Minnesota
Conservation Reserve Enhancement Program (CREP)

Red River Basin, Spring 1997

April 2005

Final Programmatic Environmental Assessment

Farm Service Agency
United States Department of Agriculture

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ABSTRACT

FEDERAL ACTION: The U.S. Department of Agriculture (USDA), Farm Service Agency (FSA), proposes to evaluate alternatives to and potential effects of a voluntary enrollment type of conservation program in the State of Minnesota. The goals of this program are to control erosion, improve water quality and enhance wildlife habitat within three targeted watersheds including the Red River of the North, the Missouri and the Minnesota portion of the Lower Mississippi basin. The Conservation Reserve Enhancement Program (CREP) is a component of the USDA Conservation Reserve Program (CRP), the largest and most comprehensive Federal conservation program.

LEAD AGENCIES: FSA, through funding provided by the Commodity Credit Corporation (CCC), is the lead Federal Agency for administering CREP. The Minnesota Board of Water and Soil Resource (BWSR), a partner with FSA, is the lead State agency. BWSR and cooperating agencies contribute to the monitoring and mapping occurring within the CREP area.

AUTHORITY: CREP is authorized pursuant to the provisions of the Food Security Act of 1985, as amended (16 U.S.C. 3830 *et seq.*), and promulgated in 7 CFR 1410.

DOCUMENT TYPE: Programmatic Environmental Assessment (PEA), prepared in accordance with the National Environmental Policy Act of 1969 (P.L. 91-190; 42 U.S.C. 4321-4347), as amended, 40 CFR 1500-1508, and FSA environmental regulations at **7** CFR Part 799.

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COMMENTS: This Final PEA was prepared in accordance with the United States Department of Agriculture FSA National Environmental Policy Act Implementation Procedures found in 7 CFR 799, as well as the National Environmental Policy Act of 1969, Public Law 91-190, 42 U.S.C. 4321-4347, 1 January 1970, as amended. A Notice of Availability for the Finding of No

Significant Impact (FONSI) is being published in local newspapers and is posted on the FSA website (http://www.fsa.usda.gov/dafp/cepd/epb/assessments.htm) concurrent with this Final PEA. Any written comments regarding this final assessment shall be submitted to: Jeff Johnson, State Environmental Coordinator, Farm Service Agency, Box 994, Willmar Minnesota by May 20, 2005. All revisions made to this Final PEA are bold and italicized.

ACRONYMS & ABBREVIATIONS

BALMM	Basin Alliance for the Lower Mississippi in Minnesota
BMPs	Best Management Practices
BWSR	Board of Water and Soil Resources
CCC	Commodity Credit Corporation
CCRP	Continuous Conservation Reserve Program
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CREP	Conservation Reserve Enhancement Program
CREP II	Conservation Reserve Enhancement Program II
CRP	Conservation Reserve Program
EBI	Environmental Benefits Index
ECP	Emergency Conservation Program
EPA	U.S. Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
EWPP	Emergency Watershed Protection Program
FIP	Forestry Incentive Program
FLEP	Forest Lands Enhancement Program
FONSI	Finding of No Significant Impact
FSA	Farm Service Agency
FWP	Farmable Wetland Program
FWS	U.S. Fish & Wildlife Service
GIS	Geographic Information System
GRP	Grassland Reserve Program
DNR	Minnesota Department of Natural Resources
LMRB	Lower Mississippi River Basin
MFA	Minnesota Forestry Association
MLRA	Major Land Resource Areas
MPCA	Minnesota Pollution Control Agency
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act of 1969
NGO	Non Government Organization
NRI	Natural Resources Inventory
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PRP	Pasture Recovery Program
RIM	ReInvest in Minnesota
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SIP	Stewardship Incentive Program
SIP	Signing Incentive Program
SSRP	Stream bank Stabilization and Restoration Program

SWCDs	Soil and Water Conservation Districts
TAP	Tree Assistance Program
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
UMRS	Upper Mississippi River System
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
WHIP	Wildlife Habitat Incentives Program
WMA	Wildlife Management Area
WRP	Wetlands Reserve Program

CHAPTER 1.0 PURPOSE OF AND NEED FOR ACTION

1.1 History and Background

1.1.1 Conservation Reserve Program (CRP)

The Conservation Reserve Program (CRP) was initially authorized by Congress in Title XII of the Food Security Act of 1985, as amended (16 U.S.C. 3830 *et seq*.), and was reauthorized by the Farm Security and Rural Investment Act (2002 Farm Bill) through December 31, 2007. The program is administered by the U.S. Department of Agriculture's Farm Service Agency (FSA) through the Commodity Credit Corporation (CCC). Cooperators include the Natural Resources Conservation Service (NRCS); Cooperative State Research, Education and Extension Service; state forestry agencies; county Soil and Water Conservation Districts; and the Minnesota Board of Water and Soil Resources.

CRP's objective is to cost-effectively assist landowners and farm operators in conserving and improving the nation's natural resources by reducing soil erosion, improving water quality and enhancing wildlife habitat. Today, CRP is a voluntary, long-term conservation program that offers farmers and landowners an annual CRP rental payment, maintenance rate, certain incentives and up to 50 percent of the costs of establishing a permanent land cover, such as grass or trees. In exchange, the landowner agrees to retire highly erodible or environmentally sensitive cropland from production for 10 to 15 years.

CRP is the single largest and most comprehensive voluntary conservation program ever undertaken by the Federal government. CRP is authorized to maintain a maximum enrollment of 39.2 million acres. The general eligibility criteria for CRP are—

1. the land must be cropland that has been cropped four of the previous six years or be marginal pastureland, and
2. no more than 25 percent of the cropland in a county may be enrolled in CRP. The 25-percent limitation also applies and includes lands currently enrolled in the farmable wetland program (FWP), CRP continuous signup (CCRP), general signups and CREP.

Highly erodible and other environmentally sensitive land, formerly cropland, is retired from production and converted to a long term resource conservation cover, such as native grasses, trees and riparian buffers. Only the most environmentally sensitive land, yielding the greatest environmental benefits, is accepted into the program. For General Signups, an Environmental Benefits Index (EBI) was developed in 2002 to select areas and acreages offering the greatest environmental benefits. The EBI consists of the following factors:

- Wildlife habitat benefits
- Water quality benefits from reduced erosion, runoff and leachate
- On-farm benefits of reduced erosion
- Long-term retention benefits
- Air quality benefits from reduced wind erosion
- Location in a Conservation Priority Area, if applicable[i]
- Cost of enrollment per acre

For certain high priority conservation practices (CPs) yielding highly desirable environmental benefits, producers may sign up for the program at any time without waiting for an announced sign-up period. Continuous sign-up allows farmers flexibility in implementing certain CPs on their cropland. These CPs are specially designed to achieve significant environmental benefits, giving program participants a chance to help protect and enhance wildlife habitat, improve air quality and improve the condition of water resources. These practices include filter strips, riparian buffers, shelter belts, grass waterways and shallow water areas for wildlife.

Of the total acres enrolled in CRP nationwide, 2.5 million have been planted to trees and 2 million acres have been converted to wildlife habitat and special shallow water areas. In addition, there are approximately 8,500 miles of CRP filter strips along water bodies and 32.3 million acres in grass cover.[ii]

In 2002, FSA prepared a programmatic environmental impact statement (PEIS) on the nationwide CRP, which was followed by a Record of Decision (ROD) issued in 2002. The PEIS and associated ROD addresses the environmental impacts of both CRP and CREP from a national programmatic level.

1.1.2 Conservation Reserve Enhancement Program (CREP)

On February 19, 1997, CCC issued a final rule in 7CFR 1410.50 (b) that authorizes CCC to enter into agreements with states to use CRP to cost-effectively further "specific conservation and environmental objectives of that state and the nation."

The primary goals of CREP are to improve water quality, reduce soil erosion, enhance air quality, develop and enhance fish and wildlife habitat for species of State and local importance and provide for the recovery of threatened and endangered species and their critical habitat areas. CREP is a community based, results oriented program centered on local participation and leadership. Between 1997 and 2002, 24 states, including Minnesota, have established CREP programs.

Like CRP, CREP is administered by FSA and funded by CCC. CREP offers incentives to landowners to develop CPs that protect environmentally sensitive land, decrease erosion, restore wildlife habitat and protect water resources. These incentives are used to encourage farmers to voluntarily enroll in multi-year contracts with states and convert cropland to native vegetation, and to establish riparian buffer zones, plant trees and restore wetlands.

CREP differs from CRP in the following four ways:

1. CREP is targeted to specific geographic areas and is designed to focus conservation practices on specific environmental concerns of a high priority;
2. CREP is a joint undertaking among states, the Federal government and other stakeholders who have an interest in addressing particular environmental issues;
3. CREP is results-oriented and requires states to establish measurable objectives and conduct annual monitoring to measure progress toward implementing those objectives; and
4. CREP is flexible, within existing legal constraints, and can be adapted to meet local conditions on the ground.

1.1.3 Minnesota Conservation Reserve Enhancement Program (CREP)

The Minnesota River CREP Agreement was originally signed on February 19, 1998 through a Memorandum of Agreement (MOA) between the CCC and the State of Minnesota. The focus of the Minnesota River Watershed CREP is to target marginal frequently flooded cropland in the floodplain of the mainstream river and principal tributaries of the Minnesota River; riparian buffers along cropland identified as a pollutant contributor; and wetland restoration with a high potential for providing water quality and wildlife benefit. Offers to enroll land in the MN River Watershed CREP began April 1, 1998.

A total of 38 counties comprise the Minnesota River Watershed. One hundred thousand acres of cropland were enrolled in this original CREP, although no more than 25 percent of cropland in a county could be enrolled. This CREP was implemented through a Federal-State-local partnership in the eligible area. The agencies responsible for implementing the program were FSA, NRCS, Minnesota Board of Water and Soil Resources (BWSR), Minnesota Department of Natural Resources (DNR) and the county Soil and Water Conservation Districts (SWCDs). Other agencies and organizations also provide guidance and assistance.

1.1.4 Minnesota Conservation Reserve Enhancement Program the Second Generation (CREPII)

USDA and the State of Minnesota have now initiated a $250 million Conservation Reserve Enhancement Program (CREP) to restore 120,000 acres of environmentally sensitive land in three targeted watersheds. Enrollment goals are 51,000 acres in the Red River Watershed in Northwestern Minnesota, 51,000 acres in the Lower Mississippi Watershed in southeastern Minnesota and 18,000 acres in the Des Moines/Missouri River Watershed in southwestern Minnesota.

This new CREP, administered by FSA and BWSR, in cooperation with NRCS, SWCDs, and Watershed Districts, proposes to use Federal and state resources through CRP and the Reinvest in Minnesota Program (RIM) to meet State specific environmental objectives and to protect environmentally sensitive land. Under CREP, landowners voluntarily enroll in a 14 to 15 year CRP contract and a concurrent 45 year RIM contract except for the Contour Strip Practice-CP15A. Landowners seeking to enroll in CREP must enroll in both CRP and RIM. FSA, NRCS, watershed districts and SWCD offices will partner in promoting and enrolling participants in CREP. In CREP, landowners must convert environmentally sensitive cropland to native grasses, trees and other conservation practices to improve water quality, soil, flood damage reduction and wildlife habitat. CREP provides annual rental payments, easement payments, and cost-share assistance.

1.2 Proposed Action

The establishment of the CREP II proposal seeks to convert environmentally sensitive cropland in the three targeted watersheds to native vegetation to improve water quality, wildlife habitat and to reduce soil erosion and phosphorus and nitrogen loads, increase flood damage reduction/storage. CREP land management practices will continue to improve the water quality and enhance fish and wildlife habitat, particularly for certain identified threatened and endangered (T&E) species. Certain

select CRP practices will conform to the programmatic goals set forth in CRP; the land management goals identified in CREP; and the goals presented in the Governor's Clean Water Initiative.

Landowners, who voluntarily enter into a contractual agreement with the State of Minnesota through the RIM program and take environmentally sensitive land out of agricultural production, receive financial and cost-share incentives and technical assistance for planting specific types of native vegetation and trees near rivers, streams, wetlands and other bodies of water. A State contract or easement may not be entered into unless the landowner enrolls in a Federal CREP contract. Landowners may choose from a permanent Minnesota RIM easement on certain targeted areas or a 30-year state RIM contract.

To be eligible for enrollment into the Minnesota CREP, the land—

- Must be located in one of three targeted watersheds;
- Must meet location and practice criteria; and
- Must have been cropped four of the last six years or be considered marginal pastureland that meets both of the following provisions:
  i) The conservation practice must be associated with scour erosion.
  ii) The land is located in the NW Minnesota CREP Area.
  iii) Remnant native prairie areas will not be disturbed by the practice or implementation

1.3 Purpose of Action

CREP is a results-oriented, community-based conservation partnership program between FSA and the State of Minnesota and was developed to address specific state and nationally significant water quality, soil erosion and wildlife habitat issues linked to agriculture.

The main purposes of the this proposed Minnesota three-pronged CREP is to reduce sedimentation and runoff into the Red River, the Lower Basin of the Upper Mississippi, sections of the Des Moines and Missouri Watersheds in Southwest Minnesota and their respective tributaries; reduce flooding and the associated damages on the Red River; and to encourage the growth of local wildlife populations through habitat enhancement.

More specifically the goals are to enroll 120,000 acres of environmentally sensitive cropland in the targeted watersheds to:

- Reduce sediment loading in the three targeted watersheds by 420,000 tons per year.
- Reduce phosphorus loading in streams and rivers by 530,000 pounds per year.
- Establish 61,897 acres of riparian buffers **(15 year CRP contract + 30 year RIM easement);** this will protect 2,500 linear miles of streams, rivers, and ditches.
- Enroll 8,195 acres of land in sensitive groundwater areas **(15 year CRP contract + 30 year RIM easement)**; this will help protect the drinking water supplies used by 250,000 people.
- Restore 24,000 acres of wetland and associated upland **(15 year CRP contract +perpetual RIM easement)**; in addition to water quality and wildlife benefits, wetland restorations will increase water storage capacity of the targeted watersheds by 10,000-20,000 acre feet.

- Enroll 5,000 acres into flood-damage reduction projects **(15 year CRP contract +perpetual RIM easement)**, to reduce agricultural flooding impacts and enhance natural resource benefits.
- Establish 120,000 acres of long-term wildlife habitat in the targeted watersheds for the preservation of natural diversity of Minnesota's biological resources, including threatened and endangered species associated with riparian and wetland habitats.

Figure 1-1 - Main Street of Warren, MN, Spring 1996 (NRCS Photo)

1.4 Need for Action

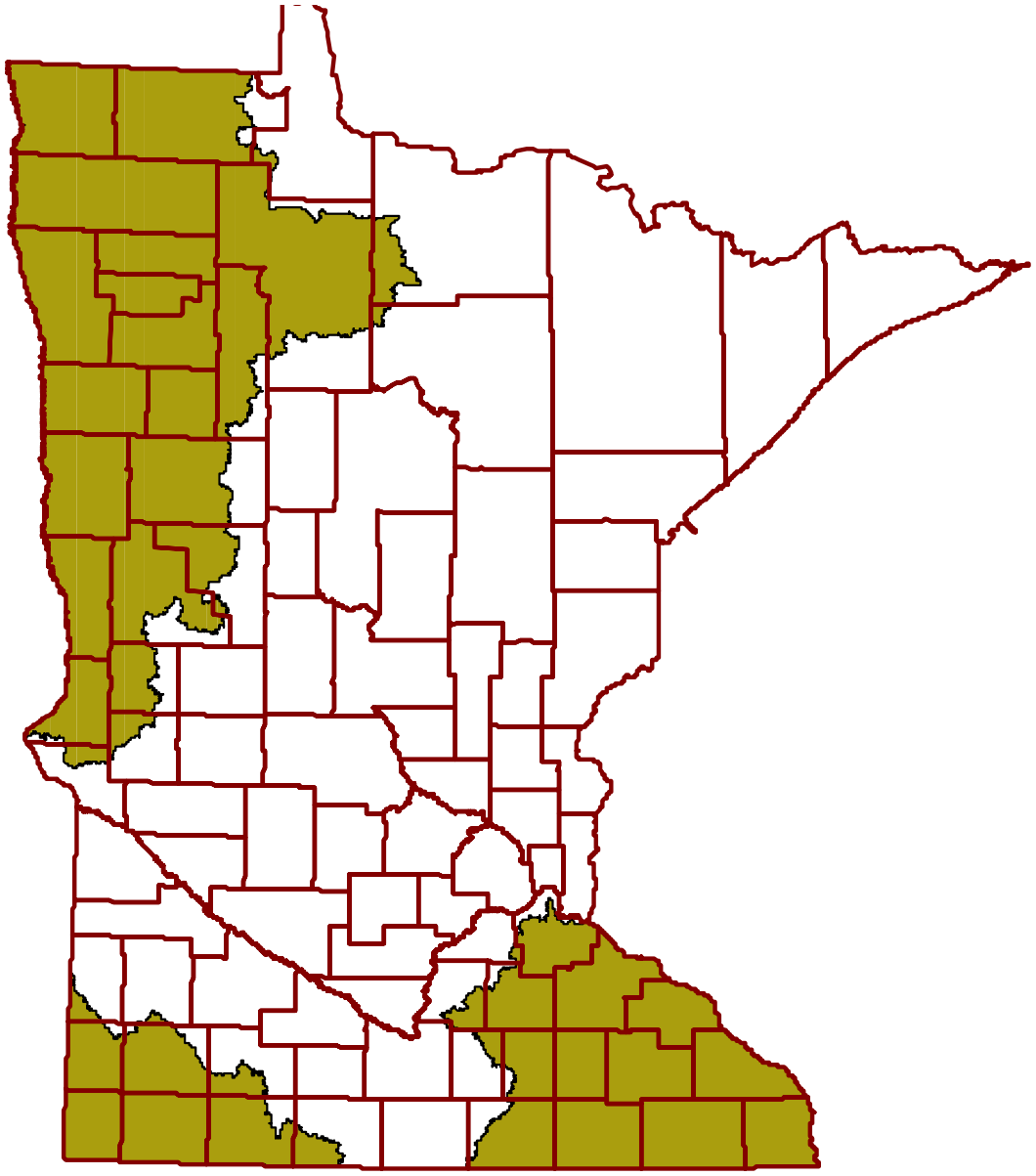

Figure 1-2 Map showing locations of the three proposed CREP areas in Minnesota (BWSR)

1.4.1 Red River Basin

Figure 1-3 - Hay production in the Red River basin from *A User's Guide to Natural Resource Efforts in the Red River Basin, 2001.*

Agriculture has long been major economic engine in northwest Minnesota and the Red River Valley. The Red River Basin of the North faces critical vulnerabilities to environmental degradation that are heavily affected by the management of agricultural land. Extensive drainage of wetlands has made the region's productive soil available for cropping, including most of the riparian areas that border the area's rivers and streams. This leads to a high potential for soil erosion in areas with a high delivery of sediment to surface water. In addition, the combination of extensive land drainage and widespread row cropping contributes to higher stream flows following high precipitation events, and to lower base flows during dryer periods.

The primary natural resource concerns on farmland in the basin are flood damages, soil erosion, poor water quality, and loss of the diversity of wildlife habitat. Wind erosion is among the worst in the nation and results in loss of long-term soil productivity, clogged waterways, crop damage and water turbidity. Land use in the basin and frequent flooding has accelerated the impacts on the natural resources. Disaster events in the Red River Basin have major impacts on the area as well as the nation's financial and human resources. The Red River Basin has experienced several large-scale flood events over its recorded history. The flood of 1997 brought national attention to water

management and policy issues in the Basin and resulted in over $1.2 billion in flood relief from a variety of private, Federal, and State sources. From 1993 to 1997, flood damage expenditures in the Red River Basin were approximately $421 million per year. This number does not include related expenditures such as poor water quality (i.e. elevated treatment costs), public ditch system maintenance, and damages to remaining wildlife habitat (Red River Basin Board 2000).

Red River Valley farmers play a crucial role in basin-wide efforts to improve natural resources and to reduce flood damages. The region's main rivers originate in this headwaters region and flow westward to the main stem of the Red River. These forces combine to create widespread water quality impairments for fecal coliform bacteria and turbidity. Because the historic forces which have led to current conditions show no signs of abatement, there is a need to provide economic incentives to landowners to place certain high priority areas in conserving uses so that the remaining acreage can be profitably farmed while environmental impacts on water and wildlife are appreciably reduced.

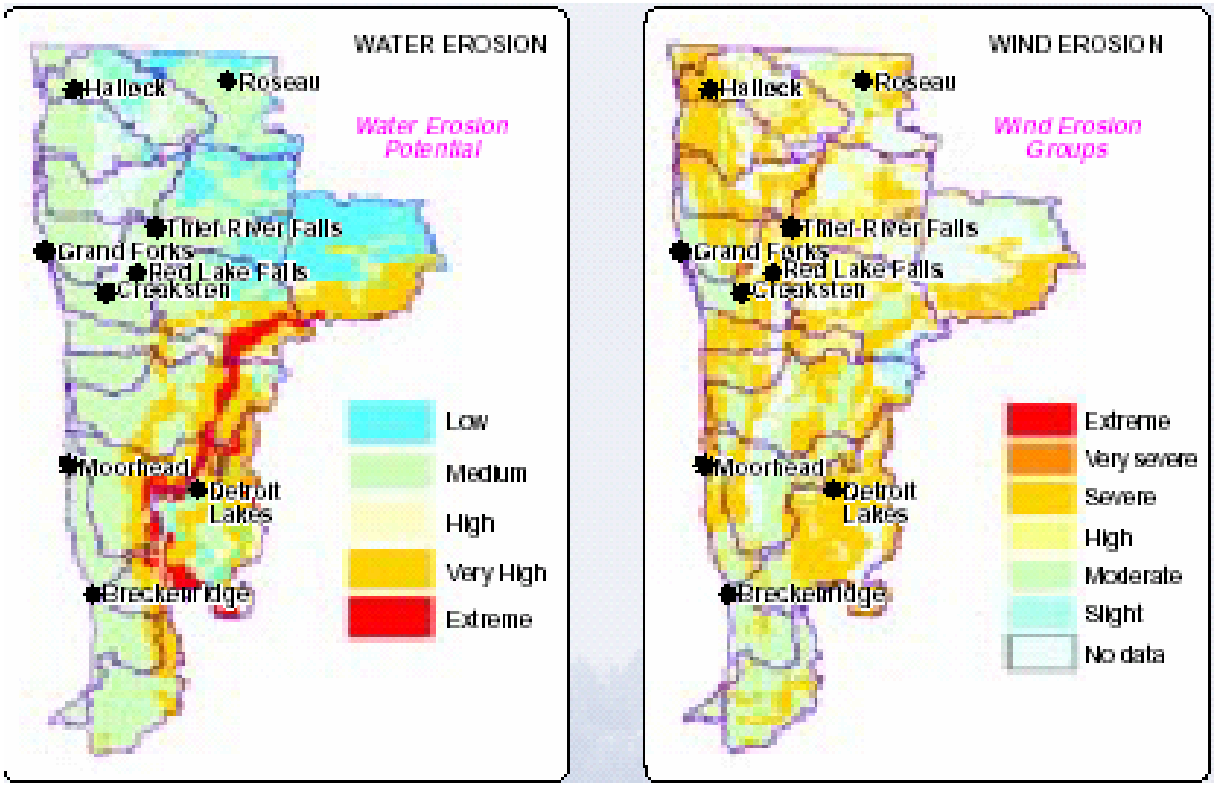

Figure 1-4 – A User's Guide to Natural Resource Efforts in the Red River Basin, 2001

1.4.2 Lower Mississippi River

Similar to the Red River, the Lower Mississippi River Basin of Southeast Minnesota also faces critical vulnerabilities to degradation that are heavily affected by the management of agricultural land as well as by increased development pressures. In karst topography, which dominates the eastern basin, steep slopes covered with a thin mantle of loess-type, wind-deposited soils create the

potential for high rates of soil erosion from water runoff. At the same time, fractured bedrock underlying the thin topsoil creates a high potential for groundwater contamination from surface activities. Historically, this area was settled with small, quarter-section farms with livestock facilities – both pastures and small feedlots -- located near streams. In this karst area, the rapid decline of livestock production has brought about a significant shift in land use from perennial (pasture and hay) to annual row crops (corn and soybeans), a shift that exacerbates the already high potential for soil erosion and groundwater contamination.

The western part of the basin has less extreme topography but is more intensively farmed, mainly with row crops (corn and soybeans). Extensive drainage of wetlands has made the region's productive soil available for cropping, including most of the riparian areas that border the area's streams. This leads to a high potential for soil erosion in areas with a high delivery to surface water. In addition, the combination of extensive land drainage and widespread row cropping contributes to higher stream flows following high precipitation events, and to lower base flows during dryer periods. The region's main rivers originate in this headwaters region and flow eastward (except the Cedar and Shell Rock).

Figure 1-5 - Sinkholes near Fountain, MN. (FSA)

This area of the State is also noted for the large amount of karst lands which include large numbers of sinkholes and limestone caves. These formations lend themselves well to rapid percolation and subsequent contamination of groundwater supplies as well as surface water. Pollutants and chemicals are easily dispersed throughout an area because the porosity of the limestone. Waste material easily enters the ground if runoff enters the sinkholes. Managing this runoff is an important part of prevention of additional pollution problems.

These forces combine to create widespread water quality impairments for fecal coliform bacteria and turbidity; high levels of coliform bacteria and nitrates in thousands of private wells that draw drinking water from the upper carbonate aquifers; and significant adverse impacts on the Mississippi River. Because the historic forces that led to current conditions show no signs of abatement, there is a need to provide economic incentives to landowners to place certain high priority areas in conserving uses so that the remaining acreage can be profitably farmed while environmental impacts on water and wildlife are appreciably reduced.

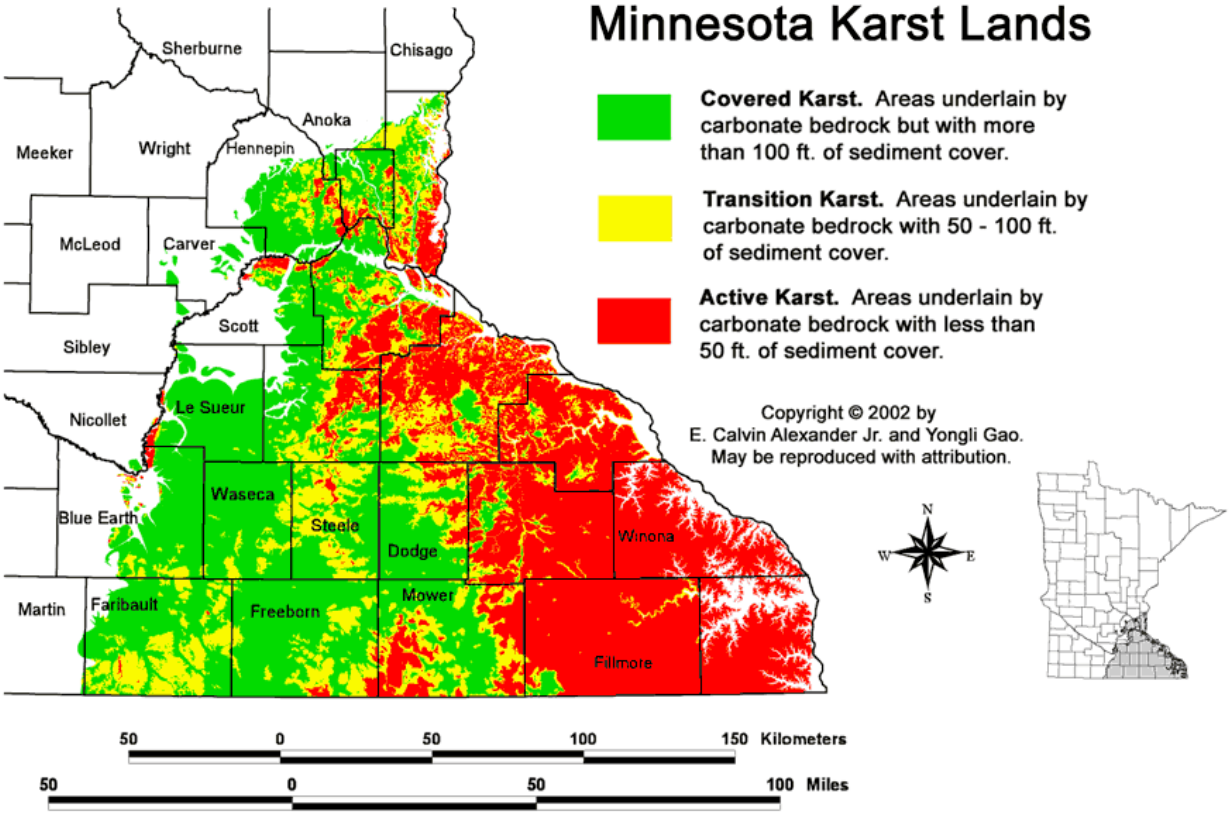

Figure 1-6 - Gao, Yongli, E. Calvin Alexander, Jr., and Robert G. Tipping (2002) The Development of a Karst Features Data Base for Southeastern Minnesota. Journal of Cave and Karst Studies, April 2002, v. 64, n. 1, pp. 51-57.

To help address this need, the Basin Alliance for the Lower Mississippi in Minnesota (BALMM) developed a Landscape Buffer Initiative as part of its comprehensive basin plan. The Initiative calls for multi-functional vegetated buffers in four types of strategic locations to reduce runoff, erosion, water pollution and peak stream flows while increasing wildlife habitat. The four strategic locations are: highly erodible land; riparian zones; drained wetlands; and groundwater protection zones. The current CREP application reflects the priorities included in the BALMM initiative.

1.4.3 Southwest Minnesota

The Des Moines and Missouri River Watersheds are experiencing degraded water quality due to increased crop production, lack of sound environmental education, and lack of funding to make changes. Farm sizes are increasing while actual numbers of farmers are decreasing. The trend has been a slow conversion of smaller, more diversified family farms to larger, more specialized operations. Nutrients, sediment, and bacteria are polluting lakes and rivers causing decreased tourism, recreational value and aesthetics as well as possible health problems. Thousands of miles of subsurface drainage has taken place on the landscape, causing rainwater and snowmelt to enter receiving waters more quickly and with more energy thus causing bank erosion and flooding.

Four issues of concern have been targeted in southwestern Minnesota including water quality of lakes and rivers, safe and adequate drinking water, endangered species protection and habitat enhancement for fish and wildlife. This area has 1.8 million tillable acres of which 4.4 percent (79,000 acres) are currently enrolled in a conservation program (Continuous CRP, CRP, RIM, and WetlandsRestoration Program). It has been estimated that there is an actual resource need of 447,000 acres in southwestern Minnesota to adequately protect the resources being targeted. This proposal represents an effort to begin to protect a portion of those acres.

1.5 Legislative Mandates

This programmatic environmental assessment (PEA) is prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321-4347), the Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and FSA environmental regulations (**7** CFR Part 799).

The Food Security Act of 1985 (16 U.S.C. 3830 *et seq.*), as amended by the Federal Agriculture Improvement and Reform Act of 1996, authorizes CCC to perform all activities related to CREP in Minnesota, as specified in an Agreement between USDA, CCC and the State of Minnesota. The provisions of this Act are codified in 7 CFR Part 1410. CCC is further authorized to enter into agreements with states to use CREP in a cost effective manner to address specific conservation and environmental objectives of a state and the nation. Programmatic changes to CRP in 2003 incorporated provisions from the 2002 Farm Bill into the CRP regulations.

The Watershed Protection and Flood Prevention Act of 1954 (P.L. 83-566; 16 U.S.C. 1001-1008), authorized the Watershed Protection and Flood Prevention Program. Before 1996, watershed planning activities and the cooperative river basin surveys and investigations were operated as separate programs. The 1996 Appropriations Act combined these activities into one program entitled the Watershed Surveys and Planning Program. Activities for both programs are continuing under this authority.[iii]

Minnesota has the authority to perform the activities contemplated by this CREP Agreement pursuant to Minnesota statutes Section 103F.505 to 103F.531, 84C and Minnesota Administrative Rule 8400.3000 to 84003930. Pursuant to Minnesota Statutes Section 103F.505 to 103F.531, 84C, and Minnesota Administrative Rule 8400.3000 to 8400.3930, the Minnesota BSWR administers enrollments into the state's CREP. The rule states that the purpose of this program is to provide long-term environmental benefits by allowing 120,000 acres of certain environmentally sensitive lands in the three targeted watersheds to be restored, enhanced or protected over a period of time from 15 years to perpetuity. The program is driven by locally led conservation efforts, and forges a partnership between landowners, governmental entities and nongovernmental organization in addressing watershed quality problems.

1.6 Other Programs and Partnerships

The Minnesota CREP is a collaborative partnership involving several Federal, state and local agencies and nongovernmental organizations. Cooperating agencies involved in implementing CREP in Minnesota include:

- ⇒ Minnesota Association of Soil and Water Conservation Districts
- ⇒ Minnesota Board of Water and Soil Resources
- ⇒ Minnesota Department of Natural Resources
- ⇒ Minnesota Pollution Control Agency
- ⇒ Red River Basin Commission
- ⇒ Watershed Districts
- ⇒ Farm Service Agency
- ⇒ Natural Resources Conservation Service
- ⇒ United States Fish and Wildlife Service
- ⇒ Pheasants Forever

Figure 1-7 T&E Species in Minnesota

Examples of programs and statutes involving these agencies that have been initiated to focus on restoring and protecting these watersheds include:

- *Wetland Conservation Act of 1996,* a state law aimed at promoting a "No Net Loss of Wetlands" policy, Minnesota's Comprehensive Wildlife Conservation Strategy **http://www.dnr.state.mn.us/cwcs/index.html** to protect and enhance wildlife and their habitat into the next century .

- *IMPLEMENTATION PLAN, REGIONAL TOTAL MAXIMUM DAILY LOAD,* Study of Fecal Coliform Bacteria Impairments In the Lower Mississippi River Basin Of Southeast Minnesota, October 15, 2003 by the Minnesota Pollution Control Agency and the Basin Alliance for the Lower Mississippi in Minnesota . "This Watershed Restoration Action Strategy has been prepared as a plan to implement the source-reduction requirements of the Regional Total Maximum Daily Load (TMDL) for Fecal Coliform Bacteria in the Lower Mississippi River Basin of Southeast Minnesota"[iv] and includes various 319 projects in the Southeast including:

    - o Improved livestock management in Sensitive Riparian Areas –Minnesota Department of Agriculture;
    - o Reduction of Fecal Coliform Bacteria from Human Sources –Southeast Minnesota Water Resources Board;
    - o Straight River Fecal Coliform Reduction Project – Cannon River Watershed Partnership.

- *Funding Initiatives* for the Sustainable Agriculture Grants Program, the conservation practices cost-share program, the Stream Bank Stabilization and Restoration program and the Soil and Water Conservation District grants program.

- *Flood Damage Reduction Program*: This is locally led program with the goal of reducing flood damage through a watershed approach. It is working on projects throughout the basin.
- *Environmental Quality Incentives Program (EQIP)*: EQIP is currently funding 15 priority areas in the state to provide assistance to farmers and private landowners who are faced with serious threats to soil, water and related natural resources.
- *Wildlife Habitat Incentive Program (WHIP)*: WHIP provides assistance to people who want to develop and improve wildlife habitat primarily on private lands. There are limited dollars available for this program
- *Wetlands Reserve Program (WRP)*: WRP increases wildlife habitat and improves water quality by providing increased wetland habitat, slowing overland flow and providing a natural pollution control.
- *Forest Lands Enhancement Program (FLEP)*: FLEP and MFA (Minnesota Forestry Association) provides assistance to private landowners for planting trees, improving timber stands, as well as other non-industrial private forest land practices. In Minnesota, approximately 4338 acres have been treated in 2004.
- *CCRP*: CCRP enrollments provide additional in-place conservation practices facilitating resource management in the basins.

Figure 1-9 - Native CRP-RIM planting 2nd year. (FSA, Jeff Johnson)

Figure 1-8 – Prescribed burn on DNR wildlife area. (FSA, Jeff Johnson)

Other conservation programs that focus on the watersheds include the NRCS's Conservation Security Program, DNR wildlife management area (WMA) and numerous other large and small scale programs sponsored by non-profits stakeholders such as The Nature Conservancy, Pheasants Forever, Minnesota Deer Hunters Association, Ducks Unlimited and Trout Unlimited to name but a few. This list is not meant to be all inclusive but rather to point out that there are other programs that are also being implemented in the areas. Some of these are listed in the accompanying table.

Table 1-1. Conservation Programs Related to the three Basins

Program	Sponsor
Tall Grass Prairie Initiative	FWS
Sustainable Agriculture Grant Program	Minnesota Dept. of Agriculture
Streambank Stabilization and Restoration Program (SSRP)	Minnesota Dept. of Agriculture
Environmental Quality Incentives Program (EQIP)	NRCS
Wildlife Habitat Incentive Program (WHIP)	NRCS
Debt for Nature Conservation Contract	FSA
Emergency Conservation Program (ECP)	FSA
Emergency Wetland Reserve Program (EWRP)	NRCS
Emergency Watershed Protection Program (EWPP)	NRCS
Conservation Security Program	NRCS
Farmland Protection Program (FPP)	NRCS
Tree Assistance Program (TAP)	FSA
Pasture Recovery Program (PRP)	FSA
Grassland Recovery Program (GRP)	FSA
Noninsured Crop Disaster Assistance Program	FSA
Forestry Incentive Program (FIP)	Forest Service
Stewardship Incentive Program (SIP)	Forest Service
Wetland Reserve Program (WRP)	NRCS
Landscape Buffer Initiative	BALMM
Farmable Wetlands Program	FSA

1.7 Scoping

As the Federal agency responsible to implement and oversee CREP, FSA is required to comply with NEPA (42 U.S.C. 4321), the CEQ regulations (40 CFR 1500-1508) and other applicable Federal and state statutes and regulations. Through this PEA, FSA has evaluated the Federal action, considered programmatic alternatives to this action and assessed the potential effects of these alternatives on the human and natural environments. FSA will announce availability of the draft PEA for Agency and public review. Subsequent to public review of the draft PEA, FSA will make a finding as to whether significant impacts result from the proposed action. If no significant impacts are determined, FSA will prepare a Finding of No Significant Impact (FONSI).

To comply with the requirements set forth in §1501.7 of CEQ's scoping requirements, FSA sent 48 letters to Federal, state and local agencies, universities and other organizations advising them that preparation of a PEA on the Minnesota CREP had been initiated. The FSA scoping letter, dated April 7, 2004, identified the CREP area, program goals and alternatives under consideration, and outlined the provisions of CREP. A total of nine comments were received through May 7, 2004, the close of the scoping comment period. These scoping comments are summarized in Table 1-2.

