EPA
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Environmental Protection
Agency

Taking Stock of Your Water System

A Simple Asset Inventory for Very Small Drinking Water Systems

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Contents

Why Take Stock of Your Water System? An Overview of this Document

This document is a guide to help very small water systems, such as manufactured home communities and homeowners' associations, assess the condition of their water system by preparing a simple asset inventory. Additional guides can be found on EPA's website at Simple Tools for Effective Performance (STEP) Guide Series.

Physical components of a water system are referred to as **assets**. Some are visible assets such as tanks, wells, pumps, hydrants, and treatment facilities. Other assets are invisible, or buried, such as pipe and valves. Knowing what assets your system has and what condition they are in will help you maintain the safety, security, and reliability of the water that your system provides. Creating a simple asset inventory can help you in the following ways:

- **Ensure Compliance is Met.** Keeping a precise inventory of your water system's assets can assist you in complying with the federal Safe Drinking Water Act and with your state's drinking water regulations by; helping you prepare accurate budgets, document your assets' condition, and preparing for future needs (whether financial, growth-related, or regulatory).
- **Build Resiliency for the Unexpected.** Understanding your water system's strengths and weaknesses will help you be better prepared and positioned to respond to sudden or unexpected problems with the system's operation or the quality of water it provides.
- **Identify and Solve Capacity Issues.** Gaining a better overall picture of your system will help you to spot gaps in your water system's security or performance so that you can take steps to address them. Documenting your actual needs can lead to a stronger justification when applying for financial assistance to correct capacity issues.
- **Encourage Knowledge Sharing.** Knowing the details of your system will enable you to explain its current condition and how it operates day-to-day. You will be better able to answer questions from customers, local health officials, and the media.

Maintaining and Replacing Your Assets – The Basis of Asset Management

An important part of conducting an inventory is determining when to repair, rehabilitate, or replace an asset. At some point, continuing to repair the asset will no longer be cost-effective and you will need to rehabilitate or replace it. The worksheets in this brochure will help you get a better picture of your current assets, including the ones nearing the end of their useful service life. To further help you manage your assets, EPA has developed Asset Management: A Handbook for Small Water Systems. You can download it from EPA's STEP Guide Series Website.

Inside this document you will find information and worksheets (both completed examples and blank) to help you prepare an asset inventory and begin to develop a written asset management plan. You should keep a copy of this document and refer to it, along with other relevant records, when making decisions about your water system. Contact your State or Tribal Drinking Water Primacy Agency for help completing the worksheets or for more information on conducting an asset inventory. State and territorial contacts can be found on EPA's website here. EPA's Regional Tribal Drinking Water Coordinators can be found on EPA's website here.

How to Use this Document

The worksheets on the following pages will enable you to get an idea of the overall state of your water system. There are worksheets for source and intake structures, treatment system, storage tanks, distribution system, valves, electrical systems, buildings, service lines, and hydrants.

Carry out the following steps to complete the worksheets:

1. Fill in as much information as you can about the asset's **characteristics,** including quantity, size, location, age, and the manufacturer of the components. These characteristics will vary by asset type.

2. Using the estimates from the table, "Typical Life Expectancies of Water Supply Equipment," on page 5, and assessing the current condition of each asset, its service history, and your experience, estimate an **adjusted useful life** for each of your assets. Subtract the age of your asset from its adjusted useful life to calculate a remaining useful life. Adjusted useful lives are the typical life expectancies of water system assets adjusted based on the characteristics of your system (e.g., poor source water quality, extreme weather conditions, operation, and maintenance routines). Adjusted useful life can be the same as or lower than typical life expectancies.

3. Identify the **contact information** of the person or company you would call to service each component and include a telephone number. If you do not know who to call, you can ask your State or Tribal Drinking Water Primacy Agency, parts manufacturers and distributors, or other water systems.

4. Once you've completed the asset inventory worksheets, use them to develop a **basic asset management plan**. Completing the asset management plan worksheets (on pages 29 and 33) will help you prioritize the components that will need to be replaced or rehabilitated, plan for the timing of replacement or rehabilitation, and help you determine how much money you'll need to set aside each year if you plan to pay for replacements and rehabilitations through cash reserves.

How *Taking Stock of Your Water System* Can Improve Your System's Capacity

"Water system capacity" describes a system's ability to plan for, achieve, and maintain compliance with national and State drinking water standards. System capacity has three components: technical, managerial, and financial. Completing this asset inventory will help you improve all three components by:

- Increasing your knowledge of the physical components of your system, which will allow you to make better technical and managerial decisions
- Identifying components that may need to be replaced or rehabilitated in the near future, which will enable you to develop a financial plan and research cost-effective options.

