

2002 Year in Review

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BROWN NICOLLET COTTONWOOD
WATER QUALITY BOARD

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This year starts the 4th year of my employment with the Water Quality Board. This past year like others has been exciting and full of change. Staff are managing 4 major water quality projects 1) Ground Water Vulnerability 2) McKnight Nitrate Reduction using Wetlands 3) Seven Mile Creek Clean Water Partnership 4) Little Cottonwood River Clean Water Partnership. These projects have been especially rewarding to coordinate since I have had the opportunity to watch them emerge into the implementation phase. It is gratifying to see water quality enhancing practices get put on the land and to know we are making a difference. In addition, we have also seen some major political changes this past year. In the spring of 2002 a new Federal Farm Bill was passed by congress with additional provisions to protect water quality. As I write this however, the rules regarding the Conservation Security Act portion of the bill have yet to be fully written. This new legislation along with TMDLs, and the state's budget shortfall will have the most impact on the future management of our watershed projects. By October we were happy for yet saddened by the news that our director Bonnie Holz was resigning and taking a new position with the MDH in Duluth. Bonnie's ingenuity, experience, and overall talent in leading locally led water quality initiatives will be missed greatly. This coming year holds continued excitement and change. We are just starting the Seven Mile CWP and McKnight nitrate reduction project. Conversely, we will complete the groundwater vulnerability, St. Peter Wellhead Protection 319 grant, and Little Cottonwood CWP. This coming year, be on the lookout for invitations to a watershed tour showcasing water quality initiatives, water quality project website, and the National Watershed Heroes Conference in June.

Kevin Kuehner
Water Quality Board Project Coordinator

Seven Mile Creek Watershed Moves into Implementation

By May of 2002, we received news that the Seven Mile Creek Watershed was successful in its application for a phase II Clean Water Partnership Grant to accelerate the adoption of BMPs within the 23,551 acre watershed. The grant ranked number one in the state! We were awarded full funding in the amount of \$196,432 and \$550,000 in low -interest loan money to upgrade septic systems. This project is truly an example of leveraging and collaboration. With cash contributions from



In December work began on a \$15,000 project to help stabilize 1,000 feet of stream bank in effort to protect a bridge in Seven Mile Creek Park. The design also included fish habitat improvements.

Seven Mile Creek Watershed Moves into Implementation Continued....

other grants, MDNR, Nicollet County, and in-kind sources, project funds total \$953,348. The leveraging translated into a 4:1 match to grant ratio. Major emphasis the next three years will be placed on:

1. Buffer strips along the riparian corridors
2. Upgrading non-complying septic systems (Steve Stauff will be coordinating this effort)
3. Nutrient Management through nitrogen insurance, N-rate validation, and record keeping systems

Education and water quality monitoring will continue to be emphasized. In addition demonstrations for stream bank protection will be conducted. A kick start to the implementation phase began in December when work began on a \$15,000 project to help stabilize 1,000 feet of stream bank in effort to protect a bridge in Seven Mile Creek Park. The design also included fish habitat improvements. The project was funded by Seven Mile Creek CWP, Alliance Pipeline, and MDNR trout stamp money.

Little Cottonwood Project Focuses on CRP in Targeted Areas



Gerald Riederer, Comfrey, explains the difficulty of farming a 10 acre field along the LC River and the subsequent enrollment into CREP. Gerald and 4 other landowners in the watershed were interviewed because of their participation in conservation programs. The interviews will be showcased in a River Hills Mall Kiosk and other conservation related venues.

The Little Cottonwood River project completed its second year of the implementation phase in 2002. Following the success of the CREP initiative in the LCR watershed, NRCS/SWCD and watershed staff focused on other conservation options for landowners. Each landowner that is eligible to enroll in a conservation practice was contacted via a general letter that described the Little Cottonwood project and the cost-share options that are available. Some of these options include:

- ◆ Continuous CRP filter strips: A large potential exists for establishing filter strips along ditches and streams in the watershed. Staff identified all of the landowners that have eligible land for CRP filter strips. Some of these landowners were mailed aerial photos illustrating their eligible land and estimates of the payments they could receive if they enrolled in CRP. The rest of the qualifying landowners will receive similar proposals in 2003.

