

Aquifer Storage and Recovery to Maximize Water Resources in a Supply Limited Area



SPF WATER
ENGINEERING

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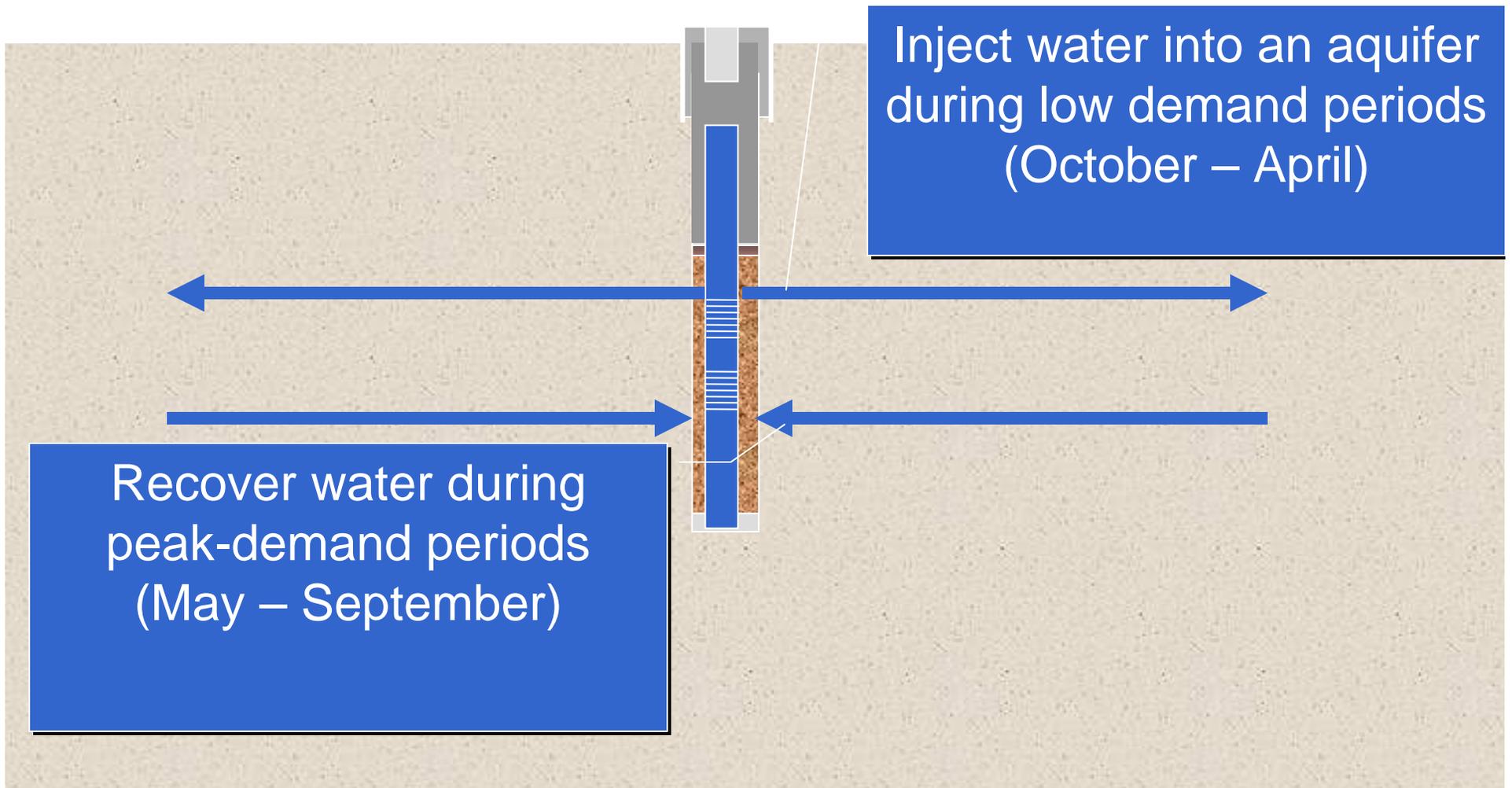
Overview

- **Goals of Presentation**
- **Case Study: Avimor Planned Community**
- **Avimor Water Supply and Demand**
- **Aquifer Storage and Recovery**
- **Take-Home Messages**

