Managing Your TNC System



A Guide for
Massachusetts Transient Noncommunity (TNC)
Drinking Water Systems

Rev 3-2017

MassDEP
Drinking Water Program

Acknowledgments

This guide was prepared by the Massachusetts Department of Environmental Protection (MassDEP) staff and reflects the contributions and suggestions of many people in the drinking water field.

Publication of this information is supported in part by the Massachusetts Safe Drinking Water Act Assessment.

This information is available in alternate format upon request to ADA Coordinator, BAS/HR, 4th floor, One Winter Street, Boston, MA 02108

March 2017

Table of Contents

The TNC System

The Massachusetts Department of Environmental Protection (MassDEP) has identified your establishment as a transient noncommunity (TNC) public water system (PWS).

A TNC PWS is any publicly or privately owned system that provides piped water for human consumption, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily for at least 60 days per year. This includes, but is not limited to, campgrounds, motels, gas stations, golf courses, restaurants and roadside rest stops. To confirm your system's designation as a TNC, see http://www.mass.gov/eea/docs/dep/water/compliance/privpubl.pdf

Drinking water uses, defined under federal and state regulations, include all sanitary functions in which the public has access to drinking water. This includes, but is not limited to, bubblers, coffee makers, post mixed beverage machines and rest room facilities. Serving bottled water on the premises does not exempt your system from meeting the Massachusetts public drinking water requirements.

Two types of beverage machines.

This handbook is intended to serve only as a guide and contains material determined to be of most value and interest to the owners and operators of TNC PWSs. It does not relieve you of any other public water supply responsibilities under current state policies and regulations.

Responsibilities of a TNC System

As an owner or operator of your water system, you should be familiar with the Massachusetts Drinking Water Regulations 310 CMR 22.00 as MassDEP is the primary enforcement authority under the federal Safe Drinking Water Act (SDWA). You are responsible for seeing that your system consistently meets state and federal drinking water quality standards. Compliance with the law provides your customers with added protection against waterborne disease.

The Massachusetts Drinking Water Regulations are designed to protect the public health and general welfare by ensuring that water systems in Massachusetts provide water that is safe to drink. These regulations took effect on June 24, 1977 and are updated regularly.

You can view the regulations and policies on-line at: http://www.mass.gov/eea/agencies/massdep/water/regulations/310-cmr-22-00-massachusetts-drinking-water-regulations.html . Complete copies of the regulations and policies can be purchased

from the State House Bookstore in Boston and Springfield. See: https://www.sec.state.ma.us/spr/sprcat/catidx.htm.

As the operator/owner of a PWS, it is your responsibility to:

- maintain and provide potable drinking water in compliance with the regulations.
- to file an annual statistical report and submit your water quality test results to MassDEP.
- to maintain your system under the supervision of a certified operator.

Please review the brochure, *The Value of Public Drinking Water* located online at: http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/water-valuesm.pdf. It gives a good account of how important safe drinking water is to human health.

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 (Board). This includes very small systems (serving 500 people or fewer), water vending machines, and bulk water operations.

Certified operators are the most important resource for providing a safe supply of water to the public. They are trained in the workings of public water systems as well as the rapidly changing state and federal drinking water laws.

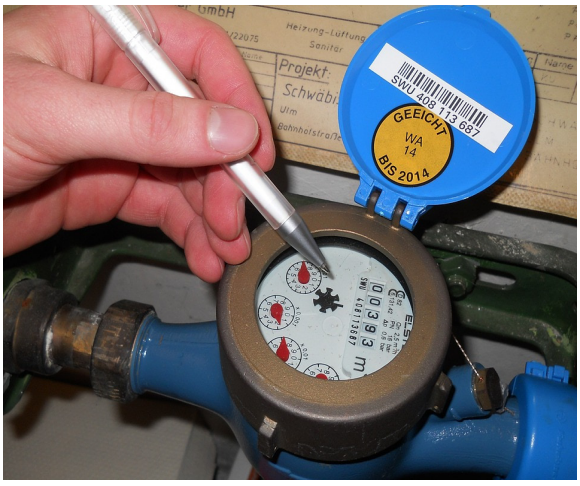
If your system is not being run by a certified operator, you must do one of the following:

- You or a staff person can become certified as a very small system (VSS) or water vending machine (VND) operator by taking an examination and meeting certain education and experience requirements.

or

- Hire a certified operator of your choice on a contract basis.

The Board works with the Association of Boards of Certification (ABC) and Applied Measurement Professionals (AMP) to administer exams. AMP will schedule candidates for examination; the exams will be administered at AMP locations; and candidates will receive their score and diagnostic report following completion of the exams. In order to apply to take exams please go to www.goamp.com and follow the link for Massachusetts Board of Certification of Operators of Drinking Water Supply Facilities. There is a fee to



Certified operator reading the water meter.

take the exam. After passing the exam, applicants must apply to the Board for certification. There is an application fee and licensing fee.

Licenses must be renewed every two years by December 31st of odd numbered calendar years. Certified operators must maintain their level of competency and knowledge of the regulations through continuing education, called training contact hours (TCH). Operators with VSS certificates are required to earn five TCHs each renewal period. There is a license renewal fee. To find training events to earn your TCHs please go to: http://www.mass.gov/eea/agencies/massdep/water/drinking/drinking-water-training-class-schedules.html.

If you or a member of your staff want more information on becoming a certified operator, please visit the Board's website at: http://www.mass.gov/ocabr/licensee/dpl-boards/dw.

If you choose to hire a certified operator or want additional information on contract operators, please visit the MassDEP website at: http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html#5. On this site you will find information on contract operator requirements and staffing requirements, as well as a Certified Operator Directory which contains a list of contract operators available in your area. If you decide to hire a contract operator, you will need to complete a Certified Operator Compliance Notice and submit it to your MassDEP regional office for review and approval. The Certified Operator Compliance Notice

Certified operator taking water samples.

can be found at http://www.mass.gov/eea/agencies/massdep/water/approvals/drinking-water-forms.html#1. Be sure to keep copies of all completed and signed forms on file for MassDEP review during site visits.

If you do not currently have a certified operator, you may apply to the Board for a Temporary Emergency Certification (TEC) to keep your system in compliance. A TEC, if approved by the Board, will allow you to operate your system with a designated individual for six months while you become certified or hire a certified operator. A TEC Application can be found at: http://www.mass.gov/ocabr/docs/dpl/boards/dw/dwtmpapp.pdf.

