

# CENTRAL SANDS PRIVATE WELL NETWORK FOR NITRATE 2017 RESULTS

The Minnesota Department of Agriculture developed the Central Sands Private Well Network in 2011 because of concerns about high nitrate levels in private drinking water wells. Drinking water high in nitrate can cause serious health effects in infants. The state's Health Risk Limit for nitrate-nitrogen is 10 mg/L.

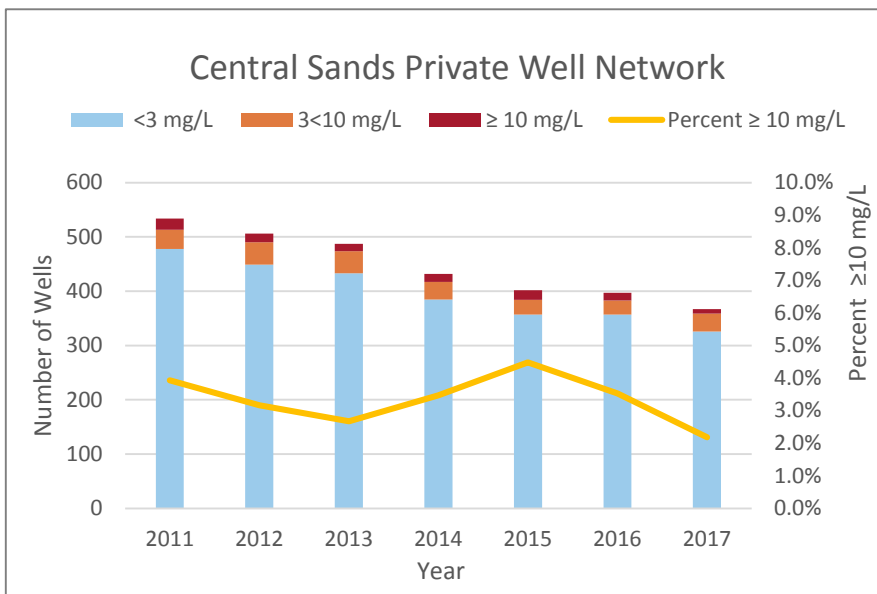
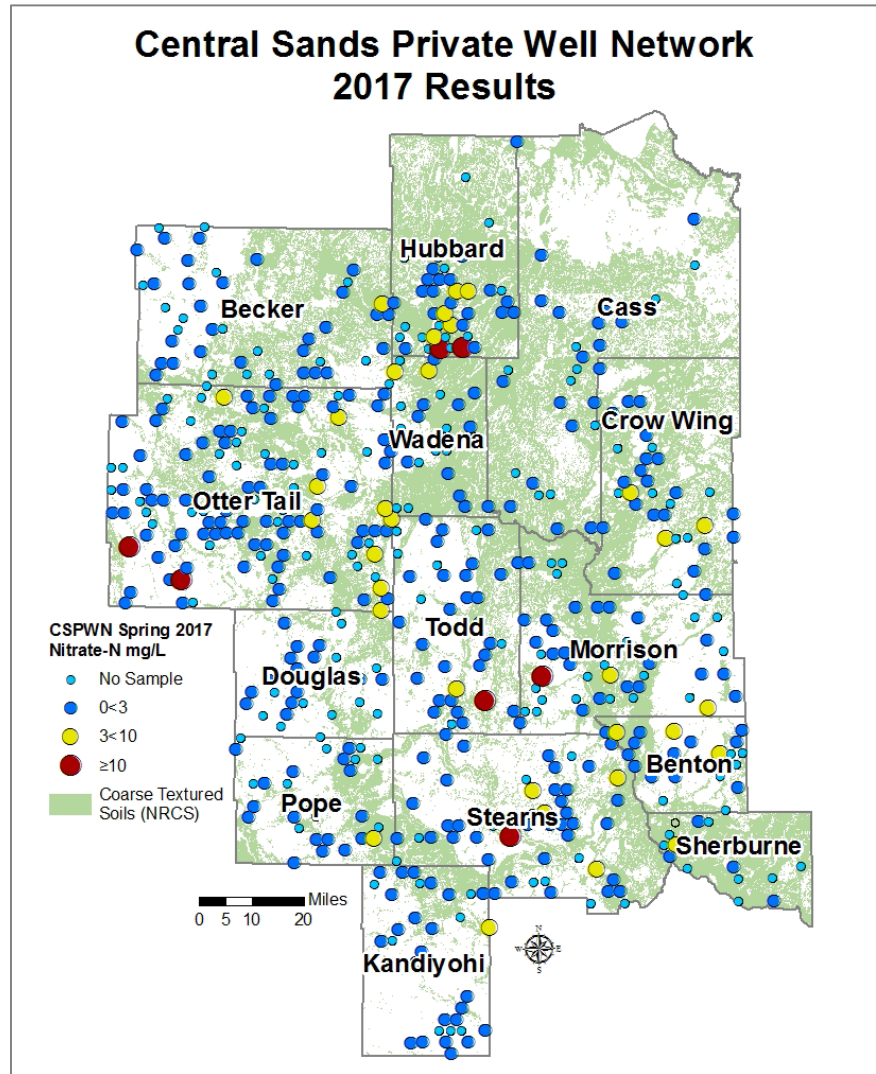
The Central Sands region has soils that may be vulnerable to groundwater contamination. The long-term goal of the network is to determine nitrate trends in the region. To the greatest extent possible, the same households have been tested since 2011.

