>Goals and Objectives</b>				
<b>Priority Concern 2. Drainage Management</b>				
<b>Goal 2:</b> Restore more natural flow in the drainage system, with a priority for Shoreland.				
<b>Objective 2.a: Improve Shoreland and Impervious surface areas</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
2.a.1	Administer and promote shoreland zoning regulations. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowner and operators/year	ENVS, SWCD, DNR	2014-2018	In-Kind
2.a.2	Administer and promote Watershed District rules. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowner and operators/year	WD, ENVS, SWCD, HLWD, OOWD, KLR, WD	2014-2018	In-Kind
2.a.3	Promote, assist and seek funding for the installation of streambank and lakeshore stabilization projects and educate landowners regarding lakeshore and streambank BMP's Outreach-Direct mailings, news releases, personal contacts, provide technical assistance. Audience- 50 landowners/year Enrollment- 5 projects/year; \$50,000/year	SWCD, ENVS, WD, DNR, USFW, BWSR	2014-2018	\$250,000
2.a.4	Provide educational material on the proper application of fertilizer, minimizing impervious surfaces, fire pit placement, and rain gardens. Outreach-Direct mailings, news releases, personal contacts, provide technical assistance. Audience – 4500 county residents/year; \$3,000.00/year	ENVS, WD	2014-2018	\$15,000
2.a.5	Promote and implement the Worthington Storm Water Pollution Prevention Plan. Outreach-Direct mailings, news releases, personal contacts, provide technical assistance. Audience – 2500 county residents/year; \$6,000.00/year	OOWD, HLWD, Worthington	2014-2018	\$30,000
2.a.6	Consider adopting provisions for conservation design and low impact development in local plans and zoning ordinances. Outreach- Personal contacts, public meetings Audience – City and County officials and staff	WD, ENVS, Worthington	2014-2018	In-Kind
2.a.7	Promotion and enforcement of construction site erosion control rules within the Okabena Ocheda Watershed, Heron Lake Watershed and City of Worthington. Outreach-Direct mailings, news releases, personal contacts, provide on-site assistance. Audience – Watershed Residents; \$1,000/year	OOWD, HLWD, Worthington	2014-2018	\$5,000 + In-Kind
2.a.8	Consider County ordinance provisions encouraging soil erosion mitigation during construction. Outreach- Personal contacts, public meetings Audience - County officials and staff	ENVS, SWCD, WD	2014-2018	In-Kind
			<b>Total</b>	<b>\$300,000</b>

