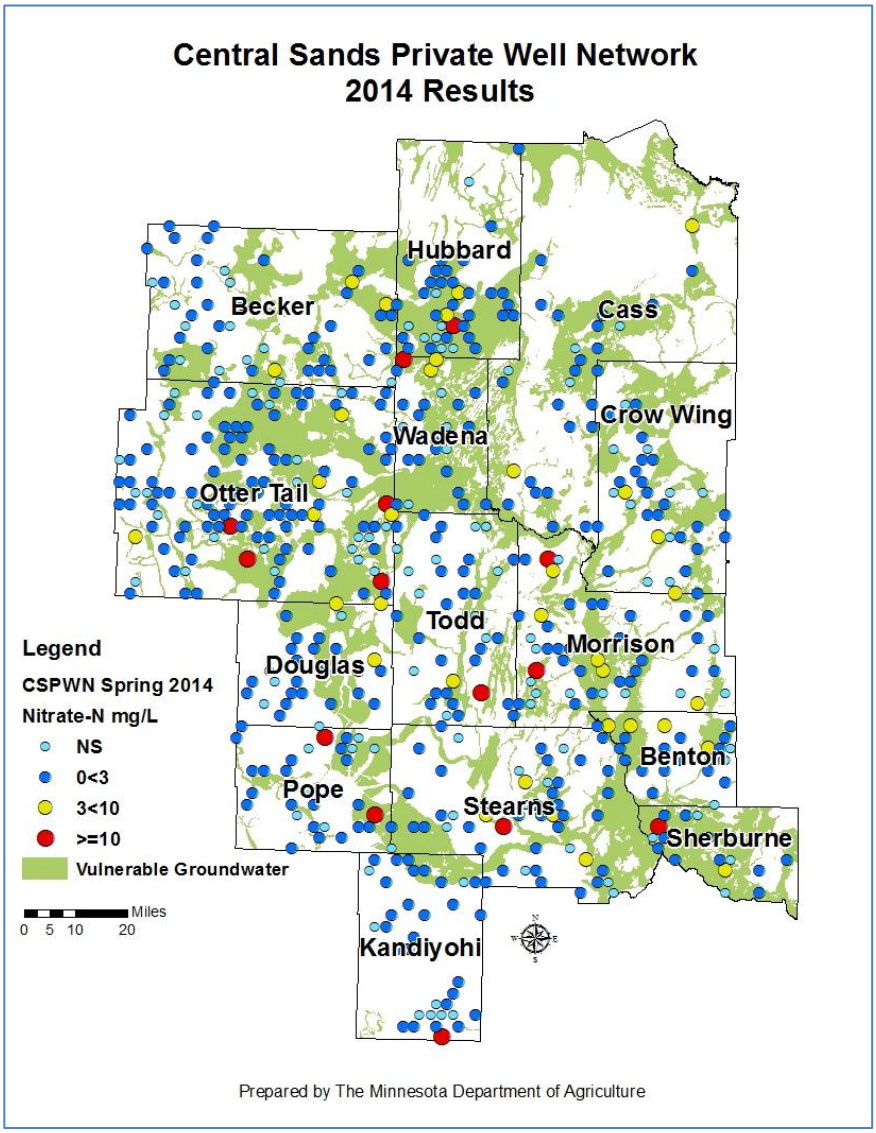
CENTRAL SANDS PRIVATE WELL NETWORK FOR NITRATE 2014 RESULTS

Concerns about high nitrate levels in private drinking water wells led to the development of the Central Sands Private Well Network starting in 2011. Too much nitrate in drinking water can cause serious health problems for infants. The state's Health Risk Limit for nitrate-nitrogen is 10 mg/L.