Table 1-2. Summary of Scoping Comments

Commenter	Date	Summary of Comments
Gina Papasodora, Deputy THPO, Leech Lake Band of Ojibwe	April 21, 2004	Important that we preserve, protect, and promote tribal cultural heritage. All resources within the bounds of the reservation must be protected.
Natalie Weyaus THPO Mille Lacs Band of Ojibwe	May 3, 2004	Not in their area
George W. King, Chairman Red Lake Band of Chippewa Indians	April 23, 2004	Wish to consult further on the proposal
Sheldon Myerchin FWS Private Lands Coordinator	By TC	Ensure that practices do not adversely impact existing native habitats
Wayne Edgerton DNR Agricultural Policy Director Minnesota Department of Natural Resources	May 6, 2004	• Prioritize CREP enrollments to maximize wildlife habitat benefits • Consider other habitats for fish, insects and wildlife species of concern • Please consider the travel corridor program • Place acres to accomplish the greatest benefit for the dollars spent
Dianne Mandernach Minnesota Dept of Health	May 6, 2004	• support the well head protection program as well as the protection afforded to the limestone aquifer in SE MN
Sheryl Corrigan, Commissioner, MPCA	May 6, 2004	• Strong supporter of project • Project will be beneficial to water quality
Dennis Gimmestad Government Programs and Compliance Officer SHPO	May 10, 2004	• Make sure to review individual actions • Possibly develop a Programmatic Agreement for the various practices that have low likelihood of impacting cultural resources

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CHAPTER 2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Introduction

The proposed action, as described in Chapter 1.2, is for FSA to implement land management practices in the three targeted areas to reduce soil erosion and phosphorus and nitrogen loads caused by agriculture; improve the water quality of the Mississippi, Red, Des Moines and Missouri Rivers; protect drinking water supplies; reduce flood damage; and enhance wildlife habitat. This chapter will describe two alternatives for consideration for each of the three targeted areas. Alternative 1-No Action presents existing conditions in each area without implementing any CREP. Alternative 2-Continuous Enrollment Program describes the CREP that targets the acreages to be enrolled if the agreement is approved.

Under the second or preferred alternative, a Federal-state-local partnership program would be implemented by FSA and NRCS from the Federal side, and the following state partner, the BSWR in cooperation with SWCDs and Watershed Districts utilizing Federal funds along with RIM funds.

2.2 Description of Alternatives

2.2.1 Alternative 1-No Action

Under this alternative, existing programs as described in Chapter 1.6 and elsewhere in this document remain in place.

2.2.2 Alternative 2- Implement Minnesota CREP II (Preferred Alternative)

Implementation of the Minnesota CREP II would target approximately 120,000 acres. Land enrolled in CREP would be removed from agricultural production for a minimum of 45 years. The benefits provided by implementation of the Minnesota CREP II include reduced sediment and nutrient content as well as reduced flood damage. These benefits will help protect water quality in three distinct watersheds; and to improve fish and wildlife habitat.

Enrollment would have begun in this program in late summer 2004, in select regions of the State and watershed and extended until December 31, 2007. This enrollment has now been proposed for spring of 2005. We are anticipating between 4,000 and 6,000 signed contracts, comprising 120,000 acres, to be enrolled in CREP contracts. This project area consists of the watersheds and sub watersheds along the:

- Red River of the North
- Des Moines
- Lower Mississippi, from the Vermillion River watershed south to the Iowa Border

- Minnesota portions of the Missouri River watershed

2.2.2.1 Eligible Land

Land considered eligible for the program under this alternative must be cropland that has been cropped four out of the past six years, and can be physically and legally cropped in a manner normal to an agricultural commodity. Marginal pastureland is also eligible provided that the practice is associated with scour erosion and the land is located in the NW MN CREP area. Landowners generally must have owned or operated the land for at least one year prior to enrollment into the program.

2.2.2.2 Eligible Conservation Practices

The conservation practices that are eligible under this alternative for lands enrolled into the Minnesota CREP are listed in Table 2-1:

Table 2-1. Minnesota CREP Eligible Conservation Practices

Practice No.	CREP Eligible Practice
CP2	Establishment of Permanent Native Grasses
CP3A	Hardwood Tree Planting
CP4D	Permanent Wildlife Habitat
CP12**	Wildlife Food Plots
CP15A	Contour Grass Strips
CP21	Filter Strips
CP22	Riparian Buffer
CP23	Wetland Restoration (100 Year Floodplain)
CP23A	Wetland Restoration, Non-Floodplain
CP34	Flood Control System
***Note: CP12 may be used in conjunction with all the above practices except CP15A*	

2.2.2.3 Contract Periods

Under this alternative, eligible producers can enroll in 14 to 15 year CRP contracts along with a State contract extension (RIM Reserve) for an additional extension of 30 years in length. Participants will be required to sign perpetual easements for wetland restorations. The amount of land eligible to be enrolled for perpetual easements will be limited to 24,000 acres for wetland restorations and 5,000 acres for floodplain protections. A state contract may not be signed unless the landowner enrolls, or is currently enrolled, in a Federal CREP agreement.

Much discussion was also involved with the proper balance of permanent versus set-duration easements. All the parties involved including groups and individuals from many different backgrounds determined that it was more important to find common ground on the issues rather than not have a program at all. As a result the permanent easement provision was limited to only those acres slated for wetland restorations.

2.2.2.4 Payment Options

Both Federal and State payment options are available to participants under this alternative:

CREP Payments

Minnesota CREP participants are eligible for five types of *Federal payments:*

1. The normally calculated CRP annual rent payment, plus;
2. A CREP annual rent incentive bonus equal to somewhere between 30 and 50 percent of the annually calculated rent payment, plus;
3. A one-time signing incentive of $10 per acre per year based on the contract length (14 or 15 years), plus;
4. The maximum allowable eligible maintenance payment, which is $5-$10 per acre.
5. In addition, 50 percent of the reimbursable costs to establish CREP conservation practices, plus a 40 percent Practice Incentive Payment will be paid for all CREP conservation practices.

CREP participants are eligible for two types of State payments*:*

1. A one-time payment for a conservation easement. This payment is made soon after the easement is processed. The amount of payment is based on a percentage of the assessor's estimated deeded value of property in the township of enrollment and the easement length, which are 30 year and perpetual in duration. By Minnesota law, RIM easements for wetland restorations must be perpetual.

   Examples of easement payment rates in each of the three targeted watersheds are:

   SE Minnesota 30 year=$312/ac; perpetual=$397/ac.
   NW Minnesota 30 year=$105/ac; perpetual=$134/ac.
   SW Minnesota 30 year=$264/ac; perpetual=$336/ac.

2. The remainder of the cost to install CREP conservation practices, not to exceed 100 Percent: For example, if the normal cropland rental rate is $100 per acre, the incentive rate for CREP would be an additional 50 percent or $150 per acre, and the maintenance would be (at least) $5 per acre yielding an annual payment for 15 years of $155 per acre. The applicant would also receive a one-time signing bonus up to $150 per acre ($10/acre x 15 years). In addition, Minnesota would provide a one-time payment for a conservation easement. For an easement of 30 years in duration (using the above examples), this easement payment would range from $105 to $312 per acre.[v]

2.2.2.5 Program Costs

Based on the full implementation of the Minnesota CREP II, which projects enrollment of 120,000 acres, the projected combined financial Federal and state costs will be approximately $250 million, with $200 million contributed by the Federal government and $50 million contributed by the State of Minnesota. This does not include costs that may be borne by producers.

CHAPTER 3.0 RESOURCES

3.1 Overview and Description of Relevant Resources

3.1.1 Red River and it's Watershed

3.1.1.1 Introduction

Profile of Basin

The Red River Basin See (Figure 3-1) in Minnesota includes all or parts of 21 counties. It consists of a total of 18,800 square miles (12,000,000 acres) of land which is approximately half of the entire Red River Basin encompassing North Dakota, Minnesota, South Dakota and Manitoba. About 74 percent of the land area in the Red River Basin is agricultural of which 66 percent is cropland and 8 percent is pasture and rangeland. The remaining 26 percent of the land area consists of forests (12 percent), water and wetlands (4 percent), urban land (3 percent), and other categories (7 percent). The Glacial drift thickly mantles most of the basin and has left two distinct land forms; the very flat Red River Valley Lake Plain and Lake Washed Till Plain; and the gently rolling uplands.

Flooding disasters which degrade water quality, increase sedimentation, and destroy fish and wildlife habitat are the major problem in the basin. The economic impacts from these floods have been large. In some areas of the basin, more localized flooding has prevented planting and/or harvesting of crops. The Red River basin is an extremely altered landscape. Human activities have straightened natural waterways and converted two-thirds of the landscape to cropland. Intensive agriculture production has impacted water quality, accelerated soil erosion, and fragmented habitat resources.

Precipitation and Runoff

Annual precipitation in the Red River Basin is highly variable. Average precipitation increases from west to east across the basin forming an increasing gradient averaging from 16 – 24 inches per year. Minnesota contributes roughly 60 percent of the total main stem Red River flows (Red River Basin Board 2000 Hydrology Inventory Team Report, 2000).

The region experiences temporal and spatial extremes in precipitation patterns. This variability causes great fluctuation in discharge measured along the main stem of the Red River. Although flooding from spring runoff is often considered the most damaging, heavy summer rainfall events can and do occur frequently in the Red River Basin. These rainfall events often cause severe damage to emerging crops. Conversely, the Basin can experience periods of severe, prolonged drought such as the early 1980s and 1990s.

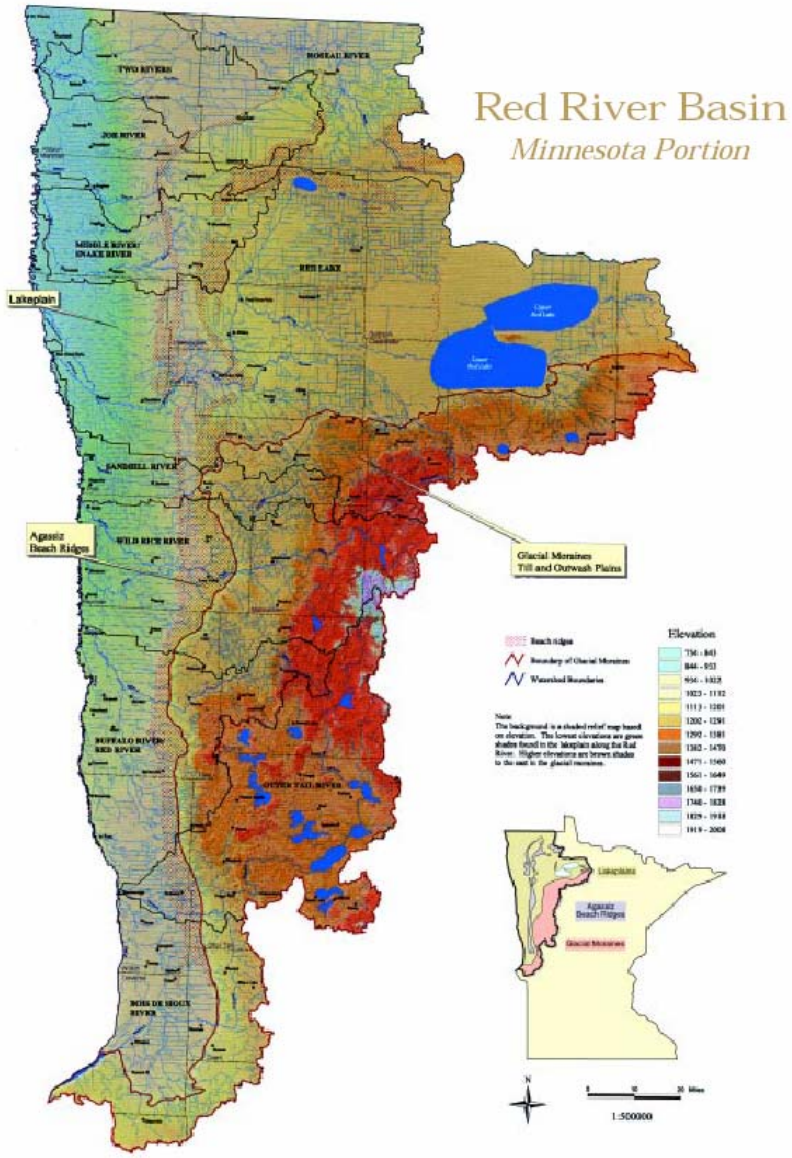


Figure 3-1 – Minnesota Portion of the Red River Basin

Important Geologic Features

Morphologically, the most striking and important geological feature of the Red River Basin is its lack of relief. The basin has an average north-south slope of less than one foot per linear mile. The relatively small topographic relief is a result of glaciations and geologically recent erosion. Glacial Lake Agassiz left clay-rich sediments in a flat lake plain along the axis of the Red River and a lake-washed till plain in the northeastern part of the Red River

Basin. Ice sheet advances and recessions left upland moraines and large deposits of glacial drift over the entire basin area. As glacial Lake Agassiz receded, it left deposits of sand and gravel in the form of beach ridges. Glaciers and glacial melt water also left elongated ridges of beach sands and gravels, and flat plains of outwash sands.

Vegetation Patterns

Historically, intermixed upland and wetland habitats provided a dynamic land cover mosaic that provided important landscape and watershed functions. These habitats consisted of meandered streams and rivers making up riparian areas with narrow gallery forests along the water's edge. Prairie consisted of tall native grasses (i.e., big Bluestem, Indian grass, Switchgrass). A transition zone, called savannahs, between these two areas is made up of grasses, trees, small shrubs, and numerous shallow wetlands.

3.1.1.2 Relevant Affected Resources

Soils: The landscape of the Minnesota Red River Basin Watershed consists of three distinct geologic surfaces. The large Glacial Lake Agassiz Lake Plain, the gently sloping to sloping Fergus Falls till plain, and the rolling to steep and very steep Alexandria moraine complex and Itasca Moraine. The large lake plain is characterized with gently sloping beach deposits that are course textured sandy and gravelly sediments. Lower in elevation and farther north and west into the lake plain basin are wave-washed silty and sandy sediments overlying clayey till and clay lake deposits. The Fergus Falls till plain is made up of moderately fine textured glacial till deposits on a sloping landscape. Numerous wet basins are interspersed into this geomorphic surface. The Alexandria Moraine Complex and Itasca Moraine are made up of glacial till deposits ranging from moderately coarse to fine textured. Slopes in these deposits are complex and are rolling to very steep. This complex topography is very susceptible to erosion. Many pothole type wetlands dot this complex topography.

Many of the soils on the lake plain portion are susceptible to erosion by wind. Unsheltered distance and surface soil texture are key factors in this landscape. The moraine portion of the Red River Basin is mostly made up of soils that erode easily by water on the steep slopes. Many lakes, wetlands and connecting streams are in this complex topographic region. The cultivated soils will very easily deliver soil sediment into these adjacent basins and waterways.

Farmland south of Ada under a sea of floodwater
Photo by Bruce Crummy / The Fargo Forum
6/26/02

Riparian, Floodplain and Wetlands
Natural waterways in the basin reflect

their watersheds in shape, in volume and speed of water, in distinct groups of plants and animals. In their upper reaches, streams flow intermittently and are generally eroding down to their rocky substrates. The middle reaches of streams grow in size and consistency of flow and develop riffles and pools. Different types of vegetation and wildlife inhabit these alternating sections of fast shallow water and slow deep water. In their lower reaches, rivers slow to a meander and deposit their sediment loads onto floodplains along the river channel.

Channelization and land use changes have increased water conveyance and disrupted many of the natural processes described above. Throughout the basin, channelized stretches tend to have reduced water retention time in the channel; increased turbidity; unstable banks, degraded habitats, as well as restricted and unvegetated floodplain areas. Flooding continues to be a problem throughout the basin.

The drainage, cultivation and development of land have combined to greatly increase the speed of runoff and the peak flows of streams following significant snow melt and rainfall events, as well as greatly reducing wildlife habitat provided by wetlands. Opportunities for wetland restoration are greatest in the beach ridge in the eastern basin, while more limited opportunities exist in the river valleys.

Water Resource Issues

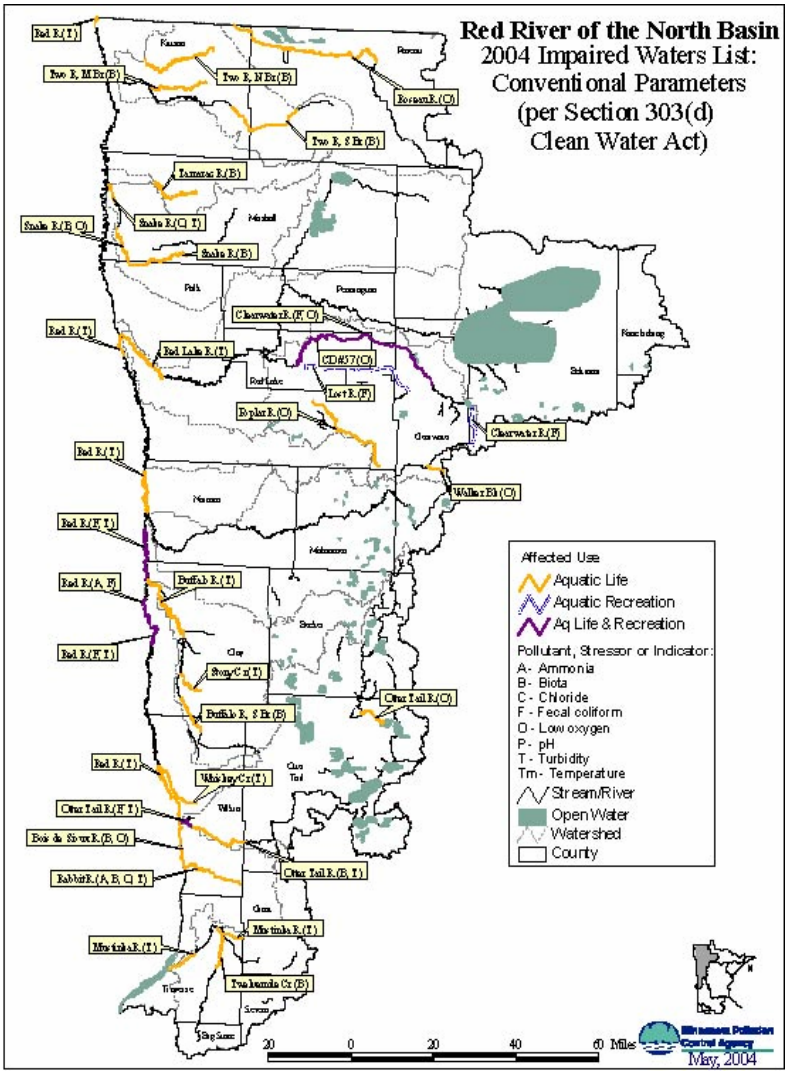
Water resources in the Red River Basin range from excessive to scarce and are dependant on a number of (temporal and spatial) environmental and anthropogenic factors. Surface and groundwater resources are important as they are both used as sources of drinking water. Some of the larger municipalities such as Fargo/Moorhead, Grand Forks/East Grand Forks, Thief River Falls and Fergus Falls depend on the Red River and its tributaries for a portion of the drinking water supplied to its residents.

The foremost controllable variable of economically productive agriculture in the Red River Basin is adequate drainage. The basin's hydrology has been substantially altered during the past 100 years with a complex system of public and private drains designed to remove surface water from agricultural lands swiftly and effectively. The importance of these constructed/altered waterways cannot be overstated; however, in some cases, drainage activities may have exacerbated flooding in the receiving river and streams. Construction of water conveyance systems and stream channelization (i.e. "straightening") causes channel degradation and accelerates the natural sediment transport process. Accelerating the sediment transportation processes damages aquatic and riparian habitat and negatively impacts water quality in most cases.

Table 3-1. Percent of land within 100 feet of streams that is in row crops, vegetated or other land uses.

County	Riparian Acres	Cultivated Acres	Percent Cultivated
Becker	107,751	10,744	10.0%
Beltrami	348,999	7,918	2.3%
Big Stone	3,637	1,553	42.7%
Clay	49,950	22,319	44.7%
Clearwater	41,832	6,851	16.4%
Grant	19,382	9,451	48.8%
Itasca	908	0	0
Kittson	127,875	97,052	75.9%
Koochiching	7,899	14	.2%
Lake of the Woods	419	0	0
Mahnomen	39,060	8,607	22.0%
Marshall	233,995	142,987	61.1%
Norman	94,061	7,403	7.9%
Otter Tail	171,278	8,415	4.9%
Pennington	38,191	28,339	74.2%
Polk	254,144	184,181	72.5%
Red Lake	24,576	13,684	55.7%
Roseau	240,500	112,122	46.6%
Stevens	7,384	4,788	64.8%
Traverse	31,197	16,669	53.4%
Wilkin	53,951	43,304	80.3%
Source: Minnesota Department of Natural Resources			

Fecal coliform bacteria: High concentrations of fecal coliform bacteria have been documented in several reaches of the Red River and its tributaries. Coliform in excess of the health standard of 200 organisms per 100 ml water sample are documented regularly. Elevated levels of fecal coliform bacteria may be caused by agricultural or urban runoff as well as other naturally occurring sources. As indicated in Map 3-2 these excess occurrences have caused several reaches of the Red River and its tributaries to be listed on the impaired waters lists of Minnesota (MN Pollution Control Agency, 2004). These listings are for both recreation and human consumption.



Turbidity: Suspended in-stream sediment originates from erosion and transport (i.e. sheet, rill, and/or wind erosion) of upland soils in agricultural areas and in-stream degradation processes (i.e. bank and bed erosion). Sediment transport is a natural function of all rivers and streams. However, the amount of erosion and subsequent sedimentation increases because of anthropogenic alterations to the landscape. NRCS estimates that the Red Lake and Thief River Watersheds (1,916 miles^2) alone transport 53,900 tons of sediment each year to their respective rivers.

These levels of nitrogen and phosphorus not only impact populations in the United States but also contribute to increased nutrient loading downstream on the Red River as well as negatively impacting Lake Winnipeg in Manitoba, Canada.

Quoting from the Manitoba Conservation Report, "The Red River was the single largest contributor of TN and TP to Lake Winnipeg during the period of record" (1994 to 2001). The Winnipeg River was the second largest contributor, followed by atmospheric deposition, and finally, the Saskatchewan River. Since the United States contributed more than half of the nutrient load in the Red River, it follows that approximately 30 percent of the TN, and 43 percent of TP load to Lake Winnipeg originated in the United States ……over period of record (1994 to 2001)." [vi]

Phosphorus: Phosphorus loading has been recognized as one of the most critical water quality issues facing the Red River Basin. Eutrophication of Lake Winnipeg has prompted the Manitoba Provincial government to issue a management plan. The Action Plan is a commitment to reduce nitrogen and phosphorus loads to Lake Winnipeg to pre-1970s levels. The Lake Winnipeg Action Plan was developed in part from scientific research conducted through the Nutrient Management Strategy and will be updated as studies continue. The Lake Winnipeg Action Plan recognizes that nutrients are contributed by most activities occurring within the drainage basin and that reductions will need to occur across all sectors. According to a study by the Province of Manitoba, it is estimated that 46 percent of the phosphorus entering Lake Winnipeg originates on the U.S. side of the international border (Bourne, Armstrong & Jones, November 2002).[vii]

Water quantity

Development of a quality water supply of sufficient quantity for the Red River Valley has been a subject of interest and concern to local residents, government officials, and others. Groundwater available to wells, streams, and springs primarily comes from sand and gravel aquifers near land surface or buried within 100 to 300 feet of glacial drift that mantles the entire basin of the Red River of the North. Water moves through the system of bedrock and glacial-drift aquifers in a regional flow system generally toward the valley basin. The total water use in 1990, about 196 million gallons per day, was mostly for public supply and irrigation. Slightly more than one half of the water used comes from groundwater sources compared to surface-water sources. Most municipalities obtain their water from groundwater sources. However, the largest cities (Fargo, Grand Forks and Moorhead) obtain most of their water from the Red River of the North.

Fish and Wildlife Habitat

For terrestrial animals such as the White-tailed Deer, Prairie Chicken, Wild Turkey and many song-bird species, the important habitat areas remaining in the basin are floodplain forests and all areas of native vegetation, particularly those containing complexes or clusters of different plant communities. The three main basin ecosystems are typically referred to as the lakeplain, Agassiz beach ridge and the glacial moraines.


USFWS

Rivers and streams in the Basin support over 80 species of fish. Many rivers support healthy populations of game fish, including channel catfish, walleye, sauger, and small mouth bass. The network of streams in the Red River watershed are critical to different phases of a fish's life cycle, with the tributaries used for spawning and rearing young on the main stem for refuges during harsh weather. Maintaining the connections between the mains stem and small intermittent streams is critical to maintaining fish

populations. Managing stream flows to ensure fish passage and adequate water levels is also important. Areas of special concern are trout streams, headwater streams and pool/riffle complexes."[viii] It remains important to continue to work to reduce sediment loading in an effort to enhance and restore the existing fishery. In addition it is important to restore spawning areas in the upper reaches of the tributaries for species such as the northern pike, a higher level predator specie and respected gamefish. Hay Creek, a tributary of the Roseau River in the northern end of the watershed, has been designated a cold water trout fishery.

The Red River Basin is part of the Tall Grass Prairie Region of North America. This rare habitat type has nearly disappeared due to two main factors. Most of the tall grass prairie disappeared under the plow of early settlement. Much of the remaining prairie reverted to savannah and aspen parkland with the extermination of the bison and removal of fire from the ecosystem. According to the USFWS less than 1/10 of 1 percent of the prairie remains. Much of this is in fragmented parcels that are difficult to manage and preserve. The USFWS currently is utilizing easements from private landowners to protect some of these remaining tracts. CREP could also allow for restoration of the functions and values of this rare and declining habitat type. CREP would compliment this effort by requiring the planting of native grasses as part of the conservation practices. It would not encumber the same lands as the FWS.

The Red River Basin is also part of the Prairie Pothole Region. Much of the Prairie Pothole Region is highly suited for agriculture and as a consequence many potholes have been drained. This poses a serious threat not only to the prairie potholes themselves, but also the wildlife species that frequent and utilize this habitat type. Solutions to address the loss of this habitat range from protecting the remaining wetlands to restoring those wetlands that have been drained.

Hunting Habitat – Big-game hunting for white-tailed deer and turkey occurs throughout the area and is most prevalent where habitat is most extensive. Hunting pressure for deer remains constant, and interest in turkey hunting is increasing as turkey populations expand farther north. The Red River Basin holds the state's remaining populations of sharp-tailed grouse and prairie chicken. Populations of prairie chicken have rebounded. There is also significant opportunity for hunting waterfowl.

Figure 3-2 Whitetail Deer (Rob Spitzley)

Minnesota has four native species of grouse. These are the Ruffed, Sharptail, Spruce and Prairie Chicken. "The greater prairie chicken *(Tympanuchus cupido)* once flourished on the

plains of Minnesota. In 1923, hunters shot an estimated 300,000. But as prairie habitat disappeared, so did the prairie chicken. In 1942, the hunting season was closed. As a result of grassland enhancement and preservation efforts of many state and Federal Agencies and NGO's the birds are making a recovery. Today the grasslands between Crookston and Fergus Falls hold about 3,000 birds**."**[ix] The first hunt held since 1946 was authorized in 2004 with relatively good success.

Federal and State listed T&E species

Federal and State agencies list 38 plant and animal species as endangered, 40 as threatened, and 95 species of concern in the Red River Basin in Minnesota. Species of special concern include certain raptors and a mixture of upland and wetland plants. An overwhelming proportion of the species of concern and those considered rare require habitats that have not been altered such as mature ddeciduous/coniferous forests for the Canada Lynx or native prairie for the Western Fringed Prairie Orchid and the candidate specie, Dakota Skipper butterflies. Many of these habitats have been altered or destroyed from human activity in the Red River Basin. Federally listed T&E species include: Canada Lynx, Gray Wolf, Bald Eagle, and Western Prairie Fringed Orchid. A complete list of Federal and state listed species appears as Appendices A and B to this document.

Historic and Cultural Resources

The National Register of Historic Places (NRHP) is part of a national program administered by the National Park Service to coordinate and support public and private efforts to identify, evaluate and protect significant historic and archeological resources. Properties listed on or eligible for the NRHP include historic districts, sites, buildings, structures and objects that are significant in American history, architecture, archaeology, engineering and culture. National Historic Landmarks (NHLs) are designated by the Secretary of the Interior and are nationally significant historic places because of their exceptional value or quality in illustrating or interpreting the heritage of the U.S.

The area being proposed incorporates all or portions of the Red Lake and White Earth Indian Reservations. Located on or near these reservations are traditional cultural places as well as gravesites (marked and unmarked) and other areas with special importance to Native Peoples. It will be important to recognize and avoid any potential to impact such places on a case-by-case basis. This will be discussed in more detail in the analysis section for cultural resources issues.

There are also several National Natural Landmarks located in the Red River Basin. These include: Ancient River Warren Channel NNL (Big Stone County); and parts of the Upper Red Lake Peatland NNL (Beltrami County). These lands are owned by private and government agencies and are not generally open to the public.

Other Important Lands and Resources

National Wildlife Refuges
There are five national wildlife refuges (NWR) in the Red River Basin including Agassiz, Tamarac, Glacial Ridge, Rydell and Hamden Slough. There are also thousands of acres of Waterfowl Production Areas that are federally owned and managed by the FWS.

The Agassiz NWR is composed of 40,100 acres of wetlands, 10,000 acres of shrub lands, 7,000 acres of forestland, 4250 acres of grassland, and 150 acres of cropland. The Wilderness Area encompasses one of the most westerly extensions of black spruce-tamarack bog in Minnesota. Two lakes in the area were formed by deep peat fires which occurred prior to settlement of the area.

The goal of Hamden Slough NWR is to re-establish almost 6,000 acres of prairie wetland habitat on the edge of the northern tallgrass prairie. Within the future boundary of the refuge, 280 wetlands will be re-established. Refuge staff has restored 235 wetlands since 1991.

Tamarac NWR covers 42,724 acres and lies in the glacial lake country of northwestern Minnesota in Becker County, 18 miles northeast of Detroit Lakes. It was established in 1938 as a refuge and breeding ground for migratory birds and other wildlife. Tamarac lies in the heart of one of the most diverse vegetative transition zones in North America, where northern hardwood forests, coniferous forests and the tall grass prairie converge. This diversity of habitat brings with it a wealth of wildlife, both woodland and prairie species.

White Lady Slipper

Glacial Ridge NWR is one of the nation's newest refuges. It has been designated to protect and enhance 35,000 acres of wetlands and tall grass prairie habitat near Crookston**.** It is said to be one of the nation's largest prairie and wetland restoration projects in history**.**

The refuge will provide critical habitat for declining grassland birds, greater prairie chickens, sandhill cranes and other wildlife, as well as the endangered western prairie fringed orchid. Currently, less than 1 percent of Minnesota's original prairie habitat is still in existence.

State owned lands - Within the Red River Basin, the DNR manages eight state parks that encompass over 23,000 acres. There is a significant amount of other state owned lands such as wildlife management areas, scientific and natural areas and state forest (see Figure 3-3).

- There are also numerous areas of lands under private control in permanent and/or long term easements across the basin. These include the WRP FSA's Debt Cancellation Conservation Contracts (Debt for Nature Contracts,) FWS's Grassland Easements and wetland conservation easements and others.

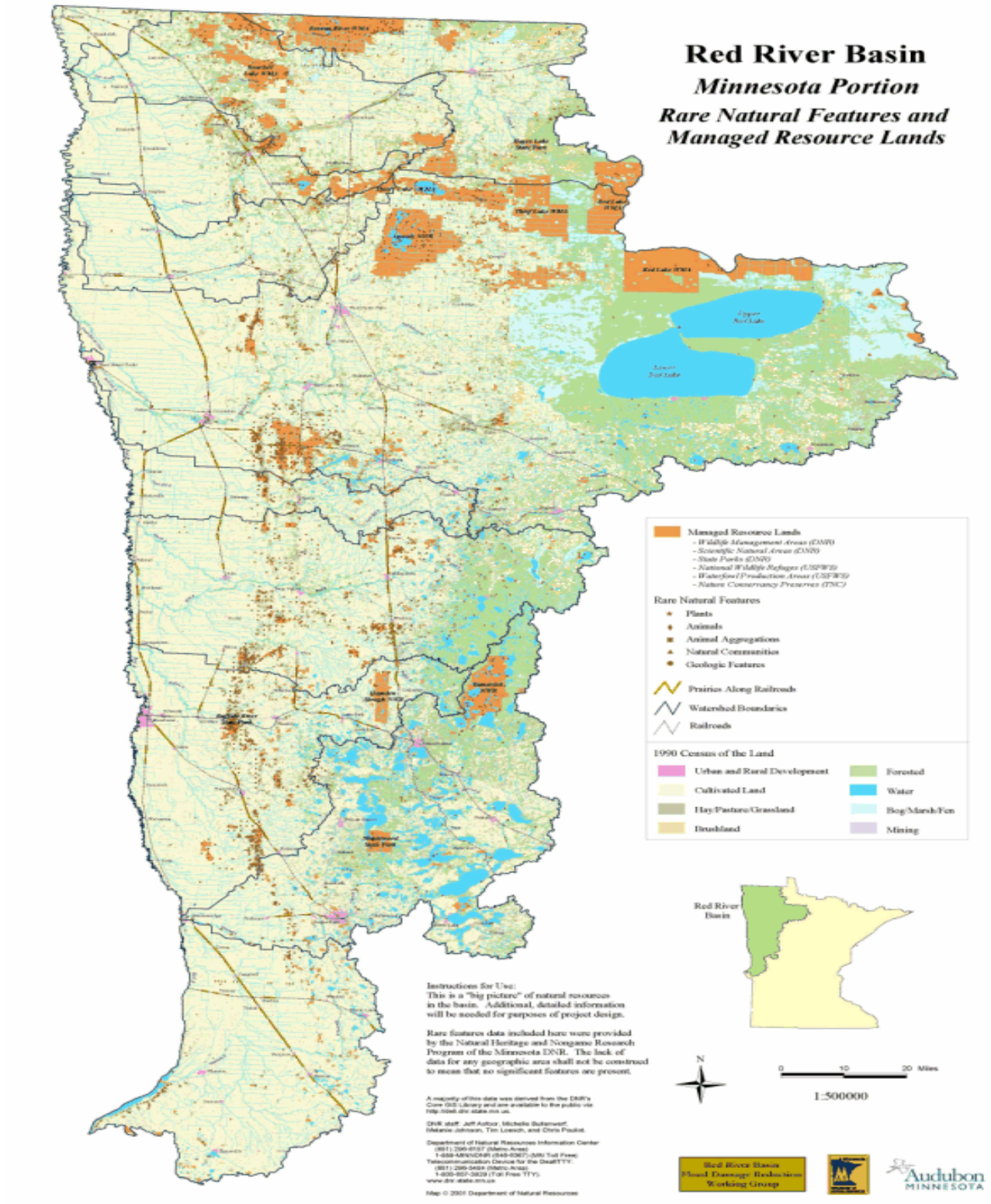


Figure 3-3. Red River Basin

3.1.2 The Lower Mississippi Basin

3.1.2.1 Introduction

Profile of Basin: The Lower Mississippi River Basin (LMRB) in southeastern Minnesota includes all or part of 17 counties covering 7,266 square miles (4,650,100 acres) of land. It includes 11,500 miles of stream, 736 of which are designated for trout. About 60 percent of the land is under cultivation, 13 percent forested, 8 percent pasture and 2 percent urban. Fractured limestone bedrock underlies a thin mantle of erosion-prone loess soil in the karst region to the east. Here, cow-calf and dairy farms add to land-use diversity with pasture, hay and woodland complementing corn and soybeans on the hilly terrain. To the west, where the major tributaries have their origin, intensive row crop farming is dominant and most of the terrain is gently sloping. The basin population increased by 12 percent to more than 600,000 from 1990 to 1998, putting increased recreation and development demands on the region's land and water resources. Most of the growth has been in Dakota (23.3 percent), Rice (10 percent), Dodge (10 percent) and Olmsted (11.8 percent) counties. Population growth in the first two counties is oriented to employment opportunities in the Twin Cities Metropolitan Area, while population growth in the latter two counties is related to expanding employment opportunities in Rochester, much of it triggered by the rapidly growing Mayo Clinic complex.

- Precipitation and runoff: Southeastern Minnesota receives the highest average annual precipitation in the state, 28 to 31 inches, which often occurs as intense storms. The abundant moisture greatly benefits crop production but aggravates problems associated with soil erosion and sediment transport to surface water. Annual runoff ranges from 5.5 to about 8 inches on average, increasing from west to east.

- Important geologic features: Much of southeastern Minnesota exhibits a karst topography where the upper carbonate bedrock, covered only by that thin layer of glacial material or loess, contains numerous and sometimes extensive solution fractures and cavities. The dissolution of the carbonate rocks has lead to structural characteristics like sinkhole formations and provides for a high degree of underground drainage with rapid infiltration to lower aquifers and direct connections between surface waters and groundwaters. Karst topography is the term used for unglaciated lands formed over shallow limestone or dolomite bedrock that have had fractures enlarged and caves formed through the dissolution of the rocks. Karst areas are characterized by, among other things, sinkholes, caves, disappearing reaches of streams and rapid underground drainage. Due to the interconnection of surface and groundwater, the risk of aquifer contamination is relatively high.

  A second important geologic feature is a linear outcropping of the Decorah shale formation, which runs through five counties in the basin for several hundred miles. The Decorah shale formation acts as a confining layer to upper carbonate aquifers above it, which tend to be very high in nitrate nitrogen concentrations. Water seeps from the upper aquifers over the shale and then percolates through overburden to recharge deeper aquifers that serve as drinking water supplies to cities such as

Rochester and Preston. When left intact, with vegetative cover, the band of soil covering the face of the outcropping plus a few yards up- and down-slope provides significant infiltration, absorption and denitrification of polluted water from the upper aquifers. When cropped or covered over with impervious surface, it loses these functions to the detriment of water quality and quantity.

- Vegetation patterns: Western basin: Gently rolling plains in the west and central portions of the region are heavily farmed with very little original vegetation present.

  Eastern Basin: The blufflands area of the east consists of bedrock deposits of limestone and sandstone that are heavily eroded with exposed bluffs and deep stream valleys (500 to 600 feet deep). When the first settlers arrived, they found valleys rich in bottomland forests and clean, spring-fed streams with abundant brook trout populations. Oaks dominated most slopes, although sugar maples and basswood grew on some north- and east-facing slopes. Some of the upland was oak savannah, gently rolling prairie with scattered oaks. Today, upland plains and plateaus are farmed while forests are found along major river corridors and valleys. Remnant stands of white pine and other plants usually found farther north still remain from a time when the climate was colder.

  Western Basin: The Oak Savannah Landscape once hosted a mosaic of plant communities: oak savanna, tallgrass prairie, wetlands, and maple-basswood forest. The occurrence of a particular community depended on topography, geology and disturbances. Approximately 90 percent of the land has been converted to cropland (87 percent) or developed for towns, housing, industries, roads or rails. Natural plant communities exist as scattered remnants. Ecological systems are severely degraded and have lost their ability to renew themselves or provide resources on a sustainable basis. The largest prairies remaining occur in road ditches. Remaining examples of oak savannas are rare, small and severely degraded by the invasion of non-native plants and the lack of fire to assist in controlling the invasive species and brush.

