

## Private-Well Stewardship Among Wisconsin Private Well-Owners

Approximately 940,000 households use private wells in Wisconsin.

Currently, there is no required testing for well owners, leaving about a quarter of Wisconsin’s drinking water unregulated and untested.

Naturally occurring groundwater contaminants in Wisconsin make private-well stewardship an important public health concern.

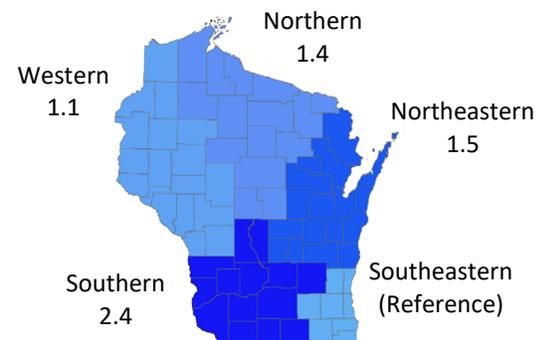
35% of individuals who found a problem with their well opted to take no action.

With nearly a million Wisconsin households served by private wells, good private-well stewardship is an important factor in avoiding health hazards posed by groundwater contaminants. Despite known threats, such as nitrates, to the private well water supply, it has been documented that private well users are often unlikely to regularly test or treat well water according to the public health recommendations.<sup>1</sup> The Wisconsin Department of Health Services and Department of Natural Resources (DNR) provide private well owners with contaminant-specific recommendations. The DNR recommends that private well owners test for the presence of nitrates and bacteria at least once a year and anytime that there is a change in the appearance, taste, or smell of the water.<sup>2</sup> There is, however, limited regulatory infrastructure in Wisconsin to promote well stewardship, and state law does not require a well inspection or water testing, even at the time of a property transfer.

In order to quantify testing and treatment patterns of private well users in Wisconsin, Dr. Kristen Malecki, Associate Professor at UW Madison and Director of the Survey of the Health of Wisconsin (SHOW), worked with a team of public health practitioners from the state health department and the Wisconsin DNR to better understand the factors surrounding private-well stewardship decisions.<sup>3</sup> The 2017 study sought to describe the social and demographic characteristics of private well users, the frequency and purpose of well water use, and testing and treatment patterns. A primary goal of the study was to identify individuals who might be at a greater risk of adverse exposures because they did not test their private well or were unaware of testing requirements.

