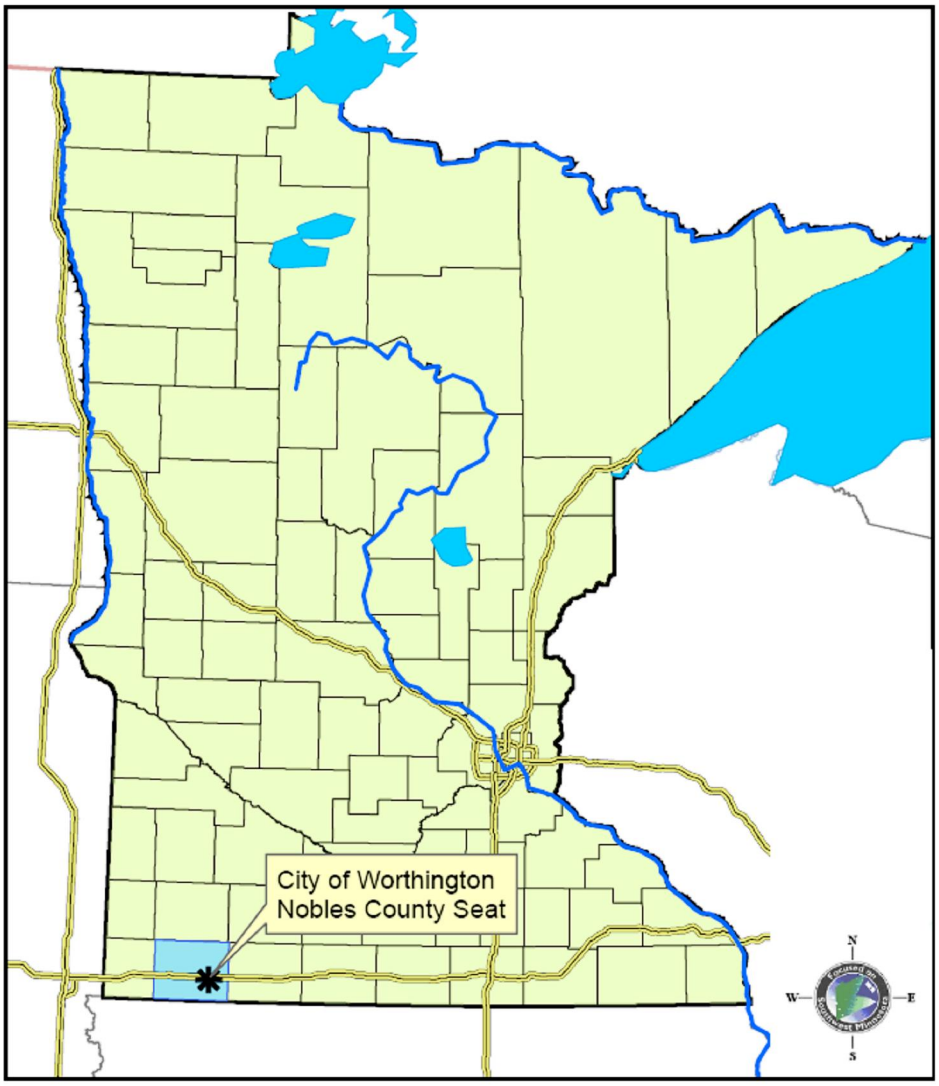
NOBLES LOCAL WATER MANAGEMENT PLAN

A 10-year plan with a 5-year implementation schedule 2009-2018

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

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



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I. Table of Contents

II. Color Maps

A. Land Use
B. Watersheds
C. Watershed District Boundaries
D. General Soils
E. Impaired Waters 2008
F. Erosion Prone Areas
G. Sedimentation Prone Areas
H. Shoreland
I. Floodplains
J. Wellhead Protection
K. Water Appropriations

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A. Executive Summary

Nobles County is located in southwestern Minnesota, adjacent to Rock, Murray, Cottonwood and Jackson counties. Iowaôs Lyon and Osceola counties are located south of the state line. The City of Worthington is the county seat. Nobles Countyôs population in the 2000 U.S. Census was 20,832, with a density of 29 persons per square mile. The Minnesota State Demographic Center estimates a current population (2007) of 20,399. The Demographic Center projects total population of 20,590 by 2030.

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 dinking 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 & Water Conservation District (SWCD) comprehensive plan and watershed district plans for the Kanaranzi-Little Rock Watershed District (KLRWD) and Okabena-Ocheda Watershed District (O-OWD). 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

The most recent edition of Nobles Countyôs water plan was approved by the Board of Water and Soil Resources (BWSR) on 23 April 2003, and adopted by the County Board on 20 May 2003. This plan expired on 23 April 2008, with an extension granted by BWSR. The Nobles County Board of Commissioners adopted a resolution on 8 May 2007 to revise the current plan, according to Minnesota Statutes now in effect. The intention is that this plan will continue to cover the four participating water resources 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.

Soil and Water Conservation Districts often adopt the local water management plan as their comprehensive plan required for certain state funding, as long as the plan has details of ñhigh priority erosion problemsò and ñhigh priority water quality problemsò. Watershed Districts have additional requirements to meet for their Watershed Management Plan, which like the SWCD are subject to 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 Countyôs previous water management plans included:

- Appointed Co-Water Planners in the SWCD and County Environmental Office.
- Funded the $231,000 upgrading and digitizing of the NRCS Soil Survey.
- Provided technical assistance, guidance and in some cases funds, for wellhead protection programs for the cities of Ellsworth, Adrian, Lismore, Worthington and the Community of Leota.
- Partnered with the Heron Lake Watershed for continuation of a MPCA Clean Water Partnership.
- Provided technical assistance, supplied data and assisted with education efforts with the West Fork Des Moines River Project.
- 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.
- Co-sponsored conservation tillage demonstration plots.
- Funded a bill board education program with the Okabena Lake Association and provided education by the Prairie Ecology Bus Center for local schools.
- Participated in the multi-state Upper Des Moines River Watershed Accelerated Implementation Plan.

Nobles Local 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		

Source: Nobles SWCD

A.1.c Plan Update, Adoption and Amendment

Nobles SWCD and Nobles County Environmental Services (Env) are responsible for local water management in Nobles County, including facilitation of public input and convening the Local Water Management Task Force. Nobles County retained John C. Shepard, AICP, Development Planner for the Southwest Regional Development Commission to assist with the Plan update. Task Force membership included:

- Dean Christopherson, Nobles Co. Farm Bureau
- Connie Frahm, K-LR Watershed board
- Norm Gallagher, Nobles Co. Commissioner
- Harberts Gregg, City of Rushmore
- Coleen Gruis, City of Rushmore
- Tim Henning, Nobles Co. Farmers Union
- Al Langseth, Nobles Co. Env. Serv., staff
- Paul Langseth, Nobles SWCD, supervisor
- Ed Lenz, Nobles SWCD, staff
- Dan Livdahl, O-O Watershed, staff
- Jerry Lonneman, Lincoln-Pipestone Rural Water
- Jim McGowan, O-O Watershed board
- Rick Nelsen, Nobles SWCD, supervisor
- Kevin Norskog, K-LR W/S and City of Adrian
- Gary Reker, Reker Construction
- Eric Roos, Worthington Public Utilities
- Wayne Smith, Nobles Co. Env. Serv., staff
- Jane Steffl, Nobles SWCD, staff
- Diane Thier, Nobles Co. Commissioner
- Genny Turner, Lakes Association
- Shirley Vis, City of Rushmore

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

5/8/2007 Nobles Board of County Commissioners adopt resolution to update.

5/17/07 Nobles Soil & Water Conservation District moved to hire Southwest Regional Development Commission to manage update process.

5/21/07 Update planning meeting w/SWCD, County Environ Office, KLR and O-O watershed districts, NRCS, SRDC, BWSR (9 att.)

5/30/07 Mail/email Notice to Revise and Update to BWSR routing list, adjacent counties, cities & townships.

5/30/07 Notice to Revise and Update published in *Nobles County Review* & *Fulda Free Press.*

5/31/07 Notice to Revise and Update published in *Worthington Daily Globe.*

6/16/07 Requested date for submission of Priority Concerns.

6/21/07 Notice of Public Meeting published in *Worthington Daily Globe.*

7/31/07 Local Water Plan Public Update Information Meeting held at Nobles County Public Works Building, Worthington (22 att.)

8/17/07 KDOM-AM/FM interview with Southwest Regional Development Commission Development Planner, discussing water plan updates in the region.

8/28/07 Continuation of Public Meeting to confirm Priority Concerns, Nobles County Public Works Building, Worthington (22 att)

12/6/07 BWSR Southern Regional Committee meeting at DNR Building in New Ulm to review PCSD.

1/29/2008 Local Water Management Plan Task Force meeting to consider Priority Concerns regarding Surface Water Quality held at Ag Service Center in Worthington. (19att).

2/28/08 Local Water Management Plan Task Force meeting to consider Priority Concerns regarding Drainage Management held at the Nobles County Public Works. (19att).

3/25/08 Local Water Management Plan Task Force meeting to consider Priority Concerns regarding Public Water Supply held at the Nobles County Public Works. (22att).

8/26/08 Local Water Management Plan Task Force meeting to consider Goals, Objectives and Implementation measures. (17att).

10/24/08 Notice of Public Hearing Published in *Worthington Daily Globe.*

11/4/08 Public Hearing before Nobles County Board of Commissioners.

Upon approval of this plan by the Minnesota Board of Water and Soil Resources (BWSR), the County Board has up to 120 days to pass an Adoption and Implementation Resolution. The local Watershed District boards have 45 days from BWSRôs recommendation to hold a public hearing on the revised plan. 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 yearsô and no later than 18 monthsô prior to the end of the 5 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 countyôs 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. EPA. Impaired waters affect both the local environment and communitiesô 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 systemô the modern hydrographô 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 un-sewered 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 $1,250,000 for TMDL plans and implementation, $2,730,000 to complete projects, $222,000 for technical assistance and administration, and $49,500 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 $9,500,000 for the flood control project on County Ditch 12 in Worthington, $675,000 for other projects, $105,000 for technical assistance and administration, and $17,500 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 $500,000 towards land retirement partnerships, $50,000 for assistance to landowners sealing unused wells, $10,000 for technical assistance and administration, and $60,000 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 Countyôs comprehensive land use plan and zoning ordinance. This helps to maintain consistency between this plan and the Countyôs other plans and ordinances. The Countyôs *comprehensive plan* identifies goals and policies for the County, which have been reviewed for consistency with this water management plan. Task Force members are also familiar with Heron Lake Watershed District management documents, and operations procedures for Kanaranzi-Little Rock Watershed District, and Okabena-Ocheda Watershed District. 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 6/2007). 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 documentôs 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 after reviewing the concerns submitted by state and local agencies and other stakeholders. (See *Priority Concerns Scoping Document* appended.)

Local water management concerns and comments were received from:

- *Minnesota Board of Water and Soil Resources*
- *Minnesota Department of Agriculture*
- *Minnesota Department of Health*
- *Minnesota Department of Natural Resources*
- *Minnesota Pollution Control Agency*
- *Nobles County Commissioner*
- *Nobles Soil & Water Conservation District*
- *KLR Watershed District*
- *O-O Watershed District*
- *City of Adrian*
- *Dewald Twp*
- *Ransom Twp*
- *City of Rushmore*
- *Worthington Utilities*
- *City of Worthington*
- *Jackson County*
- *Rock County*

Concerns were presented at the public input meeting and discussed. Staff then reviewed, refined, and developed focused Priority Concerns for Task Force consideration. After further discussion, the Task Force members selected the Priority Concerns by consensus. During the planning process, the Task Force revised the initial priority concerns to better reflect the needs of the County. This resulted in three priority concerns of Surface Water Quality, Drainage Management, and Public Water Supply.

B.2 Assessment of Priority Concerns

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 20,399 residents and 7,949 households in the county. This is 2% fewer people and essentially the same number of households, as counted in the 2000 US Census. Only the City of Worthington has seen substantial growth in population or housing this decade. The Demographic Center projects the Countyôs population will grow to 20,590 in 2030.

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 UP at Worthington through Luverne to the 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 Local Water Management Plan
Population

Civil Division	2000 Census	2007 Estimate
Adrian city	1,234	1,226
Bigelow city	231	226
Bigelow township	384	386
Bloom township	213	204
Brewster city	502	476
Dewald township	291	261
Dundee city	102	92
Elk township	284	265
Ellsworth city	540	518
Graham Lakes township	251	245
Grand Prairie township	227	210
Hersey township	257	246
Indian Lake township	259	248
Kinbrae city	21	17
Larkin township	218	204
Leota township	463	404
Lismore city	238	214
Lismore township	232	216
Little Rock township	260	248
Lorain township	278	249
Olney township	232	215
Ransom township	271	239
Round Lake city	424	414
Rushmore city	376	363
Seward township	259	242
Summit Lake township	368	338
Westside township	258	239
Wilmont city	332	313
Wilmont township	228	215
Worthington city	11,283	11,379
Worthington township	316	287
County	20,832	20,399

Source: MN State Demographic Center

Nobles County is considered a typical prairie environment, with large temperature variations and average annual precipitation of 26-28 inches (Minnesotaôs state-wide median since 1890 is about 26 inches). Typically 70% of precipitation falls May to September. Annual precipitation can vary widelyð while 22 inches was measured in 2003, over 37 inches of precipitation was observed during 2005 (State Climatology Office ï 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.

