Morrison County Comprehensive Water Plan 2010-2020

"Managing, Protecting, and Enhancing the Water and Land Resources for the use and enjoyment of the citizens and visitors of Morrison County"

Prepared by the Morrison Soil and Water Conservation District with the direction and assistance of the Morrison County Water Planning Task Force

Morrison SWCD
16776 Heron Rd.
Little Falls, MN 56345

Phone: 320-616-2479
Fax: 320-616-5401
www.morrisonswcd.org

2010 Water Plan Update
Morrison County, Minnesota

County Board of Commissioners

Jeff Schilling, Chairman – District Two

Tom Wenzel	District One
Rich Collins	District Three
Don Meyer	District Four
Duane Johnson	District Five

Morrison SWCD Board

Marvin Stangl, Chairman

Claude Dahmen	Robert Holmgren
Tom Brutscher	Cynthia Anez

Water Plan Task Force and Partners

Helen McLennan, Chair

Amy Kowalzek, Morrison Co. Public Works
Anne Sittauer, USFW Crane Meadows
Dan Steward, BWSR
Eric Altena, DNR Fisheries
Tim Crocker, DNR Waters
Beau Liddell, DNR Wildlife
Jerry Lochner, City of Little Falls
Greg McGillis, City of Little Falls
Jon Kolstad, Camp Ripley
Marty Skoglund, Camp Ripley
Mark Wettlaufer, MN Rural Waters
Mark Anderson, Mo. Co. Zoning Dir.
Megan Molitor, Morrison Co. Feedlot Officer
Todd Holman, The Nature Conservancy
Phil Votruba, MPCA
Lance Chisholm, Morrison SWCD
Janelle Smude, Morrison SWCD
Alan Ringwelski, Morrison SWCD
Claude Dahmen, County Board Appointee
Tom Brutscher, Morrison SWCD Board
Jim Lilienthal, Lake Alexander
Rich Collins, County Board Member
Tom Wenzel, County Board Member
Jeff Schilling, County Board Member
Duane Johnson, County Board Member
Don Meyer, County Board Member
Don Hickman, Initiative Foundation
Peter Libby, Sullivan Lake Association
Dan Miller, Sullivan Platte Lake Coalition
Terry Zapzalka, NRCS
Laurel Mezner, MPCA

Table of Contents

Executive Summary

Introduction

The Morrison Soil and Water Conservation District (SWCD) assumed the task of the local water plan update in April of 2009. It had previously been administered by the Planning and Zoning office but staff changes and budget considerations compelled the county to make some changes. A Board of Water and Soil Resouces (BWSR) extension had been granted until May 2010 and therefore the timeframe for completion required escalated planning. The convening of task force members had to begin from scratch since the former committee had dissolved.

Initially, a survey had been sent out to all lake associations, agencies, and townships soliciting input, as well as published in the local newspaper with a circulation of over 30,000. Radio spots were used to inform citizens of where and how to submit comments. All agencies came to the table, recognizing the collaborative planning process had diminished in recent years. It was important to capture what had been accomplished from the last plan, and how we should focus our resources for the next decade. The county board appointed citizen members and along with agency representatives, the attendance at the twice monthly meetings was a positive statement of how important the coordination of planning had once been and how much all members felt it should be resurrected.

It was apparent that leadership to lake associations, lake improvement districts, grant coordination, and better utilizing resources of all agencies was at risk, without a central coordinating effort, that being the Local Water Plan.

The good news is that after hiring a new zoning administrator, he recommended the plan stay with the SWCD. Since the Water Plan by resolution can be the District's comprehensive plan, it now will truly encompass our district goals as well as the goals of comprehensive water planning.

This plan will encompass the county as a whole, cities included so that all agencies and units of government have a common focus on how to best utilize our resources in a conscientious manner that serves the needs of citizens, but preserves the resources for future generations.

Further, goals set are with a watershed approach, collaborating with our neighboring counties, recognizing that the boundaries of the county do not confine the impacts we all have on a water resource.

PURPOSE OF LOCAL WATER PLANNING

The Local Water Planning purpose by statute has not wavered in 20 years.

- To identify existing and potential problems and opportunities for the protection, management, and development of water and related land resources; and
- Develop objectives and carry out a plan of action to promote sound hydrologic management of water and related land resources, effective environmental protection and efficient management.

WATER PLANNING HISTORY

The most recent plan (2003-2007) was a comprehensive planning initiative to coordinate the Comprehensive Land Use Plan with the Local Water Plan to make sure land use decisions led to the protection and enhancement of Morrison County's natural resources. The county received a Challenge Grant from the Board of Water and Soil Resources (BWSR) to accomplish the task. After two years of township/county wide hearings and input, the Morrison County Water Plan became a 533 page document. While it was and will continue to be a tremendous resource of information, it was perceived as too large a document to actually use as a work plan. Therefore, this update will refer back to that plan as needed, but attempt to be a more workable document which will provide annual work planning and an implementation planning process. In the many hearings held, it was expressed overwhelmingly that the citizens of Morrison County desired to maintain the rural character of Morrison County, preserve agriculture, and insure water quality in our many lakes, rivers, and wetlands.

The first or "original" Morrison County Comprehensive Local Water Plan was completed and adopted in 1990. Implementation of the plan began immediately that year. The second plan saw the most accomplished.

The third generation plan expired in 2008. This 4th generation plan, while shorter in length will attempt to capture our multi-year accomplishments and detail the goals yet to be achieved and/or continued.

****See Scoping Document for geologic, geographic, and land use make up of Morrison County**

EVALUATION OF PAST PLAN EFFORTS

Water planning successes have been hit and miss in Morrison County. Retaining the leadership and funding levels have contributed to stalls in our efforts. While managed by the county, five different Water Plan Coordinators passed the baton. The task force ceased to meet sometime after the third generation plan was written, and therefore some goals may have been duplicated or were not accomplished.

Like any other planning process many things arose that was not in the plan but necessitated a change of focus and funding. Following are the accomplishments that transpired both planned and presented during the past 8 years.

- Swan River TMDL – The Swan River was analyzed by the MN Pollution Control Agency (MPCA) during the plan period, but at the end of their monitoring, they actually recommended the river be de-listed. They gave credit to the continued efforts of Morrison and Todd SWCD's in fixing several polluting feedlot sites, educating many agricultural producers with nutrient management planning, and conducting a series of educational opportunities. A 319 grant was received following the delisting to continue working with poultry and hog producers for nutrient management to further decrease the impact of phosphorus within the watershed. That grant will be completed by summer of 2010. We did not reach all producers so the effort will need to continue through the EQIP program and other funding sources. **See Figure 1. – Swan River Watershed Recent Projects Map in maps section.**

- A Challenge Grant for Swan River was received from BWSR in 2006-2007. However, it was unknown to the partners until staffing changes had occurred within the county and unfortunately the funds had to be returned to BWSR. If it had been known to the SWCD it could have extended the above mentioned 319 grant and assisted a few more landowners.

- Three lakes in the northwest portion and one in the northeast area of the county were approved by the county to form Lake Improvement Districts (LID's). (Lake Alexander, Sullivan Lake, Fish Trap, and Crookneck) The LID's primary focus in their plans is to monitor and eradicate invasive species in their lakes and to conduct septic inspections. Curly leaf pond weed control has been monitored by the DNR. Lake Alexandria is also monitoring Eurasian Milfoil. Their efforts need to be monitored by the county to assure the taxation is warranted. They also need to expand their scope of work as time and funding progress. **(LID plans are available at the SWCD office)**

- A 2 year SWAG (Surface Water Assessment Grant) was completed in 2009. Secchi disc readings were taken by volunteers as well as water

samples each month and analyzed by RMB Laboratories in Detroit Lakes. No significant contaminants were found but each lake association has been encouraged to continue the monitoring at their own expense to have a better period of study for a trend analysis. Twelve lakes participated; Alexandria, Fish Trap, Shamineau, Cedar, Pine, Peavy, Crook Neck, Sullivan, Platte, Green Prairie Fish Lake, Pierz Fish Lake, and Round. **See Figure 2. - Lake and Ob Well Monitoring Map in maps section.**

- The County's Land Use Ordinance adopted in 2007-8 gave more restrictive conditions to lakeshore development, which included restricting the size and amount of impervious surface that could be created, how many times a parcel could be split, placing 50' setbacks from wetlands for development, etc. The county also increased the distance for septic systems from the ordinary high water table of a surface water.

- Morrison County Planning and Zoning completed their level 3 feedlot inventory, also identifying all riparian feedlots. 42 producers signed their open lot agreements and of those 26 have come into compliance.

- DNR has been conducting an extensive study and monitoring of Cedar Lake, known as the clearest lake within the county. Results from that study will be published in the next couple of years.

- MPCA increased the number of waters within the county as impaired. When listed, it allows greater funding to be received for feedlot repair or implementation plans. (re: MPCA listing available on their website) MPCA further developed a schedule for monitoring and funding.

- A segment of the Upper Mississippi River was listed as a TMDL-bacteria which is partnering three counties to study that section of the river and develop some protection goals. While Morrison County's reach of the Mississippi River is not included in the study area, it is prudent that we participate and be aware of the degradation as the river flows through Morrison County.

- Although a Healthy Lakes Community challenge grant was funded by the Initiative Foundation, and joined by most lakes in the county, it was found that few of the lakes carried out their plans and/or did not report their accomplishments. Therefore, they need to be encouraged to get back on track and take advantage of funding to meet their goals.

- Camp Ripley began their ACUB (Army Compatible Use Buffer) program in 2004. To date, nearly 9,000 acres have been secured through easements with BWSR and approximately 2,000 acres were acquired by the Department of Natural Resources (DNR) through fee title. These lands will prevent further encroachment of camp while perpetually protected

from further development. The county received an Environmental Reward from the Association of Minnesota Counties (AMC) for the support of the ACUB accomplishments through the SWCD. Camp Ripley was awarded the national conservation award in 2009 because of the success of ACUB. The ACUB program compliments the Morrison County Comprehensive Water Plan by encouraging green space in perpetuity, reducing septic systems, impervious surfaces, etc. Also, the Mississippi River runs north and south through the ACUB zone. The Nokassippi River, Fletcher Creek, and many lakes exist in the zone as well. **See Figure 3. – ACUB Land Deals in maps section.**

- Little Rock TMDL Committee completed their biological and chemical monitoring through a grant and will now be writing their implementation and work plan. Benton SWCD is the lead agency for the TMDL Plan. Morrison SWCD/NRCS had secured 26 continuous CRP contracts on tributaries and the Little Rock Creek, which abandoned agricultural use for a 150' of both sides of watercourses. Four ag waste sites that had very high pollution ratings were fixed. **See Figure 4. - Little Rock Watershed Recent Projects Map in maps section.**

- National Pollution Discharge Elimination System (NPDES) permitting began to address storm water discharge for all development sites greater than 1 acre. Because there is no local oversight, it's not certain that protection measures are followed.

- Morrison County Public Works re-routed Co. Rd. 3 around Lake Bernhard instead of through it, restoring the surrounding wetland basin. They received a Lake Friendly Strategy Award for this effort besides improving the safety of travel through that busy lakes area of the county.

- Morrison County Public Works began following new provisions for concrete washouts and sweeping debris off roads, reducing contaminants in road ditches. They also implemented greater use of green designs for holding ponds allowing for greater absorption.

