

White Bear Lake Area Comprehensive Plan Study 11

Implement/Require/Encourage Non- or
Less-Potable Water Reuse or Potable
Reuse for Irrigation and Process Water

Progress Update

Presenters: Uma Vempati



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Overview of Scope

- Analyze the feasibility of non- and less-potable water use and potable water reuse in White Bear Lake and Vadnais Heights for Commercial/Industrial Businesses
- Coordinate with the DNR to analyze the potential or improvement or maintenance of White Bear Lake Surface water elevation using the estimated savings from less groundwater pumping.
- Evaluate potential costs, operation and maintenance requirements, regulatory concerns, and ownership and management structures of proposed scenarios

Progress Update

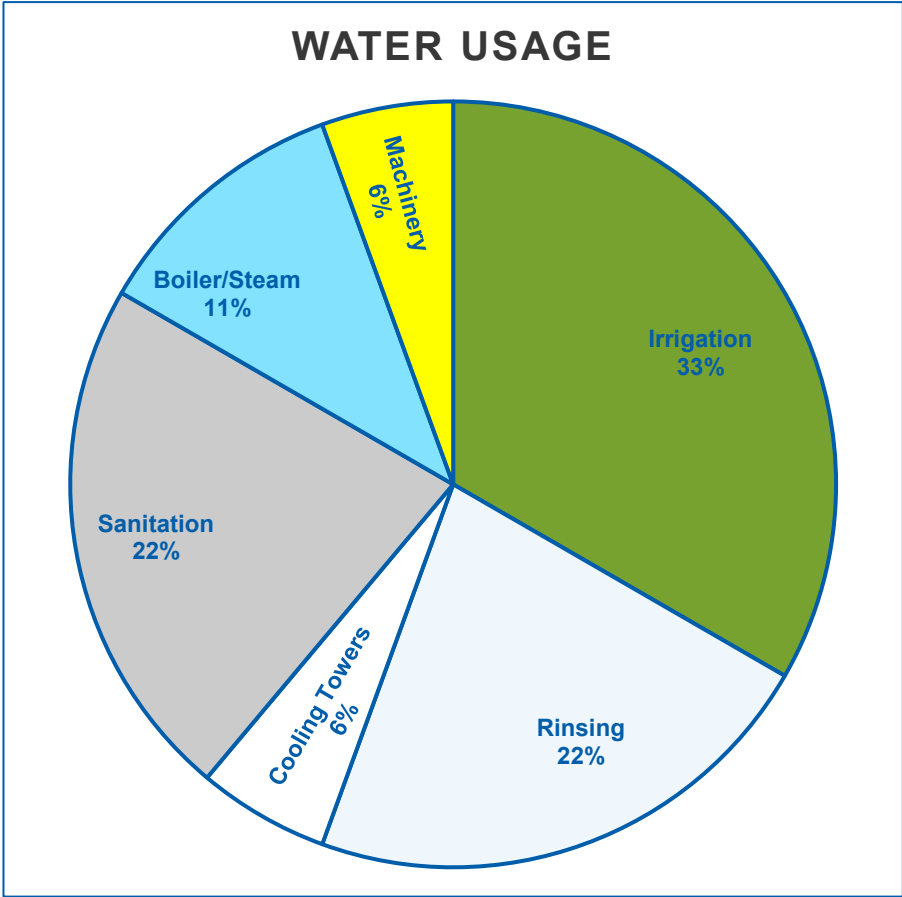
Task	Status
Summarize historical water usage for targeted businesses along impacted corridors	Complete-under review
Collect and summarize available datasets regarding current water supply systems, water quality data, treatment methods, and potential water reuse applications	Partially Completed-Awaiting Survey Responses
Conduct outreach to stakeholders to determine current water chemistry & pressure requirements and the impacts of switching water sources	Surveys sent; awaiting responses
Prepare a detailed map establishing watermain route and major distribution infrastructure.	In progress; final data being added to the model and GIS file
Evaluate infrastructure requirements and preliminary route alignments based on gathered data and develop potential trunk distribution system layouts.	In progress
Identify regulatory constraints and opportunities with non-potable water	In progress
Obtain the capital, O&M costs and establish treatment requirements for source water.	In progress