Nobles Local Water Management Plan **General Soil Units in Nobles County**
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
Source: NRCS STATSGO2

High priority water quality problems **are seen in areas where sediment, nutrients, chemicals or other pollutants discharge to Minnesota Dept. of Natural Resources (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 ñimpairedò or polluted if it fails to meet these standards. Section 303(d) of the Act requires the State to conduct a Total Maximum Daily Load (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 stateôs 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
2008 Impaired Waters Requiring a TMDL

Name	Stretch	Affected Use	Pollutant	Status
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
Okabena Creek	Elk Cr to South Heron Lake	Aquatic recreation	Fecal Coliform	EPA-Approved
Okabena Creek	Elk Cr to South Heron Lake	Aquatic life	Turbidity	EPA-Approved
East Graham	Lake or Reservoir	Aquatic recreation	Phosphorus (Total)	Not Underway
West Graham	Lake or Reservoir	Aquatic recreation	Phosphorus (Total)	Not Underway
Elk Creek (Rock River)	Headwaters to Rock River	Aquatic life	Turbidity	EPA-Approved
Judicial Ditch 6 (Lake Okabena Outflow)	Okabena Lake to Ocheda Lake	Aquatic life	Turbidity	Not Underway
Little Rock River	Little Rock River to MN/IA border	Aquatic life	Turbidity	Not Underway

Source: MPCA

Nobles SWCD has been monitoring surface waters of the Kanaranzi and Little Rock rivers in the KLRWD. 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 will continue on Bella through 2009. In 2007-2008, OOWD also monitored turbidity and transparency on JD6, which has been placed on the TMDL list (see below). It is expected that Okabena, Ocheda and Bella lakes will be candidates for listing in the near future.

Minnesotaôs 2008 TMDL list contains 1,475 impairments on 336 rivers and 510 lakes, down from 2,250 impairments listed on 1,297 waters in 2006. According to MPCA Impaired Waters website, ñThe main reason for the decrease in total numbers in 2008 is the approved Mercury TMDL.ò However, the state Inventory of impaired waters still has 2,575 impairments listed. The list will be updated again in two years.

There are 10 impaired waters listings in Nobles County at this time. In 2008, three additional listings were approved by EPA: the Graham Lakes (East and West) and a small stretch of the Little Rock River.

The West Fork Des Moines River 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 ñElk Creekò in Nobles County). The study found that ñFor 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.ò Representatives of Nobles County Environmental Services and Nobles SWCD participated in the study. Rock County Land Management has been leading planning for implementation.

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 are 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 area a proven method to reward agricultural producers for doing their part to safeguard water quality and prevent soil erosion. Conservation Reserve Program (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 tillageð leaving adequate crop residueð provides a layer of protection from water and wind erosion and increases organic mater 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 Soil and Water Conservation District (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 ñcorn-on-cornò, 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 2002 U.S. Census of Agriculture reported 1,043 farms on 404,307 acres in Nobles County. Of these, 353,112 acres were harvested cropland. The Ag Census counted 262 farms with cattle, 174 with hogs and pigs, and 45 with sheep. Questionnaires for the next Census of Agriculture were distributed in December 2007 and results have not yet been released.

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, processing and disposal of animal manure. As of September 2008, there were 569 feedlots registered in Nobles County, with 14% having less than 50 animal units and 6% more than

1000 animal units. Thirty-four (34) registered feedlots are located in 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.

At the present time in Nobles County, existing septic systems are required to be brought into compliance at the time of the addition of a bedroom or system failure. The State adopted new SSTS rules in 2008. Counties have two years to bring their standards into compliance with the new rules.

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 2008

Permittee	Use	Permit Volume (MGY*)	Resource	Use by Year (MGY) 2007	2006	2006	2005	2004	2003	2002	2001
Worthington Country Club	Golf Course	34.0	Lake Okabena	30.5	32.3	23.1	28.7	32.5	28.0	33.6	28.9
City of Worthington	Golf Course	30.0	Okabena Creek	19.1	23.3	18.5	17.0	10.1	15.4	9.0	6.1
City of Worthington	Sewage Treatment	5.0	Lake Okabena	2.1	3.0	2.3	2.5	3.7	4.2	.9	3.9
Worthington Rendering	Processing	12.0	Okabena Creek	1.9	2.3	1.8	1.0	1.1	1.1	1.3	1.4

* Million Gallons Per Year
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 countyôs 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 ñhard-scapeò ð 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 shorelandð 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 wetlandsð 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/ 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 siteôs 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 Okabena-Ocheda Watershed District and Heron Lake Watershed District on stormwater issues. The Worthington Storm Water Pollution Prevention Project (http://www.ci.worthington.mn.us/stormwater/) provides information to local residents on pollution, erosion control and yard care.

A number of jurisdictions address the specific impacts of construction on water and soil. State Stormwater permits are required for any project disturbing over one acre of land, although enforcement through state agencies can be problematic. The City of Worthington also requires erosion and sediment control practices, such as grassed buffers or silt fences, during construction and landscaping projects. There may be other opportunities in local land use codes to provide more clear local guidance, in line with the intent of state and federal rules.

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 has a history of flooding issues. In addition to seasonal spring flooding, the U.S. Dept. of Commerce National Climatic Data Center (NCDC) has data on 14 flash flood events since 1994, typically due to severe summer storm events. 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 K-LRWD*

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. As one example, the Minnesota Corn Growers Association has joined with the national Agricultural Drainage Management Coalition to promote the wider use of comprehensive approaches to drainage. Locally, the Heron Lake Watershed

District (HLWD) has been promoting Alternative Tile Intakes, also known as rock inlets. A long trench is excavated and backfilled with a 6ò-12ò bed of small rock. A perforated tile is placed and covered with pea gravel to about 1ô above grade for settling. According to the Watershed District, these systems have been demonstrated in Minnesota to deliver ñadequate drainage capacity and a 50% reduction of sediment and phosphorus loading into subsurface tile lines.ò

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 ditchesð 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 countyôs 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. Pheasants Forever, DNR, Worthington Public Utilities and the OOWD recently cooperated to purchase 60 acres of wetlands in the City of Worthingtonôs wellhead protection area. Wetland bankingð restoring or creating a wetland as a ñdepositò available for saleð 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 Blandingôs 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 an 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, ñA 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.ò A Drinking Water Supply Management Area (DWSMA) provides a geographic focus for securing the water supply.

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.

Nobles Local Water Management Plan
Public Water Suppliers
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

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	$ 3,545
2005	26	$ 4,355
2006	18	$ 3,865
2007	17	$ 3,982

Source: Nobles County Public Works

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 countyôs 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, OOWD offers incentive payments in addition to a landowner's CREP and 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, the Okabena-Ocheda Watershed District (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, BWSR, MPCA, the Olson Trust, Okabena-Ocheda-Bella Clean Water Partnership Joint Powers Board and the Nobles Soil and Water Conservation District.

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.

Worthington Public Utilities (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 western Nobles County. Red Rock Rural Water (RRRW) recently announced an expansion to serve townships in southeastern Nobles County and is exploring the opportunity to provide water to the City of Round Lake.

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 Ground Water Appropriation Permits

June 2008

Permittee	Use	Permit Volume (MGY)	(GPM)	Use by Year 2007	2006	2005	2004	2003	2002	2001	2000
ADRIAN AREA COUNTRY CLUB	Golf Course	20.0	200	5.9	5.3	2.9	.0	6.9	7.9	.0	.0
ADRIAN COUNTRY CLUB	Golf Course	15.0	500	13.9	14.9	11.8	10.9	12.3	12.3	8.7	7.5
ADRIAN, CITY OF	Municipal Waterworks	60.5	360	20.5	26.4	23.6	22.5	24.6	21.0	16.1	14.6
ADRIAN, CITY OF	Municipal Waterworks	60.5	360	15.9	22.0	19.0	20.4	19.1	26.1	31.1	31.9
ADRIAN, CITY OF	Municipal Waterworks	60.5	360	14.6	.0	.0	.0	.0	.0	.0	.0
BREWSTER, CITY OF	Municipal Waterworks	22.0	210	7.2	7.7	7.9	7.8	8.7	8.0	7.9	8.2
BREWSTER, CITY OF	Municipal Waterworks	22.0	210	6.2	6.6	6.8	6.8	7.3	6.9	6.8	7.0
DEBEER, WILLIAM A	Major Crop Irrigation	33.3	500	.0	.0	.0	.0	.0	.0	.0	.0
ELLSWORTH, CITY OF	Municipal Waterworks	20.0	150	7.9	9.5	8.1	8.4	12.0	14.2	8.9	12.0
ELLSWORTH, CITY OF	Municipal Waterworks	20.0	150	7.2	7.7	7.7	.0	5.9	3.1	8.1	4.5
ELSING, GERMAINE	Major Crop Irrigation	10.0	600	.0	.0	.0	.0	.0	.0	.0	.0
LUETTEL, RUTH & MARK	Major Crop Irrigation	16.8	500	.0	.0	.0	.0	.0	.0	.0	.0
LYNN, CLYDE	Major Crop Irrigation	29.0	350	.0	.0	.0	.0	.0	.0	.0	.0
PRAIRIE VIEW GOLF LINKS	Golf Course	10.0	80	6.1	8.8	4.1	3.7	13.0	7.6	13.1	11.6
ROUND LAKE, CITY OF	Municipal Waterworks	22.0	200	14.8	13.1	13.4	15.9	17.3	15.6	18.4	18.4
RUPP, D A	Major Crop Irrigation	44.0	750	.0	.0	.0	.0	.0	.0	.0	.0
RUSHMORE, CITY OF	Municipal Waterworks	19.0	130	12.3	12.5	11.8	11.2	13.1	14.2	13.2	13.6
WILMONT, CITY OF	Municipal Waterworks	9.5	75	8.4	7.3	7.4	8.0	7.8	8.7	8.6	7.5
WILMONT, CITY OF	Municipal Waterworks	9.5	75	.6	.4	.4	.5	.4	.5	.5	.6
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	85.1	187.2	159.9	131.3	188.4	190.4	200.8	173.0
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	209.5	186.6	140.8	119.2	100.9	119.2	64.3	97.9
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	188.1	138.6	167.2	183.9	190.3	170.8	174.2	178.4
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	177.5	137.9	140.4	173.8	187.6	199.4	140.5	171.2
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	94.2	111.8	93.9	117.9	95.1	169.3	180.3	199.8
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	61.3	75.0	77.7	49.6	56.8	45.1	57.1	.0
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	73.5	70.5	66.5	52.7	67.1	12.0	28.8	16.5
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	49.8	54.9	58.4	52.0	38.0	32.3	39.3	.0
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	28.2	46.5	62.3	50.5	37.4	42.8	35.8	54.0
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	54.3	26.9	34.8	39.7	10.3	.0	3.7	.0
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	23.9	16.9	.0	6.2	22.6	20.4	36.1	21.7
WORTHINGTON, CITY OF	Municipal Waterworks	1,100.0	4,300	21.2	12.1	6.1	7.3	6.8	5.2	24.8	28.8

Source: DNR Waters Div.

B.3 Goals and Objectives to Address Priority Concerns

Goals and Objectives for local water management were selected by the Task Force based on the selected priority concerns. **Goals** are general statements that clearly communicate **what is to be accomplished** over the long-term to address the priority concerns. Goals are achievable in a reasonable period of time. **Objectives** state **how the goal will be accomplished** by breaking it down into smaller, more specific measures that will be taken. Objectives should be measurable. Goals and objectives listed below were reached by consensus and are not necessarily in rank order.

Priority Concern 1. Surface Water Quality.

Goal 1: Prevent further degradation of stream and lake water quality, with a priority for Shoreland, TMDL-listed waters, and un-sewered communities.

Objective 1.a: Address TMDL Impaired Waters.

Objective 1.b: Prevent soil erosion.

Objective 1.c: Promote Ag Best Management Practices (AgBMPs).

Objective 1.d: Facilitate compliance of nutrient management, feedlots & SSTS with state and federal requirements.

Priority Concern 2. Drainage Management

Goal 2: Restore more natural flow in the drainage system, with a priority for Shoreland.

Objective 2.a: Improve shoreland and impervious surface areas.

Objective 2.b: Improve flood control, drainage systems and stormwater retention.

Objective 2.c: Encourage wetland restoration and protection of natural habitat

Priority Concern 3. Public Water Supply

Goal 3: Assure long-term quality and quantity of public water supplies, with a priority for DWSMAs and areas not currently served by public/community systems.

Objective 3.a: Encourage Well Head Protection planning and implementation.

Objective 3.b: Prevent groundwater contamination from unused wells and gravel pits.

Objective 3.c Facilitate land retirement in critical areas.

Objective 3.d Support rural water systems and long-term water supply.

C. Implementation to Address Priority Concerns

This section establishes the implementation program for local water management to address priority concerns. **Action items** describe **specific measures** that the County intends to implement, in cooperation with appropriate local, state and federal agencies and organizations. Private property owners will also make significant investments in their own individual projects to protect and preserve water in the county. Action items listed below were reached by consensus and are not necessarily in rank order. Costs are estimated with best available information at this time. In-Kind recognizes staff and volunteer time.

Local Water Management Cooperators	
Env	Nobles County Environmental Services
SWCD	Soil & Water Conservation District
WD	Watershed Districts
HLWD	Heron Lake Watershed District
OOWD	Okabena-Ocheda Watershed District
KLRWD	Kanaranzi-Little Rock Watershed District
LPRW	Lincoln-Pipestone Rural Water System
RRRW	Red Rock Rural Water System
DNR	Minnesota Dept. of Natural Resources
MPCA	Minnesota Pollution Control Agency
UMN EXT	University of Minnesota Extension
NRCS	Natural Resources Conservation Service
USFWS	US Fish & Wildlife Service
FEMA	Federal Emergency Management Agency

C.1 Priority Concern 1. Surface Water Quality.

Goal 1: Prevent further degradation of stream and lake water quality, with a priority for Shoreland, TMDL-listed waters, and un-sewered communities.

