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Assessment of the Extent and Magnitude of Nitrate Contamination in Private Domestic and Monitoring Wells in the Lower Yakima Valley in 2026

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Introduction

Over the past quarter-century, various organizations have measured nitrate concentrations in wells across the Lower Yakima Valley. However, the results of these tests have not been shared with residents in communities affected by this contamination. This report shows that nearly 40% of the wells tested have met or exceeded the federal drinking water standard of 10 parts per million (ppm), indicating the water is unsafe to drink. By withholding this information, residents and community leaders lack a clear understanding of the health risks they face and the full extent and severity of nitrate pollution in their area. This report compiles all nitrate test results we have been able to obtain for these purposes:

- Identify and map locations within the Lower Yakima Valley where private domestic and test wells meet or exceed the regulatory standard of 10 ppm nitrate-N, providing a comprehensive overview of the extent and severity of the contamination.
- Communicate findings to community leaders to enable them to support affected residents effectively and advocate for necessary resources and solutions.
- Supply regulatory agencies with consolidated data regarding nitrate pollution to facilitate their evaluation and subsequent actions.
- Assess pollution trends by reviewing historical test records and identifying regions where the rate of pollution is increasing or decreasing.
- To increase knowledge of overall groundwater quality in the area and help individuals better understand the associated health risks.

Many wells have been tested more than once over the past 25 years, and this report uses these historical records to identify long-term trends in pollution levels in the Lower Yakima Valley. These records generally show that nitrate contamination has worsened over the past decades. The historical data can also be used to identify persistent hotspots and assess the effectiveness of past mitigation efforts. All the well data used in this report are available through the links provided. We hope others will review this data and draw their own conclusions.

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Methodology

Multiple organizations have conducted tests on private domestic wells in the Lower Yakima Valley to monitor nitrate contamination over the last 25 years. The following table lists these organizations.

Organizations that have Tested Wells in the Lower Yakima Valley from 2000 to 2026

Testing Organization	Testing Period	Number of Wells Tested	Wells with Nitrate-N Levels ≥ 10 ppm	Data Availability
Valley Institute for Research and Education	2000-2002	245	16%	available
Yakima County Public Service	2011-2012	253	68%	available
U. S. Environmental Protection Agency	2010-2014	Unknown	unknown	unavailable
Anchor QEA	2013-2026 intermittent	unknown	unknown	unavailable
Tebbutt Law and the CDWP ¹	2014-ongoing	173	74%	available
U.S Geological Service Baseline Study	2016-2017	156	23%	available
YGWMA and Ecology Monitoring Wells ²	2021-ongoing	30	43%	available
YGWMA and Ecology Domestic Wells	2021-2025	141	16%	available
Yakima County Public Service	2024-2025	1052	25%	available
WA Department of Health ³	to begin in 2026			

1. Clean Drinking Water Project
2. Yakima Groundwater Management Area and Washington Department of Ecology
3. Will test private domestic wells in the Benton County portion of the Lower Yakima Valley

Test results were obtained either from publicly available sources on the organizations' websites or from personal communications with the study managers. To protect the privacy of all participants, the specific addresses of residents who took part in the testing have been omitted from this report. All nitrate testing reported herein was performed by laboratories accredited by Washington State.

The Valley Institute for Research and Education (VIRE) organization first documented high nitrate levels in private wells in the Lower Yakima Valley. Their testing covered a broad range of the valley, but nitrate exceedances were primarily found in Outlook and Sunnyside. A full report of their study can be found at the following website:

<https://apps.ecology.wa.gov/publications/summarypages/0210074.html>

Click the link below for VIRE's well data:

[VIRE well data.xls](#)

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Methodology (continued)

Based on the findings of the VIRE study, the EPA invoked Section 1431 of the Safe Drinking Water Act to address health risks from nitrate contamination, identifying dairy as the primary source of nitrate pollution and detecting bovine pharmaceuticals in some wells. Over the past 16 years, EPA researchers have primarily focused on Granger and Outlook, WA, leading to a deeper understanding of groundwater contamination in those areas. In contrast, other parts of the Lower Yakima Valley have not received the same level of investigation. As a result, large portions of the area remain understudied and lack adequate research and data on nitrate pollution.

