

**Strand Associates, Inc.® (SAI)**

# Water Supply Service Area Plan

City of Pewaukee  
Public Information Meeting No. 2  
October 22, 2025

## Why is the City completing a Water Supply Service Area Plan?

- All public water supply systems serving a population greater than 10,000 shall prepare a water service area plan on or before December 31, 2025.
- Plan needs to be reviewed every 5 years and updated as needed.
- The City has immediate water system needs and is committed to finding the best long-term solution.
- This Public Information Meeting is intended to present the need for the plan and gather feedback.

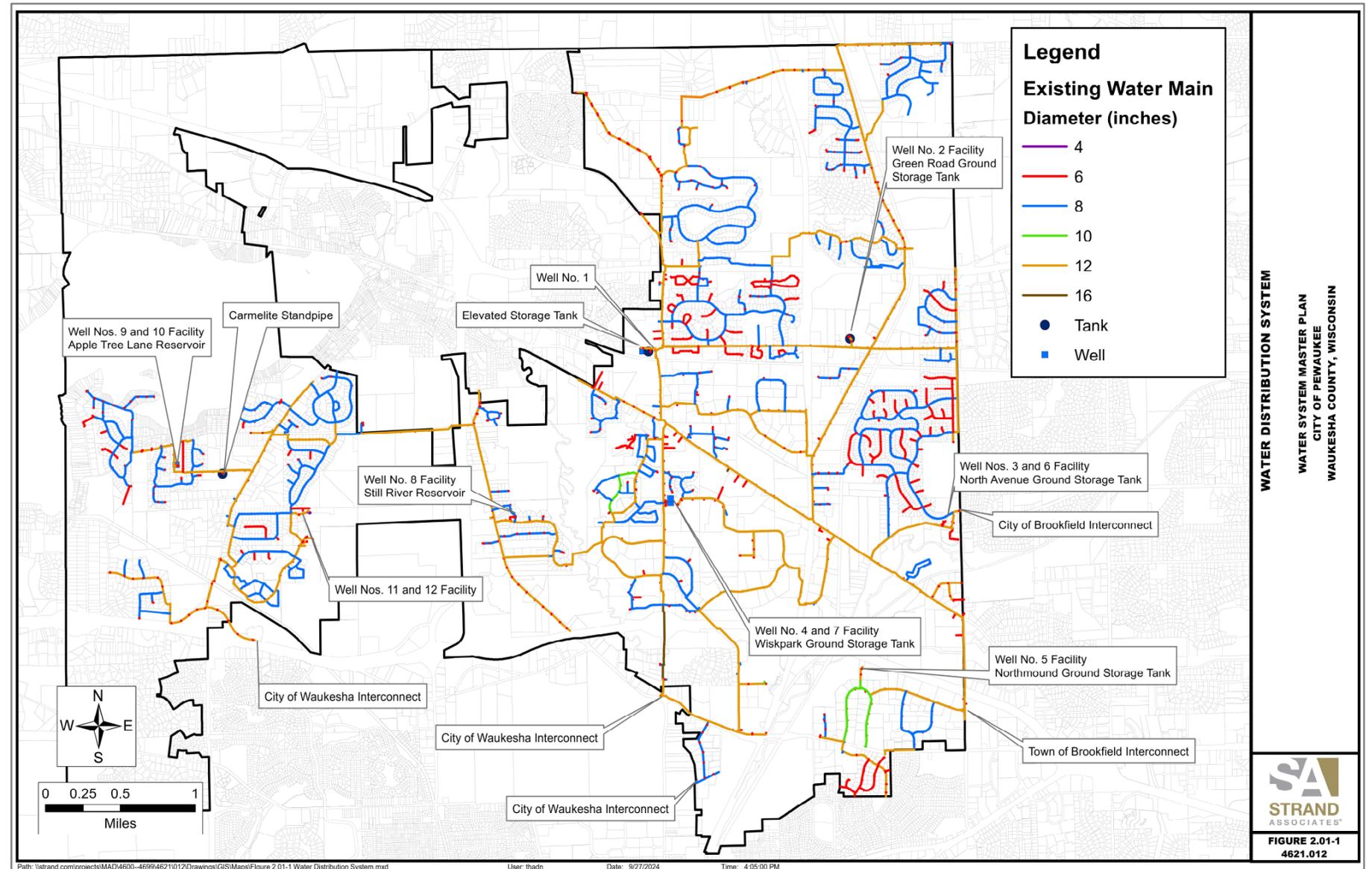
# What are the Components of a Water Supply Service Area Plan?