- Morrison Co. Public Works continues to monitor wells around the landfill. They test for pharmaceutical detections in drinking water. Another BMP of pumping the groundwater from contaminated plumes and land applying it has helped maintain safe levels of ground water contaminants.

- Morrison Co. Solid Waste Dept. participated in the MPCA pilot leachate recirculation project which treats the leachate and speeds up the decomposition of waste in the Morrison Co. landfill. The county has completed the Super Funded clean up of the landfill and now has a state of the art phased system.

- Camp Ripley completed their water management plan through the Univ. of Minnesota Duluth. They also have their Wellhead Protection Plan completed.

- Camp Ripley completed their monitoring study for munitions in ground water. There was no indication of contaminants in the two year study.

- The City of Little Falls and the City of Royalton completed their Wellhead Protection Plans and identified their drinking water protection zones. **See Figure 5a. – 5c. – Wellhead Protection Maps for Little Falls, Royalton, and Camp Ripley in maps section.**

- MN Department of Ag published their most recent study of pesticide and nitrogen monitoring which included six sites in Morrison County in irrigation areas. The data is available on their website at www.mda.state.mn.us/news/publications/chemfert/2008wqmreport.pdf.

- The former Hennepin Paper Mill site on the Mississippi River was restored back to native vegetation through a grant from the SWCD/DNR. The actual building site has become a park.

- Ob well monitoring continued through a partnership of SWCD/DNR Division of Waters. Fifteen wells are monitored 8 months of the year for ground water levels. The wells are primarily located in irrigational areas of the county. They provide valuable information during drought periods. **See Figure 2. - Lake and Ob Well Monitoring Map in maps section.**

- The sixth grade Water Festival continued for all county sixth graders. The annual event held at Camp Ripley hosts 400-500 students annually with learning stations presented by numerous agency staff. 2009 marked the 16th year. Stations vary from Camp's own water purification demonstration to how to web of life of wetlands. Each school sets aside the September dates in their school calendar.

- After 2 years of extensive flooding, the county received federal financial assistance to improve the Fletcher Creek's flow patterns. Several culverts were required to be resized under County Rd. 76, the railroad, and over flow redirected. The outlet into the Mississippi River was extensively armored. **Design on file with the Public Works Dept of Morrison Co.**

- Two years of purple loosestrife control was completed on the Mississippi River by the SWCD and DNR Fisheries.

- A major rock weir and dredging project was completed by the Army Corp of Engineers on the Mississippi River in Little Falls in reaction to

complaints of low flow and navigation restrictions. The flow patterns had been altered by vast amounts of sedimentation that had entered the Mississippi during flooding events many years before. The state had allocated $350,000 towards the project but then it wasn't needed so the money was made available to landowners to do enhancement projects on the Mississippi. Many landowners were helped with bio-engineering projects.

- A partnership of Mississippi Headwaters, Minnesota Power, and the county was signed to monitor the Mississippi River at Blanchard Dam. However, the end of the River Watch program, and the changes in county staff, dropped the program in 2007.. It will be resurrected if possible under the new plan.

- A total of **16** Feedlot Water Quality projects were completed since 2003. To be eligible, the feedlots must be close to a receiving water. Another **5** sites were assisted by NRCS. Feedlots must have a pollution rating to receive financial assistance.

- The Continuous CRP Program enrolled 17 contracts totaling 104 acres, since 2003 which retires as much as 150' on one or both sides of a water course.

- Approximately 75 producers were assisted with nutrient management plans. This assures acres are not receiving more manure than the crops can use.

WATER PLANNING FUTURE

The public/state legislature is demanding that financial resources be wisely spent with measurable outcomes. The people have a "right to know" that the increase in sales tax is truly being spent in manner it was intended. That vote, in light of the economic times, was a statement of how important water quality is to our state's residents.

Therefore, all public agencies **must** work together to meet the common goals, and to assure the public that projects funded accomplish a measurable benefit.

It is the purpose of this plan, and the Morrison SWCD, to act as a vehicle to bring the partners together regularly to plan, report, and take actions to meet the goals and objectives outlined in this plan.

Those accomplishments will be posted on the county's, the SWCD's, and in legislative reports so the public can stay informed of what we are doing on their behalf.

Priority Concerns Established

Through the evaluation of the surveys received, the numerous meetings held with the Task Force, the priority concerns remained as they had been in previous plans, Ground Water, Surface Water, and Land Use. The tweaking of those became: (see the scoping document for further clarification of the process)

1. **Protect the Quality and Manage the Quantity of Groundwater Resources**
2. **Protect the Quality and Manage the Quantity of Surface Water Resources**
3. **Promote and Implement Sound Land Use Practices that Reduce the Impacts on all Water Resources.**

Assessment of Priority Concerns

Protection of Ground Water Quality: Over the past several years a number of nitrate clinics have been held. Of all wells tested, approximately 15-17% consistently are high in nitrates. At the same time, livestock operations are increasing in size. While there are fewer feedlots, the operations are far greater in size. The manure management and whether there are adequate acres for application has risen as a concern amongst elected officials and resource agencies. Much of the manure actually leaves the county, but the need to assure that applicable rates are being followed is a continued concern. There also seems to be considerable agricultural growth (livestock facilities) in concentrated areas, namely Buh Township and Buckman Township. Whether the growth is having an adverse impact on groundwater is a concern, but not known.

In addition, there is a large increase in rural residential development. Since many platted developments have been approved in agricultural neighborhoods, and operating on private septic and well systems, it becomes necessary to secure the ground water quality to meet both interests.

Protection of Ground Water Quantity: Overwhelmingly in the public meetings as well as the surveys collected, the increase in the irrigation systems in the county rose to the top of the list of concerns. During a two year drought period of 2007 and 2008, some permits were suspended for short periods of time due to homes being affected. Besides the possible

impact to rural residential homes being affected however, it may also affect another irrigator. How much is too much? Can the aquifers handle the demand?

The cities in the vicinities of the increased appropriation zones are becoming concerned about their own supply and demand and how it will be affected by rural agricultural use. This is a quality and quantity issue. To that end, it was important to get the support of all governing bodies for a geologic atlas of the county.

Protection and Management of Surface Water Resources: With 97 protected lakes and hundreds of miles of rivers and streams covering nearly 18,000 acres, focus naturally is given to their continued health and management.

Rural residential growth is concentrated surrounding these water bodies, primarily lakes. Many of the older established cabins and homes are non-conforming to setback ordinances and septic designs, built well before shore land ordinances were adopted. The love of lakeshore like everywhere has meant that anything that could be developed, was developed long ago and what is left, with the exception of state or county owned land, probably should never be developed. Balancing the "property rights belief, with what is environmentally sound to do, is a problem facing all lake protection efforts.

Unlike the lakes, rivers of the county run through agricultural lands. Instead of homes and septics, we have older riparian feedlots, and pasturing situations that have continually been addressed.

Morrison County is a transitional county. Agriculture is still the predominant land use, but the county begins the lakes and forested region of the state.

Shore land residents continue to want to convert small cabins into large year around homes, and lot size as well as the impervious surface increase, place greater threats to surface waters. It has been a continued goal by the Planning and Zoning Office and the SWCD to encourage residents to minimize the impact of surface run-off into the lakes by establishing vegetative buffers and minimizing impervious surface. The county is quite strict in vegetative removal. However, it sometimes happens that the problem is dealt with after the fact.

Unfortunately, landowners sometimes learn the hard way why setbacks and vegetation both aquatic and bank vegetation areas are important. When ice damage and flooding damage a structure, it often teaches a landowner why the standards have been changed. Also, the removal of

aquatic vegetation led to less desirable species, often invasive species, spreading. The increase in DNR Enforcement was a necessary step in minimizing the spreading of invasive species. Several lakes are on board with data collection and educational efforts with their residents.

It is apparent that the lack of continuous leadership to landowners and lake associations has led some decision making by the Lake Associations and Lake Improvement Districts to be made without adequate scientific background. It will be addressed to reinforce that effort through this plan.

Riparian feedlots have been identified through the Morrison County Feedlot inventory conducted by the Planning and Zoning Office. Through the Open Lot Agreement program, BWSR Feedlot Water Quality grants, and the efforts of the SWCD, NRCS, County Feedlot Officer, and the AgBMP Loan program, these feedlots are slowly coming into compliance. Funding and need have not matched up and the progress is slow. The teeth in the Open Lot Agreement program has been minimized by the lack of a concrete plan regarding what happens to those that have refused to come into compliance.

The MN Wetland Conservation Act sequencing process has definitely saved many wetlands in the nearly 20 years of implementation. With the SWCD serving as the LGU, it allows the county to distance itself from the more arbitrary discussions of land rights. However, by following the priority set in the water plan of riparian wetlands being a high priority for protection, it further restricted allowing any more than deminimus impacts whenever possible. At this point in time, we actually have a net gain of wetlands due to the number of wetland restorations that have been enrolled in the state banking program, or done under enrollment in another federal or state program.

Promoting and Implementing Sound Land Use Practices that Reduce Impacts on Water Resources

As mentioned earlier, the Challenge Grant awarded to the county was to comprehensively tie water planning goals and the new land use ordinance together. It is one reason the county retained the administration of the water plan in their zoning office. The re-writing of ordinances took over 2 years of planning discussions with a panel of 20 people made up of resource agency staff and citizens along with zoning staff and the County Board.

The county retained another consulting firm from the writer/consultant of the water plan. It is perhaps the reason that the two plans didn't tie as well together as originally planned.

Some results were good in that greater restrictions were placed in some areas, like the increase of setbacks for septic systems to surface waters and a setback established from wetlands which gave greater protection of wetlands than the MN Wetland Conservation Act allowed. Interpretation of some ordinances waned however in a change of zoning staff and for a period of a few years, we experienced an increase of retaining walls within setbacks of lakes, an abuse of rock rip rap permits allowing rock to be placed all the way up a bank, grading and filling ignored under those two practices, etc. Under the new administration of the zoning office, and cooperation of cooperating agencies, we hopefully will be back on track in those decisions.

Further, the County invited the SWCD to the table for Planning Commission Meetings and Board of Adjustment meetings to provide environmental comments to their land use decisions. For many years, the SWCD has conducted an Environmental Review for feedlot operation changes, and now has the opportunity to apply that information on variances and conditional use permits. This enables the county to keep feedlot operators in compliance with feedlot regulations. The three boards, advisory or governing, have placed conditions on permits that mandate zero pollution ratings in their approval process.

Similarly, in shore land development, or platted developments, wetland impacts, erosion control stipulations, and best management practices have become standard language as conditions in the county's permitting approval.

FOLLOWING ARE THE GOALS AND OBJECTIVES SET FORTH FOR THE NEXT DECADE IN ADDRESSING OUR PRESENT AND FUTURE CONCERNS.

GROUNDWATER

GOAL 1: *Protect and provide high quality groundwater resources for the citizens and visitors of Morrison County*

Objective A: Increase the available background information of the County's groundwater resources.

Objective B: Prevent groundwater contamination from abandoned wells.

Objective C: Continue to regulate subsurface sewage treatment systems (SSTS) in the county.

Objective D: Support Source Water/Wellhead Protection planning and implementation.

Objective E: Maintain and promote existing cooperative partnerships that monitor groundwater.