<b>Goals and Objectives</b>				
<b>Priority Concern 2. Drainage Management</b>				
<b>Objective 2.b: Improve Flood Control, drainage systems and storm water retention.</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
2.b.1	Administer the Floodplain Ordinance to protect public health, safety and welfare. Outreach-Direct mailings and personal contacts Audience-500/year; Floodplain landowners	ENVS, Adrian, Worthington	2014-2018	In-Kind
2.b.2	Inform the public on dangers of flooding and benefits of floodplain preservation. Outreach-Newsletters, news releases, personal contacts Audience- 500/year; Floodplain landowners; \$500/year	ENVS, Adrian, Worthington	2014-2018	\$2,500
2.b.3	Review plans and zoning ordinances against updated floodplain maps to limit development in areas prone to flooding. Outreach-personal contacts Audience- 500/year; Floodplain landowners	ENVS, Adrian, Worthington	2014-2018	In-Kind
2.b.4	Cooperate with City of Rushmore efforts to improve storm water drainage. Outreach- Personal contacts, public meetings Audience – City residents and officials, County officials and staff	ENVS, SWCD, KLR, Rushmore	2014-2018	In-Kind
2.b.5	Implement City of Worthington flood control measures on CD12. Outreach-Direct mailings, news releases, personal contacts, provide technical assistance. Audience- 50 landowners/year Enrollment- 5 projects/year; \$50,000/year	OOWD, Worthington, County Engineer	2014-2018	\$6,165,000
2.b.6	Facilitate City of Adrian efforts to improve storm water drainage. Outreach- Personal contacts, public meetings Audience – City residents and officials, County officials and staff	KLR, SWCD, ENVS, NRCS, Adrian	2014-2018	In-kind
2.b.7	Develop a GIS layer of all public drainage systems and include: system name, watershed size, outlets, date established, system type, repair history, improvement history, and other relevant data. Technology – GIS Target Audience – Nobles County Drainage Authority and County Residents	ENVS, County Engineer, BWSR	2014-2018	\$50,000
2.b.8	Promote, assist and seek funding for the installation of storm water retention projects such as rain gardens to reduce peak storm event flows. Outreach - Direct mailings, news releases, personal contacts. Target Audience – 2 landowners/year Enrollment-2 structures/year; \$60,000/year	SWCD, ENVS, WD, BWSR	2014-2018	\$300,000
2.b.9	Promote conservation drainage practices in Nobles County. Seek incentive funds and cost-share to assist producers with the installation of conservation drainage practices; these practices include alternative tile intakes, structures to control tile drainage and bioreactors. High priority areas would include impaired water bodies and reaches of impaired water bodies. Outreach - Direct mailings, news releases, personal contacts. Enrollment - 20 practices/year; \$160,000/year	ENVS, SWCD, WD, NRCS, MPCA, BWSR, Highway Department	2014-2018	\$800,000
2.b.10	Seek funding for the installation of storm water retention projects within the Jack Creek and Elk Creek (Des Moines). Enrollment - 2 practices/year; \$40,000/year	SWCD, ENVS, HLWD, BWSR	2014-2018	\$200,000 + In-Kind
2.b.11	Seek additional funding for water retention structures within the Okabena-Ocheda watershed.	SWCD, ENVS, OOWD, BWSR	2014-2018	\$200,000

	Enrollment - 2 practices/year; \$40,000/year			+ In-Kind
2.b.12	Seek additional funding for water retention structures within the Kanaranzi-Little Rock watershed. Enrollment - 2 practices/year; \$40,000/year	SWCD, ENVS, KLR, BWSR	2014-2018	\$200,000 + In-Kind
2.b.13	Seek additional funding for water retention structures within the Rock and Little Sioux Watersheds. Enrollment - 2 practices/year; \$40,000/year	SWCD, ENVS, BWSR	2014-2018	\$200,000 + In-Kind
2.b.14	Promote, assist and seek funding for the installation of Urban BMPs, to individuals and the communities of Worthington, Adrian, Ellsworth, Rushmore, Reading, Brewster, Lismore, Wilmont, Leota and Round Lake, as found in the MN Stormwater Manual. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 5 BMPs/year; \$5,000	Soil and Water County P&Z Office Cities BWSR	2014-2018	25 BMPs \$25,000
2.b.15	Promote, assist and seek funding for the installation of grass waterways. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 7000 ft/year; \$28,000/year	SWCD, WD, NRCS, BWSR	2014-2018	35,000 feet \$140,000
2.b.16	Promote, assist and seek funding for the installation of water and sediment control structures. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 5 Systems/year; \$50,000/year	SWCD, WD, NRCS, BWSR	2014-2018	25 structures \$250,000
2.b.17	Develop a Comprehensive Drainage Management Plan (DMP), for Nobles County, that addresses present and future drainage needs as well as methods to mitigate the unintended consequences of agricultural drainage on water quality. Hiring of technical personnel to investigate and resources to complete work by present staff in developing plan. Technology – Data collection Research – Compiling information and data Outreach - Direct mailings, news releases, personal contacts. Target Audience – Nobles County Drainage Authority and County residents New Staff-\$60,000/year	Soil and Water County P&Z Office County Auditor/Treasurer's Office and other County Departments, NRCS HLWD, USF&WS, MPCA, DNR, BWSR, other LGUs	2014-2018	\$300,000
2.b.18	<b>Redetermination of Benefits.</b> Continue the redetermination of benefits on all public ditches and tile systems. Technology – Data collection Research – Compiling information and data Outreach - Direct mailings, news releases, personal contacts. Target Audience – Nobles County Drainage Authority and County residents Cost for drainage viewers and associated costs estimated at \$3.00 per acre	Soil and Water County P&Z Office County Auditor/Treasurer's Office and other County Departments, NRCS HLWD, USF&WS, MPCA, DNR, BWSR, other LGUs	2015-2018	\$500,000
			Total	\$9,332,500



