

DRINKING WATER 101

**WHAT EVERY BOARD OF HEALTH SHOULD KNOW ABOUT
PUBLIC WATER SYSTEMS**



MASSDEP DRINKING WATER PROGRAM

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Public Water Systems (PWS)

- ❖ Maybe publicly or privately owned
- ❖ Surface water and Groundwater
- ❖ Serve an average of at least 25 persons daily at least 60 days of the year (*days do not have to be consecutive*) or at least 15 service connections
- ❖ Community and Non-Community Systems
- ❖ PWSs must comply with 310 CMR 22.00 Massachusetts Drinking Water Regulations

Currently 1,592 PWS in MA

How are Public Water Systems Regulated?

- ❖ 310 CMR 22.00 Massachusetts Drinking Water Regulations are designed to promote the public health and general welfare by ensuring that public water systems in Massachusetts provide water that is **safe, fit and pure to drink**.
- ❖ Drinking water uses, defined under federal and state regulations, include **all sanitary functions in which the public has access to drinking water for human consumption**.
- ❖ This includes, but is not limited to:
 - drinking
 - bathing
 - showering
 - cooking
 - handwashing
 - dishwashing
 - oral hygiene
 - bubblers
 - coffee makers
 - post mix beverage machines
 - rest room facilities
 - ice making



Community Systems

Serve primarily residential customers



- ❖ Serve at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
- ❖ Community systems serve residential customers year-round.



Examples: Condominiums, Apartments, Homes,
Boarding schools, Senior Living Facilities, Trailer Parks

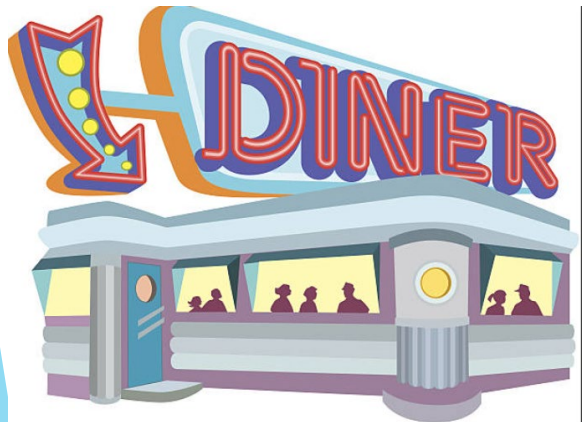


Non-Community Systems

Serve primarily non-residential customers

Non-Transient: Regularly serves at least 25 of the same people, 4 hours per day, 4 or more days per week, for more than 6 months/year.

Schools, Daycares, Hospitals, Factories, Businesses, Professional Offices, Cannabis Facility



Transient: Serves water to 25 different persons at least 60 days per year.

Restaurants, Motels, Campgrounds, Parks, Clubs, Gas stations, Golf Courses, Churches, Water Vending Machines, Seasonal Facilities, Ski Areas, Community Service Centers, Libraries, Town Halls, Public Safety Buildings, Farmstands, Banquet Facilities, Car Dealership, Convenient Stores, Cannabis Store



Seasonal Systems



A **seasonal system** is a non-community water system that is not operated as a PWS on a year-round basis and starts-up and shuts-down at the beginning and end of each operating season.

- ❖ **Before serving water** to the public, seasonal systems must:
 - ❖ Conduct MassDEP state-approved start-up procedures and
 - ❖ Submit certificate of completion to MassDEP at least 7 days prior to opening.
- ❖ Examples of state-approved start-up procedures (prior to serving the public):
 - ❖ Notify certified operator and inspect water system
 - ❖ Disinfect (well, tank, distribution)
 - ❖ Flush the distribution system
 - ❖ Sample for total coliform and E.coli (must be absent)
 - ❖ Verify that non-compliance issues have been corrected

Notify MassDEP upon BOH issuance of annual license for Recreational Camps (105 CMR 430.632). Contact MassDEP to review drinking water compliance.

<https://www.mass.gov/doc/recreational-camps-licensed-by-local-boards-of-health-0/download>

MassDEP Approvals

- ❖ PWS must **obtain permits** if they plan to construct or modify a source, treatment, storage or distribution system. Plans and permits must be submitted and approved by MassDEP **before** the system or modification is placed on-line.