If you have additional questions about operator certification, you should contact your MassDEP regional office.

Water Quality Testing

TNC systems must routinely test for coliform bacteria, nitrate, nitrite, and sodium according to the sampling schedule issued to your facility by MassDEP. Please

note, that MassDEP may require additional testing as needed.

For a copy of your specific sampling schedule, you may call your MassDEP regional office or get it on line at: http://www.mass.gov/eea/agencies/massdep/water/drinking/pws-documents-search-tool.html.

Use a Massachusetts-certified laboratory to test for each drinking water contaminant. MassDEP will reject all reports submitted by an uncertified laboratory, and will require you to retest. A list of Massachusetts certified laboratories may be obtained on-line at http://public.dep.state.ma.us/Labcert/Labcert.aspx.

Follow proper collection procedures or the sample results could be invalid. Samples can be collected by a certified operator, a certified laboratory, or someone who has been properly trained in this procedure. For information on how to take samples please review EPA's guide found at: https://www.epa.gov/sites/production/files/2015-11/documents/drinking_water_sample_collection.pdf

Your lab may electronically submit your lab forms through eDEP, and if you have an eDEP account the reports will appear on your account. To learn more about eDEP and how to set up an account please visit: https://edep.dep.mass.gov/.

Or you may submit test results to MassDEP on the required paper forms. A certified laboratory will usually report the test results on MassDEP forms upon request. MassDEP will reject all results submitted on the incorrect form. Correct forms can be found on-line at: http://www.mass.gov/eea/agencies/massdep/water/approvals/drinking-water-forms.html#8.

Taking a coliform sample.

Report the results of every required test. Do this within 30 days of receiving test results and no later than 10 days after the end of the reporting period. It is best to sample early in the period in case there are lab problems that need correcting. Remember that the PWS is ultimately responsible for submitting test results. MassDEP issues notices of noncompliance to the PWS for nonsubmittals. Make sure you have good communication with your hired laboratory about submittal dates.

Coliform Bacteria

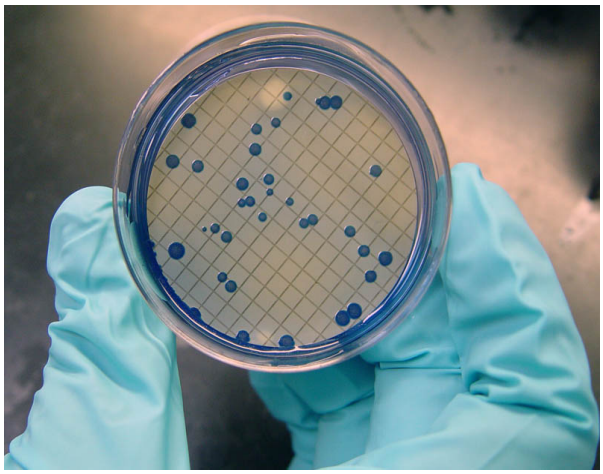
Coliform bacteria are fairly common in nature. They are found in the intestines of warm-blooded animals (including humans), and in plants, soil, air, and water. Their presence in water may indicate that the water is polluted and may contain disease-carrying organisms.

Fecal coliform and *E. coli* are two of the many different types of coliform bacteria. Their presence in water is serious because of their association with sewage or animal waste which may contain disease causing organisms.

Rule Summary

The purpose of the Revised Total Coliform Rule (RTCR) is to increase public health protection by reducing potential pathways of entry for fecal contamination into distribution systems. All PWSs must comply with the RTCR requirements as of April 1, 2016.

The RTCR establishes a maximum contaminant level (MCL) for *E.coli* and uses *E.coli* and total coliforms to initiate a "find and fix" approach to address fecal contamination that could enter into the distribution system. It requires PWSs to perform assessments to identify sanitary defects in order to take action to correct them.



Coliform bacteria growing on test medium.

RTCR Key Provisions

- Established a maximum contaminant level goal (MCLG) and MCL for *E. coli* for protection against potential fecal contamination
- A total coliform treatment technique (TT) requirement has been set
- Requirements for monitoring total coliforms and *E. coli* according to a written sample siting plan and schedule specific to the PWS
- Provisions allow for the PWS to transition to the RTCR from the old Total Coliform Rule (TCR) monitoring frequency, including PWSs on reduced monitoring that were under the TCR
- Requirements for seasonal systems to have written certification of their completion of their start-up procedures each year
- Assessments and corrective action requirements when monitoring results show that PWSs may be vulnerable to contamination
- Public notification (PN) requirements for violations

How to Comply With the Rule

Compliance is based on whether or not there is a presence or absence of total coliforms (TC). It is determined each calendar month that a system serves water to the public or each calendar month that sampling occurs for systems that are on a reduced monitoring schedule. Results of routine and repeat samples are used to determine compliance.

Major Violations

A PWS will receive an *E.coli* MCL violation when there is a combination of an EC+ sample result with a routine/repeat TC+ or EC+ result.

E.coli MCL violation occurs with the following sample result combination:

Routine	Repeat
EC+	TC+
EC+	Any missing sample
EC+	EC+
TC+	EC+
TC+	TC+ (no *E.coli* analysis)

EC+ means *E.coli* positive

TC+ means total coliform positive

PWSs will receive a TT violation when there is a:

- Failure to conduct a Level 1 or Level 2 Assessment within 30 days of a trigger.
- Failure to correct all sanitary defects from a Level 1 or Level 2 Assessment within 30 days of a trigger or in accordance with a state-approved time frame.
- Failure of a seasonal system to complete state-approved start-up procedures prior to serving water to the public.

What is a sample plan and how do I obtain one?

PWSs must develop and implement a written coliform sampling plan that identifies sampling sites and a sample collection schedule that represents the water throughout the distribution system. These plans, including any revisions of these plans are subject to state review, revision, and approval.

PWSs must contact their MassDEP Regional Office in order to obtain a written sample siting plan template.

Moreover, a map or sketch of your water supply distribution system showing the locations of bacteria sampling sites, the well, and the storage tank must be submitted to your MassDEP Regional Office.

Seasonal System Provisions

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 state-approved start-up procedures
- Certify completion of state approved start-up procedures
- Exemptions from conducting state-

One type of seasonal system

approved start-up procedures may be granted for seasonal systems that maintain pressure throughout the distribution system during non-operating periods.