GOAL 2: ***Preserve and ensure adequate quantity of the groundwater resources for the citizens and visitors of Morrison County.***

Objective A: Improve groundwater protection from irrigation practices.

Objective B: Protect well-head protection zones and drinking water supplies.

SURFACE WATER

GOAL: ***To protect, enhance, and maintain the quality of all surface waters in Morrison County (lakes, rivers, streams, and wetlands)***

Objective A: Reduce impacts of agricultural run-off from feedlots and farming practices.

Objective B: Ensure that land use decisions for shore land development take environmental impacts into consideration.

Objective C: Protect and enhance the county's wetlands.

Objective D: Assist Lake Associations and Lake Improvement Districts in developing and maintaining good lake protection plans.

Objective E: To improve, maintain, and ensure clean and healthy rivers in Morrison

Objective F: To increase protection of lakes and rivers from floodwaters.

LAND USE AND DEVELOPMENT

GOAL: ***To ensure that land use decisions are compatible with natural resource protection***

Objective A: To make sure all riparian feedlots are in full compliance.

Objective B: Reduce the pressure/impacts of shore land, rural residential, and marginal land development

Objective C: Reduce the loss of natural habitat.

Objective D: Promote storm-water/drainage/floodwaters management:

IMPLEMENTATION PLAN

Priority Concern: GROUNDWATER

Goal 1: ***Protect and provide high quality groundwater resources for the citizens and visitors of Morrison County*****.**

Objective A: Increase the available background information of the County's groundwater resources.				
No.	Action	Lead/ Supporting Agency	Timeframe	Cost
1	Support the development of a county Geologic Atlas and Regional Hydro Atlas	SWCD, P & Z, MN Geologic Survey, DNR Waters	2010-2013	$350,000
2	Use the atlas to identify and inventory sensitive areas of the county.	P & Z, Co. Board, DNR Waters, SWCD	2013-perpetuity	$500/yr
3	Sponsor workshop/s to present the completed atlas to the public and provide training on use.	SWCD, Co. Board, P & Z, PC, BOA, DNR, MN Geologic Survey	2013-2015	$1,000/yr
4	Ensure the distribution & sharing of the digital Atlas to other agencies for their use and applications	SWCD, DNR Waters, P & Z	2013-2015	$500/yr

Objective B: Prevent groundwater contamination from abandoned wells.				
No.	Action	Lead /Supporting Agency	Timeframe	Cost
1	Work with public & LGUs to identify the location of unused wells & develop an inventory.	SWCD, Public Health, P & Z	2011-2013	$3,000
2	Promote & utilize cost share to seal unused wells in priority areas (wellhead protection zones, sensitive groundwater areas)	SWCD, MDA, BWSR, Rural Waters, Cities	2011-2015	$10,000/yr
3	Improve & develop a process to require the sealing of abandoned wells.	Co. Board, P & Z, SWCD, BWSR	2012	$2,000
4	Develop materials that address the potential impacts of abandoned wells and the costs and process to seal properly. Distribute through media/events, web site.	SWCD, P & Z, Public Health	2013-15	$750/yr

Objective C: Continue to regulate SSTS in the county				
No.	Action	Lead/ Supporting Agencies	Timeframe	Cost
1	Develop & implement a plan to identify SSTS in priority areas, such as high water table, wellhead protection zones, excessively sandy soils, heavy soils	P & Z, SWCD, MPCA	2012-2015	$2000/yr
2	Promote low interest loan programs to assist in upgrades of failing SSTS, targeting priority areas	SWCD, P & Z, MDA	2012-2017	$20,000/yr
3	Continue to require septic inspections and Certificate of Compliance for building permit applications	P & Z	2010/ongoing	$1,000/yr
4	Continue to enforce Chapter 7080 rules throughout the county by requiring the upgrade of non-compliant systems and inspections of all SSTS installations	P & Z, MPCA	2010-ongoing	$15,000/yr
5	Work cooperatively with watershed and lake organizations to distribute educational materials & information to public regarding SSTS operation and maintenance. Maintain supply of brochures.	P & Z, MPCA, MN Extension, MDA, SWCD	2010/ongoing	$$2,000/yr
6	Publish SSTS BMP information on both county and SWCD website.	P & Z, SWCD	2011	$500
7	Hold bi-annual designer, installer workshops	P & Z, SWCD, MPCA, BWSR	2010, 2013, 2015	$1,000 ea year

Objective D: Support Source Water/Wellhead Protection Planning and implementation.				
No.	Action	Lead/Supporting Agencies	Timeframe	Cost
1	Assist wellhead water protection teams with development of Wellhead Protection Plans	Rural Waters, SWCD, DNR Waters	Ongoing	?
2	Identify wellhead protection areas as priority areas for BMP incentive programs	SWCD, NRCS, P & Z, Cities, BWSR	2010-2015	$20,000/yr
3	Recognize drinking water supply management areas in existing and future water resource plans by establishing priority protection overlays on land use and zoning maps.	P & Z, Cities, SWCD, Rural Waters, NRCS	2011	?
4	Assess effectiveness of existing ordinances to ensure the protection of wellhead protection zones	P & Z, Cities, SWCD	2011-2013	$1,000/yr
5	Protect wellhead areas & surficial aquifer areas from agricultural & industrial contamination through conditional use hearings.	P & Z, BOA, County Bd, PC, SWCD	2010-ongoing	?
6	Support continued solid waste programs and educational efforts on the proper disposal of hazardous waste & recycling programs	Public Works, SWCD, DNR Waters, School Districts	2010 - ongoing	$2,000/yr
7	Work with appropriate entities to identify aquifer thresholds to maintain adequate water supply for consumptive use	Cities, County, MN Geologic Survey, DNR Waters, SWCD	2013	?
8	Identify and map groundwater recharge areas in the county	Geologic Atlas, DNR Waters, SWCD, County	2010-2013	Associated with atlas
9	Promote wetland restorations in critical recharge areas & flood zones	SWCD, USFW, NRCS	2010-2015	$5,000

Objective E: Maintain and promote existing cooperative partnerships that monitor groundwater.				
No.	Action	Lead/supporting agencies	Timeframe	Cost
1	Continue to maintain USGS monitoring wells to measure static water levels in irrigation areas.	SWCD, DNR Waters	2010/ongoing	$2,000/yr
2	Hold annual nitrate clinics for county residents and provide public with information on private well testing and safe drinking standards	SWCD, MDA	2010 – 2020	$500/yr
3	Provide regular news releases on radio and newspapers with groundwater concerns	SWCD, DNR Waters, MPCA		
4	Continue monitoring wells around Morrison County landfill	Public Works	2010-2020	$500/yr

GOAL 2: ***Preserve and ensure adequate <u>quantity</u> of the groundwater resources for the citizens and visitors of Morrison County.***

Objective A: Improve groundwater protection from irrigation practices.				
No.	Action	Lead/supporting agencies	Timeframe	Cost
1	Identify auxiliary sources to augment community water supplies in the event of water contamination or shortages	DNR Waters, MN Geologic Atlas, SWCD	2013	Included in cost of Geo Atlas
2	Monitor groundwater levels in county and investigate groundwater appropriation effects on surface waters & wetlands	DNR Waters, Morrison and Benton SWCD	2010-2015	$10,000
3	Work with municipalities & agricultural community to conserve water use and implement irrigation BMPs.	DNR Waters, Cities of Little Falls and Royalton, Morrison/Benton SWCD	2010-2015	$3,000
4	Work with appropriate entities to identify aquifer thresholds to maintain adequate supplies for consumptive use	DNR Waters, SWCD	2013-2016	
5	Review irrigation logs & permits to ensure proper procedures are maintained in Little Rock Watershed	Benton SWCD, Morrison SWCD, DNR Waters	2011	$5,000
6	Develop a data base for groundwater levels from the ob well logs & precipitation records	SWCD, DNR Climatology, DNR Waters	2012	$3,000
7	Assess ground water resources, determine long term trends, interpret impacts of pumping & climate, plan for water conservation	DNR Waters, SWCD, Water Plan Task Force	2014	$5,000
8	Evaluate the impacts of windbreak removal for irrigation systems	SWCD, DNR Waters	2015	$3,000
9	Conduct a study between appropriation permitting & land use decisions to evaluate the relationship of quantity & demand conflicts	DNR Waters, County Bd, P & Z, SWCD	2014-2015	
10	Hold educational workshops for irrigators on sustainability and BMPs	DNR Waters, SWCDs, MN Irrigators Association	2013	$1,000
11	Evaluate how irrigation demand is affecting Little Rock Creek.	Benton and Morrison SWCD, DNR Waters	2011	$5,000
12	Continue to write conservation plans for new irrigators & work with existing irrigators to encourage low pressure systems.	SWCD, NRCS	2010-2020	$3,000/yr

Priority Concern: SURFACE WATER

Goal: *To protect, enhance, and maintain the quality of all surface waters in Morrison County (lakes, rivers, streams, and wetlands)*

Objective A: Reduce impacts of agricultural run-off from feedlots and farming practices.				
No.	Action	Lead/Supporting Agencies	Timeframe	Cost
1	Bring all riparian feedlots into compliance by offering technical and financial assistance.	SWCD, Co. Feedlot Officer, NRCS, MPCA, County Board, BWSR	2010-2010	$300,000/yr
2	Encourage nutrient management practices for manure application through federal and state programs	NRCS, SWCD, MDA, MPCA	2010-2020	$20,000/yr
3	Install buffer strips and riparian plantings along cropland fields and pastures.	NRCS, SWCD, DNR, BWSR, MPCA	2010-2020	$20,000/yr
4	Maintain state, federal, and county rules regarding setbacks for structures, applications, and feedlots.	Co. Feedlot Officer, P & Z, DNR, MPCA, NRCS, SWCD	2010-2020	?
5	Hold landowner/producer workshops for manure/nutrient management	Co. Feedlot Officer, P & Z, SWCD, MPCA, NRCS	2010, 2013, 2016	$1,000/per year
6	Work with local officials to apply for and utilize grand funding wisely.	SWCD, SWCD Bd, Co. Feedlot Officer, EQIP Committee, NRCS	2010-2020	$200/yr
7	Cooperate with all local and state agencies to resolve pollution issues in a manner that provides agricultural sustainability.	SWCD, BWSR, MDA, NRCS, MPCA, County Board, Feedlot Officer, P& Z	2010-2020	?