- ❖ If a facility creates, modifies or operates a public water system **prior to** obtaining MassDEP approvals, the facility owner(s) and operator(s) are subject to state enforcement action.

Contact your MassDEP regional office for guidance and technical assistance.

Should it be a PWS?

It is important for the BOH to know if a facility might be subject to PWS requirements.



On-site well and requires a local **food permit** - likely meets the definition of a public water system

Car dealership with its own well with **bathrooms** or serving complimentary coffee in the waiting room

Facility with on-site well and provides **bottled water**



Use of bottled water does not exempt a facility from meeting MassDEP PWS requirements.

Commonly owned property with **multiple wells** that if combined serve 25 or more people; such as a condominium

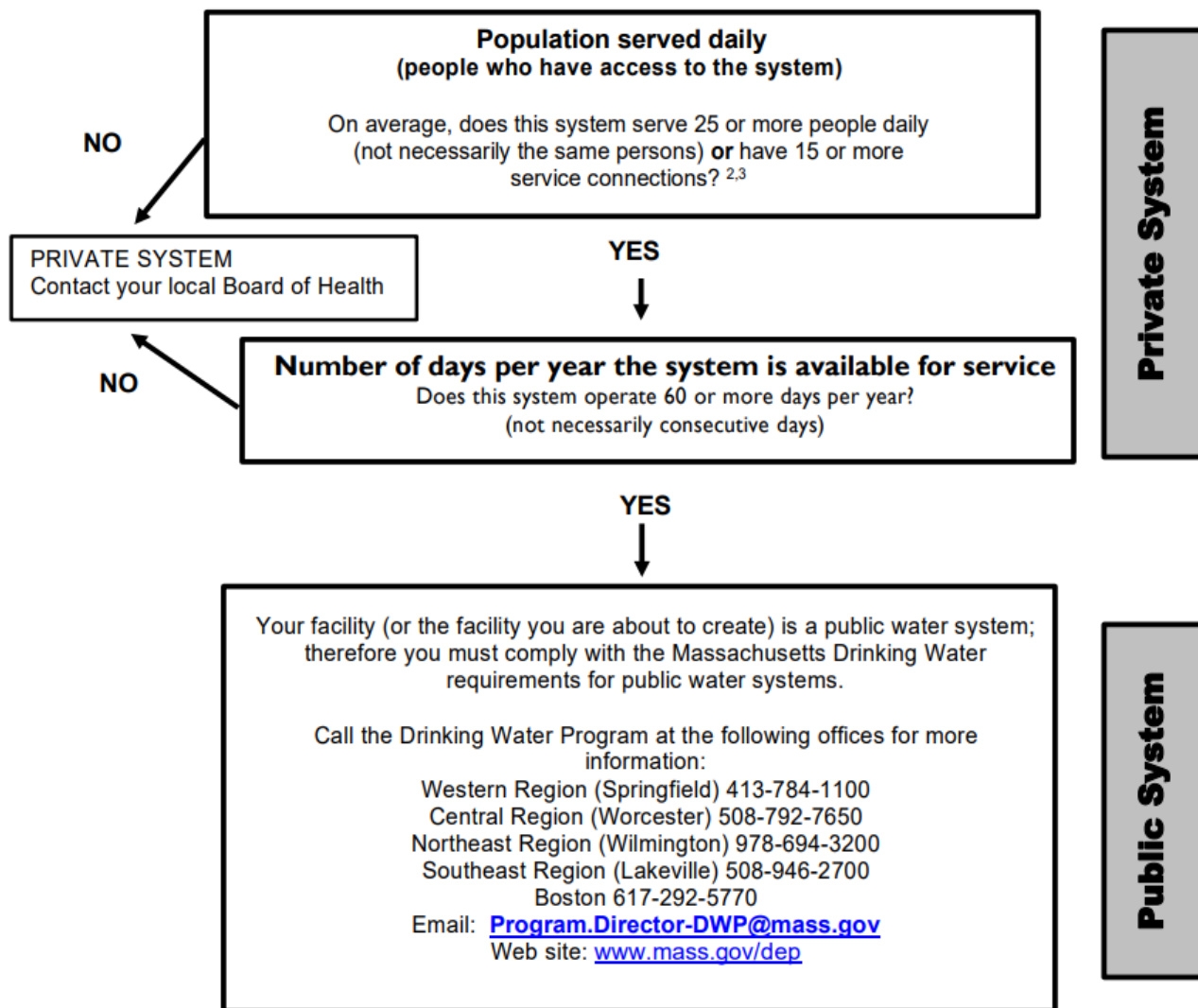
Change in occupancy or use of the facility with a well; such as a residential home proposing to operate a daycare, a gas station proposing to operate a coffee shop, a business expanding number of employees