- Establishment of Planning Period
- Delineation of the Area
- Description of the Public Water Supply System
- Description of Existing Water Sources and Withdrawals
- Description of Current Water Use
- Projected Water Demand
- Inventory and Identification of the Sources and Quantities of Water Supplies in the Region
- Plan Recommendations
- Analysis of Consistency with Other Plans and Agreements
- Public Participation
- Submission of Plan to Local Governments
- Procedures for Implementing and Enforcing the Plan



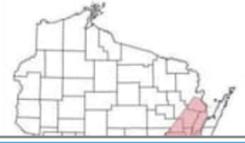
# System Overview

- 12 Wells (deep & shallow)
  - 8 Facilities
  - 6 ground storage tanks
- 2 elevated storage facilities
- 1 pressure zone
- 530,000 feet of pipe



# Water Quality Considerations Impact Current and Future Needs

- Radium
  - Naturally occurring in deep aquifer wells
  - All City entry points except one are in compliance with radium MCL
  
- PFAS
  - Found in four wells
  - Exceeds MCL in four wells
  - City exploring treatment options
  
- Other Concerns and Future Needs
  - Chloride
  - Strontium



### Radium

- **Radium (Ra)** is a radioactive element that is naturally occurring in many rock formations and groundwater aquifers in eastern Wisconsin.
- The federal Safe Drinking Water Act (SDWA) and Wisconsin Administrative Code NR 809 requires all public water systems monitor for certain radioactive substances, including radium.
- **All entry points except one into the City's water system meet regulated radium levels.**

### PFAS

- **Per- and Polyfluoroalkyl Substances (PFAS)** are a category of man-made chemicals that have been used in industrial and commercial products since the 1940s and can still be found in products today.
- PFAS have been found above Wisconsin Department of Health Services' recommended advisory levels at 4 of the City's 12 municipal wells: Well nos. 4, 5, 8, and 12.
- **The deadline to comply with new standards is 2029. The City is working to address PFAS contamination in two potential ways:**
  1. Adding new treatment systems to reduce PFAS
  2. Changes in water source such as Lake Monona

### Chloride

- **Chloride** is an element that can enter well water due to contamination for sources like road salts and can cause a salty taste in drinking water above certain concentrations.
- Chloride is regulated as a secondary contaminant, meaning that the USEPA **mandatory** guidelines for chloride levels in drinking water.
- **City's wells produce water with chloride levels above recommendations.**