Survey

- Surveys sent to approximately 110 prospective customers' businesses in Vadnais Heights on September 25, 2025
- Surveys sent to approximately 100 prospective customers' businesses in White Bear Lake on October 2, 2025

Preliminary Survey Results

Question	Summary of Responses
Estimated Monthly Usage	No Estimate Known (3), Provided Estimate (6)
Estimated Peak Hour Demand	No Estimate Known (9)
Minimum Flow Rate	No Requirement (8), Provided Minimum (1)
Water Pressure Requirements	No Requirement (8), Provided Minimum (1)
Current Treatment	None (5), Yes (4)
Impact of Changes to Water Chemistry	None (6), Unsure (2), Provided Required Chemistry (1)
Desired Changes to Water Chemistry	Currently Satisfied (5), Desired Changes to Odor (1) and Hardness (3)
Existing Separate Fire Suppression	Yes (2), No (5), Unsure (2)
Desire for Non-Potable Service	Yes with Additional Information or evaluation (3), No (5), Unsure (2)
Current Wastewater Pre-Treatment	No (8), Yes (1)
Interest in Water Reuse/Treated Surface Water Use	Yes (2), Yes with Additional Information (3), Potentially in the Future (1), No (3) No, but we would be open to learning more (1)



*Results from 9 total surveys as of October 7, 2025.

Annual Water Usage Overview

	Avg. Domestic per User, Gallons per year	Avg. Irrigation Use per User, Gallons per year
Vadnais Heights	558,206	191,874
White Bear Lake*	891,819	500,139
Gem Lake**	239,113	
	Avg. Total Domestic Use, Gallons per Year	Average Total Irrigation Use, Gallons per Year
Vadnais Heights	57,495,285	19,596,578
White Bear Lake*	86,506,500	13,503,750
	Average Commercial Usage (GPM)	Average Irrigation Use (GPM)
Vadnais Heights	84	124
White Bear Lake	234	64
Gem Lake**	166	