Hospital that receives water from a registered PWS that **treats water entering the building** with a chemical disinfectant (such as chlorine dioxide) to control *Legionella* in the premise plumbing (consecutive PWS)



public drinking water

Follow this Flow-Chart to determine your type of drinking water system



¹ As defined by the MA Drinking Water Regulations 310 CMR 22.00 and the Federal Safe Drinking Water Act. Regulations can be found at: <https://www.mass.gov/regulations/310-CMR-22-the-massachusetts-drinking-water-regulations>.

² To determine a residential population: multiply # bedrooms (2), or # service connections (1.67). Use the greater number. ³ For more information see Policy 94-02 and Policy 88-11. Policies are located on MassDEP website at: <https://www.mass.gov/service-details/drinking-water-policies-and-guidance>.



Common PWS Compliance Issues

- ❖ Some facilities operating as a PWS have not been approved or permitted by MassDEP, especially TNCs.
- ❖ Higher rate of non-compliance for small PWSs:
 - ❖ No certified operator
 - ❖ Water quality contamination issues
 - ❖ Zone I setback and land use issues
 - ❖ Failure to collect water quality samples
 - ❖ Failure to maintain required paperwork
 - ❖ Failure to maintain treatment
 - ❖ Failure to record PWS affidavit

MassDEP copies BOH on PWS inspections, permits and enforcement documents.

Board of Health Role



- **Notify** MassDEP of questionable land use activities in the Zone I, potential PWS expansion or operations at a PWS that may compromise the water system.
- **Identify** and refer to your MassDEP regional office any unapproved or unpermitted public water systems.

An electronic list of active PWSs is available on MassDEP's website at:
<https://www.mass.gov/lists/drinking-water-health-safety#4>
- **Evaluate** local permitting procedures to ensure that potable water complies with appropriate state permits, inspections or outstanding enforcement **PRIOR** to issuing occupancy permits or renewing food, seasonal or other licenses.
- **Advise** facility or property owner to contact your MassDEP regional office to request a PWS determination.
- MassDEP may ask for BOH assistance to help evaluate a regulated PWS that may no longer meet the PWS definition, confirm facility operations, or verify septic design flows.
- **Contact** your MassDEP regional office if you have any questions or would like to review the compliance status of a specific PWS.

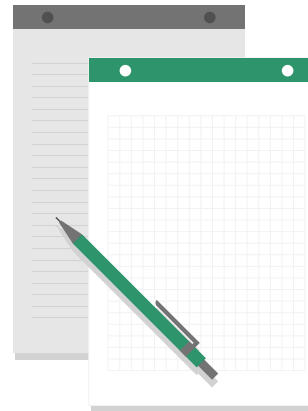
Typical PWS Requirements

- ❖ Certified Operators
- ❖ Water Quality Monitoring
- ❖ Monitoring & Reporting
 - ❖ Reporting sample results
 - ❖ Annual reports: Annual Statistical Reports (ASR), Consumer Confidence Reports (CCR)
- ❖ Violations
- ❖ Public Notification and Public Health Orders
- ❖ Inspections (3-5 years) and cross-connections
- ❖ Permitting (new sources, treatment, storage, expansions)
- ❖ Source Protection – Wellhead Protection Zones

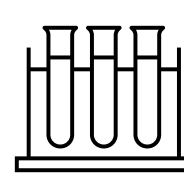


Certified Operator

- ▶ All public water systems in Massachusetts must be operated by a person with a certificate of competency issued by the Massachusetts Board of Certification of Operators of Drinking Water Supply Facilities.
- ▶ Certified Operator licenses vary by type (treatment and distribution) and grade. Advanced grades are required for larger systems or systems with more complex treatment.