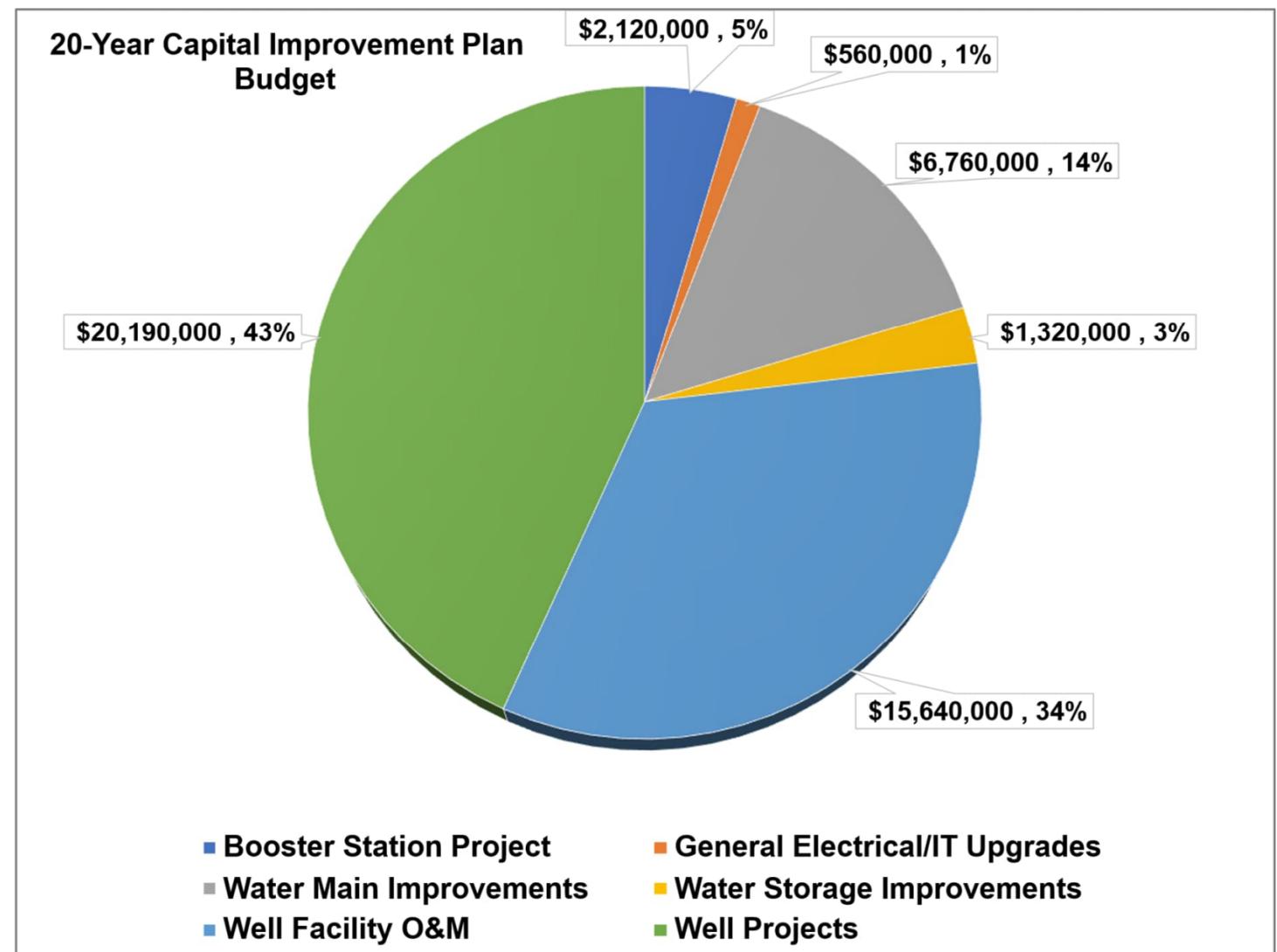
### Strontium

- **Strontium (Sr)** is a naturally occurring element in many rock formations and groundwater aquifers in eastern Wisconsin.
- Strontium levels in drinking water are not currently enforced.
- **Strontium has been measured above Wisconsin Department of Health Services' recommended advisory levels at 10 of the City's 12 municipal wells currently in operation.**

Figure 2 Statewide Dissolved Strontium  
Source: Origin and Distribution of Dissolved Strontium in the Carbonate-Dominant Aquifer of Wisconsin  
Wisconsin DNR, et al., 2014