Examples of state-approved start-up procedures, which must be completed before serving water to the public, can include one or more of the following:

- Disinfection
- Distribution system flushing
- Sampling for total coliform and *E.coli*
- Site visit by the state
- Verification that current or historical sanitary defects have been corrected

Routine Monitoring for Seasonal Systems:

- The baseline monitoring frequency for seasonal systems is monthly.
- Reduced monitoring frequency may be available for seasonal systems that use ground water only and serve fewer than 1,000 people.

Guidelines for Selecting Coliform Sampling Point for Small Systems

The following are general guidelines for selecting coliform sample locations. Each system should identify enough sample locations for compliance with the sample requirements.

All sample locations must be submitted to and approved by MassDEP. They will be reviewed and updated by MassDEP as required. Please note that once your sampling plan is approved all changes must be requested from and approved in writing by your Regional MassDEP Office. Contact your regional office for a *Coliform Sampling Plan*.

TC Monitoring Frequency for PWSs

Population Served	Minimum Number of Samples Per Month
Up to 1,000	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
For larger systems please call MassDEP	

Sample location definitions:

- 001, 002 etc. is the normal routine sampling (RS) location where a coliform bacteria sample is to be taken every month or quarter. This sample tap is typically in the middle of the system and is frequently used. Example: 1st floor-kitchen tap.
- 1a, 2a, etc. is the upstream repeat (UR) sample site location where a coliform bacteria sample is to be taken if the normal routine sample (001) tests positive for total coliform bacteria. This sample tap is up line from the RS sample site and is usually at or near the storage tank. Example: basement-janitor's sink.
- 1B, 2B, etc. is a downstream repeat (DR) sample site location where a coliform bacteria sample is to be taken if the normal routine sample (001) tests positive for total coliform bacteria. This sample tap is down line from the RS sample site and is usually near the end of the distribution line. Example: 2nd floor Men's room - left sink.

Routine Sampling

Refer to your sampling schedule to know when your routine bacteria samples are due. If any samples come back as total coliform positive (TC+) steps must be taken to correct the situation.

- Each TC+ routine sample must be tested for the presence of *E.coli*. If any TC+ is also *E.coli*-positive (EC+), then the EC+ sample result must be reported by the end of the day that the PWS has been notified.
- If any routine sample is TC+, repeat samples are required. PWSs on quarterly or annual monitoring must take at least a minimum of three additional routine samples the month following a TC+ routine or repeat sample.

Reduced monitoring may be available for PWSs using only ground water and serving 1,000 or fewer persons and can meet certain additional PWS criteria. Please check with MassDEP for more information on this.

Repeat Sampling

Within 24 hours of being notified of a TC+ routine sample result, at least 3 repeat samples must be collected and analyzed for total coliform.

- One repeat sample must be collected from the same tap as the original sample.
- One repeat sample must be collected from within five service connections upstream.
- One repeat sample must be collected from within five service connections downstream.
- The PWS may propose to MassDEP alternative repeat monitoring locations that are expected to better represent pathways of contamination into the distribution system.

If one or more repeat samples are TC+

- The TC+ sample must be analyzed for the presence of *E.coli*
- If any repeat TC+ sample is also EC+, then the EC+ sample result must be reported to MassDEP by the end of the day that the PWS is notified.
- The PWS must collect another set of repeat samples, unless an assessment has been triggered and the PWS has notified MassDEP.

Public Notification

Under the RTCR a TC+ sample no longer requires PN. The RTCR now requires investigation and corrective action. However, if the corrective actions are not taken in a timely manner and violations occur then PN may be warranted.

Laboratory water samples

Assessments and Corrective Action

The RTCR requires PWSs to assess problems (as a result of TC+ samples, *E.coli* MCL violations, and/or performance failures) and take corrective action. There are two levels of assessments which are based on the severity or frequency of the problem.

Level 1 Assessment

The Level 1 Assessment consists of a self-assessment of the system's source water, treatment, distribution system, and relevant operational practices. The Level 1 Assessment is located here at http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/rtcr1.doc. A Level 1 Assessment should be conducted by a responsible party of the PWS that is familiar with the system. Systems should complete the entire assessment form, even if they believe they understand the apparent cause, to ensure that they do not overlook a sanitary defect. A well-performed Level 1 Assessment will prevent most systems from developing conditions that lead to a Level 2 Assessment.

The Level 1 Assessment form must be provided to MassDEP within 30 days after determination of exceeding a Level 1 Assessment trigger. In an effort to ensure that the certified operator is aware of the violation and participates in the Level 1 Assessment, both the certified operator and the responsible party filling out the Level 1 Assessment form (if different than the certified operator) must sign the document.

Level 2 Assessment

A Level 2 Assessment is an evaluation to identify the possible presence of sanitary defects, defects in distribution system, coliform monitoring practices, the likely reason that the system triggered the assessment, and consists of a more detailed examination of the system (including the system's monitoring and operational practices) than a Level 1 Assessment. Through the use of more comprehensive investigation and review of available information it includes, at a minimum, the following elements:

- Review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired
- Changes in distribution system maintenance and operation that could affect distributed water quality (including water storage)
- Source and treatment considerations that bear on distributed water quality, where appropriate (*e.g.*, whether a groundwater system is disinfected)
- Existing water quality monitoring data
- Inadequacies in sample sites, sampling protocol, and sample processing

A Level 2 Assessment is triggered when:

- A PWS incurs an *E.coli* MCL violation.
- A PWS has a second Level 1 Assessment within a rolling 12-month period.
- A PWS on state-approved annual monitoring has a Level 1 Assessment trigger in 2 consecutive years.

Level 2 Assessments must be conducted by the state or a state-approved entity. PWSs are responsible for ensuring that a Level 2 Assessment is conducted regardless of the entity conducting the Level 2 Assessment.

RTCR Questions

If you have any concerns or questions about the RTCR, assessments, or any general questions please contact your regional MassDEP office. Offices are listed in the back of this guide.

Ground Water Rule

All Massachusetts' PWSs using ground water, including systems receiving their water from other systems using ground water (consecutive systems) must comply with the federal Ground Water Rule (GWR). This rule is intended to increase protection against potential viral contamination in PWSs that use ground water sources. It does not apply to systems with ground water under the direct influence of surface water or systems that combine all of their ground water with surface water prior to treatment.