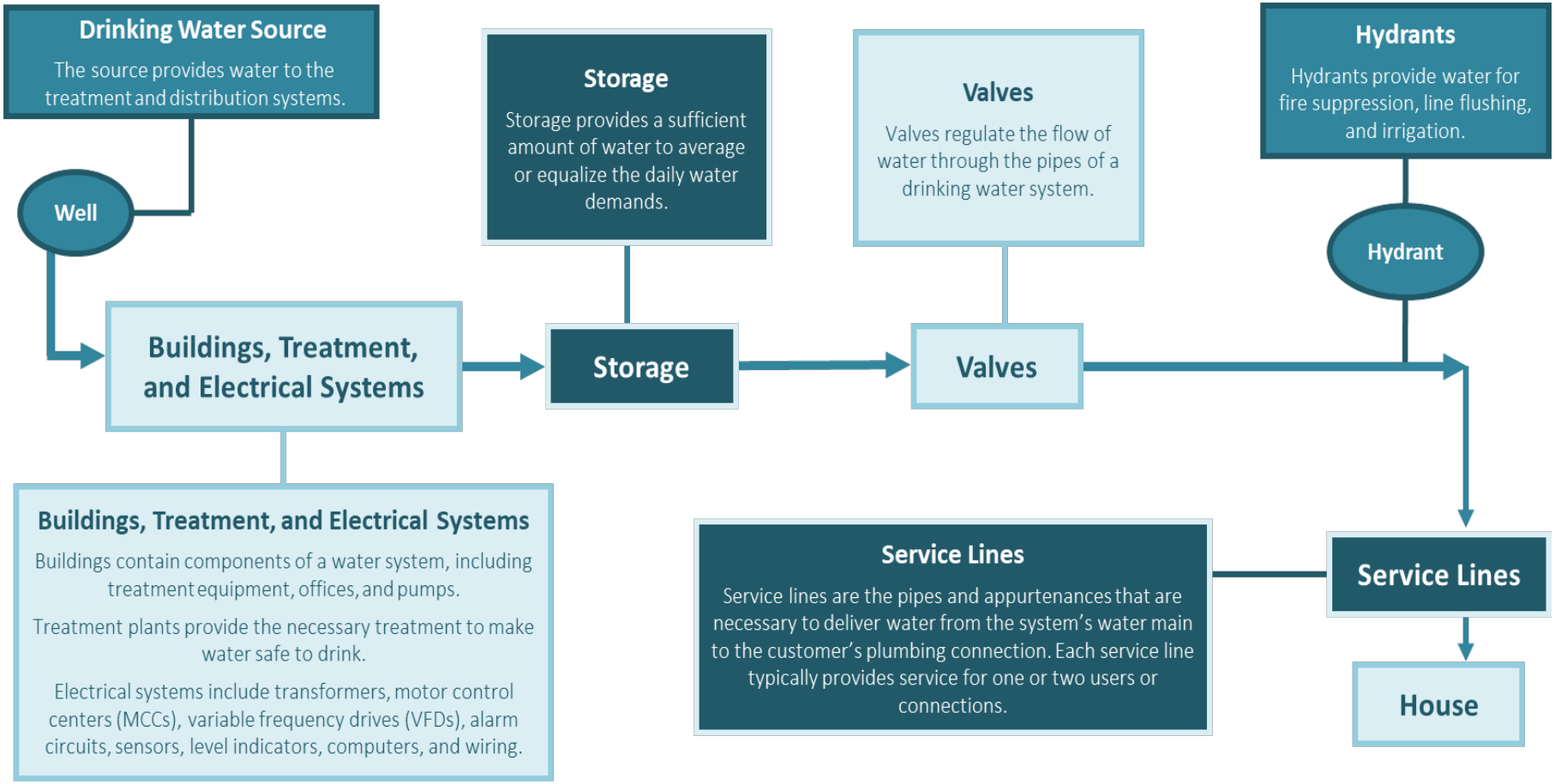
More information about capacity and asset management can be found on EPA's website here.

Each worksheet is preceded by a completed example that illustrates how to fill out the worksheet. Refer to the example if you have any questions about the sort of information you should include.

Inventorying your assets can be an intensive job. Get the best information you can but use estimates if you need to. If you keep up with an asset management program, new information will become available as assets are replaced or rehabilitated, and your inventory of assets will improve.

Elements of a Simple Asset Inventory

A note to the users of this document: It is quite likely that all of the details of the asset management plan presented in this document will not apply to every small drinking water system. Help in using this document, conducting asset inventories, and preparing future plans is available from your State or Tribal Drinking Water Primacy Agency.



Courtesy of Roger Bergeron, Vermont Water Supply Division

How Long Will It Last? Using the Typical Life Expectancies Table

One of the most important aspects of managing your assets is determining how much longer you think they will last. A number of factors can affect how long your assets will last, including routine service and proper maintenance, excessive use, and environmental conditions such as poor source water quality, soil quality, or climate.

The worksheets on the following pages ask you to:

1. Determine the **adjusted useful life** of each asset. Estimate how long the asset should last (the expected useful life) and adjust these numbers based on the specific conditions and experiences of your system. The useful life of an asset will be affected by water quality, operation and maintenance routines, the number of years the asset lasted in the past, the asset's service history, and its current condition.

For help in determining the adjusted useful life, you can use the table on this page and talk to parts distributors, your State or Tribal Drinking Water Primacy Agency, and other public water systems.

How Long Will It Last? Typical Life Expectancies of Water Supply Equipment

Component	Worksheet	Useful Life
Wells and Springs	Drinking Water Source	25 years
Intake Structures		35 years
Pumping Equipment		10 years
Disinfection Equipment	Treatment System	5 years
Hydropneumatic Tanks	Tanks	10 years
Concrete and Metal Storage Tanks		30 years
Transmission Structures (Pipes)	Distribution System	35 years
Valves	Valves	35 years
Mechanical Valves		15 years
Computer Equipment/Software	Electrical Systems	5 years
Transformers/Switchgears/ Wiring		20 years
Motor Controls/Variable Frequency Drives		10 years
Sensors		7 years
Buildings	Buildings	30 years
Service Lines	Service Lines	30 years
Hydrants	Hydrants	40 years
Note: These expected useful lives are drawn from a variety of sources. The estimates assume that assets have been properly maintained. The adjusted useful life of an asset will be equal to or less than typical useful life		

2. Subtract the **estimated age** of each asset from its **adjusted useful life** to determine its **remaining useful life** (or how many months or years remain before you will have to replace or significantly rehabilitate the asset).