- ◆ FWP: The Farmable Wetland Program is aimed at enrolling small prairie potholes in CRP. Landowners can enroll up to 5 acres of farmable wetland and a 3:1 buffer around the wetland. Eligible landowners within the Little Cottonwood watershed were identified by staff. Our efforts have been mostly aimed at areas on the edges or corners of fields as these wet areas are

more likely to be enrolled. Some of the eligible landowners were contacted and given aerial photos and payment estimates in 2002 and the rest will receive similar proposals in 2003. Follow up visits and/or phone calls will follow to help those who are interested in signing up for the programs.

Activities for Final Year 2003:

- ◆ Host watershed tour of BMPs
- ◆ Construct Stream Fencing Demonstration
 - ◆ Develop Watershed Web page
- ◆ Accelerate CRP enrollment in priority areas

Adjusting N Rates For Profit and Water Quality St. Peter Wellhead Protection Phase III

Are University of MN Extension recommendations for nitrogen valid on my farm and if so can I reduce current nitrogen rates yet still maintain yields and increase profits? Attempting to answer those questions for area St Peter wellhead producers was the main goal of the Phase III 319 grant. Now in its final year, all of the data is in and it appears that question can finally be answered.

After ten years of education and outreach to local producers about the high vulnerability of nitrate loss to drinking water, it was found that nitrogen (N) application rates were still 30-80 pounds over the recommended rate of 120 pounds/acre. At various technical meetings it was found that the major obstacle for producers not applying at UM rates was due to a lack of confidence in the recommendations. Some producers and fertilizer dealers believe that UM rates are not representative of their farm's soils, farm management, and other conditions. Therefore, why possibly risk a reduction in yield with a lower rate of nitrogen fertilizer? With the help of local and state agencies, agronomists from Blue Earth Consulting,

"Results from the past three years show the University recommendations of 120 pounds per acre of N is more than adequate for maximizing net returns while reducing potential nutrient loss"



In December, wellhead technical committee members discussing the N-rate validation results.

wellhead producers, local fertilizer dealers, new technologies such as GPS, GIS, and yield monitors several nitrogen rate validation plots were set up to help prove or disprove this issue.

After three years of demonstrations, the results indicate that the most economical optimal nitrogen rate for corn following soybeans is in the range of 90 to 120 pounds of nitrogen per acre. As seen in the table on page 4, even with no nitrogen applied almost 130 bushels/acre was achieved. The yields jumped 20 bu./acre with 60 lbs/acre of N and 4.4 and 2.8 bu./acre for an additional 30 pounds of N respectively. After 120 pounds there was no yield response to nitrogen fertilizer. From an economic stand point it appears that the most economical nitrogen rate falls in the range of 90-120 pounds of N/acre.

Results from a 1998 MN Dept. of Ag. survey reported on average of approximately 50 pounds/acre of N was being applied above UM recommendations on corn following soybean rotations in the wellhead protection area. Assuming producers are over applying N by just 30 lbs./acre N for additional insurance purposes, 38.1 tons of N would have the potential of being leached away through the soil profile in the St. Peter Wellhead Protection Area. If the rate was cut back from 150 lbs./acre to 120 lbs./acre the 22 producers in the wellhead area could save \$15,240 or on average \$6/acre/year on their corn ground.

Producers may not be comfortable applying 90 pounds of N per acre to soybean stubble for corn-production, but applying more than 120 pounds may cut into farm profits. Some N rate in between may provide the best yield and profit scenario for



Adjusting N Rates For Profit and Water Quality

St. Peter Wellhead Protection Phase III Project Continued.....