PWSs that do not provide 99.99% (4-log) treatment of viruses must conduct "triggered monitoring" of their source water for a fecal indicator each time the PWS is notified of a total coliform-positive sample (TC+). The repeat samples must be collected:

- within 24 hours of being notified of the TC+ result
- prior to any treatment or chemical addition
- at all ground water sources active at the time the TC+ sample was collected

If the source sample is fecal indicator positive, a Tier 1 public notification (acute health concern) must be issued and an additional five source-water samples collected within 24 hours. MassDEP may require a PWS to take immediate corrective action after the initial source sample is identified as fecal indicator positive.

If any of the additional five source-water samples are fecal-indicator positive, the PWS will be required to provide emergency disinfection or an alternate source of water until one or more of the following corrective actions is completed:

- the source of contamination is identified and eliminated
- a deficiency in the water system operation or construction that could

Manure piles on farms, broken sewer pipes, and dog waste can all contribute to fecal contamination in drinking water.

lead to fecal contamination has been corrected

- an alternate source of water is provided
- 4-log treatment for viruses using inactivation (disinfection) and or removal (filtration) is installed

PWSs that demonstrate 4-log treatment of viruses through GWR "compliance monitoring" are not required to conduct triggered monitoring.

All water systems serving 3,300 or fewer people are to use *E.coli* as the fecal indicator

Systems that treat or disinfect

If your system provides treatment and concentration-time (CT) to achieve at least 99.99 percent (4-log) inactivation or removal of viruses, you must demonstrate that you consistently provide treatment that meets all GWR requirements, including continuous or daily monitoring of chlorine residual. PWSs should not assume that by chlorinating their drinking water or using UV disinfection that they will meet 4-log treatment. PWSs using a chemical disinfectant must complete a Log Credit Determination Form http://www.mass.gov/eea/agencies/massdep/water/approvals/gwr-a-log-credit-determination.html to determine the viral log treatment currently achieved by the system. If your PWS provides 4-log treatment, you must also submit supporting documentation prepared by a professional engineer. Please call your MassDEP regional office for more information on the approval process and future compliance monitoring requirements.

Regulation requires that your system should already have:

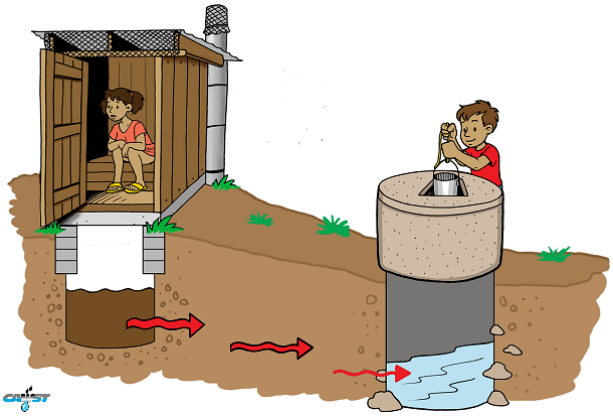
- Installed a raw water sample tap (prior to any treatment) at every well
- Installed an emergency disinfection injection port
- Protected the well and the surrounding area.
- Corrected any defects, failures, or malfunctions at the wellhead, treatment, storage, or distribution system that may cause the introduction of fecal contamination. (Review your past MassDEP sanitary survey findings.)
- Developed a Long-Term Fecal Contamination Response Plan to address a potential fecal indicator positives at the source.
- Consider purchasing emergency disinfection equipment/supplies or have immediate access to them if needed.

Response Forms

To determine if each PWS has adequate capacity to comply with the GWR, all PWSs must have completed the Immediate and Long-Term Fecal Contamination Response Form located at: http://www.mass.gov/eea/docs/dep/water/approvals/year-thru-alpha/e-thru-l/gwr-b.pdf. By completing the form, PWSs identify steps to take to protect public health in the event of a fecal contamination. Send a copy to MassDEP/DWP, One Winter Street, Boston MA, 02108. Keep a copy of this form on-site as part of your emergency response plan.

Nitrate and Nitrite

These inorganic chemicals are used in fertilizers, are found in sewage and wastes from humans and farm animals, and generally get into drinking water from these activities. High levels of nitrate and/or nitrite in drinking water have caused serious illness and sometimes death in infants under six months of age.



A septic system too close to drinking water supply can contaminate your drinking water.

Nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen carrying capacity of the blood. This is an acute disease in that symptoms can develop rapidly, especially in infants. This condition is called "blue baby" syndrome. In most cases, health deteriorates over a period of days. Symptoms include shortness of breath, and cyanosis (gray/blue color) of the skin. Expert medical advice should be sought immediately if these symptoms occur.

Nitrate and nitrite must be sampled at the entry point to the distribution system which is representative of each well after any treatment. EPA's MCL for nitrate in drinking water is 10 mg/L, and nitrite is 1.0 mg/L. The MCL for nitrate and nitrite combined is 10 mg/L.

Laboratory forms can be found on-line at: http://www.mass.gov/eea/agencies/massdep/water/approvals/drinking-water-forms.html#8.

Sodium

Sodium is a naturally occurring common element found in soil and water. The MassDEP guideline represents a very low level of sodium in water that physicians and sodium sensitive individuals, such as those with high blood pressure should be aware or in cases where sodium intakes are being monitored.

Sodium must be sampled at the entry point to the distribution system which is representative of each well after any treatment.

In addition to reporting sodium result to MassDEP, you must also notify your local board of health and the MA Department of Public Health (DPH) if your sodium result is greater than 20 mg/L. A Sodium Notification Form can be found at: http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/sodguide.pdf or http://www.mass.gov/eea/docs/dep/water/approvals/year-thru-alpha/m-thru-s/sodium.pdf .

Violations

MassDEP issues a notice of non-compliance (NON) when you fail to comply promptly with a reporting requirement or a laboratory test that shows an exceedance of an MCL. This notice explains the nature of the violation, the regulations that were violated, corrective and public notification actions which must be taken, and the deadline for such action.

Once you respond to MassDEP on all corrective actions, such as sampling for a contaminant and submitting copies of the public notice, your systems will return to compliance.

All violations are kept on record and reported to the US EPA. If you accumulate four NONs within a 12-month period, your system will be classified as significant non-complier (SNC). Before you become a SNC you will be required to submit a plan detailing what specific actions will be taken to prevent any further con-compliance. In addition, you may be subject to federal enforcement action if you become a SNC.