Remember!

A preventive maintenance program will enable you to maximize the useful lives of your assets, help you prepare for the unexpected problems, and cut down or delay replacement costs. Contact your State or Tribal Drinking Water Primacy Agency for more information on developing and implementing a preventive maintenance program.

Asset Inventory Tables

Drinking Water Source: Completed Example

Well Construction

Obtain a well log or look at receipts from the time of drilling for the following information. Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Drilling Contractor	Adjusted Useful Life - Estimated Age = Remaining Useful Life
WLL Excavations	30 years - 10 years old = 20 years

Whom would you call to maintain and repair your well? This may be the well driller.

Company/Agency	Contact	Telephone Number
WLL Excavations	William Smith	(800) 685-6850

Remember that the typical useful life of wells and springs is 25 years, and that the typical useful life of pumping equipment is 10 years. Use this as a basis for determining the adjusted useful life of your well or spring and pump and pump controls. In this example, the typical useful lives equal the adjusted useful lives because the well, pumps, and controls have been properly maintained.

Well Pump and Controls

Look at receipts or records from the time of installation for the following information:

Pump Manufacturer	Well Pump Model Number (typically located on pump casing. If buried, look for information near the electrical system.)
PMP Pumps	ZZ-0001234

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	–	Estimated Age	=	Remaining Useful Life
10 years	–	5 years old	=	5 years

Whom would you call to maintain and repair your pumps and controls? This may be the pump manufacturer or installer.

Company/Agency	Contact	Telephone Number
Pro Well Pumps	Samuel Higgins	(800) 741-8523

Date Worksheet Completed or Revised
8/01/21

A Ground Water System Well

Drinking Water Source: Blank Table

Well Construction		
Obtain a well log or look at receipts from the time of drilling for the following information. Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.		
Drilling Contractor	Adjusted Useful Life - Estimated Age = Remaining Useful Life	
Whom would you call to maintain and repair your well? This may be the well driller.		
Company/Agency	Contact	Telephone Number

Well Pump and Controls		
Look at receipts or records from the time of installation for the following information:		
Pump Manufacturer	Well Pump Model Number (typically located on pump casing. If buried, look for information near the electrical system.)	
Adjusted Useful Life – Estimated Age = Remaining Useful Life		
Whom would you call to maintain and repair your pumps and controls? This may be the pump manufacturer or installer.		
Company/Agency	Contact	Telephone Number
Date Worksheet Completed or Revised		

Intake Structures: Completed Example

Intake Structures: Concrete Catch Basin

Look at receipts or records from the time of installation for the following information:

Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
35 years	- 15 years old	= 20 years

Remember that the typical useful life of concrete catch basins is 35 years. Use this as a basis for determining your concrete catch basin's adjusted useful life.

Intake Structures: Underwater Pipe

Look at receipts or records from the time of installation for the following information:

Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
15 years	- 5 years old	= 10 years

Remember that the typical useful life of underwater pipes is 15 years. Use this as a basis for determining your underwater pipe's adjusted useful life.

Whom would you call to maintain and repair your intake structures?

Company/Agency	Contact	Telephone Number
Kent's Contractors	Simon Kent	(800) 963-8521

Whom would you call if you had a potential wellhead protection problem? You can find the appropriate contact by contacting your State or Tribal Drinking Water Primacy Agency.

Regulatory/Agency	Contact	Telephone Number
Natural Resources Dept.	Rodrick Morrow	(555) 854-9635

Date Worksheet Completed or Revised

8/01/21

A Drinking Water Intake for a Surface Water System

Intake Structures: Blank Table

Intake Structures: Concrete Catch Basin		
Look at receipts or records from the time of installation for the following information:		
Adjusted Useful Life - Estimated Age = Remaining Useful Life		
Intake Structures: Underwater Pipe		
Look at receipts or records from the time of installation for the following information:		
Adjusted Useful Life - Estimated Age = Remaining Useful Life		
Whom would you call to maintain and repair your intake structures?		
Company/Agency	Contact	Telephone Number
Whom would you call if you had a potential wellhead protection problem? You can find the appropriate contact by contacting your State or Tribal Drinking Water Primacy Agency.		
Regulatory/Agency	Contact	Telephone Number
Date Worksheet Completed or Revised		

Treatment System: Completed Example

Many systems are required to disinfect their water as treatment against common disease-causing organisms (bacteria, viruses, and protozoa). The characteristics of your water source and the regulations of your state will dictate what type of treatment system, if any, your drinking water system needs.

Look at receipts or records from the time of installation for the following information:

Treatment System Name/Type	Manufacturer
Chlorinator	Chlorinator, Inc

Model Number (may be located on the apparatus)
CL-00987

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
5 years	- 3 years old	= 2 years

Whom would you call to maintain and repair your treatment system? This may be the manufacturer or installer.

Company/Agency	Contact	Telephone Number
Claire's Chlorine Specialties	Ty Frank	(555) 333-9876

Date Worksheet Completed or Revised
8/01/21

Remember that the typical useful life of disinfection systems is 10 years. In this example, adjusted useful life for the chlorinator is 5 years lower than the typical useful life because the system has not properly maintained it.

