Minnesota's 2025 Water Testing Clinics for Nitrate Summary

10/13/2026

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Minnesota Water Testing Clinics for Nitrate Summary Report – 2025

Executive Summary

Nitrate is one of the most common contaminants in Minnesota's groundwater. The majority of Minnesota households have access to safe drinking water supplies. However, in areas vulnerable to groundwater contamination, some public and private wells have nitrate levels that exceed the health risk limit. While elevated levels of nitrate in groundwater can result from several factors, a major contributor in rural Minnesota is nitrogen from commercial fertilizer or manure that leaches past the crop root zone.

The MDA collaborates and sponsors any entity in Minnesota that hosts free nitrate testing clinics. These entities are local water partners, such as Soil and Water Conservation Districts (SWCDs), County Environmental Services, and other entities such as the Minnesota Well Owners Organization. Water clinics increase public awareness of nitrate contamination in rural drinking water and provide individuals with a snapshot of nitrate concentrations in their wells. The clinics provide an opportunity to discuss options for wells and clarify potential harm from consuming water with nitrate contamination. Test results are intended for the private well owner’s personal use, and participants may remain anonymous.

The local water partners that host clinic are the primary partner. Secondary partners may provide assistance. Primary partners generally house an ultraviolet spectrophotometer used for testing. There were 17 primary partners and 12 secondary partners who conducted nitrate testing clinics in 2025. Ten water testing clinics were held by two or more partners. Water samples from 24 Minnesota counties were tested, with samples ranging from 14 to 264 per county.

- Across all counties, 6% (138) of 2,233 water samples exceeded the drinking water standard for nitrate (>10 mg/L).
- Seven counties had more than 10% of water samples over 10 mg/L nitrate
- Six counties had between 5% and 9% of water samples over 10 mg/L nitrate
- Eleven counties had less than 5% of water samples over 10 mg/L nitrate

Nitrate in Groundwater

The health risk limit for nitrate in drinking water is 10 mg/L, according to the U.S. Environmental Protection Agency (EPA) and the Minnesota Department of Health. The reference of 10 mg/L of nitrate is the same as 10 parts per million. Through local partners such as SWCDs and County Environmental Services, the Minnesota Department of Agriculture (MDA) offers free clinics to test for nitrate and increase public awareness of nitrate contamination in rural drinking water. The MDA purchased spectrophotometers that use ultraviolet light to measure nitrate in water. A spectrophotometer is an instrument used to measure the amount of light absorbed by a sample at different wavelengths, providing information about the sample's composition. The MDA uses the spectrophotometer specifically to measure the nitrate concentration of each sample. This process takes only a few minutes. The MDA loans these machines to local partners across Minnesota as a public service to provide individuals with a screening tool to evaluate nitrate concentrations in their well water.

In 1993, the MDA developed an onsite, walk-in style clinic with the objective of increasing public awareness of nitrate levels in private well water. The program was successful in achieving high monitoring rates in counties with a chronic problem of nitrate concentrations greater than 10 mg/L. The program was funded through the Environment and Natural Resources Trust Fund and other grants between 1999 and 2006. This funding ended in 2006, and the program was discontinued. Counties were still able to use the MDA nitrate testing equipment but had to provide their own personnel to run the clinic and record the nitrate analysis results. The Water Testing Clinic Program was reinstated in 2011 through the Clean Water Fund and continues to be funded through those dollars.

The MDA sponsors spectrophotometers to any entity in Minnesota that would like to host a water testing clinic. There are currently 13 spectrophotometers placed throughout the state of Minnesota. These are available for any entity to use.

Locations of Water Testing Clinics in 2025

The MDA collaborates with local partners to conduct water testing clinics for private well owners across the state of Minnesota. Clinics are held primarily in areas vulnerable to groundwater contamination and in areas with a high percentage of agricultural land. Elevated levels of nitrate in groundwater can result from several factors. However, a major contributor in rural Minnesota is nitrogen fertilizer or manure that leaches past the crop root zone. Water testing clinics were held across the 24 counties that are displayed in Figure 1.

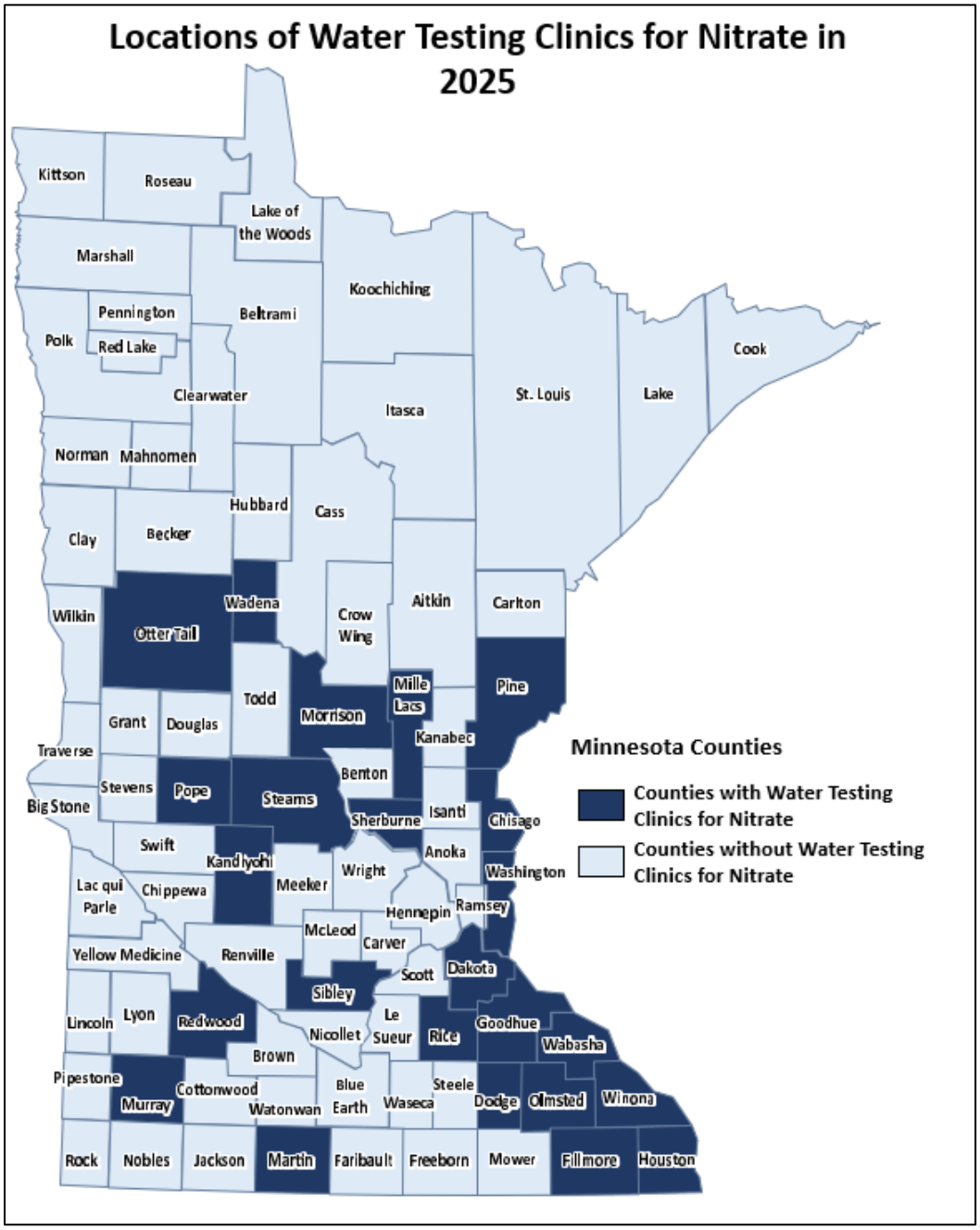


Figure 1. Location of the 24 water testing clinic counties 2025

The total number of water samples tested in individual counties across Minnesota are displayed in Figure 2. There were 2,333 water samples tested in 2025.

