Nobles County: Final Overview of Nitrate Levels in Private Wells (2016-2017)

The Minnesota Department of Agriculture (MDA) determines current nitrate-nitrogen concentrations in private wells, on a township scale, through the Township Testing Program. The MDA has identified townships throughout the state that are vulnerable to groundwater contamination and have significant row crop production. The MDA plans to offer nitrate testing to more than 70,000 private well owners in over 300 townships by 2019.

Each selected township is offered testing in two steps, the "initial" sampling and the "follow-up" sampling. In the initial sampling, all township homeowners using private wells are sent a nitrate test kit. If nitrate is detected in their initial sample, the homeowner is offered a follow-up nitrate test, pesticide test and well site visit. Trained MDA staff visit willing homeowners to resample the well and then conduct a site assessment. The assessment helps to identify possible non-fertilizer sources of nitrate and to see the condition of the well. A well with construction problems may be more susceptible to contamination.

Nobles County Final Highlights

- 10 wells remain in the final well dataset for Nobles County

- **35** (78%) wells removed from initial dataset.

The MDA and Nobles County Soil and Water Conservation District worked together to select townships and implement the nitrate testing project. The following townships were selected: **Grand Prairie, Lismore, Olney, and Westside.** The initial sampling in Nobles County started in 2016 and follow-up sampling ended in 2017.

Results

Two datasets, "Initial" and "Final", are used to evaluate nitrate in private wells. The initial dataset represents private well drinking water regardless of the potential source of nitrate. The final database was formed through an assessment process to evaluate wells. In the assessment, wells that had nitrate-nitrogen results over 5 mg/L were removed from the initial dataset to form the final dataset if a potential non-fertilizer source or well problem was identified, there was insufficient information on the construction or condition of the well, or for other reasons which are outlined in the full report (see Appendix E for details). The final dataset represents wells with nitrate attributed to the use of fertilizer. The initial dataset for Nobles County contains 45 wells; the final dataset contains 10 wells. A total of 35 wells (78%) were removed.

The results from the initial and final well datasets are summarized in the following table and figures. In the initial data set all four of the townships tested had more than 10% of the wells over the Health Risk Limit of 10 mg/L of nitrate-nitrogen (see map). The final percent of wells over the Health Risk Limit in each township ranged from 0% to 66.7%. The Nobles County Final Report will be available on the MDA website in 2019: www.mda.state.mn.us/townshiptesting. A minimum of 20 wells is generally required by MDA for an adequate sample size to characterize a township. No townships in Nobles county met this criterion.

Next steps

The MDA uses the TTP data and assessment process and prioritization guidelines in the Minnesota Nitrogen Fertilizer Management Plan (NFMP) to determine next steps. It is MDA's intent to implement the voluntary aspects of the NFMP in townships with elevated nitrate with the highest priority placed on areas with high sampling results. Find more information about the NFMP on the MDA website at www.mda.state.mn.us/nfmp.

Funding for this project is provided by the Clean Water, Land and Legacy Amendment

Table: Nobles County Private Well Nitrate Results.

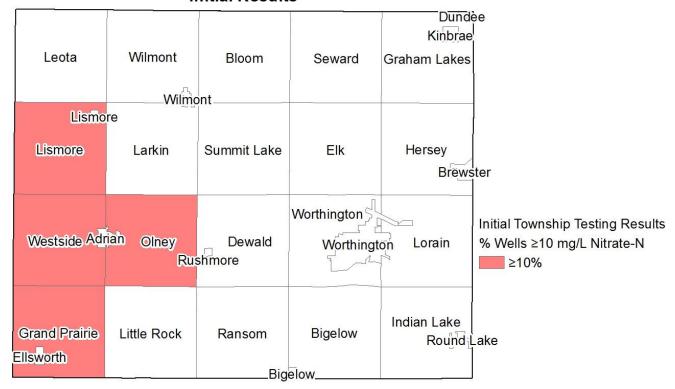| Township	Initial Well Dataset		Final Well Dataset	
	Total Wells*	Percent of Wells ≥10 mg/L Nitrate-Nitrogen	Total Wells	Percent of Wells ≥10 mg/L Nitrate-Nitrogen
Grand Prairie	14	92.9%	0	NA
Lismore	7	71.4%	3	66.7%
Olney	9	44.4%	4	0.0%
Westside	15	86.7%	3	33.3%
Total	45	77.8%	10	30.0%

* All well types included

Figure: Nobles County Initial and Final Well Dataset Map.

Initial Results

Dundee

Kinbrae

| Leota | Wilmont | Bloom | Seward | Graham Lakes |

Wilmont

Lismore

| Lismore | Larkin | Summit Lake | Elk | Hersey |

Brewster

Worthington

| Westside Adrian | Olney | Dewald | Worthington | Lorain |

Rushmore

Indian Lake

Round Lake

| Grand Prairie | Little Rock | Ransom | Bigelow | |

Ellsworth

Bigelow

Initial Township Testing Results
% Wells ≥10 mg/L Nitrate-N

≥10%

Final Results

Dundee

Kinbrae

| Leota | Wilmont | Bloom | Seward | Graham Lakes |

Wilmont

Lismore

| Lismore | Larkin | Summit Lake | Elk | Hersey |

Brewster

Worthington

| Westside Adrian | Olney | Dewald | Worthington | Lorain |

Rushmore

Indian Lake

Round Lake

| Grand Prairie | Little Rock | Ransom | Bigelow | |

Ellsworth

Bigelow

Final Township Testing Results

<20 Wells*

*MDA considers <20 wells inadequate to characterize a township for purposes of the NFMP.

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