Objective 1.a: Address TMDL Impaired Waters

Actions:

1a.1 Review land use plans and ordinances to insure minimal development impacts on surface waters.
Who: Env When: 2009-2013 Cost: In-Kind

1a.2 Provide public information on protecting stream and lake water quality.
Who: Env, SWCD, WD When: 2009-2013 Cost: $3,500 + In-Kind

1a.3 Conduct water monitoring for water quality data.
Who: Env, SWCD, WD, DNR, MPCA When: 2009-2013 Cost: $50,000 + In-Kind

1a.4 Work with MPCA to improve quality of waters entering Heron Lake.
Who: Env, HLWD, MPCA Cottonwood, Murray, Nobles counties When: 2009-2013 Cost: In-Kind

1a.5 Work with MPCA and private wildlife and sportsmenôs organizations to improve quality of waters entering Okabena, Ocheda and Bella lakes.
Who: Env, OOWD, MPCA When: 2009-2013 Cost: $12,000/year
Worthington + In-Kind

1a.6 Provide technical assistance for the Des Moines River TMDL.
Who: Env, SWCD, HLWD, MPCA When: 2009 Cost: In-Kind
Cottonwood, Jackson, Murray counties

1a.7 Provide technical assistance for preparation of other TMDL plans as necessary.
Who: Env, SWCD, WD, MPCA When: 2009-2013 Cost: In-Kind

1a.8 Participate in implementation of the Rock River TMDL study and plans, through funding from Clean Water Legacy and other sources.
Who: Env, SWCD, MPCA When: 2009-2013 Cost: $500,000
Rock, Pipestone, Murray counties

1a.9 Participate in implementation of the Des Moines River TMDL study and plans, through funding from Clean Water Legacy and other sources.
Who: Env, SWCD, HLWD, MPCA When: 2009-2013 Cost: $750,000
Cottonwood, Jackson, Murray counties

1a.10 Participate in implementation of other TMDL plans as necessary.
Who: Env, SWCD, WD, MPCA When: 2010-2013 Cost: In-Kind

Objective 1.b: Prevent soil erosion.

Actions:

1b.1 Promote environmental education and conservation.
Who: Env, SWCD, WD When: 2009-2013 Cost: In-Kind

1b.2 Help fund an annual environmental fair and conservation day which educates 1,400 students from southwest Minnesota, and the local/state Envirothon event.
Who: SWCD, NRCS, WD When: 2009-2013 Cost: $700/year
+ In-Kind

1b.3 Assist tours of Prairie Wetland Learning Area in Worthington and Prairie Learning Area in Adrian that educate over 500 students about wildlife, wetlands and native prairie.
Who: SWCD, NRCS When: 2009-2013 Cost: $1,500/year
KLRWD, OOWD + In-Kind

1b.4 Promote use of natural cover and windbreaks.
Who: SWCD When: 2009-2013 Cost: In-Kind

1b.5 Inventory status of all ditch buffers in GIS
Who: Env, SWCD, NRCS When: 2010-2011 Cost: $15,000

1b.6 Enforce filter strips according to Minnesota Statutes.
Who: County Ditch Authority When: 2009-2013 Cost: $10,000/year

1b.7 Assist with and install 200 grassed waterways, critical area plantings and terraces with EQIP, Continuous CRP and State cost-share.
Who: NRCS, SWCD, WD When: 2009-2013 Cost: $150,000/year

1b.8 Assist with and install 15 sediment control structures.
Who: NRCS, SWCD, WD When: 2009-2013 Cost: $100,000

Objective 1.c: Promote Ag Best Management Practices (AgBMPs).

Actions:

1c.1 Assist producers in applying for cost share opportunities for conservation practices.
Who: Env, SWCD, WD, NRCS When: 2009-2013 Cost: In-Kind

1c.2 Conduct yearly meetings with township officials to promote Ag BMPôs.
Who: Env When: 2009-2013 Cost: In-Kind

1c.3 Promote conservation tillage, EQIP, and AgBMPs by contacting all County landowners through an informational bulletin sent by the SWCD
Who: Env, SWCD, NRCS When: 2009-2013 Cost: $4,000/year

1c.4 Conduct conservation tillage transect survey for the county and analyze data to determine residue cover.
Who: SWCD, BWSR, NRCS When: 2012 Cost: $1,000 + In-Kind

1c.5 Provide incentives for sign up of 100 acres of buffer strips along ditches and streams within the Des Moines watersheds.
Who: Env, SWCD, WD When: 2009-2009 Cost: $15,000/year
NRCS, FSA

1c.6 Provide incentives for 300 acres of filterstrips in Okabena-Ocheda watershed.
Who: OOWD, Worthington When: 2009-2013 Cost: $28,000/year

1c.7 Fund Watershed District cost-share programs.
Who: KLRWD, OOWD When: 2009-2013 Cost: $25,000/year

Objective 1.d: Facilitate compliance of nutrient management, feedlots & SSTS with state and federal requirements.

Actions:

1d.1 Conduct yearly meetings with township officials to discuss nutrient management.
Who: Env When: 2009-2013 Cost: In-Kind

1d.2 Assist 5 producers a year with nutrient management plans.
Who: Env, SWCD, NRCS When: 2009-2013 Cost: $10,000/year

1d.3 Inspect 10% of all registered feedlots per year to verify they are in compliance with MN Statute 7020.
Who: Env When: 2009-2013 Cost: $3,000/year
+In-Kind

1d.4 Provide technical assistance for feedlot improvements to 30 projects.
Who: Env, SWCD, NRCS When: 2009-2013 Cost: In-Kind

1d.5 Provide implementation funding through EQIP and state cost-share to 10 projects.
Who: SWCD, NRCS When: 2009-2013 Cost: $1,000,000

1d.6 Maintain a GIS layer of all registered feedlots and manured acres compatible with eLink.
Who: Env When: 2009-2013 Cost: In-Kind

1d.7 Provide an informational packet regarding septic system maintenance to every landowner who installs a new SSTS.
Who: Env, UMN EXT, MPCA When: 2009-2013 Cost: $2,000/year

1d.8 Inventory all individual sewage systems in Nobles County in a GIS-compatible database.
Who: Env, MPCA When: 2010-2011 Cost: $10,000

1d.9 Upgrade 15 non-compliant septic systems per year.
Who: Env, WD, landowner When: 2009-2013 Cost: $7,000 per system

1d.10 Seek additional funding from USDA and other sources for SSTS improvements.
Who: Env, WD, MPCA When: 2009-2013 Cost: In-Kind

1d.11 Work with cities to assure appropriate sewage treatment is available.
Who: Env When: 2009-2013 Cost: In-Kind

1d.12 Revise SSTS ordinance for compliance with new state rules.
Who: Env, MPCA When: 2009-2010 Cost: $20,000 +In-Kind

1d.13 Update ordinance to require SSTS compliance on property transfer.
Who: Env When: 2009-2010 Cost: In-Kind

1d.14 Proactively inspect SSTS and enforce compliance.
Who: Env, County Attorney When: 2010-2013 Cost: In-Kind
MPCA

C.2 Priority Concern 2. Drainage Management.

Goal 2: Restore more natural flow in the drainage system, with a priority for Shoreland.

Objective 2.a: Improve shoreland and impervious surface areas**.**

Actions:

2a.1 Administer Shoreland zoning regulations.
Who: Env, DNR When: 2009-2013 Cost: In-Kind

2a.2 Administer Watershed District rules.
Who: WD When: 2009-2013 Cost: In-Kind

2a.3 Meet with 50 landowners and provide best practices information on proper lakeshore and streambank stabilization.
Who: Env, SWCD, WD, DNR When: 2009-2013 Cost: In-Kind

2a.4 Provide educational material on the proper application of fertilizer, minimizing impervious surfaces, fire pit placement, and rain gardens.
Who: Env, WD When: 2009-2013 Cost: $15,000

2a.5 Implement the Worthington Storm Water Pollution Prevention Plan.
Who: OOWD, HLWD, Worthington When: 2009-2013 Cost: $6,000/year +In-Kind

2a.5 Consider adopting provisions for Conservation Design and Low Impact Development in local plans and zoning ordinances.
Who: Env, Worthington, DNR When: 2009-2010 Cost: In-Kind

2a.6 Participate in state Shoreland Rules Update Project.
Who: Env, Worthington, DNR When: 2009 Cost: In-Kind

2a.7 Revise Shoreland ordinances for compliance with new state rules if necessary
Who: Env, Worthington, DNR When: 2009-2010 Cost: $20,000 +In-Kind

2a.8 Enforce construction site erosion control rules.
Who: OOWD, Worthington When: 2009-2013 Cost: $1,000/year + In-Kind

2a.9 Consider County ordinance provisions encouraging soil erosion mitigation during construction.
Who: Env, SWCD, WD, DNR When: 2010-2011 Cost: In-Kind

Objective 2.b: Improve flood control, drainage systems and stormwater retention.

Actions:

2b.1 Administer a Floodplain Ordinance to protect public health, safety and welfare.
Who: Env, Adrian, Worthington When: 2009-2013 Cost: In-Kind

2b.2 Inform the public on dangers of flooding and benefits of floodplain preservation.
Who: Env, Adrian, Worthington When: 2009-2013 Cost: $2,500

2b.3 Work with FEMA to create updated digital floodplain maps.
Who: Env, DNR, FEMA Worthington When: 2009-2010 Cost: In-Kind

2b.4 Cooperate with City of Rushmore efforts to improve storm water drainage.
Who: KLRWD, County Engineer When: 2009-2010 Cost: In-Kind

2b.5 Implement City of Worthington flood control measures on CD12.
Who: OOWD, Worthington. County Engineer When: 2009-2013 Cost: $9,500,000

2b.6 Facilitate City of Adrian efforts to improve storm water drainage.
Who: KLRWD, SWCD, NRCS Adrian When: 2009-2013 Cost: In-Kind

2b.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.
Who: Env, County Engineer BWSR When: 2009-2010 Cost: $50,000

2b.8 Promote and cost-share installation of on-site stormwater retention and rain gardens to reduce peak storm-event flows.
Who: Env, SWCD, WD When: 2009-2010 Cost: $25,000 + In-Kind

2b.9 Facilitate a drainage retention demonstration project.
Who: Env, SWCD, WD, NRCS, Highway Dept. When: 2009-2013 Cost: $150,000

2b.10 Seek additional funding for water retention structures within the Jack Creek and Elk Creek (Des Moines), and Elk Creek (Rock River) watersheds.
Who: Env, SWCD, HLWD When: 2009-2013 Cost: In-Kind

2b.11 Seek additional funding for water retention structures within the Okabena-Ocheda watershed.
Who: Env, SWCD, OOWD When: 2009-2013 Cost: In-Kind

Objective 2.c: Encourage wetland restoration and protection of natural habitat.

Actions:

2c.1 Administer the Wetland Conservation Act.
Who: Env, SWCD, BWSR When: 2009-2013 Cost: In-Kind

2c.2 Utilize USFWS drained wetland inventory and identify high priority areas for wetland restoration and enhancement.
Who: Env, SWCD, BWSR, NRCS, USFWS When: 2009-2013 Cost: In-Kind

2c.3 Work with DNR and US Fish and Wildlife Service to maintain wetlands in existing wildlife areas.
Who: Env, DNR, USFWS When: 2009-2013 Cost: In-Kind

2c.4 Educate landowners on the benefits of restoring wetlands, using Wetland Reserve Program, Conservation Reserve Program and Continuous CRP.
Who: SWCD, WD, NRCS When: 2009-2013 Cost: In-Kind

2c.5 Enroll 100 acres of marginal land into wetland restoration programs.
Who: SWCD, WD, BWSR, NRCS, USFWS, private conservation organizations When: 2009-2013 Cost: $500,000

2c.6 Provide information to landowners on benefits of appropriate natural cover on habitat for threatened and endangered species.
Who: SWCD, WD, DNR When: 2009-2013 Cost: In-Kind

2c.7 Consider benefits of wildlife habitat in project prioritization.
Who: SWCD, WD, DNR When: 2009-2013 Cost: In-Kind

C.3 Priority Concern 3. Public Water Supply.

Goal 3: Assure long-term quality and quantity of public water supplies, with a priority for DWSMAs and areas not currently served by public/community systems

Objective 3.a: Support Well Head Protection planning and implementation.

Actions:

3a.1 Assist with completing Wellhead Protection Plans as MDH establishes local priority areas.
Who: Env, MDH When: 2009-2013 Cost: In-Kind

3a.2 Work with water suppliers to implement Wellhead Protection Plans.
Who: Env, SWCD, WD, MDH When: 2009-2013 Cost: In-Kind

3a.3 Review land use plans and ordinances to insure minimal development impacts on groundwater.
Who: Env, MDH When: 2009-2013 Cost: In-Kind

3a.4 Educate landowners near public supply wells on measures to protect groundwater.
Who: Env, SWCD, WD cities When: 2009-2013 Cost: In-Kind

3a.5 Consider drinking water sources in land use and development hearings.
Who: Env, cities When: 2009-2013 Cost: In-Kind

3a.5 Amend zoning ordinances and watershed district rules to consider drinking water sources.
Who: Env, WD, cities When: 2009-2010 Cost: In-Kind

Objective 3.b: Prevent groundwater contamination from unused wells and gravel pits.

Actions:

3b.1 Work with well contractors to promote proper well protection and sealing.
Who: Env When: 2009-2013 Cost: $150/year

3b.2 Inventory unused wells in GIS layer.
Who: Env, WD, MDH When: 2009-2013 Cost: In-Kind

3b.3 Develop best management standards for gravel pit reclamation to be considered during conditional use permit process.
Who: Env When: 2010 Cost: In-Kind

3b.4 Prevent contamination of groundwater aquifers through the sealing of 20 unused wells per year.
Who: Env, WD, landowners When: 2009-2013 Cost: $600 per well

Objective 3.c: Facilitate land retirement in critical areas.

Actions:

3c.1 Work with water suppliers to identify opportunities to retire lands in vulnerable areas.
Who: WD, SWCD, NRCS When: 2009-2013 Cost: In-Kind

3c.2 Consider benefits of wildlife habitat and recreation in project prioritization.
Who: SWCD, WD, DNR When: 2009-2013 Cost: In-Kind

3c.3 Establish public and private partnerships to take advantage of opportunities to retire land as they become available.
Who: Env, WD When: 2009-2013 Cost: In-Kind

3c.4 Accomplish land retirement when opportunities become available.
Who: OOWD, DNR When: 2009-2013 Cost: $500,000
Private partners

3c.5 Seek additional funding from USDA and other sources for land retirement.
Who: Env, WD, BWSR When: 2009-2013 Cost: In-Kind

Objective 3.d: Support rural water systems and long-term water supply**.**

Actions:

4c.1 Support efforts of public water suppliers to secure additional sources of water.
Who: Env, cities When: 2009-2013 Cost: In-Kind
RRRW, LPRW

4c.2 Support funding for Lewis & Clark Regional Water System.
Who: Env, Worthington, LPRW When: 2009-2013 Cost: In-Kind

4c.3 Promote water conservation.
Who: Env, WD, RRRW, LPRW When: 2009-2013 Cost: In-Kind

4c.4 Monitor groundwater and review all available monitoring data and information.
Who: Env, SWCD, WD, LPRW When: 2009-2013 Cost: In-Kind

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 BMPôs.
- 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 sewage treatment systems (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 Clean Water Partnership study plans.

