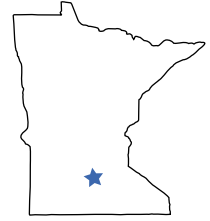




Drinking Water Protection

City of St. Peter Wellhead Protection—A Case Study

Developed cooperatively between the Minnesota Department of Agriculture and the Minnesota Department of Health



St. Peter is located in south-central Minnesota nestled in the beautiful Minnesota River valley. Substantial growth and development are projected for the future of St. Peter and supplying quality drinking water is very important for long-term economic growth and stability of the city. Approximately 350 million gallons of drinking water are supplied annually to over 10,000 residents.

St. Peter's Water Quality and Unique Challenges

- ◆ Seven supply wells, varying in depth from 130 to 670 feet, pump water from three separate aquifers. Of these, four shallow wells are considered vulnerable to land use activities.
- ◆ Nitrate levels in the vulnerable wells have been steadily increasing since the 1980's. In response to this threat, a planned approach was developed on how to minimize risks from nitrates and other contaminants.
- ◆ City staff blend water from various wells to produce a finished water supply which typically contains nitrate-N levels between 4 to 5 parts per million (PPM), the health standard is 10 PPM. A new nitrate removal system was considered, but not constructed because of the high cost of operation
- ◆ St. Peter's wellhead protection area covers over 4,600 acres. Over 80% of the protection area is cultivated cropland consisting of corn, soybeans, and canning crops.
- ◆ Drainage water derived from tile-drained cropland on the western edge of the management area is discharged onto coarse-textured soils near the city limits. The rapid infiltration of water through these coarse soils allows rapid movement of contaminants into the aquifer.



Successful Action Steps

- ◆ Community residents, farmers, businesses, and state/local agencies developed a wellhead protection plan to protect the city's water supply. Management goals and strategies in the plan define implementation steps to address nitrate contamination from cropland, lawns, and septic systems. This plan was approved in 1998 and was one of the first of its type in Minnesota.
- ◆ Local units of government were instrumental in obtaining funding through state and federal grant programs. Assessing the extent of the problem and implementing numerous educational activities were made possible through these grants.
- ◆ City residents, farmers, and businesses are provided with information on specific actions they can take to protect drinking water. Information is distributed through public meetings, media, direct mailings, utility bill inserts, demonstration projects, and curriculum being taught in local schools.
- ◆ An inventory of potential contaminants was compiled by interviewing property owners. Personal interviews provided an excellent "one on one" opportunity to explain the importance of protecting their drinking water resource.

- ◆ A well sealing campaign was initiated for inactive private wells. This campaign successfully sealed numerous wells and identified some previously unrecorded ones.
- ◆ In 1996, an “on-farm” study was conducted to evaluate farmer’s current nutrient management practices, fertilizer/manure rates, and review associated management decisions. This information helped target educational programs focused on reducing nitrogen application rates and promote nitrogen best management practices (BMPs).
- ◆ Rural residents are encouraged to upgrade failing septic systems through low interest loan, cost share programs, and upgrades through property transfer requirements.
- ◆ Homeowners are learning about efficient ways to manage nitrogen fertilizer applications on their lawns. Lawn and garden care demonstrations are held at local parks. Lawn management information is supplied to the homeowner through monthly water statements.
- ◆ The “Red Top” demonstration farm was established in 1995 as a means for evaluating the U of M fertilizer recommendations, associated nitrogen BMP’s, and subsequent water quality. This site has been a highly successful demonstration tool.
- ◆ Informational handbooks were developed and distributed to farmers and agricultural professionals within the wellhead protection area. These handbooks emphasize activities producers and landowners can implement to reduce groundwater contamination.
- ◆ Numerous nitrogen validation trials have been established on farmer’s fields. Results from these trials have consistently proven that farmers can produce maximum economic corn yields and reduce nitrogen inputs. Farmers in the protection area are beginning to implemented positive management changes on their own farms after seeing these results.
- ◆ Crop consultants and agricultural retailers are taking a leadership role in promoting nitrogen BMP’s and developing nutrient management plans. Some farmers in the area are taking advantage of cost share incentives for developing these plans through the Environmental Quality Incentive Program (EQIP).

Future Activities and Needs

- ◆ Continued educational efforts will be directed towards landowners, farmers, agricultural professionals, businesses, and residents to encourage their participation in stewardship activities.
- ◆ New technologies and management practices will continue to be evaluated and promoted by farmers, agricultural professionals, local/state agencies, and the University of Minnesota. These methods include: bio-engineered crops, variable rate nitrogen applications, nutrient management planning, nitrogen stabilizers, alternative land uses, wetland restoration, and winter rye cover cropping.
- ◆ Wellhead protection will influence future land use planning for the city and county. New residential developments will incorporate catch basins to filter out potential contaminants.

For more information:

Minnesota Department of Agriculture - www.mda.state.mn.us/appd/waterprotect.htm

Minnesota Department of Health - www.health.state.mn.us/divs/eh/water/index.html

Minnesota Rural Water Association - www.mrwa.com

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