Water Quality Monitoring



- ❖ Standards are set by EPA and implemented by the states. States may implement more stringent requirements. (MassDEP also regulates MCLs for perchlorate and PFAS.)
- ❖ Monitoring requirements can vary based upon system class, population served, water treatment and water quality history.
- ❖ Contaminants include:
 - Lead and copper
 - Bacteria
 - Asbestos
 - Nitrate, Nitrite
 - Perchlorate
 - PFAS
 - Secondary Contaminants
 - Volatile Organic Contaminants (VOCs)
 - Synthetic Organic Contaminants (SOCs)
 - Disinfection By-Products (TTHMs, HAA5s)
 - Inorganics (sodium, arsenic and other metals)
 - Radionuclides (uranium, gross alpha, radium)

PWSs monitor water quality according to a sample schedule set by MassDEP, available on the web. <https://www.mass.gov/service-details/public-water-supplier-document-search>

Where can I find PWS sample results?

- ❖ PWSs are required to electronically report most monitoring results (via laboratory upload) to MassDEP using the eDEP platform. (bacteria & LCR are not available on this portal)
- ❖ Visit Mass.gov Executive Office of Energy & Environmental Affairs (EEA) Data Portal for PWS statewide sample results. Results can be downloaded in an excel format. <https://eeaonline.eea.state.ma.us/portal#!/search/drinking-water>

The screenshot shows the 'Energy & Environmental Affairs Data Portal' interface. At the top, there is a navigation bar with links for HOME, DASHBOARDS, SEARCH DATA (with a dropdown arrow), and HELP (with a dropdown arrow). Below the navigation bar, the main heading is 'Search for Drinking Water'. The search form is organized into two columns. The left column contains four dropdown menus: 'PWS ID' (with a help icon), 'Town' (with a help icon and a 'Select' option), 'Contaminant Group' (with a help icon and a 'Select' option), and 'Raw OR Finished' (with a help icon and a 'Select' option). The right column contains three dropdown menus: 'PWS Name' (with a help icon), 'Class' (with a help icon and a 'Select' option), and 'Chemical Name' (with a help icon and 'PFAS6' selected). Below these is a 'Collected Date' section with two calendar icons and a 'to' label. At the bottom left, there are two buttons: 'PREVIOUS' and 'CLEAR'. At the bottom right, there is an orange 'SEARCH' button with a magnifying glass icon.

Energy & Environmental Affairs
Data Portal

HOME DASHBOARDS SEARCH DATA ▼ HELP ▼

Search for Drinking Water

PWS ID ?
PWS Name ?
Town ?
Class ?
Contaminant Group ?
Chemical Name ?
Raw OR Finished ?
Collected Date ?

Select
Select
Select
PFAS6
Select

to

PREVIOUS CLEAR SEARCH



Annual Reporting

- ❖ **The Annual Statistical Report (ASR)** is required to be updated every year. Includes information like population, contact list, inventory, quantity of water used per month, backflow device testing.
- ❖ **Consumer Confidence Report (CCR)** is an annual report on drinking water quality that public water suppliers must deliver to their customers.
 - ❖ **Community systems** - required to create and distribute report by July 1st of each year.
 - ❖ **Non-community systems** - MassDEP creates annual water quality reports which are required to be posted. These reports are found on the MassDEP website at: <https://www.mass.gov/service-details/public-water-supplier-document-search>



Violations

- ❖ MassDEP issues a Notice of Non-compliance (NON) for violations of:
 - Sampling or reporting requirement
 - Exceedance of an MCL
 - Treatment technique
 - Corrective actions from inspection
 - Modifications without permit
- ❖ System will return to compliance once they respond to all the corrective action items listed in the NON.
- ❖ All violations are kept on record and reported to the US EPA.
- ❖ If the system fails to complete what is required by MassDEP's deadlines outlined in the NON, the system could be subject to legal action.



Public Notification



- ❖ Public notification is intended to ensure that consumers will always know if there is a problem with their drinking water.
- ❖ The timing, required wording, and delivery of PNs vary depending on the seriousness of the health risk involved. The more serious the health risk, the more stringent the requirements. Types of PNs:
- ❖ **Tier 1, 24 hours (Boil Order, Do Not Drink, Do Not Use)**
 - BOH can require the facility to take additional actions including whether the facility can stay open.
- ❖ The Massachusetts Department of Health (MDPH) has specific guidance outlined in “Guidance for Emergency Action Planning for Retail Food Establishment” (includes a section “Interruption of Water Service”)
<https://www.mass.gov/lists/retail-food>
- ❖ MassDEP lists all public health orders on its website located at:
https://eeaonline.eea.state.ma.us/DEP/Boil_Order