Figure 3-4. Proposed Southeast CREP Area

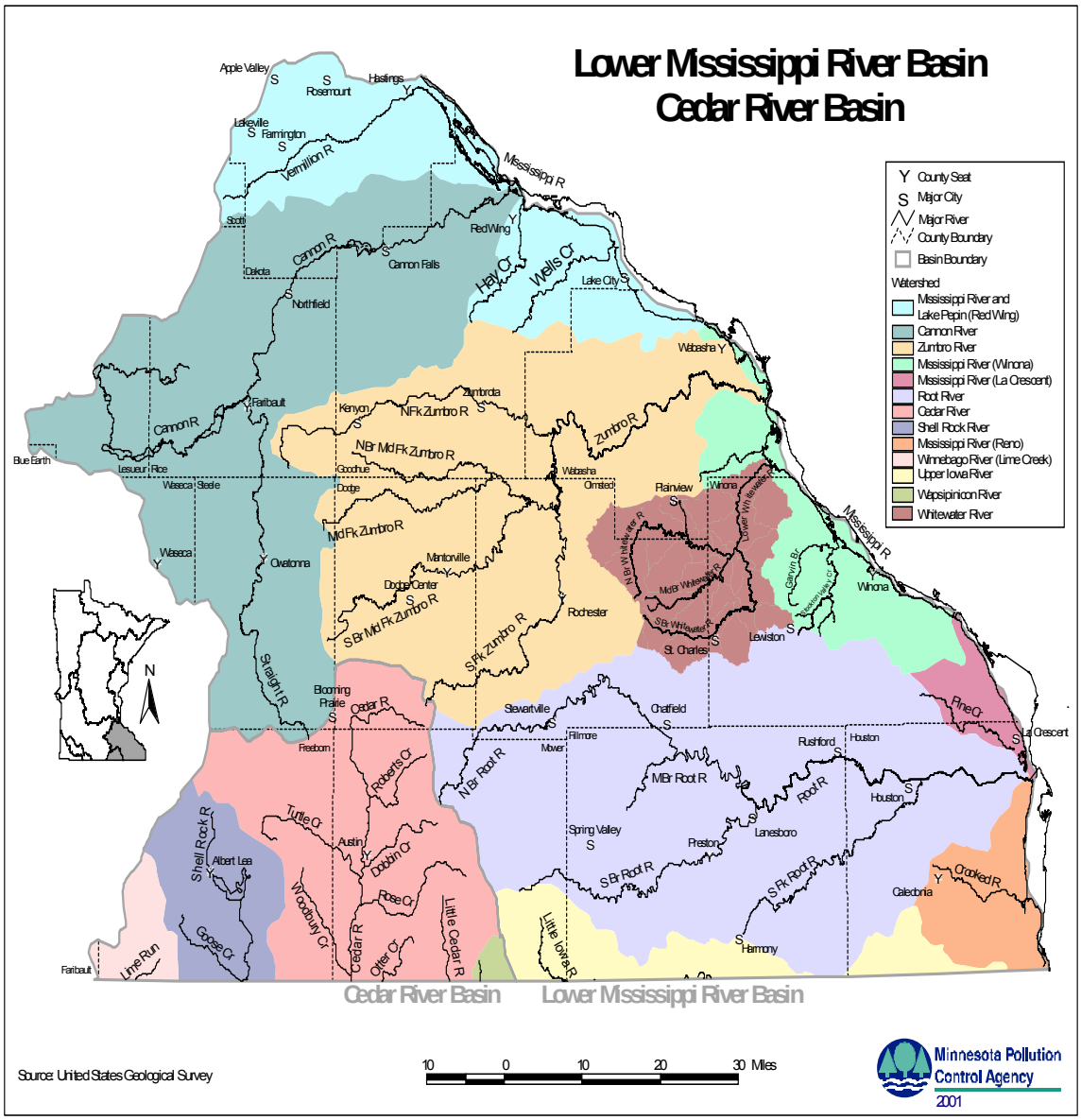
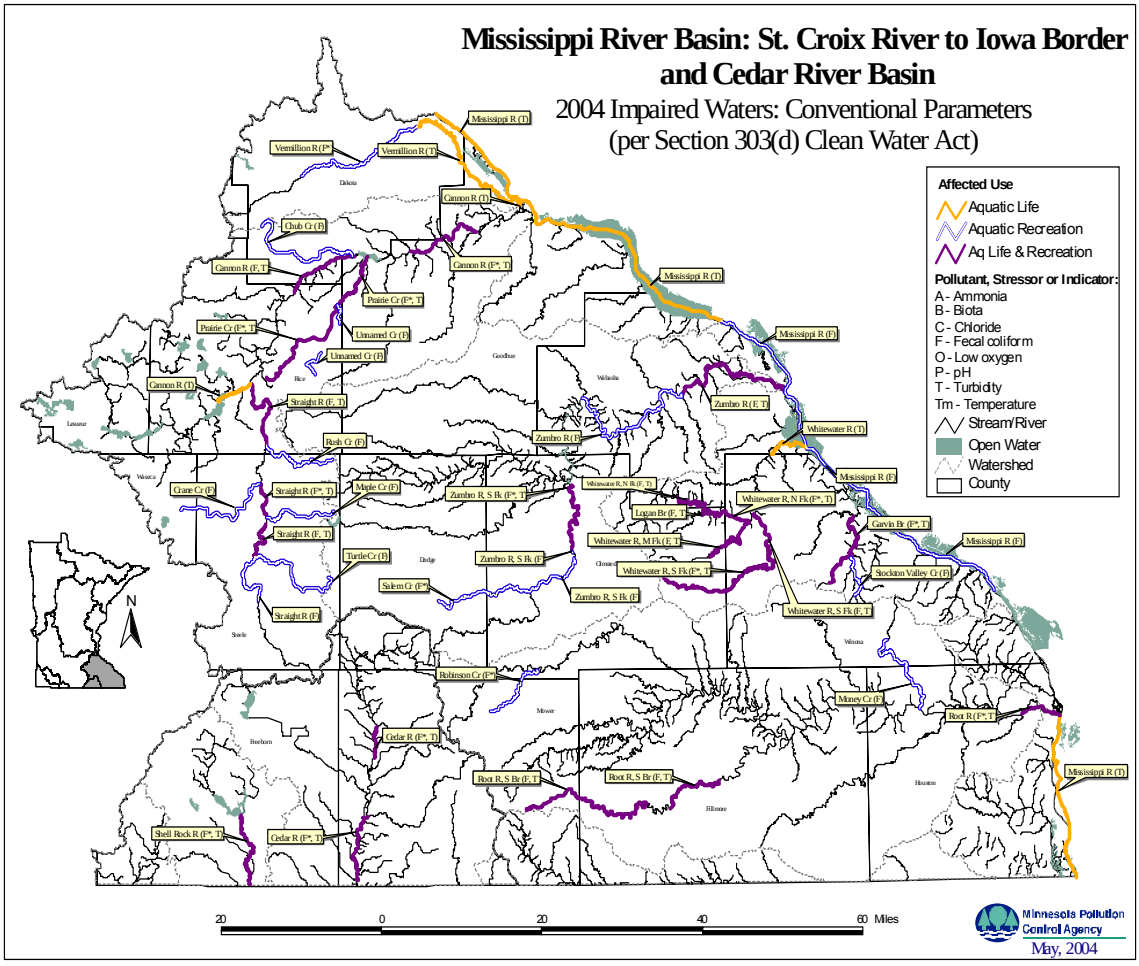


Figure 3-5. TMDL Map of the Southeast area



3.1.2.2 Relevant Affected Resources

Soils: Two distinct areas of wind-deposited silt loam (loess) soils dominate the southeastern Minnesota landscape. The karst area to the east has relatively deep to shallow deposits of loess overlying limestone and sandstone bedrock and has exceptional water-and nutrient-holding capacity. The soils also have good internal and surface drainage with a rolling topography and gradual to steep slopes. Soil depth varies from one foot to greater than 20 feet. Gently sloping to flatter fields characterizes the other major soil area located on the western edge of the rolling landscape. The loess soil in this area developed as a cap overlying glacial till. The soil has good water- and nutrient-holding capacity as well, but much poorer internal drainage due to the fine-textured subsoil. Loess soils are susceptible to erosion, particularly those on rolling landscapes with steep slopes**.**

Steep-sloping land, often under intensive cultivation or development, is located in close proximity to streams in many parts of the basin. This is especially true of the blufflands on the eastern side of the basin and the rolling moraine landforms on the western edge of the basin. Most of the lands in between these two regions of the basin have less extensive steep

areas. Approximately 11 percent of the land is next to permanent streams and about 29 percent next to intermittent streams. This indicates a very high potential for sediment delivery to streams and channels as a result of the erosion and runoff process.

The National Resource Inventory (NRI) (USDA, 2002), a statistical land-use survey conducted every five years by NRCS, indicates that the majority of soil erosion originates on a small percentage of highly erosive land. Erosion rates are described relative to the amount of erosion that land can tolerate (T) without impairing its productive capacity. Land eroding at "T", which usually amounts to about three to five tons per acre, is thus able to maintain its productive capacity.

Results of the 1997 NRI indicate that 61,200 acres of cultivated cropland in the Lower Mississippi River Basin are eroding at a rate of 4T or greater. This land comprises only 2.2 percent of the cultivated cropland in the basin, but accounts for 65 percent or the total water erosion in the region from cultivated cropland. About 154,700 acres of cultivated cropland in the LMR Basin are eroding at a rate of 2T - 4T. This land comprises only 5.5 percent of the cultivated cropland in the basin, but accounts for 21 percent of the total soil loss due to water erosion from cultivated cropland.

Soil erosion and runoff are greatly affected by land use – particularly, how the land use affects surface roughness and the ability to infiltrate water. Well managed pasture and hay land provide vast areas where rainfall and snowmelt can infiltrate the soil and recharge shallow groundwater, rather than running off the surface which can increase water volumes and pollutant loads to streams.

Data from the NRI show a steady decline in pastureland and erratic fluctuations in noncultivated cropland from 1982 to 1997 in the basin. Together, acreage in these two land use categories declined from 628,000 acres in 1982 to 448,000 acres in 1997, a decline of 180,000 acres, or 28 percent. Forested acreage increased slightly over the same period, from 574,000 to 590,000 acres.[x]

Although reasons for declining acreage of pasture and noncultivated cropland were not identified in the NRI study, conversion from mixed crop/livestock farming to larger, more specialized row crop operations appears to be playing a major role. In the 9-county region of southeastern Minnesota, corn and soybeans occupied 82 percent of the crop acreage in 2001 compared to 64 percent in 1975. Most of the shift to soybeans has been at the expense of large reductions in alfalfa, pastures and small grains[xi].

In addition to the trends in agricultural land uses, there are significant land use changes occurring around major cities and highways in the basin or region. Impervious surface percentage increases often result in increased sediment loading and degraded stream water quality in downstream reaches.

Riparian, Floodplain and Wetlands

Land cover analysis using GIS and satellite imagery indicates that tributaries in the western basin are the least protected with vegetated buffers. Most have well under half of riparian

acreage in perennial vegetation. Streams in the region are moderately impaired by turbidity (or suspended solids) and fecal coliform bacteria. For counties with primarily karst topography, a relatively high percentage of riparian acreage is vegetated. However, some of the vegetated acreage is pastureland that may be eroding at high rates due to overgrazing certain areas, especially steep slopes and stream banks. In addition, the upper reaches of tributaries in this region sometimes have low percentages of riparian land in permanent vegetation. Adding riparian buffers in the eastern basin also can provide important benefits. Basin wide, if implemented along with conservation practices in the upland and riparian zones, as called for in the BALMM Basin Plan Scoping Document, riparian buffer strips can go a long way toward meeting water quality standards and providing broad ecological benefits to the region.[xii]

Table 3-2. Percent of land within 100 feet of streams that is in row crops, vegetated or other land uses.

County	Percent Row Crop	Percent Vegetated	Other
Dodge	54	37	9
Fillmore	27	62	11
Freeborn	63	28	9
Goodhue	38	50	12
Houston	15	73	12
Mower	60	32	8
Olmsted	36	50	14
Rice	53	36	11
Steele	50	40	10
Wabasha	24	63	13
Winona	16	74	10
Source: Minnesota Department of Natural Resources[xiii]			

To convert all row crop acreage within this basin to buffers within a 100 foot (each side) riparian zone would require an estimated 160,000 acres. To achieve the target of 50 percent vegetated land use in the 100 foot (each side) riparian zone in the western basin, and meet the need for improved riparian vegetation management in karst topography, would require an estimated 25,000 additional acres of permanent riparian vegetation, basin wide.

The extent of pre-settlement wetlands in LMRB counties has been estimated to be approximately 880,000 acres. Good estimates of remaining wetland acreage are not readily available, but considerably less than half of the original wetlands are believed to exist today (Anderson and Craig, 1984). The vast majority of the original wetland acreage is located on the western side of the basin in Dodge, Freeborn, Mower, Steele, and Waseca counties. Seventy-nine percent of the landscape in southeastern Minnesota is classified as well-drained. Of the remaining lands that are classified as poorly drained soils, much has been tiled for agricultural production.

The drainage, cultivation and development of land have combined to greatly increase the speed of runoff and the peak flows of streams following significant snow melt and rainfall events, as well as greatly reducing wildlife habitat provided by wetlands. The restoration of wetlands in strategic locations can begin to reverse these adverse effects. Opportunities for wetland restoration are greatest in the headwaters region in the western basin, while more limited opportunities exist in the river valleys and elsewhere in the karst region. In Mower and Steele Counties, the SWCDs estimate that 18,000 acres of wetlands could be restored in each county based on NWI maps and soil information. Applying this to the five headwater counties, and making provision for more limited wetland restoration in the east, the result is a resource need of 100,000 acres. It is proposed that 18,000 acres be targeted for wetland restoration in the headwaters region. NRCS will be requested to evaluate how wetland restoration can be targeted in this region to maximize reductions in peak stream flows on the Cedar, Root, Zumbro, Cannon and Vermillion Rivers, in addition to Spring Valley Creek and other streams with severe flooding problems. An additional 2,000 acres are needed for wetland restoration elsewhere in the basin, including floodplains.

As the rivers near the Mississippi Valley, gradients decline and stream velocities decrease, resulting in a loss of energy and deposition of a portion of their sediment load in stream channels and alluvial floodplains. In recent decades, however, dikes along the lower reaches of the Root and Zumbro have disconnected the rivers from their alluvial floodplains, making farming of the rich soil possible, at the cost of increased sedimentation of the Mississippi River itself and the degrading of a rich ecosystem.

Surface Water Resources: The surface water resources of the LMRB in Minnesota consist of 11,566 stream miles (364 miles assessed) and 114,781 lake acres (54,110 acres assessed).

Lakes: Of 47 monitored lakes, 7 are in full compliance, 4 are in partial compliance and 36 are in non-compliance with the water quality criteria established for lake assessment in Minnesota. Excess phosphorus resulting in hypereutrophication is usually the cause of partial and non-support.

Streams: Water quality monitoring over several decades shows widespread exceedances of State and Federal water quality standards throughout the basin for turbidity (suspended solids) and fecal coliform bacteria, along with steadily increasing concentrations of nitrate nitrogen. Nitrate concentrations exceeding drinking water standards are also found in the shallow aquifers. Throughout the basin these aquifers frequently appear as springs and seeps which in turn contribute water sources to the area streams.

Meeting water quality standards and reducing nitrogen export to the Mississippi River are priority concerns to the State and nation. Locally there are similar concerns caused by water quality degradation. Intensive land use and extensive drainage, coupled with extreme weather, has led to increased flooding and stream bank erosion. Agricultural land use is a source of these problems, with livestock manure, commercial fertilizer, and tillage and grazing practices among the major sources of

excess nutrients, fecal coliform bacteria and soil erosion, which degrades both soil productivity and stream water quality.

Water Quality Standard Exceedances: The region's streams generally exceed State and Federal water quality standards for fecal coliform bacteria (35 stream reach impairments) and turbidity (31 stream reach impairments). This includes tributaries and the Mississippi River. The Root River, for example, is impaired by high turbidity in its lower reach and is a significant source of turbidity and suspended sediment downstream in the Mississippi River in Navigation Pool 8. Plans to achieve water quality standards are required to be developed and implemented by the Federal Clean Water Act, Section 303, through the Total Maximum Daily Load process. It is a State and national priority to develop and implement such plans. A regional fecal coliform TMDL covering 20 impaired reaches in southeast Minnesota was approved by EPA in November 2002.

Fecal coliform bacteria: Data from more than 2300 water samples at 113 monitoring sites from 1997 to 2001 show stream concentrations on average more than twice the water quality standard of 200 organisms per 100 ml. Livestock manure accounts for an estimated 90 percent of the problem during spring and summer wet weather periods, when fecal coliform concentrations tend to be highest, according to the Regional Fecal Coliform TMDL study by the Minnesota Pollution Control Agency. Fecal coliform bacteria also are detected in shallow groundwater. Manure runoff to sinkholes and other focused recharge zones are suspected sources, along with failing septic systems.[xiv]

Turbidity: Turbidity values exceed the water quality standard for about 23 percent of samples taken in the Zumbro, 20 to 40 percent of samples in the Mississippi River downstream of the Root River confluence, and for 47 to 75 percent of samples for Garvin Brook, a trout stream. Watershed assessments identify agricultural runoff as the main source of suspended sediment, which correlates very closely to turbidity. In the Whitewater River Watershed, a 1996 assessment indicated that 68 percent of sediment in the river came from sheet and rill erosion, largely from agricultural fields, while 21 percent came from stream bank erosion. Watershed modeling often shows agricultural best management practices to be the most effective ways to reduce sediment runoff. An assessment of Dobbins Creek, northeast of Austin, showed that most stream sediment originated in the uplands of a largely agricultural watershed. The Agricultural Nonpoint Source model showed that gully removal plus conservation tillage would reduce sediment in the stream by 33 percent after a 5-inch storm, and by 60 percent in a normal year of moderate rainfall events. A study of the Wells Creek watershed near Frontenac estimated that 100-foot buffers plus conservation tillage would reduce sediment in the stream by 31 percent.

Not only have wetlands been impacted by various means but also many of the riverine systems throughout the basins have seen degradation due to siltation. The 1994 UNIONID MUSSEL SURVEY (MOLLUSCA: BIVALVIA: UNIONIDAE) FROM THE HEADWATERS OF THE ROOT RIVER SYSTEM, MN, TO THE MISSISSIPPI RIVER (Mavlicka) states "Overall, our data shows severe impacts to the Root River system. We were unable to pinpoint the precise impacts that led to this situation, but

similar to Hove and Neves' observations (1994), our preliminary conclusions are that cumulative impacts, primarily agricultural, are apparently responsible for the near decimation of the unionid fauna."[xv] As long as the siltation continues many species of importance including not only mussels but also fish such as trout will be adversely compromised.

Nitrate Nitrogen – Concentrations show a steady increase over three decades across the basin. Even in small headwater streams, the concentration of nitrate nitrogen often exceeds the 10 mg/L drinking water standard. Typical tributary concentrations range from 3.0 to 9.0 mg/L, with values in the Mississippi River from 1-3 mg/L. Besides posing a potential health threat to drinking water, high nitrate nitrogen concentrations lead to excessive algae production in Mississippi River backwaters and contribute to very low oxygen levels, or hypoxia, in the Northern Gulf of Mexico. Soil organic matter and nitrogen fertilizer are by far the leading sources of inorganic nitrogen, providing 42 and 36 percent of the total amount, respectively, statewide. In southeastern Minnesota, livestock manure is another significant source. In the Garvin Brook Watershed study, where more than 36 percent of private wells exceeded the nitrate standard, nitrate-nitrogen concentrations four to eight feet below fertilized land generally were between 20 and 50 mg/L.

Phosphorus: High concentrations of phosphorus can trigger excessive algae production, or hypereutrophication, in lakes, reservoirs or slow-moving rivers or backwaters with hydraulic residence time of one week or more. The decay of algae can use up dissolved oxygen near the bottom of rivers and lakes, threatening aquatic life. This condition of hypereutrophication occurs in shallow lakes in the western basin, as well as in Lake Pepin on the Mississippi, Lake Zumbro on the Zumbro River, and Lake Byllesby on the Cannon River. The latter three lakes have recently been added to the Section 303(d) list of impaired waters, for which TMDL's must be developed.

While hypereutrophication does not often occur in Mississippi River navigation pools bordering Minnesota, it is more common further south, in Pools 13 and downriver. Since phosphorus is a conservative pollutant, it can contribute to hyper-eutrophication far from its point of origin, so that phosphorus originating in southeastern Minnesota can contribute to algae production in the Mississippi near Clinton, Iowa, or below. Typically, point sources provide the majority of phosphorus during dry periods, and nonpoint sources dominate during wet weather, when rainfall or snowmelt carries phosphorus attached to sediment or in solution from manure runoff, to surface water. A 1996 study of Lake Byllesby, for example, estimated that nonpoint sources contributed 65 percent of phosphorus in normal years, and about 45 percent in low-flow years. Manure, commercial fertilizer and phosphorus-rich soil are major agricultural sources of phosphorus.

Water quantity: The character of rivers and streams in the LMRB changes considerably along the main direction of flow, west to east. Lower portions of these rivers and tributaries are fed by groundwater, making many streams sufficiently cold to support trout populations. Stream conditions may include a combination of swiftly moving

current, streambeds formed of boulders, cobble and gravel, and stable flows of cool, oxygen-rich waters. Pools and undercut banks provide refuge during sunny days and low waters, while riffles provide a continuing source of food. Snowmelt and heavy rainfall can induce flash floods in this topography.

Historic landscape alterations including clearing and drainage of the land for farming has decreased the potential for water storage on the land and produced a more extreme pattern of stream flow volumes. Following rainfall and snowmelt, increased runoff leads to higher peak flows than would exist under presettlement conditions. Likewise, under dryer conditions, base stream flows are lower than they would be under presettlement conditions particularly in the western basin, where wet prairies previously maintained more stable shallow groundwater flows than under today's conditions of extensive artificial land drainage.

Groundwater: Generally, the upper-most ("shallow") glacial and bedrock aquifers will have groundwater movement which is locally toward the nearest topographic drainage point such as a stream or valley and regionally toward the mouth of the watershed. It is often the case that the upper bedrock aquifers have regional flow directions which mimic the surface water flows in the watershed. The general pattern for groundwater aquifers is to have recharge in the upland plateaus with subsequent dewatering as baseflow, springs or seeps into the stream valleys. Bedrock aquifers also exhibit a constant downward movement of water with some recharge to deeper aquifers through leaky confining units and some aquifer cross-over of watershed boundaries. The groundwater movement of the water table and surficial aquifers tends to bend parallel to river flows with a water table divide at the stream.

Many of the watersheds have areas that are highly susceptible to groundwater contamination. These areas typically have only a thin sediment layer over the bedrock. This susceptibility is also magnified by the bedrock dynamics exhibiting rapid water travel times through dissolved limestone and dolomite fractures, caves and extensive underground drainage. While many aquifer waters typically move only a few feet per year, many of the waters in the karst regions can have groundwater movement on the extreme order of miles per day. Nitrates, pesticides, and bacteria are common pollutants that can re-enter streams through this underground drainage as well as move vertically to impact deeper aquifers. In addition, many of the groundwater aquifers are highly susceptible to pollution because of extensive areas of coarse sediments such as outwash or riverine sand deposits. On the other hand, one of the benefits of this high degree of groundwater and surface water interaction is that it provides for a strong (and cool) supply of water to streams through baseflow and springs that has resulted in many of the trout stream reaches in this basin.

Wildlife Habitat: In the course of a year, as many as 42 mammal species and 237 bird species use the ecosystems in this basin. In the eastern portion of the basin, algific talus (steep, rocky, southern exposure) slopes support plant and animal communities found nowhere else in Minnesota and few other places on Earth. Many upland game species

including whitetail deer, turkey, pheasant, Hungarian partridge and ruffed grouse thrive in this area.

Trout Stream Habitat: Southeastern Minnesota is home to 736 miles of trout water in 102 streams. These waters include such high-quality waters as the renowned Green River and they attract anglers from miles around. In 1998, a DNR creel survey estimated total mean angling pressure to be 617 hours/acre. By contrast, angling pressure on Minnesota lakes rarely exceeds 100 hours/acre. Total estimated annual angling pressure in southeastern Minnesota streams is 500,000 hours. Trout require cold, clear, oxygen-rich water, and are very sensitive to disturbances from sedimentation, high flows and loss of riparian vegetation. Prior to European settlement, brook trout were naturally distributed throughout the region, but the native trout species have largely been replaced by introduced brown trout, a species far more tolerant of warmer water temperatures and lower dissolved oxygen levels typical of streams in agricultural settings. Brook trout populations are now restricted to small feeder streams and headwater sections. Cold-water streams are protected with more stringent water quality standards than apply to warm-water streams, in accordance with state and national priorities. Management of this fishery is the major DNR Fisheries management program in southeast Minnesota.[xvi]

Hunting Habitat: Big-game hunting for white-tailed deer and turkey occurs throughout the area and is most prevalent in the eastern basin where habitat is most extensive. More than 25,000 deer were harvested in 2000 in this basin alone. Almost 13,000 individual turkey permits were issued, and about 4,100 turkeys harvested during the spring 2000 wild turkey season. Hunting pressure for deer remains constant, and interest in turkey hunting is increasing as turkey populations expand. Duck hunters spent an estimated 96,692 hunting days afield and harvested 96,804 ducks in 2000. The same year, estimated 23,112 pheasant hunters spent 161,782 hunting days afield and harvested 67,785 pheasants. Each hunter in Minnesota spends an estimated $416/season, for a total of $9.6 million, a strong stimulus to the regional economy[xvii].

Figure 3-6- Photo Credit: Maslowski/National Wild Turkey Federation

Federally listed endangered and threatened species: Algific talus (steep, rocky, southern exposure) slopes support plant and animal communities found nowhere else in Minnesota and few other places on Earth. Fourteen threatened or endangered species (Federal and/or state) occur within very unique and specific habitats. The following five are federally threatened or endangered species: the peregrine falcon, bald eagle, Karner blue butterfly, Leedy's roseroot, and the Higgins Eye pearly mussel.

Historic and Cultural Resources:
The NRHP is part of a national program administered by the National Park Service to coordinate and support public and private efforts to identify, evaluate and protect significant historic and archeological resources. Properties listed on or eligible for the NRHP include historic districts, sites, buildings, structures and objects that are significant in American history, architecture, archeology, engineering and culture. National Historic Landmarks (NHLs) are designated by the Secretary of the Interior and are nationally significant historic places because of their exceptional value or quality in illustrating or interpreting the heritage of the U.S.

A review of the state's historic and cultural resource database showed that there are numerous NRHP protected sites located within this area. Many of them are located in the rural areas of the various counties.[xviii]

Other Important Lands and Resources:

National Natural Landmarks and other protected lands

- *The Upper Mississippi River System* (UMRS) includes commercially navigable reaches of the Mississippi River between Cairo, Illinois and St. Paul, Minnesota, including the main channel and its floodplain. The LMRB is the northern (25 percent) portion of the UMRS. The UMRS is a nationally significant ecosystem and a nationally significant commercial navigation system, as declared by the U.S. Congress in 1986. It is critical habitat for 286 state-listed or candidate species and 36 Federal listed or candidate species of rare, threatened or endangered plants and animals endemic to the Upper Mississippi River Basin. The portion of the UMRS that borders southeastern Minnesota, Navigation Pools 3-9, includes some of the highest quality wildlife habitat of the entire UMRS. A 1990 study showed that 75 percent of all nonresident recreation expenditures in the entire UMRS corridor occurred within the St. Paul District of the US Army Corps of Engineers, which includes Navigation Pools 1-10. The BALMM region of southeastern Minnesota drains to the river and its floodplain, impairing its quality with discharges of sediment and nutrients.

- *Trails* – Nine trails ranging from three to 48 miles have been established on abandoned railroad grades for hiking, biking, in-line skating, and cross-country skiing. DNR surveys from 1997 and 1998 show that the most popular trails attract upwards of 100,000 user hours per summer, while the remainder attract about 50,000 user hours. Hundreds of additional trail miles are planned in order to create connected corridors traversing southeastern Minnesota. Maintenance of high water quality in streams adjacent to the trails, and landscape diversity on land adjacent to the trails, is integral to the quality of outdoor experience valued by the thousands of people who use the trails.

- *The Upper Mississippi River National Wildlife and Fish Refuge* includes 32,000 acres and managed by the FWS. This refuge runs along the Mississippi River and includes lands and waters in both Minnesota and Wisconsin. This habitat in Minnesota and

Wisconsin includes natural areas of bottomland forest with numerous sloughs and channels.

- Within the proposed Southeast CREP area, the DNR manages 10 *State Parks*. There is also the Richard J. Doeher Memorial Hardwood Forest where Minnesota DNR Forestry manages 45,000 acres within a 2 million acre statutory boundary.

Other Resource of Concern: *Hypoxia in the Northern Gulf of Mexico* is the problem of low dissolved oxygen (hypoxia) in the Northern Gulf of Mexico. It is a national concern that has been linked to excessive loads of nitrate nitrogen from the Mississippi River. An estimated 56 percent of the annual average nitrate nitrogen load originates in the Upper Mississippi River Basin, upstream of Cairo, Illinois. Southeastern Minnesota watersheds are identified as yielding high (10,000 – 15,000 kg/km^2) and very high (15,000 – 20,000 kg/km^2) loads of nitrate nitrogen to the Mississippi River.

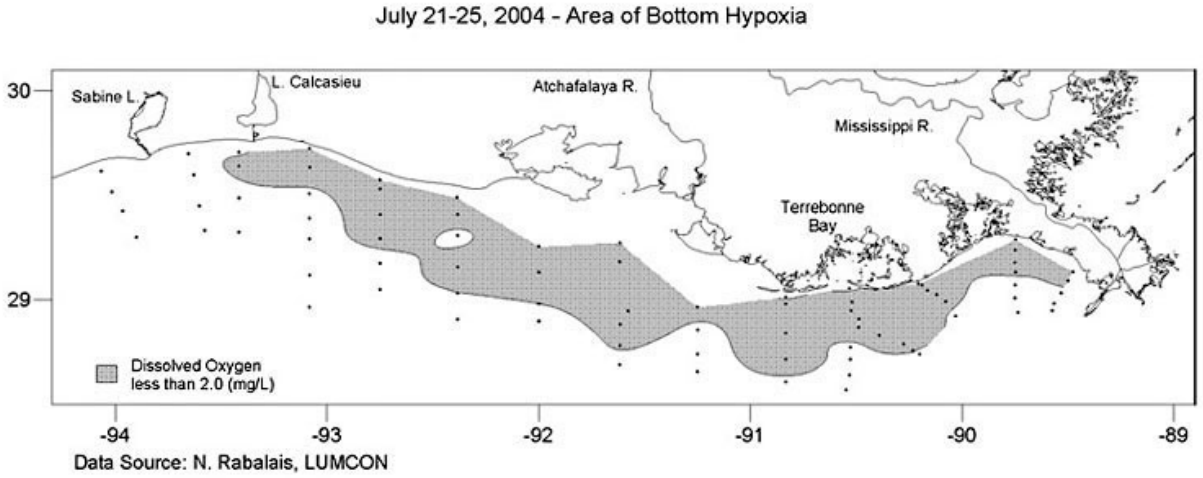


Figure 3-7. Hypoxia in the Gulf of Mexico

3.1.3 The Missouri and Des Moines Basins

3.1.3.1 Introduction

Profile of Basin: The SW MN CREP area consists of two watersheds: the Missouri River Watershed and the Des Moines River Watershed.

The Missouri River Watershed drains approximately 1,140,547 acres and has several smaller tributaries that drain to South Dakota and Iowa. The majority of the land use in the watershed is agriculturally related. Eighty four percent of the land use is cultivated land with a corn and soybean rotation and 11 percent is in hay, pasture and grassland.

The Des Moines River Watershed consists of three minor watersheds: West Fork Des Moines River-headwaters, Lower and East Fork Des Moines River.

The West Fork Des Moines River begins at Lake Shetek and flows southeast through Murray, Cottonwood, and Jackson counties before entering Iowa. The East Fork Des Moines River starts in Martin County and flows south to Iowa and joins the West Fork Des Moines River near Fort Dodge. The watershed's major land is agriculturally related with 85 percent in cultivated land and seven percent in hay and pasture.

Precipitation and runoff: The topography and soils in the southwest corner of Minnesota are a result of two major landforms. The extreme southwest counties (Pipestone, Rock, and the west half of Nobles) are underlain by an old clay loam glacial till that is covered by a mantle of silty clay loam loess. The loess mantle can vary in thickness from a few inches to several feet. It is gently sloping and hilly.

The remaining counties are a young glacial till deposited by the most recent glacial advance. The southwest edge of this advance is marked by the Bemis Moraine (Buffalo Ridge). The soils throughout this area are dominantly loam. In the southwest part of this area they are rolling to gently undulating and become nearly level to gently undulating as you move north to east. Southwestern Minnesota receives about 26 inches of annual precipitation.

Streams and rivers make up riparian areas with narrow gallery forests along the water's edge. Prairie consisted of tall native grasses (i.e., big bluestem, indiangrass, switchgrass). A transition zone, called savannahs, between these two areas, is made up of grasses, trees, small shrubs, and numerous shallow wetlands.

Figure 3-8. Impaired Waters in Southwest Minnesota

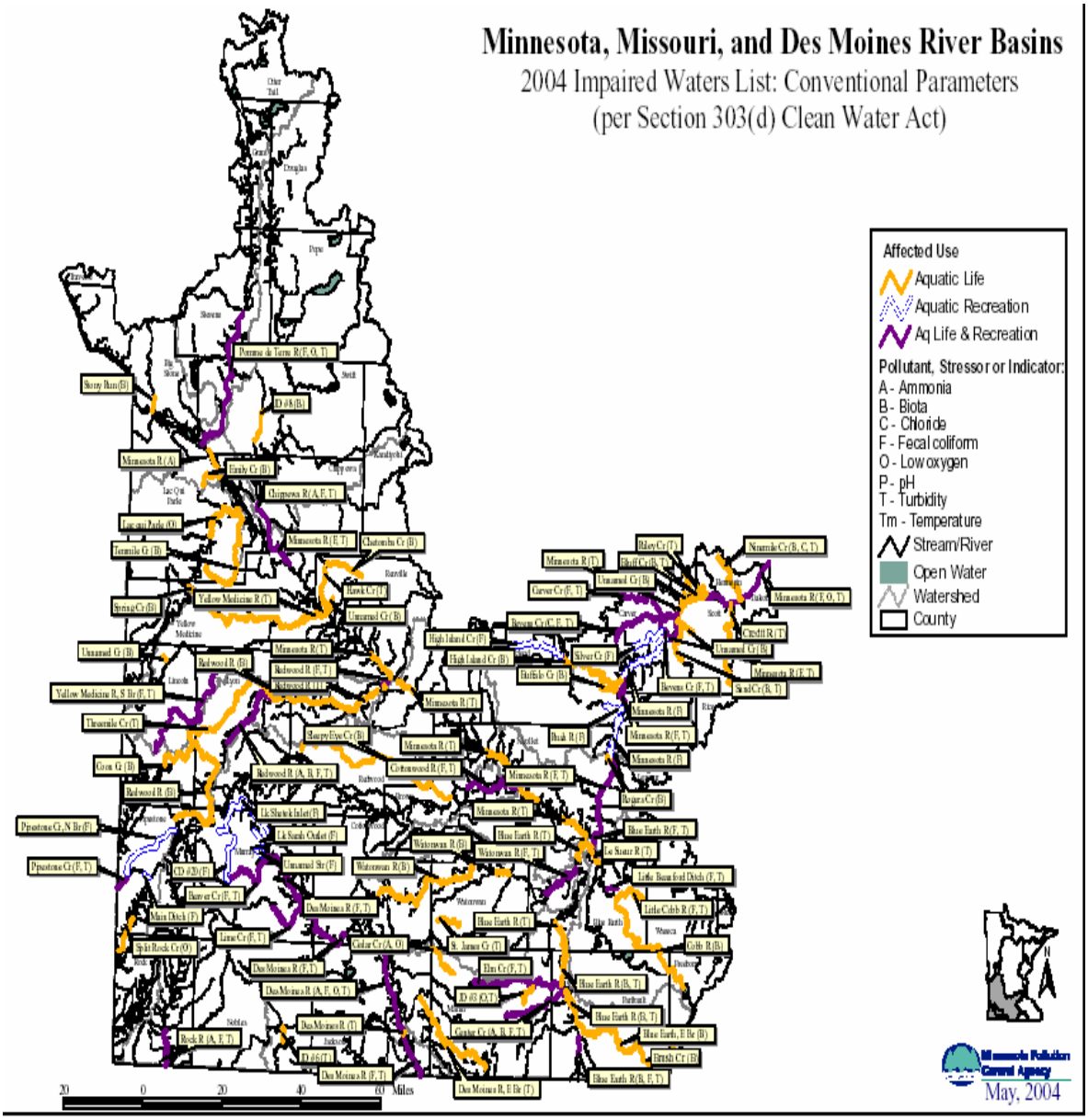


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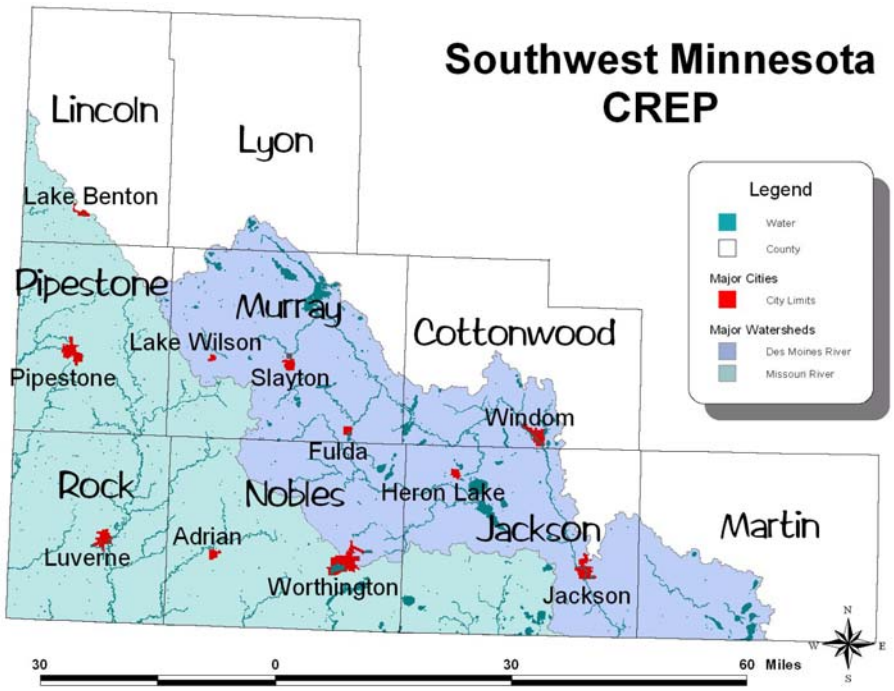
Figure 3-9. Proposed Southwest CREP Area



3.1.3.2 Relevant Affected Resources

Soils: The landscape in southwestern Minnesota consists of two distinct geomorphic surfaces. One is a till plain and the other is a loess covered till plain. The loess covered till plain in extreme southwestern Minnesota consists mostly of loess over firm glacial till. The thickness of the Loess varies in depth from one to three feet. A small proportion of this area is underlain by quartzite bedrock. In these areas the loess is shallow and bedrock sometimes outcrops. Slopes range from nearly level to steep. A second geomorphic surface further to the east is the till plain. It is thick, friable, loamy glacial till. Slopes here range from nearly level to steep. All these soils are susceptible to erosion especially those on steeper slopes.

Many of the soils on steep slopes in southwestern Minnesota are adjacent to steams, lakes and wetlands. When intensively cultivated, they erode delivering sediments to streams, lakes and wetlands.

Riparian Land Use: Land cover in areas immediately adjacent to rivers, streams, drainage ditches, and lakes are of critical importance for water quality. The table below shows the land cover type in the critical riparian zone defined as 100 feet or 100yr. floodplain, whichever is greater for each side of the riparian source.

Table 3-3 SW MN RIPARIAN LAND USE

County	Total County Acres	Basin Acres	Riparian Zone Total Acres	Riparian Zone Cultivated	Cult%
Cottonwood	415,034	105,320	9,837	3,048	31%
Jackson	460,258	399,995	31,219	11,154	36%
Lincoln	351,288	52,649	4,649	1,559	34%
Lyon	462,076	14,245	1,566	255	16%
Martin	466,604	109,767	7,404	2,340	32%
Murray	460,664	387,503	40,140	14,251	36%
Nobles	462,633	462,622	34,978	18,000	51%
Pipestone	298,520	281,858	25,852	10,975	42%
Rock	309,151	309,135	27,741	13,496	49%
TOTAL	3,686,229	2,123,095	183,386	75,077	41%

Source: MN Board of Water and Soil Resources.