If you fail to take any action required by MassDEP by the prescribed deadline, or if you otherwise fail to remain in compliance, you could be subject to legal action including criminal prosecution, court-imposed civil penalties, or civil administrative penalties. A civil administrative penalty may be assessed by MassDEP for every day that you are out of compliance with the requirements.

Public Notification

Anytime there is even a slight chance the water you supply could cause a health hazard for your customers, you are required to notify them as soon as possible. The US EPA and MassDEP require this mandatory public notification (PN) whenever there is an exceedance of a MCL. There are also other circumstances that warrant a PN such as reporting violations or bookkeeping violations. For more specific language on this topic please consult the MA Drinking Water Regulations. If you fail to notify your customers you may be subject to civil penalties.

If a PN is warranted, it must provide a clear and readily understandable explanation of :

- the violation
- any potential negative health effects
- the population at risk
- steps the system is taking to correct the violation
- preventative measures the consumer should take until the violation is corrected.

The PN must:

- be clear and conspicuous in design
- contain non-technical language
- use print that's easily read
- contain the phone number of a knowledgeable contact person
- contain multilingual information, where appropriate.

The more serious the health risk, the more stringent the PN requirements are (Tier 1, Tier 2, Tier 3). The timing, required wording, and delivery of PNs vary depending on the seriousness of the health risk involved. Your MassDEP regional office can provide you with the necessary information should a PN be required. For more PN information and templates please go to: http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html#23.

Annual Reporting

You are required to submit water quantity and an update on your system every year to MassDEP. This is called an Annual Statistical Report (ASR). You must submit a completed ASR electronically to MassDEP by February of each year. You will find the form online; you'll add your water quantity used and make all necessary updates online, and electronically submit it to MassDEP. Please go to: http://www.mass.gov/eea/agencies/massdep/water/approvals/drinking-water-forms.html#16 to review all forms and information pertaining to the electronic ASR.

Water Quality Reports and Certificates of Registration

MassDEP creates water quality reports -commonly called consumer confidence reports (CCR)- for every TNC system in July of each year. These reports list important information about your water supply so that your customers can make informed decisions about drinking the water.

These reports are found on the MassDEP website at: http://www.mass.gov/eea/agencies/massdep/water/drinking/pws-documents-search-tool.html. You, as the owner of the system, must pull up your report from the web, print copies of it, sign the report, have your operator sign the report, and post the report in various conspicuous areas for consumers to read.

Conspicuous areas can include bathrooms, near cash registers, water fountains, or registrations desks. Continually post this report until a new one is available each

One good spot to post your CCR can be a bathroom mirror where they can read while they wash thier hands.

year. Vending machine operators may want to secure a plastic envelope to the front of their machines with many copies of the report in it should their customers wish to take a copy with them.

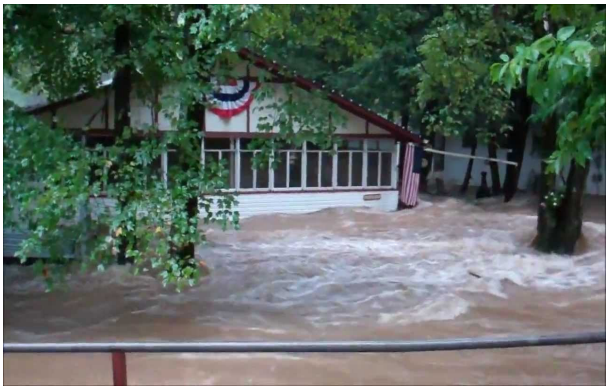
These reports can also be used, in certain circumstances, as a Tier 3 Public Notice if one is warranted. Call your regional MassDEP office for help if you need to post a public notice.

Your system's Certificate of Registration can be found on this same web page. This certificate ensures your consumers that your facility is registered with the Commonwealth as a TNC water system and that you are required to follow and be in compliance with all applicable state regulations. You may display this certificate as well.

Your system's monitoring sampling schedule can also be found on that web page as well.

Emergency Response

It is always said that it's not *if* an emergency happens, it's *when* an emergency happens. Accidents and emergencies do happen and as a water supplier to the public you have to be prepared. Every PWS is required to have an Emergency Response Plan and to keep it updated. You can find the emergency response guidebook along with templates on the web at: http://www.mass.gov/eea/docs/dep/water/drinking/alpha/a-thru-h/erplan.pdf.



Flooding at a camp ground

There can be many types of emergencies such as a blown pump, contaminants that spilled and migrated into the water supply, electrical emergencies, drought conditions, heavy storms with flooding, etc. For all types of emergencies you must have a concrete contingency plan such as redundant equipment, bulk water haulers, engineers, and laboratories on hand to call just to name a few suggestions. Don't forget to partner with other, maybe larger systems, which may be able to help you in certain types of emergencies. When in crisis it will help to have this all prepared and ready to act upon, instead of wasting precious time wondering what to do.

You can find various help documents and referrals on-line at: http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html (scroll down until you reach the emergency response section). And don't forget to keep the MassDEP daytime and emergency numbers on hand which are found at the end of this guide.

Sanitary Surveys

A sanitary survey is an on-site inspection and review of the water sources, treatment facilities, distribution system, finished water storage, pumps and pump facilities, monitoring, reporting and data records, system management, and operation, and certified operator compliance. This is for the purpose of evaluating the adequacy of the system to produce and distribute safe drinking water.

Conducting a sanitary survey

All TNCs must have a sanitary survey done every five years. These are conducted by MassDEP staff or an approved contractor. Your MA Certified Drinking Water Operator must be present during the on-site inspection of your facility.

The goals of a sanitary survey are to provide assistance to the water system and the certified operator, identify significant and minor deficiencies, facilitate improvements to the system, and establish a working relationship with MassDEP. After the on-site visit you will receive a written report covering the following eight elements in the table below.

Employees of the Commonwealth have the authority, upon presentation of their credentials, to enter your facility for the purpose of inspecting, surveying, and sampling public water systems.