<b>Goals and Objectives</b>				
<b>Priority Concern 2. Drainage Management</b>				
<b>Objective 2.c Encourage Wetland Restoration and Protection of natural habitat</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
2.c.1	Administer the Wetland Conservation Act and assemble Technical Evaluation Panel (TEP) to minimize the amount of wetland acres lost county wide. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowner and operators/year	SWCD, ENVS, BWSR	2014-2018	10,000 contacts \$45,000
2.c.2	Work with DNR and USF&WS to expand or enhance wetland in existing wildlife areas. Educate landowners on the benefits of converting drained wetlands back to a permanent native vegetated state, using RIM/WRP and CRP or other long term conservation program. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowners and operators/year	SWCD, ENVS, NRCS, BWSR, USFWS	2014-2018	10,000 contacts In-kind
2.c.3	Promote, assist and seek funding to enroll marginal land into available wetland restoration programs including RIM/WRP and CRP or other long term conservation program. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowners and operators/year Enrollment – 1 contract /year; 50 acres/year; \$300,000/year	SWCD, ENVS, NRCS, BWSR, USFWS	2014-2018	5 contracts \$1,500,000
2.c.4	Provide information to landowners on benefits of appropriate natural cover on habitat for threatened and endangered species. Outreach – Direct mailings, news releases, personal contacts. Audience – 2000 landowners and operators/year; \$2000/year	SWCD, ENVS, WD	2014-2018	\$10,000
2.c.5	Consider benefits of wildlife habitat in project prioritization. Outreach- Personal contacts, public meetings Audience – SWCD, County and Watershed officials and staff	SWCD, ENVS, WD	2014-2018	In-Kind
			Total	\$1,555,000

<b>Goals and Objectives</b>				
<b>Priority Concern C.3 Public Water Supply.</b>				
<b>Goal 3:</b> Assure long-term quality and quantity of public water supplies, with a priority for DWSMAs and areas not currently served by public/community systems				
<b>Objective 3.a Support Well Head Protection planning and implementation</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Cost/Units</b>
3.a.1	Assist cities with completing and implementing their Wellhead Protection Plan. Outreach – Direct mailings and personal contacts. Audience – Contact City Department heads each year	ENVS, SWCD, WD, Cities, BWSR	2014-2018	In-Kind
3.a.2	Protect DWSMA and surficial aquifer areas from agricultural and industrial contamination through zoning ordinances. Manure management plans to be completed and followed in DWSMA and surficial aquifers. Outreach – Direct mailings and personal contacts. Audience – 10 landowners/year	ENVS, Planning and Zoning, SWCD	2014-2018	In-Kind
3.a.3	Educate landowners and residents on DWSMAs and measures to protect the groundwater. Emphasis on City of Worthington, Adrian, and Ellsworth DWSMA Outreach – Direct mailings, news releases, personal contacts. Audience – 100 landowners-residents/year	ENVS, SWCD, WD, Cities	2014-2018	In-Kind
3.a.4	Protect long-term water supply by enforcing zoning ordinances through Conditional Use Hearings for municipal, industrial, irrigation and public water supply wells. Outreach – Permitting and public hearings, Direct mailings and personal contacts Audience – Planning Commission, Cities, Water Suppliers, landowners; \$50/year	ENVS, Planning and Zoning, SWCD	2014-2018	\$250
3.a.5	Continue to cooperate with Rural Water Systems on the expansion of the rural water systems and advise the public about County programs that will help manage potential contamination sources. Outreach – Direct mailings, news releases, personal contacts. Audience –25 landowners-residents/year	ENVS, County, Cities	2014-2018	In-Kind
3.a.6	Promote, assist and seek funding to enroll eligible acres (highly vulnerable wellhead areas) into the RIM Wellhead Protection Program and Continuous Conservation Reserve Program. Outreach – Direct mailings, news releases, personal contacts. Enroll – 20 acres/year; \$120,000/year	SWCD, ENVS, WD, BWSR, Cities	2014-2018	\$600,000
3.a.7	Support water conservation by using existing educational materials. Outreach – Direct mailings, news releases, personal contacts, farm and home show, and county fair Audience – 2,000 county residents/year; \$500/year	SWCD, ENVS, WD, Cities	2014-2018	\$2,500
3.a.8	Monitor water level elevations in MN DNR Observation Wells as part of a state wide effort to measure depth to aquifer. Target – 4 wells- 10 readings each/year	SWCD, DNR	2014-2018	\$360
			<b>Total</b>	<b>\$603,110</b>