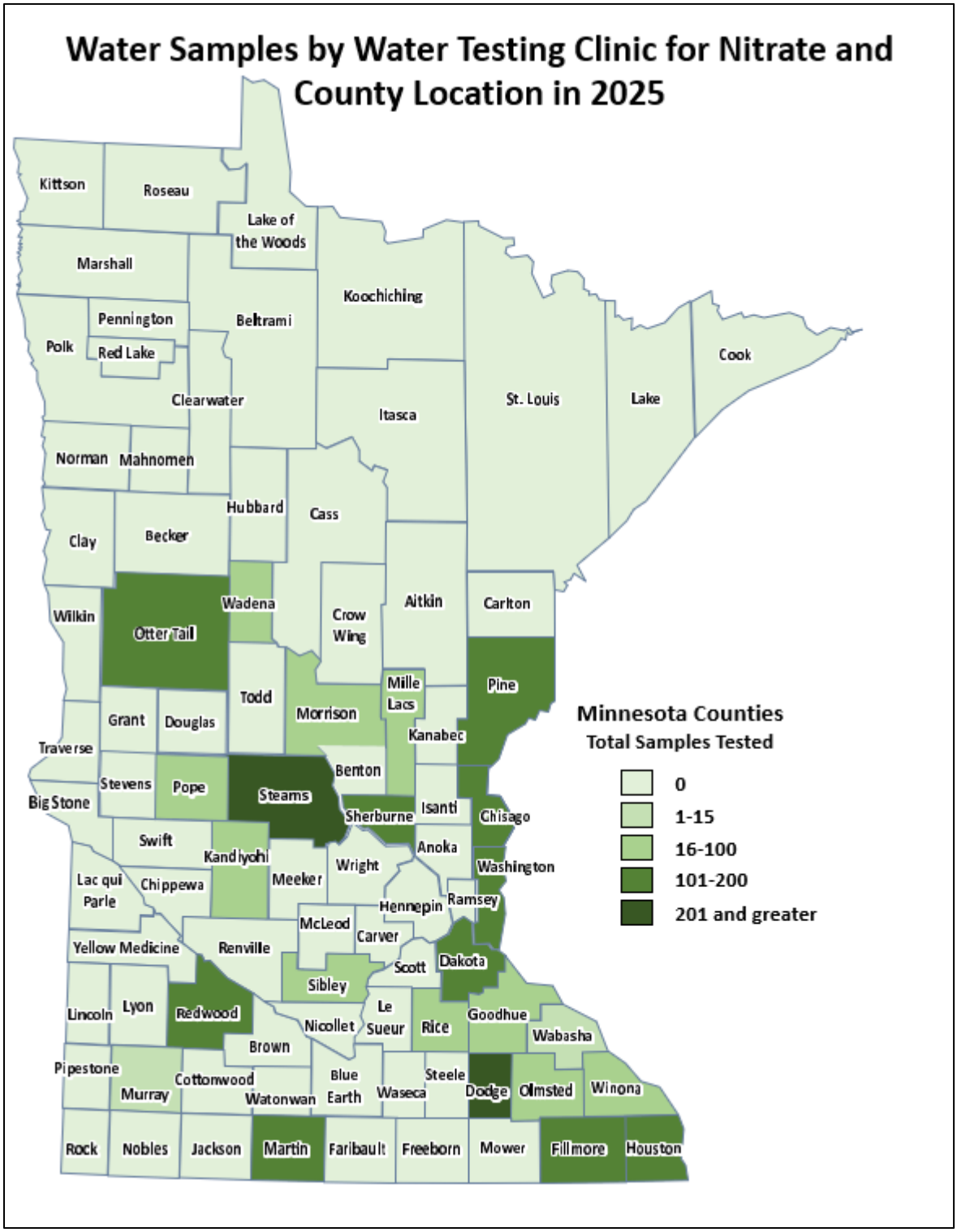


Figure 2. Total water samples by county in 2025

Water Sample Testing Results by Water Partner

Overall, 2,333 water samples for nitrate were reported in 2025. Partners varied in the number of water samples tested and their results. There were 17 primary partners and 12 secondary partners that conducted water testing clinics for nitrate in 2025 as shown in Figure 3. Water testing clinics with two partners list the primary water partner first and secondary water partner last. There were 138 samples that were above the health risk limit of 10 mg/L. Ten of the water testing clinics were held by two or more partners, listed separately in Figure 3. The Minnesota Well Owners Organization (MNWOO) and Minnesota Ground Water Association (MGWA) have partnered with their water sample testing and accounted for 1,017 samples (44%) in multiple water clinics. MNWOO/MWGA had multiple partners with the Land Stewardship Project water clinic. A complete list is provided in Table 1 on Page 9. Individual names are not published in this report. There were 11 partners in 2025 that ran under 50 water samples for nitrate. The MDA will assist with media announcements to increase participation by private well owners in future water clinics.