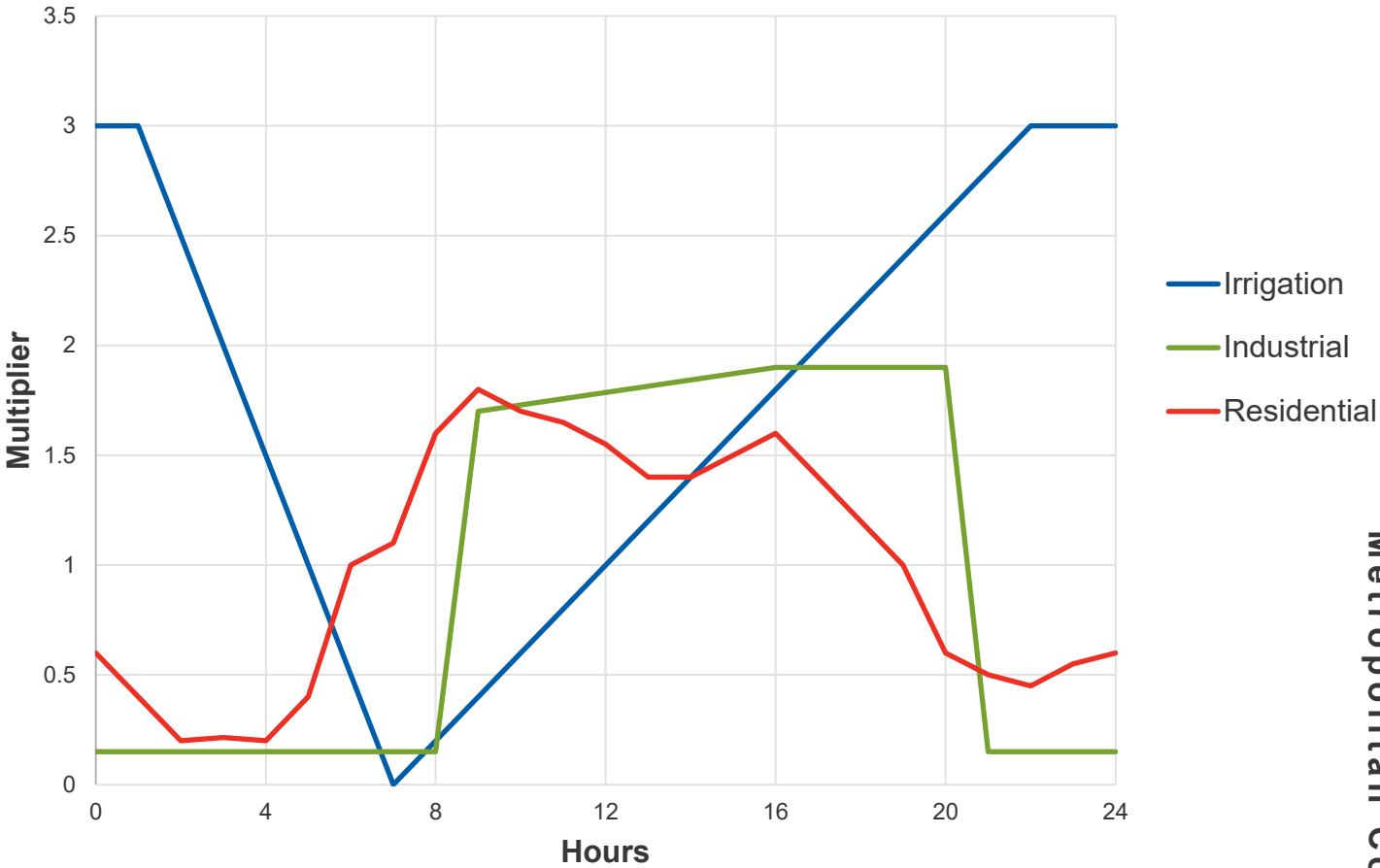
*White Bear Lake usage is calculated using data from 2024 only. Vadnais Heights calculations use data from 2022-2024.