Objective B: Ensure that land use decisions for shore land development take environmental impacts into consideration.				
No.	Action	Lead/supporting agencies	Timeframe	Cost
1	Hold training sessions for elected and appointed officials on storm water management and BMPs in shoreland development	SWCD,MECA, MPCA, P/Z , Extension, DNR	2011, 2015	$3,000
2	Ensure that developers have secured their NPDES permits and manage erosion control	P/Z, MPCA, SWCD	2010-2020	N/A
3	Work with MPCA to delegate NPDES authority to a local agency to ensure proper oversight	SWCD, MPCA, P/Z	2011	$500
4	Develop and enforce ordinances that protect shore land impacts	P & Z, County BD, PC, BOA, SWCD, DNR	2010-2011	$3,000
5	Work towards a county ordinance that prohibits vegetative removal in shore-land impact zones	SWCD, DNR Waters and Fisheries, P & Z	2013	1,000
6	Keep applying for Native Buffer Funding to fund riparian buffers.	SWCD, BWSR, DNR	2010-2020	$15,000/yr
7	Establish a septic inspection process for lake and river shore residents.	P & Z, Lake Associations, MPCA	2011	??
8	Apply for funding to purchase easements in sensitive riparian areas.	SWCD, DNR, BWSR, Camp Ripley	2010-2020	$75,000/yr

Objective C: Protect & enhance the county's wetlands				
No.	Action	Lead/Supporting Agencies	Timeframe	Cost
1	Reduce impacts to wetlands by administering WCA, and adhering to sequencing requirements	SWCD, BWSR, P & Z	2010-2020	$78,000/yr
2	Encourage wetland restorations , prioritizing flood management areas, water recharge areas	SWCD, USFW, BWSR, NRCS	2010-2020	$20,000/yr
3	Hold bi-annual contractor trainings sessions to help developers identify wetlands.	SWCD, BWSR, DNR Enforcement & Waters	2010-12, 14, 16, 18	$1,000 per year
4	Continue to publicize via radio the rules and regulations concerning wetland impacts	SWCD, Little Falls Radio	4 times per year	N/A
5	Continue holding wetland educational opportunities at schools and civic groups	SWCD,USFW,NRCS, DNR	4 times per year	$1,000/yr
6	Encourage landowners & lake associations to learn how to identify and control invasive species	DNR Aquatics, DNR Enforcement, SWCD, Lake Associations	2010-2020	$1,000 yr
7	Work with elected officials to require wetland delineations for all new development	SWCD, P & Z, County Bd, PC	2011	$500
8	Hold realtor training sessions on wetlands & property sales	SWCD, BWSR, Mn Realtors Assoc.	2010,2013,2016	$500/yr
9	Create a wetland data base of impacts to assist future decision makers with historical analysis.	SWCD, P & Z	2010	$1,000

Objective D: Assist Lake Associations & Lake Improvement Districts in developing & maintaining good lake protection plans.				
No.	Action	Lead/Supporting Agencies	Timeframe	Cost per yr.
1	Conduct follow up & support to LIDs to assure they are carrying through with their plans & report to County Commissioner	SWCD, LIDS	Annually	$1,000
2	Hold annual meetings with LID's/Associations to keep them abreast of funding opportunities	SWCD, DNR, BWSR	Annually	$1,000
3	Develop schedule of monitoring to develop a trend analysis	SWCD, LIDs, MPCA, BWSR	Annually	$5,000
4	Encourage lakes to continue their participation in Healthy Lakes Program	SWCD, Initiative Foundation, LAs	Annually	$1,000
5	Monitor, maintain, and enhance healthy aquatic vegetation on all lakes	DNR Aquatics, DNR Fisheries, SWCD, LAs	Annually	$10,000
6	Protect and enhance wildrice lakes	DNR, SWCD	Annually	$2,000
7	Seek funding to assist LAs efforts in controlling invasive species	SWCD, DNR, LAs, LIDs, BWSR, MPCA	Annually	$20,000
8	Dedicate Native Buffer funding to critical erosion sites	SWCD, BWSR	Annually	$20,000
9	Assist MPCA with their impaired waters monitoring	SWCD, MPCA, DNR, adjacent Counties	2010	$5,000
10	Provide low interest loan info to lake shore owners to encourage septic updates	SWCD, P/Z, MDA	2010-2020	$20,000
11	Apply for CWF funding to achieve monitoring and implementation goals	SWCD, P&Z, BWSR, DNR, MPCA	Annually	$100,000

Objective E: Improve, maintain, & ensure clean & healthy rivers in Morrison County				
No.	Action	Lead/supporting agencies	Timeframe	Cost per year
1	Seek funding to monitor identified TMDL/impaired rivers. (Platte, Rice Cr. Skunk, Hillman, Two Rivers, Swan River, Crow Wing River, Rum River	SWCD, MPCA, Adjacent Counties	2010	$10,000
2	Seek funding to additionally monitor Little Elk	SWCD, MPCA	2011	$2,000
3	Resume monitoring the Mississippi River main stem	SWCD, MPCA, MHB	2010	$2,000
4	Support Benton SWCD in the TMDL/Little Rock	SWCD, Benton SWCD	2010	$5,000
5	Apply for Native Buffer Funding for critical area restorations	SWCD, BWSR	2010	$20,000
6	Seek FWQ funding for all riparian feedlots	SWCD, BWSR	2010	$200,000
7	Cooperate with Crow Wing River TMDL	SWCD, MPCA, Crow Wing Co, Wadena Co, Cass Co, Aitkin Co	2010	$2,000
8	Hold annual River Day for BMP education	SWCD, P & Z, DNR	2010	$1,000
9	Encourage Little Falls to revise their setback ordinance	SWCD, P & Z, City of Little Falls	2011	$500
10	Re-establish MHB/MN Power grant to monitor Blanchard Dam	SWCD, MHB, MN Power	2010	$1,500
11	Control invasive species in rivers	SWCD, BWSR, DNR Aquatics / Fisheries	2011	$2,000
12	Conduct an outreach to residents along rivers for wetland restoration projects in flood zone areas.	SWCD, DNR Waters, ACOE	2011-2013	$500
13	Target cost share programs & funding sources to critical areas, prioritizing impaired waters	SWCD, DNR Waters, Fisheries, NRCS, BWSR	2011-2020	$20,000
14	Seek funding for dam rehabilitation	SWCD, Public Works, DNR	2011	$100,000

Objective F: Increase protection of lakes and rivers from floodwaters				
No.	Action	Lead/supporting agencies	Timeframe	Cost Per Year
1	Explore funding to obtain LIDAAR for the County	SWCD, DNR,BWSR	2011	
2	Work with FEMA & DNR to consider updating the floodplain maps for the county	SWCD, DNR Waters, USGS	2012	
3	Hold education seminars for elected and appointed officials on stream channel integrity and BMPs	SWCD, DNR Water, ACOE	2013	$1,000
4	Target funding sources to critical flood areas (Little Elk, Bellevue Twp, Swan River, Skunk River, Platte River, Lake Shamineau, Fletcher Creek, Mississippi River	SWCD, DNR, BWSR	2010-2020	$10,000
5	Support efforts to improve dissolved oxygen conditions by Blanchard Dam	DNR, SWCD, BWSR, MPCA	2011	?

Priority Concern: LAND USE & DEVELOPMENT

GOAL: ***To ensure that land use decisions are compatible with natural resource protection.***

Objective: To assure all riparian feedlot producers are in full compliance.				
No.	Action	Lead/supporting agencies	Timeframe	Cost per year
1	Apply for and prioritize all funding sources to address the most critical pollution sites	SWCD, BWSR, NRCS County Feedlot Officer	Annually	$500,000
2	Maintain technical assistance capabilities to assist landowners.	SWCD, NRCS, WCTSA	Annually	
3	Hold training sessions for PCs, BOA, & County Boards on feedlot compliance	P & Z, County Feedlot Officer, SWCD, MPCA	2011	$1,000
4	Continue serving as advisory member to the PC and BOA	SWCD, P/Z	Annually	N/A
5	Continue Environmental Reviews for feedlot changes	SWCD, P/Z, PC, BOA	Annually	$7,000
6	Work with the state legislature to approve technically and financially assist feedlots over 300 a.u.	SWCD, BWSR, Co. Feedlot Officer, MPCA, MDA	2010-11	$1,000
7	Enforce manure stockpiling rules	County Feedlot Officer, Co. Bd., MPCA	Annually	?
8	Promote pasture management, nutrient management, and residue management through state and federal programs	SWCD, NRCS, Co. Feedlot Officer	Annually	$50,000

Objective B: Reduce the pressure and impact of shore land, rural residential and marginal land development.				
No.	Action	Lead/Supporting Agencies	Timeframe	Cost per year
1	Continue to encourage ordinances that minimize the over development of sensitive areas.	P & Z, SWCD, County Board, PC, BOA	2012	$5,000
2	Support the Camp Ripley Army Compatible Use Buffer Program	Camp Ripley, SWCD, BWSR, DNR, TNC	2010-2020	$2.5m per year
3	Apply for state funding to purchase conservation easements in undeveloped shore land	SWCD, BWSR, DNR	2010-2020	$1m per year
4	Complete the Geologic Atlas for Morrison Co and begin using as reference in decision making	SWCD, P & Z, County Bd, SWCD Bd, BOA, PC	2010-2014	$350,000 total
5	Approve developments with sufficient conditions to address potential impacts	P & Z, County Bd., BOA, PC	2010-2020	$????
6	Develop plan for a cooperative monitoring of land use changes	P & Z, SWCD, all agencies	2011-2020	
7	Develop a dock and boathouse ordinance that exceeds the state rule	P & Z, DNR, SWCD, County Board	2012	$2,000

Objective C: Reduce the loss of natural habitat				
No.	Action	Lead/supporting Agencies	Timeframe	Cost per yr.
1	Develop a soil loss ordinance for the county that includes the control of windbreak removal	SWCD, P & Z, NRCS, County Board	2011	$2,000
2	Work with landowners and public lands on invasive species control	DNR, SWCD, BWSR, Public Works	2010-2020	$5,000
3	Support land ordinances that protect natural resources	P & Z, SWCD, TNC, DNR	2010-2020	$1,000
4	Require all developments to include green space and good storm water management	P & Z, County Board, PC, SWCD, DNR	2010-2020	$5,000
5	Preserve forested lands of the county	DNR Forestry, SWCD, County Board	2010-2020	
6	Work with landowners to develop private forest management plans	DNR Forestry, SWCD, TNC, USFW	2010-2020	
7	Support the ACUB program which minimizes development & protects green space	County Bd, SWCD, Camp Ripley, TNC, DNR	2010-2020	$1m per year
8	Encourage smart growth in rural developments	P & Z, County Board, SWCD	2010-2020	
9	Promote white pine and oak savannah plantings	DNR Forestry, SWCD, NRCS	2010-2020	$10,000

ONGOING ACTIVITIES ACTION PLAN

MN Wetland Conservation Act: Administered by the Morrison SWCD since adoption in 1992, with resolutions from all municipalities for blanket coverage of the entire county with one LGU. The Technical Evaluation Panel meets monthly on the third Wednesday of each month to review all applications requiring replacement plans or special problematic situations. The TEP is made up of SWCD Administration and technical staff, BWSR Wetland Specialist, Army Corps of Engineers, and DNR Ecological Services or Division of Waters, and DNR Enforcement.

Healthy Lakes Partnership: While follow through has been lacking, it is the intention to resurrect this partnership with the participating lakes and the Initiative Foundation. Ten lakes are on record as having developed plans and taken the training.

Army Compatible Use Buffer Program: Morrison SWCD and Crow Wing SWCD are the local agencies for landowners wishing to participate in the program through BWSR. It is administered using the same format as Reinvest in Minnesota but allows the landowner to continue to farm and use the land as they have been. The program pays 50% of the assessed value of an agricultural acre by township to place an easement on the property, preventing further residential

or commercial development or mining. 72% of the ACUB zone is in Morrison County. Morrison SWCD also administers the program for Cass County residents within the zone.

State Cost Share Program: A BWSR funded program, these grant funds can be used for conservation practices on private lands as well as public lands. SWCD's provide financial and technical assistance for a docket of practices established by BWSR. Priorities and approval are set by the Morrison SWCD Board of Supervisors.

