

Cottage Grove Well Water Screening – Preliminary Summary

Private-Well Owners and Users (PWO/Us)

During the 2023 year, seven well water screening clinics were held throughout the state of Minnesota. The Washington Conservation District served as the lead sponsor of the Cottage Grove clinic held on September 18 at the Washington County South Service Center. This preliminary summary provides a few highlights from self-reported data provided by private-well owners and users (PWO/Us).

The Cottage Grove Clinic began with a one-hour orientation sessions held for volunteers assisting with the clinic. Volunteers received information and training associated with the following clinic activities: check-in and water-sample registration, screening services (nitrate and chloride), consulting associated with poster displays and the Private Well User Portfolio, and consulting provided to PWO/Us participants regarding screening results. Volunteers also assisted in the set-up of the clinic and assembling the materials for the portfolio. The portfolio included the following materials:

- My Drinking Water from My Well (four-page folder that housed the remaining materials).
- Inserts:
 - How Do I Find Out About My Well’s Construction?
 - Perfluorinated Alkylated Substances (PFAS) – AKA. “Forever Chemicals”
 - Pesticides
 - Abandoned Wells and Abandoned Well Sealing Grant Application
 - Managing Potential Contamination Sources
 - Is My Drinking Water Sensitive to Contamination?
 - Glossary of Terms
 - Accredited Labs in Minnesota Accepting Drinking Water Samples from Private Well Users
 - 5 x 7 Information Cards
 - Nitrate Nitrogen
 - Arsenic
 - Coliform Bacteria
 - Managing the Area around Your Well

Process

The clinic hours ran from 1:00 – 6:00 pm, and completed nitrate and chloride screenings for 92 PWO/Us from multiple communities in the area and one community outside of Washington county (Brainerd). The communities with the highest rate of participation included Afton (n=25), St. Paul Park (n=16), Stillwater (n=12) and Hastings (n=7). Eight individuals did not report the city from which they resided; however, they did provide township information that included Denmark (n=3), May (n=1), and Grey Cloud Island (n=1). Of special note, two individuals provided samples from city water (Cottage Grove) and those samples are not included in the analyses of data.

As individuals arrived, they registered their sample(s) by completing the Screening Results document that collected contact information, sample location, well information, concerns, type of treatment system and other miscellaneous information. Ideally, the participants were to provide at least one cup (8 oz.) of drinking water in a clean container (hard plastic or glass) with the date and location of the

sample identified. Volunteers took the samples and transferred the water bottles labeled with the sample number and whether the sample was treated or untreated. Once the Screening Results document and transfer of samples into the bottles occurred, the samples and document moved to the screening station.

This clinic provided screening for nitrate and chloride. The nitrate screening occurred through the use of specialized equipment (Hach DR 6000 Nitrate Analyzer) in which water from the sample container was poured into the unit's glass vial. The sample then moved through the inflow tube and once the water level dropped to half its level in the vial, the "read" button was pressed and results were displayed. The results were recorded on the document and the sample moved to the chloride screening station.

The chloride screening required greater human intervention with each sample requiring titration. In this process, the sample was poured into a mixing bottle in which Chloride 2 Indicator Powder was poured and mixed. Following this step, the Silver Nitrate Solution was added by a dropper. Drops were added to the solution until the color changed to red-brown. To determine the chloride levels, the number of drops added to the mixture was multiplied by five. This completed the screening.

For individuals waiting, they received their Screening Results document and had the option of visiting with a consultant to discuss the results and ask other questions. Those who dropped off their samples received the results by email or through a phone call.

Preliminary Results

During the clinic, volunteers conducted a total of 238 tests ($\text{NO}^3=119$, $\text{Cl}=119$). Table 1 provides results using the Meaning of Water-Quality Screening Guidance document to structure the results based on nitrate and chloride levels.

Table 1 - Screening Results

Screening Results Parameters	Untreated (n=64)	Treated (n=55)
$\text{NO}^3 < 3\text{mg/L}$ and $\text{CL} < 25\text{mg/L}$	48	43
$\text{NO}^3 < 3\text{mg/L}$ and $\text{CL} > 25\text{mg/L}$	4	6
$\text{NO}^3 > 3\text{mg/L}$ and $\text{CL} < 25\text{mg/L}$	11	5
$\text{NO}^3 > 3\text{mg/L}$ and $\text{CL} > 25\text{mg/L}$	0	0
Missing data for Cl	1	1

A vast majority of the screening results for treated (n=48) and untreated samples (n=43) did not exceed levels that might indicate an impact on the quality of the drinking water by land use or disease organisms. Four untreated samples and six treated samples tested high for chloride that may indicate that the drinking water is impacted by sources of disease organisms. With respect to high nitrate levels and low chloride, 11 untreated samples and five treated samples fell into this category. These results may indicate that the drinking water is being impacted by land use. With respect to the results indicating high levels of nitrates or chloride, further testing may be needed by a certified laboratory.

Further data analyses are occurring to tease out more details in the results (e.g., reviewing treatments samples with high levels of chloride when a treatment system is in use, results by community).