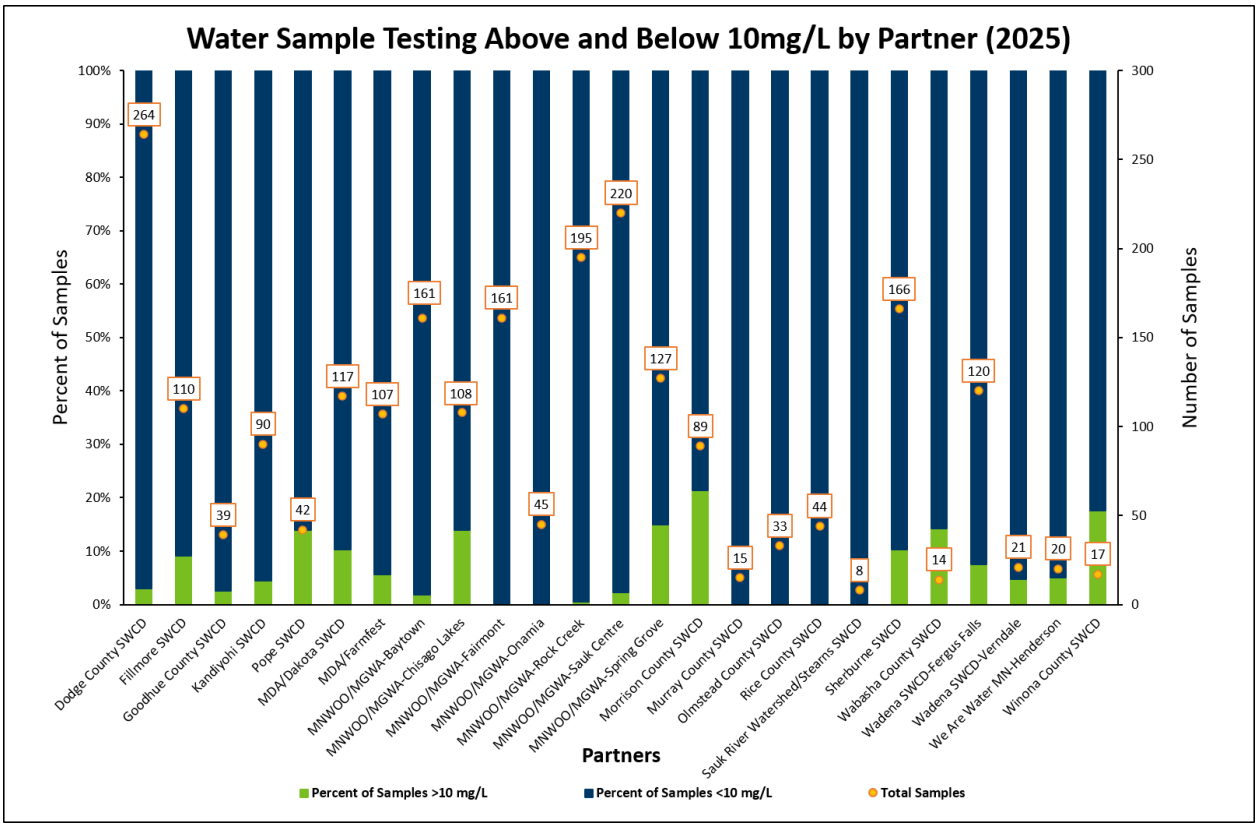


Figure 3. Water sample testing for nitrate by partner (2025)

Water Sample Testing for Nitrate by County in Minnesota

Water samples from 24 Minnesota counties were tested for nitrate as shown in Figure 4. Water samples by county ranged from 14 per county to 264 per county.

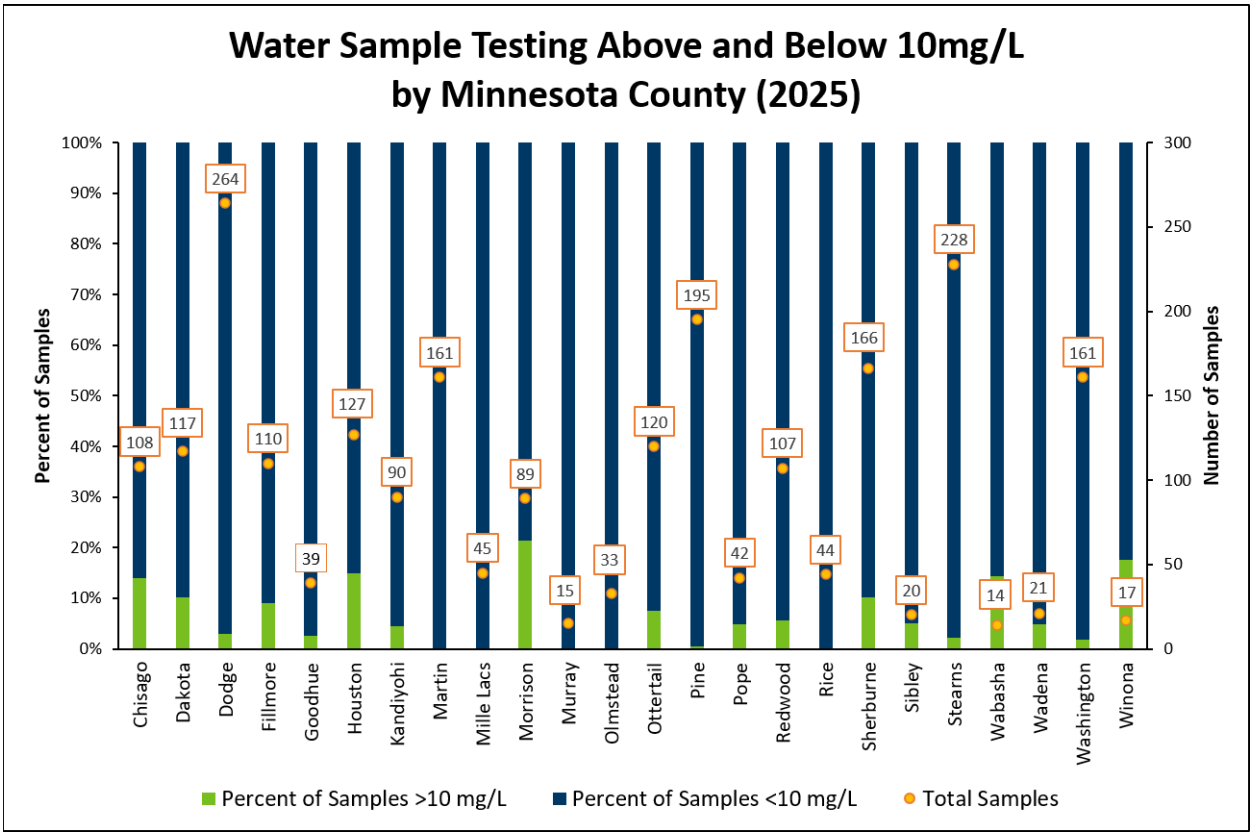


Figure 4. Water sample testing for nitrate by county (2025)

- Across all counties, 6% (138) of 2,333 water samples exceeded the drinking water standard for nitrate (>10 mg/L).
    - Seven counties had more than 10% of water samples over 10 mg/L nitrate
    - Six counties had between 5% and 9% of water samples over 10 mg/L nitrate
    - Eleven counties had less than 5% of water samples over 10 mg/L nitrate

Minnesota's best management practice (BMP) regions for nitrogen are displayed below in Figure 5. Each region has unique properties that can affect nitrogen use for crops and corresponding nitrate leaching.