Anchor QEA is a company contracted by dairies to test private domestic wells in Granger and Outlook, WA. Test results from the EPA and Anchor QEA are unavailable due to participant privacy concerns. Because this report focuses on regions in the Lower Yakima Valley outside the EPA and Anchor QEA's study area, their data wasn't essential.

The Tebbutt Law Firm sued several Lower Valley dairies and secured consent decrees that funded well testing and provided reverse osmosis water purification systems or bottled water to affected residents. In 2017, the Clean Drinking Water Project (CDWP) became independent of the law firm and continues to test wells and supply purification systems or bottled water to residents with contaminated wells.

Click the link below for CDWP's data:

[CDWP data.xlsb](#)

The Washington Department of Ecology (Ecology) installed 49 dedicated monitoring wells in the Lower Yakima Valley and tested them for nitrate up to four times annually over roughly three years. Additionally, 141 private domestic wells were tested. In this report, wells with nitrate levels of 10 ppm or higher were plotted. The link below provides Ecology's data.

[Ecology data 6-18-2026.xlsb](#)

The YGWMA was established in 2011 to investigate nitrate contamination in the region. As part of their efforts, they track groundwater quality and nitrate levels. They monitored wells installed by Ecology and private domestic wells in the Lower Yakima Valley.

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Methodology (continued)

The YGWMA established a quarterly sampling plan for their testing. Over 2.4 years, samples were collected each season, and sampling dates were recorded by season rather than by specific calendar dates. For easier data analysis in Excel, seasonal samples were standardized to key dates: March 20th for spring, June 20th for summer, September 22nd for fall, and December 21st for winter. This approach provided a straightforward way to compare nitrate levels throughout the year and identify seasonal trends in groundwater quality. Click the link below for YGWMA monitoring well data:

[YGWMA data.xlsx](#)

The United States Geological Survey (USGS), in cooperation with the YGWMA, tested wells from April through December 2017 to establish baseline groundwater quality data for the Lower Yakima Valley. A total of 157 wells were tested, and 31 exceeded the drinking water standard. Click the link below for USGS data:

[USGS data.xlsb](#)

Yakima County Public Services (YCPS) aimed to identify contaminated wells and provide homeowners with either reverse-osmosis water purification systems or bottled water. An initial study was conducted in 2011. Funding was sufficient to test 253 private domestic wells and to install reverse-osmosis water purification systems in some residences, but not to service them, a responsibility that fell to the residents. Click the link below for YCPS 2011 data:

[YCPS data 2011.xlsb](#)

YCPS received funding for a second study in 2025. This large-scale survey tested wells in more than 1000 homes. Water purification systems and bottled water were provided to many residents. After YCPS's funding ended in 2025, the CDWP assumed responsibility for servicing the water purification systems installed by YCPS and for providing bottled water to their clients. Click the link below for YCPS 2025 data:

[YCPS data 2025.xlsb](#)

