

Section 8 Private Wells

Section 8.1: Definitions

Unless otherwise noted below, the following terms shall have the following definitions throughout all of Section 8.

- 8.1.1 Agent: Any person designated and authorized by the Board to execute these regulations. The agent shall have all the authority of the Board and shall be directly responsible to the Board and under its direction and control.
- 8.1.2 Applicant: Any individual, corporation, association, trust, or partnership who intends to have a Private Well constructed.
- 8.1.3 Aquifer: A water bearing geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.
- 8.1.4 Board: The Board of Health of Bedford, Massachusetts.
- 8.1.5 Business of Digging or Drilling: A person who charges a fee for digging or drilling a well, or a person who advertises for hire the availability to dig or drill wells within the Commonwealth of Massachusetts.
- 8.1.6 Certified Laboratory: Any laboratory currently certified by the Department of Environmental Protection for analysis of drinking water in Massachusetts. Provisional certification shall also qualify.
- 8.1.7 Monitoring Well: A well designated to facilitate down-hole measurement of groundwater and/or gas levels and/or the collection of groundwater and/or gas samples. A Monitoring Well shall not be used to supply water.
- 8.1.8 Private Well: Any dug, driven, or drilled hole, with a depth greater than its largest surface diameter, developed to supply water and not subject to regulation by 310 CMR 22.00.
- 8.1.9 Private Drinking Water Well: A Private Well intended and/or used for human consumption.
- 8.1.10 Private Irrigation Well: A Private Well serving water to irrigate lawns, shrubs, trees, vegetables, ornamental plants and other such items. Irrigation well water shall NOT serve as water intended for human consumption.
- 8.1.11 Pumping Test: A procedure used to determine the characteristics of a well and adjacent aquifer by installing and operating a pump.
- 8.1.12 Registered Well Driller: Any person registered with the Department of Environmental Management/Office of Water Resources to dig or drill wells in the Commonwealth of Massachusetts.
- 8.1.13 Static Water Level: The level of water in a well under non-pumping conditions.
- 8.1.14 Structure: A combination of materials assembled at a fixed location to give support or shelter, such as a building, framework, retaining wall, fence, or the like.

Section 8.2: Well Construction Permit/Registration

8.2.1 Approval to construct a Private Well from the Board is required as follows.

- a) For a Private Drinking Water Well the Applicant shall obtain a permit from the Board. A completed Private Well Application must be filed with and approved by the Board.

- b) For a Private Irrigation Well the Applicant must register with the Agent. A completed Private Irrigation Well Application must be filed with and approved by the Agent.
 - c) Monitoring Wells may be constructed without a permit or registration if constructed in accordance with the Department of Environmental Protection Standard Reference for Monitoring Wells (1992, 1999; et seq.).
- 8.2.2 Each permit application and each registration application shall include the following:
- a) the property owner's name and address
 - b) the well driller's name and proof of valid state registration
 - c) a plan with a specified scale showing the location of the proposed well in relation to existing or proposed above or below ground structures.
 - d) a description of visible prior and current land uses within two-hundred (200) feet of the proposed well location, which represent a potential source of contamination, including but not limited to the following:
 - 1) existing and proposed structures
 - 2) subsurface sewage disposal systems
 - 3) subsurface fuel storage tanks
 - 4) public ways
 - 5) utility rights-of-way
 - 6) any other potential sources of pollution.
 - e) a permit/registration fee in accordance with Appendix B of the Bedford Board of Health Code of Regulations.
- 8.2.3 Well Construction Permits and Well Construction Registrations are not transferable.
- 8.2.4 Private Wells shall not be permitted within the Zone I protection area of any public water supply well in Bedford as defined per 310 CMR 22.00.
- 8.2.5 The Board/Agent may grant the Applicant's application for permit/registration, when in its opinion the construction of a Private Well will not result in harm to the public health or local environment. The Board may deny the application if it appears the construction will result in harm to the public health or environment. The Board may also request additional information from the Applicant before rendering a decision.
- Note: Copies of Private Well applications will be furnished to the Bedford Department of Public Works, Conservation Commission and Building Department. The Applicant shall comply with all other applicable local, state and federal laws, statutes and regulations. It is the responsibility of the Applicant to consult with the Bedford Department of Public Works, Conservation Commission and Building Department to determine if any other bylaws or regulations mandate additional requirements or conditions.
- 8.2.6 All Private Wells shall be constructed in accordance with the Massachusetts Department of Environmental Protection Private Well Guidelines (2001; et seq.).