As the Table 3-3 indicates an average of 41 percent or 75,077 ac. of this riparian zone is under cultivation for agricultural purposes. Of these targeted acres approximately 20 percent or 15,000 ac. have already been enrolled in some type of conservation program. This leaves about 60,000 ac. of riparian cropland that would be available for enrollment in programs like CREP, CCRP or other riparian type programs.

Wetlands: The extent of presettlement wetlands in the SW MN CREP area is indicated in the table below. Anderson and Craig inventoried presettlement wetland areas using soils information on 40 ac. parcels. The result found that although the area proposed for the SW MN CREP area was once rich in prairie pothole wetlands, in excess of 80 percent have been drained. The National Wetland Inventory of 1994 provides indication of the remaining wetlands. The potential for wetland restoration is wide spread across the entire basin.

Table 3-4 SW CREP Area Wetland Status

County	Total Land Area (Acres)	Presettlement Wetland (Acres)	Current Wetland (Acres)	Wetland (Acres)
Cottonwood	416,800	40,000	0	10,347
Jackson	461,800	147,000	2,000	20,577
Lincoln	350,600	40,000	1,000	17,855
Lyon	459,000	107,000	1,000	15,364
Martin	468,000	181,000	1,000	15,733
Murray	461,600	33,000	1,000	16,151
Nobles	461,200	137,000	0	8,327
Pipestone	295,100	17,000	0	7,024
Rock	310,100	3,000		6,358
TOTALS	3,684,200	705,000	6,000	117,736

Source: Anderson and Craig 1984 National Wetland Inventory 1994 Note that a 0 appearing in a column means that wetlands were not on the NWI.

Water Resource Issues: Water quality in the Des Moines River Watershed and the Missouri River Watershed has degraded over time due to the changing landscape. Nutrients are a major contributor to the degraded water quality. Phosphorus binds to soil particles and enters a waterbody. Phosphate will stimulate the growth of plankton and aquatic plants, which provide food for fish. At times this may cause an increase in the fish population and improve the overall water quality. Typically, if an excess of phosphate enters a waterbody; algae and aquatic plants will grow wildly and use up large amounts of oxygen. This rapid growth of aquatic vegetation eventually dies and as it decays it uses up oxygen. This process in turn causes the death of aquatic life because of the lowering of dissolved oxygen levels.

In this target area, there are 46 impaired reaches or water courses on the TMDL submitted to EPA. A TMDL is an assessment of a specification section or "reach" of a river or

stream that evaluates the pollution sources occurring in that area. With those numbers, the Minnesota Pollution Control Agency determines if the reach exceeds the state standard for that selected usage.

In the SW MN CREP proposal area, there are six issues of concern or impairments. They are mercury, fecal coliform, ammonia, turbidity, excess nutrients, and dissolved oxygen. These impairments affect the plant and animal communities in the system. Of specific concern is the recently designated critical habitat of the Topeka Shiner (see attached map on page 57 or in Appendix C) The USFWS has identified several actions which may threaten the shiner or modify the species existing habitat including destruction or modification of the species habitat (such as channelization, stabilization and damming or other impoundment activities); improper use of pesticides or fertilizers (failure to comply with labeling requirements); contamination of soils, streams and groundwater (such as from spills or discharges); and discharging or dumping of chemicals, silt or other pollutants (such as material discharges from manufacturing plants, runoff from livestock confinements, and construction operations).[xix] The impairments also affect the local residents, tourists, and general public. The water quality problems in southwestern Minnesota prove to be important to the watershed residents and as a result many local groups have formed partnerships to study and improve the water quality. Working with the Minnesota Department of Health, a number of well head protection areas have been identified and mapped. An example of a well head protection area is found in Figure 3-10 as well as in Appendix D.

There are slightly over 2,000 acres designated in the Minnesota CREP II proposal for protection of identified areas such as the one indicated on the above map. This proposal should not adversely impact these areas.

A diagnostic study was recently completed on the West Fork Des Moines River that determined the major water quality issues were high levels of nutrients, sediment, and bacteria. Table I shows the number of semi-truck loads of pollutants that passed the USGS sampling station in Jackson from 2001-2003. The pollutant loadings are directly affected by precipitation and intensity of storm events. In 2001, the higher pollutant loads are a product of spring snowmelt followed by a 3-4 inch rainfall event. 2002 and 2003 had relatively little snowmelt runoff and low intensity rainfall events.

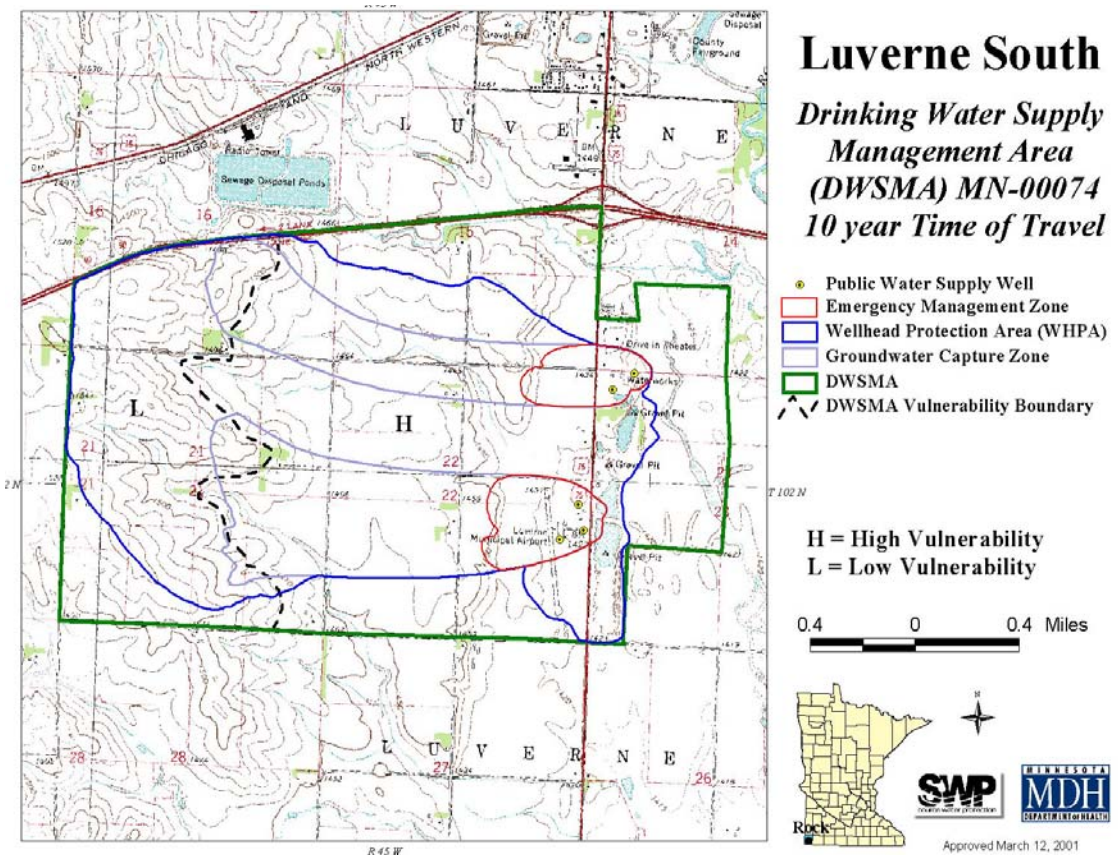


Figure 3-10- Well Head Protection Area MN Department of Health

Table 3-5. 2001-2003 Pollutant Loads passing Jackson, MN

West Fork Des Moines River Clean Water Partnership~Phase 1
2001-2003 Loads passing by Jackson, MN from April - October

Sampled Parameters	Pounds			# of Semi truck loads		
	2001	*2002*	*2003*	*2001*	*2002*	*2003*
TSS: Total Suspended Solids	116,555,859	21,132,985	59,216,819	2,775	503	1,410
NO2_NO3: Nitrate-Nitrite	10,001,201	1,108,947	2,455,230	238	26	58
NH3_N: Ammonia Nitrogen	114,753	18,475	26,456	3	0.4	1
TKN: Total Kjeldahl Nitrogen	2,956,550	741,749	N/A	70	18	N/A
OP: Orthophosphorous	175,560	6,705	8,477	4	0.16	0.20
TP: Total Phosphorous	484,856	84,882	152,926	12	2	4

In a georgraphical area where land use is primarily dominated by agriculture, many health issues may be related to agriculture. In the area, a number of wells have nitrate concentrations exceeding the National Drinking Water Standard of 10 mg/L. A groundwater study in the proposal area shows that in low flow conditions, there is a correlation between the water quality of surface water and the groundwater. In 1998, fish consumption advisories were listed for thirteen lakes sampled in the nine county area.

The1999/2000 Minnesota Wetland Report published by the Minnesota BWSR indicates the State really has three distinct areas of wetland loss. These are indicated on the map on the left. It indicates that for the areas proposed for this CREP that the state has lost greater than 50 percent of its pre-settlement wetlands through drainage and development. The quality of many of the remaining wetlands has been affected by sedimentation and other anthropomorphic factors. Because of these changes, many native wildlife populations have declined over the years, and some have completely disappeared, while others have attempted to adapt to environmental change.

Wetlands have an intrinsic ability to filter harmful pollutants from water supplies, reduce sedimentation which carries these pollutants downstream and store water on the landscape rather than allow it to rapidly move downstream causing flooding and loss of property.

Wildlife Habitat:

Consistent with the rural landscape that characterizes much of the Minnesota CREP II area, fish and wildlife habitats that support the hunting, fishing and wildlife watching activities provide important recreational activities and generate significant state and local economic benefits as well. However, due to a number of factors that have occurred over time in the various river basins, it is accepted that wildlife habitat has experienced overall degradation and decline.


Jeff Johnson

The amount of wildlife habitat found on public lands dedicated for this purpose is limited. The major source of wildlife habitat occurs on private land. Habitat typically takes two distinct forms on private lands: Habitat which naturally occurs as non-cropland and habitat which is driven by retirement of land historically used for agricultural purposes. There is also a subset of this in the use of croplands by certain species but in typical years these croplands are tilled in the fall and provide little benefit for over wintering. Wildlife habitat is summarized in the table below. At present 11 percent of the overall land area is some form of habitat while 4.4 percent of cropland is enrolled in some type of conservation program. It should be noted that in the years 2007 and 2008, 50 percent of the general CRP will expire in MN. This will leave a large gap in private lands that are providing some form of wildlife habitat.

Table 3-6. SW MN CONSERVATION LANDS SUMMARY

County	Total Program Acres	Cropland Acres	Percent Enrolled	Public Land	Natural Lands	County Size Total Acres
Cottonwood	16,038.5	360,943.0	4.4%	9,424.45	35,558.60	415,027
Jackson	11,471.3	397,517.0	2.9%	9,029.47	44,181.56	460,250
Lincoln	38,794.1	278,292.0	13.9%	9,623.18	56,721.98	351,283
Lyon	20,286.4	387,950.0	5.2%	11,358.36	50,106.46	462,067
Martin	7,428.9	411,001.0	1.8%	2,810.65	40,428.42	466,598
Murray	22,741.0	388,780.0	5.8%	9,963.18	52,660.51	460,659
Nobles	6,699.7	399,175.8	1.7%	4,259.65	37,156.93	462,630
Pipestone	12,906.3	242,801.0	5.3%	2,101.00	46,686.47	298,515
Rock	2,455.2	257,380.9	1.0%	498.00	39,845.99	309,146
TOTAL	**138,821.4**	**3,123,840.7**	**4.4%**	**59,067.94**	**403,346.92**	**3,686,175**

Source: Minnesota Board of Water and Soil Resources

Federally listed T&E species:

Federally listed species occur in all but two counties located in the SW area. They are listed in the accompanying Table 3-7. Plants such as the Western prairie fringed orchid (*Platanthera praeclara*) (Figure), a threatened Midwestern prairie plant, depend upon non tilled lands for their continued survival. Areas containing these species must undergo appropriate management to attempt to replicate nature.

In addition, this area of the State has a federally listed Critical Habitat Area for the Topeka shiner. The FWS listed the Topeka shiner (*Notropis topeka*) as an endangered species in 1998 and designated critical habitat for the species in 2004. The Endangered Species Act of 1973, as amended, prohibits the taking of this species. FWS surveyed 14 streams in the range of the Topeka shiner between 1985 and 1995. The species was collected from 5 of 9 (56 percent) streams with historic occurrences, and was not found in

the 5 streams with no historic occurrences. These locales were in the Rock River drainage (Baker, in litt. 1996). In 1997, additional surveys were completed with the species being captured at 15 sites in 8 streams, including a stream in the Big Sioux River basin (Baker, in litt. 1997). Topeka Shiners are currently distributed extensively throughout the Big Sioux and Rock River Watersheds in five counties in southwestern Minnesota

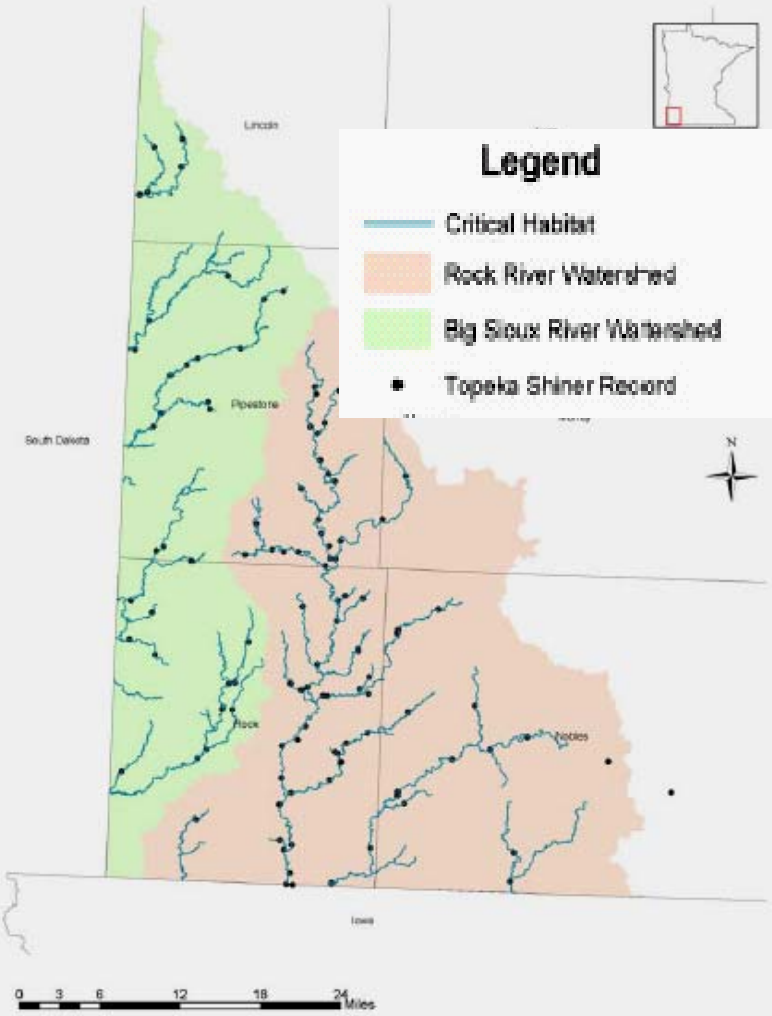


Figure 1. Critical habitat and recorded occurrences of Topeka shiner in Minnesota. Surveys for Topeka shiner are incomplete and ongoing. Therefore, Topeka shiners may also occur within these two watersheds at locations and in streams not shown on the map. Contact U.S. Fish and Wildlife Service at (612)725-3548 to determine whether Topeka shiners may be present in specific areas within these watersheds.

Table 3-7. County Distribution of Federally-Listed Theatened, Endangered, Proposed, and Candidate Species

County [1]	Species	Status	Habitat
Cottonwood	Prairie bush clover *(Lespedeza leptostachya*)	Threatened	Gravelly soil in dry to mesic prairies
	Dakota skipper *(Hesperia dacotae)*	Candidate	Native prairie habitat
Jackson	Prairie bush-clover *(Lespedeza leptostachya*)	Threatened	Native prairie on well-drained soils
Lincoln	Topeka shiner *(Notropis topeka*)	Endangered	Prairie rivers and streams
	Topeka shiner *(Notropis topeka*)	Proposed Critical Habitat	
	Dakota skipper *(Hesperia dacotae)*	Candidate	Native prairie habitat
Murray	Topeka shiner *(Notropis topeka*)	Endangered	Prairie rivers and streams
	Topeka shiner *(Notropis topeka*)	Proposed Critical Habitat	
	Dakota skipper *(Hesperia dacotae)*	Candidate	Native prairie habitat
Nobles	Topeka shiner *(Notropis topeka*)	Endangered	Prairie rivers and streams
	Topeka shiner *(Notropis topeka*)	Proposed Critical Habitat	
Pipestone	Topeka shiner *(Notropis topeka*)	Endangered	Prairie rivers and streams
	Topeka shiner *(Notropis topeka*)	Proposed Critical Habitat	
	Dakota skipper *(Hesperia dacotae)*	Candidate	Native prairie habitat
	Western prairie fringed orchid *(Platanthera praeclara*)	Threatened	Wet prairies and sedge meadows
Rock	Topeka shiner *(Notropis topeka*)	Endangered	Prairie rivers and streams
	Topeka shiner *(Notropis topeka*)	Proposed Critical Habitat	
	Western prairie fringed orchid *(Platanthera praeclara*)	Threatened	Wet prairies and sedge meadows

[1] *Lyon and Martin have no federally listed species at this time.*

Historic and Cultural Resources: The Late Prehistoric Period (A.D. 900-1650) is characterized by significant cultural changes. These changes can be seen in ceramics that differ greatly from Woodland ceramics in both form and decoration. A new subsistence-settlement pattern focused on gardening and rivers, and new cultural orientations appeared. Large village sites were located on river valley terraces with adjacent river bottom gardens. Many of the village sites were fortified. Arrowheads were small and triangular with or without notching. During this period, Plains Village and Oneota complexes replaced the preceding Woodland culture.

Limited-use sites evidenced by scatters of flaking debris from tool manufacture are numerous and are found along the rivers and around lake margins (Anfinson 1997)[xx]. Moderate numbers of burial mounds are concentrated along the Minnesota River on the upper terraces with a few concentrations on the margins of the major lakes.

Other Important Lands and Resources:

National landmarks and other protected lands

- *State owned lands* – In Southwestern Minnesota the DNR manages the Talcot Lake Wildlife Refuge and four State parks. There is a significant amount of other State owned lands such as wildlife management areas, six State Scientific and Natural Areas. These areas are utilized by local and vacationers as well as hunters and birdwatchers.

- *Pipestone National Monument* averages approximately 82,000 visitors annually. It encompasses 282 acres just outside the city of Pipestone in Pipestone county. This is a site where Native Americans traveled hundreds of miles to mine the native, easily worked pipestone for their ceremonial pipes. This area is still being mined in the traditional fashion by Native Peoples.

3.2 Profile of Minnesota Agriculture

Based on the 2002 Census of Agriculture, the State of Minnesota ranked fourth in the nation in the value of the sale of feed corn, third in the sale of soybeans, and first in the production of sugar beets. It also ranks third in the crop area necessary to produce corn and beans. Of the 10 leading states in 2002, Minnesota ranked fourth in the number of farms with crop sales of $100,000 or more, yet it ranked seventh in terms of the number of farms.

Between 1997 and 2002, the land in farms in Minnesota increased from 26 million acres to 27.8 million acres, and the number of farms increased 4.5 percent from 77,367 to 80,865 farms. A decade earlier, a total of 75,679 farms were thriving in Minnesota. However, the average size of farm remained nearly constant at 342 acres in 1992 vs. 343 acres in 2002. The overall market value of

agricultural products sold rose 2 percent in 2002 from 1997. Crop sales accounted for 53 percent of the market value and livestock sales accounted for 47 percent.

Minnesota ranks first nationally in turkey production, third in hogs and fifth in milk cows. Minnesota commodity agriculture is heavily dependent on animal agriculture for consumption. Minnesota consumers are blessed with abundant, affordable and safe meat and dairy products.

Importance of the Livestock Industry in Minnesota:

- The livestock industry is a key sector in Minnesota Agriculture.
- Livestock production supports crop farming through feed utilization, a significant market for Minnesota's major crops.
- The livestock industry in Minnesota consumes 28 percent of total annual corn crop and 20 percent of total annual soybean crop.
- The livestock industry contributes 50 percent of the economic value to Minnesota agricultural production and processing industry.
- Minnesota's livestock industry (including production and processing) generates $21 billion in total economic impacts.
- Minnesota's livestock industry (including production and processing) supports about 150 thousand jobs.
- Minnesota's livestock industry creates economic activities in many other sectors including agriculture, manufacturing, transportation, trade, services and construction.
- Minnesota is the 7th largest livestock producer in the U.S.
- Minnesota's livestock cash receipts average $4.3 billion a year.
- Livestock production contributes 54 percent of Minnesota's total agricultural income.

Source: FSA agriculture talking points August 21, 2004

In 2002, Minnesota ranked seventh in the market value of agricultural products, with more than $8.6 million sold, a 2.0 percent increase from 1997. The average market value of agricultural products sold per farm fell slightly to $106,083 from $106,720.[xxi]

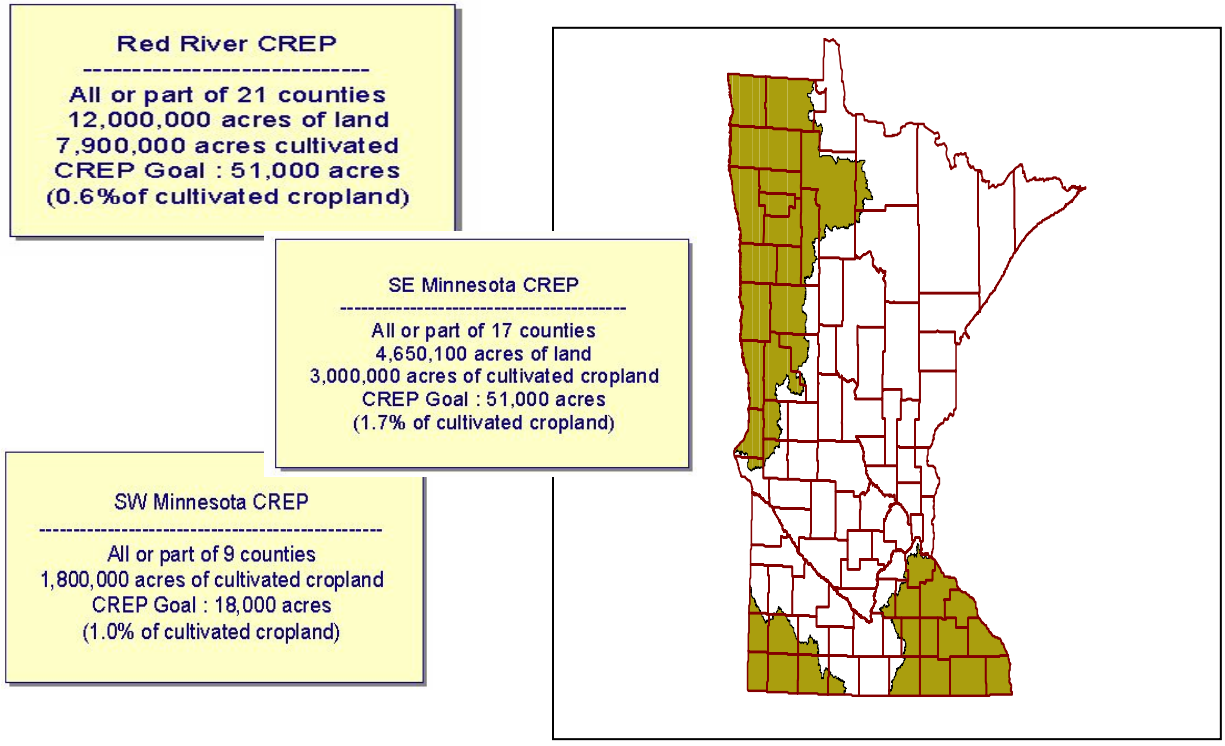
3.2.1 Minnesota CREP Area

A total of 85 counties compose the State of Minnesota, of which all or a part of 41 counties comprise the proposed Minnesota CREP II area within the 3 watersheds (12.7 million cultivated acres). Table 3-8 lists the counties within the Minnesota CREP II areas and Map 3-1 illustrates their location within the watersheds. As proposed, the Minnesota CREP II Agreement would enroll up to a maximum of 120,000 acres or <1 percent of the total cultivated acres, subject to availability of state funding.

Table 3-8. Minnesota CREP Counties, 2004

Becker	Goodhue	Mower	Rock
Beltrami	Grant	Murray	Roseau
Big Stone	Houston	Nobles	Scott
Cass	Jackson	Norman	Steele
Clay	Kittson	Olmsted	Stevens
Clearwater	Koochiching	Ottertail	Traverse
Cottonwood	Lincoln	Pennington	Wabasha
Dakota	Lyon	Pipestone	Waseca
Dodge	Mahnomen	Polk	Watonwan
Fillmore	Marshall	Red Lake	Wilkin
Freeborn	Martin	Rice	Winona

Figure 3-11. Minnesota Proposed CREP Area, 2004



The general resource treatments that are proposed to be implemented through CREP agreements and their acreages are shown in Table 3-9.

Table 3-9. MINNESOTA'S CREP II ENROLLMENT TARGETS

Watershed		Easement Options
Easement Location/Type	Acre Targets	Duration
Red River Basin CREP		
Riparian	35,435 Acres	15 yr. CRP + 30 yr. RIM
Wetland Restoration [2]	13,440 Acres	15 yr. CRP + Perpetual RIM
Flood Damage Reduction [3]	2,125 Acres	15 yr. CRP + Perpetual RIM
subtotal	**51,000 Acres**	
Southeast MN CREP		
Riparian Zones	14,828 Acres	15 yr. CRP + 30 yr. RIM
Groundwater Protection	6,179 Acres	15 yr. CRP + 30 yr. RIM
Highly Erodible Land	18,058 Acres	15 yr. CRP + 30 yr. RIM
Rotation Contour Strip	2,850 Acres	15 yr. CRP contract only
Wetland Restoration [2]	6,960 Acres	15 yr. CRP + Perpetual RIM
Flood Damage Reduction [3]	2,125 Acres	15 yr. CRP + Perpetual RIM
subtotal	**51,000 Acres**	
Southwest MN CREP		
Riparian Zones	11,634 Acres	15 yr. CRP + 30 yr. RIM
Wellhead/Groundwater	2,016 Acres	15 yr. CRP + 30 yr. RIM
Wetland Restoration [2]	3,600 Acres	15 yr. CRP + Perpetual RIM
Flood Damage Reduction [3]	750 Acres	15 yr. CRP + Perpetual RIM
subtotal	**18,000 Acres**	
Total	**120,000 Acres**	

APPLICATION SUMMARY

- 3 Watershed Proposals Included: Red River, SE Minn., & SW Minn.
- Acre Enrollment Goal:

Accomplishment Targets	
Riparian Zones	**61,897 Acres**
Wetland Restoration	**24,000 Acres**
Highly Erodible Land	**18,058 Acres**
Groundwater/Wellhead Protection	**8,195 Acres**
Flood Damage Reduction	**5,000 Acres**
Rotation Contour Strips	**2,850 Acres**

- **$50** Million State dollars leverage **$200** Million Federal dollars
- Improves & protects water quality, reduces soil & water erosion, & creates **120,000** acres of fish & wildlife habitat.
- Estimated state cost:

$43.7 M	
$ 7.0 M	Implementation
$50.7 M	

120,000 Total Acres
91,000 Aces in 30-year Limited Duration RIM Easements
24,000 Acres in Perpetual RIM Easements – Wetland Restoration
5,000 Acres in Perpetual RIM Easements – Flood Damage Reduction

Easement Duration commences at the expiration of the 15 year CRP contract.

[1]Application will include request to extend existing high priority CRP contract.
[2]Requires perpetual easement by MN Statute 103F.515 Subd. 5 (3).
[3]Allows for perpetual easements due to frequent flooding and high costs of projects.

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CHAPTER 4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4 will assess the direct, indirect and cumulative effects of two alternatives designed to help reduce soil erosion and phosphorus and nitrogen loads caused by agricultural practices in the three targeted watersheds. While the initial portion of this document was specific to each of the three targeted areas, this chapter will evaluate the impact of the overall proposal as one larger area with area specific issues identified as necessary. Many of the impacts will be similar and the comments redundant and therefore the decision to combine into one. Two alternatives are under evaluation:

- Alternative 1-No Action, which evaluates existing conditions and programs
- Alternative 2-Enrollment of Targeted Acreage in the three watersheds as proposed in the submitted agreement, which evaluates the Minnesota CREP II identified in the 2004 MOA.

The programmatic effects of these alternatives will be evaluated. Specific resource categories that will be evaluated by alternative are:

- Soils
- Water Resources
- Riparian Areas, Wetlands and Floodplains
- Cropland, Forestlands and Grasslands
- Wildlife Habitat
- Terrestrial and Aquatic Species
- Threatened and Endangered Federally and state listed species
- Historic and Cultural Resources
- Socioeconomic Impacts

The cumulative impacts of any past, present and reasonably foreseeable future actions will be summarized. These include contemplative future actions in the CREP area from any source.

As the nature of this evaluation is programmatic and not site-specific, the analysis may not always be quantifiable. Information will be presented in a broad, programmatic manner to enable decision makers to understand the effects of the CREP on resources in the three targeted watersheds and to determine the viability of each alternative. Each individual CREP agreement will require the completion of a site specific environmental evaluation to be completed by FSA in accordance with FSA 1-EQ and NEPA as well as Section 106 of NHPA.

4.1 Alternative 1-No Action/ without the proposed program

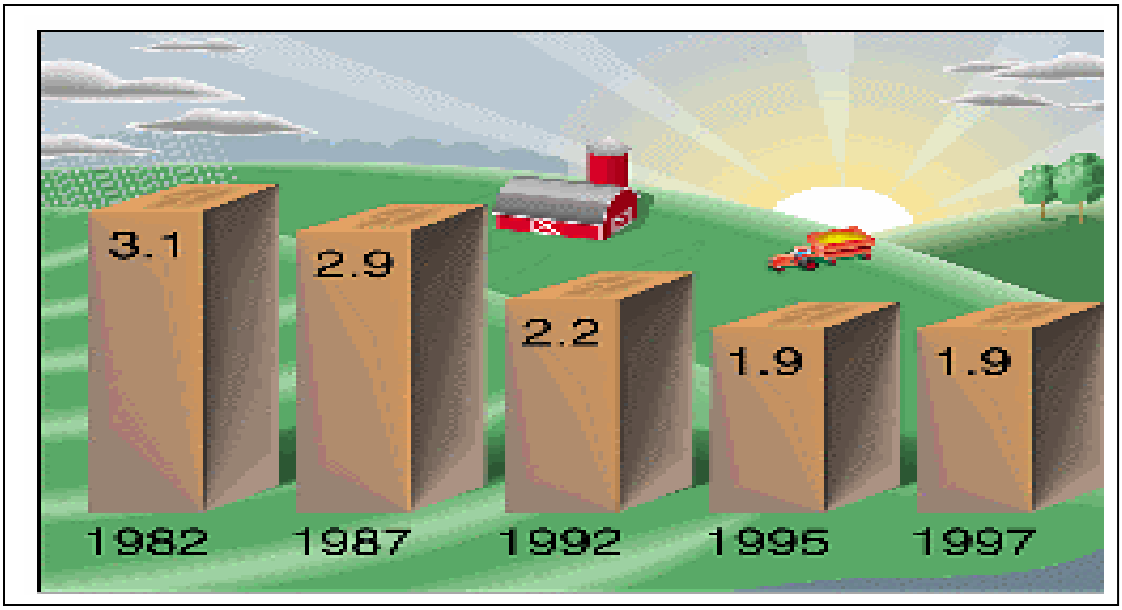
a) Soils. If no action is taken, it is likely that soil loss through water erosion will increase as existing CRP contracts began to expire. Supplementary practices such as buffers and conservation structures are needed along with existing conservation tillage to bring erosion rates down to a tolerable level. Wind erosion in the lake plain itself will continue to be a problem. Continued degradation in water quality on the lower Red and across the border in Manitoba will also continue. Loss of fertility as the result of water and soil

erosion will be an economic issue to producers. Continued need for ditch cleaning as the result of siltation will continue to plague local authorities and individual producers.

Sedimentation may increase as the livestock producers continue to shift to row crops with attendant land use changes from hay and pasture into row crops such as corn and soybeans. This may be offset somewhat by improvements in conservation tillage; however, on steep terrain with greatest erosion potential, conservation tillage alone is not adequate to control erosion. Supplementary practices, such as buffers and conservation structures, are needed along with conservation tillage to bring erosion rates down to a tolerable level.

There are currently certain benefits of existing conservation programs. As shown in Figure 4-1, soil erosion on agricultural lands declined about 38 percent nationwide between 1982 and 1997. Soil quality has increased due to the retention of more topsoil on the land resulting from an absence of conventional cultivation. This decline in erosion has occurred because of implementation and monitoring of best management practices (BMPs), the implementation of CRP in 1986 and because Federal and state farm programs have supported improved conservation tillage methods, erosion control and flood control measures. It can be surmised that Minnesota would be similar to the national trends.

Figure 4-1. Total Erosion on Cropland and CRP Lands Nationwide, 1982-1997 (in billions of tons)



Research shows soil enriched by decomposing crop residues contains more natural microbes that also offer greater groundwater protection. Conservation tillage methods have been credited with reducing runoff from fields, as well as offering farmers a more economical way of growing crops. Such systems reduce the number of trips farmers have to make through the fields for planting and cultivation. There may be increases in pesticice usage as a result however some of this is offset by genetically engineered plants allowing the use of supposedly less toxic chemicals. The method saves farmers labor, time, fuel and machinery wear while building soil productivity.[xxii]

b) Riparian, Floodplain and Wetlands: Agricultural producers, many of whom are conservation minded and desirous of protecting the soil and water upon which all depend, have a need to produce income from the land which they operate. Production agriculture is a capital and mechanically intensive industry. One way to minimize the per-acre cost of equipment is to spread the cost over as many productive acres as possible. This includes utilizing the more marginal acres as well. Unless there are conservation programs available to compensate farmers for removing sensitive cropland in these locations from production, little change is likely to occur. This means that the largely unprotected riparian corridors will continue to be subject to severe soil erosion and flood damages, leaving stream corridors unstable and allowing nutrients and sediment to flow into surface water without the cleansing effect of a grass buffer strip. The proportion of the landscape covered with functioning wetlands will continue to be extremely low, leaving surface water subject to destabilizing hydrologic extremes. Floodplains will continue to be farmed, being subject to periodic flooding and sediment scouring rather than becoming a functioning part of the rivers at higher flows.

c) Water Resource Issues

i. Surface water quality. Without action, past surface water quality trends are likely to continue or accelerate. Nitrate nitrogen concentrations would continue to increase without the benefit of wetland and buffer strips for nutrient uptake and denitrification. Suspended sediment concentrations, which have been fairly stable, could begin to increase if additional CREP resources are not available to somewhat offset the ongoing trends in land use toward increased row crops. The same is true of phosphorus. Although continuing reductions from point sources are likely, the preponderance of nonpoint source phosphorus during higher stream flows could become even more pronounced unless sediment-attached phosphorus is reduced through buffers, critical area setasides and conservation tillage. There should also be a resultant reduction in pesticide and other chemical pollutants entering the water supplies from agricultural runoff.

Water quality is also adversely affecting remnant populations of the Topeka Shiner in the Southwest Portion of the State. As a result, FWS has designated a portion of the watersheds as a critical habitat area under Section 7 of the Endangered Species Act. Without action to reduce the amount of sedimatnation, manure and fertilizer runoff and uncontrolled flows in the meandering streams in the habitat area the popuilations will continue to be adversely impacted. Other clean water dependant species such as the Higgins eye Pearly Mussel will also be continue to be adversely impacted without means to clean the water prior to it’s entering the streams.

As has been stated previously in this document the water quality of the Red River entering Lake Winnipeg will continue to be adversely impacted by

phosphorus containing runoff. Much of this occurs as a result of run off originating in the Minnesota portion of the basin.

ii Water quantity. There is no reason to expect stream flows to become more stable unless resources are provided to create more water storage on the landscape through such practices as wetland restorations.

iii Groundwater quality. Buffering of critical recharge areas for cities such as Moorhead, Worthington, Marshall and others will be achieved by the restoration of wetlands in critical wellhead protection areas. At this time these restorations are subject to funding from sources such as FWS Partners program, locally led conservation efforts for well head protection and other State and Federal programs. In some cases, the aquifers supplying water are at or near the surface, making protection even more critical.

With respect to nitrate nitrogen, high concentrations in shallow groundwater will continue to reflect high and rising concentrations in streams unless measures are introduced to increase denitrification. With continued conversion of hay and pasture to row crops, a continued trend on higher nitrate concentrations in groundwater appears likely. Regarding fecal coliform, recent detections of high concentrations in springs in the Southeast are likely to continue unless buffering of critical recharge areas such as sinkholes and sidehill seeps are facilitated through CREP**.**

Studies indicate that the groundwater quality in southwestern Minnesota is poor. Hundreds of families within the project area depend upon wells and springs for drinking water. In the Southwest Minnesota CREP proposalproposed CREP II area, there are three rural water systems that provide an alternative water supply for 40 communities and 19,000 rural residents, businesses, and livestock producers. The Minnesota Department of Health is required to work with public water supply systems to define sensitive areas around wells and develop an implementation plan to protect the areas adjacent to the wells. At this time, there are few conservation programs to protect wellhead areas. Local land management decisions have a direct impact on the health of our water supply system. Absent widely implemented protection plans, the potential for aquifer contamination is at higher risk**.**.

Alternative 1 will limit Minnesota's potential to:

1. Improve lakes, streams, creeks, and wetlands by reducing pollutants entering surface water;
2. Allow landowners an opportunity to improve their environment through implementation of best management practices; and
3. Prevent contamination of the groundwater resources.

d) Cropland, forest land and grass land. The impact of no action will continue a history of periodic flooding of farm fields, loss of productivity due to erosion and additional costs

to insurance and disaster programs. Forested areas as well as grasslands should undergo little adverse impact except in those areas subject to development pressures..

e) Wildlife Habitat. With no action, wildlife habitat is likely to remain stable until such time as the large number of CRP acres becomes eligible for agricultural uses beginning in 2007. In the years 2007 and 2008 MN will see the expiration of 800,000 ac. of general CRP. This represents well over ½ of the 1.4m ac. of general CRP presently enrolled many of which are the more marginal lands. The impact on ground nesting birds will occur after that time. Many of the species such as pheasants, ducks and praire chickens as well as neo tropical migrants that depend on expanses of open prairie and wetlands will by adversely impacted.

f) Terrestrial and Aquatic Species The effect of not implementing the CREP proposal will reduce the tools that resource managers have available to improve the Red River basin for the recovery of species of such as the Lake Sturgeon as well as enhancing habitat for the Prairie Chicken, Sharptail Grouse and many others.

g) Threatened and Endangered Species. With no action, threatened and endangered species are likely to remain vulnerable. This is especially true for the concentrations of the Higgens eye Mussel and the Leed's Rosewort. The mussel populations are especially vulnerable to fluctuations to water flow and increased amounts of turbidity. Thirty of Minnesota's 48 mussel species are currently listed as endangered, threatened, or of special concern. Although there are other reasons for species to become listed as threatened or endangered, many of the listed aquatic species have become so for water quality reasons. A majority of the species of mussels in Minnesota, for example, are listed species because of water quality reasons. Nearly all of the recent surveys when compared to historical data show drastic declines of many species of mussels[xxiii].