<b>Goals and Objectives</b>				
<b>Priority Concern 3. Protect Groundwater</b>				
<b>Goal 3:</b> Assure long-term quality and quantity of public water supplies, with a priority for DWSMAs and areas not currently served by public/community systems				
<b>Objective 3.b Prevent groundwater contamination from unused wells, gravel pits and fertilizer application</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
3.b.1	Work with well contractors to promote proper well protection and sealing. Outreach – Direct mailings and personal contacts. Audience – Well Contractors (Nobles and surrounding counties) \$50/year	County, ENVS, SWCD, WD	2014-2018	\$250
3.b.2	Inventory unused wells in GIS layer Technology – GIS, \$10,000/year Target Audience – County Officials and Staff as well as County Residents	County, ENVS, SWCD, WD	2014-2018	\$50,000
3.b.3	Protect ground water supply by enforcing zoning ordinances through Conditional Use Hearings for permitted gravel pits. Outreach – Permitting and public hearings, Direct mailings and personal contacts Audience – Planning Commission, landowners; \$50/year	County, ENVS	2014-2018	\$250
3.b.4	Promote, assist and seek funding to prevent contamination of groundwater by providing cost-share for the sealing of unused wells. Outreach – Direct mailings, news releases, personal contacts. Enrollment – 20 wells/year; \$4,000/year	ENVS, SWCD, WD, BWSR, MDH	2014-2018	\$20,000
3.b.5	Provide information to County residents concerning proper well protection and sealing programs. Outreach – Direct mailings, news releases, personal contacts. Audience – Well Contractors (Nobles and surrounding counties) \$500/year	ENVS, SWCD, WD	2014-2018	\$2,500
3.b.6	Conduct annual free clinics for testing nitrate levels in well water. Outreach – County Fair, Direct mailings, news releases, personal contacts. Audience – 2,000 county residents/year; \$800/year	ENVS, MHA, MDH	2014-2018	10,000 contacts \$4,000.00
3.b.7	Promote proper application of fertilizers and pesticides and partner with local crop consultants. Outreach –Producer Workshop, Direct mailings, news releases, personal contacts. Audience – 25 landowners/year	ENVS, SWCD, WD	2014-2018	125 contacts \$500
3.b.8	Promote, assist and seek funding to assist landowners and operators with nutrient management plans. Outreach – Crop Consultants, Direct mailings, news releases, personal contacts. Plans – 12 plans/year; \$9,600/year	ENVS, SWCD, MPCA	2014-2018	60 plans \$48,000.00
3.b.9	Promote AgBMPs along ditches, rivers, lakes and streams. Outreach – Direct mailings, news releases, personal contacts. Audience – 100 landowners/year; \$400/year	ENVS, SWCD, WD, DNR, MPCA, BWSR	2014-2018	500 contacts \$2,000.00
			<b>Total</b>	<b>\$127,500</b>