A Chlorination System

Treatment System: Blank Table

Many systems are required to disinfect their water as treatment against common disease-causing organisms (bacteria, viruses, and protozoa). The characteristics of your water source and the regulations of your state will dictate what type of treatment system, if any, your drinking water system needs.
Look at receipts or records from the time of installation for the following information:

Treatment System Name/Type	Manufacturer

Model Number (may be located on the apparatus)

Adjusted Useful Life - Estimated Age = Remaining Useful Life
Whom would you call to maintain and repair your treatment system? This may be the manufacturer or installer.

Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Tanks: Completed Example

Your system will most likely use one of the following types of tanks:

- A **hydropneumatic tank** is automatically started and stopped by the air pressure in a compressed- air or captive-air chamber. The air in the tank maintains pressure throughout the distribution system.
- A **concrete reservoir** is a structure that is either cast in place or pre-cast to be used for water storage.
- A **metal reservoir** is a water storage tank constructed by welding or bolting galvanized or painted plates of metal.

Remember that the typical useful life of tanks can vary. Concrete and metal tanks generally last 30 years. Hydropneumatic tanks generally last 10 years. In this example, the adjusted useful life is the same as the typical useful life because the tank has been properly maintained.

Look at receipts or records from the time of installation for the following information:

Type of Tank (hydropneumatic, concrete reservoir, metal reservoir)	Size	Manufacturer
Hydropneumatic	100 gallons	Storage Tank Maker, Inc.

Major Maintenance
Pressure tested, 2002

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	-	Estimated Age	=	Remaining Useful Life
10 years	-	7 years old	=	3 years

Whom would you call to maintain and repair your pressure tank?

Company/Agency	Contact	Telephone Number
Riley's Tanks Inc	Bryan Riley	(555) 999-7777

Date Worksheet Completed or Revised
8/01/21

A Hydropneumatic Storage Tank

A Metal Storage Tank

Tanks: Blank Table

Your system will most likely use one of the following types of tanks:

- A **hydropneumatic tank** is automatically started and stopped by the air pressure in a compressed- air or captive-air chamber. The air in the tank maintains pressure throughout the distribution system.
- A **concrete reservoir** is a structure that is either cast in place or pre-cast to be used for water storage.
- A **metal reservoir** is a water storage tank constructed by welding or bolting galvanized or painted plates of metal.

Look at receipts or records from the time of installation for the following information:

Type of Tank (hydropneumatic, concrete reservoir, metal reservoir)	Size	Manufacturer

Major Maintenance

Adjusted Useful Life - Estimated Age = Remaining Useful Life

Whom would you call to maintain and repair your pressure tank?

Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Distribution System: Completed Example

You may want to note the location of shut-off valves to isolate particular sections of the system in case of an emergency.

You may also want to note the location of "as-built" drawings showing the layout of the distribution system.

If your system has many types of pipe (e.g., different size, different material), reproduce this worksheet and list the information for each type.

Remember that the typical useful life of pipes is 35 years. In this example, the system has estimated that the adjusted useful life will be the same as the typical useful life because in the past its distribution system pipes have lasted for the typical number of years.

Look at receipts or records from the time of installation for the following information:

Type of Pipe	Size	Length (feet)
PVC	6-inch	2,200 feet

Where Used or Located
Main Street Line

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life - Estimated Age = Remaining Useful Life
35 years - 21 years old = 14 years

Whom would you call to maintain and repair your pipes?

Company/Agency	Contact	Telephone Number
Kent's Contractors	Simon Kent	(800) 963-8521

Date Worksheet Completed or Revised
8/01/21

Broken old rusty pipes

Distribution System: Blank Table

You may want to note the location of shut-off valves to isolate particular sections of the system in case of an emergency. You may also want to note the location of "as-built" drawings showing the layout of the distribution system. If your system has many types of pipe (e.g., different size, different material), reproduce this worksheet and list the information for each type.

Look at receipts or records from the time of installation for the following information:

Type of Pipe	Size	Length (feet)

Where Used or Located

Adjusted Useful Life - Estimated Age = Remaining Useful Life

Whom would you call to maintain and repair your pipes?

Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Valves: Completed Example

Valves can be used to isolate portions of the distribution system for cleaning, maintenance, and repairs. In addition, valves regulate flow and pressure.

Air-relief valves (or manual bleeds) are used to release trapped air and prevent surge problems when lines are filled. They also can eliminate water hammer (a condition in which pressure in the pipes increases and decreases very quickly, possibly damaging the tank, valves, piping network, and customers' plumbing). These valves respond to pressure variations.

Blowoff valves are used to eliminate accumulated sediment or stagnant water from low spots or dead ends in the line and can be used to dewater lines or reservoirs for repairs or inspection.

Backflow prevention valves and devices eliminate reverse flow conditions to prevent contamination in the system's distribution pipes.
If your system uses more than one type of valve, reproduce this worksheet, and list the information for each type.

Look at receipts or records from the time of installation for the following information:

Valve type (air-relief, blowoff, etc.)	Number of Valves	Size	Manufacturer
Air Relief	5 valves	4 inches	LV Air Valves

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	-	Estimated Age	=	Remaining Useful Life
20 years	-	3 years old	=	17 years

Whom would you call to maintain and repair your valves?

