

# Distribution Systems: A Best Practices Guide

## Introduction

<i>Purpose</i>	This Guide discusses the importance of maintaining your distribution system.
<i>Target Audience</i>	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.

<i>Task</i>	<i>Benefits</i>	<i>Suggested Frequency</i>
Valve exercising	<ul style="list-style-type: none"> <li>◆ Improves reliability.</li> <li>◆ Familiarizes crews with valve location.</li> <li>◆ Identifies inoperable valves.</li> <li>◆ Locates obstructed valve boxes.</li> <li>◆ Ensures isolation of distribution system sections when necessary.</li> </ul>	Annually.
Flushing pipelines	<ul style="list-style-type: none"> <li>◆ Removes aged water from the pipeline.</li> <li>◆ Reduces buildup of biofilms and sediments.</li> <li>◆ Restores disinfectant residual.</li> </ul>	Annually for all piping. More often in areas with water quality issues (e.g., dead ends).
Storage tank inspections	<ul style="list-style-type: none"> <li>◆ Detects vandalism.</li> <li>◆ Identifies defects.</li> <li>◆ Ensures that access hatches are locked.</li> <li>◆ Ensures that vents, overflows, and drains are screened.</li> </ul>	Daily or weekly for vandalism. Annually for other items.

## Distribution System Routine and Preventative Maintenance Tasks (continued)

<i>Task</i>	<i>Benefits</i>	<i>Suggested Frequency</i>
Storage tank maintenance	<ul style="list-style-type: none"> <li>◆ Improves protection against sources of contamination.</li> <li>◆ Extends the useful life of the equipment.</li> </ul>	Every 3 years for cleaning. Painting and repairs as dictated by inspection.
Routine water quality monitoring (e.g., pH, temperature)	<ul style="list-style-type: none"> <li>◆ Provides information on potential contamination of raw and finished water.</li> <li>◆ Helps determine effectiveness of treatment.</li> <li>◆ Helps assure the compatibility of the water with the materials.</li> </ul>	Will vary depending on water quality and state regulations.
Inspecting and flushing hydrants and valves	<ul style="list-style-type: none"> <li>◆ Ensures that hydrants and valves are operable and that no water losses occur.</li> <li>◆ Ensures that hydrants and valves are not susceptible to tampering.</li> </ul>	Once or twice per year.
Maintaining operating pressure range of distribution system	<ul style="list-style-type: none"> <li>◆ Reduces the risk of backflow contamination.</li> <li>◆ Helps your system provide better service to customers.</li> <li>◆ Reduces damage to infrastructure due to excess pressure.</li> <li>◆ Provides adequate fire flow.</li> </ul>	Continuously.
Tracking unaccounted for water	<ul style="list-style-type: none"> <li>◆ Can reduce pumping and treatment costs.</li> <li>◆ Helps identify leaks, breaks, stolen water, and inaccurate meters.</li> </ul>	Daily at the source. Monthly or during routine meter reading at customer connections.
Testing for presence of excess biofilms	<ul style="list-style-type: none"> <li>◆ Indicates a presence of inadequate chlorine residual, possible high disinfection byproduct levels, and water stagnation.</li> </ul>	Monthly in conjunction with Total Coliform sampling.
Monitoring corrosion	<ul style="list-style-type: none"> <li>◆ Identifies the need to modify treatment or conduct flushing.</li> </ul>	Annually.
Checking for normal wear (such as in mechanical parts found in pumps and control valves)	<ul style="list-style-type: none"> <li>◆ Can extend the useful life of infrastructure components.</li> <li>◆ Helps avoid unnecessary replacement or operational costs.</li> </ul>	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](http://www.epa.gov/safewater/smallsys.html), or contact your State drinking water representative.