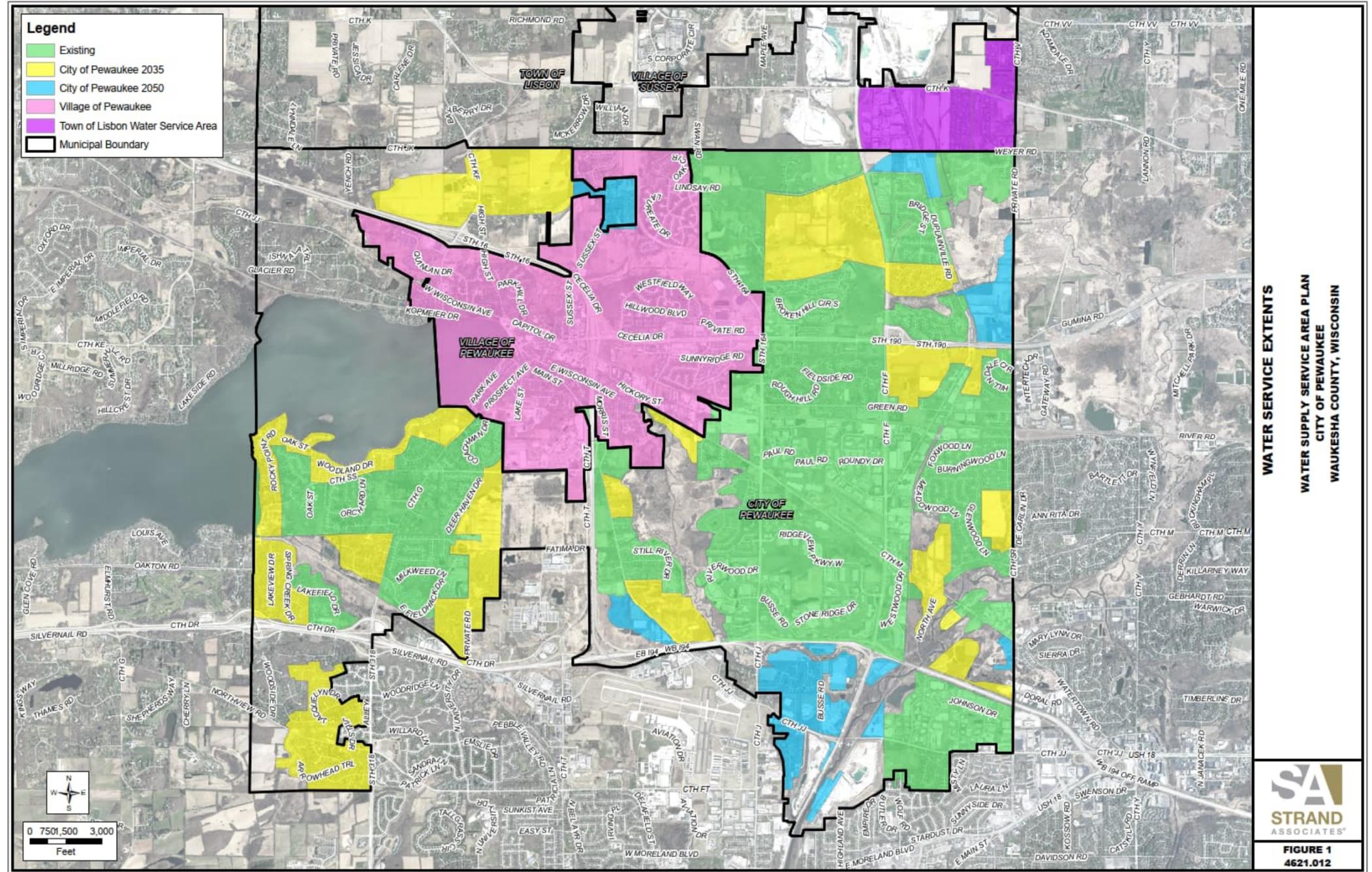
# Existing System Needs Significant Investment

- Significant investment in existing system needed over next 20 years.
- ~\$47 million
- This study will help determine if we are on the path with the best long-term viability.