In 2017, 367 private drinking water wells were sampled for nitrate.

## 2017 Nitrate-N Results

- 88.8% of results were <3 mg/L
- 9.0% of results were 3<10 mg/L
- 2.2% of results were ≥10 mg/L

On a regional scale, 98% of participating wells have water that is below the Health Risk Limit for nitrate-nitrogen.



Results from 2017 are similar to previous years with 89% of nitrate results <3 mg/L, 9% in the 3<10 mg/L range, and 2% ≥10 mg/L. There is no statistically significant change in the nitrate trend of the network.

There is a decline in participation rates since 2011, however, the overall picture is still representative of the network as the proportion of wells in each nitrate category remains nearly the same. The occurrence of lower nitrate wells leaving the network is consistent each year. As of 2017, roughly 86% of dropped wells previously had results <3 mg/L.

# 2017 NITRATE RESULTS BY COUNTY

Counties	Total Wells	Nitrate–N Summary Statistics					Percentage of Wells		
		Min	Max	Mean	Median	90th <sup>1</sup>	<3 mg/L	3<10 mg/L	≥10 mg/L
		Nitrate-N mg/L or parts per million (ppm)					Percent		
Becker	29	<0.03	3.7	0.2	<0.03	0.8	96.6%	3.4%	0.0%
Benton	14	<0.03	9.0	1.6	0.08	5.7	78.6%	21.4%	0.0%
Cass	18	<0.03	1.7	0.3	<0.03	1.3	100.0%	0.0%	0.0%
Crow Wing	23	<0.03	5.7	0.9	0.03	3.5	87.0%	13.0%	0.0%
Douglas	16	<0.03	3.6	0.2	<0.03	0.2	93.8%	6.3%	0.0%
Hubbard	26	<0.03	21.1	2.3	<0.03	6.0	73.1%	19.2%	7.7%
Kandiyohi	25	<0.03	6.8	0.4	<0.03	0.8	96.0%	4.0%	0.0%
Morrison	25	<0.03	20.3	1.4	<0.03	3.3	88.0%	8.0%	4.0%
Otter Tail	84	<0.03	16.0	1.0	<0.03	4.1	88.1%	9.5%	2.4%
Pope	16	<0.03	3.2	0.3	<0.03	0.6	93.8%	6.3%	0.0%
Sherburne	6	<0.03	36.4	6.7	<0.03	33.2	66.7%	16.7%	16.7%
Stearns	40	<0.03	18.0	1.1	<0.03	3.8	87.5%	10.0%	2.5%
Todd	29	<0.03	10.8	1.0	<0.03	2.5	93.1%	3.4%	3.4%
Wadena	16	<0.03	5.3	0.6	<0.03	3.4	87.5%	12.5%	0.0%

<sup>1</sup>The 90th Percentile means that 90% of reported results are below this value.

Nitrate concentrations varied between counties in the Central Sands region. Sherburne County had the highest percentage of wells (16.7%) greater than 10 mg/L. However, Sherburne County has the smallest sample size (6 wells), so one high result can disproportionately affect the mean for a county. An important aspect of the Central Sands Private Well Network (CSPWN) is that it was statistically designed to look at long term trends as a whole region and not on a county by county basis.

Wells with results in the range of 3 to 10 mg/L are considered impacted but safe for drinking; the water is above natural levels of nitrate but below the Health Risk Limit. Groundwater in this range is being impacted by activities on the land surface. Benton County (21.4%), Hubbard County (19.2%), and Sherburne County (16.7%) have the highest percentage of impacted wells.

The Minnesota Department of Agriculture will continue to offer free nitrate sampling kits to participating well owners on an annual basis. Wadena Soil and Water Conservation District will continue to provide local coordination for the entire network. Efforts are underway to assess which wells have dropped out of the network and where replacement wells are needed.

This could not be done without the help of homeowner volunteers! Thank you for making this program possible. Your participation is helping to protect local groundwater. If you have any questions, please contact Kimberly Kaiser at [kimberly.kaiser@state.mn.us](mailto:kimberly.kaiser@state.mn.us) or by phone: 651-201-6280.

Updated May 2018