EPA
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Agency

Distribution Systems: A Best Practices Guide

Introduction

Purpose	This Guide discusses the importance of maintaining your distribution system.
Target Audience	This Guide is intended for owners and operators of all public water systems serving fewer than 10,000 persons.

Distribution Systems

Distribution Systems usually consist of:

- Piping and fittings
- Pumps and pump stations
- Meters
- Storage tanks
- Backflow prevention devices
- Hydrants and valves

Importance of Maintaining Your Distribution System

A properly maintained distribution system is important for ensuring that you can: provide high quality water to your customers, continue operating in the event of an emergency, help minimize property damage as a result of responding to an emergency, and help prevent contamination events. A properly maintained distribution system can also extend equipment life-cycles and minimize problems related to minor or major equipment failures.

Distribution System Routine and Preventative Maintenance Tasks

The following table provides suggested frequencies of routine and preventative maintenance tasks for systems under normal operation. However, any time a system experiences water quality issues, the appropriate tasks should be performed as frequently as needed. Contact your state for more information.

Task	***Benefits***	***Suggested Frequency***
Valve exercising	◆ Improves reliability. ◆ Familiarizes crews with valve location. ◆ Identifies inoperable valves. ◆ Locates obstructed valve boxes. ◆ Ensures isolation of distribution system sections when necessary.	Annually.
Flushing pipelines	◆ Removes aged water from the pipeline. ◆ Reduces buildup of biofilms and sediments. ◆ Restores disinfectant residual.	Annually for all piping. More often in areas with water quality issues (e.g., dead ends).
Storage tank inspections	◆ Detects vandalism. ◆ Identifies defects. ◆ Ensures that access hatches are locked. ◆ Ensures that vents, overflows, and drains are screened.	Daily or weekly for vandalism. Annually for other items.

Distribution System Routine and Preventative Maintenance Tasks (continued)

Task	*Benefits*	*Suggested Frequency*
Storage tank maintenance	◆ Improves protection against sources of contamination. ◆ Extends the useful life of the equipment.	Every 3 years for cleaning. Painting and repairs as dictated by inspection.
Routine water quality monitoring (e.g., pH, temperature)	◆ Provides information on potential contamination of raw and finished water. ◆ Helps determine effectiveness of treatment. ◆ Helps assure the compatibility of the water with the materials.	Will vary depending on water quality and state regulations.
Inspecting and flushing hydrants and valves	◆ Ensures that hydrants and valves are operable and that no water losses occur. ◆ Ensures that hydrants and valves are not susceptible to tampering.	Once or twice per year.
Maintaining operating pressure range of distribution system	◆ Reduces the risk of backflow contamination. ◆ Helps your system provide better service to customers. ◆ Reduces damage to infrastructure due to excess pressure. ◆ Provides adequate fire flow.	Continuously.
Tracking unaccounted for water	◆ Can reduce pumping and treatment costs. ◆ Helps identify leaks, breaks, stolen water, and inaccurate meters.	Daily at the source. Monthly or during routine meter reading at customer connections.
Testing for presence of excess biofilms	◆ Indicates a presence of inadequate chlorine residual, possible high disinfection byproduct levels, and water stagnation.	Monthly in conjunction with Total Coliform sampling.
Monitoring corrosion	◆ Identifies the need to modify treatment or conduct flushing.	Annually.
Checking for normal wear (such as in mechanical parts found in pumps and control valves)	◆ Can extend the useful life of infrastructure components. ◆ Helps avoid unnecessary replacement or operational costs.	According to the manufacturer's recommendations.

For additional information:
Call the Safe Drinking Water Hotline at 1-800-426-4791, visit the EPA Web site at www.epa.gov/safewater/smallsys.html, or contact your State drinking water representative.

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