D.1 Cost-Share Needs Projection

Cost-share funding is needed both as an incentive to encourage installation of BMPôs and as financial assistance. The SWCD is presently administering cost-share programs for the State and other Local Cost-Share programs. The SWCD and NRCS also provide technical assistance for the three watershed districts in Nobles County. In addition, money will be needed from the EQIP program.

The SWCD needs approximately $35,000 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 BMPôs. Assuming continued support of the locally funded share programs, and barring unforeseen natural disasters, funding at this level should be sufficient for the ten years covered by this plan.

State cost-share money will be used to install BMPôs as follows:

Water Quality Protection Practices	$ 106,400.00	(38%)
Water Erosion and Sediment Control Practices	$ 140,000.00	(50%)
Wind Erosion Control Practices	$ 28,000.00	(10%)
Flood Control Practices	$ 5,600.00	(2%)
	$ 280,000.00	

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.

E. Kanaranzi-Little Rock Watershed District

The Kanaranzi-Little Rock Watershed District was established on October 1, 1981, for the following purposes:

1. To provide for the orderly management of all the waters in the District for the protection of the public health and welfare and the provident use of the natural resources; and
2. To prevent recurring damage to property and resources caused by uncontrolled flooding, erosion and siltation.

Information on existing and updated statistical data, description of problems and summaries of completed studies, is included in *B.2 Assessment of Priority Concerns* above, as well as in the historical editions of the Nobles County Water Plan referenced herein. Specific projects and programs are described in *Section C. Implementation to Address Priority Concerns* and *Section D. Implementation Schedule of Ongoing Concerns*, above. Additional information specific to the KLR Watershed District follows.

E.1 Progress Since District Formation

a. First Overall Plan

The Districtôs first Overall Plan was approved in August 1982. The overall goal of the plan was to scientifically manage the Districtôs surface and groundwater to assure that an adequate quantity and quality is maintained to meet domestic, commercial, and recreational and wildlife needs. To meet the goals, the objectives of the District included, but were not limited to, the following:

1. To provide adequate water quantity and quality for essential human and animal needs;
2. To reduce flooding;
3. To control sheet, rill, gully, and streambank erosion and the siltation of watercourses;
4. To protect surface and groundwater from pollution;
5. To prevent flood plain encroachments that would materially increase the flood damage potential;
6. To preserve wetlands for water retention, recharge, soil conservation, and wildlife habitat;
7. To improve wildlife habitat and recreational opportunities;
8. To coordinate District activities with neighboring watershed districts and all other interested units and agencies to the fullest practical extent; and
9. To compile hydrologic information on the District.

b. Kanaranzi-Little Rock Watershed PL-566 Project

Planning for the Kanaranzi-Little Rock Watershed PL-566 Project began at the time the District formed. The project area covers the entire District or 198,400 acres in Nobles and Rock counties. The projectôs primary goal is to prevent serious soil erosion and at the same time reduce flooding. Sponsors including the Kanaranzi-Little Rock Watershed District, Nobles SWCD, Rock SWCD and the Nobles County Board of Commissioners formed a Joint Powers Board to locally plan and administer the project. The project administration is primarily funded the Districtôs levy, but some state grant assistance was received.

The first long-term contracts providing landowners with conservation planning and planning assistance were approved in 1989. Since then, 124 contracts have been written with the Districtôs landowners. Approximately 22,141 acres have been protected by conservation practices using about $1.9 million of federal money. As of 2008, the total cost of the conservation practices is $2.97 million, including the landownersô contributions.

The Kanaranzi-Little Rock Watershed Project PL566 was directed in 2008 by the NRCS state office to discontinue writing any additional contracts and any contracts that were in progress were to be completed before the end of the year. $68,000.00 remains in project agreements for this project. The Kanaranzi-Little Rock Watershed is working with the NRCS state office to try to commit the remaining funding to a project to address flooding in the watershed district.

c. Current Programs

Meeting the goals and objectives stated at the time of Districtôs formation will be an ongoing long-term process. The programs in the adjacent table have been developed and are currently in place for the benefit of the Districtôs residents and natural resources. The District will continue to fund these programs through its levy, grants and other sources in the future.

Nobles Local Water Management Plan
KLR Watershed District Projects and Incentive Programs Summary
August 2008

Program Name	Number of Participants	Approximate Cost
PL-566 Project	124	$2,970,656.00
Local Cost-Share	103	$175,564.00
Streambank Stabilization	1	$1,000.00
Tree Plantings	15	$2,500.00
Conservation Use Acres	75	$26,000.00
CRP Filter/Buffer Strips	25	$9,322.50
Well Sealing	82	$7,071.00

Source: KLRWD

At present time the Little Rock River watershed is listed by MPCA to be impaired for turbidity. The District is working with the Nobles SWCD to do more water testing in the Little Rock River and the Kanaranzi Creek Watersheds. TMDLôs will need to be completed during the next several years for the Little Rock River for turbidity as well

as for any other additional impairments that are found. The District will work towards completing the TMDLôs, as well as developing plans to correct water quality issues.

E.2 District Permits and Rules

Watershed District rules, updated in June 1997, require permits for the following activities:

1. Work in any watercourse or water basin, whether or not open water is present at the time of the work; including but not limited to excavation, filling, dredging and placement of structures of any type.
2. Work in the Right of Way of any legal drainage system.
3. Withdrawal of ground or surface water at a rate greater than 50 gallons per minute, or installation of an irrigation project serving an area over five acres.
4. Any land disturbing activity affecting over one acre in incorporated areas and over five acres in unincorporated areas.
5. Operation or alteration of any water control structure in any watercourse or water basin.
6. Diversion of water into a different sub-watershed or into a legal drainage system from land not assessed for the system.
7. Actions not in compliance with the following State agency rules: *Statewide Standards and Criteria for Management of Flood Plain Areas of Minnesota* (Minn. Reg. NR 85-92), *Statewide Standards and Criteria for Management of Shoreland Areas of Minnesota* (Minn. Reg. Cons 70-77), and Rules, Regulations, Classifications and Water Standards (Minn. Reg. WPC 4, 14, 15, 23 and 25).
8. Construction or improvement of any drain tile, open ditch system or dike.
9. Cultivating any area that is closer than one rod from the top edge of a watercourse bank or normal high water mark of a water basin.
10. Placement of power poles, underground cables, pipelines or any structure within 100 feet of the normal high water mark of any water basin or the top edge of the bank of any watercourse.
11. Any other act that, as judged by the Managers may have significant impact on the Districtôs water resources.

Approximately 1752 permits have been issued since 1982. About 90% of the permits were issued for private drainage tile installation or replacement and repair of drainage tile. The rest of the permits were issued for private ditch system maintenance, tile around manure storage facilities, terrace systems and waterways. Permits were denied for projects that would straighten natural stream courses or drain wetlands that are protected under Swampbuster or the Minnesota Wetland Conservation Act.

a. Effectiveness

The Districts rules and permit programs have begun to provide for the orderly management of all the waters in the District and to prevent recurring damage to property and resources caused by uncontrolled flooding, erosion and siltation. As of 2008, the Districtôs issued 124 permits to landowners for its PL-566 project to install runoff control and soil conservation practices on 22,141 acres in high priority areas. District rules have protected wetlands from drainage and stream courses from being straightened. The rules require inspection pipes to be in place when tile is installed around manure storage facilities and set back distances for installation of agricultural drainage tile near feedlots. District rules require grassed buffers along private and public drainage ditches.

While the District rules and permit program works to manage its water resources, much remains to be done in the future to prevent flooding and non-point source pollution.

E.3 Rock County

Approximately 20 square miles of the District is in Rock County. While the District is mentioned in the draft *Comprehensive Local Water Plan for Rock County, MN*, issued for review in February 1997, it was not identified as an area that will be managed differently than the rest of the County. The revised *Rock County Water Plan*, adopted 16 June 2007, treats the Watershed area in a similar manner. The Rock County portion of the District will be governed by the Goals, Objectives and Actions listed in the Rock County plan. In addition, the area will be subject to Districts rules and its residents eligible for District programs.

F. Okabena-Ocheda Watershed District

On February 28, 1961, the Minnesota Water Resources Board issued an order dissolving the Worthington Drainage and Conservancy District and establishing the Okabena-Ocheda Watershed District with approximately its present boundaries.

The Districts Overall Management Plan was adopted in 1962 and later amended in 1965 and 1972. The 1972 plan listed the following objectives for the District:

1. Control or alleviation of damage by flood waters;
2. Improvement of stream channels;
3. Reclaiming or filling wet and overflowed lands;
4. Providing water supply for irrigation;
5. Regulating the flow of streams and conserving the waters thereof;
6. Diverting or changing watercourses in whole or in part;
7. Providing and conserving water supply for the domestic, industrial, recreational and other public use;
8. Providing for sanitation and public health and regulating the use of streams, ditches, or watercourses for the purpose of disposing of waste;
9. Repair, improve, relocate, modify, consolidate, and abandon, in whole or in part, drainage systems within the district;
10. Imposition of preventive or remedial measures for the control or alleviation of land and soil erosion and siltation of watercourses or bodies of water affected thereby;
11. Regulating improvements by riparian landowners of the beds, banks, and shores of lakes, streams and marshes by permit or otherwise in order to preserve the same for beneficial use.

The 1972 overall plan was not updated until 1998 when the District adopted the Nobles County Comprehensive Water Management Plan as its management plan. The District again adopted the updated version of the county comprehensive water management plan in 2002. The 1998 and 2002 plans did not include objectives for improvement of stream channels, filling and draining wetlands and diverting or changing watercourses. Instead, these versions focused on protecting surface water and groundwater quality, preventing flood damage by reducing and treating runoff, establishing grassed buffers along streams and around lakes, protecting and restoring wetlands and retiring marginal agricultural land.

The Districtôs goals and objectives and management strategies listed in the 2002 Nobles County Comprehensive Water Management plan are replaced by the priority concerns, goals and objectives in section C of this plan.

F.1 Progress Since District Formation

During the Districtôs first twenty-five years, activities focused on regulating private drainage projects, establishing public drainage projects, diverting water to maintain lake

levels and protecting and enhancing Worthingtonôs groundwater supply. The table below list the water control structures within the District. The Mudhole Bay Desilting Basin, Bigelow Branch Channel, Lake Bella Dam, Lake Okabena outlet channel and Herlein-Boote water diversion were constructed during this period.

Water Control Works in the Okabena-Ocheda Watershed District

Project	Date	Purpose	Operator
Whiskey Ditch	1897	Flow Diversion	Worthington
Okabena Dam	1939	Lake Level Control	Worthington
Ocheda Dam	1941	Lake Level Control	DNR ï Waters Division
Flood Protection and Diversion Structure on Okabena Creek	1955	Flood Prevention	Worthington
Mudhole Bay Desilting Basin	1969	Sediment Catch Basin	Worthington
Bigelow Branch Channel	1970	Flood Protection and Drainage	Nobles County
Lake Bella Multi-Purpose Dam	1971	Water Conservation, Flood Protection and Recreation	District
Okabena-Ocheda Channel Improvement	1971	Flood Protection and Drainage	Nobles County Ditch Authority
Herlein-Boote Wildlife Management Area	1983	Water Conservation and Wildlife Habitat	DNR - Wildlife Division, District
W9 Desilting Basin Project	2002	Sediment and Nutrient Removal Project	Okabena-Ocheda-Bella Clean Water Partnership Joint Powers Board

Source: OOWD

The Stateline Dam was the Districtôs most ambitious project. The project was truly multi-purpose, creating the Lake Bella reservoir to recharge the Ocheyedan aquifer, protecting downstream farm fields in Iowa from flooding and establishing the Bella Park Recreation Area. The 40 acre park on the east shore of Lake Bella, was planned as an area for picnicking, swimming, fishing and camping. Picnic shelters, toilets, roads and a

boat ramp were installed, but camping facilities were never developed. Most of the park is now managed by the watershed district as wildlife habitat.

The Herlein-Boote Wildlife Management Area diversion was completed in 1983. The project created a channel used to divert water originally draining into the Little Rock River into Okabena Creek.

The District changed its focus from drainage and diversion projects in 1989 with the initiation of the Okabena-Ocheda-Bella Clean Water Partnership project described below. Recent actions have focused on protecting surface water and groundwater quality by reducing and treating runoff, establishing grassed buffers along streams and around lakes, protecting and restoring wetlands and retiring marginal agricultural land.

a. Okabena-Ocheda-Bella Clean Water Partnership Diagnostic Study Summary

The Okabena-Ocheda-Bella Clean Water Partnership project was sponsored by the City of Worthington and the Okabena-Ocheda Watershed District. The project was accomplished in two parts. A diagnostic study was conducted between October 1989 and September 1991. After analysis of the data collected during the diagnostic study, a plan was developed. The implementation plan was completed and an application for implementation money was submitted to MPCA for in November of 1994. When it became apparent that state funding was not available for implementing the plan, the City of Worthington and District began implementing some of the objectives using local money.

The study included lake and stream monitoring, analysis of existing and historical water quality data, evaluation of land uses in the watershed, and the preparation of a water quality model for Lake Okabena and its watershed. The adjacent table provides a water quality summary and compares lake specific water quality data.

