

Suggested Water Quality Testing for Private Wells

The purpose of this document is to identify those water quality contaminants that the Department of Environmental Services (DES) recommends be tested in private wells. These contaminants are generally related to New Hampshire's geology and types of land use.

State, Town, and Lender Requirements

There is no state requirement for testing the water quality of private wells; accordingly, the following information is offered only for educational purposes. State law (RSA 477:4-c), however, requires that certain information concerning a home's water system be disclosed to a purchaser, including an unsatisfactory water test. The term "unsatisfactory water test" is not defined in statute.

Since there are no testing requirements for water quality, a few towns, primarily in southern New Hampshire, have identified lists of required water quality test parameters. Such town requirements are typically expressed as the obligation to test for certain contaminants, but not necessarily to achieve compliance. This testing is typically associated with the building code requirements for new construction, such as a certificate of occupancy. Please check with your town to see if water quality testing of a private well is required and under what circumstances. The Veterans Administration (VA), Federal Housing Administration (FHA) and many banks require some water quality testing when writing a mortgage. However, their requirements are not consistent, and historically there has been more emphasis on factors that pertain to aesthetics than factors that pertain to health.

LIST OF SUGGESTED CONTAMINANTS

The list of contaminants on the following page has been prepared after a review of extensive records from the DES's public water supply program. Although more test parameters could be added, this list provides a reasonable balance between the high cost of extensive testing and the relatively low cost of testing for only those contaminants that are more commonly found in New Hampshire.

Recommended Contaminant Testing

"Standard Analysis"	Testing Frequency			
	Bedrock	Dug	Regular	if greater than 75% MCL *
Arsenic	x	x	3-5 years	quarterly
Bacteria	x	x	annually	Immediately
Chloride	x	x	3-5 years	annually
Copper (nonflushed)	x	x	3-5 years	annually
Fluoride	x	x	3-5 years	annually
Hardness	x	x	3-5 years	annually
Iron	x	x	3-5 years	annually
Lead (nonflushed)	x	x	3-5 years	quarterly
Manganese	x	x	3-5 years	annually
Nitrate /Nitrite	x	x	3-5 years	1/month
pH	x	x	3-5 years	Not App.
Sodium	x	x	3-5 years	annually

Recommended Additional Test Parameters:

VOCs (Solvents and hydrocarbons)	x	x	5-10 "	See below
Radon (special bottle req.)	x	x	3-5 "	annually
Gross (screen) alpha	x		5-10 "	annually

* Suggested follow up testing if the concentration of the contaminant is greater than 75 percent of the standard. Testing should continue until the average concentration is determined for naturally occurring contaminants.

ADDITIONAL TESTING BASED ON THE ANALYSIS OF THE WELL'S LOCATION OR THE RESULTS OF THE FIRST ROUND OF WATER QUALITY TESTING

Organics Testing

There are two groups of organic contaminants, **volatile organic compounds** (VOC) and **synthetic organic compounds** (SOC). Only VOCs are generally recommended for testing. All contaminants in the organics group come from manmade sources. Laboratory testing for these contaminants is expensive. There are approximately 60 organic contaminants in these two categories.

Volatile Organic Compounds (VOC)

The DES recommended test for volatile organic chemicals (VOC) targets gasoline compounds, including MtBE, and industrial solvents. Repeat testing frequency for organics depends on a site review of the area near and uphill of your well identifying past or present land uses that make such contamination possible. Examples of some, but not necessarily all, activities that would produce these contaminants include heavy industrial or commercial activity, past or present landfills, buried chemical or hydrocarbon storage tanks. Some other water quality factors important in judging whether VOC organics testing may be necessary include:

- If there is taste or odor in the water supply, particularly if characterized as "strange or unusual" but not including hydrogen sulfide.
- If state and local records identify hazardous waste sites and other contamination areas nearby or upstream of your well, then test for VOCs and SOCs as appropriate.

Synthetic Organic Contaminants (SOC)

Testing for the remaining organics, often characterized as pesticides and herbicides, is very expensive. Factors important in judging whether pesticides/herbicide organics testing may be necessary include:

- Elevated nitrate/nitrite concentrations may indicate past agricultural activity where pesticides and/or herbicides may have been used.
- If there is taste and odor in the water supply, particularly if characterized as "strange or unusual" but not including hydrogen sulfide, then test for VOCs.
- If state and local records identify hazardous waste sites and other contamination areas nearby or upstream of your well, then test for VOCs and SOCs as appropriate.

Gross (Beta) Screen Testing

Radionuclides, producing high beta levels, are believed to occur infrequently in New Hampshire's geology. Consider testing for beta if the screen alpha mineral radionuclides are elevated.

FREQUENCY OF TESTING

Water quality in wells is normally stable and, if varying, the change occurs slowly. Thus the interval between water quality samples taken from a properly constructed well, located in a safe area, can generally be in terms of years. On the right hand side of the chart on page 2 are DES recommendations concerning how frequently to test water quality. In developing this frequency we have considered similar requirements for public water systems and given significant emphasis to the cost of laboratory work. These frequencies are appropriate for wells in rural areas believed to be free of groundwater contamination sites.

There are a variety of conditions that would prompt modifications of these average monitoring frequencies. Some include:

Areas of Possible Higher Contaminant

In more built-up areas and those with known groundwater contamination sites, increasing the sampling frequency for appropriate contaminants is warranted. In these situations the frequency for each contaminant would be determined individually based on an assessment of the well type, contaminant type, and level of health risk.

Proper Well Construction

The DES recommends that wells be sampled for bacteria unless their construction is excellent. Poor well construction can lead to high bacterial counts. DES recommends taking a bacterial test after any well repair, and after every pump or plumbing modification, but only after substantial flushing to clean the area where work occurred.

Sample Timing and Location

Where treatment is already installed, DES recommends that a sample be taken of the treated water just before the treatment system is scheduled to be regenerated. Where you desire to have a record of the baseline quality of your well water, additional testing should be done of the untreated water. Such testing provides a historical and official record of your well's quality. This historical data is often valuable when contending that contamination of your well has occurred by the recent activities of others.

Higher Concentrations

Where any health parameter is greater than 75 percent of the public drinking water maximum contaminant level (MCL), more frequent sampling should be performed until one can reasonably conclude that the concentration of that contaminant is reliably and consistently below the MCL. Suggested accelerated sampling frequencies are shown in the right hand column of page 2 for contaminant situations that have stabilized. This column is identified with the heading "greater than 75 percent MCL." Where the contaminant level in your well is unstable or unknown, much more frequent testing is warranted. This testing frequency would be individually determined based on the specifics of the area and the contaminant risk.

Variation in Quality

Where the water quality in a supply varies after a heavy rain or when you have experienced a rapid and unexplained substantial change in quality from the past long term performance of that well, we suggest weekly or monthly sampling for bacteria, and possibly other parameters, until the condition stabilizes. Heavy precipitation tends to mobilize bacteria and thus highlight conditions of poor well construction or inadequate soil filtration. Thus bacterial sample(s) should always be taken after a heavy rainstorm.

TESTING YOUR WATER

EAI Analytical Labs will provide you with your free water testing kit containing: sample bottles, detailed sampling instructions and a tracking form. Bacteria samples bottles are distributed pre-sterilized and all sample bottles contain their necessary preservatives. Kits are available for pickup or they can be mailed to you. If you are interested or have any questions regarding the analysis of your water, please give us a call.