

Small Water System Asset Management

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Best Practices Guide and Fact Sheets



Asset Management for Local Officials

This guide will help you understand:

- The basics of asset management.
- Local officials' vital role in successfully implementing an asset management program.

This fact sheet is intended for local officials, owners and operators of public water systems, technical assistance providers, and state personnel.

Asset Management

Asset management is maintaining a desired level of service, that is, what you want your assets to provide) at the lowest life cycle cost (best appropriate cost - not without cost). Public water systems must:

- Address aging water infrastructure assets before they fail.
- Keep assets productive, and not allow them to become disruptive.
- Maximize limited financial resources by treating all decisions as investments.
- Make costs transparent to help justify project priorities to the public.

Asset management requires:

- Support and involvement of local officials who have the authority to commit public resources and personnel to maintain community assets.
- A commitment of time and money to make cost-effective asset management decisions (not just save more money over the long-term).
- A team made up of key decision makers.

Improving Service and Maintaining Infrastructure Through Asset Management

A sustainable water service delivers safe, clean water to its customers' and maximizes their useful life. An asset management program will help you understand the value of your assets and make decisions about their future. Small systems that have simple asset management plans can benefit from the program. Asset management will enable your system to:

- Have more efficient and focused operations.
- Choose capital projects that meet the system's true needs.
- Base rates on sound operational decisions.
- Improve its financial health.
- Reduce environmental violations due to failed or poorly performing assets.
- Improve the security and safety of infrastructure assets.

The Five Core Questions of Asset Management

A good starting point for any system are five core questions, which walk through the asset management process.

1. What is the current state of my assets?
Your water infrastructure assets are part of your community's total infrastructure. Infrastructure indicates insufficient funding of asset management.
2. What is my desired "sustainable" level of service?
Your desired sustainable level of service is the set of features that your system's desired level of service is the basis for justifying your user rates.
3. Which assets are critical to sustained performance?
Identifying critical assets will help you make decisions about resourcing your sustainable level of service.



Asset Management: A Best Practices Guide

Introduction

This guide will help you understand:

- What asset management means.
- The benefits of asset management.
- Best practices in asset management.
- How to implement an asset management plan.

Target Audience
This guide is intended for owners, managers, and operators of public water systems, local officials, technical assistance providers, and state personnel.

Asset Management

Maintaining a desired level of service (what you want your assets to provide) at the lowest life cycle cost (best appropriate cost - not without cost).

Challenges faced by Public Water Systems

- Aging assets.
- Increasing demand for services.
- Resistance to rate increases.
- Diminishing resources.
- Determining the best (or optimal) time to repair, replace, or renew assets.
- Rising service expectations of customers.
- Increasingly stringent regulatory requirements.

Benefits of Asset Management

- Budgets focused on activities critical to sustained performance.
- Financial management and rates based on sound operational information.
- Efficient and focused operations and maintenance to prolong asset life and aid repair/replace decisions.
- Ability to meet consumer demands with a focus on system sustainability.
- Improved response to emergencies.
- Security and safety of assets improved.

Implementing Asset Management: Five Core Questions Framework

There are many asset management best practices that are constantly being improved upon. You will become more familiar with these approaches as you implement your asset management program. A good starting point for any size system is the five core questions framework. This framework walks you through all of the major activities associated with asset management and can be implemented at the level of sophistication reasonable for a given system.



Building an Asset Management Team

Understand:

How your system successfully implement asset management.

Build a successful asset management team.

Identify local officials, owners and operators of public water systems, technical assistance providers, and state personnel.

Investment

An initial investment in time and resources. The savings from asset management are realized over a 1-year project, or even a 5-year project. It is a continual, fundamental change in the way we manage our assets. Successful asset management programs are characterized by a commitment to:

Investment in the program.

Cost-effective asset decisions.

A level of service for the community.

Commitment, asset management is implemented by a team that includes:

Local leaders who have the authority and willingness to commit public resources and personnel.

Decision makers who represent the departments involved with asset management.

Building an Asset Management Culture

Differently can be the first step towards having a sustainable water system. With the limited lifting away from reacting to events and towards making strategic plans can lead to real savings. Move beyond an unsophisticated pipe-replacement plan based on a simple formula that does not replace 5 percent per year. The asset management model focuses on the long-term life cycle of performance, not on the day-to-day aspects of the asset. It involves a shift in a water system's mindset by:

Local business environment.

All asset decisions are investment decisions.