Company/Agency	Contact	Telephone Number
LV Air Valves	Laura Vang	(555) 555-6789

Date Worksheet Completed or Revised
8/01/21

Remember that the typical useful life of valves is 35 years. In this example, the adjusted useful life is lower than the typical useful life because of the system's source water characteristics and lack of routine maintenance.

An Air-Pressure Relief Valve

Valves: Blank Table

Valves can be used to isolate portions of the distribution system for cleaning, maintenance, and repairs. In addition, valves regulate flow and pressure.

Air-relief valves (or manual bleeds) are used to release trapped air and prevent surge problems when lines are filled. They also can eliminate water hammer (a condition in which pressure in the pipes increases and decreases very quickly, possibly damaging the tank, valves, piping network, and customers' plumbing). These valves respond to pressure variations.

Blowoff valves are used to eliminate accumulated sediment or stagnant water from low spots or dead ends in the line and can be used to dewater lines or reservoirs for repairs or inspection.

Backflow prevention valves and devices eliminate reverse flow conditions to prevent contamination in the system's distribution pipes.
If your system uses more than one type of valve, reproduce this worksheet, and list the information for each type.

Look at receipts or records from the time of installation for the following information:

Valve type (air-relief, blowoff, etc.)	Number of Valves	Size	Manufacturer

Adjusted Useful Life - Estimated Age = Remaining Useful Life

Whom would you call to maintain and repair your valves?

Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Electrical Systems: Completed Example

Electrical systems help control the automatic components of a water system. Your electrical systems may include transformers, motor control centers (MCCs), variable frequency drives (VFDs), power supplies, alarm circuits, sensors (level indicators, pH, flow meters), computers, wiring, and other instrumentation. If your system uses multiple types of electrical systems, reproduce this worksheet, and list the information for each type.

Look at receipts or records from the time of installation for the following information:

Type of Equipment (MCC, VFD, etc.).	Number of Units	Size of Units (HP, voltage, KvA)
Computer	2	Core i5 processor

Manufacturer	Model Number
Photon Computers	CC-5657; CC-5658

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	-	Estimated Age	=	Remaining Useful Life
5 years	-	2 years old	=	3 years

Whom would you call to maintain and repair your electrical components?

Company/Agency	Contact	Telephone Number
DM Computer Processors	Derek Mills	(555) 345-6789

Date Worksheet Completed or Revised
8/01/21

Remember that the typical useful life varies by type of electrical equipment. The typical useful life for computers is 5 years, sensors typically last 7 years, MCCs, and VFDs typically last 10 years, and transformers, switchgears, and wiring typically last 20 years. In this example, the adjusted useful life is the same as the typical useful life because the computer has been properly maintained.

An Electric System

Electrical System: Blank Table

Electrical systems help control the automatic components of a water system. Your electrical systems may include transformers, motor control centers (MCCs), variable frequency drives (VFDs), power supplies, alarm circuits, sensors (level indicators, pH, flow meters), computers, wiring, and other instrumentation. If your system uses multiple types of electrical systems, reproduce this worksheet, and list the information for each type.
Look at receipts or records from the time of installation for the following information:

Type of Equipment (MCC, VFD, etc.).	Number of Units	Size of Units (HP, voltage, KvA)

Manufacturer	Model Number

Adjusted Useful Life - Estimated Age = Remaining Useful Life

Whom would you call to maintain and repair your electrical components?		
Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Buildings: Completed Example

List all buildings owned by the water system, note a single building can have multiple estimated ages.

Look at receipts or records from the time of installation for the following information:

Structure Use	Structure Type (building, shed, manufactured home)
Administrative Facilities	Manufactured Home

Major Maintenance Needed

Roof repairs due to leaking problems

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life - Estimated Age = Remaining Useful Life

30 years - 16 years old = Leaking roof should be repaired now. Rest of building 14 years.
(Roof: 15 - 20 years)

Whom would you call to maintain and repair your building?

Company/Agency	Contact	Telephone Number
Vargas Roofing & Maintenance Co.	Oliver Vargas	(555) 444-6666

Date Worksheet Completed or Revised

8/01/21

Remember that the typical useful life of buildings is 30 years. In this example, the adjusted useful life for the roof is the same as the age (16 years) since it is leaking and should be repaired now. The adjusted useful life for the rest of the building is the same as the typical useful life.

Pumphouses

Buildings: Blank Table

List all buildings owned by the water system, note a single building can have multiple estimated ages. If you need more space to list all your buildings, click on the button to the right of the row to add additional rows.

Look at receipts or records from the time of installation for the following information:

Structure Use	Structure Type (building, shed, manufactured home)

Major Maintenance Needed

Adjusted Useful Life - Estimated Age = Remaining Useful Life

Whom would you call to maintain and repair your building?		
Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Service Lines: Completed Example

The service line is composed of the parts that are necessary to deliver water from the main to the customer's or user's plumbing connection. Each service line typically provides service for one or two users or connections.

Look at receipts or records from the time of installation for the following information:

Ownership of Lines	Size of Lines (inches)
Water system owns all lines	1-inch
Number of Lines	**Approximate Length of Lines**
42	75 ft. each
Materials of Lines	
PVC	

Remember that the typical useful life for service lines is 30 years. In this example, the system has estimated that the adjusted useful life will be the same as the typical useful life because in the past its distribution system assets have lasted the typical number of years.