<b>Goals and Objectives</b>				
<b>Priority Concern 3. Protect Groundwater</b>				
<b>Objective 3.c Facilitate land retirement in critical areas.</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
3.c.1	Work with water suppliers to identify opportunities to permanently retire lands in vulnerable areas. Outreach – Direct mailings and personal contacts. Audience – Contact water suppliers each year	ENVS, SWCD, WD, Cities	2014-2018	In-Kind
3.c.2	Consider benefits of wildlife habitat and recreation in project prioritization. Audience – County, SWCD and WD officials and staff	ENVS, SWCD, WD, DNR, USFW	2014-2018	In-Kind
3.c.3	Establish public and private partnerships to take advantage of opportunities to retire land as they become available. Outreach – Direct mailings and personal contacts. Audience – County Residents/public and private environmental organizations Purchase/Enroll – 20 acres/year; \$200,000/year	ENVS, SWCD, WD, Wildlife Organizations	2014-2018	100 acres \$1,000,000
3.c.4	Seek additional funding from State and Federal resources and other sources for land retirement. Outreach – Direct mailings and personal contacts. Audience – County Residents/public and private environmental organizations Enroll – 20 acres/year; \$200,000/year	SWCD, WD, DNR, USFW, MDH, BWSR, Wildlife Organizations	2014-2018	100 acres \$1,000,000
			<b>Total</b>	<b>2,000,000</b>

<b>Goals and Objectives</b>				
<b>Priority Concern 3. Protect Groundwater</b>				
<b>Objective 3.d Support rural water systems and long-term water supply.</b>				
	<b>Action</b>	<b>Responsibility</b>	<b>Time Frame</b>	<b>Total Units/Cost</b>
3.d.1	Support efforts of public water suppliers to secure additional sources of water. Outreach – Direct mailings and personal contacts. Audience – County Residents/public and private environmental organizations	Counties, Cities	2014-2018	In-Kind
3.d.2	Support funding for Lewis & Clark Regional Water System. Outreach – Direct mailings, Press Releases and personal contacts. Audience – State and Federal Officials, water suppliers	County, Cities	2014-2018	In-Kind
3.d.3	Promote water conservation. Outreach – County Fair, Direct mailings, news releases, personal contacts. Audience – 2,000 county residents/year; \$800/year	ENVS, Cities, Water Suppliers	2014-2018	\$4,000
3.d.4	Monitor groundwater and review all available monitoring data and information.	ENVS, MPCA, Cities, MDH	2014-2018	In-Kind
			<b>Total</b>	<b>\$4,000</b>

<b>Funding Sources for Goals and Objectives</b>			
<b>Priority Concerns 1-3</b>			
<b>Estimated Funding Amounts and Possible Funding Sources</b>			
<b>Water Plan Activities</b>	<b>Possible Funding Sources/Responsibility</b>	<b>Estimated Funding</b>	<b>Total Estimated Funding</b>
JD 12 Flood Control Project	City of Worthington	\$6,165,000	\$6,165,000
Buffers, Easements and Land Retirement	State Easement Programs (RIM, DNR), Federal Easement Programs (WRP, USFW), Conservation Reserve Programs, Watershed District Incentives, Wildlife Organizations (Pheasants Forever, Ducks Unlimited)	\$4,690,000	\$4,690,000
Project and Practice Implementation Funds	State of Minnesota Clean Water Funds Federal (NRCS) EQIP Funds SWCD and Watershed District Funds (including State Cost-share) Other Funding Sources (USFW, EPA, MPCA)	\$2,500,000 \$3,500,000 \$600,000 \$137,500	\$6,737,500
Technical Assistance and Administration	SWCD, ENVS, Watershed District, NRCS, TSA	\$889,985	\$889,985
Outreach and Education	SWCD, ENVS, Watershed District, NRCS	\$125,375	\$125,375
Development of Soil Loss Ordinance	State of Minnesota Clean Water Funds Other Funding Sources (EPA, MPCA) Local Sources (SWCD, ENVS, Watershed Districts)	\$300,000	\$300,000
Development of Comprehensive Drainage Management Plan	State of Minnesota Clean Water Funds Other Funding Sources (EPA, MPCA) Local Sources (SWCD, ENVS, Watershed Districts)	\$300,000	\$300,000
Redetermination of Benefits for Public Drainage Systems	Local Landowners	\$500,000	\$500,000
		<b>Total</b>	<b>\$19,707,860</b>

