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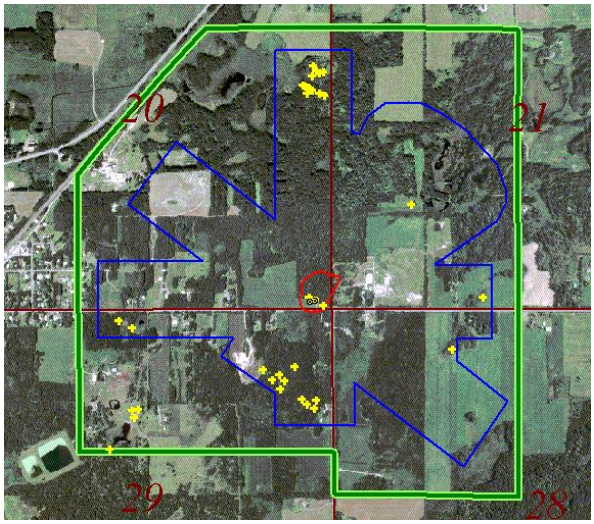
MRWA Source Water Success in Askov – District 8

The City of Askov, MN, (population 371) is located on Highway 23, approximately 50 miles southwest of Duluth and Lake Superior. The city's drinking water is supplied by two bedrock wells located 1-1/2 miles east of town, outside of the city limits. Because of the area's varied Karst geology, and the vulnerability of the water supply to impact from land surface activities, concerns were expressed years ago by local citizens and city staff regarding the safety of the water supply. With the help of MRWA, the city developed a Wellhead Protection Plan.



Askov is situated in an area of differing and dynamic geologic materials. Within a radius of 5 miles around the community, the geology changes from exposed granite bedrock to fractured sandstone. Because of other unique geologic features, which include a reverse fault line just south of the city's well field, the area is pockmarked with naturally occurring sink holes, lots of sink holes!

The city's wells are rather new and have consistently provided a good safe supply of drinking water. However, private wells in the same area contain elevated levels of chloride, an indication of human impact on groundwater in the area.

Because sink holes can function to introduce surface water into the groundwater aquifers, they are suspect as points of entry for potential contaminants. A study conducted in the late 1990's identified several sink holes in the City's DWSMA, including two directly adjacent to the city wells. MDH monitoring identified a surface water component of the city's water supply. Working with the local SWCD, the City dug up the suspect sink holes near the wells and sealed them with tamped clay to prevent the re-entry of surface water to the groundwater. Later testing by MDH indicated an improvement in water quality in the city's wells.

Minnesota Rural Water Association
217 12th Avenue SE, Elbow Lake, MN 56531
Ph: 800-367-6792 * Fax: 218-685-5272
E-mail: mrwa@mrwa.com * Web: www.mrwa.com

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MRWA Source Water Success in Vermillion – District 2

The city of Vermillion, Minnesota is located along the Vermillion River in Southern Dakota County and is home to approximately 450 residents. The small community owns two wells from which it obtains it drinking water supply. The city drilled its first well into the Mt. Simon aquifer in 1987, but later drilled an additional shallower well in 1993 to improve the aesthetic quality of the city's drinking water. Since then, Vermillion has exclusively utilized the newer well, and has enjoyed great-tasting water that meets the Safe Drinking Water Act (SDWA) requirements.

While the city's water meets or exceeds all SDWA requirements, the course soils of the area in addition to a lack of geologic protection over the aquifer utilized by the city to provide drinking water to its residents includes challenges the city is only beginning to address in earnest as part of their wellhead protection planning effort. The most pressing water quality issue before the city is that of the presence of nitrates in the drinking water. While the levels are still low and well below the SDWA maximum contaminant level (MCL) of 10.0 mg/L,

Nitrate issues related to the ground water in Dakota County have surfaced frequently over the years. Various efforts by entities such as Dakota County Environmental Services, and the Vermillion River Watershed Joint Powers Organization have led to a better understanding of the area's ground water resource. The city of Vermillion has been on the receiving end of these efforts, and hopes to reverse the upward trend of the nitrate levels exhibited in the city's drinking water supply.