Section 8.3: Water Supply Certificate

- 8.3.1 The issuance of a Water Supply Certificate by the Board shall certify that the Private Drinking Water Well may be used as a drinking water supply. A Water Supply Certificate must be issued for the use of a Private Drinking Water Well prior to the issuance of an occupancy permit for an existing structure or prior to the issuance of a building permit for new construction which is to be served by the well.
- 8.3.2 The following shall be submitted to the Board to obtain a Water Supply Certificate:
- a) a copy of the Water Well Completion Report as required by the DEM Office of Water Resources (313 CMR 3.00)
 - b) a copy of the Pumping Test Report required pursuant to Section 8.5 of these regulations
 - c) a copy of the Water Quality Report required pursuant to Section 8.6 of these regulations

- 8.3.3 Upon the receipt and review of the above documents, the Board shall make a final decision on the application for a Water Supply Certificate. A final decision shall be in writing and shall comprise one of the following actions:
- a) Issue a Water Supply Certificate. All Water Supply Certificates issued by the Board shall include the following disclaimer: “The issuance of a Water Supply Certificate shall not be construed as a guarantee by the Board or its Agent that the water system will function satisfactorily nor that the water supply will be of sufficient quality or quantity for its intended use.”
 - b) Deny the Applicant a Water Supply Certificate and specify the reasons for the denial.
 - c) Issue a conditional Water Supply Certificate with those conditions which the Board deems necessary to ensure fitness, purity and quantity of the water derived from that Private Well. Said conditions may include but not be limited to requiring treatment or additional testing of the water.

Section 8.4: Well Location and Use Requirements

- 8.4.1 In locating a Private Well, the applicant shall identify all potential sources of contamination which exist or are proposed within two hundred (200) feet of the site. When possible, the well shall be located upgradient of all potential sources of contamination and shall be as far removed from potential sources of contamination as possible, given the layout of the premises.
- 8.4.2 Each Private Well shall be accessible for repair, maintenance, testing, and inspection. The well shall be completed in a water bearing formation that will produce the required quantity of water under normal operating conditions.
- 8.4.3 Each Private Well shall be located at least ten (10) feet from any property line. The centerline of a well shall, if extended vertically, clear any projection from an adjacent structure by at least five (5) feet.
- 8.4.4 All Private Wells shall be located a minimum of 25 feet from the normal driving surface of any public roadway or a minimum of 15 feet from the road right-of-way, whichever is greater.
- 8.4.5 Each Private Well shall be located at least 25 feet, laterally, from the normal high water mark of any lake, pond, river, stream, ditch, or slough. When possible, private wells shall be located in areas above the 100-year floodplain.
- 8.4.6 A suction line or well shall be located a minimum of 10 feet from a building sewer constructed of durable corrosion resistant material with watertight joints, or 50 feet from a building sewer constructed of any other type of pipe; 50 feet from a septic tank; 100 feet from a leaching field; and 100 feet from a privy.
- 8.4.7 Water supply lines shall be installed at least 10 feet from and 18 inches above any sewer line. Whenever water supply lines must cross sewer lines, both pipes shall be constructed of class 150 pressure pipe and shall be pressure tested to assure watertightness.
- 8.4.8 The Board reserves the right to impose minimum lateral distance requirements from other potential sources of contamination not listed above. All such special well location requirements shall be listed, in writing, as a condition of the well construction permit.
- 8.4.9 No Private Well, or its associated distribution system, shall be connected to the distribution system of a public water supply system.

Section 8.5: Water Quantity Requirements

- 8.5.1 For a Private Drinking Water Well the Applicant shall submit to the Board for review and approval a Pumping Test Report. The Pumping Test Report shall include the name and address of the well owner, well location referenced to at least two permanent structures or landmarks, date the pumping test was

performed, depth at which the pump was set for the test, location for the discharge line, static water level immediately before pumping commenced, discharge rate and, if applicable, the time the discharge rate changed, pumping water levels and respective times after pumping commenced, maximum drawdown during the test, duration of the test, including both the pumping time and the recovery time during which measurements were taken, recovery water levels and respective times after cessation of pumping, and reference point used for all measurements.

- 8.5.2 In order to demonstrate the capacity of the well to provide the Required Volume of water, a pumping test shall be conducted in the following manner:
- a) The volume of water necessary to support the household's daily need shall be determined using the following equation: (number of bedrooms plus one bedroom) x (110 gallons per bedroom) x (a safety factor of 2) = number of gallons needed daily.
 - b) The storage capacity of the well shall be determined using the measured static water level and the depth and radius of the drillhole or casing.
 - c) The Required Volume shall be calculated by adding the volumes of water in (a) and (b) above. It is this volume of water that must be pumped from the well within a 24-hour period.
- 8.5.3 The pumping test may be performed at whatever rate is desired. Following the pumping test, the water level in the well must be shown to recover to within eighty-five (85) percent of the pre-pumped static water level within a twenty-four (24) hour period.

Example 1: For a one bedroom house with a well six (6) inches in diameter and contains 200 ft. of standing water:

- 1) $1 \text{ bedroom} + 1 \text{ bedroom} = (2 \text{ bedrooms}) \times (110 \text{ gallons per bedroom}) \times (\text{safety factor of } 2) = 440 \text{ gallons needed daily.}$
- 2) $\text{the volume of a 6-inch well is } 1.5 \text{ gallons for every foot of water column length. Therefore, } (200 \text{ ft. of standing water}) \times (1.5 \text{ gal/ft.}) = 300 \text{ gallons.}$
- 3) $440 \text{ gallons} + 300 \text{ gallons} = \underline{740 \text{ gallons}}$ that must be pumped from the well in 24 hours or less to demonstrate suitable capacity. Recovery up to 85% of the static water level must also occur within 24 hours after cessation of pumping.