Rain Gauge Network: Morrison SWCD has collected rain gauge data sheets from 8 volunteers throughout the county and submits them to the MN Climatology Office. More volunteers are probably needed but it's difficult to find people to make the commitment.

319 Swan River Grant: The grant will be completed in 2010, finishing $140,000 in projects. Todd SWCD and Morrison SWCD provided the technical assistance and matched the $70,000 grant from MPCA.

EQIP/CSP/CRP: On-going Federal Farm Program opportunities, these programs are administered by NRCS and FSA. They bring millions of dollars into the county while promoting a variety of conservation practices.

DNR Well Monitoring: Gives the Dept. of Climatology as well as the local agencies an ability to analyze drought/rainfall conditions of the county.

Monitoring of wells around County Landfill: Public Works continues to monitor the wells for normal standards and testing for pharmaceuticals.

Morrison County 6th Grade Water Festival: Annually held at Camp Ripley for two days in September for all county students. All agencies participate in holding learning stations on a wide variety of water, wildlife, and natural resource protection.

Lake and River Day: An opportunity to all shore land owners in the county to learn of new opportunities or rules concerning best management of their property.

Clean Water Funded Projects: As funded, will provide incentive payments for landowners to address anything from native buffers to feedlot management.

U S Fish & Wildlife Wetland Restorations: Assists private landowners with wildlife impoundments and wetland restorations for wildlife benefit. The landowner is expected to pay for 25% of the cost of the project.

Citizen Lake Monitoring: To be continued until there is a good trend analysis for all lakes and then in a schedule for maintenance and or funded implementation plans.

Nitrate Testing Clinic: Held at least one full week a year to allow citizens a free testing opportunity for household wells.

Irrigation Water Management: Regulated and permitted through DNR Waters, the SWCD writes conservation management plans and the landowner are expected to report to the DNR on an annual basis.

Tree Sales: SWCD sales for field windbreaks and shelterbelts, as well as CRP acres. DNR also sells for reforestation projects. The distribution of both agencies trees are managed by the SWCD in late April.

Geologic Atlas: Once the SWCD and Planning and Zoning staff have identified and located the wells, the Mn Geologic Atlas will begin the process of mapping the groundwater information in a format that will be used by all agencies and the county in making water and land use decisions.

Environmental Reviews for Feedlots: A partnership of the SWCD and Planning and Zoning, the reviews provide the Planning Commission, Board of Adjustment, and the County Board a review of the natural resource implications of the project application.