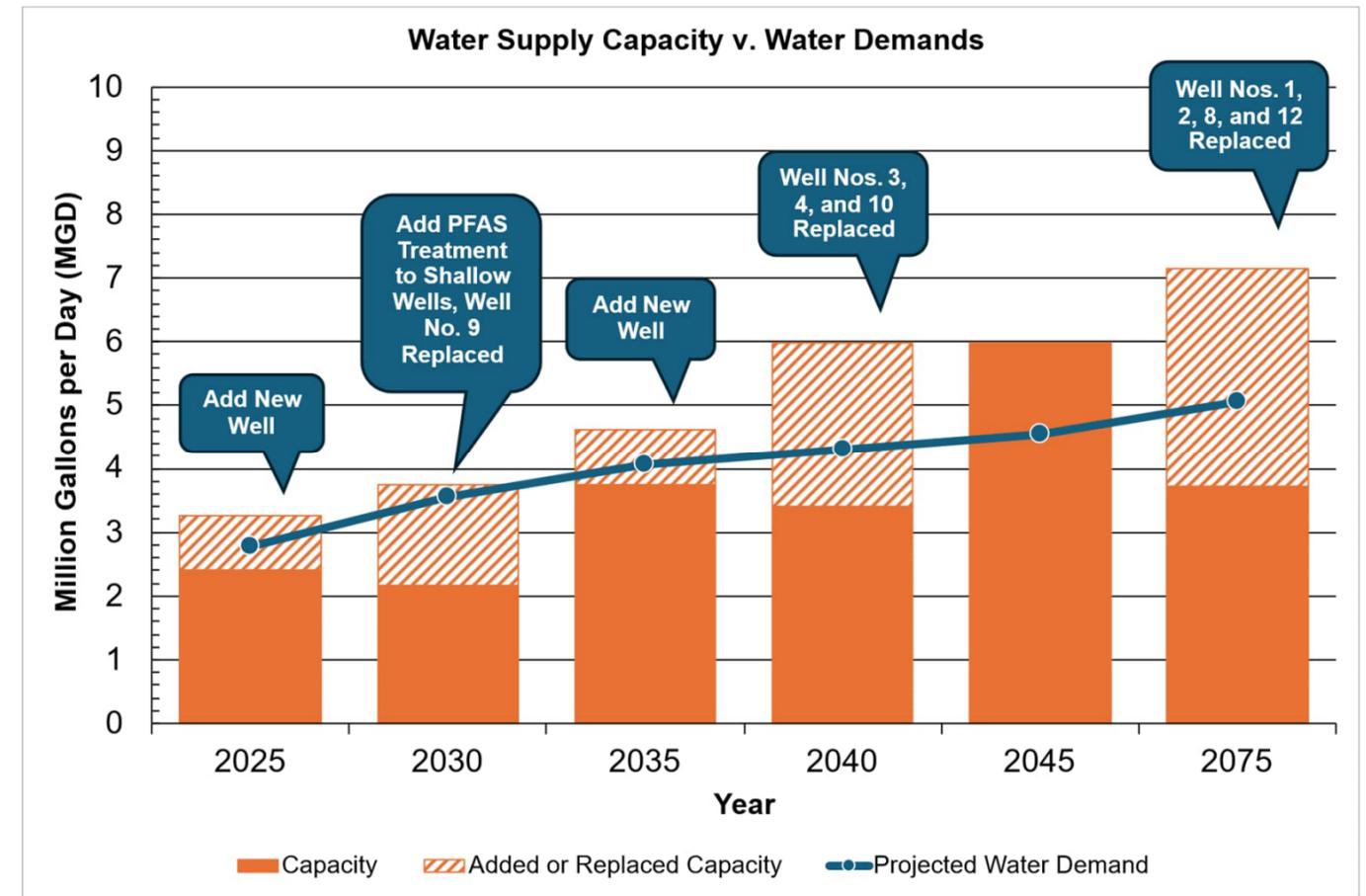