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Results

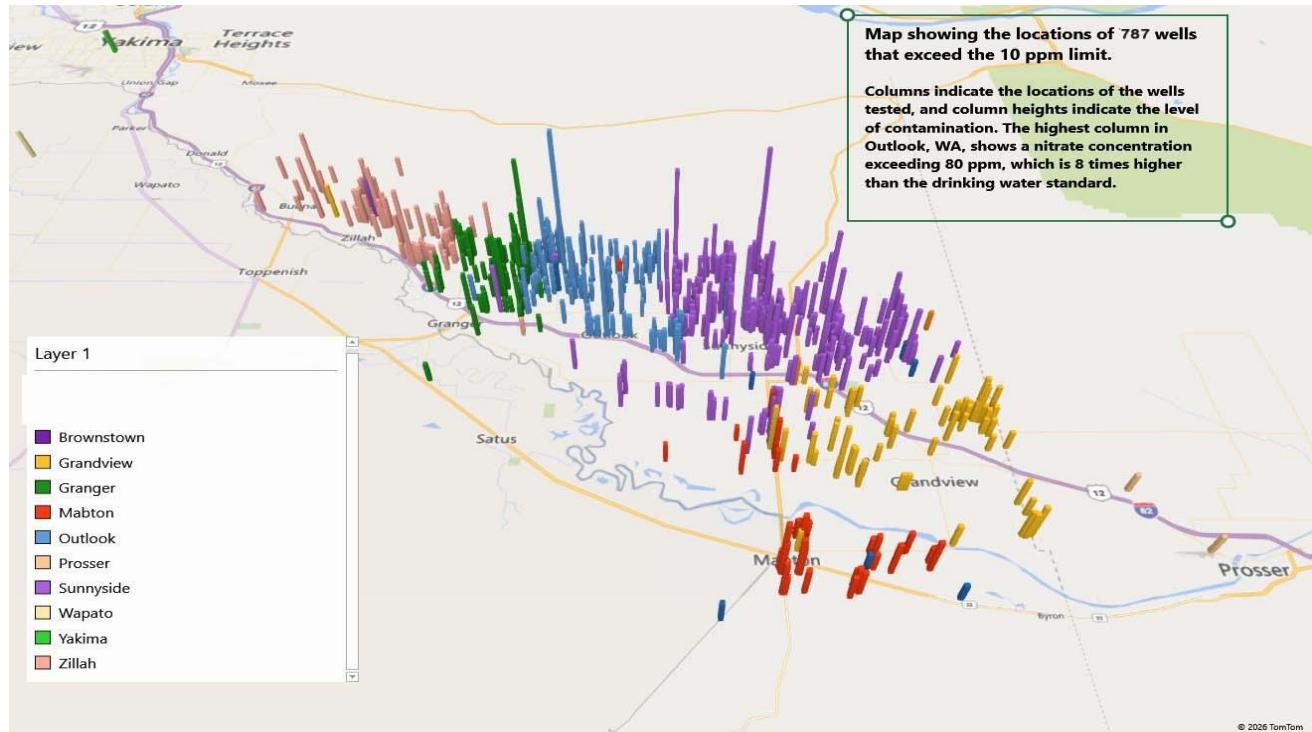
Between 2000 and 2026, nitrate concentrations were measured in private domestic wells and monitoring wells within the Yakima County section of the Lower Yakima Valley. The results of these tests for wells that met or exceeded the 10 ppm limit were compiled and organized into Excel spreadsheets in this report to facilitate data analysis and reporting.

Currently, the dataset underpinning this report comprises 1816 test results from private domestic wells in the Lower Yakima Valley. Of these, 731 tests showed nitrate concentrations at or above the regulatory threshold of 10 ppm, indicating that a significant share of wells have been rendered undrinkable by nitrate pollution. Additionally, 789 tests revealed elevated nitrate levels ranging from 3.1 ppm to 9.9 ppm, which are attributed to human activity.

Click the link below to view the compiled data on contaminated wells.

[Master file of contaminated wells.xlsb](#)

These exceedances were observed during the testing period, and nitrate concentrations may have fluctuated afterward. Wells with nitrate levels at or above 10 ppm were mapped to illustrate the distribution of nitrate contamination across the Lower Yakima Valley. The map shows widespread pollution in the region, with many wells far exceeding the 10-ppm limit.



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Results (continued)

The columns on the map mark the locations of wells that have met or exceeded the 10-ppm limit, and their heights indicate the level of contamination. The Appendix of this report shows maps of the extent and magnitude of pollution in individual cities in the Lower Yakima Valley.

The well data presented in this report represent a portion of the estimated 5,600 private wells believed to exist within the study area [1]. This means that a significant number of well owners have not yet had their wells tested. As a result, there are substantial gaps in the current assessment of groundwater quality in the region. The limited participation in well testing highlights the need for broader community involvement to ensure a more comprehensive understanding of nitrate contamination and its impact on local drinking water sources.

Tracking long-term groundwater pollution trends is difficult because seasonal fluctuations in nitrate levels can obscure them. Seasonal fluctuations were evident in some wells in the Ecology and YGWMA studies. The results of the Ecology well tests showed that 36% of the wells had decreasing nitrate levels, while 64% had increasing nitrate levels. Some wells weren't included in the plots because they had fewer than four tests. Seasonal fluctuations in nitrate levels in certain wells complicated trend analysis, highlighting the need for longer-term testing. However, trend lines in YGWMA's study showed that 62% of test wells increased and 38% declined.

