

From Wells to Wellness: An Introduction to Drinking Water Systems in Florida¹

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Introduction

Safe drinking water is a fundamental requirement for human health and well-being. The United Nations Sustainable Development Goal 6 (United Nations n.d.) targets universal and equitable access to safe and affordable drinking water for all by 2030. However, substantial discrepancies in drinking water quality exist across different locations and water systems in the United States due to factors such as aging infrastructure, impaired source water, and disparities in community financial resources and socio-demographic characteristics (Allaire et al. 2017; Mueller and Gasteyer 2021).

This publication is part of a series illuminating the critical issues surrounding drinking water quality and Florida's drinking water system. In it, we begin with a brief introduction to the different water-supply categories within Florida's drinking water system. Then, we discuss relevant federal and state regulations for each category. We provide information sources and channels for readers to access drinking water information in their communities. The publication is designed to benefit a diverse audience, including researchers, communications and outreach experts, environmental professionals, healthcare providers, and policymakers. It seeks to clarify the facts and regulatory framework governing drinking water systems, identify areas that require

targeted Extension programs, and aid in the development of outreach materials to ensure the provision of safe drinking water.

Drinking Water Systems

Drinking water systems in the United States are complex networks, varying in regulations, intended usage, source, and the number of people served. The quality of drinking water depends on its sources, the effectiveness of water treatment plants, and regulatory monitoring and enforcement (Olatunde et al. 2022). Additionally, drinking water quality and social vulnerability vary spatially and are influenced by the underlying drinking water system (Scanlon et al. 2023).

In Florida, drinking water systems have been classified into four categories: public drinking water systems, limited-use public drinking water systems, multi-family water systems, and private water systems (Florida Health 2023). We illustrate the categories and structural elements of drinking water systems in Florida in Figure 1.

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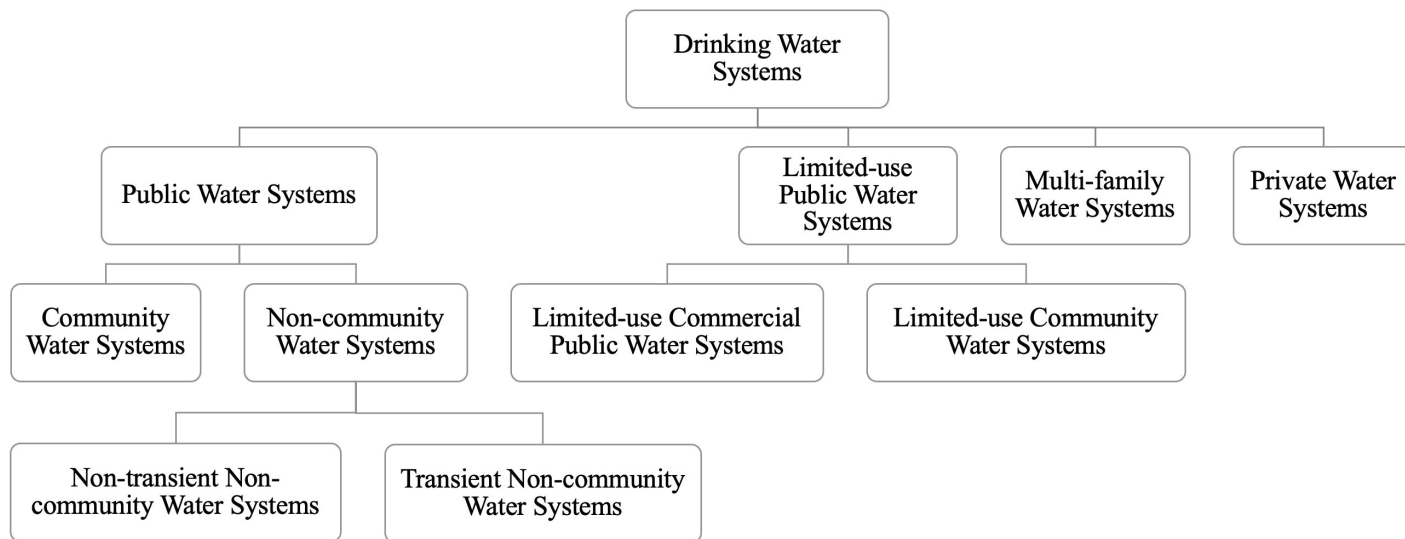


Figure 1. Categories of drinking water systems in Florida.