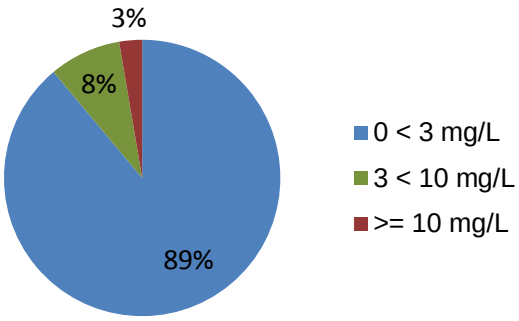
The Central Sands region has widespread sandy soils that may be vulnerable to groundwater contamination. The long-term goal of the network is to determine nitrate trends in the region. To the greatest extent possible, the same households have been tested in 2011, 2012, 2013 and 2104.

In 2014, 434 private drinking water wells were sampled for nitrate.



2014 Nitrate-N Results

- 89% of results were < 3 mg/L
- 8% of results were 3<10 mg/L
- 3% of results were ≥10 mg/L



Nitrate-N mg/L	2011	2012	2013	2014
Total Samples	534	510	487	434
0 < 3	478	454	433	388
3 < 10	35	40	41	32
≥ 10	21	16	13	14
Percent ≥ 10	4%	3%	3%	3%

On a regional scale, 96-97% of participating wells have water that is below the state's Health Risk Limit for nitrate-nitrogen.

Results from 2014 are similar to results from 2013, however fewer overall samples were returned. It is likely that well owners with results less than 3 mg/L have dropped out of the network because their results were low and they did not feel the need to continue sampling. Most well owners that have high nitrate levels in their well have stayed in the network.

MINNESOTA DEPARTMENT OF AGRICULTURE

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.

Wadena Soil & Water Conservation District

CLEAN WATER LAND & LEGACY AMENDMENT

2014 NITRATE RESULTS BY COUNTY

Counties	Total Wells	Nitrate–N Summary Statistics					Percentage of Wells[2]		
		Min	Max	Mean	Median	90th[1]	<3 mg/L	3<10 mg/L	≥10 mg/L
		Nitrate-N mg/L or parts per million (ppm)					Percent[2]		
Becker	34	<0.03	4.3	0.4	<0.03	1.6	91%	9%	0%
Benton	18	<0.03	8.6	1.5	0.03	7.2	78%	22%	0%
Cass	24	<0.03	5.3	0.5	<0.03	1.6	92%	8%	0%
Crow Wing	24	<0.03	4.8	0.7	<0.03	2.1	92%	8%	0%
Douglas	22	<0.03	5.7	0.6	<0.03	2.6	91%	9%	0%
Hubbard	33	<0.03	11.2	1.2	<0.03	5.2	88%	9%	3%
Kandiyohi	27	<0.03	16.2	0.7	<0.03	0.6	96%	0%	4%
Morrison	34	<0.03	20.6	2.2	<0.03	7.9	82%	12%	6%
Otter Tail	97	<0.03	14.6	0.9	<0.03	2.5	91%	5%	4%
Pope	21	<0.03	30.5	2.5	<0.03	8.5	90%	0%	10%
Sherburne	12	<0.03	17.6	2.0	<0.03	7.5	83%	8%	8%
Stearns	39	<0.03	13.5	0.9	<0.03	3.1	90%	8%	3%
Todd	27	<0.03	23.3	1.3	<0.03	1.8	93%	4%	4%
Wadena	22	<0.03	14.9	1.2	<0.03	3.7	86%	9%	5%

[1]The 90th Percentile means that 90% of reported results are below this value.

[2]Percentages are rounded-up to the nearest whole number.

Nitrate concentrations varied between counties in the Central Sands region. Pope County had the highest percentage of wells (9.5%) greater than 10 mg/L. In Sherburne County, 8.3% of the network wells were greater than or equal to 10 mg/L. However, Sherburne County has the smallest sample size (12 wells), so one high result can disproportionally affect the mean for a county. An important aspect of the Central Sands Private Well Network is that it was statistically designed to look at the Central Sands 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 (22.2%) and Morrison County (11.8%) 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 . If you have any questions, please contact Kimberly Kaiser at kimberly.kaiser@state.mn.us or by phone: 651-201-6280.

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