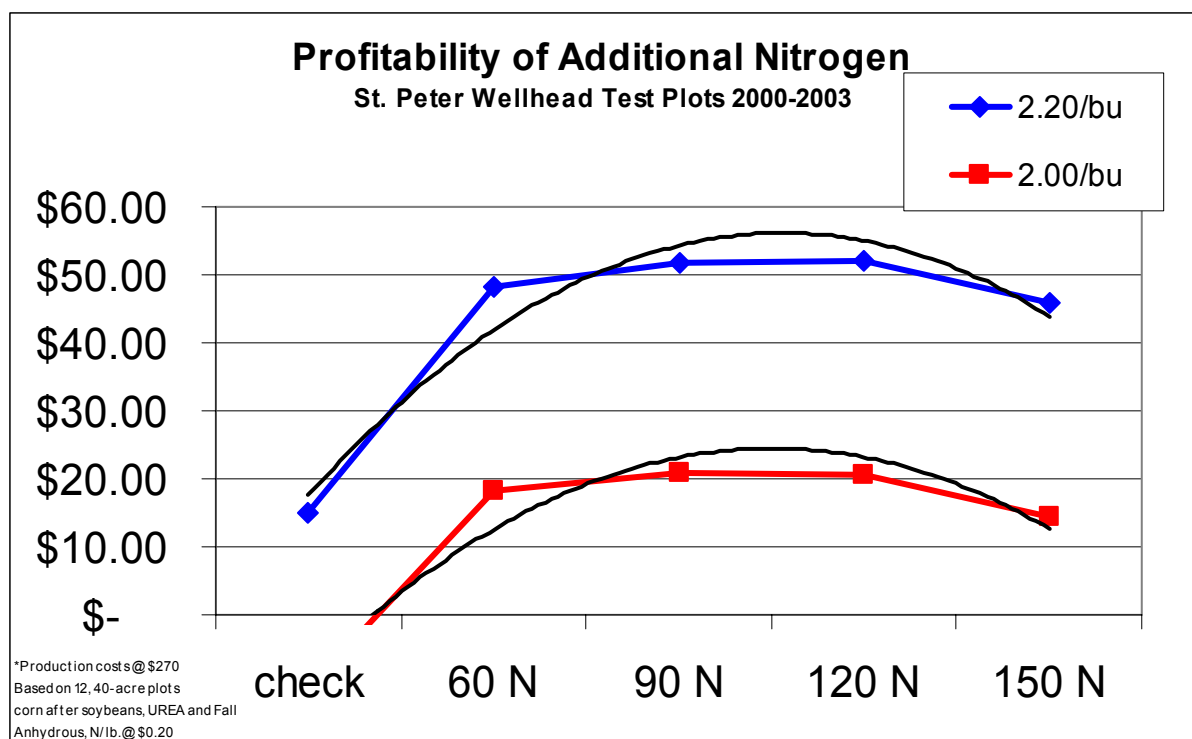
individual farmers.

In conclusion, on-farm nitrogen rate demonstrations show that farmers can reduce nitrogen fertilizer rates significantly without sacrificing yields. Results from the past three years show the University recommendations of 120 pounds per acre of N is more than adequate for maximizing net returns while reducing potential nutrient loss, especially during rainfall events on corn after soybean rotations. Whether producers and fertilizer dealers are reducing nitrogen application rates based on this information is yet to be seen. Even though the 319 project has officially ended there are plans to evaluate the effectiveness of this project through a re-survey late in 2003. Further demonstrations will be conducted in the following crop seasons in the Seven Mile Creek Watershed to confirm these findings and support the goals of locally led groundwater protection.