Asset improvement driven by results (sustainability).

Local champion to promote and articulate the benefits of asset management to decision makers. The champion can be an operator, manager, elected official, or stakeholder who coordinates the elements of the asset management program.

Successful Asset Management Team

Authority and resources to answer the core questions that lead to asset investment decisions. An

Stages: critical thinking.

For sharing ideas and information through open and transparent debate.

Plans and shares the success, not the blame.

One that builds trust and develops partnerships.

Assets of asset management as a basis for the program.

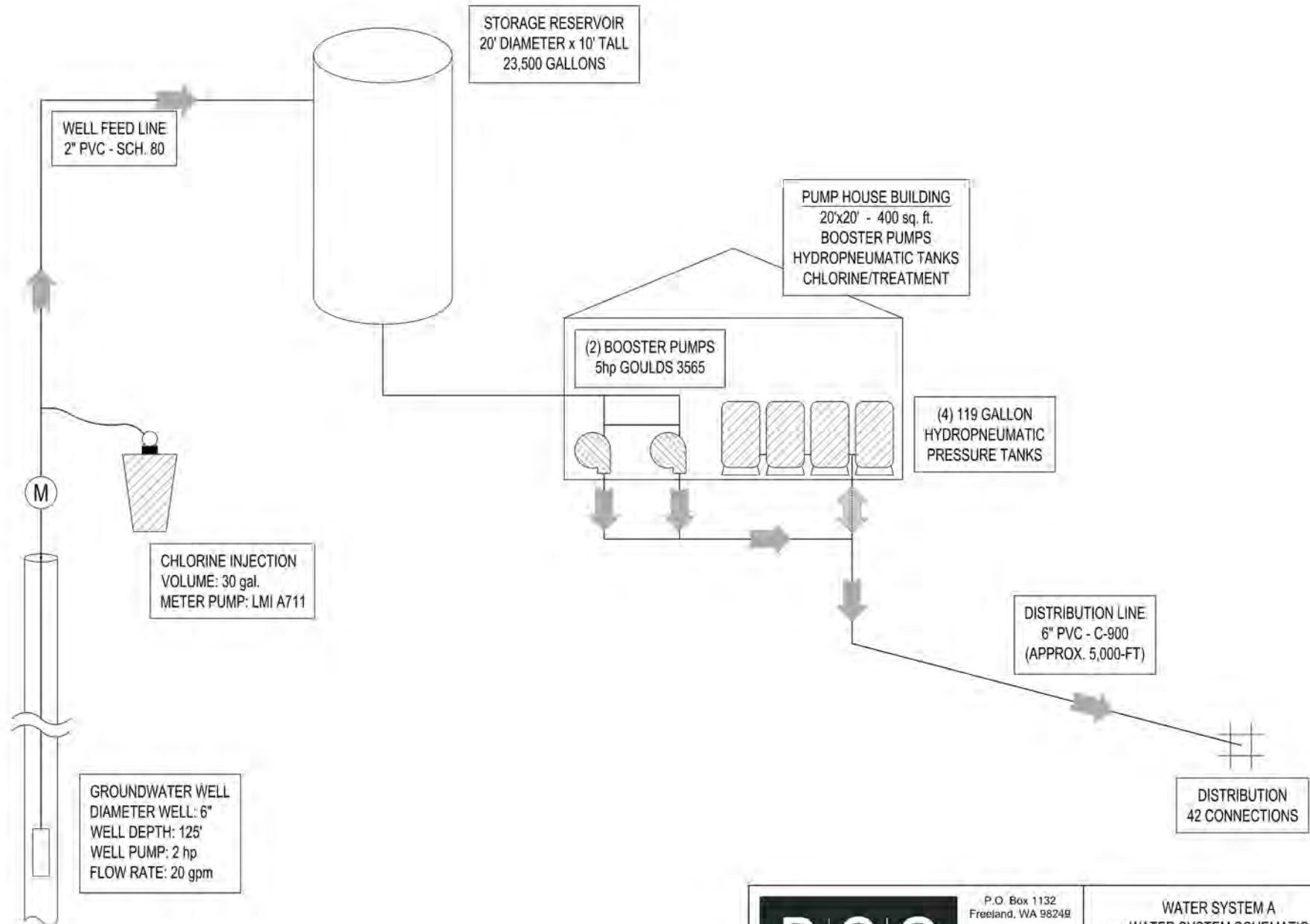
On during planning to achieve early gains.