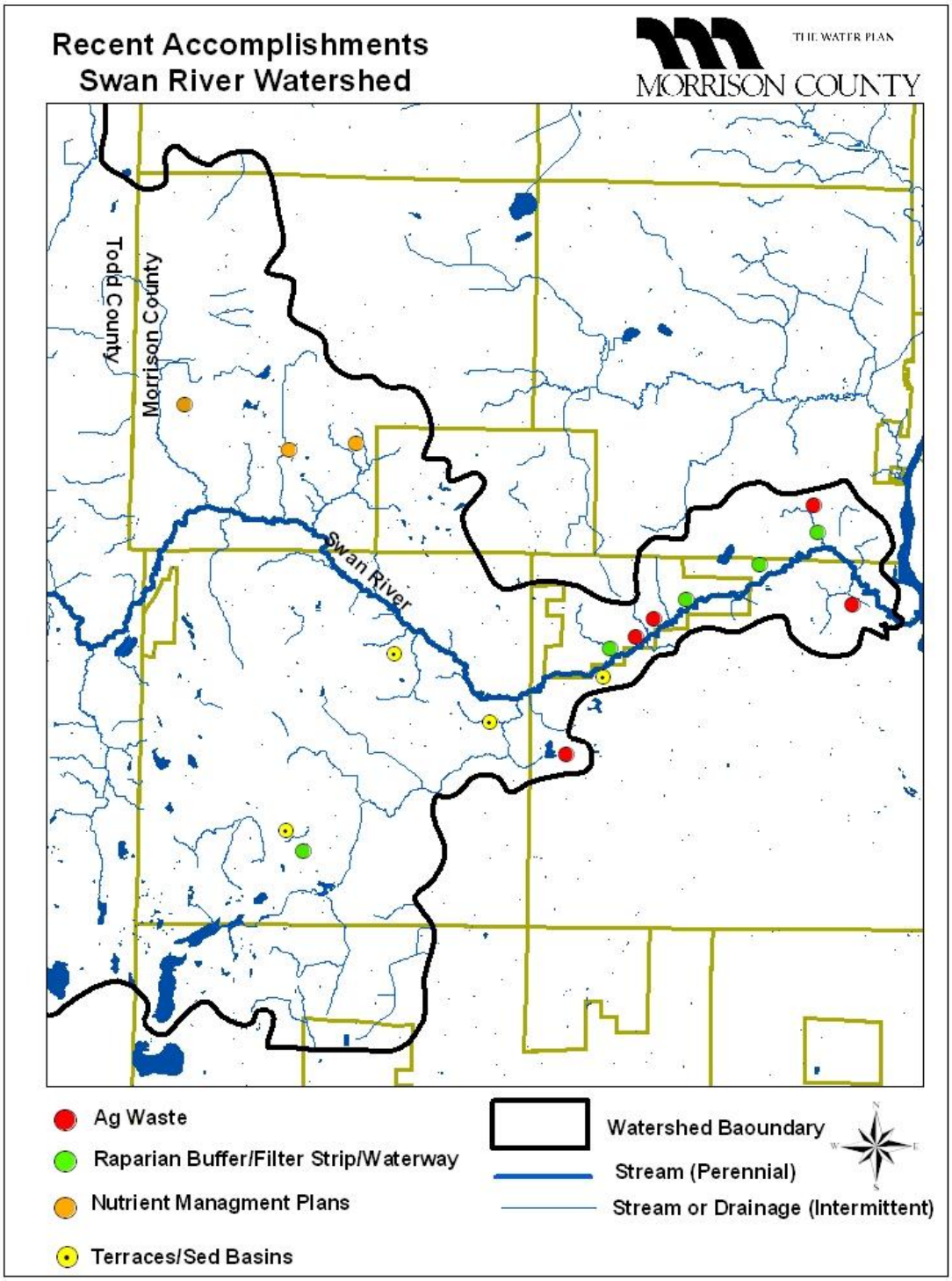

Figure 1. - Swan River Watershed Recent Projects

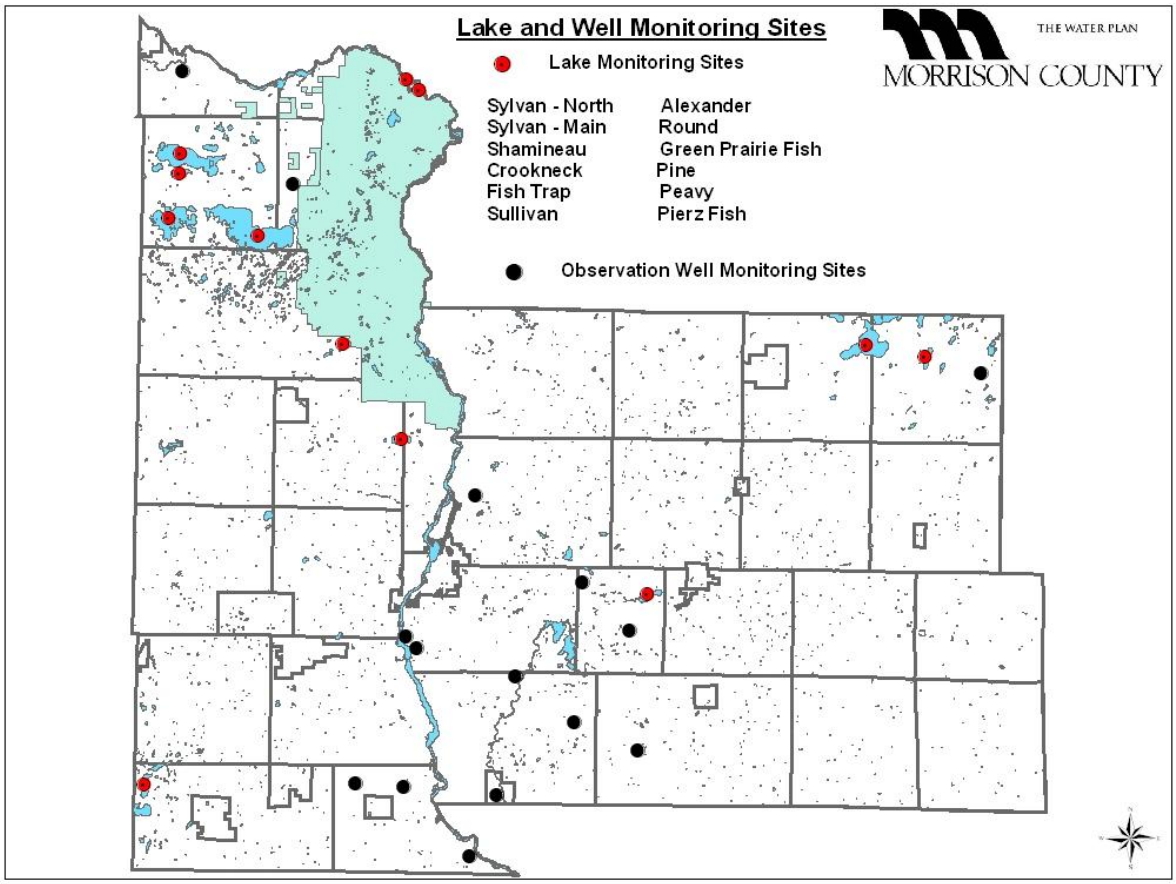

Figure 2. - Lake and Well Monitoring Sites

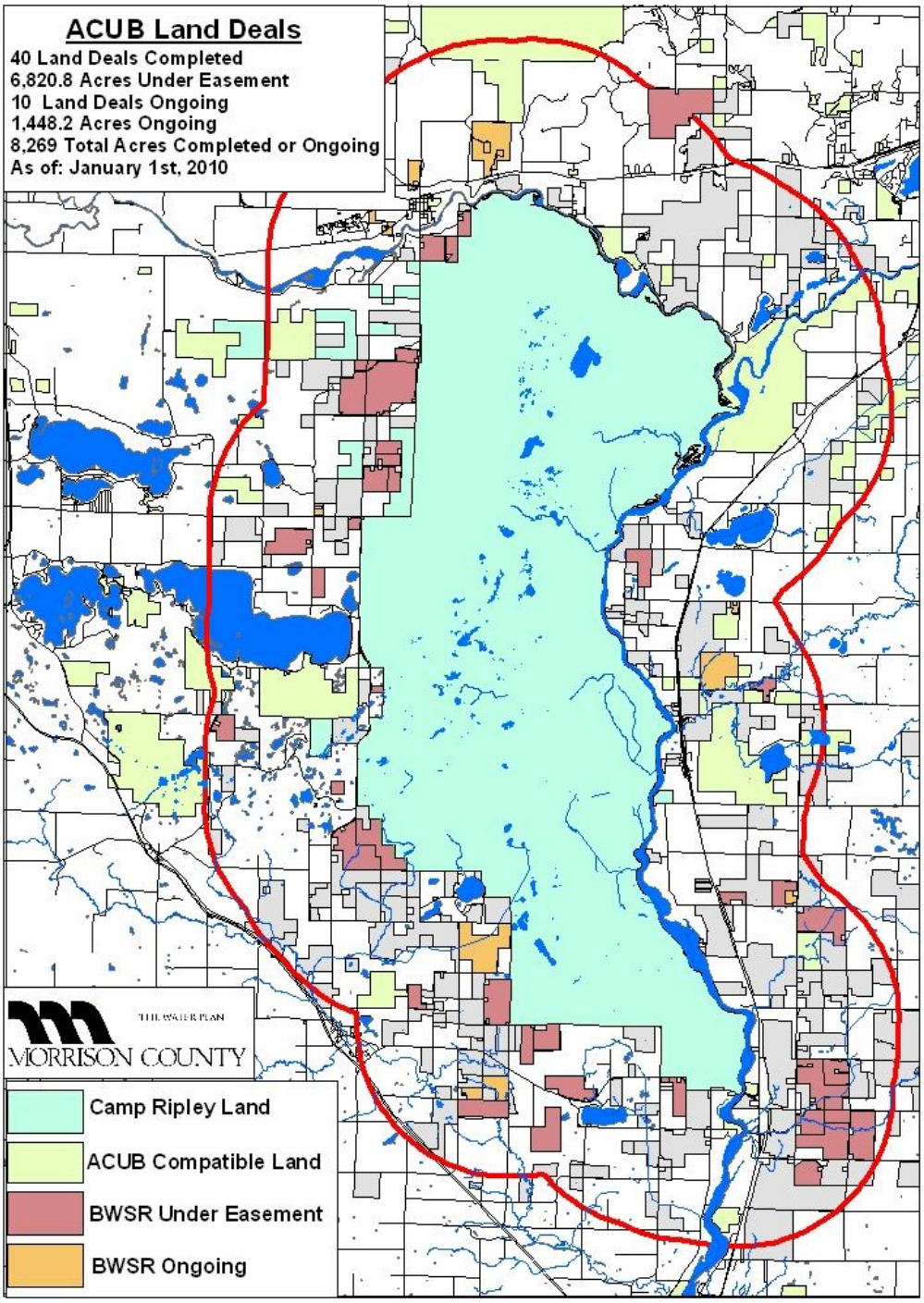

Figure 3. - Camp Ripley ACUB Easement Map

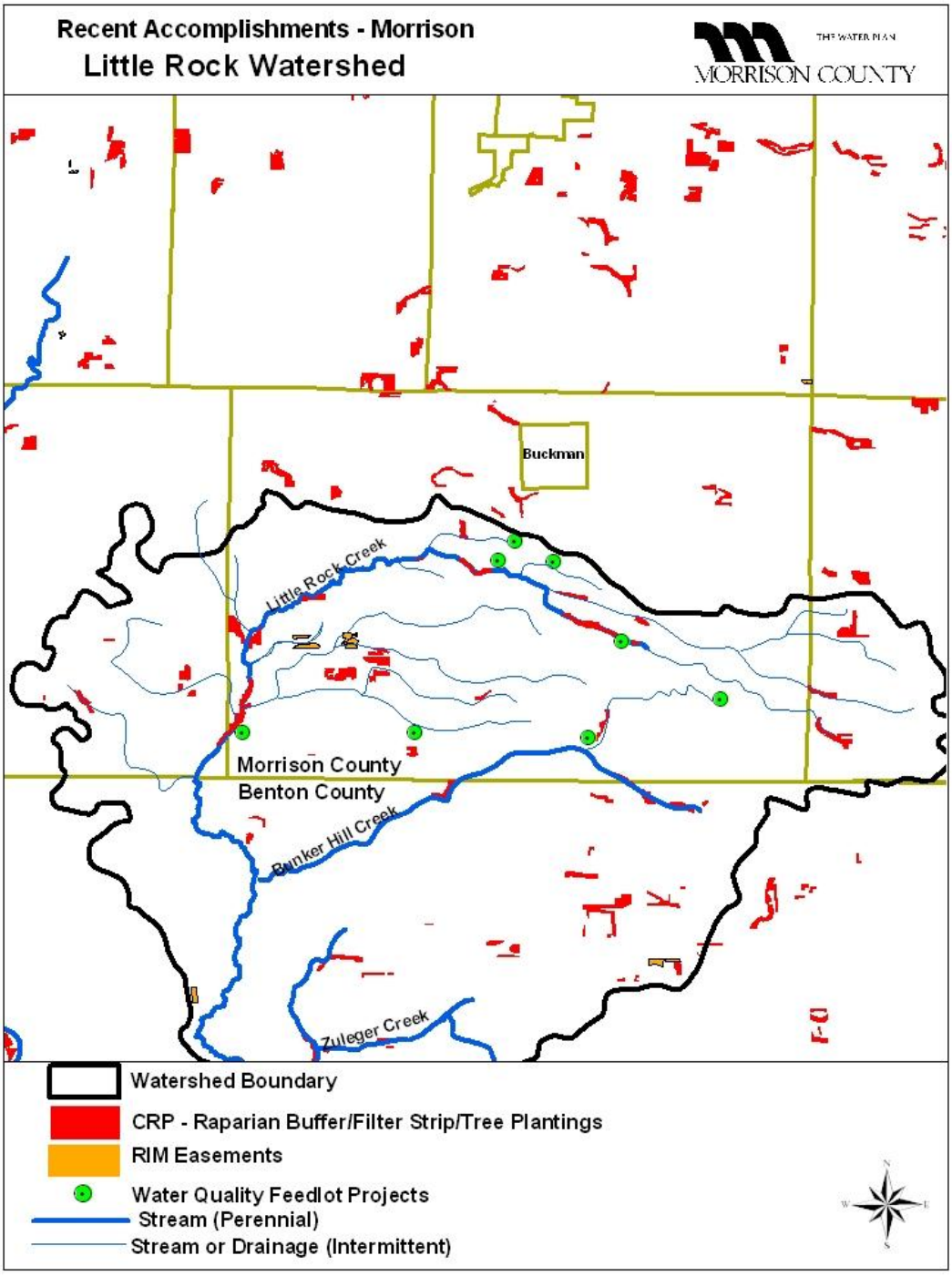

Figure 4. - Little Rock Watershed Recent Projects

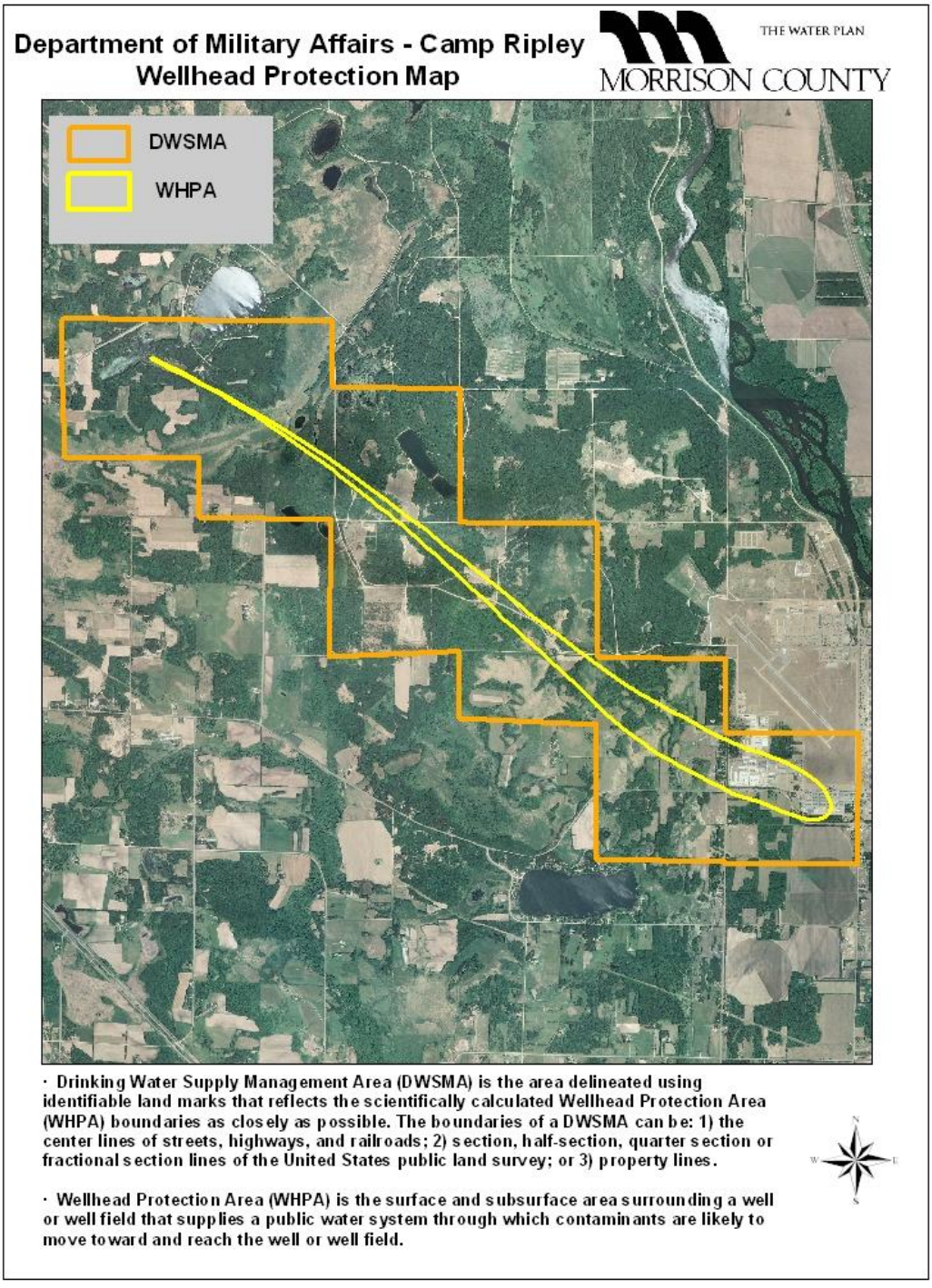

Figure 5a. - Camp Ripley Wellhead Protection Map

