

360 CMR: MASSACHUSETTS WATER RESOURCES AUTHORITY

360 CMR 12.00: LEAK DETECTION REGULATIONS

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12.01: Preamble

The purpose of 360 CMR 12.00 is to promote water conservation by the communities that receive some or all of their water supply from the Authority by requiring that those communities undertake leak detection and repair activities. These measures will improve water accountability and reduce waste of water through leakage.

12.02: Effective Date

360 CMR 12.00 shall be effective on and after July 1, 1991. Prior to that date, 360 CMR 12.00 may be looked to as providing guidelines for leak detection and repair activities.

12.03: Definitions

Authority shall mean the Massachusetts Water Resources Authority.

Authority delivery system shall mean the waterworks under the control of the Authority.

Enabling act shall mean the enabling act of the Authority, St. 1984, c. 372, as amended.

District measurement shall mean the use of flow measurements in the pipes supplying a portion of the municipal distribution system that has been isolated by selective closing of valves.

Ground microphone shall mean a monophonic or stereophonic listening instrument designed to be placed on a paved surface or compacted soil over an underground pipe for purposes of detecting sonic vibrations associated with leakage.

Leakage potential shall mean the residual portion of unaccounted-for water that remains after all metered usage and estimates of meter slippage and public use are subtracted.

Local body or community shall mean any city, town, district of the Commonwealth or other entity, including a state or federal agency, which receives some or all of its water supply from the Authority pursuant to St. 1984, c. 372, § 8(d), (the enabling act).

12.03: continued

Municipal distribution system shall mean all potable water piping and any other facilities that contain water and from which leakage may occur that are owned by the community.

Sonic leak survey shall mean the systematic use of sound intensifying equipment to detect the noise of leakage from underground water pipes.

Unaccounted-for water shall mean the water that has been delivered to the distribution system but has not been accounted for as metered consumption or estimated public use upon which billing was based.

12.04: Applicability of Leak Detection and Repair Program

The leak detection and repair program set forth in 360 CMR 12.00 shall be performed on all portions of the municipal distribution system.

12.05: Minimum Frequency

All portions of the municipal distribution system shall be surveyed for leakage no less than once every two years.

12.06: Methods

Sonic leak surveys shall be required for all underground pipe. Visual inspection of tanks, reservoirs and above ground pipe is acceptable. The following general procedures shall be followed:

- (1) Available points of direct contact to the distribution piping system shall be sounded, including valves, hydrants and selected sidewalk service connections.
- (2) In paved roadways, a ground microphone shall be used to listen over the pipeline at intervals not to exceed ten feet.
- (3) In unpaved areas, a pattern of listening points shall be established to ensure complete coverage.
- (4) Indications of leakage shall be investigated immediately and shall be pinpointed to the most probable point of leakage, with location clearly marked by an acceptable method such as paint on pavement or stake in earth and reference measurements to a permanent structure taken.
- (5) The leak shall be classified as to estimated water loss and severity. A leakage site report shall be prepared for each suspected point of leakage.

If leakage potential is less than 10%, the sounding of only direct contacts such as hydrants is allowable with use of ground microphones for pinpointing only. District measurement shall also constitute an appropriate method of leakage investigation. If the community demonstrates through district measurement that all or a portion of the municipal distribution system has a low ratio of minimum night rate to total consumption, the sounding of only direct contacts such as hydrants for the applicable districts will be allowed; if the ratio is greater than 40% and cannot be attributed to industrial use at night, such districts shall be investigated by a full sonic survey.

12.07: Qualification Process

(1) When a community's leak detection survey is to be conducted by a contractor, each individual used by the contractor for the survey must possess a minimum of one year of experience in conducting leak detection surveys.

(2) When a community's leak detection survey is to be conducted by the community's employees, it shall be performed only by personnel qualified by the Authority to be proficient in leak detection methods. Community personnel will be qualified by the Authority by attending and successfully completing an Authority leak detection training program, which shall be offered at least once each year. A community may have personnel participate in its leak detection program prior to completing an Authority leak detection training program if such personnel work under the supervision of community personnel with at least three years of experience in leak detection. This qualification shall be retained indefinitely provided that the community's employee actively continues to perform leak surveys within the community's leak detection program. If two years pass during which the community's employee does not engage in leak detection activities, the qualification will lapse and will need to be re-obtained.

12.08: Leak Detection Records

(1) Each community shall maintain records of leak detection survey progress in the form of reports from each survey party indicating by date the streets surveyed, pipe mileage surveyed and names of members of the survey party.

(2) Each community shall maintain records of suspected leak sites, whether found by sonic leak survey or other means, in the form of a separate leakage site report on each individual suspected leak. The Authority will provide standard forms for use by communities.

12.09: Leak Repairs

(1) Each community shall repair all leaks found to be existing in its municipal distribution system as expeditiously as possible. If extenuating circumstances prevent or delay repairs of specific leaks, a community should provide to the Authority a written explanation of the circumstances interfering with compliance. Based on the information provided to it, an exemption from the applicable requirement may be granted by the Authority.

(2) Each community shall establish a priority system to implement leak repairs. Leaks of 15 gallons or more per minute shall be repaired as expeditiously as possible but not later than one month after leak detection. Leaks less than 15 gallons per minute but greater than five gallons per minute shall be repaired as expeditiously as possible but not later than two months after leak detection. Leaks of five gallons or less per minute shall be repaired as expeditiously as possible but not later than six months after leak detection, except that hydrant leaks of one gallon or less per minute shall be repaired as expeditiously as possible. Repair of leakage detected during winter months can be delayed until weather conditions become favorable for conducting repair.