The city has recently been involved with developing their Wellhead Protection Plan, and hosted an informational event in conjunction with a nitrate-testing clinic with assistance from staff associated with Dakota County Environmental Services, the Minnesota Department of Health, and the Minnesota Rural Water Association. The event was widely publicized and open to

Dakota County residents outside the city of Vermillion. In holding the event, the city WHP committee hoped to raise awareness of the public about the connection between land uses and their impacts on ground water quality. Each event participant was able to have water samples tested for nitrate levels, and was provided information about the relevance of the test result. Educational displays relating to the City's wellhead protection project and ground water resources were available, and agency staff was on hand to field and answer questions.

The Vermillion wellhead protection committee felt that their goal to raise public awareness of ground water issues was a success. Mark Peine, Wellhead Protection Manager and Water Operator for the City of Vermillion commented, "I believe our event was a success just by the fact that so many people came to it which shows that people are aware that nitrates are a problem. They were concerned about water quality in general." Of the 72 wells that were tested for nitrates, 32 of those samples exceeded the MCL of 10.0 mg/L. Of those 32 samples, 11 were over 20 mg/L. The highest nitrate level tested at 34.3 mg/L. The participants in the nitrate clinic showed an awareness of the region's ground water quality challenges, and it's this level of concern that is what is needed for the city of Vermillion to have a chance to enlist the cooperation of area property owners in efforts that may lead to lower nitrate levels in the water.

While it's clear that the city of Vermillion will have its work cut out for it as it begins to work with cooperating agencies to influence nitrate levels in its drinking water supply which are still well below the EPA allowable levels, Mr. Peine layed the wellhead protection team's strategy, stating, "Our focus will be to continue to pass along information and continue to educate the public and work with the property owners with unsealed wells to obtain grant money to seal them." We will continue working with the city of Vermillion and hope to have interesting and positive things to report in the future.

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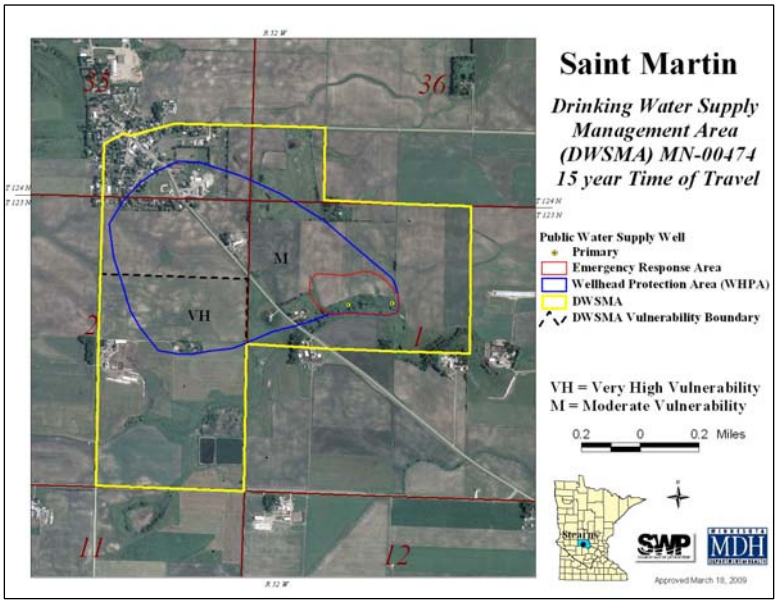
MRWA Source Water Success in St. Martin – District 6

CITY OF ST. MARTIN UTILIZES SWP IMPLEMENTATION GRANT TO CLEAN UP GRAVEL PIT/DUMP SITE

With the assistance of the Minnesota Rural Water Association, the City of St. Martin, population 344, located in south-central Stearns County, completed the development of a wellhead protection plan in May of 2010. Delineation of the wellhead protection area (WHPA) and drinking water supply management area (DWSMA) were completed by Richard Soule, hydro geologist with the Department of Health, SWP Unit.

The City of St. Martin is located on an upland area that overlooks a meander loop of the Sauk River. The geology in the area of the identified WHPA/DWSMA is composed of sand and sandy-clay glacial till materials overlaying low-permeability bedrock, with thin layers of sand present at several soil horizons. The northern area of the DWSMA was determined to be **moderately vulnerable** to contamination and the vulnerability of the southern portion was identified as **very high**, due to the lack of protective, or confining, material above the aquifer.