N Rate	Bu/A
0	129.5
60	150.1
90	154.5
120	157.3
150	157.2

Three-year Average Nitrogen Rate Validation Plot Results.
2000-2001-2002 (500 acres-12,40-acre fields)

A meeting will be held March 11 in Mankato at the Country Inn and Suites to share the results of over 30 N-rate validation plots in South Central MN. For more information contact the Water Board at 507-934-4140



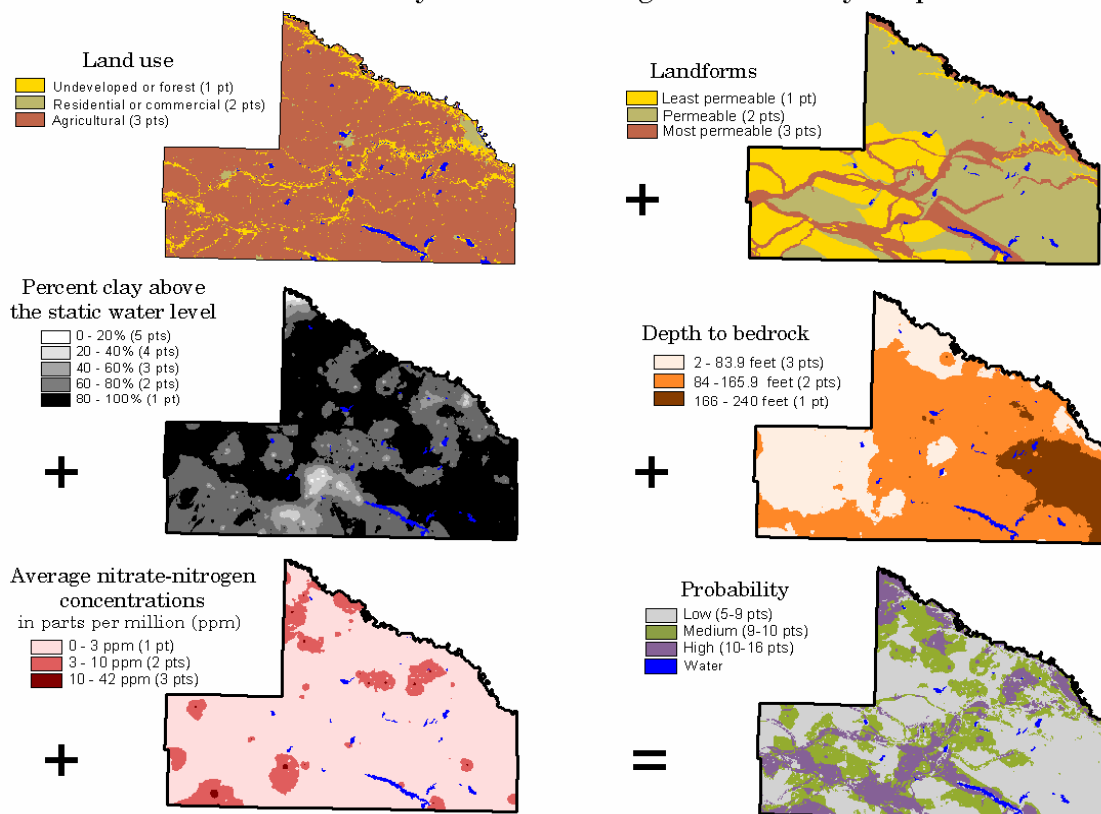
Groundwater Vulnerability Project

A Water Resource Protection Management Tool

The Groundwater Vulnerability Project is designed to provide county planning and zoning commissions with groundwater information for land management and zoning decisions. The goal of the project is to use 12 years of groundwater monitoring data, the County Well Index and Geographic Information Systems (GIS) instruments to provide guidance in land management decisions with a focus on long-term protection of ground water resources.