#### **D. Implementation Schedule of Ongoing Activities**

This section identifies other local activities and programs of the County, SWCD, watershed districts and cooperators that make up the local water management program, which may not be reflected in the priority concerns above. There are also many other public and private efforts at the regional, state and federal levels which serve to promote the goals of sound water management. These particular ongoing activities typically encompass all watersheds in the county, reaching a broad cross-section of local residents and businesses.

- Educate the public and promote water quality and conservation.
- Participate in state Impaired Waters Program
- Administer Wetland Conservation Act
- Administer National Flood Insurance Program
- Administer Shoreland management program.
- Administer Watershed District rules.
- Provide technical assistance for conservation programs.
- Promote the SWCD tree and no-till drill program.
- Administer and provide assistance for the State Revolving Fund for Ag BMP's.
- Promote and help facilitate the RIM, CRP and similar conservation programs.
- Promote and help facilitate stormwater retention and lakeshore restoration.
- Assist with testing and providing services for commercial pesticide applicators.
- Administer base-line water quality testing program.
- Continue to be a delegated County in the MPCA Feedlot Program and provide data to state databases.
- Inspect and assist producers in maintaining compliance with County and State rules.
- Administer regulations, permit, and inspect individual SSTs.
- Assist the County Board of Commissioners with drainage management.
- Continue to promote and provide Household Hazardous Waste Program for proper disposal.
- Provide a collection program for waste pesticides and empty containers.
- Promote recycling and solid waste management.
- Provide electronics and appliance disposal.
- Take applications for watershed district regulated activities, evaluate applications, issue or deny permits.
- Evaluate watershed district rules effectiveness and update rules when appropriate.
- Solicit advice from the public and watershed district advisory committees on the management of water resources within districts.
- Manage watershed district owned land for flood control, lake level maintenance, groundwater and surface water protection, wildlife habitat and recreational purposes.
- Achieve wildlife habitat and recreation benefits through land retirement.
- Fund and implement the Heron Lake and Okabena-Ocheda-Bella CWP study plans.

### D.1 State Cost-Share Needs Projection

The SWCD currently is allocated approximately \$20,000 per year for the state cost-share program. Of this amount, 20% will be used for administration and technical assistance and the remaining 80% for high priority BMP's. Assuming continued support of the locally funded share programs, and barring unforeseen natural disasters, funding at this level should be sufficient for the five years remaining in this plan.

State cost-share money will be used to install BMP's as follows:

Water Quality Protection Practices	\$ 20,000.00	(20%)
Water Erosion and Sediment Control Practices	\$ 50,000.00	(50%)
Flood Control Practices	\$ 10,000.00	(10%)
Administration and Technical Assistance	<u>\$ 20,000.00</u>	(20%)
	\$ 100,000.00	

The definition of high-priority water quality problems is to be found in the introduction to the assessment of high priority concerns (B.2). The definition of high-priority erosion problems is to be found in the assessment of Priority Concern 1, with the discussion of soil erosion. Approved practices are found throughout the assessment of high priority concerns and implementation actions to address priority concerns and ongoing actions, in this plan.