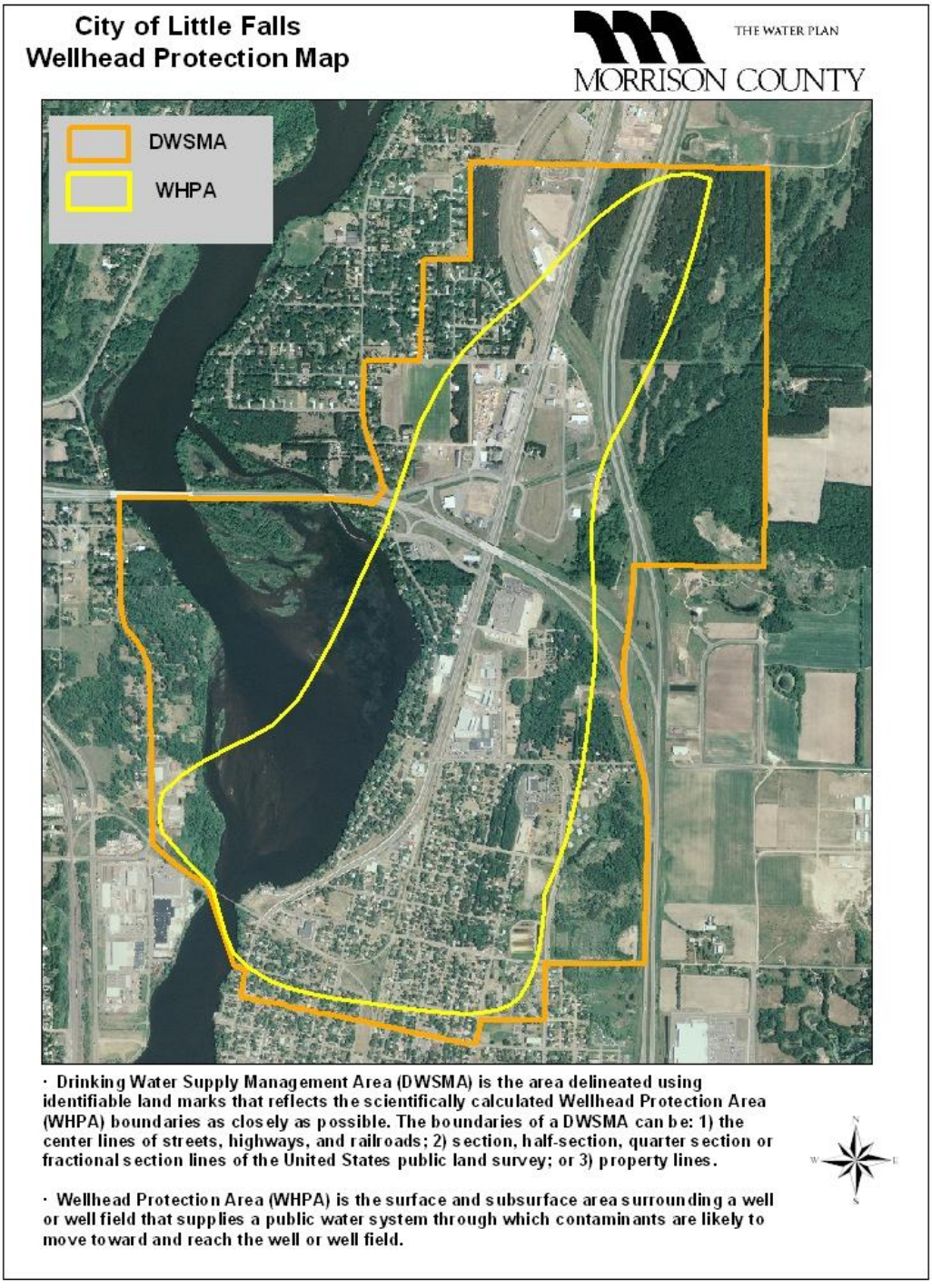

Figure 5b. - City of Little Falls Wellhead Protection Map

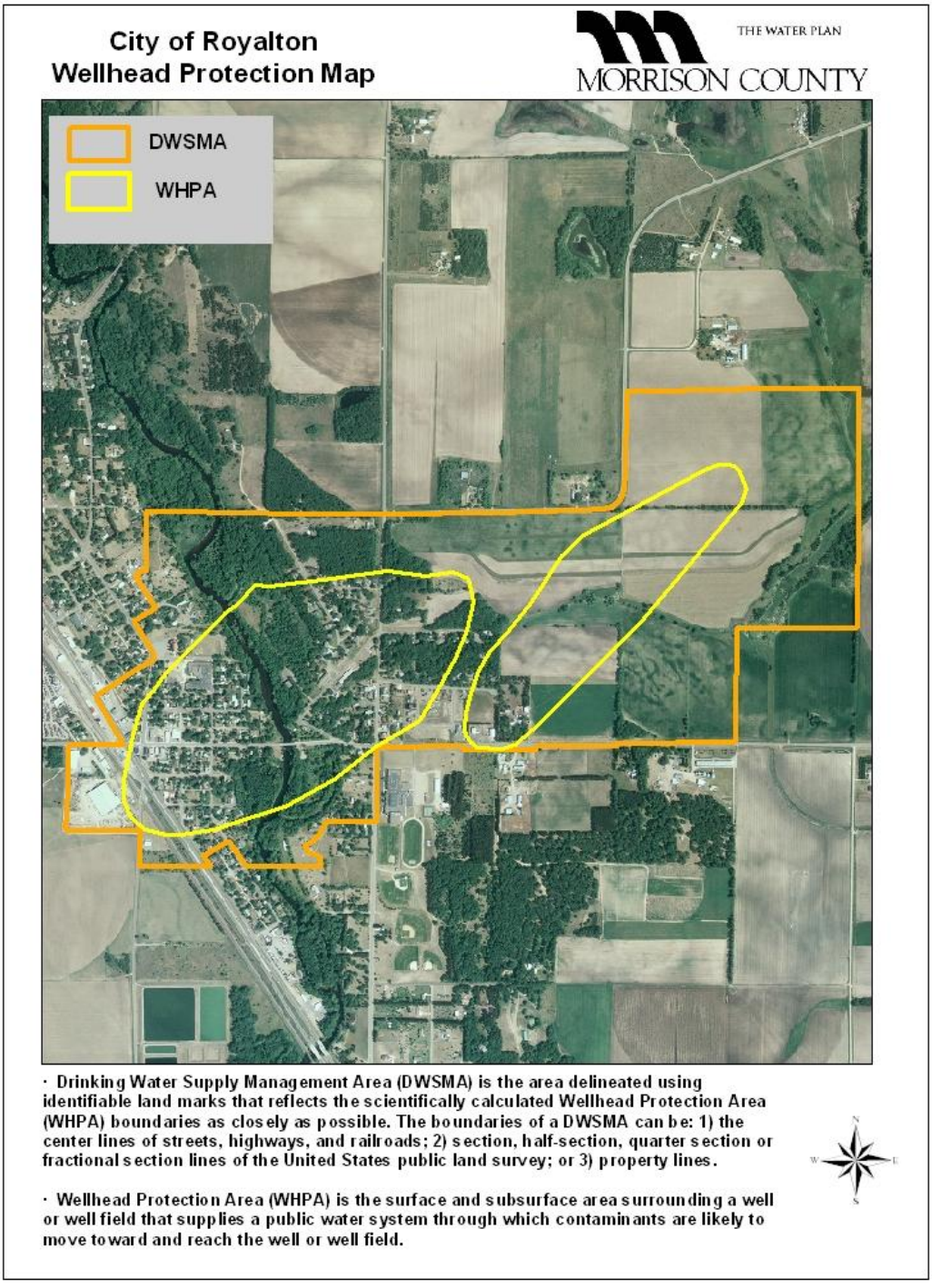

Figure 5c. - City of Royalton Wellhead Protection Map

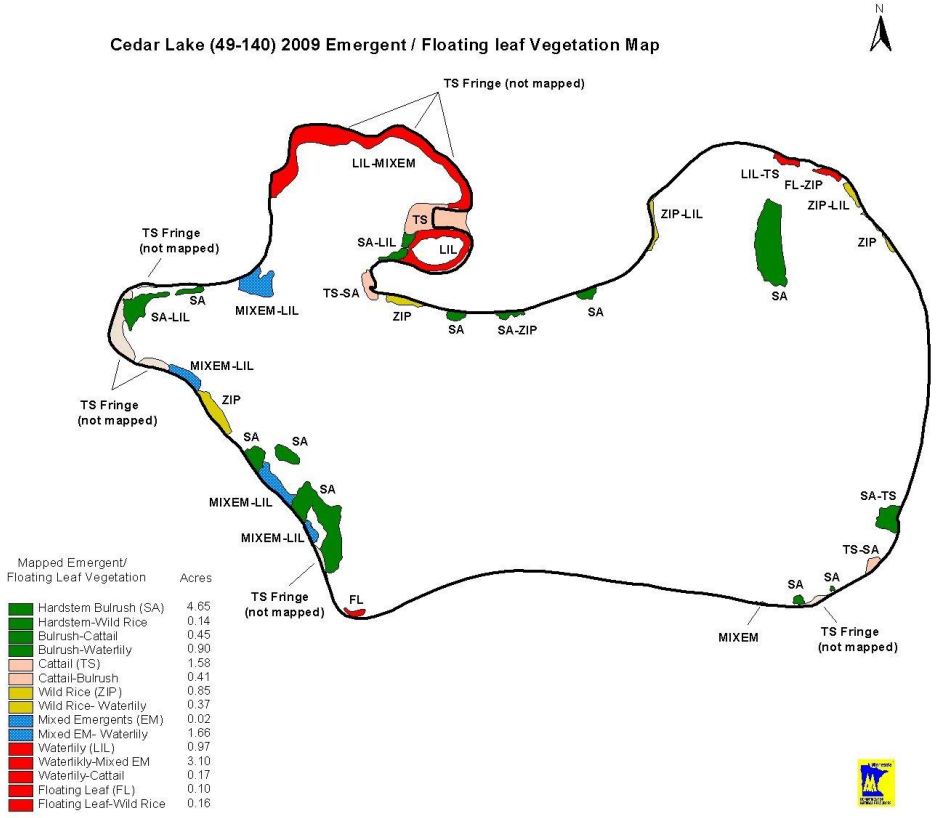

Figure 6a. - Aquatic Vegetation Map of Cedar Lake
Map prepared by DNR Fisheries

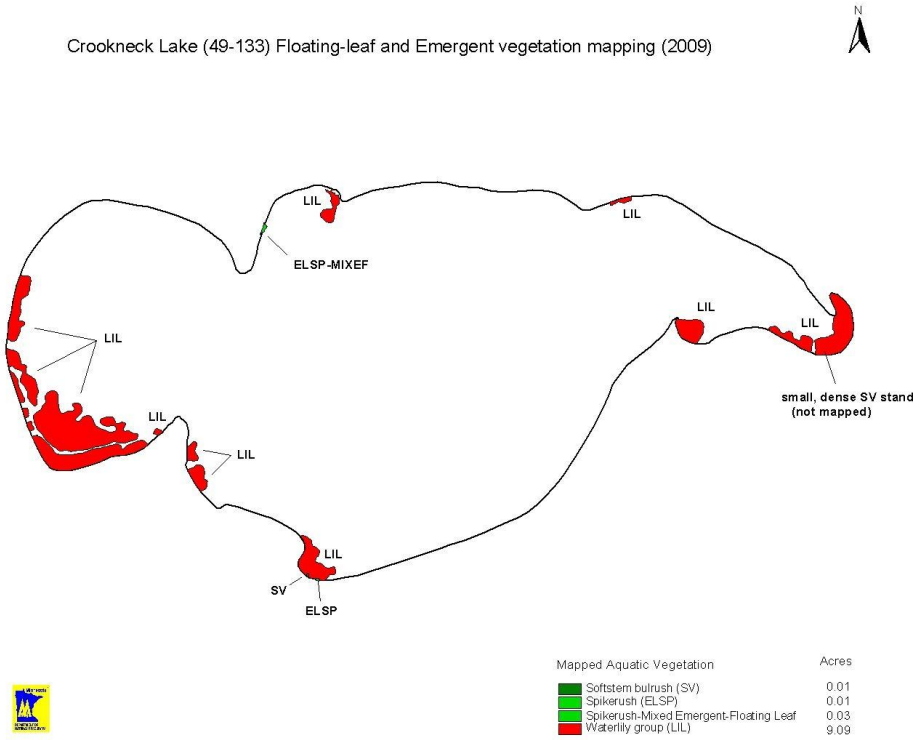

Figure 6b. - Aquatic Vegetation Map of Crookneck Lake
Map prepared by DNR Fisheries