There is a designated Critical Habitat area for the Topeka Shiner within the Missouri watershed that will also face continued impairment. This species is dependent on non siltated water flows in the smaller meandering streams for survival. They are also impacted from agricultural runoff occurring as a result of feedlot runoff and winter manure applications near unbuffered streams. These impacts will continue without incentives to landowners to modify practices to reduce this runoff.

h) Historic and Cultural Resources. The alternative of no action or non implementation of the CREP program will result in the continued potential for negative impacts to cultural resource sites. Continued flooding and the resulting sheet erosion and siltation will adversely impact historic properties and impact traditional cultural places by scouring away covering topsoil and by removal of plant populations important to native peoples. There is also the potential for impact from floods similar in size and scope to the flood of 1997 which impacted many historical structures and artifacts in towns and cities along the Red River.Downstream flooding and the alternative of construction of additional flood control structures will have the potential to impact sites not currently inventoried.

i) Other Important Lands and Resources

i. With no action, the Mississippi River will continue to be impacted by sediment and nutrients discharged by the region's tributaries, to the detriment of water quality in the river adjacent to Minnesota, as well as downstream in the Northern Gulf of Mexico hypoxic zone. Many species dependent on clean water will continue to be adversely impacted. Economically this will impact recreational and commercial uses of the river. Economic impacts will occur as increased amounts of sediment will require expenditures for dredging to allow barge traffic to continue on the Mississippi. This dredging in turn leads to impacts to aquatic species and subsequently to the quality of life enjoyed by the tourist and general population alike.

ii Existing trails and parks will continue to be utilized with our without this CREP proposal. Pressure from existing wildlife populations that will be forced into smaller areas of habitat will have a degrading impact on existing cover types. This reduction in habitat areas is not the direct result of increasing the acres of agricultural lands other than the potential from CRP coming out in 1997 but is also the result of more of the habitat being developed into rural residential sites.

j) Socioeconomic impacts. Without the CREP the impacts on the socioeconomic structure will be the result of lack of adequate water supplies to sustain development. There may also be an immeasurable impact due to lack of recreational pursuits as the habitat changes as acres come out of CRP in 2007. The actual impact may be offset by the ability to farm additional acres which may add to the rural economy as farm income streams change from landlords to producers. Fluctuating stream flows may result in unreliable vacation destinations as well as a potential reduction in the spending of recreational dollars. Fishing, canoeing, hiking biking, birdwatching, boating and water sports as well as hunting are all contributors to the economy of many of the communities within the project areas. Travelers who patronize Minnesota's leisure and hospitality businesses are also supporting many other types of jobs in the surrounding communities. Direct spending on lodging, restaurants and the like generates additional expenditures on a wide range of services including construction, printing, food processing, hospitals, and companies that provide food and equipment to hospitality businesses; many more examples could be given.[xxiv]

Contemplated Future Actions

The United States Army Corps of Engineers has been in an ongoing process to evaluate plans to improve the lock and dam system on the upper Mississippi. It is unknown what potential impacts the lock an dam improvements will have on the environment as the plans are not yet approved. Studies on these impacts are ongoing.

Discussions are ongoing to attempt to implement a CREP program in North Dakota to supplement the Red River portion of the basin lying in North Dakota. Manitoba, Canada is also exploring possible programs to protect water quality in its portion of Red River as well as in Lake Winnipeg. Neither of these should have any adverse impact on the plans for the Minnesota CREP.

4.2 Alternative 2-Enrollment of Targeted Acreage as per the 2004 MOA

a. Soils: In the Mississippi Basin implementation of the CREP IIon highly erodible land with critical area seedings and contour strips is expected to result in a reduction in gross soil erosion of 1,217,450 tons on a total of 111,000 acres of land eroding at twice the tolerable level or greater, according to NRCS estimates. Critical area seedings will bring erosion rates down to very low levels of approximately 1 ton/a. Contour strips will reduce erosion rates from an average of 27.7 tons/a to 7.35 tons/a on land eroding at 4T and above, and from 12.7 tons/a to 6.0 tons/a on land eroding at 2T-4T per acre.

   Implementation of CREP II on the riparian areas of southwest Minnesota through native grass and tree plantings is expected to result in a reduction of gross soil erosion of 90,000 tons on 18,000 acres of riparian land. The protected CREP acres will hold erosion to 1 ton/acre from an average estimate of 5 tons/acres under the current row crop tillage. The receiving waters of the Des Moines River will see an immediate benefit due to the proximity of this erosion to the water body.

b) Riparian, Floodplain and Wetlands: The quality of riparian corridors, floodplains and wetlands will undergo improvement through CREP II. The ultimate benefits are reflected in projected water quality improvements, as discussed below.

c) Water Resource Issues:

   i. Surface and groundwater quality.
   Reduce Sediment in Streams: Using data from the MN BWSR local unit of government reporting system, it is estimated that 35,435 acres of riparian buffers and filter strips in the Red River Basin alone will, on an annual basis, save 440,000 tons of soil, reduce phosphorus loading by 109,000 pounds and will create a net reduction in sediment of 88,000 tons.

   For the Southwest area, using similar data, protecting 11,634 acres of riparian buffers and filter strips it is estimated that on an annual basis CREP will save 144,494 tons of soil, reduce phosphorus loading by 35,832 pounds and will create a net reduction in sediment of 28,852 tons. This reduction will not only benefit the water quality but will also retain topsoil on the ground where it can be utilized for crop production.

   As an example of the landscape changes one only has to look at the two following FSA photos. In 1963 (inset photo) fields were cropped up to the edge of the drainage ditches. In the larger photo buffers using CCRP have

been installed to reduce runoff from the fields and reduce ditch maintenance costs as well as reduce runoff into lakes downstream. These same types of practices will be utilized again to reduce siltation and sediment delivery into the streams and subsequently the rivers and lakes.

A recent study (Boody and Krinke, 2001) found that sediment delivery to the mouth of Wells Creek, in SE Minnesota, could be reduced by an estimated 31 percent through implementation of riparian buffers and conservation tillage. An overall project objective is to achieve this type of goal throughout the targeted areas by implementing buffers in concert with other conservation practices.

A key objective of the BALMM Landscape Buffer Initiative is to target the implementation of buffers to achieve a total reduction of in-stream sediment of 116,507 tons per year. These benefits will be achieved with buffers implemented in three strategic land types, as follows:

Highly Erodible Land: With a sediment delivery ratio of 7.7 percent (Whitewater River Watershed Project), a reduction in soil erosion of 1.22 million tons leads to a reduction in sediment load to streams of 93,743 tons.

Riparian Buffers: Based on an extrapolation of data from an MPCA spreadsheet developed for the Minnesota River Basin CREP, 15,000 acres of well-targeted riparian buffers can reduce sediment in streams by 21,465 tons.

Wetland Restoration: Based on a MPCA spreadsheet developed for the Minnesota River Basin CREP, 9,085 acres of restored wetlands (includes flood-damage-reduction acres) is expected to reduce annual in-stream sediment load by 3,600 tons.

Reduce Nitrate-Nitrogen in Surface Water and Groundwater : An objective of the BALMM Landscape Buffer Initiative is to achieve nitrate-nitrogen reductions through wetland restoration in the western basin (MLRA 103 and 104). This will be achieved by targeting the restoration of 9,000 acres of wetlands, mainly in the western basin (MLRA 103 and 104), to achieve a 15 percent reduction in concentration of nitrate nitrogen in surface water. The Integrated Assessment on Hypoxia in the Gulf of Mexico (Mitsch et al; Randall, personal communication) suggests that this can be attained through restoration of properly designed and positioned wetlands on 0.7 percent of the land surface.

Additional benefits from reducing sedimentation under this alternative include:

- Lower water treatment costs
- Lower sediment removal costs
- Reduced flood damage
- Improved aquatic and riparian habitats
- Larger and more diverse populations of aquatic species
- Increased water-based recreational values
- Reduced maintenance costs for water navigation systems
- Reductions in eutrophication or stagnation caused by lower levels of nutrients and pesticides

ii Water quantity. Flood damage reduction is a key component to the Red River Basin CREP. By targeting riparian buffers/filters and wetland restorations to key areas, peak flows on tributaries of the Red River can be reduced. This will be critical to reducing flood damages from recurrent flooding. Similar results are expected on the Missouri and Des Moines watersheds as well. It should be noted that in the overall picture that the impact is going to be modest but when used in conjunction with other wetland restoration programs and flood damage reduction measures the collective impact will provide multiple benefits to the area.

Research on the Mississippi Basin area indicates that peak flows can be reduced by an estimated average of 3.7 percent for each additional percent of the landscape restored to wetlands (Demisse and Khan, 1993). By focusing wetland restoration in priority watershed projects, peak flow reductions above 3.7 percent can be achieved, especially in upper reaches for less extreme flood events.

d) Wildlife Habitat: By selection of appropriate native grasses and tree species, wildlife habitat will be increased in proportion to the increase in acreage of perennial vegetation. This will only occur if the plans are well developed and specific to the needs of the resource being targeted.

Southwestern Minnesota is a core location of the State's pheasant population. Efforts to enhance wildlife habitat will benefit many native species of wildlife, but the pheasant may well have the strongest response to habitat enhancement efforts in this area. The planting of high quality native grasses and trees along with the restoration of wetlands will allow pheasants and other wildlife to thrive. Nesting cover is the key to increasing the reproductive success of pheasants. It is expected that one harvestable rooster pheasant will result


Roger Hill, Iowa PF

from each acre of land enrolled in CREP in the southwest area. Implementation of the MN CREP II Agreement will provide this quality cover through careful utilization of biologically justified CPs. Trees will not be planted into what was historically a tall grass prairie site as determined by the information provided in the Trygg or similar maps for the area being offered.

Waterfowl will also thrive as wetlands with many of the acres proposed for enrollment will build upon existing habitats and provide the connection between isolated habitats through corridor development in riparian areas. Fisheries will benefit due to less sediment and nutrients entering streams as well as lower stream temperatures. CREP II will provide this critical habitat for an extended period of time to allow wildlife populations a chance to grow and stabilize.

In addition many species of neo-tropical song birds rely on prairie and riparian areas for habitat. With awareness of specific habitat needs of nongame native species, it is often possible to enhance their habitat and improve their population numbers with simple refinements of concervation practices normally implemented for game bird species.

In all three targeted areas the wildlife will benefit as these riparian areas along existing streams are widened. Travel corridors between larger non-contiguous areas of habitat will be improved. As siltation in the streams and rivers is lessened in the basins, recovery efforts for water dependent species should also improve. Two examples would be the Topeka Shiner and the Lake Sturgeon.

We have no science to indicate any long term negative impacts to wildlife as a result of the CREP II proposal. There are many in the wildlife community that will support the concept that the longer the contract term the more wildlife benefits accrue. For this proposal, however, the decision has been made that only wetland areas will receive permanent protection.

These permanent conservation areas do need to be appropriately managed to continue to have long term beneficial effects. This management needs extends also to those under the shorter term easements to avoid negative impacts to the practices that are established. An example of this would be requiring a 15 mix prairie planting and then not having a plan requiring management to maintain that mix. To avoid problems with using fire as a management tool it will be important to carefully design the layout of the practices so that any tree or shrub plantings will not be adversely impacted by necessary management techniques nor will the design preclude the use of fire as a management tool.

Managed haying and grazing will be administered according to FSA's Published National CRP Directives during the CRP contract. After the CRP contract expires, haying, grazing, timber harvesting, and other commercial uses may be allowed as provided in the RIM easement documents.

e) Threatened and Endangered Species: There are several threatened or endangered species (Federal and/or state) that occur within very unique and specific habitats. The following are federally threatened or endangered species: the Canada Lynx, Bald Eagle, Gray Wolf, the, Karner Blue Butterfly, Leedy's Roseroot, and the Higgins Eye Pearly Mussel, the Prairie Bush Clover, Topeka Shiner, and the Western Fringed Prairie Orchid. The acreage offered in CREP II will have a potential to positively benefit threatened and endangered species by providing opportunities to establish contiguous habitat areas and migration corridors.

Through enrollment of land into CREP II, aquatic species would benefit from the expected reduction in sediment transport rates. This is especially important in consideration of the Topeka Shiner although also potentially important to aid the spawning success of Lake Sturgeon and likely to enhance mussel habitat as well. Maintenance of high dissolved oxygen levels and cool water temperatures for some aquatic organisms would continue as cropland is enrolled into the program and converted to riparian area and wetlands.

It should be noted that there may be short term impacts resulting from wetland restoration activities immediately adjacent to streams harboring the Topeka Shiner. Adequate mitigation measures may need to be employed as wetland restorations are proposed that may cause short term effects (e.g., increased sedimentation) to streams or off-channel habitats occupied by Topeka shiner. These will include timing of the action, sedimentation barriers during construction and others required by FWS as part of site specific planning (See appendix C for additional guidance). FSA will evaluate any CP23 or CP23A action proposed in the Big Sioux or Rock River watersheds in the SW CREP area to determine whether they could have hydrological or sediment-related effects on stream or off-channel habitats that Topeka shiners may inhabit. If FSA determines that such effects may occur as a short- or long-term result of any CP23 or CP23A actions in these watersheds, it will ensure, in consultation with USFWS, that any effects are not likely to be adverse to Topeka shiners or to Topeka shiner critical habitat. Therefore, although some CP23 and CP23A actions may affect Topeka shiners in the SW CREP area, those effects are not likely to be adverse. The agency's overall responsibility is more clearly explained in Appendix C for Topeka Shiner.

Protection for the prairie bush clover will require that no native prairie stands will be impacted as part of any practices. Areas that are potential habitats will not be disturbed. NRCS has a policy that prohibits destruction of remnant prairie to implement other conservation practices In the case of the Western Fringed Prairie Orchid, the FSA or its designated TSP will, for each CP23 or CP23A action, determine whether this species may be present in areas affected by the resulting hydrological changes. The FSA will coordinate with USFWS to make this determination. FSA will not implement any CP23 or CP23A action that would cause adverse effects to western prairie fringed orchid.

The agency will need to develop guidance and training to the technical service providers and agency partners so that all will understand the implications of suggesting practices that disturb or impact, either indirectly or directly, any native prairie sites or sites within

the Designated Critical Habitat Area of the Topeka Shiner. Furthermore, none of the practices whether marginal pasture or otherwise, will be designed by NRCS or the Technical Service Provider (TSP) to convert or disturb remnant native prairie sites.

Bald eagle nesting areas may be present in the SE and NW areas. While many of the actions will occur on presently tilled soil there is always the potential that certain activities conducted within one-half mile of mature forest could impact Bald Eagles. To avoid such impacts the FSA will not implement any action under the program that would fall in an "avoid" cell in the matrix on page three of the Bald Eagle Environmental Review Fact Sheet (Minnesota Department of Natural Resources) unless they determine that such actions will not cause adverse effects to bald eagles and USFWS concurs with that determination. Any action that would fall in a cell that states "restrict/minimize" would only be implemented if FSA ensured, in consultation with USFWS that the action would not likely cause adverse effects to bald eagles. The Agency or its TSP currently completes a site specific evaluation of all CREP proposals prior to approval. If FSA determines that any action may affect bald eagles, it must consult with U.S. Fish and Wildlife Service. FSA will ensure that no action implemented under the CREP program will cause adverse effects to bald eagles. Activities conducted greater than one-half mile from mature forest will have no effect on bald eagles and consultation with USFWS is not required for such actions. No bald eagle nests are likely to occur in the SW CREP area.

The implementation and approval of individual CREP applications will comply with the Endangered Species Act which requires agencies consult with the FWS regarding potential impacts to federally protected species. This will be accomplished on a case by case basis with case specific conservation plans developed as needed.

FSA has requirements set forth in RD-1940-G and FSA 1-EQ that, if followed by the field offices, should result in no long term adverse impacts from this CREP proposal. The CREP II, as it is proposed, will only be implementing practices on landforms that are not specifically habitat in its present condition. All practices will be either on existing cropland or in limited cases, on marginal pasture. As part of this site specific evaluation and within the constraints of the need to provide water holding capacity and flood damage reduction the Agency will consider the timing and or speed of drawdown set forth in the conservation plan to minimize wildlife impacts as much as possible.

As a Federal agency, FSA must also comply with Executive Order 13112, *Invasive Species*, which prevents the introduction of invasive species and provides for their control. Consideration should be given to developing management practices and monitoring to ensure that invasive species do not continue to threaten the survival of native species. Invasive species are a definite concern in both the aquatic (big head carp, zebra mussel, etc) and the herbaceous (thistle, buckthorn, etc). Nothing in this proposal will encourage these species

There are also many species of State Concern as identified in Appendix B to this document. These species are also expected to benefit as a result of the improved habitat resulting from implementation of the proposed CREP II.

f) Historic and Cultural Resources Although specific archaeological sites have not been identified, on a programmatic basis, CREP would essentially minimize potential impacts to these resources by prohibiting cultivation activities, such as plowing, that could potentially harm these resources found below the existing plow layer. Ground disturbance caused by practice development and construction activities, cultivation and revegetation and tree plantings could possibly disturb archeological sites although most of the practices being proposed have little potential for any short or long term impacts. Those activities that do move previously undisturbed soils such as dam or levee construction will require consultation with either the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO) prior to any contract approval. Returning the land to its natural state will help preserve these resources.

Because many archeological and cultural resources have been found in floodplains where indigenous people once lived, the CREP program in the targeted areas would serve to further minimize any potential impacts to these resources by retiring the land from crop cultivation. It will also reduce erosion and scouring and minimize the impact of flooding on traditional cultural places.

Because nearly all practices will be conducted on previously tilled soils the likelihood of excessive impacts to cultural resources is minimal. The exception to this will be the result of construction activity for CP-23 Wetland Restorations when the fill dirt may be borrowed from adjacent non-tilled uplands. In these situations it will be the responsibility of the approving agency to consult with the appropriate THPO or SHPO prior to contract approval.

The same process also holds true for any flood control basins in which a CREP II practice is an integral component. In these cases THPOs and/or SHPO will need to be consulted with in accordance with Section 106 for not only the area directly impacted but also for all indirect impacts that result from removing fill or obtaining borrow necessary to construct the basin. To minimize the impacts borrow may need to be obtained from sites that have already undergone a documented cultural resource review conducted in accordance with the Secretary of the Interior's Standards for Evaluation.

Any activities undertaken within the bounds of the recognized Native American Reservations will be consulted with in accordance with Section 106 of the NHPA. Particular care needs to be taken to not impact traditional cultural places with any activity. These contract requests will be referred to FSA's State Office for a determination on the appropriate level of consultation whenever the request is received from an individual producer. County offices will be provided maps indicating all reservation lands within their servicing area. Exhibit 30 to FSA 1-EQ will assist TSP's and agency personnel in determining which proposals are determined to be an undertaking.

The Agency will assess each application on a contract-by-contract basis as part of the specific environmental evaluation and in line with any agency developed programmatic agreements and guidelines. Any contracts that will result in ground disturbing activity on previously undisturbed soil will require at a minimum, informal consultation with the SHPO unless a programmatic agreement can be developed to minimize such consultations. Therefore it can be assumed that the CREP II as proposed will not have an adverse impact as a result of the planned actions.

4.3 Cumulative Impacts of the CREP Alternative

The total impact of implementing CREP II in the Red River Basin needs to be viewed in the context of complementary basin wide initiatives and ongoing trends. Complementary initiatives include a number of measures to implement flood damage reduction and natural resource enhancement projects. Any such practices that are undertaken in conjunction with individual CREP proposals will need to be evaluated as part of the individual CREP action. These measures focus on implementing projects that will provide significant flood damage reduction benefits while also providing significant natural resource enhancement. The CPs included in the CREP II Agreement can be used to implement key components of watershed district projects as well as soil and water conservation district priorities. Also benefiting from these cumulative effects will be the Tall Grass Prairie Initiative of FWS, the Lake Winnipeg Action Plan, and many other state, Native American, Federal and international initiatives to improve water quality and wildlife habitat.

The total impact of implementing CREP in southern Minnesota needs to be considered as part of the entire basin initiative to improve water quality and reduce runoff. Complementary initiatives include a number of measures to implement the 65 percent reduction in fecal coliform sources called for in the Regional Fecal Coliform Total Maximum Daily Load report, as described in the TMDL Implementation plan. These measures focus on septic system upgrades plus feedlot runoff reduction, improved manure management, and improved grazing through promotion of rotational grazing systems. By supplementing these measures with grass buffers bordering fields where manure is surface applied, CREP can increase the speed with which we move towards achievement of the fecal coliform standard, which currently is exceeded in streams throughout the basin.

Another complementary basin wide initiative is the promotion of conservation tillage. As indicated above, the goal of a 30 percent reduction in sediment delivered to streams in the region depends on a combination of buffers and conservation tillage. Recent trends in adoption of no-till soybeans are encouraging, and will receive continued support through BALMM, University Extension and local SWCDs and NRCS field offices. There exists a potential for increased pesticide use in the no-till soybeans and other forms of reduced tillage methods which could have an adverse impact on the water quality.

Offsetting these positive trends is the continued trend toward reduced numbers ruminant livestock, particularly dairy, throughout the region. If this trend continues, despite recent improvements in dairy prices, more land will continue to shift from hay and pasture to row

crops, increasing the potential for runoff and erosion and nitrate leaching, even under the best management practices. As has been explained earlier, animal agriculture is an integral part of the agricultural economy in Minnesota. Animal agriculture and the manure created, if applied wisely and with appropriate buffers, is essential to soil building, crop farm economics and an ongoing vibrant rural economy.

The cumulative benefits of the Minnesota CREP II Agreement involve the ability to conserve and enhance wildlife habitat in the three watersheds and to retire land with the most fragile, erodible soils from cultivation, thus improving water quality. Alternative 1, the No Action Alternative, would lead to the loss of a positive tool to impact degradation in water quality as well as ongoing habitat losses, increased flooding and the associated damages all along the Red River into Canada as well as increasing hypoxic impacts in the Gulf of Mexico as a result of increased nutrient loading and TMDLs in both the Mississippi and Missouri River flowages. Alternative 2, CREP II would place 120,000 acres of marginal farmland under short and long term easements in the three watersheds. This in turn would result in potential corridor systems adding to wildlife benefits as well by tying other, permanent areas together with the newly offered CREP II acres. Economically, the program has proven to have positive benefits to landowners, tenant farmers and communities as well as the larger ecosystem.

The potential negative effects that could occur relate to the implementation of conservation plans without adequate plans in place for the monitoring of the plan's progress. Effective long term management plans for monitoring these easements will be key to providing long term benefits.

Negative impacts to wildlife could occur if practices are not developed with the specifc needs of the targeted species incorporated into the practice. In addition, short and long term management techniques need to specific to the practice and the beneficiary as well or wildlife habitat may not see long term improvement. If flood control is the requisite then maintenance of the control structures needs to be clearly spelled out. These plans must identify who, what, when, where and how the management and maintenance will be implemented throughout the term of the easement. As part of this site specific evaluation and within the constraints of the need to provide water holding capacity and flood damage reduction the Agency will consider the timing and or speed of drawdown set forth in the conservation plan to minimize wildlife impacts as much as possible.

4.4 Socioeconomic Impacts

There will be impacts on local populations that supply agricultural inputs and products. Due to the large geographical area over which the acres will be initiated the actual impact should be negligible. It can be surmised that there may be localized shifts in land use that could affect tenant farmers, however, FSA has policies in place that prevent landowners from displacing producers to simply enable participation in these programs. Furthermore, most of the acres to be enrolled will be smaller, more marginal areas within existing fields and will

not include entire farms. Paragraph IV N of the CREP II Agreement requires that parcels exceeding 80 acres in size will require a higher (2^{nd}) level of approval and review.

It is also anticipated that there will be a positive impact on the producer's net income as they utilize these programs to cease agricultural production on lands that are typically not overly profitable. Many of the CPs will assist producers in complying with waste management plans by providing an economic incentive to provide buffers along streams and around sinkholes and well head protection areas.

There will also be positive economic impact of this alternative as the areas improve wildlife habitat and fishery protection. Outdoor recreation in Minnesota is an economic engine to many smaller communities. Boating, fishing, hunting and bird watching are enjoyed by many individuals. The travel and tourism industry generated 8.9 billion in gross receipts/ sales and $1.1 billion in State and local tax revenues in Minneota in 2002[xxv]. As habitat improves so do the opportunities to enjoy the rural communities and farm landscapes. This will continue under this proposal. It is understood that as the quality of life improves in the rural areas, business and industry will be more likely to locate there as well which will benefit the local economies. Many communities rely on lifestyle farmers to support them. While not yet quantifiable, there is also the growing interest in agro tourism which also improves the economics of the rural areas.

4.5 Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs all Federal agencies to achieve environmental justice as part of their mission by identifying and addressing disproportionately high and adverse human health or environmental effects of their activities on minority and low-income populations. This is a requirement to ensure that the agency's actions, either individually or cumulatively, do not have the potential to impact minority and lower income populations. While there are populations within the areas impacted by the proposals it is not anticipated that the removal of these lands from agricultural production will have a disportionately high adverse effect to the human health or environment of these communities. It could be argued that there is always the potential however if that were the case it would be discovered and mitigated during the site specific evaluation prepared by FSA for each CREP contract.

CHAPTER 5.0 LIST OF PREPARERS AND CONTRIBUTORS

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APPENDICES

APPENDIX A

Minnesota's Federally-Listed Threatened, Endangered, Proposed, and Candidate Species' County Distribution

For more information about threatened and endangered species in Minnesota, contact the U.S. Fish & Wildlife Service office at 4101 E. 80th Street, Bloomington, Minnesota 55425-1665 (612-725-3548)

Species' common names are linked to fact sheets on the Web

Species	Status	County	Habitat
Mammals			
Canada lynx *(Lynx canadensis)*	Threatened	Aitkin, Beltrami, Carlton, Cass, Clearwater, Cook, Itasca, Koochiching, Lake, Lake of The Woods, Marshall, Roseau, St. Louis	Northern forested areas
Gray wolf *(Canis lupus)*	Threatened	Aitkin, Beltrami, Becker, Benton, Carlton, Cass, Chisago, Clearwater, Cook, Crow Wing, Hubbard, Isanti, Itasca, Kanabec, Kittson, Koochiching, Lake, Lake of the Woods, Mahnomen, Marshall, Mille Lacs, Morrison, Pennington, Pine, Polk, Red Lake, Roseau, St. Louis, Sherburne, Todd, Ottertail, Wadena	Northern forested areas
Gray wolf *(Canis lupus)*	Critical Habitat	Areas of land, water, and airspace in Beltrami, Cook, Itasca, Koochiching, Lake, Lake of the Woods, Roseau, and St. Louis Counties with boundaries (4th and 5th Principal meridians) identical to those of zones 1, 2, and 3, as delineated in 50 CFR 17.40(d)(1)." Contact FWS at (612)725-3548	

		for further information.	
Birds			
Bald eagle (*Haliaeetus leucocephalus*)	Threatened	Aitkin, Anoka, Becker, Beltrami, Benton, Big Stone, Blue Earth, Brown, Carlton, Carver, Cass, Chippewa, Chisago, Clearwater, Cook, Crow Wing, Dakota, Douglas, Fillmore, Goodhue, Grant, Hennepin, Houston, Hubbard, Isanti, Itasca, Kanabec, Kandiyohi, Kittson, Koochiching, Lac Qui Parle, Lake, Lake of The Woods, Le Sueur, Mahnomen, Marshall, McLeod, Meeker, Mille Lacs, Morrison, Nicollet, Olmsted, Otter Tail, Pennington, Pine, Polk, Pope, Ramsey, Redwood, Renville, RIce, Roseau, Scott, Sherburne, Sibley, St. Louis, Stearns, Swift, Todd, Traverse, Wabasha, Wadena, Washington, Winona, Wright, Yellow Medicine	Mature forest near water
Piping plover (*Charadrius melodus*) Great Lakes Breeding Population	Endangered	St. Louis County	Sandy beaches, islands
Piping plover (*Charadrius melodus*) Northern Great Plains Breeding Population	Threatened	Lake of The Woods	Sandy beaches, islands
Piping plover (*Charadrius melodus*) Great Lakes Breeding Population	Critical Habitat	St. Louis County	
Piping plover (*Charadrius melodus*) Northern Great Plains Breeding Population	Critical Habitat	Lake of the Woods	
Reptiles			

Eastern massasauga (*Sistrurus catenatus catenatus*)	Candidate	Houston, Wabasha, Winona	Floodplain wetlands and nearby upland areas along the Mississippi River and Tributaries in Houston, Wabasha, and Winona Counties
Fish			
Topeka shiner *(Notropis topeka*)	Endangered	Lincoln, Murray, Nobles, Pipestone, Rock	Prairie rivers and streams
Topeka shiner *(Notropis topeka*)	Critical Habitat	Lincoln, Murray, Nobles, Pipestone, Rock	
Insects			
Dakota skipper *(Hesperia dacotae)*	Candidate	Big Stone, Chippewa, Clay, Cottonwood, Kittson, Lac Qui Parle, Lincoln, Murray, Norman, Pipestone, Polk, Pope, Swift, Traverse, Yellow Medicine	Native prairie habitat
Karner blue butterfly *(Lycaeides melissa samuelis*)	Endangered	Winona	Pine barrens and oak savannas on sandy soils and containing wild lupines *(Lupinus perennis)*, the only known food plant of larvae.
Mussels			
Higgins eye pearlymussel *(Lampsilis higginsii*)	Endangered	Chisago, Dakota, Goodhue, Hennepin, Houston, Ramsey, Wabasha, Washington, Winona	Mississippi and St. Croix Rivers
Sheepnose (*Plethobasus cyphyus*)	Candidate	Wabasha, Washington, Winona	Mississippi River in Wabasha and Winona counties, St. Croix River in

			Washington county
Spectaclecase (*Cumberlandia monodonta*)	Candidate	Chisago, Pine, Washington	St. Croix River and Rush Creek
Winged mapleleaf *(Quadrula fragosa*)	Endangered	Chisago, Washington	St. Croix River
Plants			
Minnesota dwarf trout lily *(Erythronium propullans*)	Endangered	Dakota, Goodhue, Rice, Steele	North facing slopes and floodplains in deciduous forest
Leedy's roseroot *(Sedum integrifolium ssp. leedyi*)	Threatened	Fillmore, Olmsted	Cool, wet groundwater-fed limestone cliffs
Prairie bush clover *(Lespedeza leptostachya*)	Threatened	Brown, Cottonwood, Dakota, Dodge, Goodhue, Houston, Jackson, Mower, Olmsted, Redwood, Renville, Rice	native prairie on well-drained soils
Western prairie fringed orchid *(Platanthera praeclara*)	Threatened	Clay, Dodge, Kittson, Lincoln, Mower, Nobles, Norman, Pennington, Pipestone, Polk, Red Lake, Rock	Wet prairies and sedge meadows

Revised October 2004

APPENDIX B

MINNESOTA'S LIST OF ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES EFFECTIVE 7/1/96

PURPOSE, SCOPE, AND RELATIONSHIP TO FEDERAL LAWS

Minnesota's Endangered Species Statute (Minnesota Statutes, Section 84.0895) requires the Minnesota Department of Natural Resources (DNR) to adopt rules designating species meeting the statutory definitions of endangered, threatened, or species of special concern. The resulting List of Endangered, Threatened, and Special Concern Species is codified as Minnesota Rules, Chapter 6134. The Endangered Species Statute also authorizes the DNR to adopt rules that regulate treatment of species designated as endangered and threatened. These regulations are codified as Minnesota Rules, Parts 6212.1800 to 6212.2300.

Minnesota's Endangered Species Statute and the associated Rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. However, these acts may be allowed by permit issued by the DNR; plants on certain agricultural lands and plants destroyed in consequence of certain agricultural practices are exempt; and the accidental, unknowing destruction of designated plants is exempt. Species of special concern are not protected by Minnesota's Endangered Species Statute or the associated Rules. Persons are advised to read the full text of the Statute and Rules in order to understand all regulations pertaining to species that are designated as endangered, threatened, or species of special concern.

Note that the Federal Endangered Species Act of 1973, as amended (16 USC 1531 - 1544) requires the U.S. Department of the Interior to identify species as endangered or threatened according to a separate set of definitions, and imposes a separate set of restrictions pertaining to those species. In the following list, the federal status of the eleven federally-listed species that occur in Minnesota is noted to the right of those species' names (E =Endangered; T = Threatened).

DEFINITIONS

A species is considered **endangered**, if the species is threatened with extinction throughout all or a significant portion of its range within Minnesota.

A species is considered **threatened**, if the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range within Minnesota.

A species is considered a **species of special concern**, if although the species is not endangered or threatened, is extremely uncommon in Minnesota, or has unique or highly specific habitat requirements and deserves careful monitoring of its status. Species on the periphery of their range that are not listed as threatened may be included in this category along with those species that were once threatened or endangered but now have increasing or protected, stable populations.

MAMMALS

Threatened

Spilogale putorius . . . . . eastern spotted skunk

Special Concern

Canis lupus . . . . . gray wolf (Fed. Status: T)
Cervus elaphus . . . . . elk
Cryptotis parva . . . . . least shrew
Felis concolor . . . . . mountain lion
Microtus ochrogaster . . . . . prairie vole
Microtus pinetorum . . . . . woodland vole
Mustela nivalis . . . . . least weasel
Myotis septentrionalis . . . . . northern myotis
Perognathus flavescens . . . . . plains pocket mouse
Phenacomys intermedius . . . . . heather vole
Pipistrellus subflavus . . . . . eastern pipistrelle
Sorex fumeus . . . . . smokey shrew
Synaptomys borealis . . . . . northern bog lemming
Thomomys talpoides . . . . . northern pocket gopher

BIRDS

Endangered

Ammodramus bairdii . . . . . Baird's sparrow
Ammodramus henslowii . . . . . Henslow's Sparrow
Anthus spragueii . . . . . Sprague's Pipit
Calcarius ornatus . . . . . chestnut-collared longspur
Charadrius melodus . . . . . piping plover (Fed. Status: T)
Rallus elegans . . . . . king rail
Speotyto cunicularia . . . . . burrowing owl

Threatened

Cygnus buccinator . . . . . trumpeter swan
Falco peregrinus . . . . . peregrine falcon (Fed. Status: E)
Lanius ludovicianus . . . . . loggerhead shrike
Phalaropus tricolor . . . . . Wilson's phalarope
Podiceps auritus . . . . . horned grebe
Sterna hirundo . . . . . common tern

Special Concern

Ammodramus nelsoni . . . . . Nelson’s sharp-tailed sparrow
Asio flammeus . . . . . short-eared owl
Buteo lineatus . . . . . red-shouldered hawk
Coturnicops noveboracensis . . . . . yellow rail
Dendroica cerulea . . . . . cerulean warbler
Empidonax virescens . . . . . acadian flycatcher
Gallinula chloropus . . . . . common moorhen
Haliaeetus leucocephalus . . . . . bald eagle (Fed. Status: T)
Larus pipixcan . . . . . Franklin’s gull
Limosa fedoa . . . . . marbled godwit

Pelecanus erythrorhynchos . . . . . American white pelican
Seiurus motacilla . . . . . Louisiana waterthrush
Sterna forsteri . . . . . Forster's tern
Tympanuchus cupido . . . . . greater prairie-chicken
Wilsonia citrina . . . . . hooded warbler

AMPHIBIANS AND REPTILES
Endangered
Acris crepitans . . . . . northern cricket frog
Sistrurus catenatus . . . . . massasauga
Threatened
Clemmys insculpta . . . . . wood turtle
Crotalus horridus . . . . . timber rattlesnake
Emydoidea blandingii . . . . . Blanding's turtle
Special Concern
Apalone mutica . . . . . smooth softshell
Chelydra serpentina . . . . . snapping turtle
Coluber constrictor . . . . . racer
Elaphe obsoleta . . . . . rat snake
Eumeces fasciatus . . . . . five-lined skink
Hemidactylium scutatum . . . . . four-toed salamander
Heterodon nasicus . . . . . western hognose snake
Pituophis catenifer . . . . . gopher snake
Tropidoclonion lineatum . . . . . lined snake

FISH
Threatened
Polyodon spathula . . . . . paddlefish
Special Concern
Acipenser fulvescens . . . . . lake sturgeon
Alosa chrysochloris . . . . . skipjack herring
Ammocrypta asprella . . . . . crystal darter
Aphredoderus sayanus . . . . . pirate perch
Coregonus kiyi . . . . . kiyi
Coregonus zenithicus . . . . . shortjaw cisco
Cycleptus elongatus . . . . . blue sucker
Erimystax x-punctata . . . . . gravel chub
Etheostoma microperca . . . . . least darter
Fundulus sciadicus . . . . . plains topminnow
Ichthyomyzon fossor . . . . . northern brook lamprey
Ichthyomyzon gagei . . . . . southern brook lamprey
Ictiobus niger . . . . . black buffalo
Morone mississippiensis . . . . . yellow bass
Notropis amnis . . . . . pallid shiner
Notropis anogenus . . . . . pugnose shiner
Notropis nubilus . . . . . Ozark minnow

Notropis topeka . . . . . Topeka shiner
Noturus exilis . . . . . slender madtom
Percina evides . . . . . gilt darter

MOLLUSKS
Endangered
Arcidens confragosus . . . . . rock pocketbook
Elliptio crassidens . . . . . elephant-ear
Fusconaia ebena . . . . . ebonyshell
Lampsilis higginsi . . . . . Higgins eye (Fed. Status: E)
Lampsilis teres . . . . . yellow sandshell
Novasuccinea n. sp. Minnesota B . . . . . Iowa pleistocene ambersnail
Plethobasus cyphyus . . . . . sheepnose
Quadrula fragosa . . . . . winged mapleleaf (Fed. Status: E)
Quadrula nodulata . . . . . wartyback
Vertigo hubrichti hubrichti . . . . . Midwest pleistocene vertigo
Threatened
Actinonaias ligamentina . . . . . mucket
Alasmidonta marginata . . . . . elktoe
Cumberlandia monodonta . . . . . spectaclecase
Cyclonaias tuberculata . . . . . purple wartyback
Ellipsaria lineolata . . . . . butterfly
Epioblasma triquetra . . . . . snuffbox
Megalonaias nervosa . . . . . washboard
Novasuccinea n. sp. Minnesota A . . . . . Minnesota pleistocene ambersnail
Pleurobema coccineum . . . . . round pigtoe
Quadrula metanevra . . . . . monkeyface
Simpsonaias ambigua . . . . . salamander mussel
Tritogonia verrucosa . . . . . pistolgrip
Venustaconcha ellipsiformis . . . . . ellipse
Vertigo hubrichti variabilis n. subsp. . . . . variable pleistocene vertigo
Vertigo meramecensis . . . . . bluff vertigo
Special Concern
Elliptio dilatata . . . . . spike
Lasmigona compressa . . . . . creek heelsplitter
Lasmigona costata . . . . . fluted-shell
Ligumia recta . . . . . black sandshell
Obovaria olivaria . . . . . hickorynut

JUMPING SPIDERS
Special Concern
Habronattus texanus . . . . . a species of jumping spider
Marpissa grata . . . . . a species of jumping spider
Metaphidippus arizonensis . . . . . a species of jumping spider
Paradamoetas fontana . . . . . a species of jumping spider
Phidippus apacheanus . . . . . a species of jumping spider