**Gem Lake demand is based upon total community demands with fire flow demands and represented as average per day usage.

Demand Projections

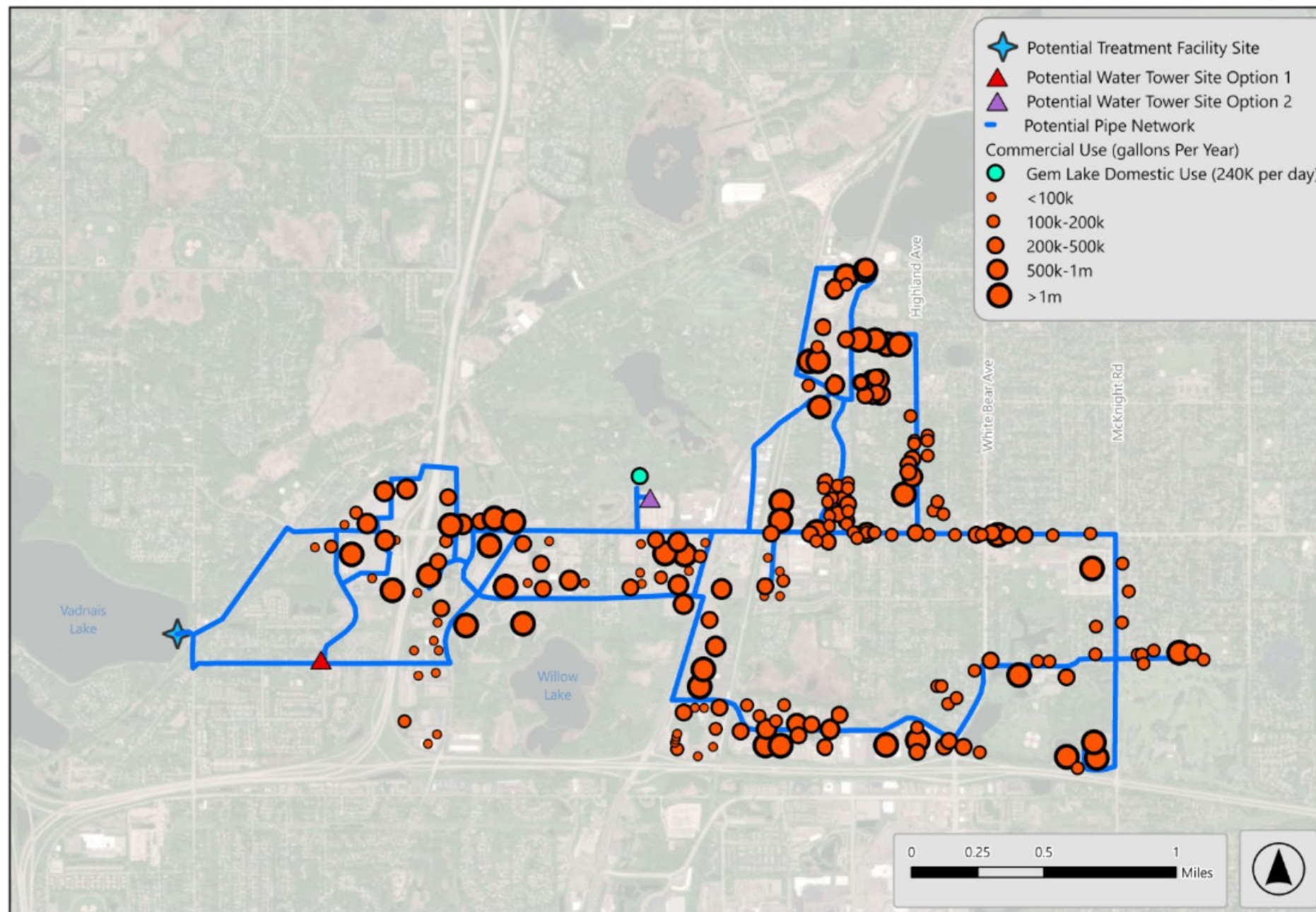
Communities Included	Season	Daily Water Usage, Gallons	Fire Flow, GPM	Tank Size, MG
WBL, VH, Gem Lake	Irrigation	965,000	1500 2 hours	1
WBL, VH, Gem Lake	Non-irrigation	583,000	1500 2 hours	0.750
WBL, VH	Irrigation	546,000	1500 2 hours	0.600
WBL, VH	Non-irrigation	344,000	1500 2 hours	0.400