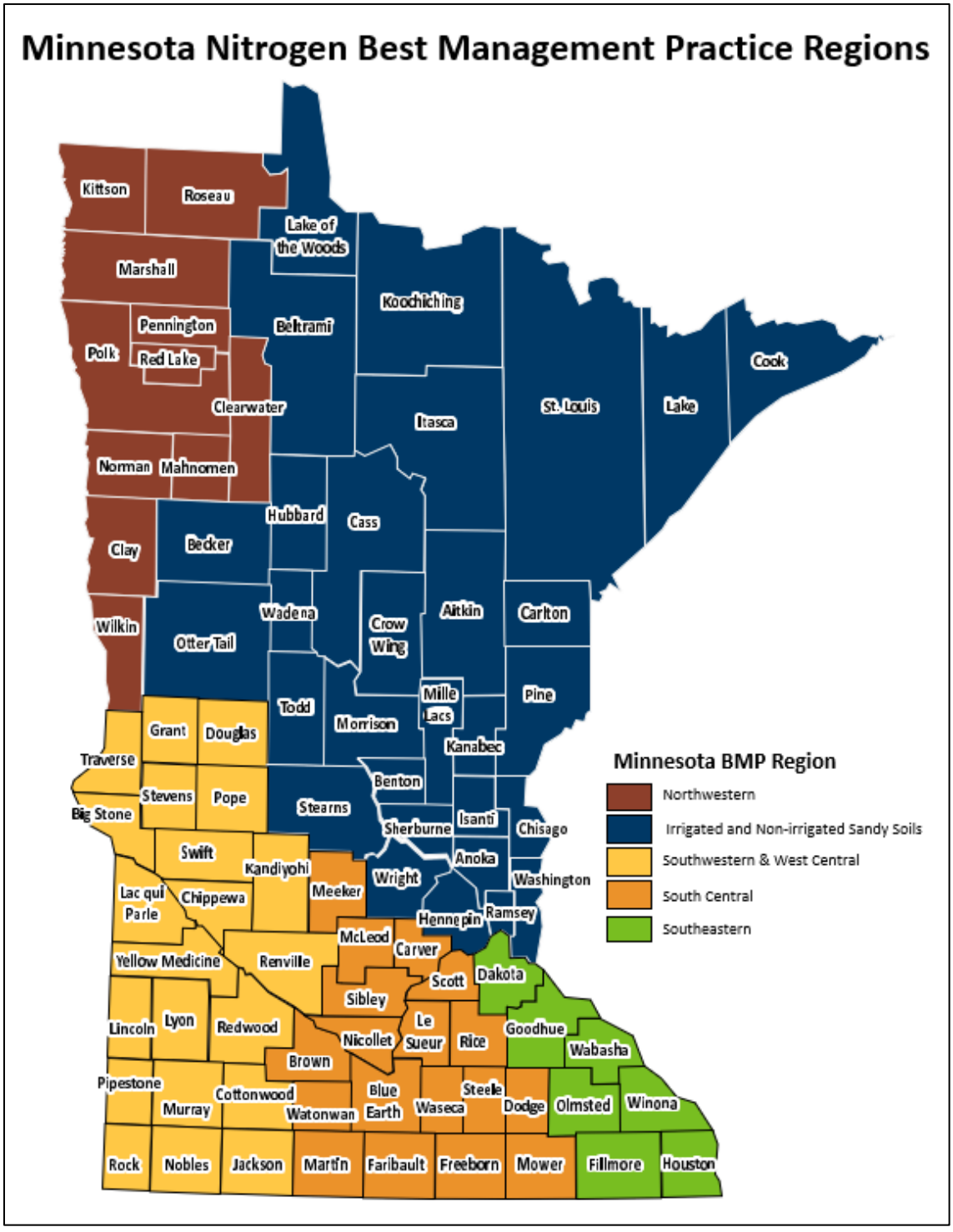


Figure 5. Minnesota Nitrogen BMP Regions (2025)

Water Sample Testing for Nitrate by Minnesota Nitrogen BMP Region

Water testing clinics were held in four of five Minnesota nitrogen BMP regions in 2025. Figure 6 details the number of samples by region and percent of samples for each region that had private well water results over 10mg/L. Sandy soils and soils with karst geology typically are located in the Irrigated and Non-Irrigated Sandy Soils BMP and Southeastern BMP regions of Minnesota. These geographic areas have characteristics that are prone to higher nitrates in groundwater due to leaching.

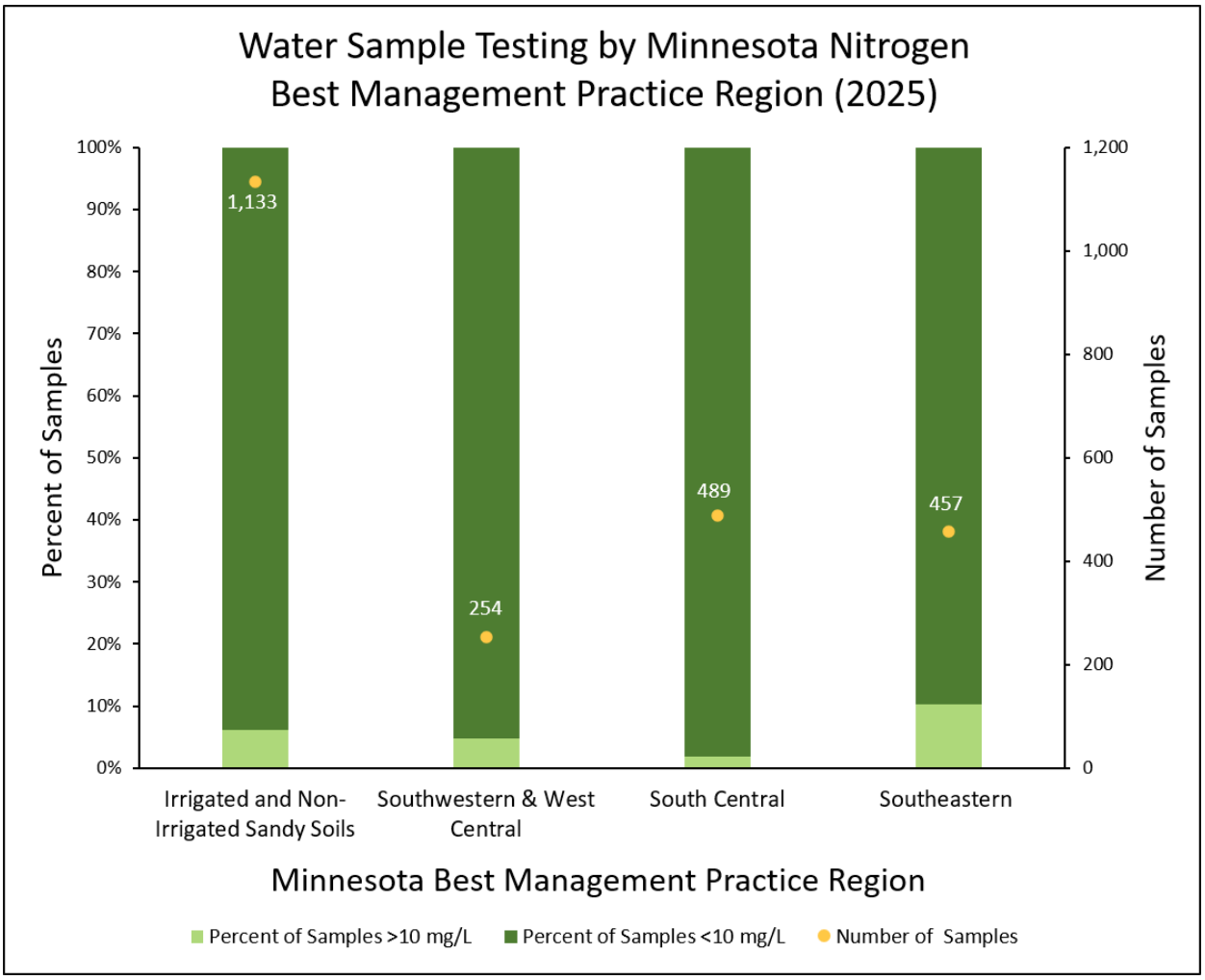


Figure 6. Water sample testing for nitrate by Nitrogen BMP Regions (2025)

Water Sample Results for Nitrate by Year in Minnesota and BMP Regions

Water samples in Minnesota were tested for nitrate by year as shown in Figure 7. Water samples ranged from 2,685 water samples in 2023 to 2,333 in 2025. The percentage of water samples testing above 10mg/L ranged from about 4%, or 113 water samples, in 2023 to 6%, or 138 water samples, in 2025.