Growing Season Average
Surface Water Quality Summary

	1990	1991
Okabena Lake		
TP (ug/l)	220	195
SRP (ug/l	136	102
TSS (mg/l)	15	16
Chlorophyll-a (ug/l)	3.4	25.5
Secchi Disk (m)	0.6	0.45
Average TSI	64	71

	1990	1991
Ocheda Lake		
TP (ug/l)		230
SRP (ug/l		15
TSS (mg/l)		70
Chlorophyll-a (ug/l)		105
Secchi Disk (m)		0.22
Average TSI		80

	1990	1991
Bella Lake		
TP (ug/l)	260	244
SRP (ug/l	82	23
TSS (mg/l)	26	26
Chlorophyll-a (ug/l)	80	89
Secchi Disk (m)	0.4	0.4
Average TSI	73	77

Source: OOWD

Numerous observations were made during the Diagnostic Study that were pertinent to the development of the Implementation Plan. They were summarized as follows:

- All three lakes are relatively shallow with average depths of 4-6 feet.
- The contributing watershed areas of the lakes are relatively large with watershed to surface area ratios of 14.4, 18, and 223 for Lakes Okabena, Ocheda, and Bella, respectively.
- Agricultural land uses currently dominate land uses in the watershed. The City of Worthington, however, occupies portions of the Lake Okabena and Lake Ocheda subwatersheds.
- A number of feedlots were observed in the watershed. However, none were considered as having a high potential for creating surface water quality problems.
- Soils with the potential for significant erosion are primarily located in the central and southern portions of the watershed surrounding Lakes Ocheda and Bella.
- Significant changes have been made to drainage patterns in the watershed. Lake Okabena historically discharged north to Okabena Creek that flows to Heron Lake. With the construction of the dam and County Ditch 6, the lake now discharges south to Ocheda Lake. East Okabena Lake was drained in 1914 to make land available for the railroad. Whiskey Ditch was constructed to drain the northern portions of Okabena Creek to Lake Okabena. Mudhole Bay on the southwest corner of Lake Okabena was modified in 1969 to serve as a desilting basin for an unnamed stream draining into Lake Okabena. Most recently, County Ditch 4, constructed in 1983, diverted runoff from the Herlein-Boote wildlife slough to Okabena Creek. The net result of all these changes was an increase in the size of the watershed to Lake Okabena by approximately 9,000 acres.
- Monitoring data showed that all three study lakes are nutrient enriched and in the eutrophic-hypereutrophic category.
- Lakes Okabena, Ocheda and Bella are important as recreational as well as water supply resources for the region.
- The primary water quality problem affecting the three lakes is water clarity. The average water clarity on all three lakes was 0.5 meters or less.
- Water clarity in Lake Okabena is primarily affected by total suspended solids (TSS) concentrations. However, nuisance algal blooms did occur in 1991.
- Water clarity in Lakes Ocheda and Bella is controlled by both TSS and algal productivity.
- Algal productivity in Lake Okabena is lower than in Lakes Ocheda and Bella. Algal productivity in Lake Okabena appears to be controlled by an element or condition other than the availability of total phosphorus (TP). Possible controlling factors include nonalgal turbidity and micronutrients. This controlling factor appears to be influenced by runoff. Reductions in algal productivity will come from reducing runoff. However, TP should also be reduced since increasing

water clarity by reducing nonalgal turbidity may allow more nuisance algal blooms.

- Algal productivity in Lake Bella is generally controlled by the availability of TP.
- Lake Ocheda had the poorest water quality of all three lakes.
- Previous studies have shown that submergent vegetation has disappeared from Lake Ocheda. The likely mechanism for this change is poor water clarity.
- The major sources of TP to Lake Okabena are Whiskey Ditch and internal loading that account for 38.5% and 33% of the TP load, respectively.
- The major source of suspended inorganic solids loading to Lake Okabena is Whiskey Ditch, accounting for 79% of the total external load.
- Based on both inorganic and organic sediment loads, Lake Okabena will lose about 1 foot of depth every 50 years.

b. Okabena-Ocheda-Bella Clean Water Partnership Implementation Plan Goals

Based on data from the Diagnostic Study, input from several public meetings and a series of smaller committee meetings with project sponsors and contributing co-sponsors, project goals were set. The implementation plan goals were stated in both narrative and specific numerical formats. The narrative goals are broad statements of future conditions to work toward. Specific goals were also listed to provide a set of numerical criteria based on physical, chemical, and biological parameters that can be used for progress evaluation over time.

The narrative goals are grouped into five categories that are: lakes, uplands, humans, groundwater, and tributary streams. These goals are listed below.

Lakes

Goal #1. Improvement of lake water quality so that the partial support of swimming as a recreational activity is restored.

Goal #2. A reduction in the frequency and severity of nuisance algal blooms.

Goal #3. Affect changes in lake water quality so that a trend is established which shifts the lakes from hypereutrophic to eutrophic conditions.

Goal #4. Through efforts to improve water quality, we will affect changes in the fish, wildlife, and aquatic plant communities to increase diversity and sustainability. This effort is linked to providing recreational opportunities for residents and visitors of the watershed.

Uplands

Rationale: The external loading of nutrients and sediment to the lakes is a function of the management of upland areas. The implementation and maintenance of upland BMP's is critical for the long-term success of our efforts.

Goal #1. Implement upland BMPôs that will maximize water quality benefits while improving long-term soil conditions. A second part of this goal is to maintain critical BMPôs for the long-term.

Humans

Rationale: The success of watershed management in the Okabena-Ocheda Watershed District depends on the awareness people have and commitment people are willing to make to change conditions toward more ecological stability.

Goal #1. Provide current and pertinent information to all watershed residents concerning the status of their water and how they can improve it.

Goal #2. Increase the knowledge and awareness of watershed residents of all ages concerning the links between land use, land management and water quality/quantity.

Goal #3. To coordinate a project of this type, a qualified person is required to work with landowners, local governments, students, and funding agencies. Our goal is to support such as staff person, both financially and institutionally. This position will coordinate all aspects of the project.

Groundwater

Rationale: Surface and groundwater are interconnected, and knowledge and understanding of both must occur for appropriate management of the watershed's resources.

Goal #1. Develop an educational process where management decisions by rural and urban residents involve the consideration of both surface and groundwater, and processes that interconnect the two.

Goal #2. Protect the Bella wellfield through the reduction of surface water contaminant transport and the application of appropriate BMP's in up gradient zones.

Tributary Streams

Rationale: Tributary streams and ditches deliver water and pollutants to our lakes. Reductions in water flow and improvements in water quality must occur if lake water quality is to improve in the long term.

Goal #1. Continue selective monitoring of key tributary inflow sites so that information on runoff and trends are available for decision making.

Goal #2. Develop a trend of reducing peak flow volumes, especially during critical periods of spring and early summer.

Goal #3. Reduce pollutant loads transported by the tributaries.

The setting of specific, numerical goals for the lakes focused on Lake Okabena, since the Diagnostic Study monitoring activities were most intensive there. Ranges were used to reflect changes anticipated due to natural variability and differential loading due to rainfall and climatic patterns. The degree of specificity in the goals for Lakes

Ocheda and Bella depended on available data. The goals are based on summer means.

Lake Okabena Goals

Physical Goals - Lake Okabena:

Inorganic Suspended Solids Concentrations: 5-8 mg/l (reduction from an observed range of 12-15 mg/l)

Water transparency: Secchi transparency: 0.7-0.9 meters. (improvement from 0.5 - 0.6 meters)

Chemical Goals - Lake Okabena:

Total Phosphorus: 120 - 160 ug/l.

Soluble Reactive Phosphorus: Reduction to less than 40% of the total phosphorus

Biological Goals - Lake Okabena:

Chlorophyll: 15-20 ug/l (algal biomass estimator)

Aquatic plants: begin reestablishment at appropriate sites on the lake.

Fish: Walleye: 10 fish/gill net at 2 lbs. each.

Black and White Crappie: maintain secondary populations.

Monitor abundance of walleye, crappie, channel catfish, and bullhead species.

Lake Ocheda Goals

Physical Goals - Lake Ocheda

Water Transparency: Secchi transparency 0.3 to 0.5 meters (from 0.2 meters monitored in 1991).

Shoreline stabilization: Seek shoreline stabilization methods that are ecologically sound and sustainable.

Chemical Goals - Lake Ocheda

Total Phosphorus - Develop a downward trend for inlake total phosphorus, with a goal range of 160-195 ug/l.

Biological Goals - Lake Ocheda

Aquatic vegetation: Establish vegetative coverage at 25% of the lake surface area (about 480 acres) for shoreline and sediment stabilization, nutrient reduction and wildlife habitat benefits.

Lake Bella Goals

Physical Goals - Lake Bella

Dissolved oxygen. Maintenance of dissolved oxygen levels at 5ppm or greater.

Chemical Goals - Lake Bella

Total Phosphorus: 130 - 170 ug/l.

Biological Goals - Lake Bella.

Chlorophyll. 56-70 ug/l.

Tributary Reduction Goals:

Data analysis and modeling for the Lake Okabena watershed showed that pollutant load reductions in the range of 45-66% are necessary to meet the lower number for the inlake water quality goal ranges presented above. These are significant reductions that are provided as our best estimate at this time. A long-term approach will be taken to first begin a downward trend of pollutant transport and delivery to the lakes. A 15 to 25 percent reduction within seven years is established as an interim goal. These high percentage reductions may be adjusted based on a review of additional monitoring data and an analysis of watershed BMP effectiveness.

c. Okabena-Ocheda-Bella Clean Water Partnership Implementation Plan Objectives

In the feasibility study, a number of alternatives were evaluated to reach the pollutant loading reduction and other goals established in the diagnostic study. These alternatives ranged from administrative alternatives such as City ordinances to structural alternatives such as sediment basins. Each alternative was evaluated for its water quality benefit, hydrologic, benefit, initial and long-term (operation and maintenance) costs, and technical feasibility. The most technically sound and cost-effective options were incorporated into the Implementation Plans for improving the lakes.

Special consideration was given to alternatives that address problems and reduce pollutant loadings at their source, and to alternatives that have the potential to reduce runoff, as well as pollutants. The study also identified a number of existing water quality initiatives by local agencies. The implementation plans were designed to complement these existing initiatives. To facilitate phasing the implementation project, separate implementation plans were developed for each lake. The full Okabena-Ocheda-Bella Clean Water Partnership diagnostic study and feasibility plan is available for review at the District office and the Worthington City Engineerôs office.

d. Okabena-Ocheda-Bella Clean Water Partnership Joint Powers Board

The City of Worthington and Okabena-Ocheda Watershed District submitted grant applications to MPCA in 1994 and 1995 to accomplish the goals of the Clean Water Partnership implementation plan. When it became apparent that state grant money was not available, the City and watershed district formed the Okabena-Ocheda-Bella Clean Water Partnership Joint Powers Board (CWP JPB) to accomplish some of the implementation plan goals. Local money from the City of Worthington, Okabena-Ocheda Watershed District and grants from the Olson Trust have used to monitor lake

and stream conditions, install conservation practices on farmland and provide public education materials. Below is a summary of two recent and ongoing activities sponsored by the CWP JPB partners to benefit Lake Okabena.

Filter Strips

The CWP diagnostic study showed that Whiskey Ditch is the main contributor of sediment and phosphorus pollution to Lake Okabena. For this reason, the CWP JPB started a grass filterstrip incentive program in 1998 in the Whiskey Ditch subwatershed. The program offered landowners $100.00 per acre per year for land along streams placed into a 10 year Conservation Reserve Program filterstrip contract. The filter strip program incentive was later offered in the rest Lake Okabena subwatershed. As of 2007, 168.8 acres were enrolled into contracts, including all the fields most likely to contribute pollution to the lake. Current CRP filterstrip contracts expire between 2008 and 2020, depending on when they were enrolled and the length of the contract.

The Okabena-Ocheda Watershed District offers the same incentive payment throughout the district and has another 160 acres in the Lake Ocheda and Lake Bella subwatersheds. The District intends to continue offering the CRP filterstrip incentives into the foreseeable future.

W-9 Water Quality Basin

In 2002, the W9 project was constructed on Okabena Creek to intercept sediment and phosphorus before it enters Lake Okabena. The basin was designed to remove approximately 33 percent or 380 pounds of total phosphorus per year and settle out 66 percent or 335,000 lbs per year of inorganic suspended sediment. Since the new dam periodically floods wetland acres existing before the project, a drained wetland approximately of 11 acres was restored nearby to satisfy the Minnesota Wetland Conservation Act and Corp of Engineers mitigation requirements.

To continue to function in the future, the detention basin will need to be maintained. The CWP JPO partners will perform and pay for this work into the foreseeable future.

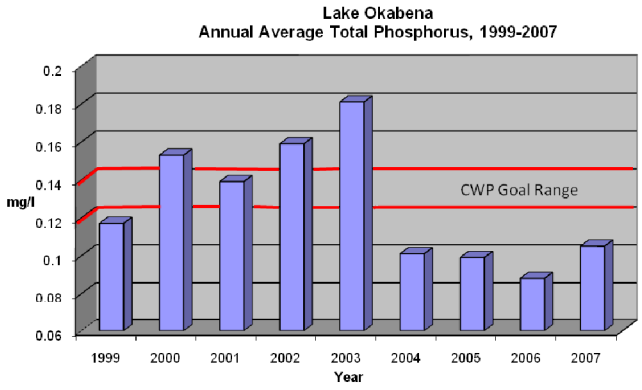
In addition to these activities, the CWP JPO, with the help of other partners, engaged in additional water quality and flow monitoring, completed a survey of Lake Okabenaôs bottom contours, conducted a study of the Sunset Bay sedimentation basin and conducted public education programs.