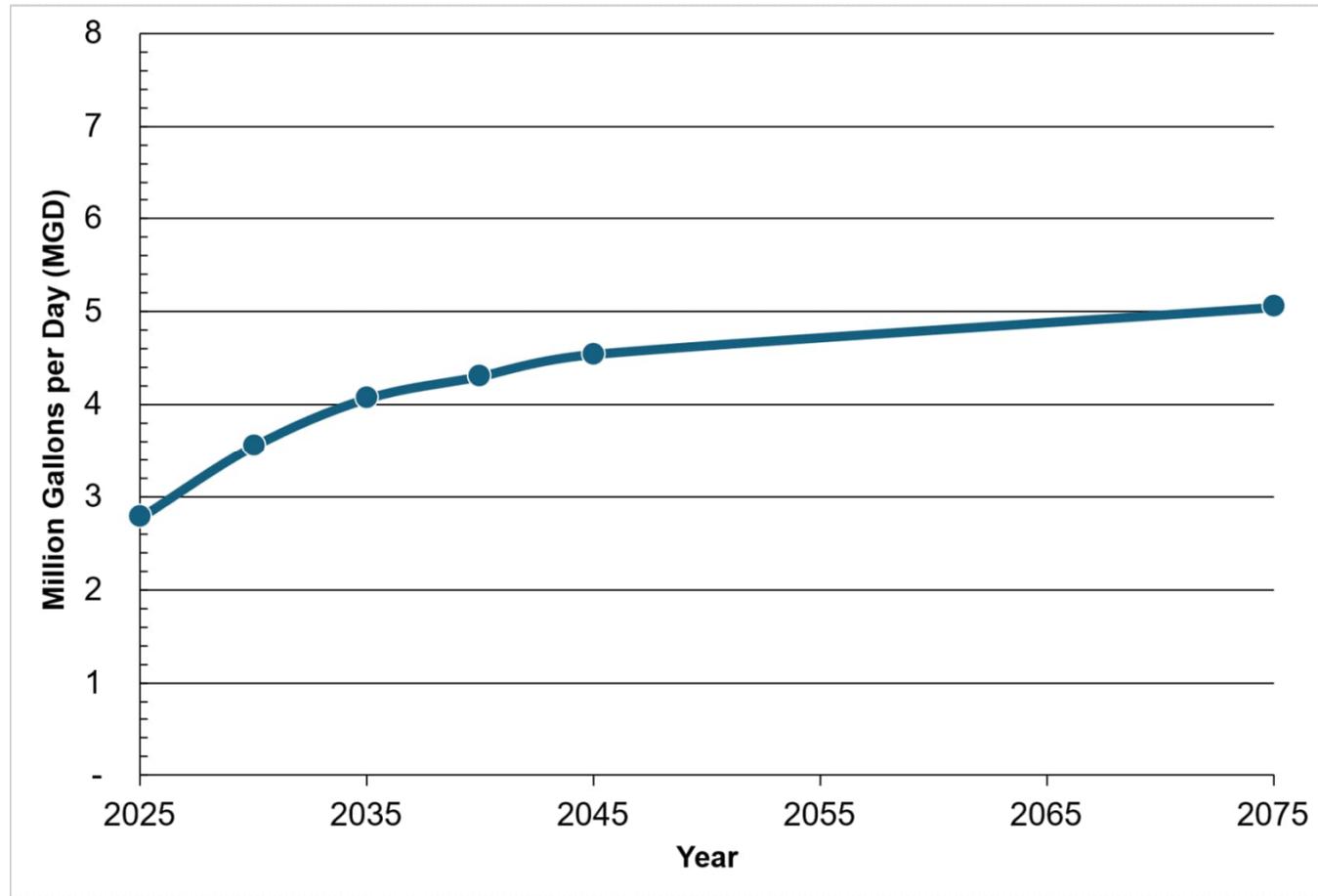


