

# Question of the Month

ADVICE FOR SMALL SYSTEMS

## Can a Small System Develop an Effective Asset Management Program? BY ARI COPELAND

One thing all water and wastewater utilities need, regardless of size or location, is an effective asset management program. Information in this column highlights asset management program benefits and will help small systems start or refine a program.

**A** sset management is a planning process that focuses on getting the most value out of each asset and ensuring funds for

asset replacement or rehabilitation are available when needed. The concept ensures all assets work properly, which helps a system perform at expected service levels.

- Review the plan annually and tweak it as needed.

A utility must first define its assets. This sounds simple, but many utilities struggle with this step. The common definition of an asset is any tool, piece of equipment, materials (like pipe), building, machinery, and instruments used to operate the system. For some utilities, assets include major equipment, such as pumps and motors, as well as doors, doorknobs, and screws that keep the door attached to the wall. For most utilities, assets are all equipment required to run a water or wastewater treatment plant and distribution and collection systems, such as pipes, valves, and meters. Life expectancies of common water system assets are listed in Table 1.

**Table 1. Estimated Life of Common Water System Assets**

Knowing asset longevity is vital to an effective asset management plan.

Asset	Expected Useful Life (in years)
Intake structures	35-45
Wells and springs	25-35
Galleries and tunnels	30-40
Chlorination equipment	10-15
Storage tanks	30-60
Pumps	10-15
Buildings	30-60
Electrical systems	7-10
Transmission mains	35-40
Distribution pipes	35-40
Valves	35-40
Blow-off valves	35-40
Backflow prevention	35-40
Meters	10-15
Service lines	30-50
Hydrants	40-60
Lab and monitoring equipment	5-7
Office furniture and supplies	10
Computers	5
Transportation equipment	10

Note: These numbers are ranges of expected useful lives drawn from a variety of sources. The ranges assume assets have been properly maintained.

Source: Based on USEPA's *Asset Management: A Handbook for Small Water Systems*

### CREATE A PROGRAM

To establish an assessment management program:

- Keep updated records and create an inventory.
- Prioritize assets and determine when each should be replaced.
- Develop an asset management plan.
- Implement the plan.

**Table 2. Asset Inventory**

A comprehensive inventory provides valuable information about a utility's assets and their condition.

Asset	Expected Useful Life	Condition	Service History	Age	Remaining Useful Life
Well	30	Fair		10	20
Well pump	10	Good	Rehab (2010)	5	5
Storage tank	40	Almost new		5	35
Chlorinator	10	Fair		9	1

Source: Based on USEPA's *Asset Management: A Handbook for Small Water Systems*

**Table 3. Asset Ranking**

Assets should be prioritized based on remaining useful life, function, importance to system operation, and redundancy.

Asset	Remaining Useful Life	Importance	Redundancy	Priority (1 = high)
Chlorinator	1	Mandatory	None	1
Well	20	Mandatory	None	1
Well pump	5	Mandatory	None	1
Storage tank	35	Another tank on site	2	2

Source: Based on USEPA's *Asset Management: A Handbook for Small Water Systems*

**Table 4. Asset Replacement Reserve Calculation**

By calculating asset replacement costs, a utility can estimate and prepare for capital expenditures.

Asset (highest to lowest priority)	Activity	Years Until Action Is Needed	Cost	Calculate Amount/ Years Until Action	Current Year Reserve Required
Chlorinator	Replace	2	\$3,000	$\$3,000 \div 2$	\$1,500
	Purchase a unit for redundancy	1	\$3,000	$\$3,000 \div 1$	\$3,000
Well pump	Replace	5	\$10,000	$\$10,000 \div 5$	\$2,000
Well	Rehab	10	\$10,000	$\$10,000 \div 10$	\$1,000
	Replace	20	\$20,000	$\$20,000 \div 20$	\$1,000
Storage tank	Rehab 1 tank	15	\$15,000	$\$15,000 \div 15$	\$1,000
	Replace 1 tank	35	\$50,000	$\$50,000 \div 35$	\$1,430
Total reserve required in current year to replace or rehab asset at the end of its useful life (not including operation and maintenance costs)					\$10,930

Source: Based on USEPA's *Asset Management: A Handbook for Small Water Systems*

**Take Inventory.** When you have defined your utility's assets, it's time to take inventory. Taking inventory may require a lot of time, but it shouldn't be complicated. This is also a good time to collect information about your assets, such as condition, age, service history, location, and other information that can help you keep track of the assets (Table 2).

**Prioritize Assets.** After listing all the assets, prioritize them based on categories such as redundancy (is there more than one?), the function they perform in the system (hydrants for public safety), how important that function is to operation, and an asset's remaining useful life. This exercise will help identify key assets and budgeting for their replacement or rehabilitation. Understanding what needs to be replaced and when will help you save money and to spend money only when absolutely needed.

For example, if you only have one well and one well pump, they would be critical, priority assets. If five of your 10 wells can supply your entire system, wells would probably rank lower on your list because you have redundancy for backup. Assets with less redundancy, shorter remaining useful lives, and those of critical importance to facility operation are the most important. Several

assets can be ranked of equal importance (Table 3).

**Develop a Plan.** When all the assets have been prioritized, you're ready to develop a plan. Planning includes determining when assets in your system should be replaced and how much money should be set aside each year to replace an asset (Table 4).

Based on Table 4, this utility will need to reserve nearly \$11,000 per year to pay for asset rehabilitation and replacement. If your utility can't afford rehab and replacement, you may need to consider rate adjustments, applying for financial assistance, or other means for acquiring funds to ensure critical equipment can be replaced when needed.

**Implement and Review the Plan.** When the plan is set, use it and update it when needed. Don't put it on a shelf and forget it. An asset management plan is a dynamic document that should be reviewed and adjusted at least annually. Reviewing and adjusting the plan will ensure timely asset repair or replacement. If this seems like a lot of work, rest assured that the benefits outweigh the time spent gathering, ranking, and budgeting for asset replacement.

**PLAN BENEFITS**

Asset management feeds into other

important aspects of utility operations, such as preventive maintenance, budgeting, maintaining regulatory compliance, and meeting customers' expected service levels.

The asset management planning process will increase your knowledge about the utility's system and operations. The information can help smaller systems make wiser decisions on how and when to spend money. In addition, by having an asset management plan in place, a utility may have greater access to funding and be able to cut back on loans and justify needed water rate adjustments. Following an asset management plan also helps reduce downtime caused by failing equipment.

**RESOURCES**

- Cromwell III, J.E. and Speranza, E., 2007. Asset Management too Complicated? Just Think About Your Car. *Journal AWWA*, 99:1:46–51.
- Davis, J., 2007. What Is Asset Management and Where Do You Start? *Journal AWWA*, 99:10:26–34.
- US Environmental Protection Agency, 2003. *Asset Management: A Handbook for Small Water Systems*, [www.epa.gov/ogwdw/smallsystems/pdfs/guide\\_smallsystems\\_asset\\_mgmnt.pdf](http://www.epa.gov/ogwdw/smallsystems/pdfs/guide_smallsystems_asset_mgmnt.pdf).