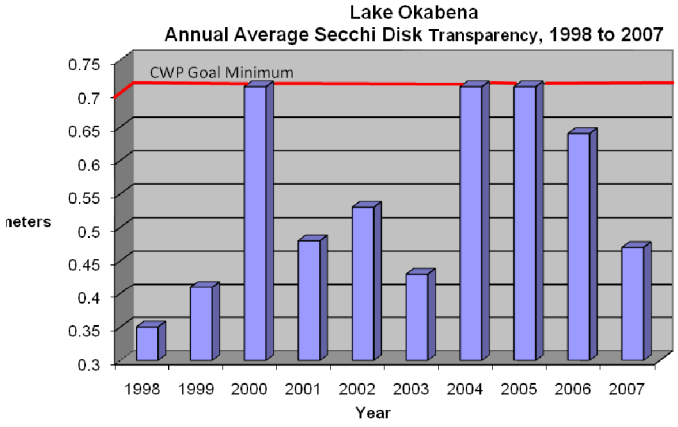
e. Water Quality Monitoring

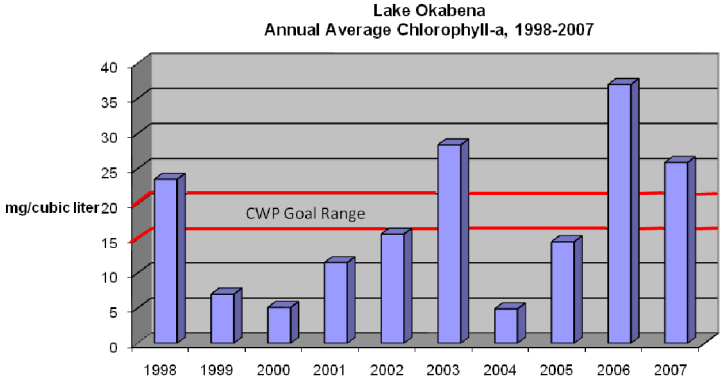
Water Quality monitoring began in 1998 to assess the condition water in Lake Okabena and measure progress toward the CWP goals. Samples are taken monthly from April through October. Parameters measured are transparency, total suspended solids, nitrate-nitrite, ammonia, total Kjeldahl nitrogen, total phosphorus, suspended volatile solids and chlorophyll-a. District staff will continue to collect water quality

data into the foreseeable future. Complete monitoring data for Lake Okabena is available at the District office.

Three charts summarizing transparency, total phosphorus and chlorophyll-a data are shown below. Total phosphorus in the lake has been trending down during the last four years, hopefully due to best management practices in the lakeôs watershed. Unfortunately, transparency and chlorophyll are not showing the same trend toward improvement. This supports the Clean Water Partnership diagnostic studyôs conclusion that algal productivity is limited by some element or condition other than total phosphorus.







Lakes Okabena, Ocheda and Bella are not on Minnesotaôs 2008 impaired waters list due to a lack of available data. Data collected for Lake Okabena from 1998 to 2007 was entered into STORET in 2007 to make it available for a future assessment.

TMDL assessment monitoring programs Lake Ocheda and Lake Bella began recently. In 2007, the District started a two year water quality study of Lake Ocheda to collect data for a TMDL assessment. Sampling on Lake Ocheda will continue twice per month during the growing season until September 2008. Parameters tested are total suspended solids, suspended volatile solids, total phosphorus, chlorophyll-a and Secchi transparency. In 2008, the District began sampling Lake Bella for the same parameters. Sampling work will continue on Lake Bella through 2009. MPCA is paying for the in 2008 and 2009 monitoring of both lakes. Data from these testing programs can be viewed in STORET.

In 2007, the District began monitoring turbidity and transparency of County Ditch #6. Monitoring on the ditch will be complete at the end of 2008. Ditch #6 is now on the TMDL list. Lakes Okabena, Ocheda and Bella will likely be added to the list in 2010.

F.2 District Property Management

The District owns and manages approximately 564 acres in three locations. The Lake Bella Park property consists of about 445 acres surrounding the lake. The park contains the Stateline Dam that was completed in 1971 to create Lake Bella as a reservoir recharging the Ocheyedan aquifer, protecting downstream farm fields in Iowa from flooding and establishing the Bella Park Recreation Area. The Ocheyedan aquifer is the source of most of Worthingtonôs domestic and industrial water supply. The District maintains a boat landing, roads, parking lots, picnic shelters and a restroom in the park. Most of the area is planted to grasses and trees and is managed as wildlife habitat. The District will continue to maintain the parkôs structures, recreational facilities and vegetation in the future. Due to the steep nature of the banks on the west shore of Lake Bella, shoreline erosion is problem. The District will monitor erosion and repair shoreline as needed.

The Dykstra property, consisting of approximately 42 acres in section 16, Bigelow Township, was purchased to protect the Lake Ocheda dam and retire the marginal, frequently flooded cropland along the Ocheyedan River. The land was planted to trees and native grasses and is posted to keep trespassers from entering to vandalize the dam.

The St. John property, consisting of approximately 75 acres in sections 24 and 25 of Worthington Township, was originally part of the lake bottom and shoreline of East Lake Okabena. It was purchased in partnership with the Olson Trust to restore wetlands and provide treatment for storm water flowing from Worthington to Lake Ocheda. The right-of-way of US Highways 59 and 60 pass through the property. Since the highway will likely be upgraded and expanded into the area during the lifetime of this plan, the District intends wait to see MNDOTôs plans before developing the property. Approximately 31

acres of cropland on the south side of the highway is rented to a private party as farmland.

The District intends to continue purchasing and managing land, as needed, to provide surface water and groundwater protection benefits.

a. Critical Land Retirement

The District believes that long- term land retirement programs are a valuable and cost effective tool for protecting groundwater and surface water resources. As of 2007, the District provides incentive payments for about 330 acres of filter strips enrolled for 10 to 15 years CRP contracts. During 2007 and 2008, the District provided one-time incentive payments totaling $125,000 to enroll 116 acres in 45 year CREP II conservation easements in critical areas. The District will continue to use incentive payments for long-term land retirement in the future.

Since the last plan update, the District has worked with Pheasants Forever, the Minnesota DNR, Worthington Public Utilities and the Olson Trust to purchase about 195 acres of marginal agricultural land in Worthingtonôs wellhead protection area. Approximately 40 of these acres were donated to the DNR and became part of the Peterson Wildlife Management Area. The rest of the land is scheduled to be donated to the DNR in 2009 and will become part of the Wachter Slough Wildlife Management Area. The District will continue to work with partners to purchase and retire land to protect groundwater and surface water resources.

F.3 District Permits and Rules

Watershed District rules were adopted in October 1980 revised in May 2002 and April 2004 to include stormwater storage and treatment and construction site erosion control standards. Permits are required for the following activities:

1. Work in any watercourse or water basin, whether or not water is present at the time of work; including but not limited to excavation, filling, dredging and the placement of structures of any type.
2. Work in the right of way of any public drainage system
3. Withdrawal of ground or surface water at a rate greater than 50 gallons per minute or installation of an irrigation project serving an area over 1 acre.
4. Installation of new surface tile intakes and catch basins, including those draining new or existing impervious surfaces.
5. Construction or improvement of any drain tile, open ditch system or dike.
6. Operation or alteration of any water control structure in any watercourse or water basin.
7. Diversion of water into a different sub-watershed or into a public drainage system from land not assessed for the system.
8. Installation of riprap on lake shore or stream banks.

9. Installation of new storm sewers, culverts or bridges, or replacement of existing storm sewers culverts or bridges with structures having a greater flow capacity.
10. Installation of agricultural best management practices that require land alteration including surface tile intakes, terraces, waterways, and diversions that have not been designed by the Natural Resources Conservation Service or Soil and Water Conservation District.
11. Grading within the shore impact zone to create public or private access to beaches, docks or boat landings.
12. Disposal of snow within the shore impact zone.
13. The installation or creation of impervious surface totaling one acre or more.
14. Earth moving projects involving more than 200 cubic yards of excavation or fill; or which disturbs more than 10,000 square feet of soil, and which project, or any part thereof, is located:
    - within 300 feet of a stream, storm sewer catch basin, drainage tile intake or a wetland, or
    - within 1,000 feet of a lake.
15. Any other act that, as judged by the Managers, may have a significant impact on the Districts water resources.

The District issued 245 permits during the period from 2003 to 2007. Approximately 49 percent of the permits were issued for private agricultural land drainage including, installation, replacement and repair of tile and the construction and maintenance of ditches. Approximately 42% of the permits were issued for construction site erosion control and stormwater management systems. Best Management Practices including waterways, shoreland stabilization and wetland restorations, account for 3 percent of the permits granted.

The District will continue the rule revision process during the next ten years to modernize language and be more specific about when permit applications are required and criteria for evaluating them.

a. Effectiveness of District Permits and Rules

The Okabena-Ocheda Watershed Districtôs rules and permits have had mixed results. As mentioned above, most permits were issued for private agricultural land drainage. The new tile added more water to existing tile, ditches, streams and lakes that were already overburdened in normal years. New and improved drainage systems have contributed to persistently high levels of water in Lake Ocheda. The result has been the destruction of the lakeôs vegetation, shoreline erosion and deteriorating water quality. The CWP study addresses the problem by calling for a drawdown of Lake Ocheda to solidify the lake bottom and reestablish lakeshore vegetation. Even if a draw down is accomplished, the cause of the problem will still be present; too much water entering Lake Ocheda too quickly.

The Districtôs permitting program and rules have had some positive effects. During the previous five years, 102 permits were issued for construction site erosion control and stormwater management systems. The permits required landowners and contractors to install BMPôs keeping sediment and nutrients out of surface waters. Permits requests to drain wetlands otherwise not protected by state or federal programs were denied. Grassed buffer strips have been required as conditions of ditch cleanouts and new tile surface intakes. An application to install tile to drain a feedlot was denied approval to avoid nitrogen and phosphorus pollution. District rules have regulated shoreland development otherwise not regulated by county and city ordinances.

The Districtôs permitting program allows the District managers to discuss conservation programs and the requirements of state and federal programs with landowners when appropriate. The permitting program encourages communication between landowners about drainage issues by requiring notification of the downstream landowners before beginning drainage work.

G. Appendices

G.1 Acronyms & Definitions

Ag BMPs ï Agricultural Best Management Practices
BWSR ï Board of Water and Soil Resources
CDP ï Census Designated Place
CRP ï Conservation Reserve Program
CREP ï Conservation Reserve Enhancement Program
CWP ï Clean Water Partnership
DNR ï Minnesota Department of Natural Resources
DWSMA ï Drinking Water Supply Management Area
Env ï County Environmental Services Office
EQIP ï Environmental Quality Incentives Program
EXT ï Extension Service
FEMA ï Federal Emergency Management Agency
FSA ï Farm Service Agency
GIS ï Geographic Information Systems
GRP ï Grassland Reserve Program
HLWD ï Heron Lake Watershed District
ISTS ï Individual Septic Treatment System (see SSTS)
KLRWD ï Kanaranzi-Little Rock Watershed District
LCCMR ï Legislative-Citizen Commission on Minnesota Resources
LPRW ï Lincoln-Pipestone Rural Water System
MDA ï Minnesota Department of Agriculture
MDH ï Minnesota Department of Health
MPCA ï Minnesota Pollution Control Agency
NRCS ï Natural Resources Conservation Service
NFIP ï National Flood Insurance Program
NWI ï National Wetlands Inventory
OOWD ï Okabena-Ocheda Watershed District
PCSD ï Priority Concerns Scoping Document
RIM ï Reinvest in Minnesota program
RRRW ï Red Rock Rural Water System
SRDC ï Southwest Regional Development Commission
SSTS ï Subsurface Sewage Treatment Systems
SWCD ï Soil and Water Conservation District
TMDL ï Total Maximum Daily Load
USCOE ï United States Corp of Army Engineers
USDA ï United States Department of Agriculture
USFWS ï United States Fish and Wildlife Service
WRP ï Wetland Reserve Program

COST-SHARE PROGRAM REQUIREMENTS

High Priority Problems

1. **High Priority Erosion Problems**
   High priority erosion problems are areas where erosion from wind or water is occurring to, or in excess of, 2 X T tons per acre per year or is occurring in any area that exhibits gully erosion or is identified as high priority in the comprehensive local water plan or the conservation districtôs comprehensive plan.

2. **High Priority Water Quality Problems**
   High priority water quality problems means areas where sediment, nutrients, chemicals, or other pollutants discharge to Department of Natural Resources designated protected waters, or any high priority waters as identified in a comprehensive local water plan or the conservation districtôs comprehensive plan, or discharge to a sinkhole or groundwater. The pollutant delivery rate to the water source is in amounts that will impair the quality or usefulness of the water resource.

   a. **High Priority Feedlots** are those where the pollution potential rating from the feedlot model is greater than or equal to one and which are discharging pollutants to Department of Natural Resources designated protected waters or to a sinkhole or shallow soils overlying fractured or cavernous bedrock or within 100 feet of a water well. Feedlots not meeting these criteria are not eligible for cost-sharing assistance unless cited by the Minnesota Pollution Control Agency.

   b. **High Priority Sedimentation Problems** are areas within 300 feet of a water course or 1,000 feet of a water basin or wetland where the water erosion rate exceeds three tons per acre per year or areas where the District can show that sediment delivery occurs from a watershed or direct conveyance structure such as a storm sewer or paved outlet channel discharging to these waters. The water basin, wetland, or watercourse must be classified by the Department of Natural Resources as protected waters. Sedimentation problems not meeting these criteria are not eligible for cost-sharing assistance.

The maps contained in this plan indicate high priority problem areas within the SWCD where approved practices will be installed.

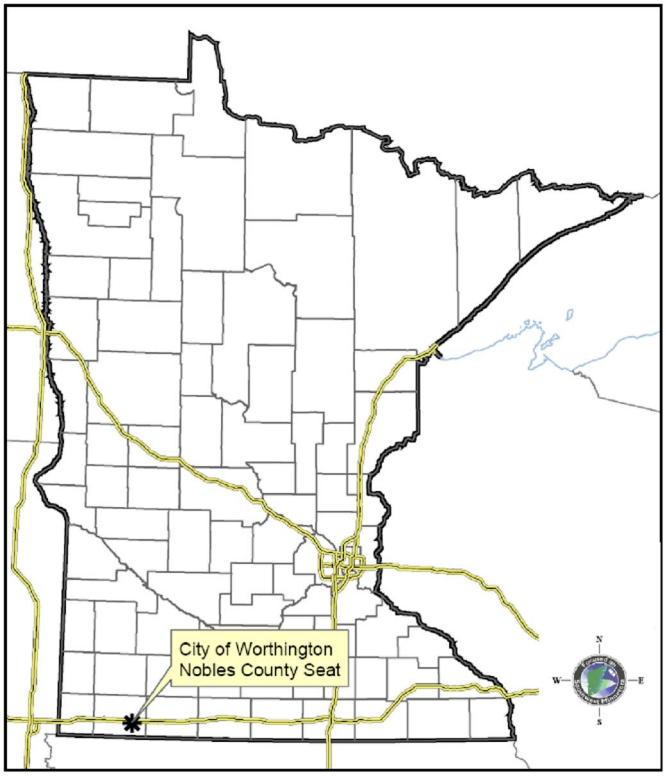
G.2 Priority Concerns Scoping Document

NOBLES COUNTY LOCAL WATER MANAGEMENT PLAN
PRIORITY CONCERNS SCOPING DOCUMENT
August 2007

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

A. INTRODUCTION

A.1 County Primer



Nobles County is located in the southwestern corner of Minnesota, adjacent to Rock, Murray, Cottonwood and Jackson counties. Iowaôs Lyon and Osceola counties are located south of the state line. Nobles Countyôs population in the 2000 U.S. Census was 20,832, with a density of 29 persons per square mile. The Minnesota State Demographic Center estimates the current population (2006) is 20,495. The Demographic Center projects total population of 20,590 by 2030.