Typical 24-Hour Water Demand Modeling Multiplier



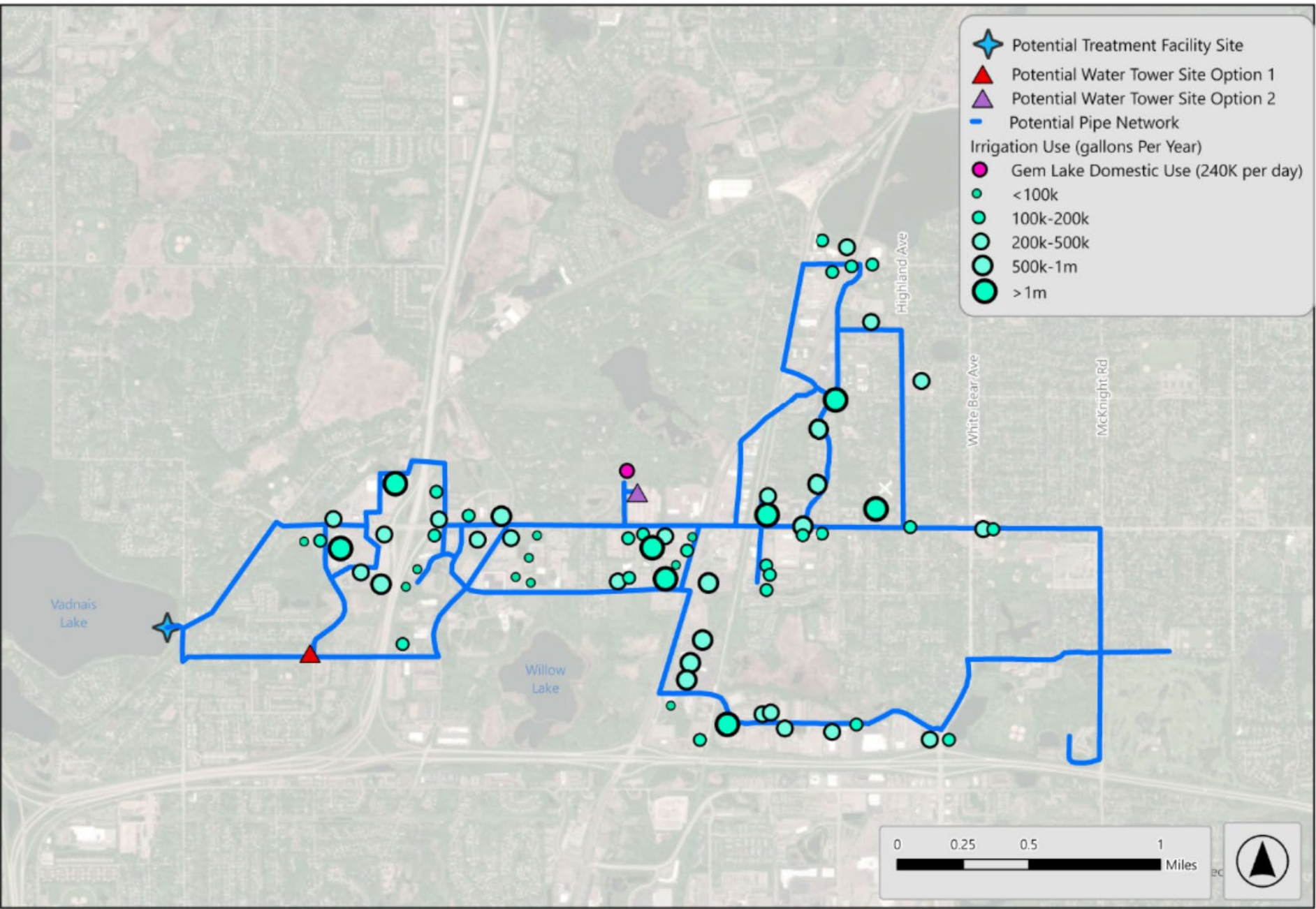
Source: AWWA

Commercial Water Usage Map