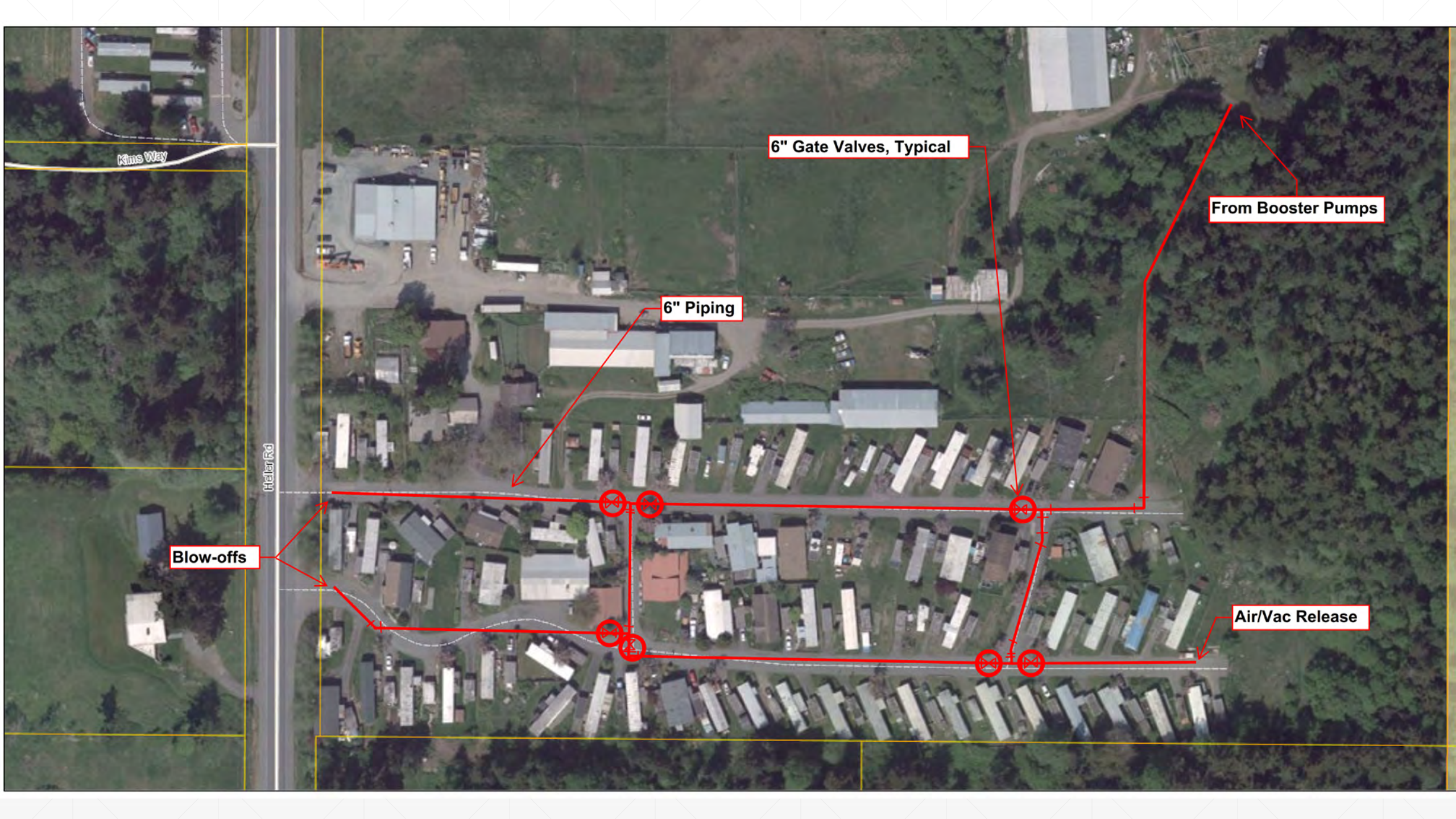
Why is Knowing your Assets Important

- You are running a Utility Business
 - As a business owner you should know your:
 - Revenue
 - Operational Costs
 - Future Liabilities
 - Current Assets are Future Liabilities
 - Replacement Costs can easily be \$100,000 up to \$1,000,000+
 - If current Water Rates are not \$50/month or more, then you are not properly funding for Infrastructure Replacement
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Small Water System Planning Process