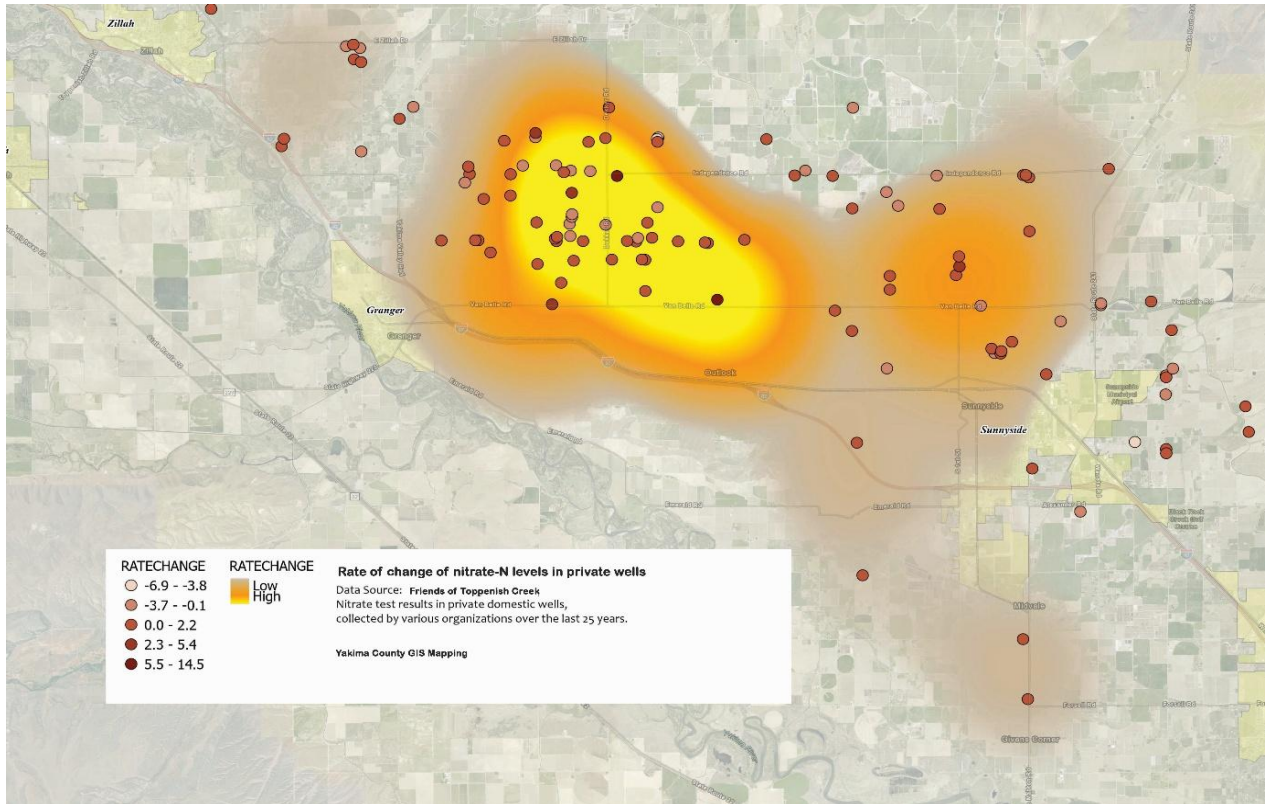
Another way to evaluate pollution trends is to examine wells that have undergone multiple rounds of testing. There are 139 wells that have been tested twice over the past 25 years. The long-time frame between some tests, up to 23 years, mitigates concerns about seasonal variability and provides a clearer view of pollution trends. Click the link below to view the temporal changes in contamination.

[Temporal changes 5-16-2026.xlsb](#)

To calculate the rate of change in nitrate concentrations for individual wells, the difference in nitrate levels between the two tests was divided by the time interval between tests. The results showed that 77% of the wells showed increasing rates of contamination. 4% were unchanged, and 19% declined.

The average annual increase in nitrate contamination was 4.0 ppm in Granger and 2.5 ppm in Outlook. The average rate of increase for Sunnyside was 0.8 ppm. Decreases in the rate were observed in 29% of the wells. This could be attributed to residents having new, deeper wells drilled after the first test date, or to environmental activities that reduced contamination levels.

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The heat plot visually represents rates of change in nitrate levels in private domestic wells data using color gradients.

Conclusions

Aside from the extensive contamination documented by the EPA in Outlook and Granger, WA, the overall understanding of groundwater pollution trends in the Lower Yakima Valley remains limited. This is primarily due to insufficient monitoring and the lack of systematic surveys across the area. As a result, there are significant gaps in knowledge about long-term contamination trends in Lower Yakima Valley communities. Decades of well-testing data, which would have helped determine the extent and magnitude of the pollution, have not been shared with residents or community leaders until this report.