The Groundwater Vulnerability Project began its implementation phase in 2002. The project was presented before the Planning and Zoning Commissions of Nicollet, Brown and Cottonwood Counties early in the year. At that time, the commissions were provided with county wide nitrate probability maps. Since then, Environmental Services for each county have also been provided with township scale probability maps. The project was applied to fifteen feedlot applications and one subdivision in 2002. Prior to the public hearings for each application, commissions were provided with probability maps of the proposed site and narrative descriptions of the nitrate vulnerability of the areas. Unexpectedly, the proposed sites for each application have been located in areas with little probability of groundwater contamination by nitrate. As a result, the effectiveness of the project as a tool to develop conditions on use permits has not been tested. However, this has revealed the value of the tool as a way to reassure neighbors of proposed sites with concerns regarding groundwater contamination. In 2002, the Groundwater Vulnerability Project was presented at the state Environmental Health conference, a national Environmental Health conference, the Minnesota Rocks and Water conference, Ground Water Guardian Conference in Eugene, Oregon, and the state Planning and Zoning conference. The Planning Committee continues to meet to refine the project and map out its future. This project will officially end in June of 2003, followed by a report summarizing the findings. Scott MacLean is coordinating the project.

Brown County Nitrate-Nitrogen Probability Map



Data layers used in producing a nitrate probability map. The end product is a combination of land use, land forms, % of clay above water table, depth to bedrock and, water quality. Areas in purple on the probability map indicate potential nitrate contamination to ground water.

Headlines

- ◆ Potential wetland sites selected for McKnight Foundation Nitrate Reduction Project.
- ◆ Four Interns volunteer with us in the winter and spring. Andrew Bussey, Lane Cowger, Jeff Brown, and Matt Tjossas. The Gustavus students helped out in the laboratory and various water quality project tasks.
- ◆ February-Iowa State University Professors help locate possible sites for nitrate reduction project in Little Cottonwood River Watershed. Wetland sites have been selected and are in review for construction.
- ◆ April-Informational meeting on New Federal Farm Bill held at Swan Lake. Legislative aid Tom Meium speaks to over 70 area farmers on the Farm Bill and its relation to conservation.
- ◆ Helped coordinate efforts to resolve issue with failing dam west of St Peter.
- ◆ Agreement made between MSU Water Resources and BNC Water Board to develop website showcasing water quality projects and results. Website will be on line by mid-2003.
- ◆ June- Middle Minnesota watershed team sponsors canoeing and boating day on Minnesota River for policy makers. County Commissioners, city council members and river enthusiasts paddle from Sibley Park in Mankato to Seven Mile Creek Park south of St Peter.
- ◆ June. St. Peter selected to host national Farm Bureau sponsored Watershed Heroes Conference. Staff assist with coord/presentations
- ◆ Staff assist with Modeling developed to help estimate effectiveness of BMPs used for Seven Mile Creek Watershed.
- ◆ August- LCR receives additional money to keep USGS station running near Courtland.
- ◆ November—Perimeter Tile Monitoring for Northern Plains Dairy begins.
- ◆ Conservation Interviews conducted in LCR Watershed. Interview will be used in conservation related articles, newspapers, and River Hills Mall Kiosk.
- ◆ Paired Watershed Research Project in Western Nicollet County continues to develop. Producer surveys completed, and BMPs introduced in treated watershed.
- ◆ Scott MacLean coordinates bio-monitoring with St Peter area High School students on Seven Mile Creek
- ◆ October 15, 2002, Bonnie Holz director of Environmental Health and founder of the BNC Water Board resigns and takes MDH position in Duluth, MN. Karen Swenson is hired as new Director.
- ◆ Steve Stauff receives certification for basic/installer and design for Individual Sewage Treatment Systems.



MM Team sponsors canoeing and boating day on MN River for area policy makers.

Water Resource Presentations and Related Educational Events 2002

	<i>Attendance</i>	<i>Month</i>
Children's Water Festival-Mankato	100+	March
MN Rivers and Lakes Conference	60+	May
Lake Hanska Conservation Days	60+	May
Red Top Farms and Seven Mile	80+	September
St Peter Wellhead protection efforts	150+	April, Oct, Nov.
State and National Env Health Conf.	250+	October
State Planning and Zoning Conf.	100+	Sept.
Groundwater Guardian Conf. Oregon	60+	Nov.

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