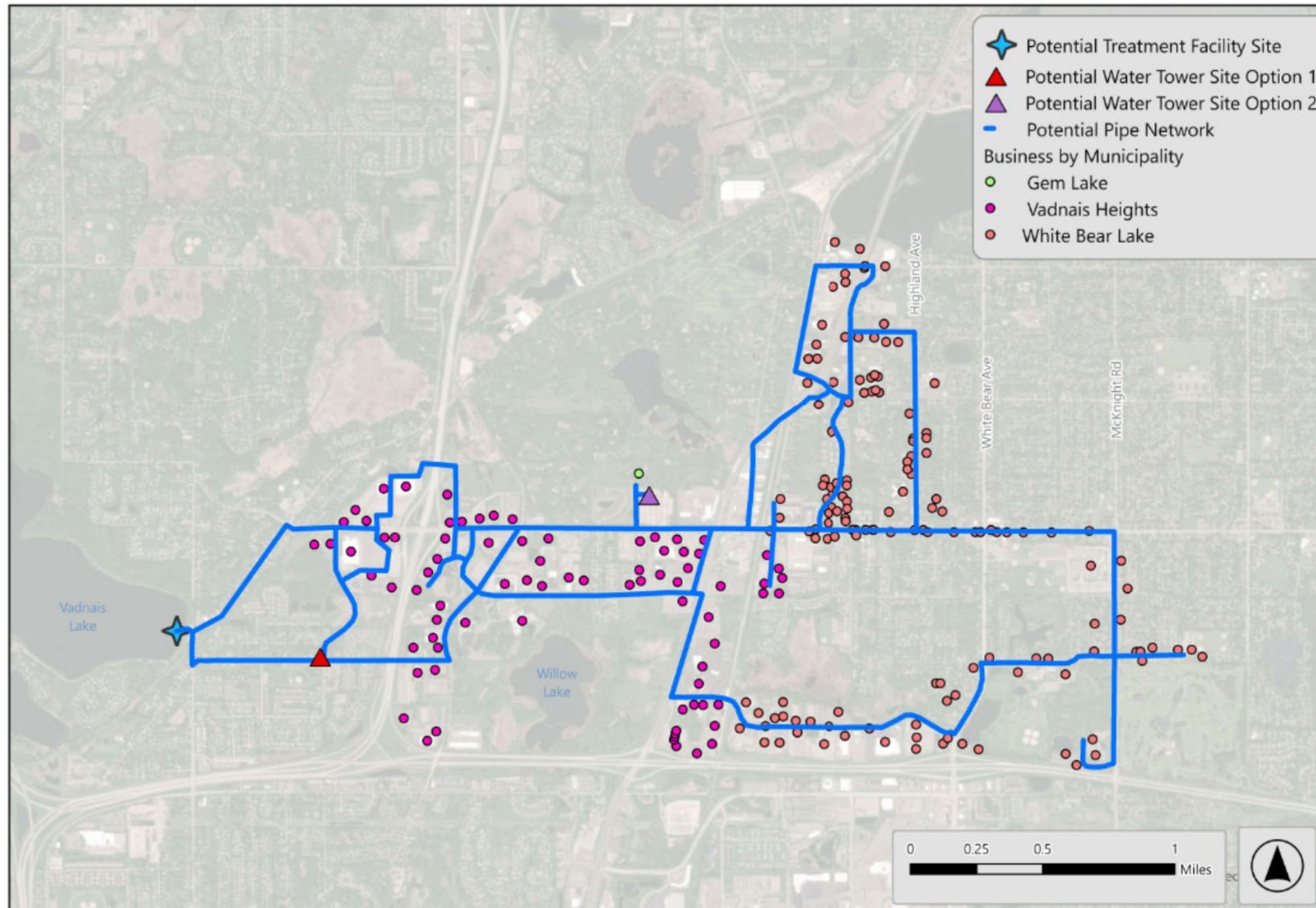
* Map Represents Commercial Water users in both WBL and Vadnais Heights