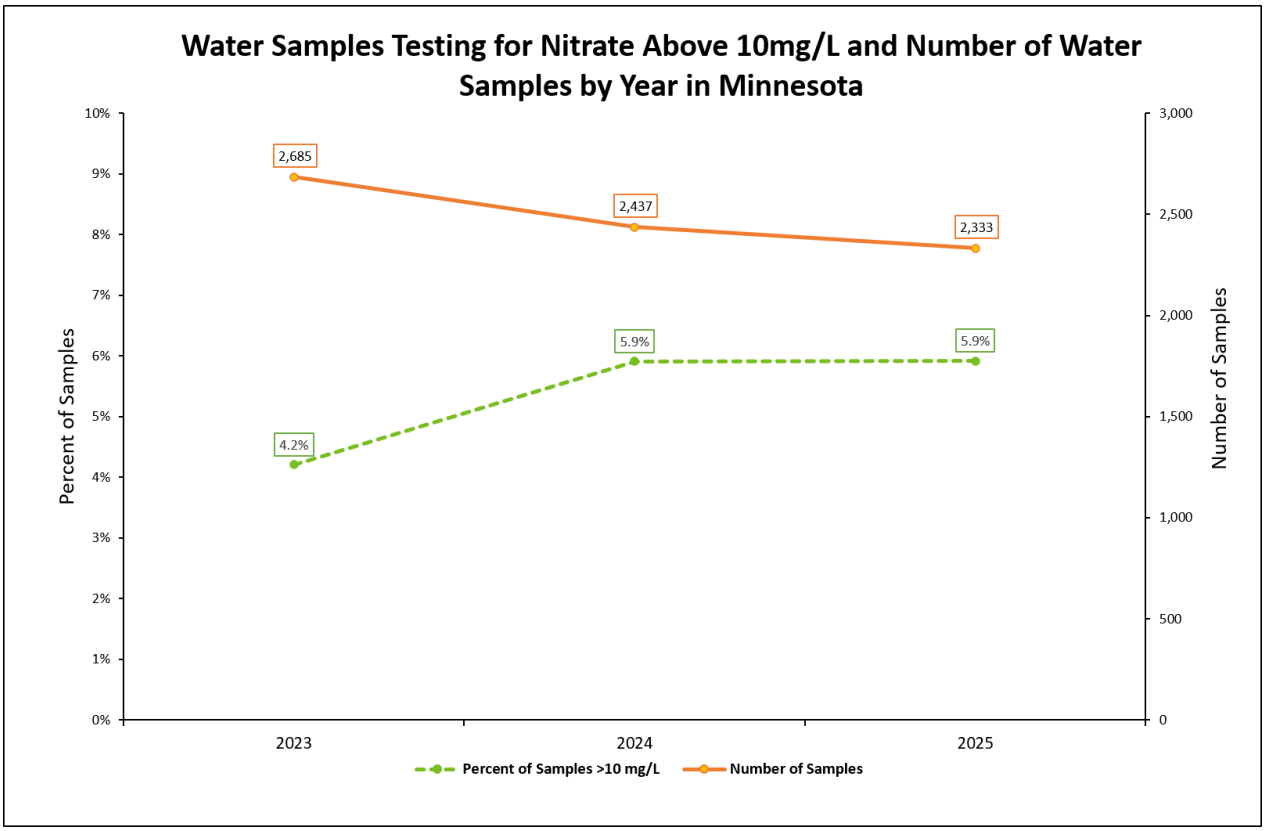


Figure 7. The percent of water samples testing above 10mg/L nitrate and total number of water samples by year in Minnesota

Water samples in the Irrigated and Non-Irrigated Sandy Soils BMP Region were tested for nitrate by year as shown in Figure 8. Water samples ranged from 1,256 water samples in 2023 to 1,133 in 2025. The percentage of water samples testing above 10mg/L ranged from 5%, or 61 water samples, in 2023 and 6%, or 70 water samples, in 2025.

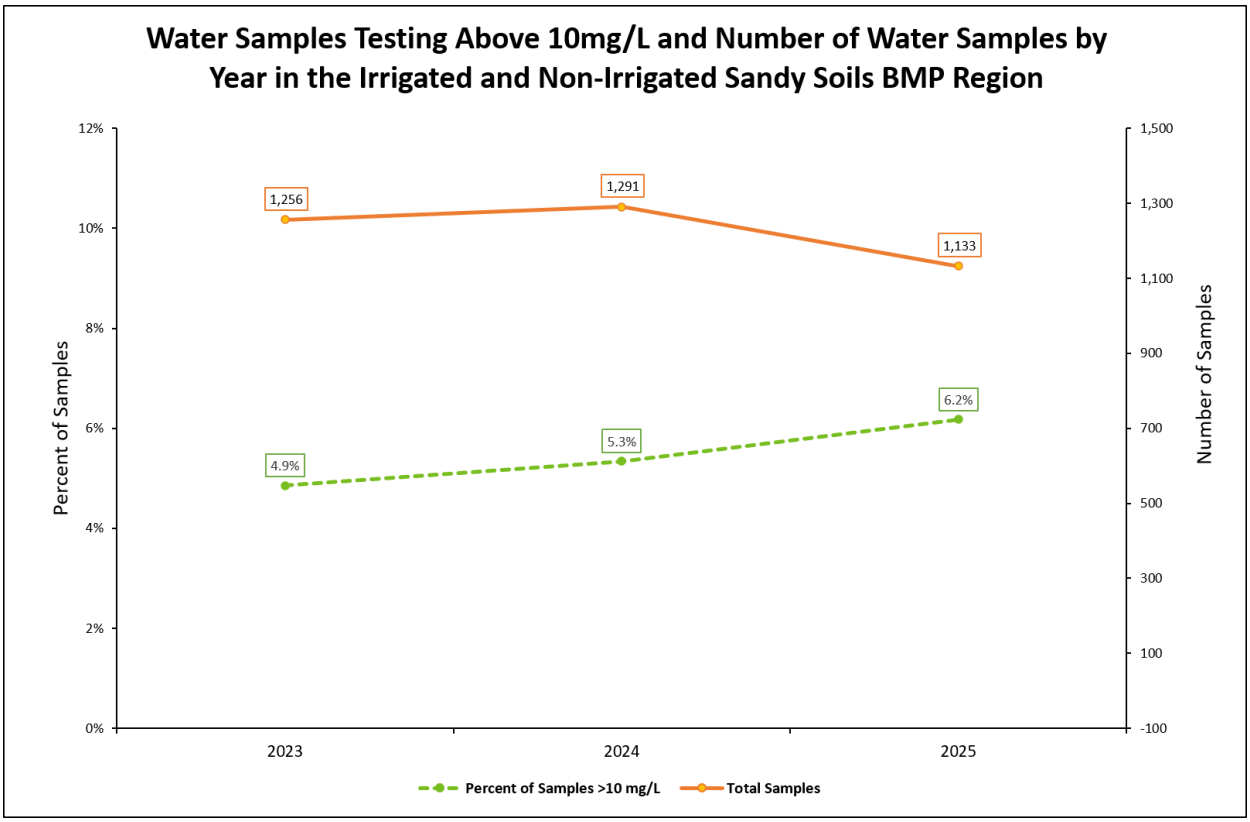


Figure 8. The percentage of water samples testing above 10mg/L nitrate and total number of water samples by year in the Irrigated and Non-Irrigated Sandy Soils BMP Region