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	- Estimated Age	= Remaining Useful Life
30 years	- 6 years old	= 24 years

Whom would you call to maintain and repair line maintenance

Company/Agency	Contact	Telephone Number
Jerry's Maintenance Company	Jerry Meyers	(555) 123-4567

Date Worksheet Completed or Revised
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Service Lines

Service Lines: Blank Table

The service line is composed of the parts that are necessary to deliver water from the main to the customer's or user's plumbing connection. Each service line typically provides service for one or two users or connections. If you have more than one type of service line, click on the button to the right of the row to add additional rows.
Look at receipts or records from the time of installation for the following information:

Ownership of Lines	Size of Lines (inches)
Number of Lines	**Approximate Length of Lines**

Materials of Lines
Adjusted Useful Life - Estimated Age = Remaining Useful Life
Whom would you call to maintain and repair line maintenance

Company/Agency	Contact	Telephone Number
Date Worksheet Completed or Revised		

Hydrants: Completed Example

If your system uses different types of hydrants (e.g., dry-barrel, wet-barrel), reproduce this worksheet and list the information for all types of hydrants.

If your system is not responsible for the hydrants, note the contact for flushing and maintenance.

Look at receipts or records from the time of installation for the following information:

Type of Hydrant	Diameter of Pipe (inches)
Dry-Barrel	6-inch
Type	**Size of Nozzle**
2-nozzle	2 ½ inch

Number of Flush Valve Vaults	Number of Hydrants	Manufacturer
0	2	M&H

Remember that maintenance, water quality, use, and soil conditions can affect useful life. Subtract estimated age from adjusted useful life to determine remaining useful life.

Adjusted Useful Life	-	Estimated Age	=	Remaining Useful Life
40 years	-	23 years old	=	17 years

Whom would you call for hydrant maintenance?

Company/Agency	Contact	Telephone Number
Jerry's Maintenance Company	Jerry Meyers	(555) 123-4567

Date Worksheet Completed or Revised
8/01/21

Remember that the typical useful life for hydrants is 40 years. In this example, the adjusted useful life is the same as the typical useful life because both hydrants have been properly maintained.

Hydrants Provide Water for Fire Suppression, Line Flushing, and Irrigation

Hydrants: Blank Table

If your system uses different types of hydrants (e.g., dry-barrel, wet-barrel), reproduce this worksheet and list the information for all types of hydrants. If your system is not responsible for the hydrants, note the contact for flushing and maintenance.
Look at receipts or records from the time of installation for the following information:

Type of Hydrant	Diameter of Pipe (inches)
Type	**Size of Nozzle**

Number of Flush Valve Vaults	Number of Hydrants	Manufacturer

Adjusted Useful Life - Estimated Age = Remaining Useful Life
Whom would you call for hydrant maintenance?

Company/Agency	Contact	Telephone Number

Date Worksheet Completed or Revised

Next Steps: Asset Management Plan

Once you have completed the worksheets in this booklet, you can use them to develop an asset management plan. Asset management is a planning process that ensures that you get the most value from each of your assets and have the financial resources to rehabilitate and replace them when necessary. The worksheets on the following pages will guide you through the process of creating an asset management plan.

A completed asset management plan will help you:

- **Prioritize** the rehabilitation and replacement of your assets.
- **Develop** an annual estimate of needed reserves to pay for replacement or rehabilitation of your assets and an annual budget.

You should review, revise, and update the worksheets in this booklet at least once a year, noting any changes such as new acquired assets. As you are implementing and maintaining an asset management plan, starting small and growing from what you learn along the way may be the best approach, especially for smaller systems. Updated information in the worksheets will give you a better picture of your system's position and better prepare you to meet your water system's future needs.

Just as an asset inventory is one part of an asset management plan, asset management is part of a larger management concept called strategic planning. **Strategic planning** supports you to prepare for and address anticipated and unexpected problems. This utilizes asset management to evaluate your system's current physical state, and it also evaluates your system's financial and managerial situation. It requires you to make fundamental decisions about your water system's purpose, structure, and functions. Using this guide along with EPA's Strategic Planning: A Handbook for Small Water Systems will help you develop, implement, and receive optimal benefit from an asset management plan that fits in with your system's overall strategy.

A Water Tower that Has Outlived Its Useful Life!

Prioritization Table

Use the inventory information you collected on the worksheets to fill out the prioritization table. Consider how important the asset is to your ability to provide safe drinking water to your customers, how soon you will need to replace an asset to adequately serve your customers (its remaining useful life), and how important the asset is to the operation of your system (can other assets do the same job?).

- In the **Asset** column, list a short name for the asset (e.g., chlorinator). List different components of the asset on separate lines.
- In the **Remaining Useful Life** column, enter the value you determined for that asset on its worksheet (earlier in the booklet). Components of your asset that have different remaining useful lives should be listed on separate lines. For example, the building roof and the building structure in the example on page 20 have different useful lives and, therefore, should be listed separately.
- In the **Importance** column, describe the importance of each asset to the operation of your system and the protection of public health. Assets that are required to keep your system running are usually more important than assets that just make its operation more efficient. Assets that may affect public health are more important than those that improve the aesthetics of your water. Assets without a backup unit available (i.e., there is no redundant unit) should have a higher priority than units that have a backup (i.e., a redundant unit).
- In the **Priority** column, rank your assets according to how important it is to reserve money for them. Consider impact on public health, remaining useful life, and importance to your system's operation when ranking your assets.