Irrigation Water Use Map

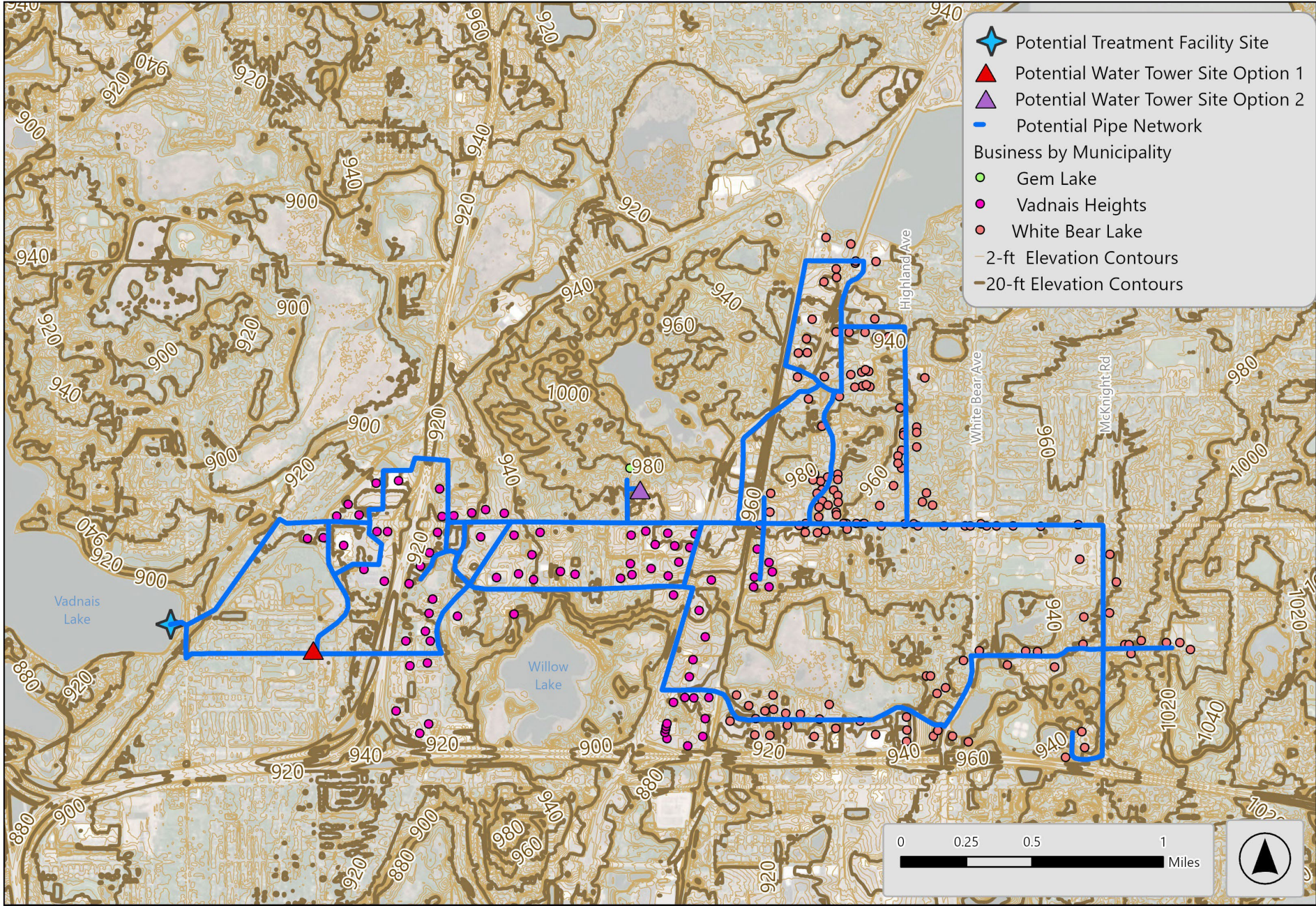


* Map Represents Industrial Water users in both WBL and Vadnais Heights

Watermain Route



Site Elevation Map



Regulatory Considerations

- MN State Law
 - Universal Plumbing Code (UPC) includes standards for non-potable water but currently Minnesota has not adopted these standards.
 - MN Plumbing Board is reviewing these standards for potential inclusion into revisions.
- WBL and Vadnais Heights have 12 Special Discharge Permit Holders but only 3 are currently in the footprint of the proposed watermain.
 - These will require additional consideration if wastewater reuse is evaluated for these businesses as their discharge water chemistry may require further treatment
- Separation of potable and non-potable water streams

Study 11 - Initial Evaluation and Next Steps

- More survey responses needed, but initial results show that additional stakeholder outreach may be needed to increase willingness/desire to use non-/less-potable water and/or treated surface water
- This evaluation may be included in the lake augmentation study (Study 7B).
- Treatment requirements will be readdressed once the Chain of Lakes Source Water Sampling and Evaluation is completed for Study 7A (estimated completion in early Spring).
- Further evaluation on water tower location and cost benefit analysis is required.
- Completion of capital & O&M costs is required once water main route is finalized.

Questions