- Water sources - Evaluate water supply sources to ensure proper source protection
- Treatment facilities - Evaluate treatment processes (e.g., chemical addition, filtration), facilities, components, and techniques
- Distribution system - Evaluate the adequacy, reliability, and safety of the system for distributing water
- Finished water storage - Evaluate the adequacy, reliability, and safety of finished water storage
- Pumps and pump facilities - Identify proper operation and maintenance of water system pumps and pumping facilities
- Monitoring, reporting, and data verification - Review paperwork and plans to demonstrate compliance with National Primary Drinking Water Regulations (NPDWRs)
- System management and operation -Review paperwork and plans to demonstrate that maintenance and operations can maintain compliance (e.g., cross connection control, emergency plan, operations and maintenance plan)
- Operator compliance - Review operator status to ensure the operator's certification is current and at the appropriate level

Cross Connections

A cross connection is any actual or potential connection between a distribution pipe of potable water from a public water system and any water pipe, soil pipe, sewer, drain, or other unapproved source. Cross connections can cause severe illness and death and must be corrected.

Nonpotable water or chemicals used in equipment or a plumbing system can end up in the drinking water line as a result of back pressure or back siphonage. The outside watering tap and garden hose are common sources of cross connections.

Hose bib backflow preventer placed on a backyard hose.

The garden hose creates a hazard when submerged in nonpotable water such as a swimming pool or when attached to a chemical sprayer for weed-killing. Businesses such as photo labs, beauty salons, and doctor and dental offices can also be sources of cross connections. Cross connections can also occur in air conditioning or cooling systems, fire protection systems, lawn irrigation systems, and high pressure boilers.

Requirements:

- Have your facility/system surveyed for a cross connection to make sure you all cross connections have been identified and eliminated or properly protected.
- Make sure that all plumbing changes are done by a Massachusetts certified plumber and approved by the local plumbing inspector.
- Do not connect any pesticide, chemical feeder, or any other nonpotable liquid applicators to a unprotected thread outlet.
- Install hose bib vacuum breakers on all outside faucets. The hose bib vacuum breaker isolates garden hose applications, protecting your drinking water supply from contaminants that could be drawn into your facility through.
- Color code all potable lines in dark blue and all nonpotable lines in colors listed in the MassDEP Guidelines and Polices for Public Water Systems.
- Eliminate every cross connections or properly protect then by installing backflow preventers for each type of health hazards

For further information on cross connection prevention call the MassDEP Drinking Water Program in your regional office or the New England Water Works Association. Contact numbers can be found at the back of this guide.

For more information on your city/town and the respective MassDEP Regional Office go to the last page in this guide.

Treatment Devices and System Improvements

Occasionally a water supply may require treatment with a water softener, filter, chemical additives, or system modifications. All devices and major system modifications must have prior MassDEP approval. Submit plans and specifications, designed by a professional engineer, to your regional office for review and approval.

MassDEP will ensure that a proposed treatment is appropriate for the water supply and that your certified operator is qualified to properly maintain the treatment system. MassDEP permit fees for these modifications are approximately $525 to $1055 as of 10-2-2016.

Point of use equipment under a sink.

POU / POE

A point of entry (POE) treatment device is any unit installed that changes the water quality of all potable water entering a building. A point of use (POU) treatment device is any unit installed on a single water faucet or bubbler that changes the water quality. POE and POU treatment devices such as carbon filters are sometimes installed to enhance the aesthetic quality (taste and odor) of potable water supplied by a PWS. In other cases, POE and POU treatment devices are installed to meet drinking water standards and are regulated by MassDEP.

If you have installed or are planning on installing any POU/POE devices please see the *FAQ: Point of Use/Point of Entry of Home Treatment Devices* located at: http://www.mass.gov/eea/agencies/massdep/water/drinking/home-treatment-devices-point-of-entry-point-of-use-tre.html. This explains POU/POE devices further. Should you have any other questions about them please contact the regional MassDEP office nearest you.

Source Protection

To prevent public drinking water wells from becoming contaminated, MassDEP establishes a protection zone around each drinking water source. For TNCs these protection zones are comprised of the Zone I and the Interim Wellhead Protection Area (IWPA). If a PWS does not know the boundaries of their Zone I or IWPA, they should contact MassDEP for assistance.

Zone I

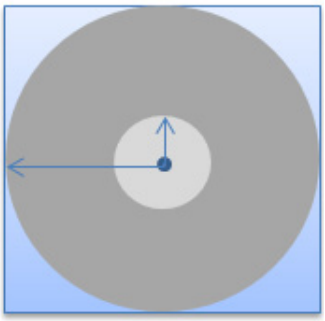
The Zone I is the immediate area surrounding a wellhead. It is defined as a 100 to 400 foot radius. MassDEP

requires PWS to own or control the Zone I. Because activities in the Zone I can have an immediate impact on water quality, only activities directly related to the operation and maintenance of the water supply are allowed in the Zone I.

Example: **ZONE I/ IWPA Source Protection Area for Well #1 (5231001-01G)**

Zone I = 126 ft. (light grey circle)

IWPA = 433 ft. (dark grey circle)



IWPA

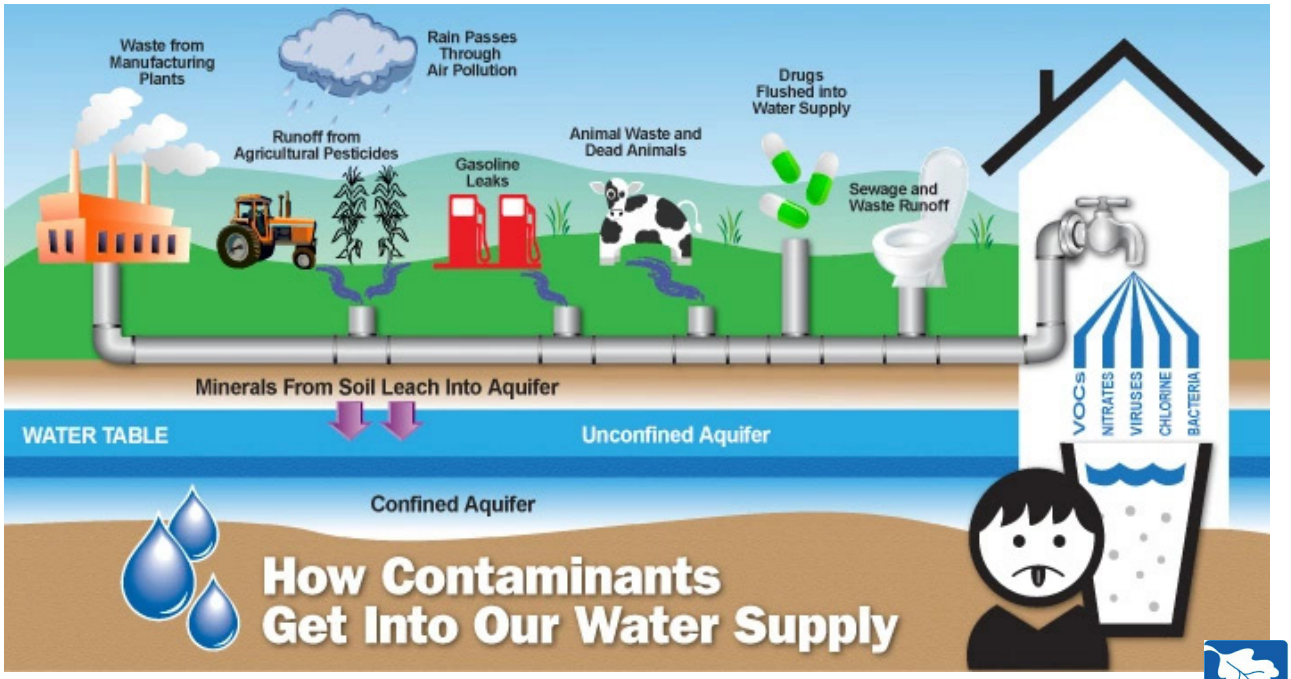
The IWPA is the recharge area to the Zone I. Its radius is determined by the approved pumping rate or historical metered rate of withdrawal. When there is no approved or metered rate, MassDEP calculates a default radius for the IWPA.