# Pewaukee Water Service Areas

- Plan Years:  
2025, 2035, 2045,  
2075
- Level of  
buildout/growth per  
year
- Consistent with 2023  
Master Plan



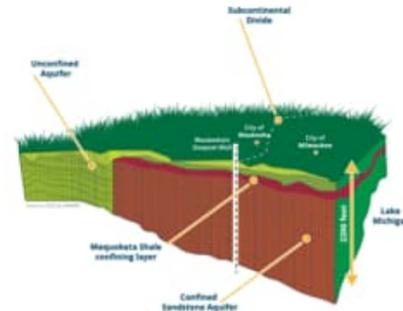
# Water Supply Capacity vs. Demands



# Water Supply Alternatives

## ➤ Groundwater from wells

Continue to use a combination of shallow and deep aquifer wells.



Source: Great Lakes Water Alliance, 2023

## ➤ Lake Michigan water from Waukesha

Purchase Lake Michigan water via Waukesha.



Source: National Museum of the Great Lakes, 2026

## ➤ Local quarries

Pump raw water from local quarries and treat at one central surface water treatment plant.



Source: Wisconsin River Trips, 2022

## ➤ Pewaukee Lake

Pump and treat surface water from Pewaukee Lake.



Source: Wikipedia, 2026

## ➤ Fox River

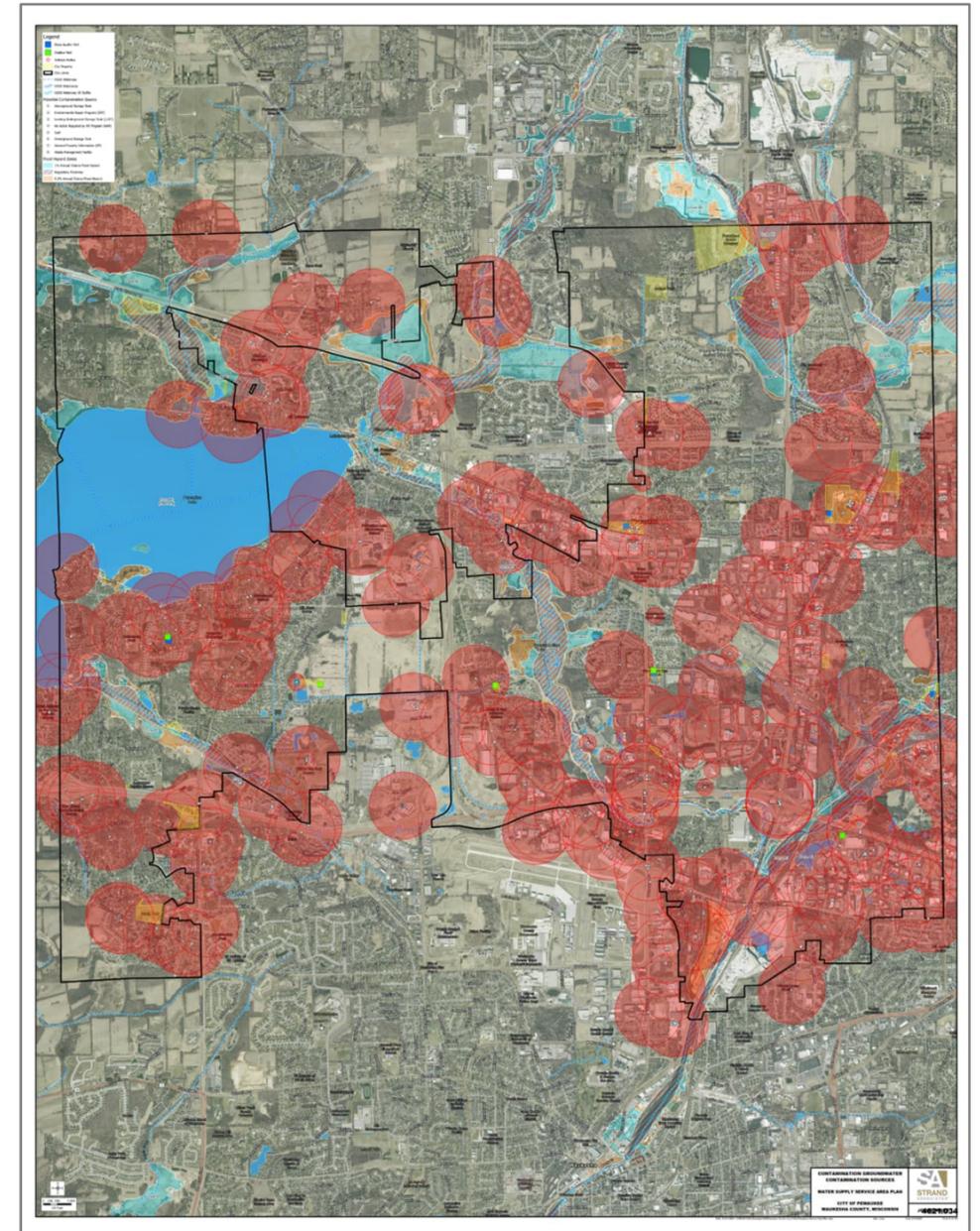
Pump and treat surface water from the Fox River.