Nobles County is typical prairie environment, with average annual precipitation between 26ò and 28ò. 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. Groundwater aquifers found in glacial drift materials are the most common source of drinking water.

The City of Worthington, the county seat, is the largest city in the county with an estimated population of 11,350. The dominant land use in the county is agriculture. University of Minnesota Remote Sensing analysis has found 84% of land under cultivation, 7% in grassland or wetlands, 2% forested, 1% water, and approximately 6% developed. The 2002 U.S. Census of Agriculture reports 1,043 farms on 404,307 acres in Nobles County. Of these, 374,443 acres were in cropland. There were 262 farms with cattle, 174 with hogs, and 45 with sheep.

A.2 Plan Information

In 1994, the Nobles County Board of Commissioners passed a resolution to revise and update its comprehensive water plan. The County developed one comprehensive water resources management plan for the entire county, incorporating the Soil & Water Conservation District (SWCD) comprehensive plan and watershed district overall plans for the Kanaranzi-Little Rock Watershed District (K-LRWD) and Okabena-Ocheda Watershed District (O-OWD). This plan was approved by the Board of Water and Soil Resources (BWSR) and adopted in 1998.

The current edition of the *Nobles County Comprehensive Water Management Plan* was developed in 2002. The local review public hearing was held on November 25, 2002. The plan was approved by BWSR on 23 April 2003, and adopted by the County Board on 20 May 2003. This plan expires on 23 April 2008.

The Nobles County Board of Commissioners adopted a resolution on 8 May 2007 to revise the current plan as authorized by Minnesota Statutes. This will include requirements for the county water plan (Minnesota Statutes §103B.311), watershed district management plans (M.S.§103D.405), and plan for the Nobles Soil and Water Conservation District (M.S.§103C.331). The County Board delegated to Nobles SWCD responsibility for coordinating this update of the local water management plan according to rules now in effect. In turn, Nobles SWCD has retained the services of John C. Shepard, AICP; Southwest Regional Development Commission, to manage the Plan update. Local Task Force membership currently includes:

Local Water Management Task Force Members

Christopherson, Dean	Nobles Co. Farm Bureau
Frahm, Connie	K-LR Watershed board
Gallagher, Norm	Nobles Co. Commissioner
Gregg, Harberts	City of Rushmore
Gruis, Coleen	City of Rushmore
Henning, Tim	Nobles Co. Farmers Union
Langseth, Al	Nobles Co. Env. Serv., staff
Langseth, Paul	Nobles SWCD, supervisor; Task Force Chair
Lenz, Ed	Nobles SWCD, staff
Livdahl, Dan	O-O Watershed, staff
Lonneman, Jerry	Lincoln-Pipestone Rural Water
McGowan, Jim	O-O Watershed board
Nelsen, Rick	Nobles SWCD, supervisor
Norskog, Kevin	K-LR W/S and City of Adrian
Reker, Gary	Reker Construction
Roos, Eric	Worthington Public Utilities
Shepard, John	SWRDC, staff
Smith, Wayne	Nobles Co. Env. Serv., staff
Steffl, Jane	Nobles SWCD, staff
Thier, Diane	Nobles Co. Commissioner
Turner, Genny	Lakes Association
Vis, Shirley	City of Rushmore
Voit, Jan	HLWD, staff
Woltjer, Steve	NRCS
Zylstra, Marv	Nobles Co. Commissioner

B. LIST OF PRIORITY CONCERNS

The *Nobles County Local Water Management Plan* to be developed in 2007-08 will cover ten years, with a 5-year implementation schedule. The Plan will address the following priority concerns.

B.1 Summary of Priority Concerns:

These concerns are considered to be priorities for local water management in Nobles County. The Task Force also found over-arching concern for accountability, education and funding.

1. **Surface Water Quality**
   - Impaired Waters
   - Soil erosion
   - AgBMPs
   - Nutrient Management, feedlots & ISTS
     ⇒ *Shoreland, TMDL-listed waters, and un-sewered communities*

2. **Drainage Management**
   - Shoreland and impervious surface areas
   - Flood control
   - Drainage systems
   - Retention
   - Wetland restoration
   - Habitat and critical species
     ⇒ *Shoreland areas*

3. **Public Water Supply**
   - Wellhead protection
   - Abandoned wells and gravel pits
   - Land retirement
   - Rural water system
   - Long-term water supply
     ⇒ *DWSMAs and areas not currently served by public/community systems*

C. PRIORITY CONCERN IDENTIFICATION

C.1 Public and Internal Forums

8-May-07	Nobles Board of County Commissioners adopt resolution to update
17-May-07	Nobles Soil & Water Conservation District moved to hire Southwest Regional Development Commission to manage update process

21-May-07 Update planning meeting w/SWCD, County Environ Office, KLR and O-O watershed districts, NRCS, SRDC, BWSR (9 att.)

30-May-07 Mail/email Notice to Revise and Update to BWSR routing list, adjacent counties, cities & townships

30-May-07 Notice to Revise and Update published in *Nobles County Review* & *Fulda Free Press*

31-May-07 Notice to Revise and Update published in *Worthington Daily Globe*

16-Jul-07 Requested date for submission of Priority Concerns

21-Jul-07 Notice of Public Meeting published in *Worthington Daily Globe*

31-Jul-07 Local Water Plan Public Update Information Meeting held at Nobles County Public Works Building, Worthington (22 att.)

17-Aug-07 KDOM-AM/FM interview with Southwest Regional Development Commission Development Planner, discussing water plan updates in the region.

28-Aug-07 Continuation of Public Meeting to confirm Priority Concerns, Nobles County Public Works Building, Worthington (22 att)

C.2 Summary of Comments Received

K-LR and O-O Watershed Districts will align plan goals with their rules and regulations as they participate in plan development. The Heron Lake WD provided their Rules and Regulations (2005). No other plans or controls were received from any state or local agencies. Nobles County Environmental Services administers the county comprehensive plan zoning ordinances, and has found no conflicts with other plans currently in place. The following comments were received prior to the initial Task Force meeting:

Nobles County Local Water Management Plan
Priority Concerns submitted prior to the Public Hearing
25/7/07

Who	What	Why	Where
1 BWSR	Soil Erosion/Nutrient Mgmt	AgBMPs-conservagion tillage, buffers, nutrients	*Entire county, cropland*
	Feedlots/ISTS	Non-compliance	*Groundwater protect. & shoreland*
	Drainage Mgmt/Wetlands	Manage flows systematically through ditches & wetlands	*Countywide*
	Okabena-Ocheda WD	Unique plan requirements for Watershed Districts	
	Kanaranzi-Little Rock WD	Unique plan requirements for Watershed Districts	
2 MDA	Ag chem use-Groundwater	Nitrate in groundwater	*Shallow groundwater*
	Ag chem use-Surface water	Highly erodible soils, surface testing indicates pesticides	*Shorelands*
	Septic Systems	Non-compliance	*Rural villages*
	Manure/Nutrient Mgmt	Open lots, land application at agronomic rates	*Resources of concern*
	Impaired Waters/TMDLs	Educate ag community on practices that contribute	*Listed basins*
3 MDH	Groundwater	Protect drinking water sources	*DWSMAs (Drinking Water Supply Management Areas)*
	Nutrient BMPs	Nitrate in groundwater	*Adrian, Ellsworth, Leota, Worthington DWSMAs*
4 DNR	Groundwater	Increasing demand	*Aquifer recharge areas*
	Ag BMPs	AgBMPs-conservagion tillage, buffers, nutrients	
	Holding Water on Landscape	Drainage management & wetland restoration	*Des Moines & Missouri basins*
	Rare & Endangered Species	Native habitat; Blandings Turtles, Topeka Shiner, calcerous fens	
5 MPCA	Impaired Waters/TMDLs	Federal Clean Water Act	*Lk Okabena Outflow, Jack Creek, Elk Creek*
	Feedlots	Feedlot & application compliance	*DWSMAs, shoreland*
	ISTS	Non-compliance	*Noncompliant systems/unsewered areas*
	Stormwater	Impervious surface areas, construction site management	*City of Worthington*
6 County Commissioner	Buffer Strips	Water quality, cost of ditch cleaning	*Ditches & streams*
	Lake Development	Pressure for residential development, wildlife habitat	*Shoreland*
	Livestock	Water quality reduction from pasture/grazing	*Along streams*
7 KLRWD	Clean Water Supply	Ag and manufacturing ground and surface water	*Countywide*
	Soil & water conservation	Stop soil erosion, reduce flooding, protect water quality	*Entire county, emph. West*
	New Funding Sources	Need state, federal, local and foundation funding	*Countywide*
	Cost Share Funding	Funds to improve water quality	*Wellhead Protection, Well Sealing, Septic Systems*
8 Nobles SWCD	Soil Erosion	Reduce soil loss w/conserv.	*Ouside organized watershed districts*
	Groundwater	Population relis on water from highly vulnerable wells	*Wellhead areas*
9 OOWD	Groundwater Quality	Easily polluted surficial aquifers	*WPA/DWSMAs*
	Surface Water Quality	AgBMPs-conservagion tillage, buffers, nutrients; habitat	*Watershed Districts*
	Education	Link to residents & local government land use decisions	*Countywide*
	Stormwater/Flood Control	Property damage and pollution	*Countywide*

Who	What	Why	Where
10 City of Adrian	Quantity	Availability controls housing and industry growth	*Equal & fair access*
	Quality	Health & safety, cost of treatment	*Countywide*
	Technology	Finding water, water waste, efficiences	*Prioritize human and other use*
	Education	Health & safety, public awareness	*Countywide*
11 Dewald Twp	No comments.		
12 Ransom Twp	Outlet in Ditches	Need Twp Board permission	
13 City of Rushmore	Storm Water / Flooding	Backflow into City during flood events	*CR13 @ RRXX*
14 Worthington Utilities	Wellhead Protection	Education & awareness	*DWSMAs*
	Ag BMPs	Protect groundwater	*DWSMAs*
	Rural Residential land use	Non-compliant septics, well sealing, turf/haz waste	*DWSMAs*
	Industrial/Commcial land use	Non-point source management	*DWSMAs*
15 City of Worthington	Wellhead Protection		
	Water Quality	Control non-point sources of phosphours and sediment	*Lake Okabena watershed*
	Flooding	Flood Insurance Study indicates 650 properties at risk	*County Ditch 12 floodplain*
16 Jackson Co Planning	Impaired Waters	Soil erosion, feedlot/ISTS	*Okabena & Jack Creek*
	Quantity	Need to slow/hold water, reestablish wetlands	*Okabena & Jack Creek*
	Erosion/sediment Control	Ag best management practices	*Erodible lands*
17 Rock Co Land Mgmt	Impaired Waters	Coordination to address turbidity & fecal contamination	*Rock River watershed*

C.3 Summary of Task Force Proceedings.

Nobles County Local Water Plan Update Public Information Meeting
Priority Water Management Concerns for Nobles County
Nobles County Public Works Building, Worthington
July 31, 2007

Attendees:

Ed Lenz	Paul Langseth	Diane Thier
Connie Frahm	Rick Nelsen	Jane Steffl
Jim McGowan	Tim Henning	Dan Livdahl
Norm Gallagher	Wayne Smith	Kevin Norskog
Steve Woltjer	Marv Zylstra	John Shepard
Jan Voit	Coleen Gruis	Shirley Vis
Gregg Harberts	Eric Roos	Dean Christopherson
Al Langseth		

Introductions
Paul Langseth called the update information meeting to order at 7:00 p.m. and welcomed all present and began introductions.

Brief Overview of Water Planning Process
John Shepard explained the purpose of the meeting and went on to review the Local Water Management Update process. John expects to be able to put together the Priority Concerns Scoping Document (PCSD) after the meeting tonight and another meeting will be planned toward the end of August to review the PCSD. The Task Force will probably hold 3 or 4 more meetings for this winter.

Accomplishments of the existing Water Plan
The Nobles County Water Plan is the plan for County and the Soil and Water Conservation District, but is the only plan in the state of Minnesota that also includes two watershed districts: the Okabena-Ocheda Watershed District and the Kanaranzi-Little Rock Watershed District.

Ed Lenz stated the Nobles SWCD has supported the implementation of the Plan by providing technical and financial assistance, as well as the promotion of several Federal, State and Local government programs. USDA Farmbill programs such as CRP, CREP, EQIP and WHIP along with state programs including State Cost-share, BWSR feedlot grants, the AgBMP loan program, RIM and administration of the Wetland Conservation Act all support the implementation of the Water Plan. A majority of our efforts are concentrated on the Water Plan priorities including protection of groundwater and surface water quality, flood prevention and reduction as well as wildlife habitat improvement.

Wayne Smith reported the Nobles County Environmental Services began years ago with a half-time water planner and an Environmental Advisory committee was formed. A lab was set to perform baseline water testing for the County. Wayne also discussed the county Well Sealing Program and the coordination of funding from the watersheds and the work of local Solid Waste Program. A final payment was just made for the Nobles County Digitized Soil Survey that was recently completed.