Groundwater pollution is often not widely or actively communicated in Washington State because private well owners are legally responsible for testing their own water, and

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Conclusions (continued)

groundwater contamination from nonpoint sources (such as agricultural runoff and septic systems) is diffuse, making it difficult to regulate and to communicate publicly.

Worsening pollution trends, however, indicate that actions taken by state regulators have been ineffective in achieving significant reductions in nitrate pollution. At present, there isn't a clear understanding of the sources of pollution in the broader valley, which is essential for determining corrective measures.

Efforts by government organizations and non-profits to address the pollution have included providing residents with contaminated wells with water purification systems or bottled water. This temporary fix has been in place for at least 17 years and has averted the need to address the sources of pollution. The net result is that groundwater in the Lower Yakima Valley has been abandoned to further deterioration for decades.

A recent survey, which involved interviews with residents of homes with contaminated wells in the Lower Yakima Valley, found that none were aware of the extent of the pollution or how it was affecting entire communities [2]. Moreover, they felt safe from the pollution if their home had a water purification system. Relying on technology to mask water quality issues can pose health risks to the community.

This blind faith in water purification systems is unwarranted because they lack alarms to signal when they fail to produce clean drinking water. Their performance depends on factors such as groundwater contamination levels and the household's demand for purified water. Typically, these units require annual service, but some have failed within 6 months (personal communication, CDWP). Some organizations have provided free installation of the systems, but maintenance costs fall to the residents, who are among the poorest in Washington State.

A concerted effort should be made to identify the sources of contamination before conditions worsen. One option is to install monitoring wells throughout the Lower Yakima Valley, but this approach is prohibitively expensive. An alternative is to retest previously sampled wells. The longer the interval between tests, the more accurate the estimates of trends in groundwater pollution. Determining the wells' depths could also yield valuable information about contamination across various aquifers.

Communities can collaborate to combat groundwater pollution by establishing cross-border watershed coalitions, launching joint water-monitoring programs with residents, and promoting regional zoning restrictions. Sharing resources enables neighboring towns to pool data, access federal or state environmental grants, and support comprehensive aquifer protection efforts.

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Conclusions (continued)

To sum up, people living in the Lower Yakima Valley have waited decades for effective measures to reduce nitrate pollution in their groundwater. Because state regulators have not acted, several organizations have petitioned the EPA to invoke Section 1431 of the Safe Drinking Water Act again. This emergency provision allows the EPA to step in if a state fails to address health concerns. The EPA has the experience and expertise to identify sources of pollution and determine remedies. We hope that communities in the Lower Yakima Valley will support this petition. It is imperative that corrective action be taken soon to prevent contamination of deeper municipal wells, as has occurred in Mabton, WA.

Petition for Emergency Action under Section 1431 of the Safe Drinking Water Act to Protect Residents of the Lower Yakima Valley, Washington, from Imminent and Substantial Endangerment to Public Health Caused by Nitrate Contamination of Drinking Water Sources. Available at:

[20211026-petition-for-emergency-action-under-section-1431-of-the-sdwa_00006.pdf](#)