Because activities in the IWPA can pose a threat to water quality, it is important that PWS are pro-active in protecting the IWPA. MassDEP requires PWS to inform residents and businesses that they are in a water supply protection area and provide them with wellhead protection information. To assist PWS with this effort, MassDEP provides sample notification letters and wellhead protection factsheets on their source protection page at: http://www.mass.gov/eea/agencies/massdep/water/drinking/source-water-protection-for-drinking-water-supplies.html

Wellhead Protection Requirmentource Protection Tips

In the Zone I at the wellhead:

- Regularly inspect visible parts of the well for damage, corrosion, or cracking.



- Do not cut the well casing below ground level.
- Keep the well cap tight-fitting and cap or screen vents, access ports, and other openings.
- Check the condition of sanitary seals and replace those that are not intact.
- Safeguard chemical feeders from inadvertent physical disturbances or tampering.
- Inspect backflow prevention valves and replace as needed.
- Restrict access to the wellhead / Zone I. Install fencing and/or post protection signs. If you need a sign go to: http://www.massrwa.org/.
- Slope concrete pads away from the well and keep them in good condition.
- Properly abandon or decommission old or dry wells; these act as conduits for transporting contaminants to your well.
- Contact MassDEP about the need for testing when there is a change in the color, taste, or odor of the water or after a flood or spill.

If your business or facility is in the Zone I:

- Do not use/store pesticides, fertilizers, herbicides, animal manure or road salt in the Zone I.

- Do not dispose of motor oil, degreasers, fuels, paints, thinners or any chemicals in the Zone I.
- Do not store equipment or locate maintenance sheds or dumpsters in the Zone I.
- Pump septic tanks regularly.
- Relocate underground fuel tanks to above ground with proper secondary containment.
- If possible use natural gas, propane, or solar for power.
- Do not dump hazardous substances down toilets or drains.
- Seal floor drains that discharge to the ground, drywell or septic system.
- Post notices informing staff and water consumers they are in a water supply area and what measures they should take to ensure their drinking water remains clean.
- Maintain existing parking areas and slope them away from the well. If possible relocate parking areas to outside the Zone I.
- Do not create new parking lots or increase vehicle parking in the Zone I.

In the IWPA

- Inspect the IWPA annually. Be aware of existing and new potential contaminant sources such as livestock, stables, non-organic crop growing, leaking underground fuel tanks, and large or numerous parking lots.

- Notify landowners annually that they are located in a water supply area and provide them with wellhead protection information.
- Request assistance from your local board of health in managing activities in the IWPA. Provide them with a map of your IWPA and request them to adopt a hazardous materials health regulation that covers the recharge areas.

If you need to order source protection signs please go to: http://www.massrwa.org/.

There are many different types of source protection signs available.

If you need more information about source protection such as fact sheets, maps, tips, forms, grants, source water assessment protection plans, etc. Please go to: http://www.mass.gov/eea/agencies/massdep/water/drinking/source-water-protection-for-drinking-water-supplies.html.

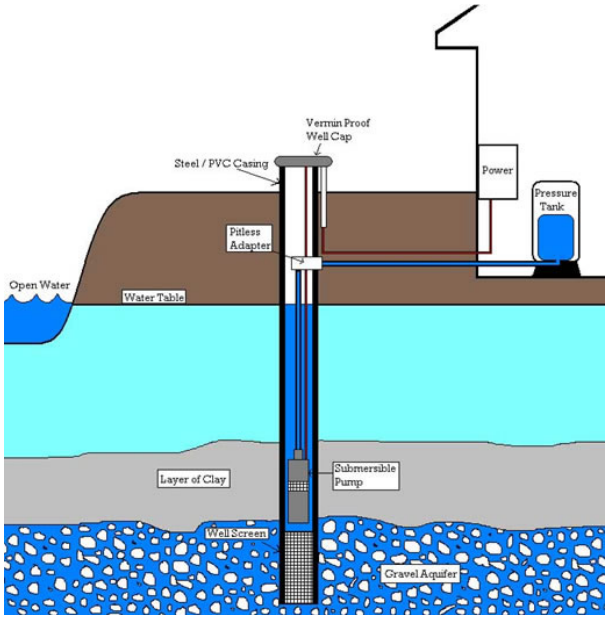
Sale of Water Supply Land

No supplier of water may sell, lease, assign, or otherwise dispose of, or change the use of, any lands used for water supply purposes without the prior written approval of MassDEP. The supplier must demonstrate that such action will have no significant adverse impact upon the water supplier's present and future ability to provide continuous adequate service to consumers under routine and emergency operating conditions. Emergencies include contamination of sources, distribution system failure, and shortage of supply.

To acquire or release land for drinking water supplies go to: http://www.mass.gov/eea/docs/dep/water/drinking/alpha/i-thru-z/pwsland.pdf.