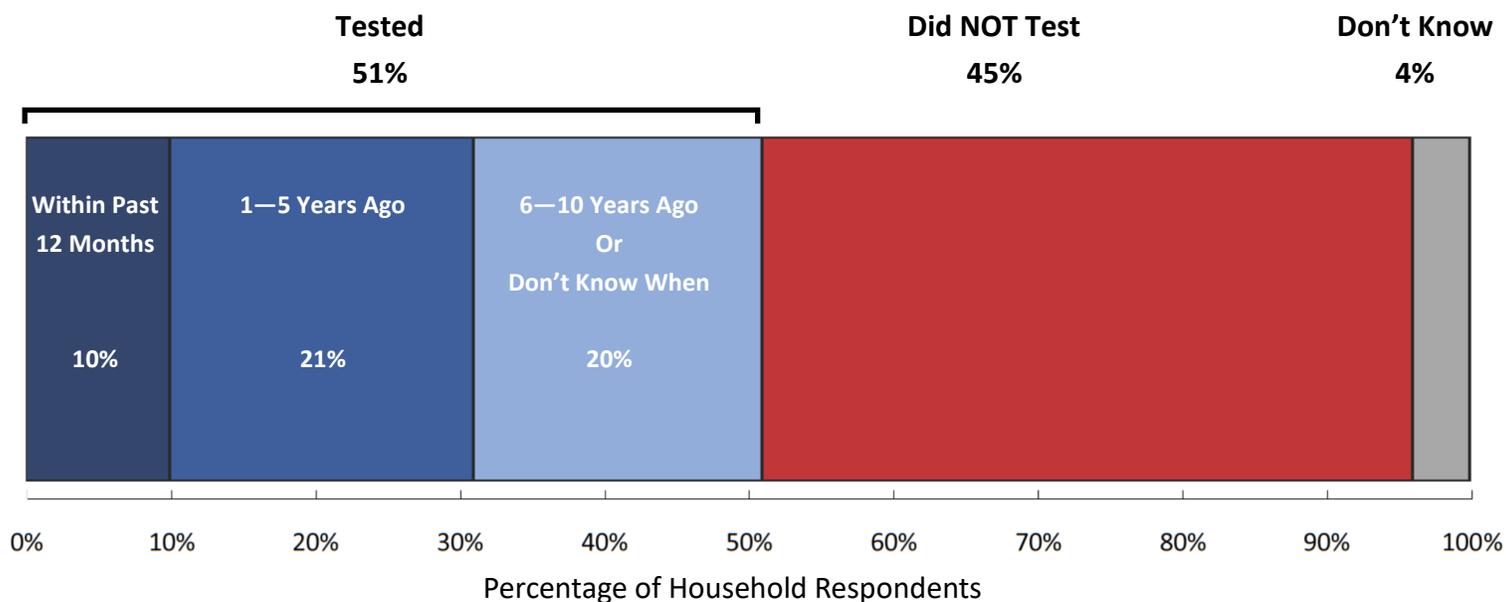
### Study Results

Almost all participants reported using private well water for household use, such as cooking, dish washing, showering, and bathing. The only statistically significant difference related to testing patterns was found to be the health region.



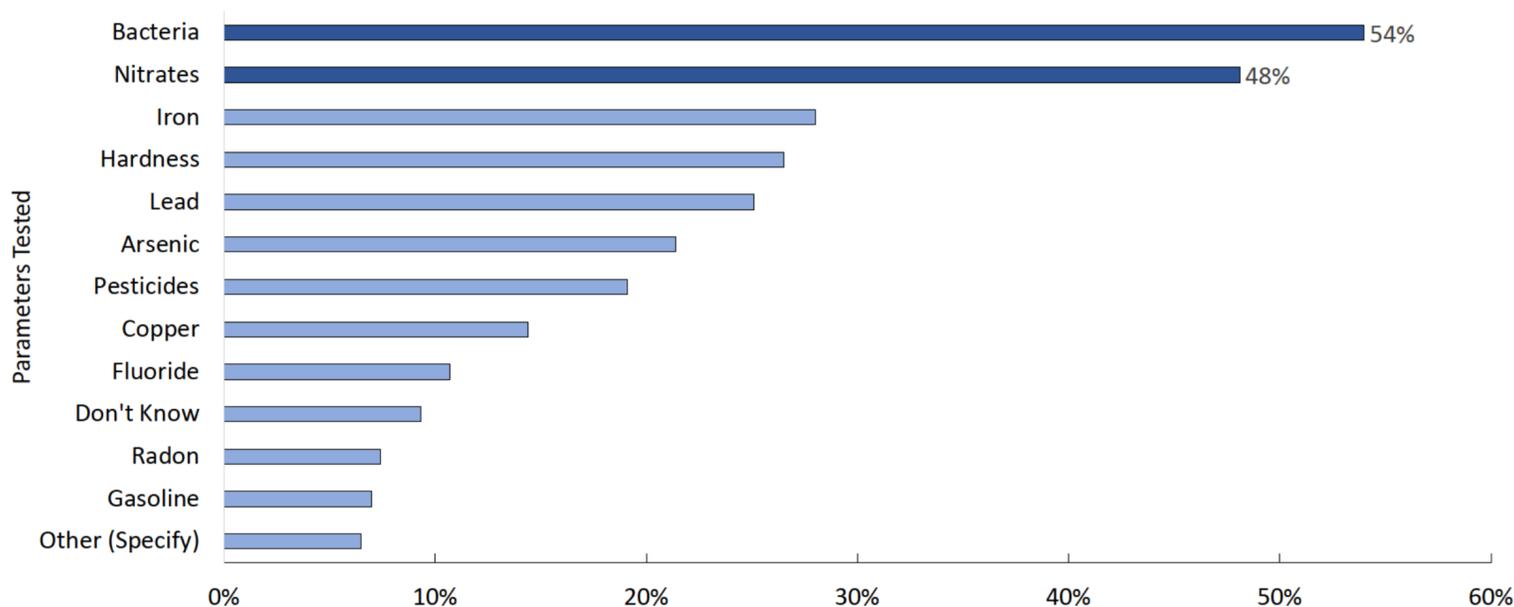
**The adjusted odds ratio for testing well water, which indicate how many more times likely a region was to test their water compared to the Southeastern region (reference).**