Water samples in the Southwestern and West Central BMP Region were tested for nitrate by year as shown in Figure 9. Water samples ranged from 206 water samples in 2023 to 254 in 2025. The percentage of water samples testing above 10mg/L ranged from 2%, or 3 water samples, in 2023 and 5%, or 12 water samples, in 2025.

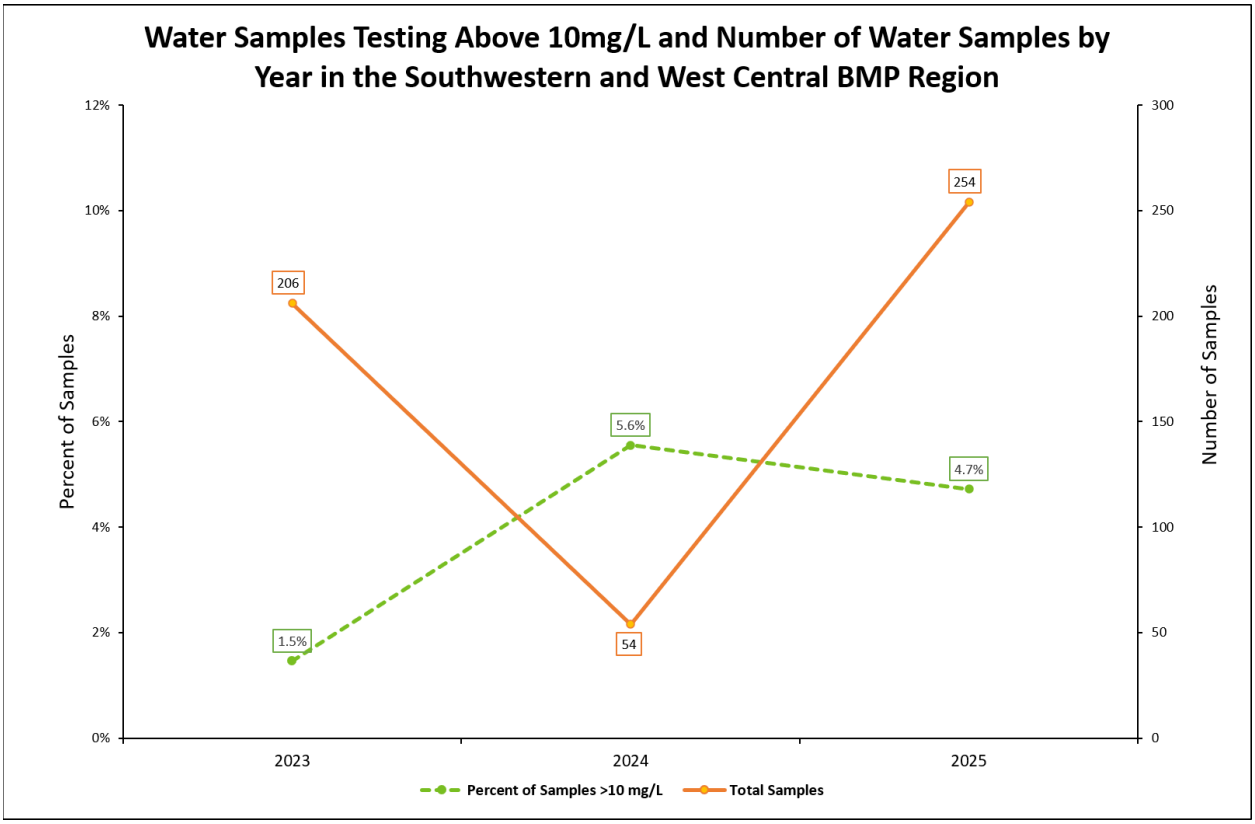


Figure 9. The percentage of water samples testing above 10mg/L nitrate and total number of water samples by year in the Southwestern and West Central BMP Region

Water samples in the South Central BMP Region were tested for nitrate by year as shown in Figure 10. Water samples ranged from 852 water samples in 2023 to 489 in 2025. The percentage of water samples testing above 10mg/L ranged from 2%, or 16 water samples, in 2023 and remained stable at 2%, or 9 water samples, in 2025.