New Construction or Replacement of a Well

Contact your MassDEP regional office for guidance and technical assistance if you are constructing a new well or replacing a well. Plans and permits must be submitted and approved by MassDEP before a well is drilled and placed on-line. You will also have to document your control or ownership of the Zone I land area.



Typical well construction

Costs of having your small well approved will include a $1380 MassDEP permit fee for Site Source/Conduct Pumping Test (BRP WS 13) and an $1585 MassDEP permit fee for a Pump Test Report/Construction Source (BRP WS 15) plus consultant fees.

For development of a TNC source for which an approved withdrawal rate of<7 gpm is being sought, and $810 MassDEP permit fee (BRP WS 37) is required.

Public Water Supply Declassification and Reclassification

Your system is currently classified as a TNC public water system because it serves over 25 people a day at least 60 days of the year. (Please see chart located at: http://www.mass.gov/eea/docs/dep/water/compliance/privpubl.pdf.

If your system serves at least 25 of the same persons (such as employees) over 4 or more hours per day, 4 or more days per week, at least 180 days (six months) of the year, your system will be reclassified as a non-transient non-community (NTNC) public water system. Your system will be required to comply with all additional NTNC regulations and testing requirements. Please call your MassDEP regional office to discuss reclassification guidelines.

If at any time you feel that your system does not meet your current classification criteria (for example you hook up to municipal water or your business changes and drops below the 25 people served per day) contact your MassDEP regional office to discuss your situation and request a declassification form.

If MassDEP determines that you do not meet the criteria for a public water system you will be declassified and no longer subject to the Massachusetts Drinking Water Regulations. Instead, your local board of health will be notified and your private system will be subject to their regulations.

Drinking Water Assessment

The Safe Drinking Water Act (SDWA) Assessment is paid each year by the 6.3 million consumers of public water in

Massachusetts through their public water systems. The Assessment provides funds to MassDEP's Drinking Water Program to maintain primacy for the federal SDWA.

Primacy means that the SDWA is implemented by MassDEP, including all enforcement responsibilities, instead of by the federal government. By maintaining primacy, MassDEP ensures the safe production of drinking water while implementing state specific programs that save PWSs and their customers millions of dollars.

In addition, Assessment revenue enables MassDEP to develop and conduct technical and compliance assistance and training for public water suppliers, with no cost training contact hours offered to maintain state licensing.

At the start of the Assessment Program in 1993, the legislature formed a SDWA Assessment Advisory Committee to:

- recommend assessment rates
- monitor and audit the Assessment Program
- produce an annual report for the legislature
- conduct public meetings.

For more information about the Assessment Program or the committee's work, go to http://www.mass.gov/eea/agencies/massdep/news/advisory-committees/safe-drinking-water-act-assessment-advisory-committee.html.

Estimated Costs

Below are the estimated costs for operating a TNC system. All systems are different with distinct needs; these are averaged costs of a typical TNC system.

Start-Up Costs/Permits:
$3500 plus consultant fees (one-time cost)

Initial Water Quality Testing:
$1200 - $3200 (one-time cost)

Routine Water Quality Testing:
$600 - $1250 annually

Routine Operation and Maintenance:
$60 - $600 annually

SDWA Assessment Fee:
Minimum of $20 with an average fee of approximately $50 annually

Certified Operator:
to contract an operator
$350 - $4500
or
Self-certification for VSS license
Exam/Appl/License: $222

With a well in the back, this gas station/convenince store is a TNC because it serves more than 25 persons daily.

MassDEP Contacts

MassDEP - Boston Headquarters
One Winter St. - 5th Floor
Boston, MA 02108
617-393-5770

MassDEP - WERO
Statehouse West - 4th Floor
436 Dwight St.
Springfield, MA 01103
413-755-2148

MassDEP - CERO
8 New Bond St.
Worcester, MA 01606
508-792-7650

MassDEP - NERO
205-B Lowell St.
Wilmington, MA 01887
978-694-3200

MassDEP-SERO
20 Riverside Dr.
Lakeville, MA 02347
508-946-2700

For more information about MassDEP offices please go to: http://www.mass.gov/eea/agencies/massdep/about/contacts/find-the-massdep-regional-office-for-your-city-or-town.html.

The MassDEP Drinking Water Home page is: http://www.mass.gov/eea/agencies/massdep/water/drinking/

Email: Program.Director-DWP@state.ma.us

Emergency number: 888-304-1133

The Massachusetts Drinking Water Regulations 310 CMR 22.16 are available on-line at http://www.mass.gov/eea/agencies/massdep/water/regulations/310-cmr-22-00-massachusetts-drinking-water-regulations.html.

Other Contacts

US EPA Safe Drinking Water Hotline
800-426-4791
(9:00 am - 5:00 pm EST)

US EPA Drinking Water webpage:
https://www3.epa.gov/region1/eco/drinkwater/index.html

Massachusetts Water Works Assoc.
978-263-1388
https://mwwa.memberclicks.net/

New England Water Works Assoc.
508-893-7979
http://newwa.org/

Mass Rural Water Assoc.
413-498-5779
http://www.massrwa.org/

RCAP Solutions
800-488-1969
http://www.rcapsolutions.org/

Acronyms

ABC - Association of Boards of Certification

AMP - Applied Measurement Professionals

ASR or eASR - electronic Annual Statisical Report

Board - The Board of Certification of Operators of Drinking Water Supply Facilities

CCR - Consumer Confidemce Report

CMR - Code of Massachusetts Regulations

DPH - Massachusetts Department of Public Health

EC+ - *E.coli* positive

EPA - United States Environmental Protection Agency

gpm - gallons per minute

GWR - Gound Water Rule

IWPA - interim well protection area

MassDEP - Massachusetts Department of Environmental Protection

MCL - maximum contaminant level

mg/L - milligrams per liter

MWWA - Massachusetts Water Works Association

NEWWA - New England Water Work Association

NON - notice of noncompliance

NPDWR - National Primary Drinking Water Regulations

NTNC - non-transient non-community

PCS: Professional Credential Services

POE - point of entry

POU - point of use

PWS - public water system

PN - public notice

RS - routine sample

RTCR - Revised Total Coliform Rule

SDWA - Safe Drinking Water Act

SNC - significant noncomplier

TC - total coliform

TC+ - total coliform positive

TCR - Total Coliform Rule

TCH - training contact hours

TNC - transient non-community

VND - vending system

VSS - very small system

A new service line tapped into water main.