REPORTING REQUIREMENTS

12.10: Annual Reports

(1) Each community shall file annual reports on its leak detection and repair program activities with the Authority. The Authority will assist each community in completing its annual report. On January 1st of each year, the Authority will give written notice to each community of the requirement to submit to the Authority the community's annual report. The annual report will be filed by March 1st each year.

12.10: continued

- (2) The Authority will provide any written comments on each annual report within 30 days of its receipt by the Authority.
- (3) The annual report will contain the following information regarding leak detection:
 - (a) a calculation, on the form attached to 360 CMR 12.00 as Appendix "A", of unaccounted-for water and leakage potential for the previous calendar year;
 - (b) if the community has done district measurement, flow measurement results; and
 - (c) a schedule of planned leak survey activity for the then-current calendar year, specifying:
 1. the pipe mileage to be surveyed;
 2. the names and qualifications of the personnel who will conduct those planned leak survey efforts; and
 3. a brief description of the sonic leak detection equipment to be used.
- (4) The Authority shall file an annual report with the communities by June 30th each year. The Authority's report shall provide a summary of all leak detection and repair activities conducted by it and the communities during the previous calendar year.

12.11: Quarterly Reports

Each community shall submit a quarterly report to the Authority within 30 days after the last day of March, June, September and December of each year. The quarterly report shall contain the following information:

- (1) Leak Detection Results:
 - (a) a cover sheet with a summary of pipeline mileage surveyed during the period and the number of leaks located in each category of leak severity; and
 - (b) copies of all leakage site reports prepared during the reporting period.
- (2) Leak Repair Results:
 - (a) a listing of all leak repairs accomplished during the reporting period, whether the leaks were discovered by leak detection surveys or by other means, and the date of repair for each leak; and
 - (b) a listing of leakage sites which have not been repaired ranked by category of leak severity and stating the date of each site's discovery.

12.12: Access to Records

Each community shall make available to the Authority upon request copies of data or records supporting information provided in annual and/or quarterly reports.

GENERAL PROVISIONS

12.13: Dispute Resolution Process

- (1) In light of the general legal requirement that those aggrieved by the actions of administrative bodies such as the Authority shall be given an opportunity to appeal from those actions, the Authority has established an administrative hearing process. That process is set forth in the Authority's Regulations for the Conduct of Adjudicatory Proceedings, 360 CMR 1.00. Any dispute arising between the Authority and a community under the terms of 360 CMR 12.00 will be resolved through that administrative hearing process.
- (2) The Authority is allowed by St. 1984, c. 372, § 8(d) to establish reasonable penalties for violations of 360 CMR. Accordingly, the Authority has issued Administrative Penalty Regulations, 360 CMR 2.00. In order to uphold its abilities to achieve the goals of St. 1984, c. 372, § 8(d), the Authority may impose civil administrative penalties pursuant to its Administrative Penalty Regulations if a community repeatedly and flagrantly violates the provisions of 360 CMR 12.00.

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12.14: Waiver of Requirements

A waiver from the terms of 360 CMR 12.00 will be granted by the Authority if a community can demonstrate that the intent of the requirements of 360 CMR 12.00 can be met by means alternative to those set forth in 360 CMR 12.00.

12.15: Severability

If any provision in 360 CMR 12.00 or any application of a provision is held invalid, it will not effect all other provisions which can be given effect.

REGULATORY AUTHORITY

360 CMR 12.00: St. 1984, c. 372, §§ 6(e), 8(m) and 26(d).

APPENDIX A

DATE

COMMUNITY: _____ PREPARED : _____ CONTACT PERSON : _____

CALCULATION OF UNACCOUNTED FOR WATER
AND LEAKAGE POTENTIAL
CALENDAR YEAR _____

	<u>Million Gallons</u>	<u>Million Gallons</u>	<u>Percentage of Total Use</u>
1. Total Water Use	_____		
2. Metered Domestic Use	_____		
3. Metered Non-Domestic Use	_____		
4. Unaccounted for Water (1- 2 - 3)		_____	_____
5. Domestic Meter Under-registration	_____		
6. Non-Domestic Meter Under-registration	_____		
7. Unmetered Public Use	_____		
8. Leakage Potential (4-5-6-7)		_____	_____

Appendix A: continued

Explanation of Calculation Requirements

1. Total Water Use is the sum of all MWRA supply meters, master meters from local sources and transfers to and from other communities.
2. Metered Domestic Use is intended to include actual metered consumption and estimation (resulting from broken meters, lockouts and other problems) upon which billing was based. Domestic Use is intended to include only residential use, provided that meter classification used by the community allows such differentiation. If the community classifies metered services by a different system (such as meter size) than the classification should be explained on an attached page.
3. Metered Non-Domestic Use is also intended to include actual meter consumption and estimation as was used for billing purposes. Variations in meter classification should be explained on an attached page.
4. Unaccounted-for Water is intended to be the remainder after Metered Domestic and Non-Domestic Use are subtracted from Total Water Use.
5. Domestic Meter Under-Registration will be assumed to be zero unless evidence is submitted to the contrary by the community. Satisfactory evidence shall be meter accuracy test data for a representative sample of residential meters. Any entry greater than zero must have supporting evidence.
6. Non-Domestic Meter Under-Registration will also be assumed to be zero unless evidence is submitted to the contrary. Satisfactory evidence shall be meter accuracy test data for a representative sample of non-domestic meters including as many large flow meters as possible. Any entry greater than zero must have supporting evidence.
7. MWRA will accept a value of 1% of total use unless the community has data to support a different value. Public Use includes firefighting, municipal hydrant use such as sewer and main flushing, unmetered parts or recreation facilities and other similar municipal uses.
8. Leakage Potential is intended to be the remainder after all consumptive uses are subtracted. MWRA intends that Leakage Potential, as calculated in the above steps, will be indicative of the scope of the community's leakage problem.

NON-TEXT PAGE