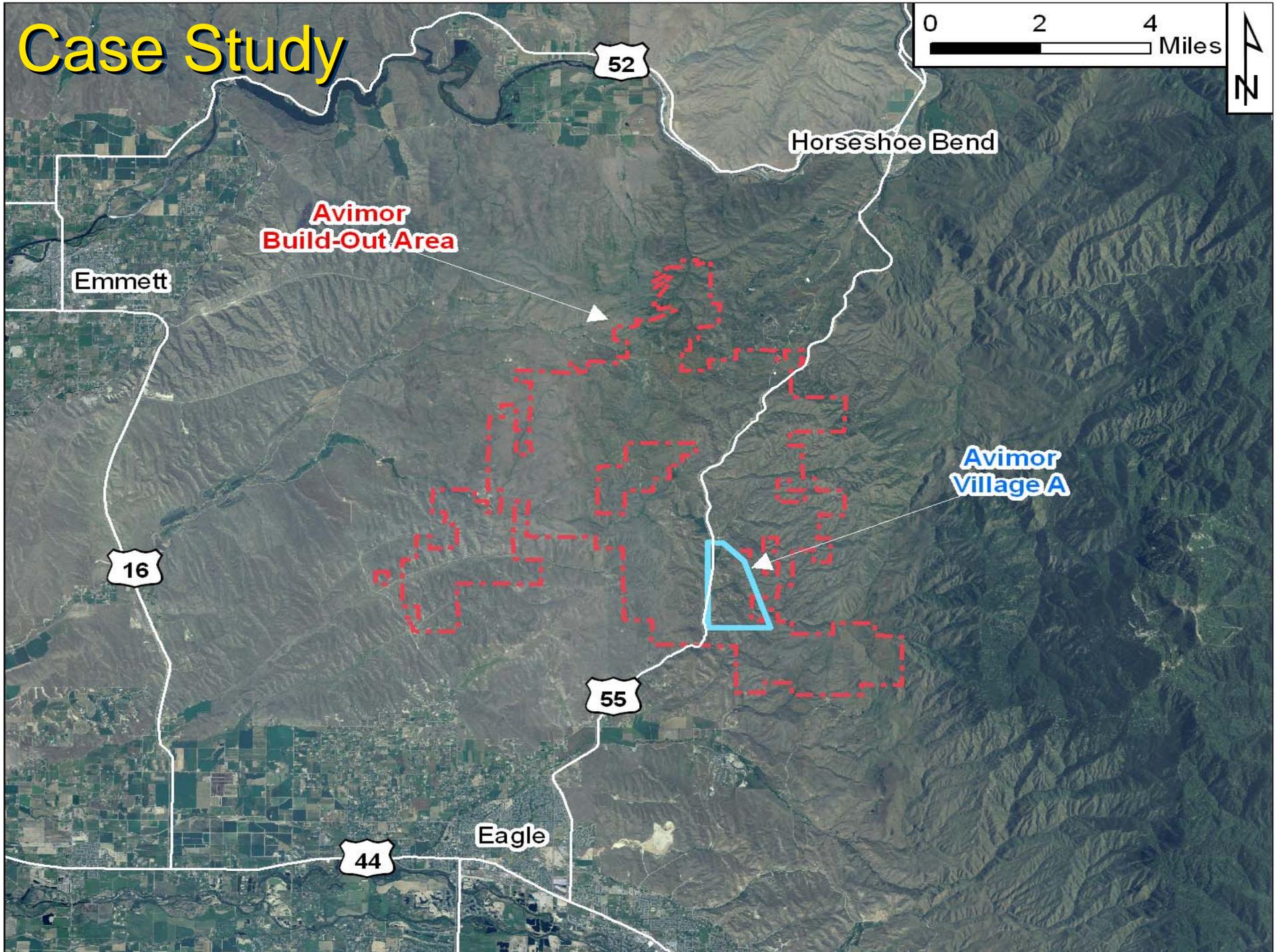
Goals

- **Review Aquifer Storage and Recovery Strategy to Maximize Water Resources**
- **Case Study: Project Implementation Insights**

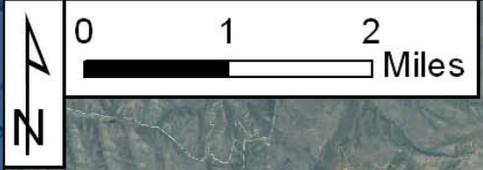
What is Aquifer Storage and Recovery?