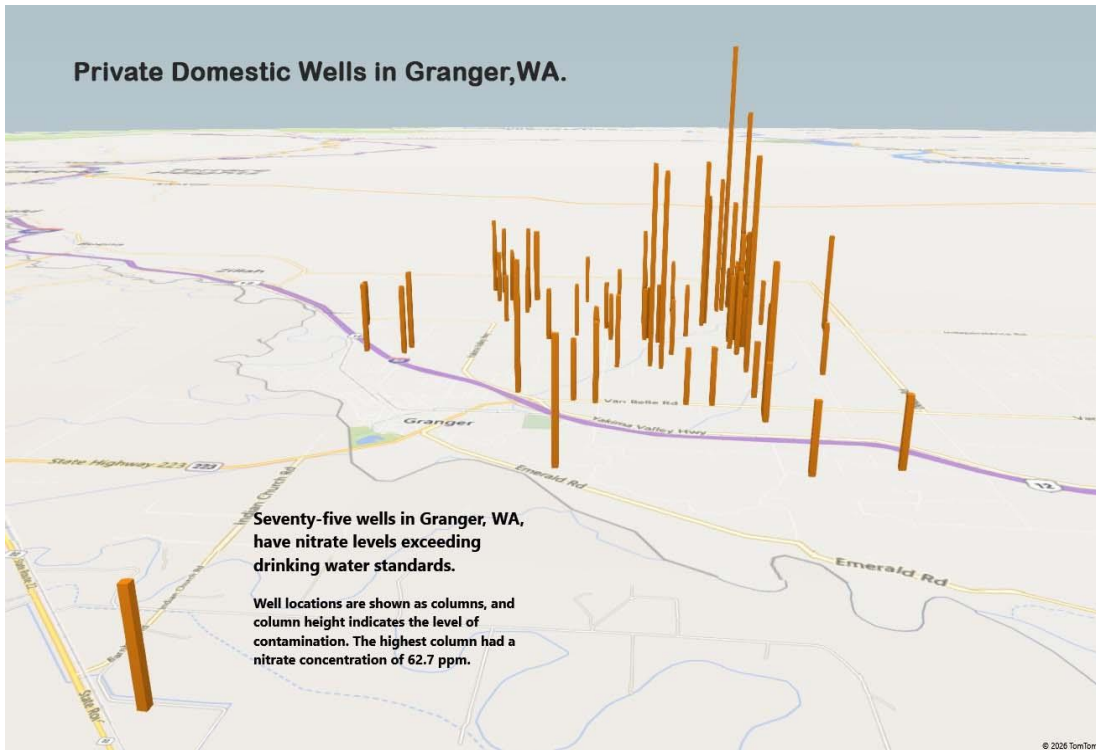
References

- [1] Bill Dunbar, EPA Region 10, Department of Justice sues Lower Valley Dairies for manure practices endangering neighboring well-users, July 2, 2024.
- [2] Michael David McNickle, *Health and Nitrate-Contaminated Drinking Water in the Lower Yakima River Valley*, Walden University Dissertations and Doctoral Studies, 2019.