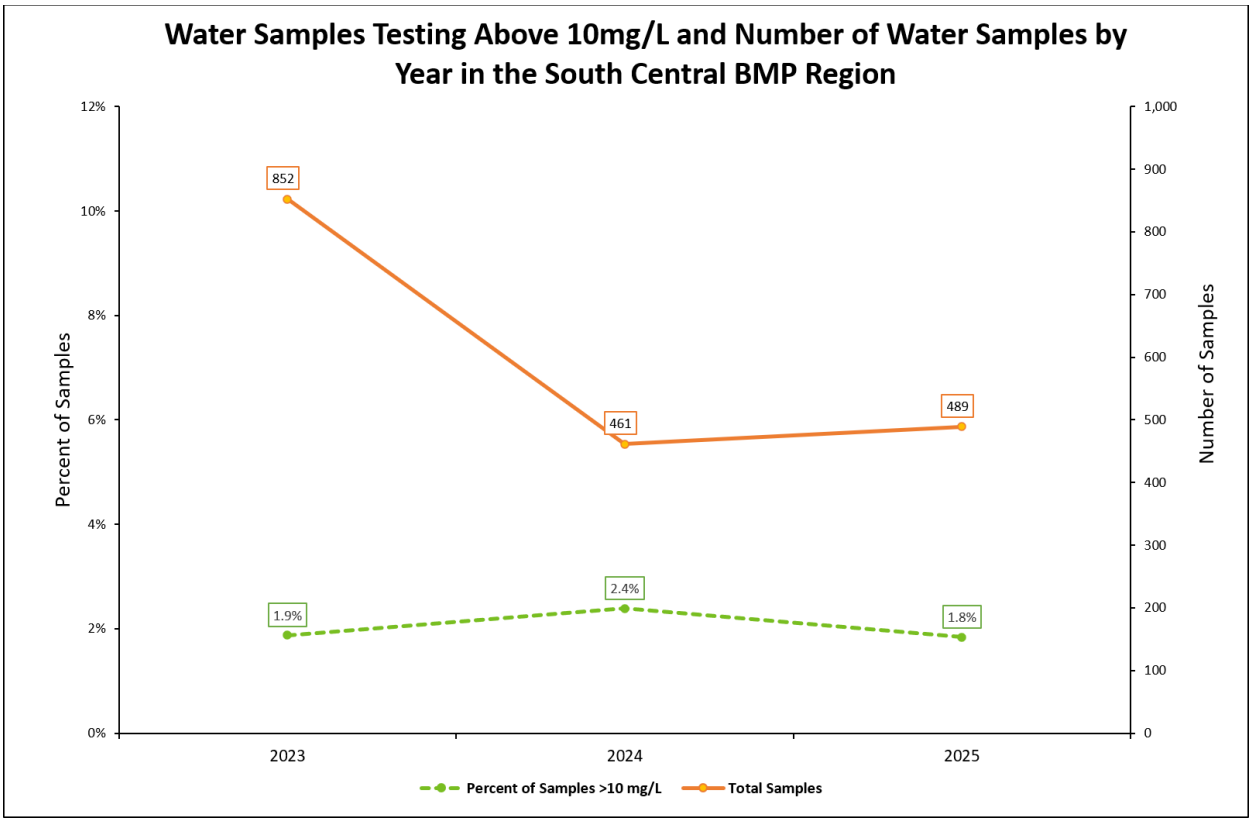


Figure 10. The percentage of water samples testing above 10mg/L nitrate and total number of water samples by year in the South Central BMP Region

Water samples in the Southeastern BMP Region were tested for nitrate by year as shown in Figure 11. Water samples ranged from 355 water samples in 2023 to 457 in 2025. The percentage of water samples testing above 10mg/L ranged from 9%, or 33 water samples, in 2023 and 10%, or 47 water samples, in 2025.

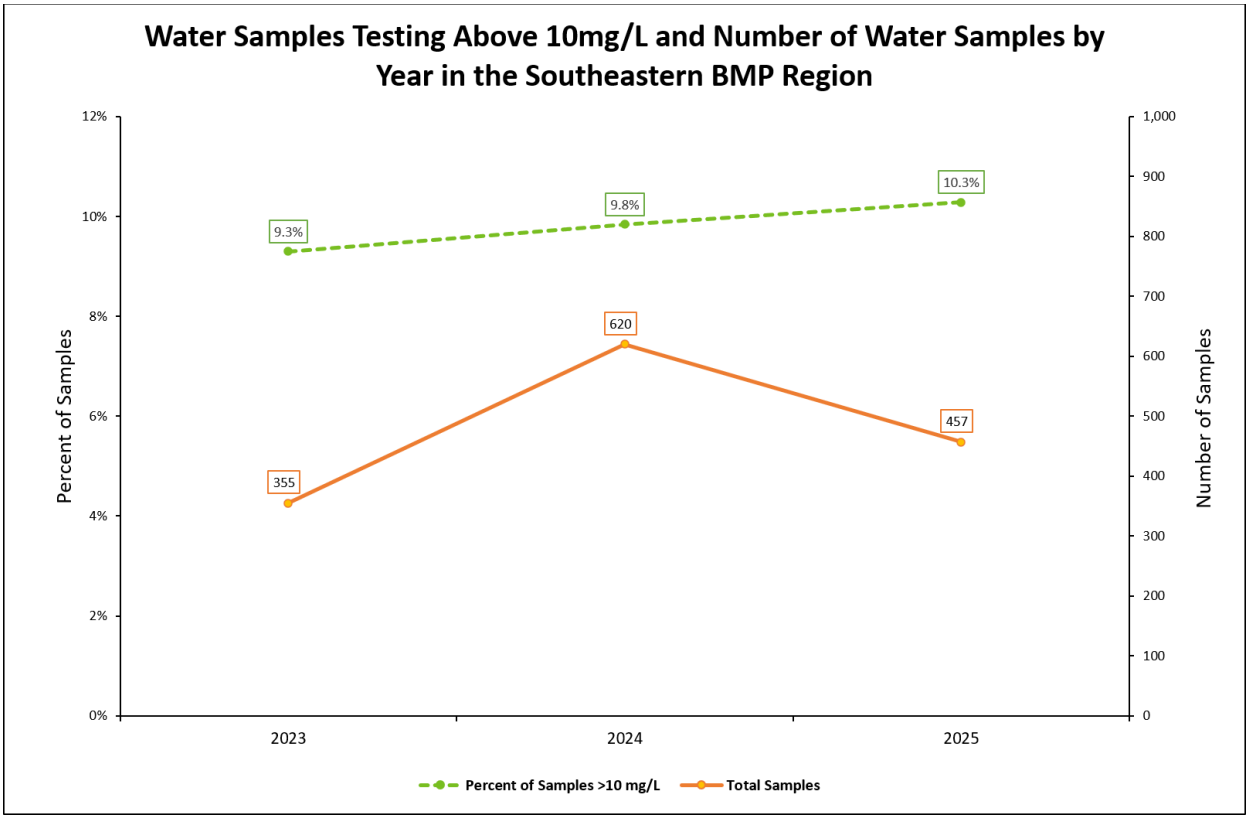


Figure 11. The percentage of water samples testing above 10mg/L nitrate and total number of water samples by year in the Southeastern BMP Region

Water testing clinics were held in 24 counties across four Minnesota Nitrogen BMP Regions.

- Statewide, 2,333 water samples were tested. There were 138 (6%) samples above 10 mg/L for nitrate.
- The Irrigated and Non-Irrigated Sandy Soils BMP Region had 1,133 water samples tested. There were 70 (6%) samples over 10 mg/L of nitrate.
- The Southwestern and West Central BMP Region had 254 water samples tested. There were 12 (5%) samples over 10 mg/L of nitrate.
- The South Central BMP Region had 489 water samples tested. There were 9 (2%) samples over 10 mg/L of nitrate.
- The Southeastern BMP region had 457 water samples tested. There were 47 (10%) samples over 10 mg/L of nitrate.
- The Northwestern BMP region did not host water testing clinics for nitrate.

Results and Explanations

Participants had their water tested and then were provided with an explanation of results. The explanation was generally provided by someone with expertise in ground water who could help the participant understand the likely source of nitrate if there were any in the sample. Factors include location of the well, age of the well, depth of the well, and other characteristics that could affect nitrate concentrations.

The explanation of results was followed by potential remediation, again dependent on the level of nitrate, such as using reverse osmosis, distillation, alternative water supplies or even if a new well. A list of certified laboratories also was provided and suggested to use if nitrate was near or above the health standard.

Conclusions

There were 2,333 water samples tested in Minnesota by MDA's water partners in 2025. Of those 2,333 water samples, 138 samples (6%) were above the health risk limit of 10 mg/L. There were 17 primary partners and 12 secondary partners who conducted water testing clinics in 2025. Clinics were hosted in 24 counties, ranging from 14 samples in Wabasha County to 264 samples in Dodge County. Water clinics were held in four of five of Minnesota's nitrogen BMP regions. The Southeastern BMP Region had the highest percentage of water samples over 10 mg/L, at 10%.

The number of water samples by BMP region can increase or decrease due to the number of clinics held within each region. Some secondary water partners may choose to host testing clinics every few years, which can result in a lower number of water samples being tested. Remediation and recommendations to address nitrate in well water were provided with the results.