During discussions with members of the City's Wellhead Protection Team, an existing gravel pit/dump site was identified inside the southern-most curve of the WHPA, in the area of the DWSMA that exhibits a very high vulnerability to contamination from land surface activities. Gravel is no longer being removed from the pit; however, there has been open water in the pit from time to time, and the land around it has been used as a family dumping area for many years. One of the management measures in the City's WHP Plan is to work with the identified land owners to control access to the former gravel pit and to assist them with cleaning up the site and restoring it to natural grassland vegetation.

The City applied for a SWP Implementation Grant from the Minnesota Department of Health (http://www.health.state.mn.us/divs/eh/water/dwp_cwl/grants/index.html) and was awarded $10,000 to assist with clean-up and restoration of the area. Phase One of the project consisted of debris removal and construction of a berm to restrict access to the site. The entire 4.33 acres have been thoroughly investigated, with all debris sorted, removed and/or recycled. A berm to restrict access to the site was created during the investigation process. As existing gravel materials were moved, gravel was placed in piles along the outer perimeter of the site. Phase One was completed, as proposed, in the summer of 2010.

Because of the size and extent of the restoration process, remaining Phases of the project will be completed as funding becomes available. Phase Two of the project will consist of filling subsurface areas on the site with low permeable clayey soil from several areas on the property, to prevent surface drainage from entering into the aquifer, by constructing a minimum 10 foot confining layer. Phase Two is scheduled to begin as soon as funds are available and should be completed by the fall of 2011.

Phase Three of the project will involve grading and leveling the site.

Phase Four of the project consists of removing any existing top soil, landscaping, replacing the top soil and planting the area with native grasses.

The City continues to utilize technical assistance from the Minnesota Rural Water Association, the Sauk River Watershed District, and the Stearns County Soil & Water Conservation District.

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MRWA Source Water Success in Red Rock Rural Water – District 1

Background:
The Red Rock Rural Water System (RRRW) is located near the City of Jeffers, Minnesota in Cottonwood County. This area in Southern Minnesota is known for its rich prairie soils and productive farmland. RRRW manages 2 Wellhead Protection Areas (WHPA). Both the RRRW Great Bend and Augusta Lake WHPA's rely on sand and gravel aquifers located along the Upper Des Moines River where water quality of the aquifer is influenced by upland run-off. The RRRW system has approximately 2025 connections and serves a population of 8000 people including nine towns. The RRRW has been working closely with MN Rural Water Association in the implementation of their wellhead protection plans. Some of the implementation highlights are listed below.

Key Accomplishments:

- 2001--Working with neighboring landowner, RRRW was able to have 185 acres immediately around the 3 PWS wells taken out of agriculture production and enrolled in CRP in the Lake Augusta WHPA.
- 2006 –Voiced concerns for gravel mining and related uses in Wellhead Protection Areas resulting in changes in the County Land Use Control Ordinance that provides better review and protection of groundwater. This was accomplished through a series of meetings with landowner's, gravel mining operators, etc. to hear and resolve issues in a positive manner.
- 2008–Working with Cottonwood County and landowner in Augusta Lake WHP area to clean up a junk and salvage operation. Worked with key landowner in Augusta Lake WHP area to establish a "Nutrient Management Initiative" test plot to improve nitrogen management beneficial to water quality and a producer's bottom line. Hosted "Drinking Water & Ag Field Day" with the City of Windom at the Lake Augusta WHP area and treatment plant site to educate people about their drinking water supply and importance of Ag best management practices.

- 2009 – Promoted and helped coordinate a 5th grade children's water festival to help promote local knowledge among students about groundwater and water resources. Delivered a letter while in Washington D.C. to USDA FSA staff thanking staff and supporting changes to continuous sign-up CRP Policy.
- 2011 – Enrolled 270 acres in the Wellhead Protection ReInvest in Minnesota Easement program to provide protection to the acres immediately surrounding the Lake Augusta Wellhead.

An active and willing participant in state and local water resource planning initiatives to help protect local groundwater supplies.