Phidippus pius . . . . . a species of jumping spider
Sassacus papenhoei . . . . . a species of jumping spider
Tutelina formicaria . . . . . a species of jumping spider

LEAFHOPPERS
Special Concern
Aflexia rubranura . . . . . red-tailed prairie leafhopper

DRAGONFLIES
Special Concern
Ophiogomphus anomalis . . . . . extra-striped snaketail
Ophiogomphus susbehcha . . . . . St. Croix snaketail

BUTTERFLIES AND MOTHS
Endangered
Erynnis persius . . . . . persius dusky wing
Hesperia comma assiniboia . . . . . assiniboia skipper
Hesperia uncas . . . . . uncas skipper
Lycaeides melissa samuelis . . . . . Karner blue (Fed. Status: E)
Oeneis uhleri varuna . . . . . Uhler's arctic
Threatened
Hesperia dacotae . . . . . dakota skipper
Hesperia ottoe . . . . . ottoe skipper
Oarisma garita . . . . . garita skipper
Special Concern
Atrytone arogos . . . . . arogos skipper
Erebia disa mancinus . . . . . disa alpine
Hesperia leonardus . . . . . leonardus skipper
Lycaeides idas nabokovi . . . . . Nabokov's blue
Oarisma powesheik . . . . . powesheik skipper
Pyrgus centaureae freija . . . . . grizzled skipper
Schinia indiana . . . . . phlox moth
Speyeria idalia . . . . . regal fritillary

CADDISFLIES
Endangered
Chilostigma itascae . . . . . headwaters chilostigman
Special Concern
Agapetus tomus . . . . . a species of caddisfly
Asynarchus rossi . . . . . a species of caddisfly
Ceraclea brevis . . . . . a species of caddisfly
Ceraclea vertreesi . . . . . a species of caddisfly
Hydroptila metoeca . . . . . a species of caddisfly
Hydroptila novicola . . . . . a species of caddisfly
Hydroptila tortosa . . . . . a species of caddisfly
Oxyethira ecornuta . . . . . a species of caddisfly

Oxyethira itascae . . . . . a species of caddisfly
Polycentropus milaca . . . . . a species of caddisfly
Protoptila talola . . . . . a species of caddisfly
Setodes guttatus . . . . . a species of caddisfly

TIGER BEETLES
Endangered
Cicindela fulgida fulgida . . . . . a species of tiger beetle
Cicindela limbata nympha . . . . . a species of tiger beetle
Threatened
Cicindela denikei . . . . . a species of tiger beetle
Cicindela fulgida westbournei . . . . . a species of tiger beetle
Cicindela lepida . . . . . a species of tiger beetle
Special concern
Cicindela hirticollis rhodensis . . . . . a species of tiger beetle
Cicindela macra macra . . . . . a species of tiger beetle
Cicindela patruela patruela . . . . . a species of tiger beetle
Cicindela splendida cyanocephalata . . . . . a species of tiger beetle

VASCULAR PLANTS
Endangered
Agalinis auriculata . . . . . eared false foxglove
Agalinis gattingeri . . . . . round-stemmed false foxglove
Asclepias stenophylla . . . . . narrow-leaved milkweed
Astragalus alpinus . . . . . alpine milk-vetch
Bartonia virginica . . . . . Virginia bartonia
Botrychium gallicomontanum . . . . . frenchman’s bluff moonwort
Botrychium oneidense . . . . . blunt-lobed grapefern
Botrychium pallidum . . . . . pale moonwort
Cacalia suaveolens . . . . . sweet-smelling Indian-plantain
Caltha natans . . . . . floating marsh-marigold
Carex formosa . . . . . handsome sedge
Carex pallescens . . . . . pale sedge
Carex plantaginea . . . . . plantain-leaved sedge
Castilleja septentrionalis . . . . . northern paintbrush
Cheilanthes lanosa . . . . . hairy lip-fern
Chrysosplenium iowense . . . . . Iowa golden saxifrage
Cristatella jamesii . . . . . James' polanisia
Dodecatheon meadia . . . . . prairie shooting star
Draba norvegica . . . . . Norwegian whitlow-grass
Eleocharis wolfii . . . . . Wolf's spike-rush
Empetrum eamesii . . . . . purple crowberry
Empetrum nigrum . . . . . black crowberry
Erythronium propullans . . . . . dwarf trout lily (Fed. Status: E)
Escobaria vivipara . . . . . ball cactus
Fimbristylis puberula var. *interior* . . . . . hairy fimbristylis

Glaux maritima . . . . . sea milkwort
Hydrastis canadensis . . . . . golden-seal
Iodanthus pinnatifidus . . . . . purple rocket
Isoetes melanopoda . . . . . blackfoot quillwort
Lechea tenuifolia . . . . . narrow-leaved pinweed
Lesquerella ludoviciana . . . . . bladder pod
Listera auriculata . . . . . auricled twayblade
Malaxis paludosa . . . . . bog adder's-mouth
Marsilea vestita . . . . . hairy water clover
Montia chamissoi . . . . . montia
Oryzopsis hymenoides . . . . . Indian ricegrass
Osmorhiza berteroi . . . . . Chilean sweet cicely
Oxytropis viscida . . . . . sticky locoweed
Paronychia fastigiata . . . . . forked chickweed
Parthenium integrifolium . . . . . wild quinine
Platanthera flava var. *herbiola* . . . . . tubercled rein-orchid
Platanthera praeclara . . . . . western prairie fringed orchid (Fed. Status: T)
Polemonium occidentale ssp. *lacustre* . . . . western Jacob's-ladder
Polygala cruciata . . . . . cross-leaved milkwort
Polystichum braunii . . . . . Braun's holly fern
Potamogeton bicupulatus . . . . . snailseed pondweed
Potamogeton diversifolius . . . . . diverse-leaved pondweed
Psoralidium tenuiflora . . . . . slender-leaved scurf pea
Sagina nodosa ssp. *borealis* . . . . . knotty pearlwort
Saxifraga cernua . . . . . nodding saxifrage
Scleria triglomerata . . . . . tall nut-rush
Sedum integrifolium ssp. *leedyi* . . . . . Leedy's roseroot (Fed. Status: T)
Selaginella selaginoides . . . . . northern spikemoss
Senecio canus . . . . . gray ragwort
Talinum rugospermum . . . . . rough-seeded fameflower
Tofieldia pusilla . . . . . small false asphodel
Xyris torta . . . . . twisted yellow-eyed grass

Threatened

Achillea sibirica . . . . . Siberian yarrow
Allium cernuum . . . . . nodding wild onion
Allium schoenoprasum var. *sibiricum* . . . . wild chives
Ammophila breviligulata . . . . . beachgrass
Arabis holboellii var. *retrofracta* . . . . . Holboell's rockcress
Arnica lonchophylla . . . . . long-leaved arnica
Arnoglossum plantagineum . . . . . tuberous Indian-plantain
Asclepias hirtella . . . . . prairie milkweed
Asclepias sullivantii . . . . . Sullivant's milkweed
Asplenium trichomanes . . . . . maidenhair spleenwort
Aster shortii . . . . . Short's aster
Aureolaria pedicularia . . . . . fernleaf false foxglove
Besseya bullii . . . . . kitten-tails

Botrychium lanceolatum . . . . . triangle moonwort
Botrychium lunaria . . . . . common moonwort
Botrychium rugulosum . . . . . St. Lawrence grapefern
Carex careyana . . . . . Carey's sedge
Carex conjuncta . . . . . jointed sedge
Carex davisii . . . . . Davis' sedge
Carex festucacea . . . . . fescue sedge
Carex garberi . . . . . Garber's sedge
Carex jamesii . . . . . James' sedge
Carex katahdinensis . . . . . Katahdin sedge
Carex laevivaginata . . . . . smooth-sheathed sedge
Carex laxiculmis . . . . . spreading sedge
Carex sterilis . . . . . sterile sedge
Crassula aquatica . . . . . pigmyweed
Crataegus douglasii . . . . . black hawthorn
Cyperus acuminatus . . . . . short-pointed umbrella-sedge
Cypripedium arietinum . . . . . ram's-head lady's-slipper
Diplazium pycnocarpon . . . . . narrow-leaved spleenwort
Dryopteris marginalis . . . . . marginal shield-fern
Eleocharis nitida . . . . . neat spike-rush
Eleocharis olivacea . . . . . olivaceous spike-rush
Eleocharis rostellata . . . . . beaked spike-rush
Eupatorium sessilifolium . . . . . upland boneset
Floerkea proserpinacoides . . . . . false mermaid
Heteranthera limosa . . . . . mud plantain
Huperzia porophila . . . . . rock clubmoss
Lespedeza leptostachya . . . . . prairie bush clover (Fed. Status: T)
Melica nitens . . . . . three-flowered melic
Moehringia macrophylla . . . . . large-leaved sandwort
Napaea dioica . . . . . glade mallow
Nymphaea leibergii . . . . . small white waterlily
Paronychia canadensis . . . . . Canadian forked chickweed
Phegopteris hexagonoptera . . . . . broad beech-fern
Plantago elongata . . . . . slender plantain
Poa paludigena . . . . . bog bluegrass
Polystichum acrostichoides . . . . . Christmas fern
Rhynchospora capillacea . . . . . hair-like beak-rush
Rotala ramosior . . . . . tooth-cup
Rubus chamaemorus . . . . . cloudberry
Salicornia rubra . . . . . red saltwort
Saxifraga paniculata . . . . . encrusted saxifrage
Scleria verticillata . . . . . whorled nut-rush
Scutellaria ovata . . . . . ovate-leaved skullcap
Shinnersoseris rostrata . . . . . annual skeletonweed
Silene nivea . . . . . snowy campion
Subularia aquatica . . . . . awlwort

Sullivantia sullivantii . . . . . reniform sullivantia
Vaccinium uliginosum . . . . . alpine bilberry
Valeriana edulis var. *ciliata* . . . . . valerian
Viola lanceolata . . . . . lance-leaved violet
Viola nuttallii . . . . . yellow prairie violet
Woodsia glabella . . . . . smooth woodsia
Woodsia scopulina . . . . . Rocky Mountain woodsia

Special Concern

Adoxa moschatellina . . . . . moschatel
Agrostis geminata . . . . . twin bentgrass
Androsace septentrionalis ssp. *puberulenta* northern androsace
Antennaria parvifolia . . . . . small-leaved pussytoes
Aristida purpurea var. *longiseta* . . . . . red three-awn
Aristida tuberculosa . . . . . sea-beach needlegrass
Asclepias amplexicaulis . . . . . clasping milkweed
Asplenium platyneuron . . . . . ebony spleenwort
Astragalus flexuosus . . . . . slender milk-vetch
Astragalus missouriensis . . . . . Missouri milk-vetch
Bacopa rotundifolia . . . . . water-hyssop
Baptisia alba . . . . . white wild indigo
Baptisia bracteata var. *leucophaea* . . . . . plains wild indigo
Botrychium campestre . . . . . prairie moonwort
Botrychium mormo . . . . . goblin fern
Botrychium minganense . . . . . Mingan moonwort
Botrychium simplex . . . . . least moonwort
Buchloe dactyloides . . . . . buffalo grass
Calamagrostis lacustris . . . . . marsh reedgrass
Calamagrostis montanensis . . . . . plains reedgrass
Calamagrostis purpurascens . . . . . purple reedgrass
Callitriche heterophylla . . . . . larger water-starwort
Carex annectens . . . . . yellow-fruited sedge
Carex crus-corvi . . . . . raven’s foot sedge
Carex exilis . . . . . coastal sedge
Carex flava . . . . . yellow sedge
Carex hallii . . . . . Hall's sedge
Carex michauxiana . . . . . Michaux’s sedge
Carex obtusata . . . . . blunt sedge
Carex praticola . . . . . prairie sedge
Carex scirpoidea . . . . . northern singlespike sedge
Carex supina var. *spaniocarpa* . . . . . weak arctic sedge
Carex typhina . . . . . cattail sedge
Carex woodii . . . . . Wood's sedge
Carex xerantica . . . . . dry sedge
Chamaesyce missurica . . . . . Missouri spurge
Cirsium hillii . . . . . Hill's thistle
Cladium mariscoides . . . . . twig-rush

Claytonia caroliniana . . . . . Carolina spring-beauty
Cymopterus acaulis . . . . . wild parsley
Cypripedium candidum . . . . . small white lady's-slipper
Dalea candida var. *oligophylla* . . . . . white prairie-clover
Decodon verticillatus . . . . . waterwillow
Deschampsia flexuosa . . . . . slender hairgrass
Desmanthus illinoensis . . . . . prairie mimosa
Desmodium cuspidatum var. *longifolium* . . big tick-trefoil
Desmodium nudiflorum . . . . . stemless tick-trefoil
Diarrhena obovata . . . . . American beakgrain
Dicentra canadensis . . . . . squirrel-corn
Draba arabisans . . . . . rock whitlow-grass
Drosera anglica . . . . . English sundew
Drosera linearis . . . . . linear-leaved sundew
Dryopteris goldiana . . . . . Goldie's fern
Eleocharis parvula . . . . . dwarf spike-rush
Eleocharis quinqueflora . . . . . few-flowered spike-rush
Eryngium yuccifolium . . . . . rattlesnake-master
Euphrasia hudsoniana . . . . . Hudson Bay eyebright
Fimbristylis autumnalis . . . . . autumn fimbristylis
Gaillardia aristata . . . . . blanket-flower
Gentiana affinis . . . . . northern gentian
Gentianella amarella ssp. *acuta* . . . . . felwort
Hamamelis virginiana . . . . . witch-hazel
Helianthus nuttallii ssp. *rydbergii* . . . . . Nuttall's sunflower
Helictotrichon hookeri . . . . . oat-grass
Hudsonia tomentosa . . . . . beach-heather
Hydrocotyle americana . . . . . American water-pennywort
Jeffersonia diphylla . . . . . twinleaf
Juglans cinerea . . . . . butternut
Juncus marginatus . . . . . marginated rush
Juncus stygius var. *americanus* . . . . . bog rush
Juniperus horizontalis . . . . . creeping juniper
Leersia lenticularis . . . . . catchfly grass
Limosella aquatica . . . . . mudwort
Listera convallarioides . . . . . broad-lipped twayblade
Littorella uniflora . . . . . American shore-plantain
Luzula parviflora ssp. *melanocarpa* . . . . . small-flowered woodrush
Lysimachia quadrifolia . . . . . whorled loosestrife
Machaeranthera pinnatifida . . . . . cutleaf ironplant
Malaxis monophyllos var. *brachypoda* . . . white adder’s-mouth
Minuartia dawsonensis . . . . . rock sandwort
Muhlenbergia uniflora . . . . . one flowered muhly
Najas gracillima . . . . . slender naiad
Najas marina . . . . . sea naiad
Oenothera rhombipetala . . . . . rhombic-petaled evening primrose

Opuntia macrorhiza . . . . . plains prickly pear
Orobanche fasciculata . . . . . clustered broomrape
Orobanche ludoviciana . . . . . Louisiana broomrape
Orobanche uniflora . . . . . one-flowered broomrape
Osmorhiza depauperata . . . . . blunt-fruited sweet cicely
Panax quinquefolius . . . . . American ginseng
Pellaea atropurpurea . . . . . purple cliff-brake
Phacelia franklinii . . . . . Franklin's phacelia
Pinguicula vulgaris . . . . . butterwort
Platanthera clavellata . . . . . club-spur orchid
Poa wolfii . . . . . Wolf's bluegrass
Polygonum careyi . . . . . Carey's smartweed
Polygonum viviparum . . . . . alpine bistort
Polytaenia nuttallii . . . . . prairie-parsley
Potamogeton vaginatus . . . . . sheathed pondweed
Potamogeton vaseyi . . . . . Vasey's pondweed
Prenanthes crepidinea . . . . . nodding rattlesnake-root
Pyrola minor . . . . . small shinleaf
Ranunculus lapponicus . . . . . Lapland buttercup
Rhynchospora fusca . . . . . sooty-colored beak-rush
Rorippa sessiliflora . . . . . sessile-flowered cress
Rudbeckia triloba . . . . . three-leaved coneflower
Ruppia maritima . . . . . ditch-grass
Salix maccalliana . . . . . Maccall's willow
Salix pellita . . . . . satiny willow
Sanicula trifoliata . . . . . beaked snakeroot
Schedonnardus paniculatus . . . . . tumblegrass
Scirpus clintonii . . . . . Clinton's bulrush
Senecio indecorus . . . . . elegant grounsel
Silene drummondii . . . . . Drummond's campion
Solidago mollis . . . . . soft goldenrod
Solidago sciaphila . . . . . cliff goldenrod
Sparganium glomeratum . . . . . clustered bur-reed
Stellaria longipes . . . . . long-stalked chickweed
Symphoricarpos orbiculatus . . . . . coralberry
Tephrosia virginiana . . . . . goat's-rue
Torreyochloa pallida . . . . . Torrey's manna-grass
Trillium nivale . . . . . snow trillium
Trimorpha acris var. *asteroides* . . . . . bitter fleabane
Trimorpha lonchophylla . . . . . shortray fleabane
Triplasis purpurea . . . . . purple sand-grass
Tsuga canadensis . . . . . eastern hemlock
Utricularia purpurea . . . . . purple-flowered bladderwort
Utricularia resupinata . . . . . lavender bladderwort
Verbena simplex . . . . . narrow-leaved vervain
Vitis aestivalis . . . . . silverleaf grape

Waldsteinia fragarioides . . . . . barren strawberry
Woodsia alpina . . . . . alpine woodsia
Xyris montana . . . . . montane yellow-eyed grass

LICHENS
Endangered
Buellia nigra . . . . . a species of lichen
Caloplaca parvula . . . . . a species of lichen
Dermatocarpon moulinsii . . . . . a species of lichen
Leptogium apalachense . . . . . a species of lichen
Lobaria scrobiculata . . . . . a species of lichen
Parmelia stictica . . . . . a species of lichen
Pseudocyphellaria crocata . . . . . a species of lichen
Umbilicaria torrefacta . . . . . a species of lichen
Threatened
Cetraria oakesiana . . . . . a species of lichen
Coccocarpia palmicola . . . . . a species of lichen
Parmelia stuppea . . . . . a species of lichen
Special concern
Anaptychia setifera . . . . . a species of lichen
Cetraria aurescens . . . . . a species of lichen
Cladonia pseudorangiformis . . . . . a species of lichen
Lobaria quercizans . . . . . a species of lichen
Peltigera venosa . . . . . a species of lichen
Sticta fuliginosa . . . . . a species of lichen

MOSSES
Endangered
Schistostegia pennata . . . . . luminous moss
Special Concern
Bryoxiphium norvegicum . . . . . sword moss
Tomenthypnum falcifolium . . . . . a species of moss

FUNGI
Endangered
Fuscoboletinus weaverae . . . . . a species of fungus
Psathyrella cystidiosa . . . . . a species of fungus
Psathyrella rhodospora . . . . . a species of fungus
Special concern
Laccaria trullisata . . . . . a species of fungus
Lactarius fuliginellus . . . . . a species of fungus
Lysurus cruciatus . . . . . a species of fungus

APPENDIX C

Construction Projects Affecting Waters Inhabited by Topeka Shiners (Notropis topeka) in Minnesota

Project Recommendations and Guidelines for Meeting Endangered Species Act Section 7 Requirements

U.S. Fish and Wildlife Service
Twin Cities Field Office
Bloomington, MN 55425
612.725-3548

Background

The U.S. Fish and Wildlife Service (Service) listed the Topeka shiner (*Notropis topeka*) as an endangered species in 1998 and designated critical habitat for the species in 2004. The Endangered Species Act of 1973, as amended, prohibits the taking[1] of this species. In Minnesota, Topeka shiner is distributed extensively throughout the Big Sioux and Rock River Watersheds in five counties in southwestern Minnesota (see Fig. C-1).

ESA Requirements for Actions in Topeka Shiner Habitat

Federal Actions

Federal agencies[2] must consult with the U.S. Fish and Wildlife Service on any action that they fund, authorize, or carry out that may affect federally listed endangered and threatened species or their critical habitat. If an agency determines that an action may affect, but is not likely to adversely affect listed species or critical habitat, it may avoid formal consultation by receiving written concurrence on this determination from the Service. Projects that incorporate the recommendations shown below may still affect Topeka shiners. In addition, these recommendations may not address every way in which proposed actions may affect this species. Contact the U.S. Fish and Wildlife Service at (612) 725-3548 for further information.

Private or Local (Non-Federal) Actions

For private or local government actions that do not involve federal funding (e.g., Federal Highway Administration, FEMA, etc.) or authorization (e.g., Corps of Engineers permits), project proponents should ensure that their actions are not likely to result in the take (see definition in footnote) of Topeka shiners. Project plans may need to be modified and an Endangered Species Incidental Take permit may be necessary if take is expected. Contact the U.S. Fish and Wildlife Service at (612) 725-3548 for further information.

If federal funding or authorization (e.g., a permit) is received, we recommend that you contact the responsible federal agency to ensure that it has concluded consultation with the U.S. Fish and Wildlife Service before implementing any action that you think may affect Topeka shiners.

Recommendations

Any action planned in or adjacent to streams, or in side channels, cut-off channels, or oxbows that are at least periodically connected to streams in the Rock River and Big Sioux watersheds in Minnesota should incorporate the following recommendations to avoid or minimize impacts to Topeka shiners. If these recommendations cannot be followed, contact U.S. Fish and Wildlife Service and/or the funding agency as soon as possible.

1. Identify the stream or off-channel areas that may be affected by the proposed action; conduct a survey in the area to determine whether Topeka shiners are present and to assess the presence and condition of important habitat features for this species, such as instream pools. Conduct surveys as early in the planning stages as possible to avoid last-minute delays necessary to modify project design. Contact U.S. Fish and Wildlife Service or Minnesota DNR for guidance on conducting effective surveys for this species.

2. Do not dewater stream reaches and/or temporarily divert streams for construction. Due to the significant likelihood of adverse effects to Topeka shiners as a result of these activities, contact U.S. Fish and Wildlife Service and/or any federal agency that is funding or authorizing proposed actions that are likely to include temporary stream diversion and/or dewatering.

3. Do not permit or conduct in-stream work between ice-out and August 15 to ensure free passage of Topeka shiners and to protect spawning habitat. When feasible, also avoid work below the ordinary high-water level during this period. (See note above regarding projects requiring intensive instream work, such as temporary stream diversions and/or dewatering.)

4. Topeka shiners frequently inhabit headwaters of small prairie streams and stream reaches that are periodically dry. If feasible, conduct instream construction work when the stream is dry to minimize sedimentation.

5. Minimize or eliminate removal of vegetation and exposure of bare soil below the ordinary high water level and in riparian (i.e., stream side) or wetland areas adjacent to waters inhabited by Topeka shiner.

6. Keep removal of riparian vegetation to a minimum; such removal shall occur sequentially as needed over the length of the project. Mulch areas of disturbed soils and reseed promptly, preferably with native grasses and forbs (flowering herbaceous plants). Inspect the site after spring green up to ensure that vegetation is recovering as expected. Replant as necessary to prevent bank erosion.

7. Implement erosion and sediment prevention measures to the maximum extent practicable. Install silt fences adjacent to the stream. Install additional devices, such as silt fences or check bales, further upslope. Inspect devices frequently to ensure that they are effective and in good repair, especially after precipitation.

8. Existing features such as bridge abutments, retaining walls and riprap should remain in place as much as possible.

9. Do not leave site exposed to potential erosion; ensure that erosion prevention measures are in place and in adequate condition when leaving work site.

10. Do not begin construction until the entire project can be completed without anticipated delay. If precipitation is imminent, cease work with erosion prevention measures in place until weather conditions are conducive to resume work.

11. Do not conduct instream work that would impair passage of Topeka shiners after construction is completed. Improperly designed and installed culverts, for example, may impede or prevent upstream or downstream passage of Topeka shiners and other fish species.

12. Do not operate motorized vehicles instream. Excavation, culvert placement, etc. shall be conducted from above streambanks.

13. Backfill placed in the stream shall consist of rock or granular material free of fines, silts, and mud. Machinery parts (i.e., backhoe buckets, etc.) shall be cleaned of all such material and free of grease, oil, etc. before their instream use.

14. Construction, demolition and/or removal operations conducted over, or in the vicinity of, the stream, will be so controlled as to prevent materials from falling into the water. Any materials that do fall into the water or into areas below the ordinary high-water line shall be retrieved promptly, by hand or by equipment working from the banks. This material shall be disposed of in a manner consistent with state and local ordinances.

15. The applicant shall meet with any hired contractors before the commencement of the project to ensure that all permit provisions are clearly understood. If the project is modified, or if field conditions change, the applicant shall contact the Minnesota DNR Area Hydrologist and/or U.S. Fish and Wildlife Service before proceeding.

16. For ditch clean-outs, only accumulated sediment should be removed from the channel. No changes in geometry, width, or depth should occur. It is preferred that the ditch be dry before sediment removal begins. The local SWCD and/or NRCS office should be consulted regarding implementation of Best Management Practices to minimize soil erosion.

Figure C-1. Critical habitat and recorded occurrences of Topeka shiner in Minnesota. Surveys for Topeka shiner are incomplete and ongoing.

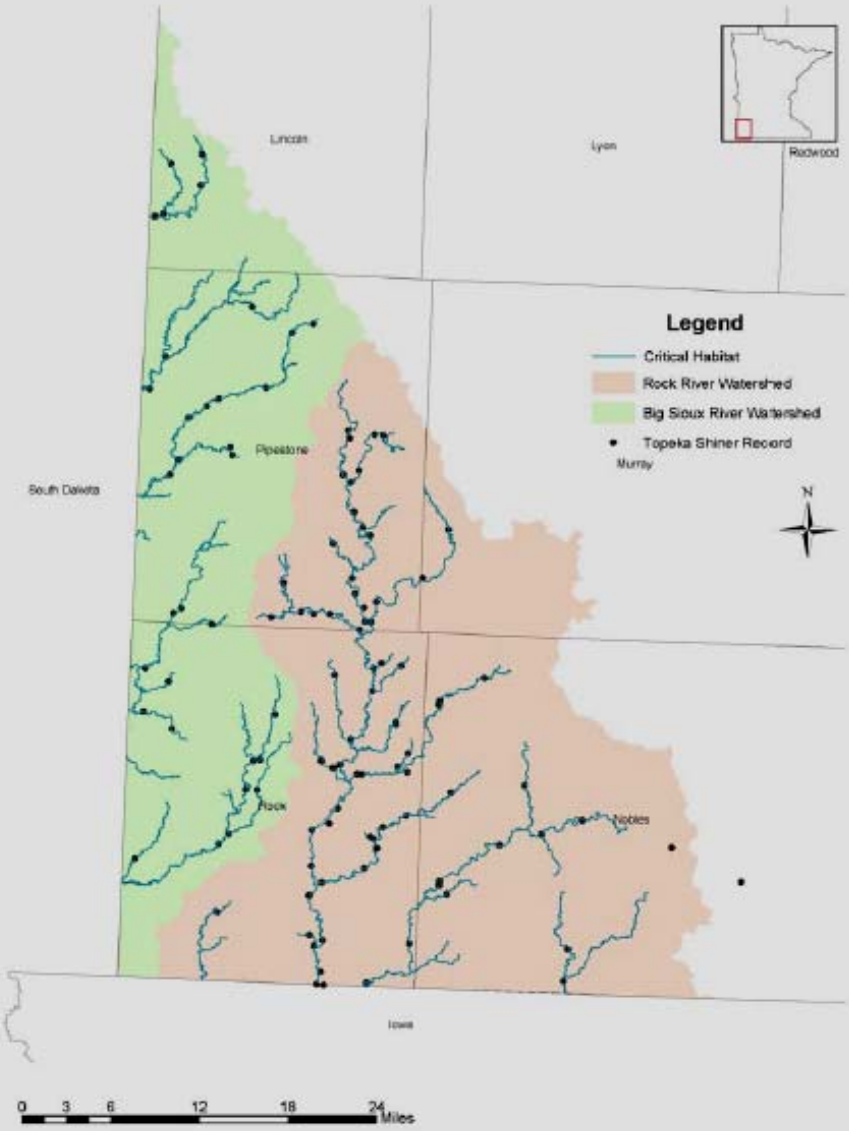


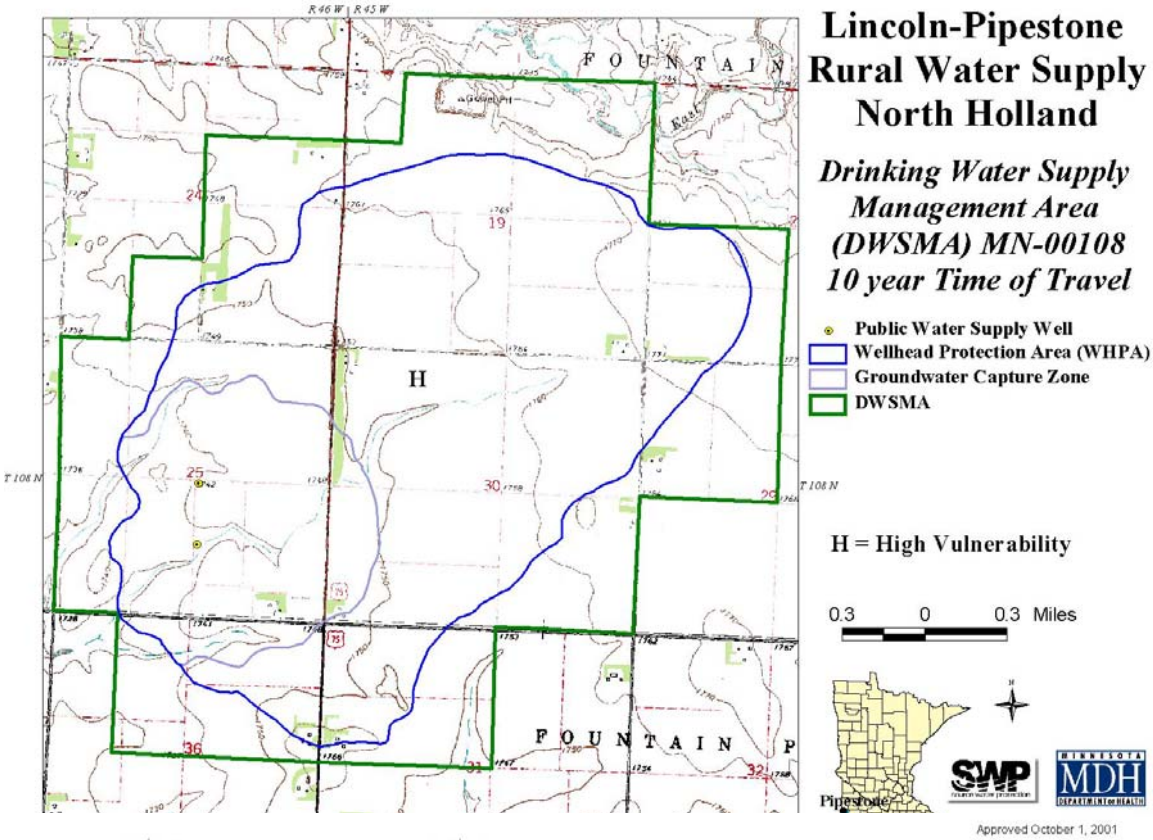
Figure 1. Critical habitat and recorded occurrences of Topeka shiner in Minnesota. Surveys for Topeka shiner are incomplete and ongoing. Therefore, Topeka shiners may also occur within these two watersheds at locations and in streams not shown on the map. Contact U.S. Fish and Wildlife Service at (612)725-3548 to determine whether Topeka shiners may be present in specific areas within these watersheds.

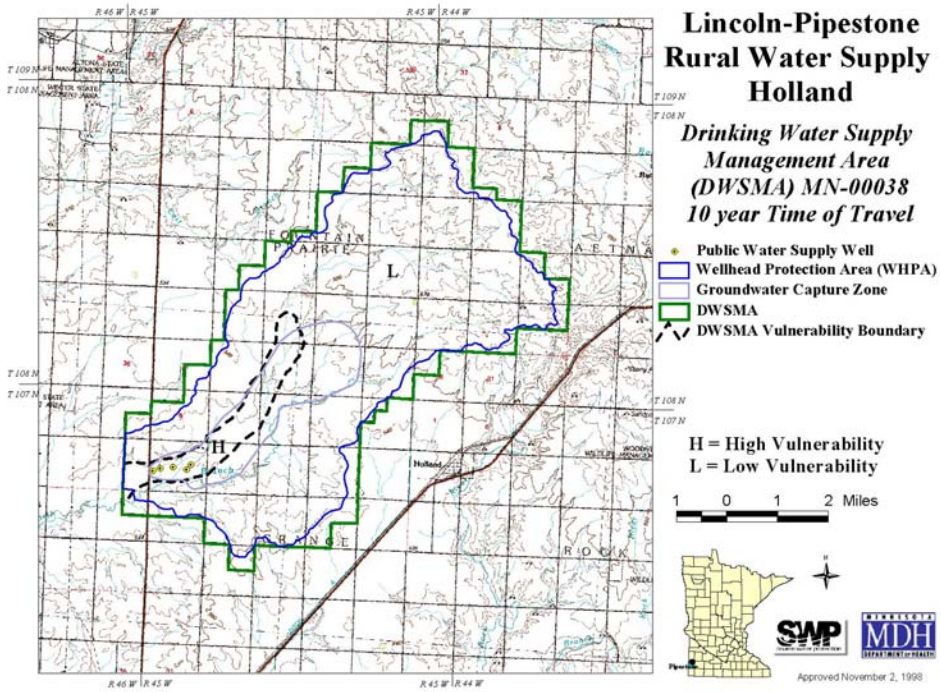
5

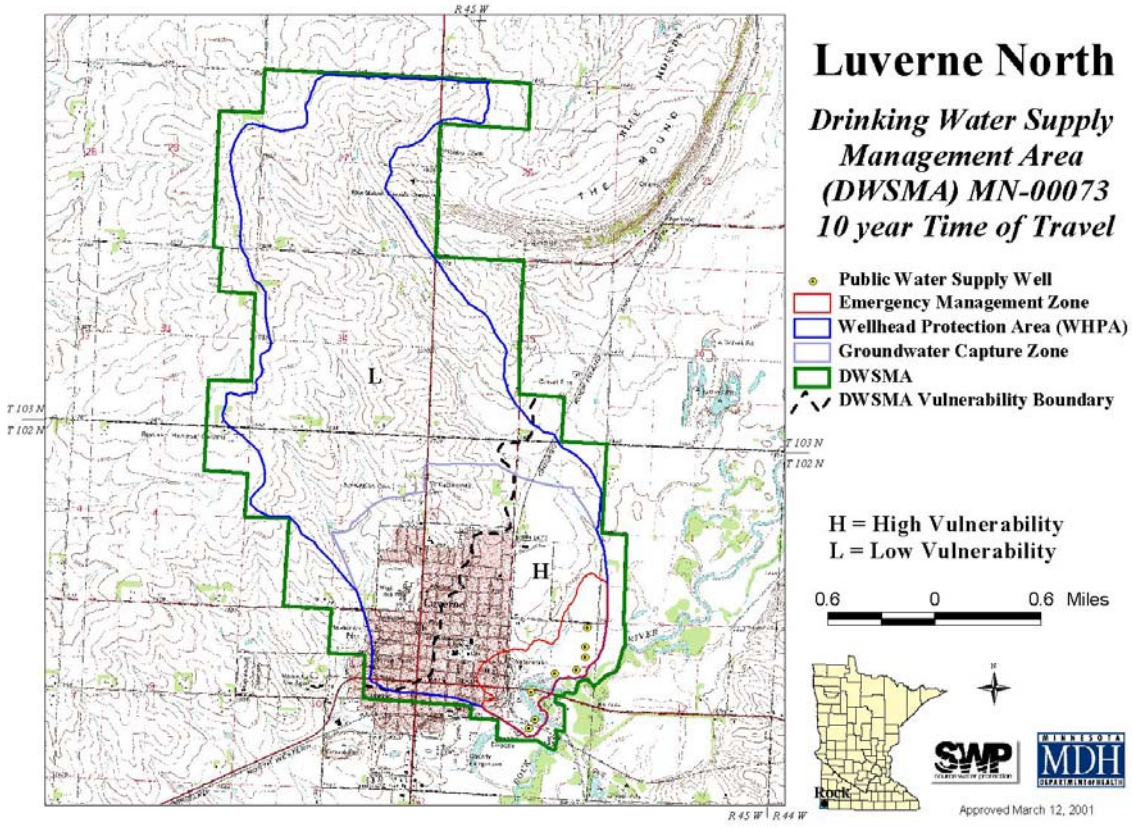
Revised 8/4/04
USFWS, Ecological Services