Source: Travel Wisconsin, 2026

# Water Supply Alternative 1: Groundwater Supply

- Continue to use a combination of shallow and deep aquifer wells
- Replace existing wells with new wells as they reach the end of the useful lives
- Add treatment to address emerging contaminants in groundwater
- What are the infrastructure needs?
  - 10 new wells constructed over the planning period, pending land availability
  - Added PFAS treatment to all 5 existing shallow wells
  - New treatment to address future emerging contaminants (typically every 20-25 years)



# Water Supply Alternative 2: Lake Michigan Supply via Waukesha

- Purchase of Lake Michigan water from Waukesha
- Return flow to meet the requirements of the Great Lakes Compact
- What are the infrastructure needs?
  - 1 water pumping station and 2 metering stations between Pewaukee and Waukesha
  - Additional water storage
  - Various water main improvements
  - Return flow infrastructure



# Other Water Supply Options Considered

## Local Quarries

- Pump raw water from local quarries and treat at two central surface water treatment plants.
- **Primary reasons not considered feasible:**
  - Potential adverse affects to the Fox River
  - Concerns regarding source water ownership
  - Similar PFAS contamination concerns as shallow aquifer well supply



## Fox River

- Pump raw water from Fox River at a surface water treatment plant.

- **Primary reasons not considered feasible:**

- Potential adverse affects to the Fox River
- Supply affected by drought



## Pewaukee Lake

- Pump and treat surface water from Pewaukee Lake at a surface water treatment plant.
- **Primary reasons not considered feasible:**
  - Current recreational water
  - Potential adverse affect on minimum lake level
  - Supply affected by seasonal fluctuations

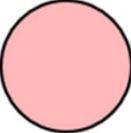
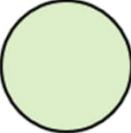
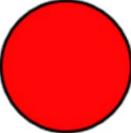
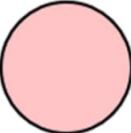
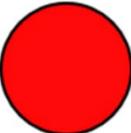
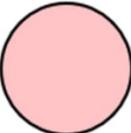
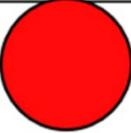
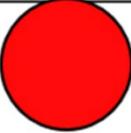


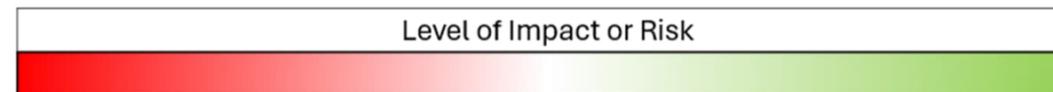
## Do Nothing

- **Primary reasons not considered feasible:**
  - Utilities must comply with new PFAS regulations by 2029
  - New supply must be obtained to meet future demands
  - The EPA continuously identifies contaminants for further study and determines contaminants to potentially regulate.
  - New emerging contaminant concerns typically appear every 20 to 25 years.

**Doing nothing is not an option.**

# Water Supply Alternatives Analysis

Major Criteria	Alternative 1: Groundwater Supply	Alternative 2: Lake Michigan Supply via Waukesha
<b>Environmental</b> <i>Considerations:</i> <ul style="list-style-type: none"> <li>➤ Impact on water resources</li> <li>➤ Impact on aquatic habitat</li> </ul>		
<b>Long-Term Sustainability</b> <i>Considerations:</i> <ul style="list-style-type: none"> <li>➤ Water return to its original source</li> <li>➤ Supply sufficient to meet future demands</li> <li>➤ Supply affected by drought</li> </ul>		
<b>Ability to Comply with Public Health Standards</b> <i>Considerations:</i> <ul style="list-style-type: none"> <li>➤ Nearby contamination sources</li> <li>➤ Treatment requirements</li> <li>➤ Ability to produce consistent water quality</li> </ul>		
<b>Implementability</b> <i>Considerations:</i> <ul style="list-style-type: none"> <li>➤ Construction complexity</li> <li>➤ Operational and maintenance complexity</li> <li>➤ Land availability</li> <li>➤ Agency coordination</li> </ul>		
<b>50-Year Life Cycle Cost</b> <i>Considerations:</i> <ul style="list-style-type: none"> <li>➤ Anticipated capital costs</li> <li>➤ Anticipated operational and maintenance costs</li> </ul>		



# Project Schedule