Things to Keep in Mind

- Assets that are more important to your ability to deliver safe water should have a higher priority because these assets affect public health.
- Assets with short remaining useful lives should have a higher priority because you will have to replace these assets soon.
- Assets for which there is less redundancy should have a higher priority because your system will have trouble continuing to operate without them.

Prioritizing Your Assets: Completed Example

Asset	Remaining Useful Life	Importance	Priority	Notes
Administrative building (roof)	1 year -- leaking roof should be repaired	Medium	2	
Chlorinator	2 years	High -- system cannot operate without it	1	
Hydropneumatic Tank	3 years	High -- maintains pressure in the system	3	
Computer	3 years	Medium	4	

Prioritizing Your Assets: Blank Table

Asset	Remaining Useful Life	Importance	Priority	Notes

Budgeting for Rehabilitations and Replacements

Once you have inventoried and prioritized your assets, you should determine how much money you will need to rehabilitate or replace them. Budgeting for these projects now can help avoid large, unplanned expenditures in the future and will ensure that you allocate your resources efficiently.

The worksheet on pages 32 and 33 will help you figure out how much money you need to reserve each year to fund your highest priority activities.

It is important that you update this worksheet every year, and as new information becomes available, because your system's priorities and finances may change. Costs of new assets or rehabilitations may also change. Updating your worksheet annually and setting aside the required reserve amount will help ensure that you have enough money to cover rehabilitations and replacements when you need them.

Remember that although the total reserves needed each year may seem like a lot of money, it is easier to put aside $200 a year to replace or repair a chlorinator than to come up with $2,000 once it fails.

The budgeting worksheet asks for the estimated cost of rehabilitation and replacement activities associated with your highest priority assets. Remember to gather information on all of the costs associated with the rehabilitation or replacement of an asset, such as equipment purchase, installation, pilot tests, labor charges, cleanup, and disposal of the replaced asset. To determine what a rehabilitation or replacement might cost, you can:

- Consult with your State or Tribal Drinking Water Primacy Agency;
- Ask local contractors and businesses for estimated costs;
- Contact equipment manufacturers; and
- Talk to other systems about the cost of their rehabilitations or replacements.

The budgeting worksheet does not include standard operation and maintenance costs such as chemicals for disinfection. It accounts only for funds you will need to replace or rehabilitate your assets. You should keep standard operation and maintenance costs in mind when thinking about financing your asset management plan.

Budgeting Table

The table on the next page will help you determine how much money you will need to set aside each year to ensure you can continue to deliver safe and secure drinking water to your customers and pay for the necessary replacement of your assets. A completed example follows the blank worksheet.

- In the **Asset** column, list the short name for your asset (e.g., chlorinator). You should list different components of the asset on separate lines.
- In the **Activity** column, list the rehabilitation and replacement activities that you expect to perform. Provide enough detail so that you can determine the cost of each activity.
- In the **Cost** column, fill in the expected cost of each activity. Make sure to include the complete cost including preparation, cleanup, and disposal of any waste.
- In the **Years Until Action Needed** column, fill in the remaining useful life of the asset from the inventory worksheets you completed earlier.
- Divide the cost by the years until action needed. Enter the result in the **Reserved Required Each Year** column. This is the amount of money you will have to set aside each year to ensure that you have enough money to perform the required activity in the allotted time.
- Add up the amounts in the Reserve Required Each Year column and enter the total in the box marked **Total Per Year**. This is the amount of money you should be setting aside each year to be able to pay for all of your planned replacements or rehabilitations.

Budgeting for Rehabilitation and Replacement of Assets: Completed Example

Asset	Activity	Cost	Years Until Action Needed	Reserve Required Each Year
Chlorinator	Replace unit	$2,000	3	$667
Administrative Building (roof)	Repair roof	$1,500	1	$1,500
Hydropneumatic Tank	Replace unit	$300	13	$23
Computer	Replace unit	$1,000	4	$250
Total Per Year:				**$2,440**

Budgeting for Rehabilitation and Replacement of Assets

Asset	Activity	Cost	Years Until Action Needed	Reserve Required Each Year
Total Per Year:				

How to Carry out the Plan

It may be overwhelming to see how much money you should be saving each year to fund the replacement and rehabilitation of your assets. You can finance capital improvements by saving the total per year cost of replacements (calculated in the budgeting table) in a reserve account. Alternatively, you can use the money you already have more efficiently and put the savings towards replacing and rehabilitating your assets. Here are some strategies that could help you use your current resources more efficiently or raise additional funds:

- **Form partnerships.** Working with other water systems may allow you to reduce operating costs, simplify management, and continue to provide your community with safe drinking water. Some water partnerships can be as simple as having an informal cooperation to share equipment, or as complex as transferring ownership to become a larger, centralized system.
- **Consider charging rates or increasing your rates to raise revenue.** If your system does not already do so, you can charge your customers a separate fee for water. Alternatively, consider assessing a flat fee for infrastructure improvements or for funding a reserve account. Check out EPA's Setting Small Drinking Water Rates for a Sustainable Future for more information.
- **Apply for financial assistance.** Banks and government agencies can help fund infrastructure projects such as treatment system upgrades and distribution line repairs. For large projects, you may want to research funding options such as state and federal drinking water grant and loan programs. Refer to for sources of financial assistance.

Once you have completed the worksheets and tables in this brochure and identified your system's needs, you can use the results to help you evaluate your infrastructure and shape decisions about your water system. Do not stick the worksheets and tables in a drawer and forget about them! You should try to review the worksheets at least once a year and make changes as your system's situation changes. Developing a good picture of when you will need to replace your assets and how much money you will need to fund those replacements will allow you to continue to deliver safe and secure drinking water to your customers.