## Within the last year, about 10% of respondents tested their private well.



Private well owners in the Southern Health Region were the most likely to have had testing completed within the last ten years compared to the four other health regions in Wisconsin. Results demonstrated that about half of well users (51%) reported having their well water tested in the last 10 years. Only about 10% of all respondents tested within the last 12 months. Both testing and treatment/filtering varied by geographic region. Compared to the Western Health Region, respondents in the Southeast and Southern health regions were respectively 2.9 and 2.3 times more likely to treat or filter their well water. Bacteria and nitrates were the two most common parameters tested. According to the 2018 Wisconsin Groundwater Quality Report, nitrate levels exceeded the 10mg/L environmental standard for 79% of the wells sampled.<sup>4</sup>

## Bacteria and nitrates were the two most common parameters tested.



In order to address concerns related to private well testing patterns, it is important to understand motivators and barriers to testing, as well as for treating and filtering, which are summarized below.

#### Top 5 Reasons Identified for Testing Well Water

- To know if my well water is safe to drink
- Real estate transaction (buying or selling a home)
- Children, babies, or pregnant women in home
- A well test program was offered in area
- I test my water on a regular basis

#### Top 5 Reasons Identified for NOT Testing Well Water

- Have been drinking the well water for years without any problem
- Our water is probably fine
- Others in our area have not had any water quality problems
- I don't know how to have my well water tested
- I don't know what to test for

#### Top Reasons Identified for Treating or Filtering

- Hardness or iron in the water
- I believe it is healthier and safer
- Tastes and/or smells better

#### Top Reasons Identified for NOT Treating or Filtering

- Our water does not smell or taste bad
- We have been drinking this water for years without any problems
- Our water is safe to drink and/or use as is
- Our water looks clean

## Implications for Public Health Practice

Notably, over 25% of participants did not know how to test their well water or what parameters to test. To address the findings in this study, Malecki et al. suggest future targeted education and outreach efforts to encourage proper well-stewardship. In addition, increased resources to support testing will likely be necessary to improve efficacy of these educational initiatives as a large number of people indicated costs as a barrier to regular testing. It is anticipated that such efforts would be well received by the general public and likely necessary to ensure the safety of private wells in Wisconsin.

Other states, such as Oregon, have demonstrated success in promotion of private well stewardship through testing programs.<sup>5</sup> Additionally, it has been found that states requiring private well testing at the time of real estate transactions have found testing rates to increase after policy implementation.<sup>5</sup> In order to ensure the safety of those using private wells in Wisconsin, it is important that efforts are made to increase awareness and accessibility for private well testing and treatment.

#### References

1. Nelson Institute for Environmental Studies. Nitration Contamination in Drinking Water and Groundwater. 2019. nelson.wisc.edu.
2. Wisconsin Department of Natural Resources. Test your private well water annually. <https://dnr.wi.gov/topic/wells/privatewelltest.html>. Published 2018. Accessed January 13, 2020.
3. Malecki KMC, Schultz AA, Severtson DJ, Anderson HA, VanDerslice JA. Private-well stewardship among a general population based sample of private well-owners. *Sci Total Environ*. 2017;601-602:1533-1543. doi:10.1016/j.scitotenv.2017.05.284
4. Wisconsin Department of Agriculture. *Targeted Sampling Summary Report, 2018.*; 2018. <https://datcp.wi.gov/Documents/TargetedSamplingSummary2018.pdf>.
5. Hoppe BO, Harding AK, Staab J, Counter M. Private well testing in Oregon from real estate transactions: An innovative approach toward a state-based surveillance system. *Public Health Rep*. 2011;126(1):107-115. doi:10.1177/003335491112600115

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