- Chapter 1 - 1.2 Service Area and Facilities Map
 - Chapter 2 – 2.4 Component Inventory and Assessment
 - Chapter 3 – 3.1 & 3.2 Asset Replacement
 - 3.3 Budget
 - 3.4 Water Rates
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Kins Way

Helen Rd

6" Gate Valves, Typical

From Booster Pumps

6" Piping

Blow-offs

Air/Vac Release

Common Items

- Wells - \$50,000 (\$25,000 well + \$25,000 testing approval and connection costs)
 - Well Pumps - \$5,000
 - Waterlines - \$100 per linear foot
 - Storage Reservoirs - \$2 per gallon plus \$25,000 for prep and site piping
 - Booster Pumps - \$3,000 (2 HP) \$5,000 (larger)
 - Pressure Tanks - \$20/gallon
 - Bladder Tanks - \$2,000 (installed)
 - Air Release/Blow-off Valves - \$5,000 each
 - Gate Valves - \$2,000
 - Oxidation/Filtration Treatment System - \$50,000
 - Building - \$200 per square foot
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Table 2-4A
Short-Lived Asset Component Inventory and Assessment (service life is 6 years or less)

Short-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
Hypo-Chlorination System			10 Years		\$2,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Major Tools			5-9 Years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Software (billing, SCADA, cross-connection control)			5-9 Years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Safety Equipment			5-9 Years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Filters and Filter Media	Filter		20 Years		\$30/gal	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
	Media				\$50/ft3	
Pressure Tanks (bladder)			8 Years		\$2,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Building Heat and Cooling			5-9 Years		\$2,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Instrument Switches and Gauges			5-9 years		\$100	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Other			years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year

Table 2-4B
Long-Lived Asset Component Inventory and Assessment (service life is longer than 10 years)

Long-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
EXAMPLE Well	Well #1 8-inch diameter and 200 feet deep	Drilled 1924	50-100 years	87 years		<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (Well #1) If Yes, Year 2014
	Well #2 12-inch diameter and 145 feet deep	Drilled 1986		25 years		
EXAMPLE Submersible Well Pump	Well #1 10 hp	Installed 1996	10-15 years	15 years		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
	Well #2 25 hp	Installed 2006		5 years		
Well			50 years		\$50,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
Submersible Well Pump			15 years		\$10,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
Source Meter			10 years		\$1,500	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
Well and Pump House			40 years		\$200/ft2	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
Reservoirs			50 years		\$2/gallon	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
Gate Valves			50 years		\$700/2"	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
					\$1,000/4"	
					\$1,500/6"	
Altitude, Pressure Reducing, Pump Control, Surge Anticipation Valves			20 years		\$2,000 (2")	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year ____
					\$4,000 (4")	
					\$6,000 (6")	

Long-Lived Asset Component	Size, Length, Diameter, and/or Capacity Where necessary, list each individual component separately	Year Constructed or Installed	Estimated Life Expectancy	Current Age	Estimated Cost to Replace	Replace in Next 6 Years?
Pressure Tanks (hydropneumatic)			50 years		\$20/gal	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Booster Pumps			15 years		\$3,000/2 HP	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
					\$5,000/5 HP	
Distribution Pipe and all in-line valves and valve boxes			60 years		\$100/lf	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Hydrants and Blow-Offs			50 years		\$5,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Back-up Power Generator			20 years		\$10,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Service Meters			10 years		\$400	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Electrical Service Panel			20 years		\$5,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Motor Starter/Control Relays			20 years		\$1,000	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Telemetry or SCADA			20 years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Fencing			30 years		\$10/lf	<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year
Other			years			<input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, Year

Items to Be Replaced

How to Determine

- Visual Inspections
- Leakage Rates
- Frequency of Repairs
- Run times or Noise for Booster Pumps
- Static and Pumping Water Levels of Wells
- Treatment Effectiveness



Well Depth - 60'
Static - 48'6"

Pump installed 10-8-98

3/4 HP - 12 gpm Gould

Set on 1" poly

Evergreen Well Drilling







Well #1



Well #2



Wells #1, #2, #3, Controls

1. To start
2. To stop
3. To reset
4. To check
5. To test
6. To set
7. To clear
8. To lock
9. To unlock
10. To reset

Additional Resources

- Your Operator
 - Evergreen Rural Water <https://www.erwow.org>
 - USA Bluebook <https://www.usabluebook.com/>
 - Island County Health Department (past submittals in water system files)
 - Department of Health
<https://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/WaterSystemAssistance>
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