Both the State of Florida and the United States Environmental Protection Agency (EPA) use the United States Code of Federal Regulations definition of a public water system, that is, “a system for the provision to the public of water for human consumption through pipes or other constructed conveyances if such system has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year” (Florida Statutes 2023; EPA 1974). Public water systems can be further classified into community water systems and non-community water systems. A community water system is a type of public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents; examples include municipalities, mobile home parks, and subdivisions (Centers for Disease Control and Prevention 2023). On average, community water systems serve more than 90 percent of the state’s population in 2019 (FLHealthCHARTS 2023). According to the definition of the United States Environmental Protection Agency, non-community water systems can be further subdivided into non-transient non-community water systems (examples include schools, factories, office buildings, and hospitals that regularly supply water to at least 25 of the same people for at least six months per year) and transient non-community water systems (examples include places like gas stations or campgrounds where people do not remain for extended periods).

Limited-use public water systems represent a distinct category defined by the Florida Department of Health. Limited-use public water systems encompass both limited-use commercial public water systems and limited-use community water systems (Florida Statutes 2023). The former category serves one or more nonresidential establishments and provides piped water, while the latter serves five or more residences or two or more rental residences and provides piped water. Examples of these limited-use systems include migrant labor camps, hunting camps, outdoor concerts, and recreational venues.

For the remaining two categories, a “Multifamily water system” is defined as a water system that provides piped water to three or four residences, one of which may be a rental residence; A “Private water system” refers to a water system that provides piped water for one or two residences, one of which may be a rental residence (Florida Statutes 2023).

Regulatory and Enforcement Landscape

Given the complex networks of drinking water systems, the regulatory and enforcement landscape varies by the type of system. The linkages among water systems, regulations, and enforcement are illustrated in Figure 2, with more detailed descriptions provided in the text below.