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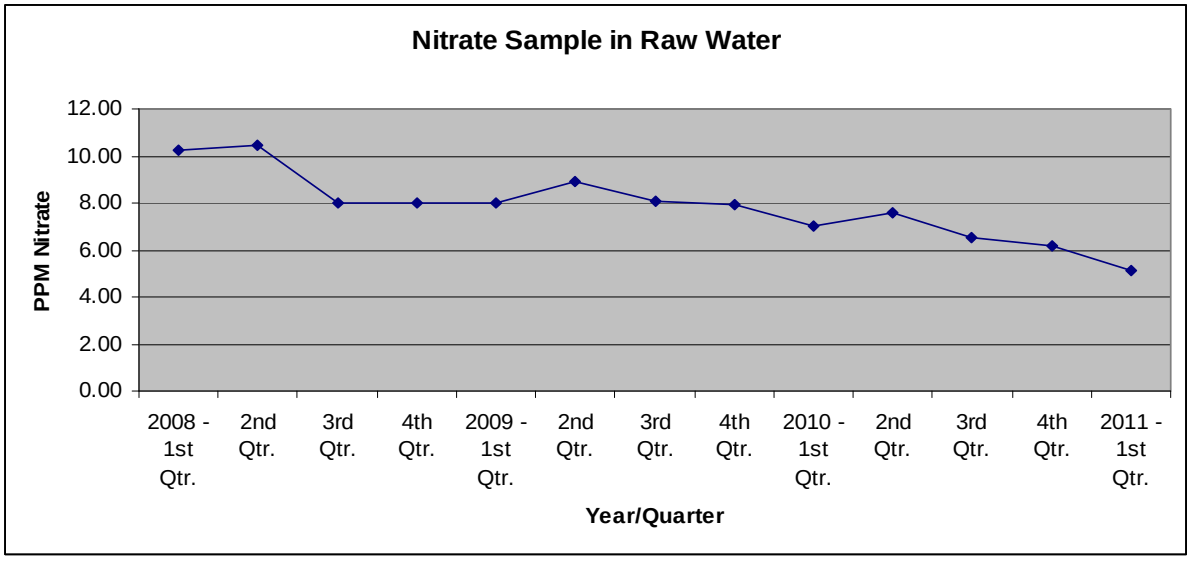
MRWA Source Water Success in Edgerton – District 1

Background:

Edgerton is a small farm community (1000 pop.) located in Pipestone County, in the southwestern part of Minnesota. Elevated nitrate-nitrogen has been an issue for this small public water supplier since the late 1980s. To address this issue the city began working with the MN Rural Water Association to develop a wellhead protection plan which was adopted in the late 1990s. Since then the City has been implementing their wellhead protection plan and having success with lowering nitrates in their drinking water.



Best Management Practices:

The city is working with landowners within their DWSMA to take steps to reduce the impact nitrate-nitrogen has on the public drinking water supply. The city has negotiated with adjacent landowners to adopt various agricultural best management practices developed to address nitrogen management, including enrollment of key cropland acres into the conservation reserve program. These efforts by local farmers and city officials have paid off by reducing nitrate levels in the source water aquifer.

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MRWA Source Water Success in Cromwell – District 8

MDH Grant to Seal Unused Private Wells in the City of Cromwell DWSMA

During an on-site visit to complete a wellhead protection plan implementation evaluation with staff from the City of Cromwell, in Carlton County, the discussion included additional potential contaminants in the Drinking Water Supply Management Area. The city's water operator said he noticed two metal casings in the field of a property that was platted a few years ago. A closer examination revealed that the casings were part of two old water wells that had been abandoned. One was 44 feet deep with a submersible pump in the well, the other 25 feet deep with no obstructions.

The city contacted the property owner who did not plan on using the wells, although intending to leave them for future buyers of the property. Concerned that the wells could be a threat for contamination to the municipal drinking water supply, the city asked the owner if he would be willing to seal the wells. The owner said he did not want to incur the expense of sealing and wanted the wells to be available for future owners.

The city and MRWA then explored grant opportunities available through the Minnesota Department of Health (MDH) and the possibility of receiving a grant to cover the well-sealing cost. Informed of this opportunity, the city asked the property owner if they would be interested in sealing the wells with no cost to the property owner. The owner soon agreed to have the wells sealed. The city hired Fideldy Bros Well Drilling and the work was completed in September of 2011

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