Kevin Norskog reported the Kanaranzi-Little Rock Watershedôs main goal has been upland treatment and one of the reasonôs the K-LR Watershed was formed was to control flooding and reduce flood damage. The federal PL566 program has provided many dollars towards this effort and will be phasing out, and EQIP will provide funding in the future. Dan Livdahl stated the Okabena Ocheda Watershed has been providing additional cost-share to landowners in the watershed with Nobles County Local Challenge Grant. They have also provided cost-share incentives for the RIM, CREP and wellhead protection areas.

The Heron Lake Watershed District is not a part of the Nobles County Water Plan, but Jan Voit reviewed several of the programs they are currently involved within Nobles County. The programs included the rock inlet program, the TMDL studies, CWP grants, the septic systems, conservation tillage demo plots and their education programs.

Water and Land Resource Plans and Official Controls Submitted
In writing this plan, John is required to solicit the rules and regulations of the watersheds within Nobles County. The HLWD has already submitted their watershedôs rules. Plans need to be coordinated, as the County Water Plan may supersede other plans with in the County.

Priority Concerns Submitted from State and Local Agencies and the Public
John distributed listing of Examples of Local Water Management Priority Concerns in SW MN. It included the priority concerns from Rock, Murray, Cottonwood, Lincoln, Redwood and Jackson counties. Eighty letters had been out requesting priority concerns in Nobles County. He then handed out a summation sheet of the seventeen water management concerns that have submitted to date and reviewed each of them.

Priority Concerns of the Task Force
The concerns were summarized in 3 general categories and discussed. The Task Force was asked to add and clarify concerns.

Tim Henning discussed DNR and their handling of beaver dams in local streams. This was added to the concerns as critical species habitat issue. The big question still remaining is funding. Wayne Smith stated flooding has been a major issue for Nobles County and that new floodplain maps are being made, this could change floodplain designations of many properties in Nobles County.

Paul Langseth asked for any other concerns and then asked ñWhat else was not on the lists?ò and went around the room. Marv Zylstra added water retention and wetland restoration issues. Steve Woltjer added feedlots and nutrient management. He discussed the control of nutrient management being enforced locally. Al Langseth reported it is a part of their annual inspection to review nutrient plans in the County. Wayne Smith stated, for both surface and groundwater, nutrient management should be a priority. Norm Gallagher reported the importance of raingardens with the Lake Association and the development of the E.O. Olson Trust that may help funding of projects to clean the water going into Lake Okabena. Dan Livdahl added that land retirement programs are very beneficial from both surface and groundwater protection. The Okabena-Ocheda Watershed has spent a great deal towards incentives for land retirement programs. Tim Henning added the importance of AgBMPôs, upland treatment and has underground tanks are being addressed. Dean Christopherson added one of the largest sources of nutrients in lakes is the lawn fertilizers. Ed Lenz suggested that land retirement may be the only solution to the wellhead protection areas in Worthington, Adrian, and Ellsworth. Eric Roos added the TFEôs from high-water industries and brownfields. Paul Langseth talked about the rural water drinking supply.

Putting It All Together
John will put these concerns together in an outline and present at the next meeting of the Nobles County Task Force.

Next Step
The next meeting was scheduled for August 28, 2007, at 7:00 p.m., at the Nobles County Public Works Building.

Nobles County Local Water Plan Update PCSD Meeting
Nobles County Public Works Building, Worthington
August 28, 2007

In Attendance:

Ed Lenz,	Jerry Lonneman	Coleen Gruis	Kevin Norskog
Connie Frahm	Lance Becker	Greg Gruis	Jan Voit
Jim McGowan	Richard Nelsen	Eric Roos	Scott Rall
Diane Thier	Jim Joens Jr	Jim Knips	John Shepard
Steve Woltjer	Wayne Smith	Jane Steffl	
Roger Doeden	Marv Zylstra	Dan Livdahl	

Introductions

Jane Steffl called the update information meeting to order at 7:00 p.m., welcomed all present and began introductions. It was noted that Roger Doeden sat in for Dean Christopherson, Farmers Bureau and Jim Joens Jr. represented Farmers Union for Tim Henning.

Recap July public meeting

John Shepard reviewed the notes from the July 31, 2007, meeting and asked for any corrections. The July meeting brought all the priority concerns submitted for public review and then were listed in categories to help develop the Priority Concerns Scoping Document.

Review PCSD

Copies of the Draft were presented to the task force members. John reviewed the draft, including County Primer, the Plan Information, the Task Force members and the chronology of the work meetings. Summary notes will be included in the final Water Plan from each of those meetings.

Confirm Priority Concerns

The task force approved the three general concerns for Nobles County as: 1) Surface Water Quality, 2) Drainage Management and 3) Public Water Supply.

Focus Area for Priority Concerns

Focus areas were discussed under the general priority concerns with the task force. The draft PCSD was approved with minor adjustments.

Next Steps

The next step will be to make the adjustments that were discussed and submit the document for State review to BWSR (Board of Water & Soil Resources). A group from this task force will plan to meet with the BWSR Southern Regional Board to review the comments made. The Nobles County Water Plan Task Force will plan to meet 3 or 4 times through the winter developing the plan update by using the approved PCSD. The task force requested that these meetings begin at 6:00 p.m. Notices of these will be sent out when the dates of the meeting are set.

D. PRIORITY CONCERN SELECTION

The Priority Concerns listed above (Section B) were selected by the Local Water Management Plan Task Force members after reviewing the concerns submitted by state and local agencies and the public. Letters were presented at the public input meeting and discussed. Staff then reviewed and refined focused Priority Concerns for Task Force consideration. After further discussion, the Task Force members selected the Priority Concerns by consensus.

E. PRIORITY CONCERNS NOT ADDRESSED BY THE PLAN

The Nobles County Local Water Management Plan Task Force carefully considered all concerns submitted, as well as concerns of individual members representing a diverse constituency in the County. Concerns beyond the specific focus of the Priority Concerns listed above are typically beyond the scope of local water management, or are currently or potentially being addressed by other entities which work closely with Nobles Soil & Water Conservation District, Nobles County Environmental Services, Kanaranzi-Little Rock Watershed District, and Okabena-Ocheda Watershed District.

G.2 Soils Report

Acreage and Proportionate Extent of the Soils

Nobles County, Minnesota

Map symbol	Map unit name	Acres	Percent
GP	Pits, gravel-Udipsamments complex	885	0.2
L5A	Delft, overwash-Delft complex, 1 to 4 percent slopes	5,834	1.3
L6A	Biscay loam, 0 to 2 percent slopes	343	*
L78A	Canisteo clay loam, 0 to 2 percent slopes	8,314	1.8
L79B	Clarion loam, 2 to 5 percent slopes	44,324	9.6
L83A	Webster clay loam, 0 to 2 percent slopes	46,909	10.2
L85A	Nicollet clay loam, 1 to 3 percent slopes	51,837	11.2
L88A	Lura silty clay, depressional, 0 to 1 percent slopes	813	0.2
L96B	Estherville-Hawick complex, 2 to 6 percent slopes	310	*
L97C	Hawick-Estherville complex, 6 to 12 percent slopes	70	*
L98A	Crippin-Nicollet complex, 1 to 3 percent slopes	246	*
L102C2	Omsrud-Storden complex, 6 to 12 percent slopes, moderately eroded	10,256	2.2
L102D2	Omsrud-Storden complex, 12 to 18 percent slopes, moderately eroded	1,374	0.3
L107A	Canisteo-Glencoe, depressional, complex, 0 to 2 percent slopes	1,938	0.4
L111A	Nicollet silty clay loam, 1 to 3 percent slopes	11,587	2.5
L112A	Webster silty clay loam, 0 to 2 percent slopes	8,081	1.7
L126A	Coland silty clay loam, 0 to 2 percent slopes, occasionally flooded	3,924	0.8
L127A	Coland silty clay loam, channeled, 0 to 2 percent slopes, frequently flooded	2,500	0.5
L129B	Terril loam, 2 to 6 percent slopes	553	0.1
L130A	Okoboji mucky silty clay loam, depressional, 0 to 1 percent slopes	602	0.1
L133A	Waldorf silty clay loam, 0 to 2 percent slopes	14,183	3.1
L134B	Clarion-Crooksford complex, 1 to 5 percent slopes	16,032	3.5
L135A	Okabena silty clay loam, 1 to 3 percent slopes	11,982	2.6
L136A	Crooksford silty clay loam, 1 to 3 percent slopes	2,821	0.6
L137A	Cylinder loam, 0 to 2 percent slopes	189	*
L138B	Estherville loam, 1 to 6 percent slopes	582	0.1
L139A	Wadena loam, 0 to 2 percent slopes	373	*
L139B	Wadena loam, 2 to 6 percent slopes	420	*
L140A	Ocheda silty clay loam, 1 to 3 percent slopes	8,987	1.9
L141A	Spillville loam, 0 to 2 percent slopes, occasionally flooded	924	0.2
L144A	Chetomba silty clay loam, 0 to 2 percent slopes	6,560	1.4
L145A	Canisteo silty clay loam, 0 to 2 percent slopes	5,079	1.1
L146A	Glencoe silty clay loam, depressional, 0 to 1 percent slopes	5,217	1.1
L150A	Prinsburg silty clay loam, 0 to 2 percent slopes	2,245	0.5
L151A	Glencoe mucky silty clay loam, ponded, 0 to 1 percent slopes	422	*
L152B	Lowlein-Round lake complex, 1 to 6 percent slopes	2,410	0.5
L153A	Essexville sandy loam, 0 to 2 percent slopes	270	*
L154E	Belview-Ridgeton complex, 15 to 45 percent slopes	465	0.1
L155A	Okoboji mucky silty clay loam, ponded, 0 to 1 percent slopes	550	0.1
L156C2	Omsrud-Storden-Pilot Grove complex, 6 to 12 percent slopes, moderately eroded	1,055	0.2
L156D2	Omsrud-Storden-Pilot Grove complex, 12 to 18 percent slopes, moderately eroded	161	*
L157A	Lowlein loam, 0 to 2 percent slopes	1,125	0.2
L158B	Round lake sandy loam, 1 to 6 percent slopes	1,247	0.3
L159A	Knoke mucky silty clay loam, depressional, 0 to 1 percent slopes	1,970	0.4
L160B	Dickinson sandy loam, loamy substratum, 1 to 6 percent slopes	251	*
L161C	Estherville-Pilot Grove complex, 6 to 12 percent slopes	453	*
L162B	Clarion-Round lake complex, 2 to 6 percent slopes	676	0.1
L163A	Okoboji silty clay loam, depressional, 0 to 1 percent slopes	915	0.2
L170B	Estherville-Round lake complex, 2 to 6 percent slopes	312	*
M-W	Water, miscellaneous	201	*

* See footnote at end of table.

Acreage and Proportionate Extent of the Soils

Nobles County, Minnesota

Map symbol	Map unit name	Acres	Percent
P1B	Annieville silty clay loam, 2 to 5 percent slopes	1,057	0.2
P2A	McCreath silty clay loam, 1 to 3 percent slopes	2,745	0.6
P3A	Biscay silty clay loam, 0 to 2 percent slopes, occasionally flooded	5,533	1.2
P7A	Comfrey clay loam, 0 to 2 percent slopes, occasionally flooded	4,029	0.9
P9A	Gillett Grove silty clay loam, 0 to 2 percent slopes	4,756	1.0
P12B	Everly silty clay loam, 2 to 6 percent slopes	31,865	6.9
P12C2	Everly silty clay loam, 6 to 12 percent slopes, moderately eroded	2,231	0.5
P15B	Galva silty clay loam, 2 to 5 percent slopes	214	*
P20B	Judson silt loam, 3 to 8 percent slopes	238	*
P21A	Marcus silty clay loam, 0 to 2 percent slopes	135	*
P27A	Primghar silty clay loam, 1 to 3 percent slopes	122	*
P28A	Ransom silty clay loam, 1 to 3 percent slopes	20,151	4.4
P29A	Rushmore silty clay loam, 0 to 2 percent slopes	28,983	6.3
P30B	Sac silty clay loam, 2 to 5 percent slopes	20,716	4.5
P31A	Spicer silty clay loam, 0 to 2 percent slopes	494	0.1
P33A	Spillco silt loam, 0 to 2 percent slopes, occasionally flooded	638	0.1
P36A	Talcot silty clay loam, 0 to 2 percent slopes, occasionally flooded	449	*
P37D	Talmo gravelly sandy loam, 6 to 35 percent slopes	86	*
P38B	Thurman sandy loam, 2 to 6 percent slopes	3,650	0.8
P38C	Thurman sandy loam, 6 to 12 percent slopes	448	*
P43A	Wilmonton silty clay loam, 1 to 3 percent slopes	7,691	1.7
P45E	Moneta clay loam, 15 to 45 percent slopes	214	*
P48A	Allendorf silty clay loam, 0 to 2 percent slopes	10,557	2.3
P48B	Allendorf silty clay loam, 2 to 6 percent slopes	7,143	1.5
P49A	Comfrey clay loam, 0 to 2 percent slopes, frequently flooded	1,869	0.4
P50B	Everly-Kanaranzi complex, 2 to 6 percent slopes	242	*
P51C2	Everly-Moneta-Talmo complex, 6 to 12 percent slopes, moderately eroded	630	0.1
P52D2	Moneta-Everly-Talmo complex, 12 to 18 percent slopes, moderately eroded	144	*
P53C2	Everly-Moneta complex, 6 to 12 percent slopes, moderately eroded	329	*
P54D2	Moneta-Everly complex, 12 to 18 percent slopes, moderately eroded	223	*
P55A	Kato silty clay loam, 0 to 2 percent slopes	556	0.1
P56A	Kanaranzi silt loam, 0 to 2 percent slopes	777	0.2
P56B	Kanaranzi silt loam, 2 to 6 percent slopes	1,942	0.4
U3B	Udorthents (cut and fill land), 0 to 6 percent slopes	51	*
U7	Udorthents, shallow (sanitary landfill)	18	*
U15A	Havelock clay loam, 0 to 2 percent slopes, frequently flooded	3,534	0.8
U24A	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	4,791	1.0
W	Water	3,972	0.9
Total		462,000	100.0

* Less than 0.1 percent.

Source: SSURGO Version 2.2