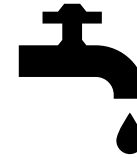
Other Public Notices



- ❖ MCL Violation, PFAS, arsenic, TTHM (Tier 2, 30 days)
- ❖ Monitoring or Reporting violation (Tier 3, 1 Year)
- ❖ Lead Action Level Exceedance Public Education (60 days)
- ❖ Consumer Notice of Lead and Copper Results (30 days)



Sanitary Survey



- ❖ A sanitary survey is an on-site inspection of the
 - ❑ water sources
 - ❑ treatment facilities
 - ❑ distribution system
 - ❑ finished water storage
 - ❑ pumps and pump facilities
 - ❑ monitoring, reporting and data records
 - ❑ system management, operation, and certified operator compliance.
- ❖ All PWSs must have a sanitary survey done every three to five years depending on classification type. These are conducted by MassDEP staff or an approved contractor.
- ❖ Reports are issued to the owner and water operator summarizing the inspection and listing any violations, deficiencies or recommendations with corresponding due dates to correct them by. **BOH also gets sent a copy of the report.**

Cross Connections

- ❖ A cross connection is any actual or potential connection between the public water supply and a source of contamination or pollution.
- ❖ Backflow - The flow into the distributing pipes of a potable water supply from anything other than its intended source.
- ❖ Example: Lawn chemicals backflowing through a garden hose into indoor plumbing and distribution system.
- ❖ Cross connections must be identified and eliminated or properly protected. Some backflow devices require annual and semi-annual testing by a MA licensed back-flow device tester.



Hose bib backflow preventer placed on a backyard hose.



Source Protection Zones for Wells

To prevent public drinking water wells from becoming contaminated, MassDEP establishes a protection zone around each drinking water source.

- ❖ **Zone I** is a 100' to 400' protective radius around a public supply well or wellfield which must be owned or controlled by the PWS. Distance is based upon the approved withdrawal rate.
 - Only activities related to water operations are allowed. Ex. parking, buildings, septic, fuel storage tanks, roadways are not allowed in this area.
 - All new permitted PWS need to meet the Zone I criteria (lot size and well location important).
 - PWS with a noncompliant Zone I cannot expand or make modifications within the Zone I.
- ❖ **Zone II** or **IWPA** (Interim Wellhead Protection Area) is the area of an aquifer that contributes water to a well under the most severe pumping conditions. The IWPA distance is based upon the approved withdrawal rate which can cover up to ½ mile radius.

Note: These source protection zones are considered **nitrogen sensitive areas** and subject to applicable nitrogen loading limitations (440 gpd per day per acre) which should be considered when evaluating septic and wastewater treatment systems.

Refer to MassMapper to verify extent of protection zones:

<https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html>



Zone Is



Public Water Supplies

- Community Groundwater Well
- Non-Community Groundwater Well
- Surface Water Intake
- Emergency Surface Water Intake
- Community Labels
- Non-Community Labels

sour...	type	site_...	supp...	town	zone.l (ft)	pws_...
2028015-01G	GW	WELL 1	WHITNEY ESTATI	BERLIN	106	2028015
2028015-02G	GW	WELL 2	WHITNEY ESTATI	BERLIN	106	2028015



MassDEP Offices

- Central Region: 508-792-7650 8 New Bond St. Worcester, MA 01606 <https://www.mass.gov/service-details/massdep-central-regional-office>
- Northeast Region: 978-694-3200 150 Presidential Way, Woburn, MA 01801 <https://www.mass.gov/servicedetails/massdep-northeast-regional-office>
- Western Region: 413-784-1100 436 Dwight St, Statehouse West 5th fl, Springfield, MA 01103 <https://www.mass.gov/service-details/massdep-western-regional-office>
- Southeast Region: 508-946-2700 20 Riverside Drive, Lakeville, MA 02347 <https://www.mass.gov/service-details/massdep-southeast-regional-office>
- Boston Office: 617-292-5500 100 Cambridge St., Suite 900 Boston, MA 02114 <https://www.mass.gov/topics/drinking-water>
- To contact MassDEP outside of regular business hours call 888-304-1133; To locate your MassDEP Office: <https://www.mass.gov/service-details/massdep-regional-offices-by-community>

Thank you for your partnership and assistance as we work together to protect public health!



Questions?