Example 2: For a 4 bedroom house with a well that is six (6) inches in diameter and contains 100 ft. of standing water:

- 1) $4 \text{ bedroom house} + 1 \text{ bedroom} = (5 \text{ bedrooms}) \times (110 \text{ gallons per bedroom}) \times (\text{safety factor of } 2) = 1,100 \text{ gallons needed daily.}$
- 2) $\text{the volume of a 6-inch well is } 1.5 \text{ gallons for every foot of water column length. Therefore, } (100 \text{ ft. of standing water}) \times (1.5 \text{ gal/ft.}) = 150 \text{ gallons.}$
- 3) $1,100 \text{ gallons} + 150 \text{ gallons} = \underline{1,250 \text{ gallons}}$ that must be pumped from the well in 24 hours or less to demonstrate suitable capacity. Recovery up to 85% of the static water level must also occur within 24 hours after cessation of pumping.

Section 8.6: Water Quality Testing Requirements

- 8.6.1 Prior to the use of a Private Well the Applicant must conduct water quality testing in compliance with regulations 8.6.2 through 8.6.6. All costs and laboratory arrangements for the water testing are the responsibility of the Applicant.
- 8.6.2 A water sample shall be collected either after purging three well volumes or following the stabilization of the pH, temperature and specific conductance in the pumped well. The water sample to be tested shall be collected at the pump discharge or from a disinfected tap in the pump discharge line. In no event shall a water treatment device be installed prior to sampling.
- 8.6.3 The required water quality test, utilizing an applicable US EPA approved method for drinking water testing shall be conducted by an EPA or Massachusetts certified laboratory and shall include analysis for the parameters specified in 8.6.6 and the results shall not exceed Massachusetts drinking water standards for public water supplies:

- 8.6.4 Following receipt of the water quality test results, the applicant shall submit a Water Quality Report to the Board which includes:
- 1) a copy of the certified laboratory's test results
 - 2) the name of the individual who performed the sampling
 - 3) where in the system the water sample was obtained
- 8.6.5 The Board reserves the right to require re-testing of the specified parameters, or testing for additional parameters when, in the opinion of the Board, it is necessary due to local conditions or for the protection of the public health, safety and welfare.

8.6.6 Analysis of water from a Private Drinking Water Well shall include all of the parameters listed below. Analysis of water from a Private Irrigation Well shall include the Volatile Organic Compounds and Metals listed below.

Coliform Bacteria

Metals

Antimony
Arsenic
Barium
Beryllium
Cadmium
Chromium
Lead
Copper
Mercury
Selenium
Thallium

Other Inorganic Compounds

Asbestos
Cyanide
Flouride
Nitrate
Nitrite
Total Nitrate and Nitrite

Volatile Organic Compounds

Benzene
Carbon Tetrachloride
Dichloromethane
o-Dichlorobenzene
para-Dichlorobenzene
1,2-Dichloroethane
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
1,1 Dichloroethylene
1,2-Dichloropropane
Ethylbenzene
Monochlorobenzene
Styrene
Tetrachloroethylene
Toluene
Trichloroethylene
1,1,1-Trichloroethane
1,2,4-Trichlorobenzene
1,1,2-Trichloroethane
Vinyl Chloride
Xylenes (total)

Radionuclides

Gross Alpha Activity
Radium – 226 & 228
Uranium
Radon

Synthetic Organic Compounds

Alachlor
Atrazine
Benzo(a)pyrene
Carbofuran
Chlordane
Dalapon
Di(2-ethylhexyl)adipate
Di(2-ethylhexyl)phthalate
Dinoseb
Diquat
Dibromochloropropane (DBCP)
2,4-D
Endothall
Endrin
Ethylene Dibromide (EDB)
Glyphosate
Heptachlor
Heptachlor epoxide
Hexachlorobenzene
Hexachloropentadiene
Lindane
Methoxychlor
Oxamyl (Vydate)
Polychlorinated biphenyls (PCBs)
Pentachlorophenol
Picloram
Simazine
2,3,7,8-TCDD (Dioxin)
Toxaphene
2,4,5-TP (Silvex)
Total Trihalomethanes

Section 8.7: Decommissioning Requirements

- 8.7.1 Abandoned wells, test holes, and borings shall be decommissioned so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water.
- 8.7.2 The owner of the Private Well shall decommission the well if the well meets any of the following criteria:
- a) construction of the well is terminated prior to completion of the well
 - b) the well owner notifies the Board that the use of the well is to be permanently discontinued.
 - c) the well has been out of service for at least three years
 - d) the well is a potential hazard to public health or safety and the situation cannot be corrected
 - e) the well is in such a state of disrepair that its continued use is impractical
 - f) the well has the potential for transmitting contaminants from the land surface into an aquifer or from one aquifer to another and the situation cannot be corrected
- 8.7.3 The owner of the Private Well shall be responsible for ensuring that all abandoned wells and test holes or borings associated with private well installation are properly plugged in accordance with the Massachusetts Department of Environmental Protection Private Well Guidelines (2001; et seq.). Only registered well drillers may plug abandoned wells, test holes, and borings.