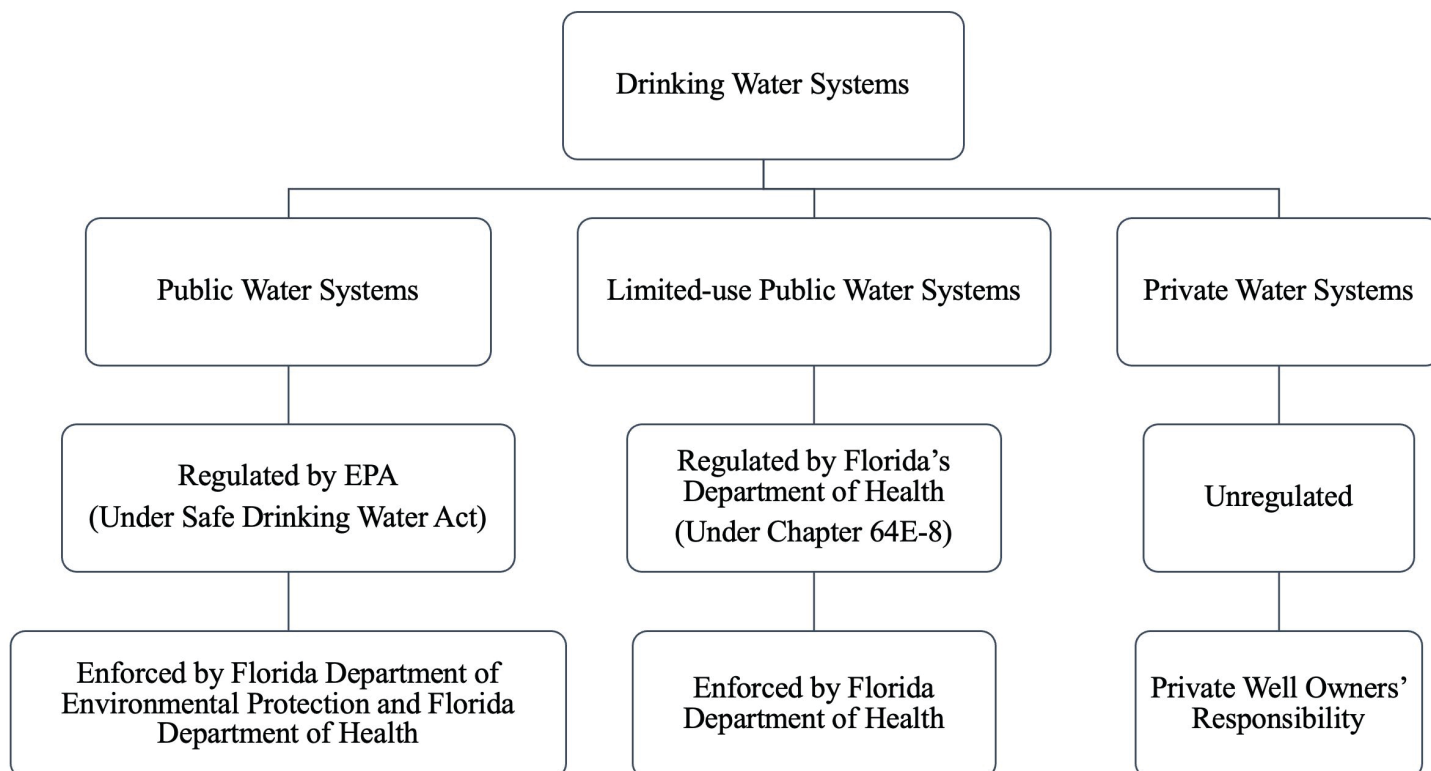


Figure 2. Regulatory and enforcement landscape of drinking water systems in Florida.

Public Water Systems and the Safe Drinking Water Act

Originally enacted by Congress in 1974, the Safe Drinking Water Act (SDWA) authorizes the EPA to establish health-based national standards for drinking water. These standards aim to set regulations, such as maximum contaminant levels, treatment methods, and requirements for both naturally occurring and human-produced contaminants (Patel et al., 2020). The current rule can be found in the EPA’s [table of National Primary Drinking Water Regulations](#). To understand the establishment of drinking water standards, we recommend reading the UF/IFAS publication “[Private Well 101: Drinking Water Standards](#).”

In Florida, the Department of Environmental Protection is the principal agency tasked with enforcing the SDWA, except in six specific counties: Hillsborough, Miami-Dade, Palm Beach, Polk, Sarasota, and Volusia. In these counties, the County Health Department assumes responsibility for overseeing the construction and operation of all public water systems (Florida Health 2023).

The 1996 amendments to the Safe Drinking Water Act mandate that community water systems disclose any violations of drinking water standards to their customers through annual water quality reports. However, requirements vary depending on the size of the water systems

(Baker et al. 2023). Please refer to Table 1 for further details. The US EPA maintains a database for those interested in obtaining water systems and water quality information for their communities. To access this information, visit the EPA’s [drinking water dashboard](#).

Outside the Safe Drinking Water Act: Limited-Use Public Systems and Private Water Systems

While limited-use public systems fall under the umbrella of public water systems, they are not governed by the Safe Drinking Water Act (SDWA). Instead, these systems are regulated by Florida’s Department of Health under Chapter 64E-8. This chapter outlines rules on construction, annual inspections, operations, maintenance, bacteriological requirements, lead and nitrate mandates, and guidelines for chlorinated systems. Detailed information can be accessed in the Florida Administrative Code chapter on drinking water systems: <https://www.flrules.org/gateway/Chapter-Home.asp?Chapter=64E-8>.

Private wells are subject to minimal federal and state regulations with no federal standards. The SDWA allows individual well owners to establish and maintain their own drinking water quality standards as long as those standards align with or surpass EPA criteria. Consequently, the responsibility for monitoring and testing falls on private

well owners, and it is the owners' responsibility to maintain the wells and ensure the quality of the drinking water sourced from those wells.

Private wells may contain a variety of contaminants, including, but not limited to, arsenic, chemical pollutants, coliform bacteria, ethylene dibromide, and nitrates. The Florida Department of Health (FDOH) strongly recommends that owners of private wells conduct tests for bacteria and nitrates at least once a year. In collaboration with the FDOH, the Florida Department of Environmental Protection (FDEP) administers the Well Surveillance Program, which samples a representative number of wells to assist in identifying and monitoring areas where contaminated drinking water is suspected and may pose a threat to public health. Further information is available on [the Florida Department of Health's Well Surveillance Program webpage](#).