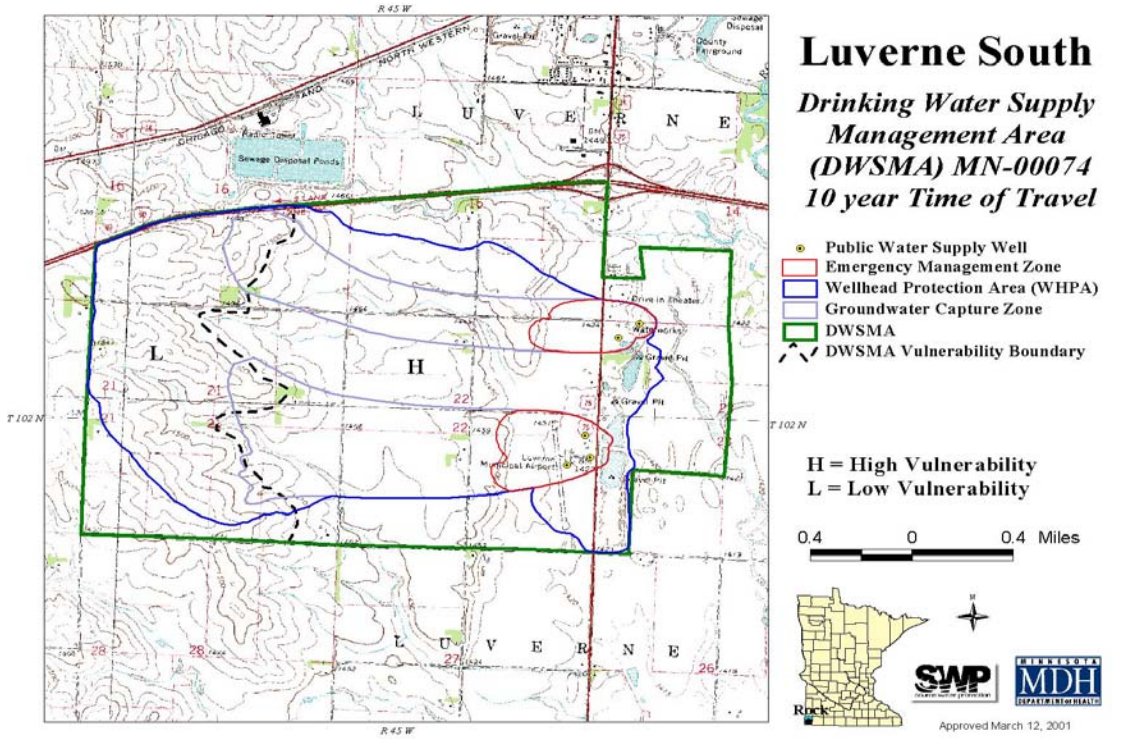
Appendix D

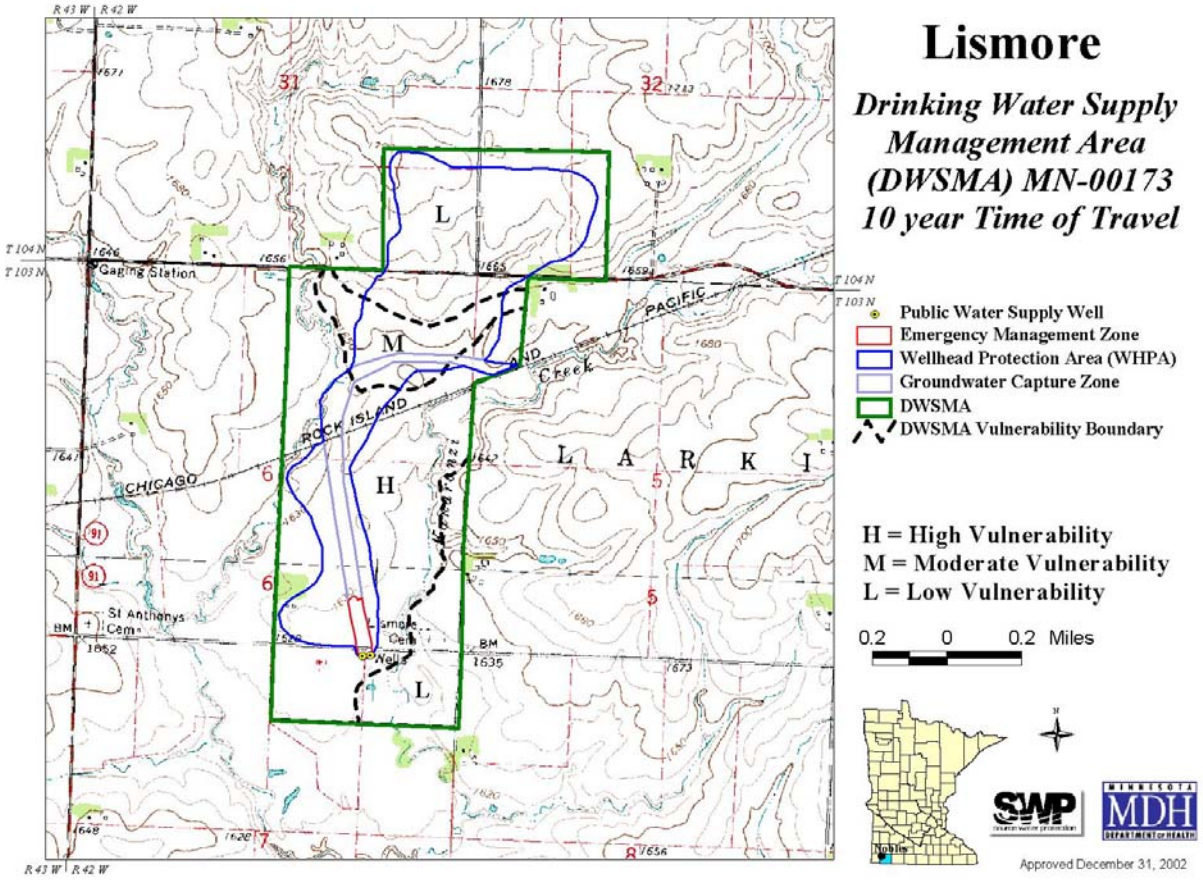
Well Head Protection Areas

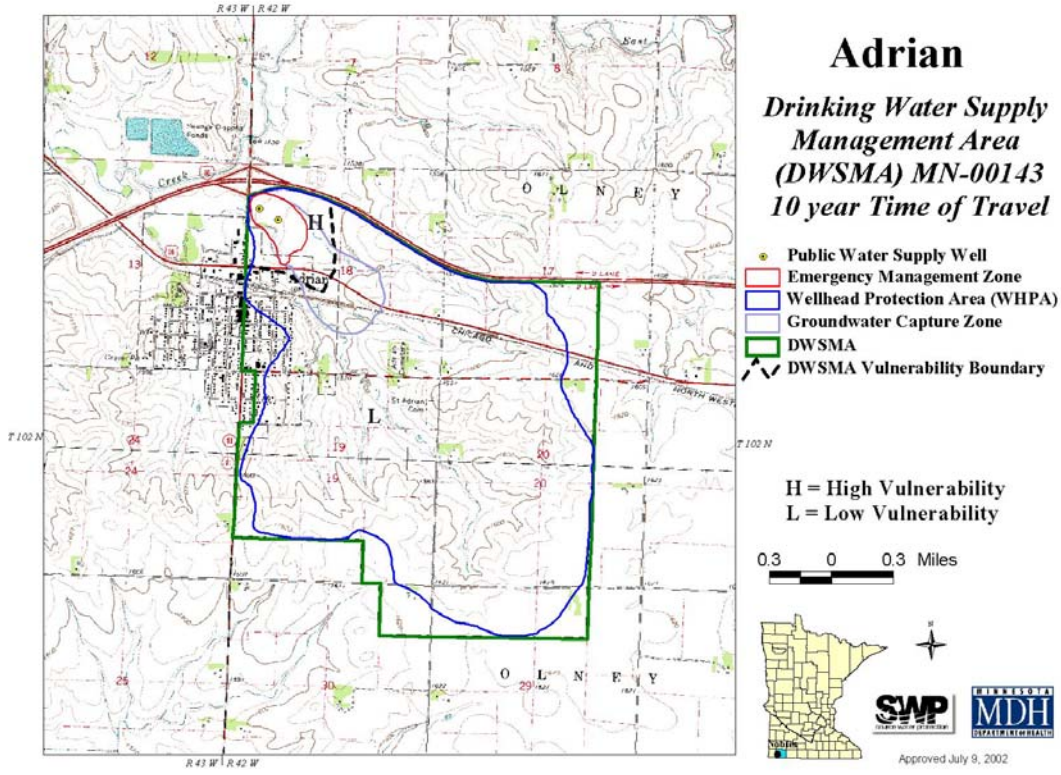


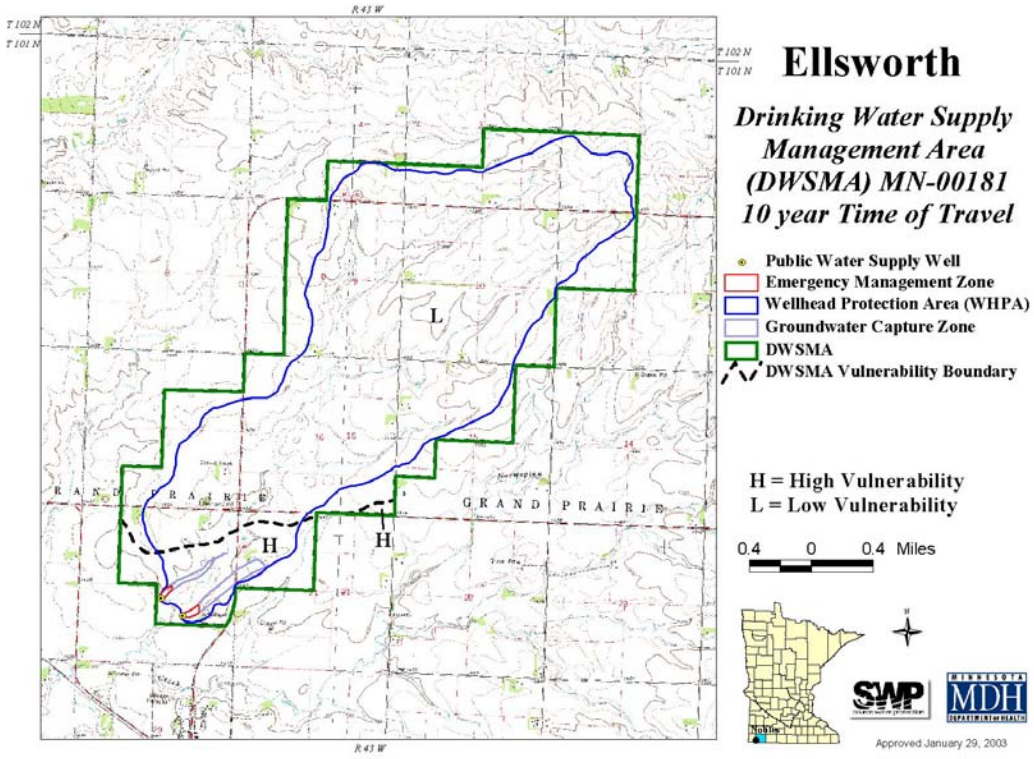


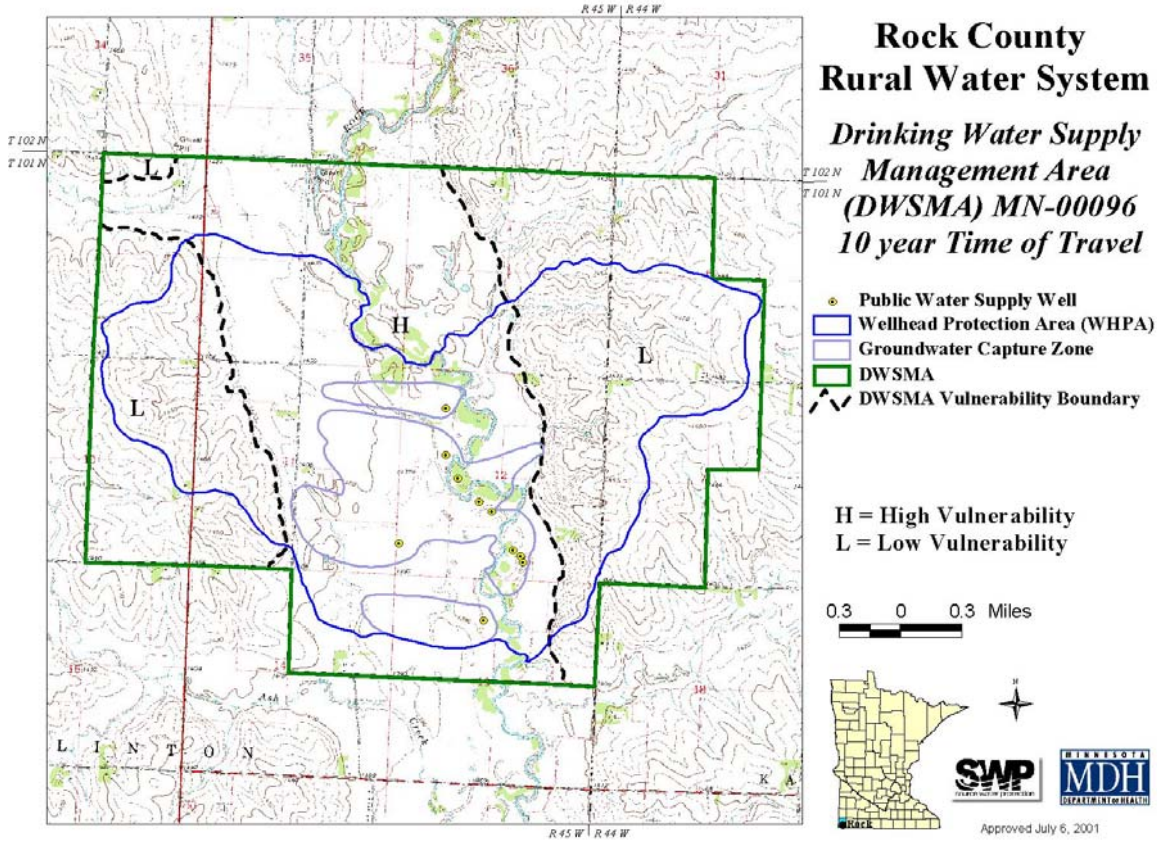

Luverne North
Drinking Water Supply Management Area (DWSMA) MN-00073
10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.6 0 0.6 Miles
Rock
Approved March 12, 2001

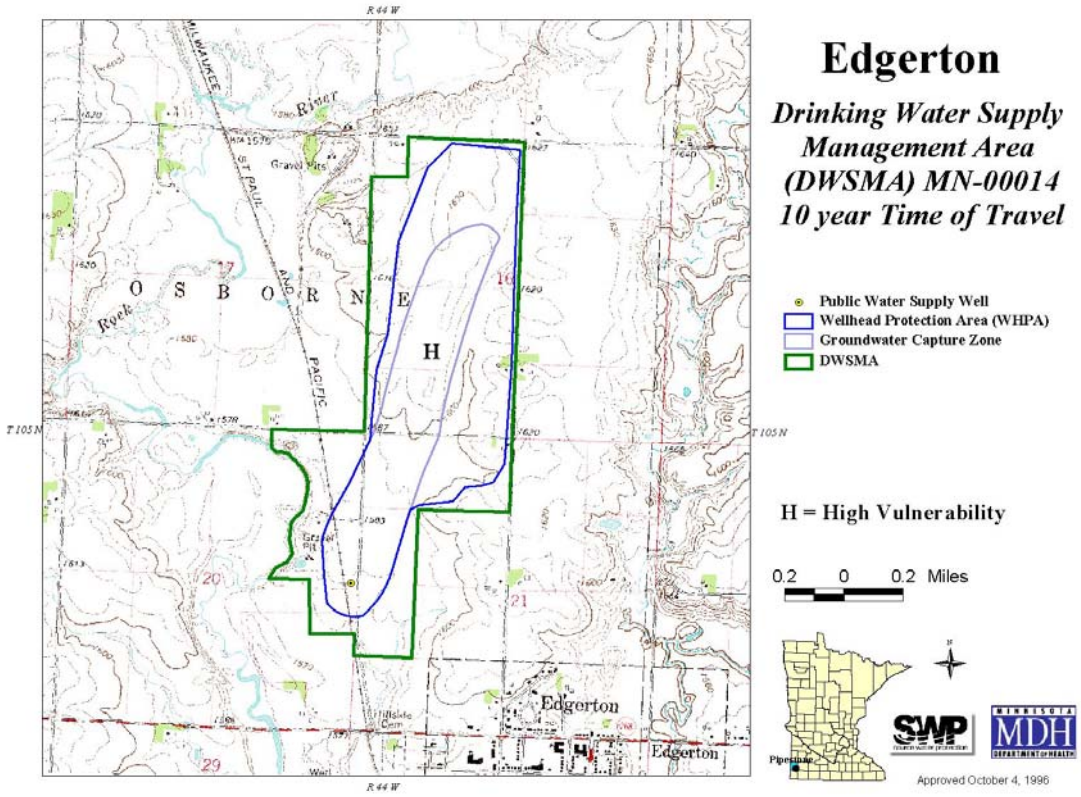

Luverne South
Drinking Water Supply Management Area (DWSMA) MN-00074
10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.4 0 0.4 Miles
Rock
Approved March 12, 2001

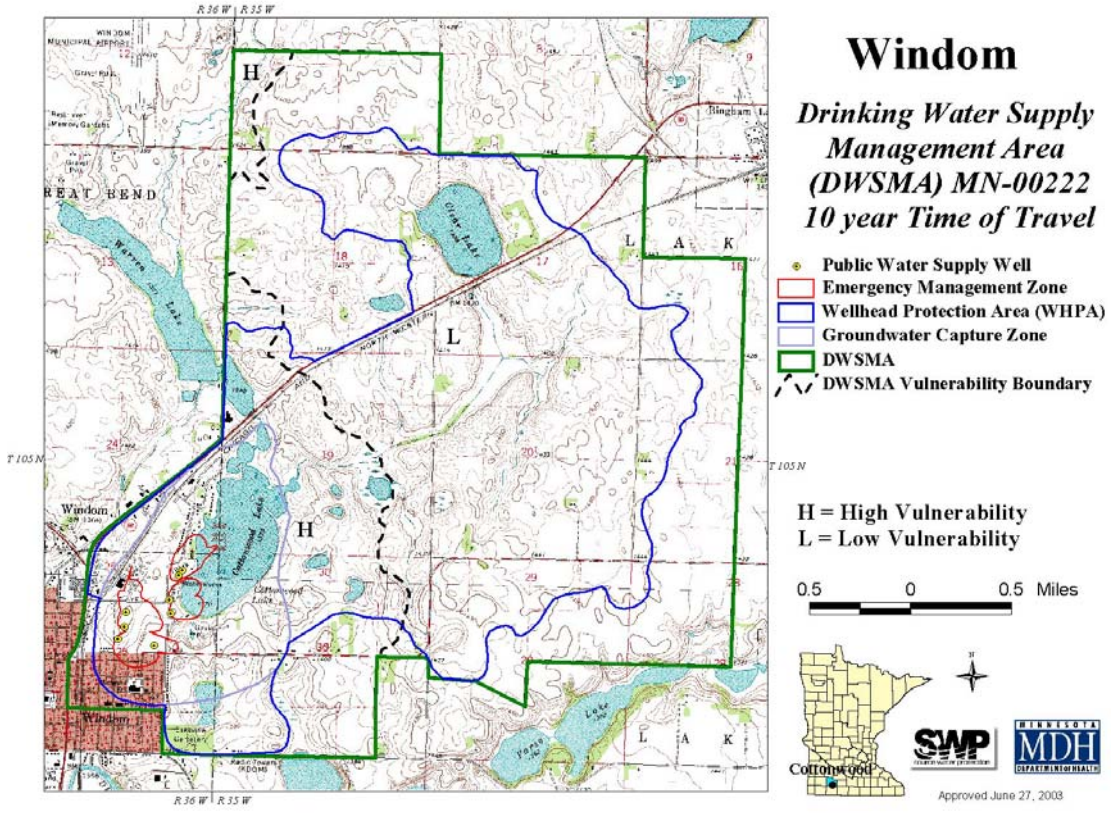

Lismore
Drinking Water Supply Management Area (DWSMA) MN-00173
10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
M = Moderate Vulnerability
L = Low Vulnerability
0.2 0 0.2 Miles
Approved December 31, 2002
R 43 W | R 42 W
T 104 N
T 103 N
Gaging Station
ROCK ISLAND
CHICAGO
PACIFIC
Creek
St Anthonys Cem
Lismore Cem
Well 3
BM 1635
L A R K I N


Adrian
Drinking Water Supply Management Area (DWSMA) MN-00143
10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.3 0 0.3 Miles
Approved July 9, 2002
R 43 W | R 42 W
T 102 N
O L N E Y


Ellsworth
Drinking Water Supply Management Area (DWSMA) MN-00181 10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.4 0 0.4 Miles
Approved January 29, 2003
GRAND PRAIRIE
L
H
H


Rock County Rural Water System
Drinking Water Supply Management Area (DWSMA) MN-00096 10 year Time of Travel
Public Water Supply Well
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.3 0 0.3 Miles
Approved July 6, 2001
L
H
L
L


Edgerton
Drinking Water Supply Management Area (DWSMA) MN-00014 10 year Time of Travel
Public Water Supply Well
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
H = High Vulnerability
0.2 0 0.2 Miles
Approved October 4, 1996
OSBORNE
Edgerton
R 44 W
T 105 N


Windom
Drinking Water Supply Management Area (DWSMA) MN-00222 10 year Time of Travel
Public Water Supply Well
Emergency Management Zone
Wellhead Protection Area (WHPA)
Groundwater Capture Zone
DWSMA
DWSMA Vulnerability Boundary
H = High Vulnerability
L = Low Vulnerability
0.5 0 0.5 Miles
Approved June 27, 2008
R 36 W
R 35 W
T 105 N
Windom
Cottonwood

Appendix E

Agency and Public Comments Received on the Draft Programmatic Environmental Assessment

The Agency published notice of the availability of the draft PEA in several newspapers as well as on the Minnesota Environmental Quality Board MEQB website. MEQB in turn posted the notice on their monthly email notice to all interested parties. It was also published in the FSA county office newsletters which are mailed to all producers in the affected counties. The draft PEA was also available for review on FSA's website.

In addition, direct mail notification was provided to the State Historic Preservation Officer, affected native American Tribes, other affected government agencies and various NGO's such as Pheasants Forever and the Nature Conservancy,

SUMMARY OF COMMENTS RECEIVED ON THE DRAFT PROGRAMMATIC ENVIRONMENTAL ASSESSMENT AND RESPONSES

Three comments were received on the draft PEA for the Minnesota CREP during the public comment period. These comments and the Agency responses are summarized below.

1. **Comment:** Email received from Mr. Sheldon Myerchin to Mr. Jeff Johnson, Minnesota State Environmental Coordinator, FSA, dated March 30, 2005.

```
---Original Message---
From: Sheldon_Myerchin@fws.gov
Sent: Wednesday, March 30, 2005 4:41 PM
To: Johnson, Jeff - Willmar, MN
Subject: Re: Draft PEA for CREP

Jeff
I thought this went last night but apparently there was a glitch with my
computer.  I eliminated some comments as they were addressed in today's training
session.

Jeff,
As requested, following are comments on the Draft PEA for CREP II.

-In section 2.2.2.3;  second paragraph, although the point is mute for CREP II,
future CREP projects should let the landowner determine the duration of the
agreement which best fits his needs.  Perpetual easements should not be limited.

-In section 3.1.1.2; page 36, Hunting Habitat ,  Turkey hunting only occurs in
the southern portion ( ~half) of the Red River Basin,  there are some biologists
who believe this will be the extent of their range north due to winter
conditions/food sources.
- 4.2, d) page 71, Wildlife Habitat ;  "By selection of appropriate native
grasses and tree species"  Should add for all locations and all practices:
```

Vegetation establishment criteria are dependent on the native ecosystem. i.e. trees should not be installed on former tall-grass prairie areas.

- 4.2, e) submitted by TCFO Phil Delphey (discussed in the consultation section of the PEA)

-4.3, page 82, last paragraph. Maintenance and management of water control structures for water level management (flood control) should be conducted at times where minimal impacts to wildlife would occur.

Responses:

Point 1: The Agency understands the concerns of the commenter in this situation. It should be noted that all wetland restorations and flood damage reduction measures will be permanently protected. This totals 29,000 acres or 24% of the total projected enrollment. It was agreed by the parties to the CREP agreement that the overall benefits of the having the CREP exceeds the potential negative impacts to wildlife that may occur as a result of the limited duration easements. Further it is unknown at this time how many acres that are in the limited duration buffer type easements will be brought back into agricultural production at the expiration of the 45 years.

Point 2: This point was duly noted and this section of the PEA so revised.

Point 3: The commenter was concerned that the language regarding the planting of trees and shrubs in what was previously prairie was not specific enough. The Agency stated in the PEA that to the extent practicable, that native types of cover will be restored. This is not necessarily species specific but rather that trees and shrubs using practice CP4d or CP22 will not be placed on what was previously tall grass prairie types of cover. The Agency will reinforce this point in the practice design criteria and in the eligibility criteria in the handbook amendment for this particular CREP. The Agency has already made the point in the PEA that we will not disturb existing native prairie sites. The PEA will be amended in par 4.2 (d) to state 'Trees will not be planted into what was historically a tall grass prairie site as determined by the information provided in the Trygg maps or other reasonably available documentation for the area being offered.'

Point 4: This point is addressed in the Section on Threatened and Endangered Species

Point 5: After phone conversations with this commenter it was understood that in his opinion drawdown of water from flood control structures would negatively impact wildlife that have been drawn into these inundated water storage areas. The Agency understands that even though the control structure is designed and maintained outside the CREP itself the Agency must, on a site specific basis; evaluate the environmental impacts of the control structure as part of the individual project. This is a requirement of the CP-34 practice as well as FSA Handbook 1-EQ. As part of this site specific environmental evaluation the Agency will consider the timing and/or speed of drawdown set forth in the conservation plan to minimize or mitigate wildlife impacts to an acceptable level. Also as part of the site specific EA the agency must consider other alternatives such as alternative sites, sizes, depths, conservation plans as well as the "No Action Alternative".

2. Comment: This comment was received electronically and in hard copy from The Minnesota Cattleman's Association by Mr. Jeff Johnson, FSA on March 30, 2005.

(Electronic Copy – Paper copy is in the mail)

March 29, 2005

Mr. Jeff Johnson
State Environmental Coordinator
Farm Service Agency
PO Box 994
Willmar, MN 56201-0994

Dear Mr. Johnson,

The Minnesota State Cattlemen's Association Board of Directors met March 12, 2005 and discussed USDA/FSA State Executive Director John Monson's letter dated March 3, 2005 requesting comments on the 100 plus page "Draft Minnesota Conservation-Enhancement (CREP) Programmatic Environmental Assessment (PEA) dated February, 2005. The Minnesota State Cattlemen's Association strongly supports protecting and enhancing our environment, however we have serious concerns about this proposal's impact on the state's rural economy and the ability to maintain viable livestock production operations within the three targeted areas.

Because the draft PEA fails to adequately address the long term economic impact on rural Minnesota communities associated with removing up 120,000 acres of land from production the Minnesota State Cattlemen's Association supports the "No Action Alternative". The following comments are provided:

(1) USDA/FSA provided insufficient time for examination and comment on this document. USDA/FSA letter dated March 3, 2005 requested comments be provided no later than March 30, 2005. That provided less than 30 days to review and comment on an expansive document that obviously took many months of FSA staff time to prepare. Despite the short review period, an examination of the document makes it clear that USDA/FSA has concluded that 120,000 acres of agriculture land must be removed from production in Minnesota, but provides no creditable assessment of the socioeconomic impact this action will have on rural Minnesota communities or livestock based agriculture producers in the impacted areas.

The Minnesota State Cattlemen's Association disagrees with USDA/FSA's conclusion that "the actual impact should be negligible" (page 83 paragraph 4.4). This conclusion is supported by speculative assumptions about the role "lifestyle farmers and agro-tourism" may play in local economies. The failure to adequately assess the economic impact on local rural economies calls into question the basis of the entire proposal and the planned expenditure of $250 million taxpayer's dollars.

(2) The Minnesota State Cattlemen's Association is particularly concerned with the economic consequences of taking land out of production that is suited for low impact forage/pasture based utilization. USDA/FSA indicates on page 83 paragraph 4.4, "It is also anticipated that there will be a positive impact on the producers net income as they utilize these programs to cease agriculture

production on lands that are typically not overly productive." Taking land out of production that is viable for forage/pasture utilization with contract payments tends to force the cost up and reduce the availability of pasture/forage land needed for livestock production. That does not have a positive impact on livestock producer's net income.

(3) This proposal puts at risk the livelihoods of livestock producers with no serious examination of the long term economic consequences of that action. At the local level, land tied up in the CREP program restricts the availability and increases the cost of land that is often well suited to low impact conservation minded uses such as managed livestock grazing and forage production. The Minnesota State Cattlemen's Association does not share USDA/FSA's conclusion that this type of land is best suited only for support of activities such as; "boating, fishing, hunting and bird watching ..." (page 83, paragraph 4.4). We also disagree with the speculative suggestion that "lifestyle farmers … and … agro-tourism" will somehow replace the economic support provided by forage based livestock production to rural economies.

In summary, let me reiterate the Minnesota State Cattlemen's Association strongly supports protecting and enhancing our environment, however we believe this proposal will unnecessarily lay up land that is well suited to low impact agriculture activities such as managed grazing and forage production. USDA/FSA's projected socioeconomic impact of this proposal on rural communities appears to be founded on speculative - not yet quantifiable assumptions. For those reasons we request that the "No Action Alternative" be implemented.

It is our view that low impact pasture and forage utilization of environmentally sensitive agricultural lands can provide both positive long term environmental benefits and sustainable economic growth to rural Minnesota communities. We ask that USDA/FSA reshape this proposal to more fully embrace and support the concept that; "properly managed livestock on the land provide both environmental and economic benefits to rural Minnesota."

Thank you for considering our comments on this matter.

Sincerely Yours,

Chuck Feikema, President
Minnesota State Cattlemen's Association

Responses: The Agency believes adequate time was available for comment. The draft Programmatic Environmental Assessment was posted on the FSA website on February 24th, 2005 and notification was also provided locally of the availability of the document for review.

In considering the overall socio- economic impacts of this proposal the agency considered that the 120,000 acres which may be enrolled comprised less than 1% of the total tillable lands in the 3 targeted areas (see Figure 3-11). At this time none of the areas to be impacted currently are used for grazing purposes. It has been determined that only lands meeting the eligibility requirements for cropland will be allowed to be enrolled into this CREP. The inclusion of the marginal pasture that was proposed in the draft PEA has been eliminated from the final PEA and CREP agreement.

As part of the proposal, there are approximately 18,000 acres of highly erodible lands in the southeast area. These acres have the potential to utilize the managed haying and grazing practice provided the owner of the property desires to do so and it is part of the conservation plan. The other uses of the land as spelled out in the comment do contribute local and statewide value outside of what is considered to be typical agricultural uses. An article by Rachel Hillman Profit & Pleasure: The Impact of Tourism on Minnesota's Economy "Statewide, employment in the leisure and hospitality industry is expected to grow faster than employment in all industries combined." The economic impacts are also explained in the PEA in Section 4.4. We recognize that there is a shift from one income producing source to another. We also recognize that there are many other forces impacting land values and causing shifts from livestock production such as purchase of agricultural lands by hunters, developers, cash grain farmers etc. By limiting the areas to those most fragile, by requiring larger parcel offers to undergo a second level of review and by limiting enrollment to 25% of the eligible acres in a given county the Agency believes they have mitigated these concerns and have selected an alternative that provides for long term improvements to the human environment.

Additionally, by utilizing programs such as CREP and continuous CRP as part of Comprehensive Waste Management Plans for animal waste applications producers can receive an economic benefit for placing required buffers along wetlands, streams and ditches. For many this added benefit will help them remain economically viable while at the same time assisting them in realizing the environmental benefits that animal agriculture can provide to communities. Properly implemented and managed buffer practices as well as restoration of native cover crops on highly erodible crop land do have the ability to support the concept that "properly managed livestock on the land provide both environmental and economic benefits to rural Minnesota."

It should be noted that after this letter was received conversations between the Farm Service Agency and the Cattleman's Association indicate that they are no longer opposed the CREP as it is proposed.

Comment 3: Email received by Kathleen Schamel, FSA and forwarded to Jeff Johnson, FSA. This email was sent by Peg Schwendeman on 3-28-2005

Date: 03/28/2005 01:17 pm (Monday)
From: Peg <peg@s3com.net>
To: <kathleen_schamel@wdc.usda.gov>
Subject: CREP comments

Kathleen,
I am not sure where to comment, but I wanted to support Continuous Enrollment of Targeted Acreage for CREP in the Minnesota agreement.
I restored my nine acres of agricultural land to prairie last year though I was ineligible for the CREP program. Even so, I strongly support continued designation of eligible acreage because of the steady decline in habitat and species of all types of native plants, animals, birds, etc. Minnesota is facing rapidly increasing population and development pressure and needs help to preserve the upper Mississippi Flyway and Red River Valley Flyway environments.

Peg Schwendeman
5035 250th St
Hampton, MN 55031

Response: None needed as the comment is in support of the alternative.

Appendix F:

Closure letter from USFWS in accordance with Section 7 of the Endangered Species Act

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Twin Cities Field Office
4101 East 80th Street
Bloomington, Minnesota 55425-1665

APR - 4 2005

Mr. Jeff Johnson
Farm Service Agency
U.S. Department of Agriculture
Box 994
Willmar, MN 56201

Dear Mr. Johnson,

This is in response to your letter dated March 31, 2005 in which you request our concurrence that the Minnesota Conservation Reserve Enhancement Program (CREP II) may affect, but is not likely to adversely affect bald eagles (*Haliaeetus leucocephalus*), western prairie fringed orchid (*Platanthera praeclara*), and Topeka shiner (*Notropis topeka*). Bald eagles and western prairie fringed orchid are each listed as threatened under the Endangered Species Act of 1973, as amended; Topeka shiner is listed as endangered.

CREP II seeks to convert environmentally sensitive cropland in the three targeted watersheds in Minnesota to native vegetation to improve water quality and wildlife habitat, to reduce soil erosion and phosphorus and nitrogen loads, and to increase flood damage reduction and storage. Landowners, who voluntarily enter into a contractual agreement with the State of Minnesota (State) through ReInvest in Minnesota (RIM) and take environmentally sensitive land out of agricultural production, receive financial and cost-share incentives and technical assistance for planting specific types of native vegetation and trees near rivers, streams, wetlands and other bodies of water. A State contract or easement may not be entered into unless the landowner enrolls in a Federal CREP contract. Landowners may choose either space a permanent Minnesota RIM easement on certain targeted areas or a 30-year State RIM contract. Lands eligible for enrollment into the Minnesota CREP, must meet the following:

- located in one of three targeted watersheds (NW, SW, and SE – see *Draft Environmental Assessment for the Conservation Reserve Enhancement Program in Minnesota*) ;
- location and practice criteria; and
- cropped four of the last six years or be considered marginal pastureland that meets all of the following provisions: i) the conservation practice must be associated with scour erosion, ii) the land is located in the NW Minnesota CREP Area, iii) remnant native prairie areas will not be disturbed by the practice or implementation

Eligible practices under CREP II are:

- CP2 Establishment of Permanent Native Grasses
- CP3A Hardwood Tree Planting
  CP4D Permanent Wildlife Habitat
- CP12 Wildlife Food Plots
- CP15A Contour Grass Strips
- CP21 Filter Strips
- CP22 Riparian Buffer
- CP23 Wetland Restoration (100 Year Floodplain)
- CP23A Wetland Restoration, Non-Floodplain
- CP26 Sediment Control Structure (Proposed practice for NW CREP)
- CP29 Marginal Pastureland Wildlife Habitat Buffer (for those scour related under CP21 that do not meet the four of six year cropping history or physically capable of being cropped provisions)

Effects to Federally Endangered Species

CREP has significant potential to benefit wildlife conservation, in general, but may cause short-term effects to bald eagles, western prairie fringed orchid, and Topeka shiner.

Bald Eagles

The Minnesota CREP II program may affect bald eagles if any activities are carried out within one-half mile of bald eagle nests during the nesting season. Nesting bald eagles may be present in project areas in the SE and NW CREP II areas. The Farm Service Agency (FSA) or its Technical Service Provider (TSP) currently completes a site specific evaluation of all CREP proposals prior to approval. If FSA determines that any action may affect bald eagles, it must consult with the U.S. Fish and Wildlife Service (Service). To avoid adverse effects to bald eagles, FSA will not implement any action under the program that is located in an "avoid" cell in the matrix on page four of Minnesota Department of Natural Resources' Bald Eagle Environmental Review Fact Sheet (enclosed) unless it determines, in consultation with the Service, that such actions will not cause adverse effects to bald eagles. Any action that is located in a "restrict/minimize" cell would only be implemented if FSA ensured, in consultation with the Service, that the action was not likely to cause adverse effects to bald eagles. FSA will ensure that no action implemented under the CREP program will cause adverse effects to bald eagles. No bald eagle nests are likely to occur in the SW CREP area.

Western Prairie Fringed Orchid

Western prairie fringed orchid is sensitive to changes in hydrology where increases or decreases in water levels could both cause adverse effects. CP23 or CP23A actions have the potential to affect hydrology of areas outside of the immediate footprint of the project (i.e. upstream or downstream of the wetland restoration projects). Western prairie fringed orchid does not occur on lands eligible for CREP (i.e. cropland), but if the species occurs on lands that will be affected by changes in hydrology caused by CP23 or CP23A actions that take place on nearby sites, it

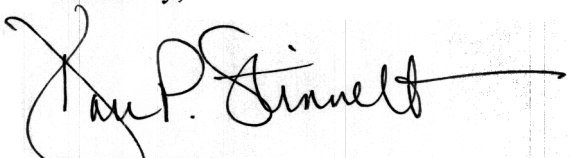
could be affected by those actions. To avoid adverse effects resulting from any CP23 or CP23A CREP project, the FSA or its designated TSP will, for each CP23 or CP23A action, determine whether this species may be present in areas affected by the resulting hydrological changes. The FSA will coordinate with the Service to make this determination. FSA will not implement any CP23 or CP23A action that would cause adverse effects to western prairie fringed orchid.

Topeka Shiner

CP23 or CP23A actions have the potential to affect hydrology of stream or off-channel habitats inhabited by Topeka shiner and could temporarily increase sedimentation. To avoid any adverse effects to Topeka shiner, FSA will evaluate any CP23 or CP23A action proposed in the Big Sioux or Rock River watersheds in the SW CREP area to determine whether they could have hydrological or sediment-related effects on stream or off-channel habitats that Topeka shiners may inhabit. If FSA determines that such effects may occur, as a short- or long-term result of any CP23 or CP23A actions in these watersheds, it will ensure, in consultation with the Service, that any effects are not likely to be adverse to Topeka shiners.

This concludes consultation on the Conservation Reserve Enhancement Program in Minnesota at the programmatic level. As described in the preceding paragraphs, FSA may consult with the Service on individual projects proposed for implementation under this program. For further discussion regarding this consultation, please contact Mr. Phil Delphey at (612)725-3548 ext. 206.

Sincerely,



Dan P. Stinnett
Field Supervisor

Enclosure

CC: Sheldon Myerchin, FWS, Waite Park, MN

Environmental Review Fact Sheet Series

Endangered, Threatened, and Special Concern Species of Minnesota

Bald Eagle

Haliaeetus leucocephalus)

Minnesota Status:	Special Concern	State rank[1]:	S3
Federal Status:	Threatened	Global Rank[1]	G4

HABITAT

During the breeding season, the Bald Eagle typically inhabits forests near lakes and rivers where large trees are available for nesting. The nest trees are usually within 1 mile of water, and are often closer. In northern Minnesota, red or white pines in the supercanopy (taller than the surrounding forest) are often selected as nest trees, whereas in the central and southern part of the state, eagles choose large hardwoods such as aspen or cottonwood. In winter, Bald Eagles can be found in upland areas where game or carrion is available. However, it is most common for them to congregate along major rivers where open water remains (such as near dams or power plants), as these areas provide opportunities for obtaining their major food items, fish and waterfowl.

LIFE HISTORY

For the purpose of assessing the impacts of human activity on Bald Eagles, the nesting period can be broken into four segments, as detailed in the following table. The "wintering" season for Bald Eagles varies by latitude, but can generally be considered to be October 15th through March 15th (a period which includes spring and fall migration).

Nesting Period Segment	Dates for	
	Northern Minnesota*	**Southern Minnesota***
Critical - Eagles are involved with courtship, egg-laying, and incubation.	March 15th - May 15th	Feb. 10th - May 1st
Moderately critical - Eagles are becoming physiologically conditioned for breeding (February/March), or newly hatched chicks require frequent brooding and feeding (May/June).	Feb. 15th - March 15th *and* May 15th - June 15th	Jan. 10th - Feb. 10th *and* May 1st - June 1st
Less critical - Eagle chicks are one month old to 1 week post-fledging.	June 15th - Aug. 15th	June 1st - July 31st
Non-critical - Most eagles are not regularly present at the nest site.	Aug. 15th - Feb. 15th	July 31st - Jan. 10th

*The state is arbitrarily divided into north and south by State Highway 210.

IMPACTS / THREATS / CAUSES OF DECLINE

- habitat loss
- human disturbance
- farm runoff and industrial pollution
- leg-hold traps
- management activities such as timber harvest and burning
- power lines and transmission structures (collisions, electrocutions)
- roads and bridges (vehicle collisions)
- lead poisoning (e.g. by lead shot ingested by eagles during feeding)
- shooting (in violation of state and federal law)
- contaminants and poisons (particularly organochlorine, organophosphorus, mercury and other heavy metals)

PROTECTION

Bald Eagles are protected under the Migratory Bird Treaty Act, and under the Bald and Golden Eagle Protection Act of 1940 and the Endangered Species Act of 1973, as amended, which prohibit the possession or taking of Bald Eagles, or their nests, eggs, or young. "Taking" is defined by the Endangered Species Act as to harass (i.e., create the likelihood of injury), harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Prohibited activities include, for example, cutting down nest trees (at any time of the year), and intense human activity that is demonstrated to have caused adult eagles to abandon eggs or young in the nest. Possession permits may be issued by the U.S. Fish & Wildlife Service for Indian religious purposes, or for scientific or exhibition purposes of public museums, public scientific societies, or public zoological parks.