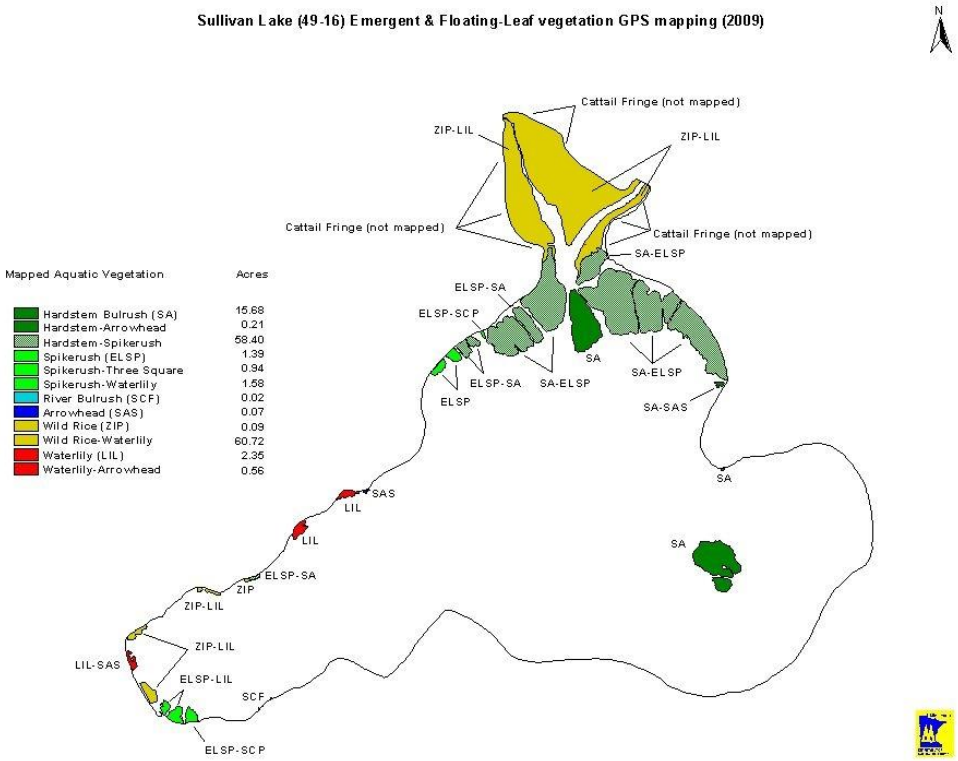

Figure 6c. - Aquatic Vegetation Map of Sullivan Lake
Map prepared by DNR Fisheries

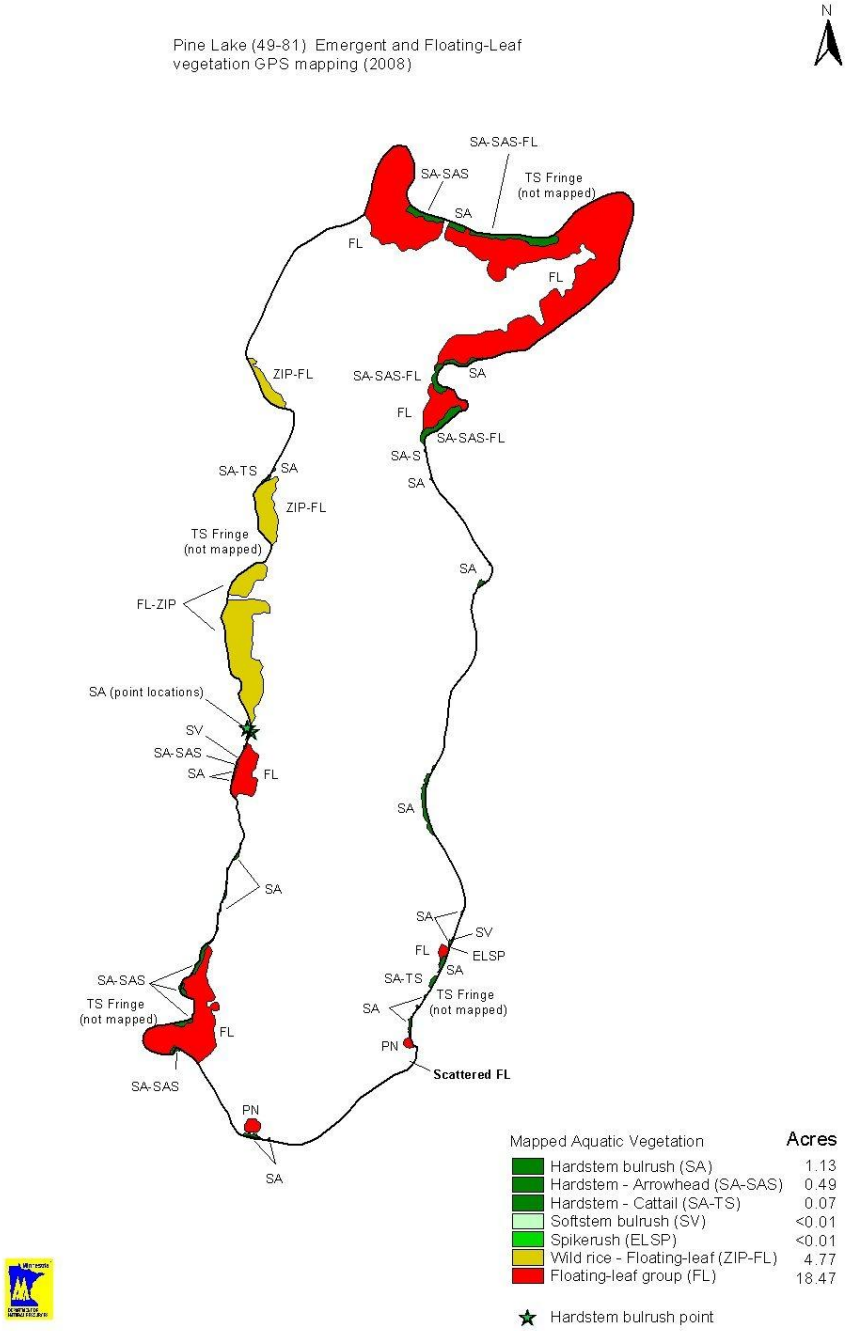

Figure 6d. - Aquatic Vegetation Map of Pine Lake
Map prepared by DNR Fisheries

Major Watersheds in Morrison County

THE WATER PLAN
MORRISON COUNTY

Small proportions of the Mississippi River – St. Cloud (168 acres), Crow Wing (21,000 acres), and Long Prairie (43,000 acres) major watersheds are located within Morrison County.
In contrast, two major watersheds, the Mississippi River – Brainerd and the Mississippi River – Sartell, cover the vast majority of the County with 250,000 and 360,000 acres respectively.
These two major watersheds cover 82.5 percent of the County.

ACRONYMS USED IN THIS PLAN

ACOE – United States Corp of Army Engineers

ACUB – Army Compatible Use Buffer

AMC – Association of Minnesota Counties

BMP – Best Management Practices

BOA – Board of Adjustments

BWSR – Board of Soil and Water Resources

CRP – Conservation Reserve Program (USDA)

CSP – Conservation Security Program

DNR – Department of Natural Resources

DWSMA – Drinking Water Supply Management Area

EQIP – Environmental Quality Incentive Program (USDA)

LA – Lake Association

LID – Lake Improvement District

LGU – Local Governmental Unit

LWMP – Local Water Management Plan

MDH – MN Department of Health

MDA – Minnesota Department of Agricultural

MHB –Mississippi Headwaters Board

MN Ext Extension – (U 0f M – Morrison County)

MPCA – Minnesota Pollution Control Agency

NRCS –Natural Resources Conservation Service

MPCA –MN Pollution Control Agency

NPDES – National Pollution Discharge Elimination System

OLA – Open Lot Agreement

PC – Planning Commission

P&Z –Planning and Zoning

SSTS – Sub-Surface Treatment System

SWAG – Surface Water Assessment Grant

SWCD – Soil and Water Conservation District

TEP – Technical Evaluation Panel (WCA)

TMDL – Total Maximum Daily Load

USDA – United States Department of Agriculture

USFWS – US Fish and Wildlife Service

USGS – United States Geological Survey

WCA – Wetland Conservation Act

WHPA – Wellhead Protection Area

GLOSSARY OF TERMS

AgBMP Loan program – low interest loan program administered by the Department of Ag. Morrison SWCD is the applicant and the funding revolves, allowing landowner an opportunity to borrow funds for conservation practices that have a water quality benefit.

aquifers - a body of permeable rock that is capable of storing significant quantities of water, that is underlain by impermeable material, and through which groundwater moves.

best management practices - methods, measures, or practices designed to prevent or reduce water pollution. Usually, BMPs are applied as a system of practices rather than a single practice.

Chapter 7080 rules – MN rules on septic design and standards.

cost-share - programs that partially reimburse landowners for implementing best management practices.

erosion - the wearing away of the land surface by rain, running water, wind, ice, gravity, or other natural or man-made agents.

groundwater - the water that moves down into the soil and underlying geological strata from the upper soil layers following rainfall. Groundwater is stored in aquifers and may move underground by streams or seepage.

impervious surfaces - surface that prevents or significantly reduces the entry of water into the underlying soil, resulting in runoff from the surface in greater quantities and/or at an increased rate when compared to natural conditions prior to development. Examples of places that commonly exhibit impervious surfaces include parking lots, driveways, roadways, storage areas, and rooftops.

intermittent - ceases to flow in very dry periods.

invasive - tending to spread.

land use - **any** building, facility, activity, development or operation that exists or operates on, in or around the earth.

native - those species that occur naturally in an area and have not been introduced, accidentally or otherwise, by humans.

nutrient - any element or compound that an organism must take in from its environment either because it cannot produce it at all or fast enough to meet its needs. In aquatic systems, nutrients can also be pollutants especially when they are excessive and contain phosphorus or nitrogen that permits high organic growth.

nutrient management – careful management of soil fertility so that crop needs are met while minimizing losses to surface or ground water.

open lot agreements – an agreement between the county and feedlot producers that allowed landowners a timeframe to address any pollution problems that might be present.

riparian - anything connected with or immediately adjacent to the banks of a stream or other body of water.

sediment - fragmented material that originated from the weathering of rocks and decomposition of organic material that is transported in suspension by water, air, or ice, to be subsequently deposited at a new location.

stormwater – the nature of stormwater is such that the amount of pollutants entering receiving waters (lakes, rivers, streams, etc.) will vary in accordance to the frequency, intensity, local drainage patterns and the duration of rain or snowfall or snowmelt events.

subwatershed - a hydrologically defined geographic area located within a secondary or larger watershed.

surface water – Water in lakes, rivers, ponds, creeks, etc.

tributary - a stream feeding, joining, or flowing into a larger stream.

watershed - a region or land area drained by a single stream, river or drainage network.

wellhead protection area - the area surrounding a well or well field that supplies a public water system through which contaminants are likely to pass and eventually reach the water well or well field.

wetlands - an area inundated by surface or groundwater at a frequency sufficient to support, and under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soils.

See approved Scoping Document for land formation, land use percentages, and historical Morrison County information.