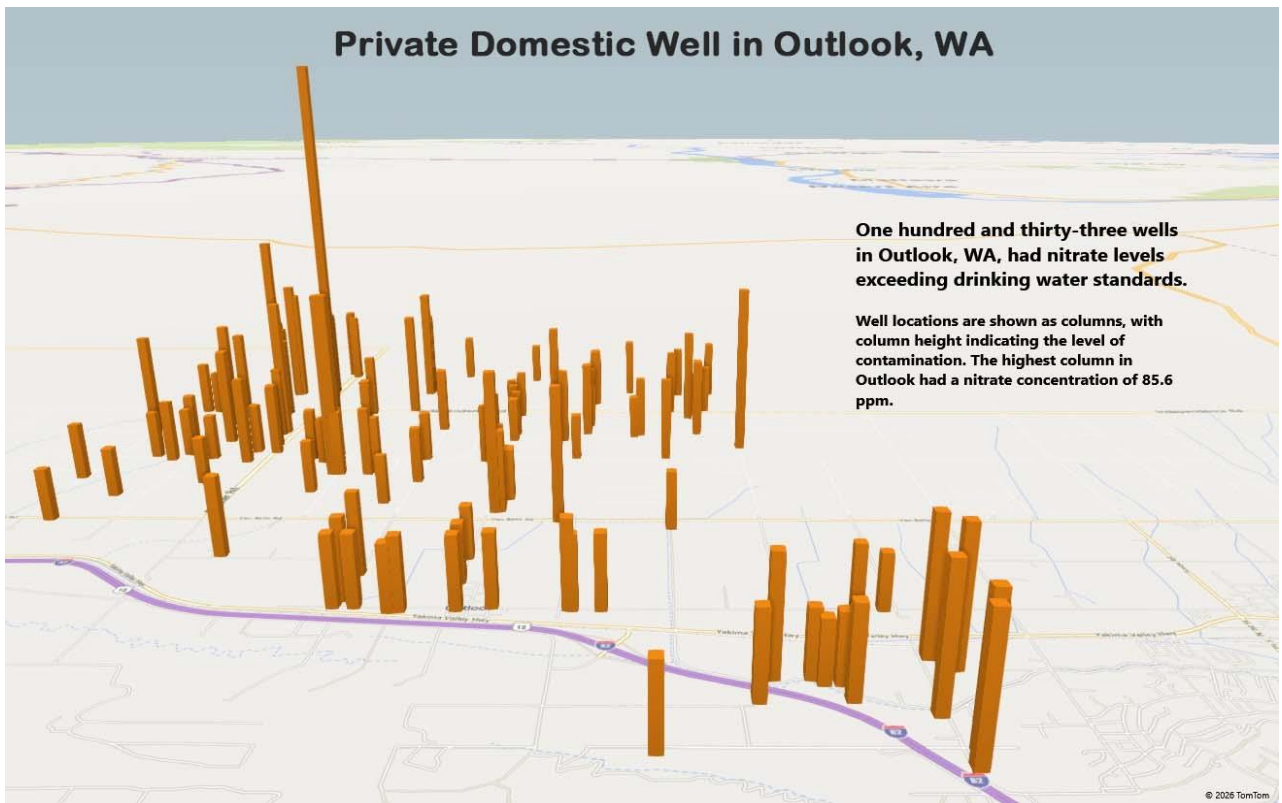
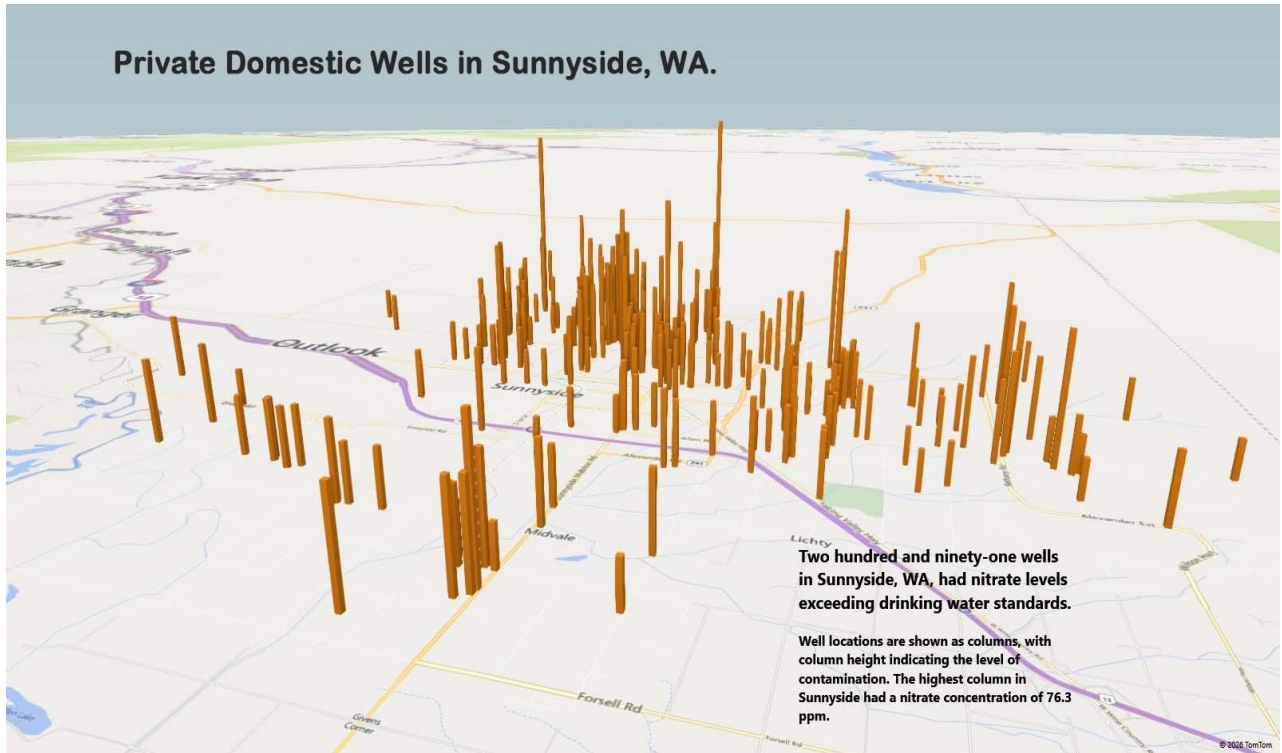
Appendix

The following section presents maps showing the nitrate contamination levels in cities in the Lower Yakima Valley.

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