Given the frequency of heavy rainfall and flooding in Florida, special caution is advised for private wells during such events. If flood waters have come into contact with a well or if you notice any changes to the water's appearance or taste, it is highly recommended to stop using the water and consult the local health department for guidance before resuming normal use. Local county health departments are excellent resources for information on water sample collection and locating state-certified laboratories. For additional information on drinking water testing, please refer to the Ask IFAS publication "[Household Drinking Water Testing for Public and Private Water Supplies](#)."

Conclusion

This publication provides an introductory overview of the drinking water systems and associated federal and state-level regulations.

Readers are encouraged to reach out to their local agencies for more comprehensive information about their specific drinking water systems. Private well owners, in particular, should remain vigilant, as these systems are often more susceptible to contamination and are not regulated under the Safe Drinking Water Act. Obtaining accurate and detailed information is crucial for ensuring the safety and quality of drinking water.

References

Allaire, M., H. Wu, and U. Lall. 2018. "National Trends in Drinking Water Quality Violations." *Proceedings of the National Academy of Sciences* 115 (9): 2078–2083. <https://doi.org/10.1073/pnas.1719805115>

Baker, J., L. Benneer, and S. Olmstead. 2023. "Does information disclosure reduce drinking water violations in the United States?" *Journal of the Association of Environmental and Resource Economists* 10 (3): 787–818. <https://doi.org/10.1086/722619>

Centers for Disease Control and Prevention. 2023. Retrieved September 25, 2023 from <https://www.cdc.gov/healthywater/drinking/public/index.html>

Florida Health. 2023. Retrieved September 25, 2023 from <https://www.floridahealth.gov/environmental-health/drinking-water/index.html>

FLHealthCHARTS. 2023. Retrieved September 25, 2023, from <https://www.flhealthcharts.gov/ChartsDashboards/rdPage.aspx?rdReport=NonVitalIndNoGrp.Dataviewer&cid=0287>

Florida Statutes. 2023. Retrieved September 25, 2023 from http://www.leg.state.fl.us/statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0400-0499/0403/Sections/0403.852.html

Mueller, J. T., and S. Gasteyer. 2021. "The Widespread and Unjust Drinking Water and Clean Water Crisis in the United States." *Nature Communications* 12 (1): 3544. <https://doi.org/10.1038/s41467-021-23898-z>

Olatunde, K., S. K. Patton, L. Cameron, T. Stankus, and P. J. Milaham. 2022. "Factors Affecting the Quality of Drinking Water in the United States of America: A Ten-Year Systematic Review." *American Journal of Water Resources* 10 (1): 24–34. <https://doi.org/10.12691/ajwr-10-1-4>

Patel, A. I., C. E. Hecht, A. Cradock, M. A. Edwards, and L. D. Ritchie. 2020. "Drinking Water in the United States: Implications of Water Safety, Access, and Consumption." *Annual Review of Nutrition* 40:345–373. <https://doi.org/10.1146/annurev-nutr-122319-035707>

Scanlon, B. R., R. C. Reedy, S. Fakhreddine, Q. Yang, and G. Pierce. 2023. "Drinking Water Quality and Social Vulnerability Linkages at the System Level in the United States." *Environmental Research Letters* 18 (9): 094039. <https://doi.org/10.1088/1748-9326/ace2d9>

United Nations. n.d. Goal 6: Ensure availability and sustainable management of water and sanitation for all. <https://sdgs.un.org/goals/goal6>

US EPA. 1974. Safe Drinking Water Act of 1974, 42 U.S.C. §300f et seq. Retrieved June 2024 from <https://www.epa.gov/laws-regulations/summary-safe-drinking-water-act>

Table 1. Disclosure Requirements of Public Water Systems.

Water System Size	Requirement
Serving up to 500 customers	Report must be available upon request
Serving between 501 and 9,999 customers	Report must be published in a local newspaper
Serving at least 10,000 customers	Report must be mailed to customers
Serving at least 100,000 customers	Report must be mailed to customers and be available online