Remember!

The worksheets in this guide could contain sensitive information about your water system. Make sure you store the worksheets, as well as all other information about your system's assets, in a secure location.

Building Community Support

Implementing an asset management program will allow you to start having a sustainable water service that will maximize the useful lives of assets, be financially self-supporting, and protect public health and the environment. Successfully implementing an asset management program means overcoming potential barriers by including the community in the process. Barriers to implementing an asset management program may include:

- Expecting to see immediate results.
- Changing from a focus on operations to a focus on assets.
- Paying for short-term costs to achieve long-term savings.
- Reconciling a short-term focus (e.g., rate increases) with long-term view of system sustainability.

Local officials and decision makers are key players in successful asset management programs because they are uniquely positioned to address these challenges and make critical decisions about your water system. This can be those in your community who are a part of the Board of Directors of the Association, elected officials of the community, or owners of manufactured housing associations. For this reason, they need to understand the financial requirements related to the rehabilitation and replacement of the system's equipment and assets. The information compiled in this brochure should be presented to key decision makers and incorporated into the annual budget. This information should be reviewed annually and modified as necessary. The key decision makers can also present this information to the public at a board meeting and in the water system's annual Consumer Confidence Report.

These barriers can be overcome by building community support for asset management's emphasis on planning as a means for cost-effective infrastructure investment. An asset management plan is an effective way to communicate your strategy and work. In order for your system to gain community support, your customers should understand what you do, and the value of your services, as well as agree upon the level of service.

Having an asset management helps you:

- Share information with your customers.
- Describe the risks of not maintaining system components.
- Communicate your system's requirements.
- Justify rehabilitation, repair, and replacement project priorities.
- Justify your long-term financial plan to the public.

Appendix A: Sources of Financial Assistance to Drinking Water Systems

System improvements can be funded by raising rates and obtaining loans or grants. The programs presented below may provide financial assistance to help you maintain assets in good condition, replace deteriorated assets that have outlived their useful lives, and continue to provide safe and secure drinking water to your customers. Consult your State or Regional Tribal Drinking Water Primacy Agency for additional information. State and territorial contacts can be found on EPA's website here. EPA's Regional Tribal Drinking Water Coordinators can be found on EPA's website here. To view the Simple Tools for Effective Performance (STEP) Guide Series visit EPA's website.

Before you apply for funding, find out what each source will pay for and what information it will need to consider in your application. Ask about local matching fund requirements, application procedures, what makes a project "fundable," and special program requirements and restrictions. Ask to see applications from previously funded projects. Get an idea of what information is required for an application; most lending and granting agencies will want to see financial statements such as budgets, income statements, and cash flow documents.

Major Providers of Financial Assistance to Drinking Water Systems

Program	Description	Contact Information
Water Finance Clearing House	Water Finance Clearinghouse is a database of financial assistance sources available to fund a variety of watershed protection projects.	https://www.epa.gov/waterdata/water-finance-clearinghouse
Drinking Water State Revolving Fund (DWSRF)	These state-administered loan programs enable water systems to finance infrastructure improvements, provide training, and fund source water protection activities	https://www.epa.gov/dwsrf/state-dwsrf-website-and-contacts
Rural Utilities Service (RUS) Water and Wastewater Loan and Grant Program	This program offers loans and grants to develop water and waste-disposal systems in rural areas.	https://www.rd.usda.gov/programs-services/water-environmental-programs
Manufactured Housing Institute	The Manufactured Housing Institute provides information on loan programs for manufactured homes to its members. It also offers forums to interact with financial services companies that cater to the manufactured homes market.	www.manufacturedhousing.org
Small Business Administration (SBA)	SBA helps small businesses get low-interest loans.	www.sba.gov
Rural Community Assistance Corporation (RCAC)	RCAC provides loans to rural utilities in 11 western states to help meet the financing needs of rural communities and disadvantaged populations.	https://www.rcac.org/programs-services/#section-0

Appendix B: Complete List of Links

Below is a comprehensive list of the links referenced throughout the.

About Asset Management
https://www.epa.gov/dwcapacity/about-asset-management

EPA's Simple Tools for Effective Performance (STEP) Guide Series
https://www.epa.gov/dwcapacity/simple-tools-effective-performance-step-guide-series

State and territorial contacts
https://www.epa.gov/dwcapacity/find-epa-capacity-development-contact

EPA's Regional Tribal Drinking Water Coordinators
https://www.epa.gov/tribaldrinkingwater/regional-tribal-drinking-water-coordinators

EPA's Strategic Planning: A Handbook for Small Water Systems
https://www.epa.gov/dwcapacity/strategic-planning-step-guide-2021-update

EPA's Water Finance Clearing House
https://www.epa.gov/waterdata/water-finance-clearinghouse

EPA's Drinking Water State Revolving Fund (DWSRF) Webpage
https://www.epa.gov/dwsrf/state-dwsrf-website-and-contacts

Rural Utilities Service (RUS) Water and Wastewater Loan and Grant Program
https://www.rd.usda.gov/programs-services/water-environmental-programs

Manufactured Housing Institute
www.manufacturedhousing.org

Small Business Administration (SBA)
www.sba.gov

Rural Community Assistance Corporation (RCAC)
https://www.rcac.org/programs-services/#section-0