In addition, the National and Minnesota Environmental Protection Acts prevent certain actions which would cause significant adverse impacts to the environment (including destruction of habitat for listed species) if there is a reasonable alternative to the proposed action.

If you are uncertain whether a proposed action may take Bald Eagles or their nests, or if you for any reason cannot follow the recommendations below, contact USFWS Ecological Services at (612) 725 3548.

RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS

These recommendations will be useful in avoiding or minimizing effects that may be caused by federal or non-federal actions, but ***all federal actions that may affect bald eagles must also complete consultation with U.S. Fish and Wildlife Service*** *under section 7 of the Endangered Species Act. A federal action is any action that a federal agency funds, authorizes, or carries out. Contact the U.S. Fish and Wildlife Service at (612) 725-3548 for further information regarding section 7 consultation.*

WINTERING AREAS[2]

Bald Eagle wintering area habitat contains three main components: foraging (feeding) areas, daytime perching areas, and night roosts. Within these areas, eagles need to be protected from human disturbance, physical alterations of their habitat, environmental contaminants, and loss of food resources.

Foraging and Daytime Perching Areas: In Minnesota, winter foraging areas where Bald Eagles congregate are located primarily along major rivers. Daytime perches tend to be near these foraging areas. While eagles are present, buffer zones (areas within which there is no human activity) of at least 1/4 mile (400m) should be maintained around foraging areas where possible. Where this is impractical, human use should be avoided between sunrise and 10am, when Bald Eagle feeding activity is greatest. Buffer zones around daytime perches should be 1/8 to 1/4 mile (250m-400m). At foraging areas along rivers, trees within 100 ft. of the shore seem to be preferred as perches. Therefore, no trees greater than 12 in. diameter should be removed within 100 ft. (33m) of river banks or other foraging areas. Activities which have the potential to kill trees (such as livestock grazing and dumping of dredge spoil) should be avoided within foraging and perching areas. New road and bridge construction should be at least ½ mile from major foraging areas.

Night Roosts: Bald Eagles are more sensitive to disturbance at night roosts than at foraging and daytime perching areas. No logging, development, or road building should occur at any time in critical roosts. Critical roosts are defined as those used more than 14 nights per season by eagles from local breeding territories *or* more than 14 nights per season by more than 15 eagles *or* roosts which have been documented as active for 5 years or longer. A buffer zone of at least 1/4 mile (400m) should be maintained around night roosts, within which both low and high impact activities, including recreation, are restricted while the roost is in use. New road or bridge construction should be at least 1/5 mile from critical roosts.

NESTING AREAS

Studies show that Bald Eagles are vulnerable to human intrusion. The vulnerability varies with the type of disturbance and the particular eagle, as some individuals have become accustomed to human activity near their nests. However, because some eagles are easily disturbed, human contact with Bald Eagles should be avoided whenever possible, particularly during the critical segment of the nesting period. The following table, adapted from the Minnesota Department of Natural Resources (DNR) Management Guidelines for Bald Eagle Breeding Areas, and the Northern States Bald Eagle Recovery Plan, summarizes recommendations for protecting individual occupied and active nest sites.

If a nest is not occupied during the year in which the activity will occur, the recommendations for the Non-critical Nesting Period Segment may be used year-round. If a nest is abandoned (unused for more than 5 years and not being maintained by eagles), activities are only restricted within the Primary Zone. Whether a nest is occupied, unoccupied, or abandoned must be determined in consultation with a DNR

Nongame Specialist (see contact numbers below the table) and the U.S. Fish and Wildlife Service (612-725-3548). Because eagles often rebuild nests that have been blown out of trees, in this situation activities are restricted within the Primary Zone for 3 years after the event. If the nest is not rebuilt, zone restrictions are removed.

Activity	Nesting Period Segment			
	Critical	Moderately	Less Critical	Non-critical
Primary Zone: (within 330 feet of the nest)				
Landscape Alteration[a]	avoid	avoid	avoid	avoid[b]
Construction (structures, trails, etc.)[c]	avoid	avoid	avoid	avoid[b]
Burning[d]	avoid	avoid	avoid	restrict/minimize[b]
Minor Forest Maintenance[e]	avoid	avoid	avoid	restrict/minimize[b]
Motorized Access	avoid[f]	avoid[f]	restrict/minimize[b]	restrict/minimize[b]
Human Entry	avoid[f]	avoid[f]	restrict/minimize[b]	restrict/minimize[b]
Low Flying Aircraft	avoid	avoid	no restrictions	no restrictions
Secondary Zone: (330 to 660 feet from the nest)				
Landscape Alteration[a]	avoid	avoid	avoid	restrict/minimize[b]
Construction (structures, trails, etc.)	avoid	avoid	restrict/minimize[b]	restrict/minimize[b]
Burning[d]	avoid	avoid	avoid	restrict/minimize[b]
Minor Forest Maintenance	avoid	avoid	no restrictions[f]	no restrictions[g]
Motorized Access	avoid[f]	restrict/minimize[b]	restrict/minimize[b]	no restrictions[g]
Human Entry	avoid[f]	restrict/minimize[b]	restrict/minimize[b]	no restrictions
Low Flying Aircraft	avoid	restrict/minimize[b]	no restrictions	no restrictions
Tertiary Zone: (660 feet to 1/4 mile from the nest - May extend up to ½ mile from the nest, if topography or vegetation permit a direct line of sight to the disturbance area.)				
Landscape Alteration[a]	avoid	avoid	avoid	no restrictions[g]
Burning[d]	avoid	avoid	avoid	restrict/minimize[b]
Other Activities (as listed above)	avoid[f]	no restrictions[g]	no restrictions[g]	no restrictions[g]

[a] Landscape alteration includes activities such as clear cutting or land clearing, which result in significant changes in the landscape.

[b] Restrictions should be decided on a case by case basis, based on type, extent, and duration of proposed activity, and sensitivity of individual eagle pairs. For assistance, contact your nearest DNR Nongame Specialist: Bemidji (218-755-2976); Grand Rapids (218-327-4267); Brainerd (218-828-2228); New Ulm (507-359-6033); Rochester (507-280-5070); St. Paul (651-297-2277).

[c] For construction involving land clearing, see also recommendations for the "Landscape Alteration" activity.

[d] *If burning can not be done within the non-critical nesting period segment, please contact your nearest DNR Nongame Specialist* (see contact numbers above).

[e] Such as thinning of tree stands, pruning, and other like maintenance.

[f] Some eagles have become habituated to human activity and can be tolerant of these activities, particularly if they were occurring regularly at the time the eagles began nesting. In these cases, complete avoidance of the activity may not be necessary. If you believe this is the case in your particular situation, contact your nearest Nongame Specialist (see contact numbers above).

[g] However, the habitat should not be altered in ways that would make it unsuitable for future nesting.

REFERENCES

[1]Association for Biodiversity Information. "Heritage Status: Global, National, and Subnational Conservation Status Ranks." NatureServe. Version 1.3 (9 April 2001). http://www.natureserve.org/ranking.htm (15 April 2001).

Coffin, B., and L. Pfannmuller. 1988. Minnesota's Endangered Flora and Fauna. University of Minnesota Press, Minneapolis, 473 pp.

Grier, J. W., J. B. Elder, F. J. Gramlich, N. F. Green, J. V. Kussman, J. E. Mathisen, and J. P. Mattsson 1983. Northern States Bald Eagle Recovery Plan. U. S. Fish and Wildlife Service. 76 pages +appendices.

[2]Martell, M. 1992. Bald Eagle Winter Management Guidelines. Unpublished brochure, The Raptor Center, University of Minnesota, St. Paul, unpaged. August.

Compiled by the Minnesota Department of Natural Resources Natural Heritage and Nongame Research Program, March, 2003. Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-296-7863

Appendix G:

Final version of the CREP Agreement

AGREEMENT

BETWEEN

THE U.S. DEPARTMENT OF AGRICULTURE,
THE COMMODITY CREDIT CORPORATION,

AND

THE STATE OF MINNESOTA

I. INTRODUCTION

This Agreement is entered into by the U.S. Department of Agriculture (USDA), the Commodity Credit Corporation (CCC), and the State of Minnesota (the State), in order to implement a Conservation Reserve Enhancement Program (CREP) in three designated areas of the State. This Agreement is undertaken to address specific state environmental objectives and to protect environmentally sensitive land. The program established by this Agreement is Minnesota's second CREP (CREP II) and does not alter or impact Minnesota's first CREP in any way.

II. PURPOSE AND GOALS

The purpose and primary goal of this Agreement is to allow enrollments in CREP II up to 120,000 acres, where deemed desirable by USDA, CCC, and the State of Minnesota, of certain environmentally sensitive acreage in these three project watershed areas:

- The Red River Watershed in Northwestern Minnesota
- The Lower Mississippi Watershed in Southeastern Minnesota
- The Missouri/Des Moines River Watersheds in Southwestern Minnesota

Program goals are to be accomplished through a voluntary, incentive-based program whereby the benefits of CCC's Conservation Reserve Program (CRP) are, for certain practices, extended by a state conservation easement issued through Minnesota's Reinvest In Minnesota (RIM) Easement Program in all, or a portion, of 47 counties. Refer to Exhibit A for a map of the areas and counties to be included in this project.

Under CREP II, the parties seek to enroll eligible environmentally sensitive cropland and establish native vegetation and wetland restoration practices to help achieve the general natural resources goals:

- Water quality improvement
- Soil erosion reduction
- Flood damage reduction
- Increased flood water storage
- Enhancement of fish and wildlife habitat.

Establishment of certain CRP practices in native vegetation will greatly reduce runoff of sediments, nutrients, pesticides, and pathogens from agricultural sources. Restoring native vegetation will also increase natural diversity and the population of many species, primarily grassland birds. CREP II will also increase the water storage capacity of the applicable watersheds through wetland restoration measures, and decrease fragmentation of riparian corridors, grasslands, and forestlands.

Specific goals of CREP II, when enrollment targets are reached, include:

(1) Enhancement of surface water quality in the three project watershed areas from 2005 levels by reducing sediment loading by 420,000 tons per year, reducing phosphorus loading by 530,000 pounds per year, and reducing nitrogen levels by 3,000,000 pounds per year.

(2) Protection of the drinking water supplies of 250,000 people by enrolling up to 8,195 acres of land in sensitive groundwater areas.

(3) Enhancement of long-term fish and wildlife habitat in the targeted watersheds for the preservation of natural diversity of Minnesota's biological resources, including threatened and endangered species.

(4) Protection of 2,500 linear miles of streams, rivers and ditches by enrolling up to 61,897 acres of riparian buffers.

(5) Enrollment and restoration of up to 24,000 acres of wetlands and adjacent upland acres. These wetland restoration measures will also help reduce future flood damage by increasing water storage capacity by up to 10,000 to 20,000 acre feet per year.

(6) Enrollment and restoration of up to 5,000 acres of flood-damaged land.

(7) Enrollment of up to 18,058 acres of excessively erodible cropland with an Erodibility Index (EI) of 15 or greater to reduce soil erosion and achieve related high-priority natural resource benefits.

(8) Enrollment of up to 2,850 acres of highly erodible cropland with an EI of 8 or greater to help reduce soil erosion through the use of contour buffer strips.

Note: Erodibility Index (EI) will be determined based on the weighted average of the three most predominant soils for the area of enrollment, using Farm Service Agency (FSA) software in the same manner as for other CRP enrollments.

Re-allocations of acres between these project areas within the overall program limit of 120,000 acres may be made after program startup as agreed to in writing by CCC and the State of Minnesota.

III. AUTHORITY

A. Federal

The CCC has the authority under the provisions of the Food Security Act of 1985, as amended (1985 Act) (16 U.S.C. § 3830 et seq.), to perform all activities contemplated by this Agreement. Pursuant to the 1985 Act, CCC is authorized to enroll land in the CRP through December 31, 2007. Sections 1230, 1234, and 1242 of the 1985 Act and the regulations at 7 C.F.R. § 1410.50 authorize CCC to enter into Agreements with States to use the CRP in a cost-effective manner to further specific conservation and environmental objectives of a State and the Nation.

B. State

Minnesota has the authority to perform the activities contemplated by this Agreement pursuant to Minnesota Statutes Sections 103F.505 to 103F.531, Chapter 84C, and Minnesota Rules 8400.3000 to 8400.3930.

IV. GENERAL PROVISIONS

USDA, CCC, and the State of Minnesota agree that:

A. The CREP II will consist of a continuous sign-up CRP component and a state conservation easement program. This Agreement contemplates the enrollment of up to 120,000 acres of environmentally sensitive cropland located in one of the three approved watershed project areas.

B. Up to 120,000 new acres of environmentally sensitive land within the three designated areas will be targeted with the following enrollment goals. The enrollment goals for the three watershed projects are:

- 51,000 acres in the Red River Watershed in Northwestern Minnesota
- 51,000 acres in the Lower Mississippi Watershed in Southeastern Minnesota
- 18,000 acres in the Missouri and Des Moines River Watersheds in Southwestern Minnesota

Note: Specific acreage targets within each of the three CREP II areas will be published in a detailed State Supplement to FSA's National CRP Directives.

C. FSA has identified certain approved conservation practices (CP) by a numbers system set forth in FSA directives. The eligible CRP practices for each of the three watershed project areas are those practices identified as follows:

(1) Red River Watershed in Northwestern Minnesota:

- CP2 Establishment of Permanent Native Grasses 1/
- CP12 Wildlife Food Plot 6/
- CP21 Filter Strips 2/
- CP22 Riparian Buffer 3/ (Cropland only)
- CP23 Wetland Restoration, 100-Yr Flood Plain 4/
- CP23A Wetland Restoration, Non-Floodplain 4/
- CP34 Flood Control System 5/

1/ CP2 will be eligible in those areas within existing CRP Conservation Priority Areas for only scour related eligible cropland damaged by a catastrophic runoff event.

Note: Both the scour and the buffer area must meet the eligible CRP cropland provisions.

2/ For CP21, after the initial 120 feet of enrollment from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined in accordance with the Natural Resources Conservation Service (NRCS) county soil survey. "Infeasible to farm" criteria apply as provided in FSA's National CRP Directives.

3/ CP22 will be applied on cropland only. After the initial 180 feet of width from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined by the NRCS county soil survey. "Infeasible to farm" criteria apply as provided in FSA's National CRP Directives.

4/ CP23 & CP23A eligible sites are limited to only those wetlands that have had the wetland hydrology component removed through alteration by drainage or manipulation and where it is practical and feasible to restore the wetland. Cropping cessation in itself is not considered an eligible restoration option.

5/ CP34 will be eligible in those areas within existing CRP – Conservation Priority Areas where there is a need to temporarily impound or manage run-off water to reduce downstream flood damage and improve water quality.

6/ CP12 may be used in conjunction with all practices above. CP12 must meet NRCS Field Office Technical Guide Standards and must maximize environmental benefits.

(2) Lower Mississippi Watershed in Southeastern Minnesota:

- CP2 Establishment of Permanent Native Grasses 1/ 2/ 3/ 4/
- CP3A Hardwood Tree Planting 1/ 2/ 3/ 4/
- CP4D Permanent Wildlife Habitat 1/ 2/ 3/ 4/
- CP12 Wildlife Food Plot 9/
- CP15A Establishment of Permanent Vegetative Cover (Contour Grass Strips) 5/
- CP21 Filter Strips 3/ 6/
- CP22 Riparian Buffer (Cropland only) 3/ 7/
- CP23 Wetland Restoration 100-Yr Flood Plain 8/
- CP23A Wetland Restoration Non-Flood Plain 8/

1/ Eligible wellhead protection areas for CP2, CP3A, and CP4D will be defined as the 10 – year wellhead protection area as approved and defined by the Minnesota Department of Health.

2/ CP2, CP3A, and CP4D will be used for soils with an EI of 15 or greater.

3/ CP2, CP3A, CP4D, CP21 and CP22, will be used as vegetative buffers for sinkholes and karst areas up to a maximum average width of 200 feet.

4/ CP2, CP3A and CP4D will be eligible in those areas within existing CRP – Conservation Priority Areas to establish vegetative cover at the focused groundwater recharge areas where the Decorah Shale is the uppermost bedrock intercept. Adjacent acres 50 feet immediately upslope and down slope are also eligible. In addition, the buffer can extend to the end of the field. Whole fields can be enrolled when greater than 75 percent of the field is eligible, or when less than an acre remains.

5/ CP15A will be used for soils with an EI of 8 or greater. Newly established contour buffers will be from 15 to 60 feet wide and newly established field borders up to 60 feet in width will be allowed for soil erosion and access for maintenance.

6/ For CP21, after the initial 120 feet of enrollment from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined by the NRCS county soil survey. "Infeasible to farm" criteria apply according to FSA's National CRP Directives.

7/ CP22 will be applied on cropland only. After the initial 180 feet of width from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined by the NRCS county soil survey. "Infeasible to farm" criteria apply as provided in FSA's National CRP Directives.

8/ CP23 and CP23A eligible sites are limited to only those wetlands that have had the wetland hydrology component removed through alteration by drainage or manipulation and where it is practical and feasible to restore the wetland. Cropping cessation in itself is not considered an eligible restoration option.

9/ CP12 may be used in conjunction with all practices above, except for CP15A. CP12 must meet NRCS Field Office Technical Guide Standards and must maximize environmental benefits.

(3) Missouri and Des Moines River Watersheds in Southwestern Minnesota:

- CP2 Establishment of Permanent Native Grasses 1/
- CP4D Permanent Wildlife Habitat 1/
- CP12 Wildlife Food Plot 5/
- CP21 Filter Strips 2/
- CP22 Riparian Buffer (Cropland only) 3/
- CP23 Wetland Restoration 100-Yr Flood Plain 4/
- CP23A Wetland Restoration Non-Flood Plain 4/

1/ Eligible wellhead protection areas for CP2 and CP4D will be defined as the 10 – year wellhead protection area as approved and defined by the Minnesota Department of Health.

2/ For CP21, after the initial 120 feet of enrollment from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil

types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined by the NRCS county soil survey. "Infeasible to farm" criteria apply as provided in FSA's National CRP Directives.

3/ CP22 will be applied on cropland only. After the initial 180 feet of width from the water source, up to 350 feet in total width may be allowed for water quality improvement, wildlife habitat, or flooding. After 350 feet, an extension up to 600 feet in total width may be allowed if the soil types on at least 51 percent of the land within the extension areas are mapped as "occasionally" or "frequently" flooded, as determined by the NRCS county soil survey. "Infeasible to farm" criteria apply as provided in FSA's National CRP Directives.

4/ CP23 and CP23A eligible sites are limited to only those wetlands that have had the wetland hydrology component removed through alteration by drainage or manipulation and where it is practical and feasible to restore the wetland. Cropping cessation in itself is not considered an eligible restoration option.

5/ CP12 may be used in conjunction with all practices above. CP12 must meet NRCS Field Office Technical Guide Standards and must maximize environmental benefits.

D. In determining conservation practice requirements and reimbursable costs to be made by CCC, the FSA shall use the FSA State CRP cost-share rates established in the FSA's National CRP Directives, except as otherwise provided in this Agreement.

E. All CRP contracts for land enrolled in CREP II will be not less than 14 years or more than 15 years and will be subject to normal CRP provisions as provided for in the CRP regulations at 7 C.F.R. Part 1410.

F. Applicable program participants who participate in CREP II will also be required to enter into the Minnesota RIM Program and grant an easement on the enrolled acreage, which shall be recorded as soon as practicable after the CRP contract is approved and shall run concurrently with the CRP contract as follows:

1. 45-Year Duration RIM Easements up to 91,000 acres shall be required for all CREP II participants except for those subject to F.2. or F.3. below.

   Note: CP21 Filter Strips and CP22 Riparian Buffers are also eligible under the 45-Year Duration Rim Easements, when those enrollments are for non-flood damage reduction sites.

2. Under Minnesota law, easements for wetland restoration must be perpetual in duration. Permanent Duration (Perpetual) RIM Easements up to 29,000 acres shall be required for all acreage enrolled under practices:

   a. CP21 Filter Strips for flood damage reduction sites for all three project areas

   b. CP22 Riparian Buffers for flood damage reduction sites for all three project areas

   c. CP23 Wetland Restoration for all three project areas

   d. CP23A Wetland Restoration Non-Flood Plain for all three project areas

   e. CP34 Flood Control System for flood damage reduction sites only in the Red River Project.

3. RIM Easements are NOT required for acreage enrolled under practice CP15A Establishment of Permanent Vegetative Cover (Contour Grass Strips) offered under the Lower Mississippi Project.

G. The easement maximums set out in "F," shall likewise be CRP enrollment maximums under this CREP. For example: Maximum enrollment in the CRP under CREP II shall not exceed 91,000 acres for those practices to which F.1. applies.

H. CCC shall be solely responsible for enforcement of the CRP contract under this Agreement. During the CRP contract period the CRP regulations will apply and any State easement provisions shall be subordinate to the CRP regulations. State RIM easement provisions pertaining to conservation cover establishment, maintenance, management, commercial use, and related land uses, which conflict with CRP regulations shall not be enforced during the CRP contract period, and shall only become effective after the CRP contract ends.

I. If the State fails to secure a RIM easement within a reasonable length of time after the State MN RIM CREP II Agreement is signed and the CRP contract is approved, the CRP contract shall be allowed to continue at CCC's discretion if the failure to obtain an easement is due to circumstances beyond the participant's control, and which the CRP participant cannot remedy, as determined by CCC.

J. Eligible producers in the CREP II project areas may continue to offer eligible acreage for enrollment in CRP or any other conservation or easement program.

K. The State and the CCC will in good faith consult with each other and the program stakeholders on issues arising out of the implementation of the CREP on matters essential to the program's purpose. State surveys of CREP II participants may be conducted as part of the consultation process.

L. Before CCC approves any CRP offers for CREP II project totaling 80 acres or more, the offer must first be reviewed in consultation with the State FSA Office, State NRCS Office and the Minnesota Board of Water and Soil Resources (BWSR) to ensure the conservation practices applied for are technically needed and feasible to address the resource concern, and the offer meets all program and practice eligibility criteria.

M. It is the intent of Minnesota to maintain the integrity, duration, and conformity of the easements according to the conditions in this Agreement. All easements are subject to modification and termination in accordance with Minnesota Rule 8400.3610 and Minnesota Statute Section 84C.03. Pursuant to Minnesota Rule, each easement modification or termination are subject to compensation by the landowner to the State for all damages and loss of benefits related to the conservation easement, which will include all payments made by the State and CCC for the establishment of the conservation easement, and administrative expenses and costs incurred. To the extent practicable, allowable compensation will be sought upon such modification and termination and recovered compensation will be used by the State to the extent authorized by law for other qualified lands under the State's RIM program consistent with the goals of this Agreement.

V. FEDERAL COMMITMENTS

CCC will:

A. Determine applicant, practice, and land eligibility for participation in the CRP portion of this Agreement consistent with the regulations at 7 CFR Part 1410, FSA's National CRP Directives, and NRCS Field Office Technical Guide, and will administer those CRP contracts that are executed.

B. Make payments to participants for:

- 50 percent of the eligible reimbursable costs (cost-share) to establish the CRP conservation practices. Cost-share reimbursement to CREP II participants from all sources may not exceed 100 percent of the cost to install CRP conservation practices.

- A one-time Practice Incentive Payment (PIP) for all CRP practices currently eligible to receive a PIP payment according to FSA's National CRP Directives. This payment will be treated as a rental payment for payment limitation purposes.

- A one-time Signing Incentive Payment (SIP) for all CRP practices currently eligible to receive a PIP payment according to FSA's National CRP Directives. This payment will be treated as a rental payment for payment limitation purposes.

- A one-time incentive payment to restore wetland hydrology for practices CP23 and CP23A as provided in FSA's National CRP Directives. This payment will be treated as a rental payment for payment limitation purposes.

C. Calculate Maximum Payment Rates per acre for annual rental payments under CRP agreements under this CREP. The rate shall be the sum of:

(1) The otherwise applicable CRP soil rental rates for cropland multiplied by an incentive rate of 1.3 (to include an added 30 percent incentive, except for any acreage enrolled under "infeasible to farm" provisions which shall be multiplied by 1.0 instead of 1.3 so as not to provide the 30 percent incentive) and

(2) The otherwise maximum allowable per acre practice maintenance rate according to FSA's National CRP Directives for the acreage contracted by CCC.
Example: $100 weighted Soil Rental Rate x 1.3 incentive + $5.00 maintenance = $135 (maximum payment rate) (or $105 for acreage under the "infeasible to farm" provisions which would not receive the 30 percent incentive).

Note: The parties note that the "infeasible to farm" provisions involve adding cropland which otherwise would not be feasible to farm once its companion enrolled cropland is taken out of production.

D. Provide information to landowners and operators concerning this Agreement.

E. Permit successors-in-interest to contracts enrolled under this Agreement to continue enrollment in the same manner as allowed generally for other CRP contracts.

F. Conduct annual compliance reviews as provided in FSA's National CRP Directives to ensure CRP compliance with CRP contract provisions.

G. Approve CRP offers for this Agreement if all eligibility requirements are met. As part of the approval process, ensure that the conservation plan developed for CREP offers meets the objectives and goals of this Agreement by addressing the identified natural resource concern.

H. Permit, when and where determined appropriate by CCC, temporary storage of water on CRP for flood control and prevention purposes. Any conservation covers damaged due to water storage under these provisions must be reestablished by the participant as soon as practicable according to CRP conservation plan requirements.

I. Share appropriate data, in accordance with procedures and restrictions and exemptions established under the Federal Freedom of Information Act, Federal privacy laws, and other applicable laws, with Minnesota to facilitate State monitoring efforts and State cost-share and State easement payment processing.

J. CCC will not share information except as provided by law.

VI. STATE COMMITMENTS

The State of Minnesota agrees to:

A Develop and implement a monitoring program that will record:

- Enrollment numbers;
- Conservation practices installed;
- Estimates of the reduction of soil erosion, sedimentation and phosphorus loading; and
- Increases in water storage capacity.

B. Prepare an annual report for USDA which summarizes, but is not limited to:

- Levels of program participation;
- Results of the annual monitoring program;
- Non-federal CREP II expenditures; and
- Recommendations for program improvements.

C. Contribute, to the extent permitted by Minnesota law, not less than 20 percent of the overall in-kind and direct program costs of CREP II. To determine the overall costs, the following costs will be considered:

- The total land retirement costs, including the CRP payments made by CCC and the easement payments made by the State;
- The total reimbursement for conservation practices paid by CCC and the State; and
- The aggregate costs of technical assistance, including those expenses incurred by the State, Soil and Water Conservation Districts, and Watershed Districts for implementing conservation plans and easements.

The State's total costs will be compared to the value of all one-time payments and the stream of federal annual rental payments discounted to a present value using the required discount rate currently published by OMB in OMB Circular No. A-94 at: http://www.whitehouse.gov/omb/circulars/a094/a94_appx-c.html

D. Enroll applicable producers who participate in CREP II in either a 45-year or permanent easement with the State of Minnesota under the RIM Program as provided in this Agreement. The intent of the State in this Agreement is to keep this land in private ownership.

E. For applicable participants, to the extent permitted by Minnesota law, provide state RIM payments for the conservation easements. The amount of payment shall be based on a percentage of the county assessor's estimated township market value for tillable farmland in the township of enrollment and easement length, which are either 45-year or perpetual in duration.

F. For applicable participants, enforce and administer the easement provisions. When CRP contracts which have concurrent easements end, the State's responsibilities for land use and conservation practice requirements shall be administered as provided in Section IV(G). The State and its designees will be solely responsible for enforcement of the State's conservation easements under this Agreement. USDA, CCC, and FSA shall have no responsibilities with respect to any aspect of the easement.

G. Pay, to the extent permitted by Minnesota law, a one-time payment of up to 50 percent of the cost to install conservation practices. Cost-share from all payments as defined above shall not exceed 100 percent of the practice costs, less CRP cost share payments, Practice Incentive Payments (CP 15A, CP21, CP22, and CP34) and incentive payments to restore wetland hydrology (CP23 and CP23A).

H. Provide assistance to producers through Soil and Water Conservation Districts, Watershed Districts, and other local units of government in the enrollment process and development of conservation plans and implementation and management of conservation practices, including reassessing the effectiveness of conservation practices and whether the public interest and general welfare are best served.

I. Provide staffing support for a full-time CREP II Administrative Coordinator to facilitate and oversee program implementation, coordination, promotional, activities, technical assistance, and monitoring and evaluation activities.

J. Allow CCC, in response to national emergencies, to cancel and/or temporarily release the participant from any contractual easement restrictions on crop production during the CRP contract period if such release is determined necessary by CCC in order to address a national emergency.

VII. MISCELLANEOUS PROVISIONS

A. CRP contracts executed under CREP II will be administered in accordance with the CRP regulations at 7 C.F.R. Part 1410 and other program authorities.

B. The intended outcome is to allow, where deemed desirable by USDA, CCC, and the State, certain acreage to be enrolled under CREP II. This Agreement is not intended to supersede any rules or regulations, which have been, or may be, promulgated by either USDA or CCC.

C. Subject to change by the U.S. Secretary of Agriculture, the Deputy Administrator for Farm Programs, USDA FSA, is delegated authority to carry out this Agreement for the USDA and CCC. Subject to change by the Governor, the Chair of BWSR, or the Chair's designee, is delegated authority to carry out this Agreement.

D. This Agreement or any portion thereof, may only be modified by written Agreement between the parties and must be executed by the same parties who executed the original Agreement, their successors in office, or their delegatees.

E. Funding commitments by USDA, CCC and the State are subject to the availability of funds. In the event either party is subject to funding limitations, that party will notify the other party expeditiously and enrollment goals may be adjusted as agreed to by CCC and the State to reflect the funds available. If either party cannot fulfill its financial obligations under this Agreement, the other party may immediately cease accepting new contracts or easements and immediately notify the public of an end to the program as applicable.

F. CRP contracts entered into under this Agreement may not be assigned or transferred without approval of the landowners and producers, except to the extent allowed by CCC pursuant to regulations applicable to CRP.

G. The State, CCC and USDA agree that each party will be responsible for its own acts and omissions and results thereof to the extent authorized by law and shall not be responsible for the acts and omissions of any other and the results thereof.

H. The books, records, documents, and accounting procedures and practices of the CCC, USDA and the State relevant to this Agreement shall be subject to examination for audit by Federal and State authorities.

I. Enrollment will be accepted until December 31, 2007, or until CCC enrollment goals are reached, whichever comes first, unless this Agreement is terminated by USDA and CCC, or the State. Either USDA and CCC or the State by written notice may terminate this Agreement unilaterally. Such termination will not alter responsibilities regarding existing contractual obligations under this Agreement between CCC, USDA and the participants, or between participants and the State.

J. CCC and the State will make available information about CREP II to help the public understand the program and the rights and obligations of participants under state and federal law.

K. CREP II will be a community-based results-oriented conservation effort and will be a partnership between producers, governmental entities, and non-governmental organizations in addressing the environmental and conservation goals for each of the three CREP II areas. In doing so, the local efforts will include developing and maintaining public involvement through the establishment of interested stakeholder teams.

L. Contracts under this Agreement cannot be approved until a detailed State Supplement to the National FSA Handbook 2-CRP is approved by the National FSA CREP Program Manager.

IT IS SO AGREED:

FOR THE UNITED STATES DEPARTMENT OF AGRICULTURE AND THE COMMODITY CREDIT CORPORATION

Michael Johanns
Secretary
United States Department of Agriculture and
Chairman of the Board
Commodity Credit Corporation

Date: 4/22/05

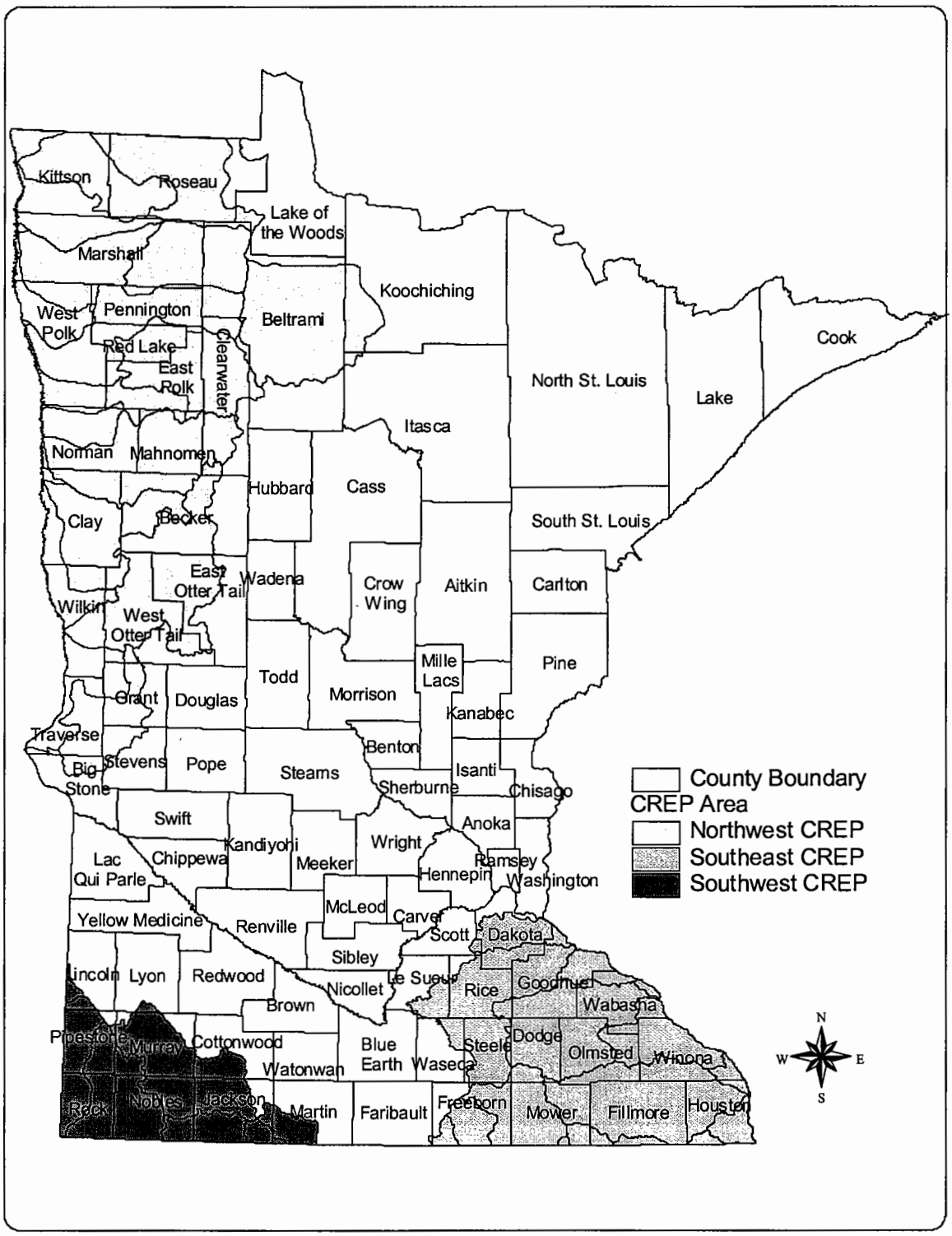
FOR THE STATE OF MINNESOTA

Tim Pawlenty
Governor
State of Minnesota

Date: 4/22/05

Exhibit A

MINNESOTA CREP II



At the Allen and Donna Grosland Farm, Ellendale, Minnesota, the undersigned witnessed on April 22, 2005, the signing of this Agreement between the State of Minnesota and the U.S. Department of Agriculture.

Pheasants Forever

Bill Hunt NRCS-USDA

Bill Wilson Pres NWACD

Jerome Deal BWSR

Dennis Frederickson State Senator

Margaret Johnson FSA

Al Christopherson Farm Bureau

Ben Nordby Mower SWCD
SE CREP Contact

Michael Yost FSA

Marquette Anderson

At the Allen and Donna Grosland Farm, Ellendale, Minnesota, the undersigned witnessed on April 22, 2005, the signing of this Agreement between the State of Minnesota and the U.S. Department of Agriculture.

Footnotes

[i] Conservation Priority Areas are regions targeted for enrollment, such as the Prairie Pothole region, an area adjacent to the Great Lakes, the Chesapeake Bay, and other valuable designated areas. In addition, the FSA may designate up to 10 percent of its remaining cropland in any given state as a Conservation Priority Area.
[ii] "History of The CRP," http://www.fsa.usda.gov/dafp/cepd/12crplogo/history.htm
[iii] http://www.nrcs.usda.gov/programs/watershed/
[iv] http://www.umbsn.org/news/documents/Implementation_PlanRegional_TMDL915031.pdf
[v] State of Minnesota Revised Application for CREP, 3-31-04
[vi] Bourne, A., N. Armstrong, and G. Jones. 2002. A preliminary estimate of total nitrogen and total phosphorus loading to streams in Manitoba, Canada. Water Quality Management Section. Manitoba Conservation Report No. 2002 - 04.
[vii] Bourne, A., N. Armstrong, and G. Jones. 2002. A preliminary estimate of total nitrogen and total phosphorus loading to streams in Manitoba, Canada. Water Quality Management Section. Manitoba Conservation Report No. 2002 - 04.
[viii] A User's Guide to Natural Resource Efforts in the Red River Basin, 2001
[ix] Minnesota Conservation Volunteer, July –August 2004
[x] http://www.mn.nrcs.usda.gov/technical/nri/findings/erosion.htm
[xi] (USDA, Minnesota Agricultural Statistics Service).
[xii] http://www.pca.state.mn.us/water/basins/lowermiss/ lm-basinscoping2001.pdf
[xiii] Johnson, Scot, and Pete Knudson, 2001. "Southeast Minnesota Riparian Vegetation Land Cover Analysis using GIS and Satellite Imagery, "Minnesota Department of Natural Resources, unpublished document.
[xiv] http://www.pca.state.mn.us/publications/reports/ tmdl-final-lowermiss-fc02.pdf
[xv]
[xvi] Cook, M.F., and J.A. Younck, 1998, "A Historical Examination of Creel Surveys from Minnesota's Lakes and Streams," Minnesota Department of Natural Resources, Department of Fisheries, Investigational Report No.464.
[xvii] Dexter, M.H., ector. 2001. "Status of wildlife populations, fall 2001."Unpub Rep., Division of Wildlife, Minnesota Department of Natural Resources
[xviii] http://nrhp.mnhs.org/NRSearch.cfm
[xix] http://www.state.sd.us/doa/das/Topeka_s.htm
[xx] Anfinson, Scott F. 1997 Southwestern Minnesota Archaeology, 12,000 Years in the Prairie Lake Region. Minnesota Historical Society, St. Paul
[xxi] *1997 Census of Agriculture*, Selected Characteristics for the United States and 10 Leading states, Table 1.
[xxii] Kelly, Dave. American Farm Bureau Federation. "Environment-friendly Conservation Tillage a Growing Practice on America's Farms," 1997.
[xxiii]. DES MOINES, MINNESOTA, MISSOURI BASIN TEAM RECOMMENDATIONS TO PROTECT WATER RESOURCES: WATER PLAN 2000. http://www.eqb.state.mn.us/pdf/minnesota.PDF
[xxiv]Profit & Pleasure:The Impact of Tourism on Minnesota's Economy by Rachel Hillman
http://www.deed.state.mn.us/lmi/publications/trends/0604/tourism.htm
[xxv] Profit & Pleasure:The Impact of Tourism on Minnesota's Economy by Rachel Hillman
http://www.deed.state.mn.us/lmi/publications/trends/0604/tourism.htm