Appendix

There were 2,333 water samples tested for nitrate. Table 1 reflects the water testing results by partner in Figure 3 on page 5.

Table 1. Water sample testing for nitrate by partner (2025)

Water Testing Partner	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
Dodge SWCD	264	3%	97%
Fillmore SWCD	110	9%	91%
Goodhue SWCD	39	3%	97%
Kandiyohi SWCD	90	4%	96%
MN Department of Agriculture/Dakota SWCD	117	10%	90%
MN Department of Agriculture/Farmfest	107	6%	94%
MNWOO/MGWA-Baytown	161	2%	98%
MNWOO/MGWA-Chisago Lakes	108	14%	86%
MNWOO/MGWA-Fairmont	161	0%	100%
MNWOO/MGWA-Onamia	45	0%	100%
MNWOO/MGWA-Rock Creek	195	1%	99%
MNWOO/MGWA-Sauk Centre	220	2%	98%
MNWOO/MGWA-Spring Grove	127	15%	85%
Morrison SWCD	89	21%	79%
Murray SWCD	15	0%	100%
Olmstead SWCD	33	0%	100%
Pope SWCD	42	5%	95%
Rice SWCD	44	0%	100%
Sauk River Watershed District/Stearns SWCD	8	0%	100%
Sherburne SWCD	166	10%	90%
Wabasha SWCD	14	14%	86%
Wadena SWCD-Fergus Falls	120	8%	92%
Wadena SWCD-Verndale	21	5%	95%
We Are Water MN-Henderson	20	5%	95%
Winona SWCD	17	18%	82%
Total	**2,333**	**6%**	**94%**

Water samples from 24 Minnesota counties were tested for nitrate in 2025. Only counties with water testing clinics are listed in Table 2. Table 2 reflects the water testing results by county in Figure 4 on Page 6.

Table 2. Water sample testing for nitrate by county (2025)

County	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
Chisago	108	14%	86%
Dakota	117	10%	90%
Dodge	264	3%	97%
Fillmore	110	9%	91%
Goodhue	39	3%	97%
Houston	127	15%	85%
Kandiyohi	90	4%	96%
Martin	161	0%	100%
Mille Lacs	45	0%	100%
Morrison	89	21%	79%
Murray	15	0%	100%
Olmstead	33	0%	100%
Ottertail	120	8%	92%
Pine	195	1%	99%
Pope	42	5%	95%
Redwood	107	6%	94%
Rice	44	0%	100%
Sherburne	166	10%	90%
Sibley	20	5%	95%
Stearns	228	2%	98%
Wabasha	14	14%	86%
Wadena	21	5%	95%
Washington	161	2%	98%
Winona	17	18%	82%
Total	**2,333**	**6%**	**94%**

There are 87 counties in Minnesota. Table 3 details the counties that are in the five BMP regions. Table 3 reflects the Minnesota nitrogen BMP regions and counties within each region in Figure 5 on Page 7.

Table 3. Counties in each of the five BMP regions

BMP Region	Counties
Northwestern	Kittson, Roseau, Marshall, Pennington, Polk, Red Lake, Clearwater, Norman, Mahnomen, Clay, Wilkin
Irrigated and Non-irrigated Sandy Soils	Lake of the Woods, Beltrami, Koochiching, St. Louis, Lake, Cook, Itasca, Hubbard, Cass, Becker, Wadena, Crow Wing, Aikin, Carlton, Otter Tail, Todd, Morrison, Mille Lacs, Kanabec, Pine, Stearns, Benton, Isanti, Chisago, Sherburne, Anoka, Washington, Wright, Hennepin, Ramsey
Southwestern and West Central	Grant, Douglas, Stevens, Pope, Traverse, Big Stone, Swift, Kandiyohi, Lac qui Parle, Chippewa, Renville, Yellow Medicine, Lincoln, Lyon, Redwood, Pipestone, Murray, Cottonwood, Rock, Nobles, Jackson
South Central	Meeker, McLoed, Carver, Scott, Sibley, Nicollet, Brown, Le Suere, Rice, Watonwan, Blue Earth, Waseca, Steele, Dodge, Martin, Faribault, Freeborn, Mower
Southeastern	Dakota, Goodhue, Wabasha, Olmsted, Winona, Fillmore, Houston

Water testing clinics were held in four of five of Minnesota Nitrogen BMP Regions in 2025. The Northwest Region had no water testing clinics and is not listed in Table 4. Table 4 reflects water testing results by Minnesota Nitrogen BMP Region in Figure 7 on Page 8.

Table 4. Water sample testing for nitrate by Nitrogen BMP Region (2025)

Nitrogen BMP Region	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
Irrigated and Non-Irrigated Sandy Soils	1,133	6%	94%
Southwestern & West Central	254	5%	95%
South Central	489	2%	98%
Southeastern	457	10%	90%
Statewide	**2,333**	**6%**	**94%**

Water samples from 2023 through 2025 were tested for nitrate. Table 5 reflects the water testing results by year starting in 2023 in Figure 7 on Page 9.

Table 5. Water sample testing for nitrate by year in Minnesota (2025)

Year	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
2023	2,685	4%	96%
2024	2,437	6%	94%
2025	2,333	6%	94%
Total	**7,455**	**5%**	**95%**

Water samples from 2023 through 2025 were tested for nitrate in the Irrigated and Non-Irrigated Sandy Soils BMP Region. Table 6 reflects the water testing results by year starting in 2023 in Figure 8 on Page 10.

Table 6. Water sample testing for nitrate by year in the Irrigated and Non-Irrigated Sandy Soils BMP Region (2025)

Year	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
2023	1,256	5%	95%
2024	1,291	5%	95%
2025	1,133	6%	94%
Total	**3,680**	**5%**	**95%**

Water samples from 2023 through 2025 were tested for nitrate in the Southwestern and West Central BMP Region. Table 7 reflects water testing results by year starting in 2023 in Figure 9 on Page 11.

Table 7. Water sample testing for nitrate by year in the Southwestern and West Central BMP Region (2025)

Year	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
2023	206	2%	98%
2024	54	6%	94%
2025	254	5%	95%
Total	**514**	**4%**	**96%**

Water samples from 2023 through 2025 were tested for nitrate in the South Central BMP Region. Table 8 reflects the water testing results by year starting in 2023 in Figure 10 on Page 12.

Table 8. Water sample testing for nitrate by year in the South Central BMP Region (2025)

Year	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
2023	852	2%	98%
2024	461	2%	98%
2025	489	2%	98%
Total	**1,802**	**2%**	**98%**

Water samples from 2023 through 2025 were tested for nitrate in the Southeastern BMP Region. Table 9 reflects the water testing results by year starting in 2023 in Figure 11 on Page 13.

Table 9. Water sample testing for nitrate by year in the Southeastern BMP Region (2025)

Year	Number of Water Samples	Percent of Water Samples >10mg/L	Percent of Water Samples <10mg/L
2023	355	9%	91%
2024	620	10%	90%
2025	457	10%	90%
Total	**1,432**	**10%**	**90%**