Case Study



Core Development Area



Avimor Build-Out Area

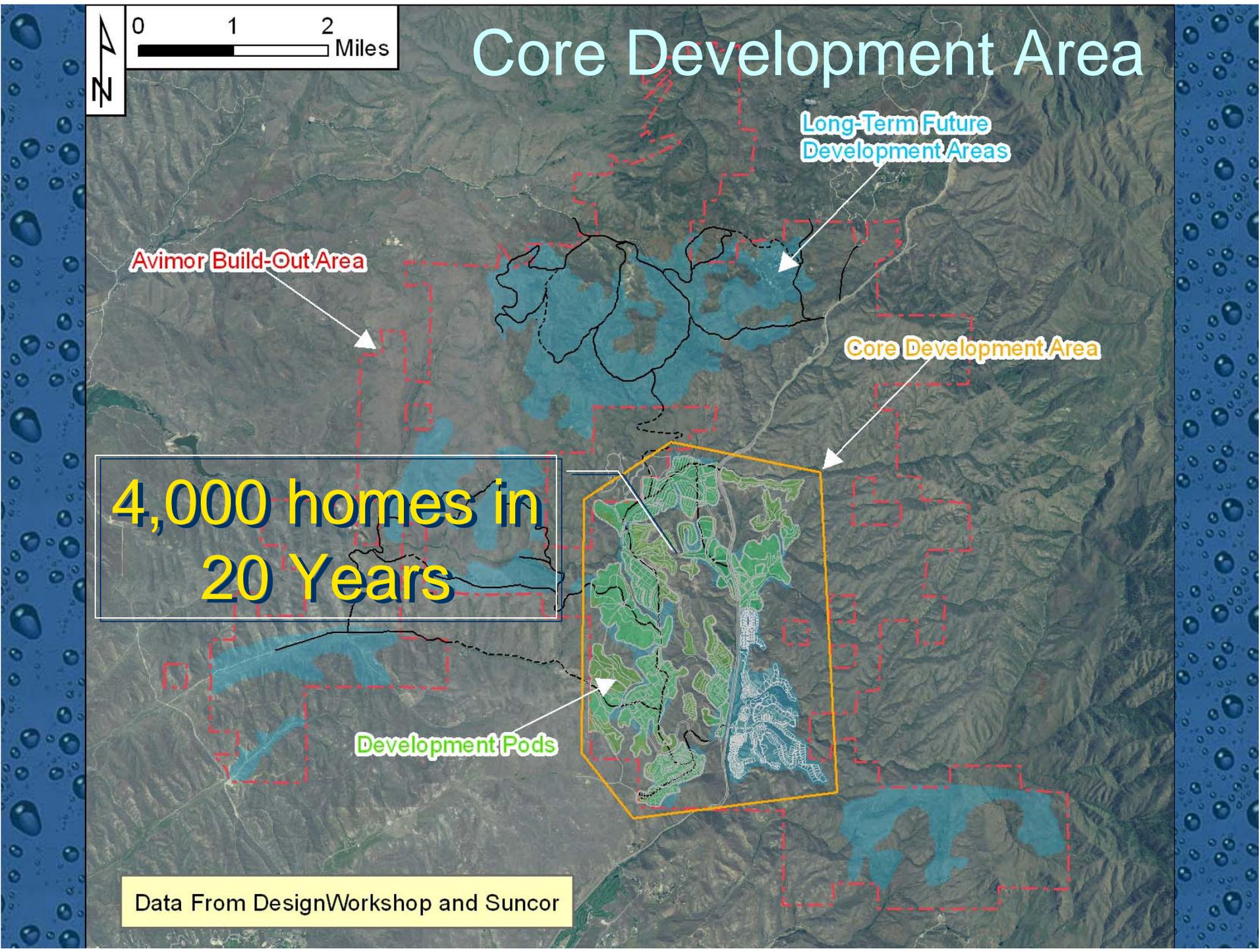
Long-Term Future Development Areas

Core Development Area

4,000 homes in 20 Years

Development Pods

Data From DesignWorkshop and Suncor



Background

- **Historically limited water supply in North Boise foothills resulting in a limiting factor for development**
- **Water available for import from October through April**

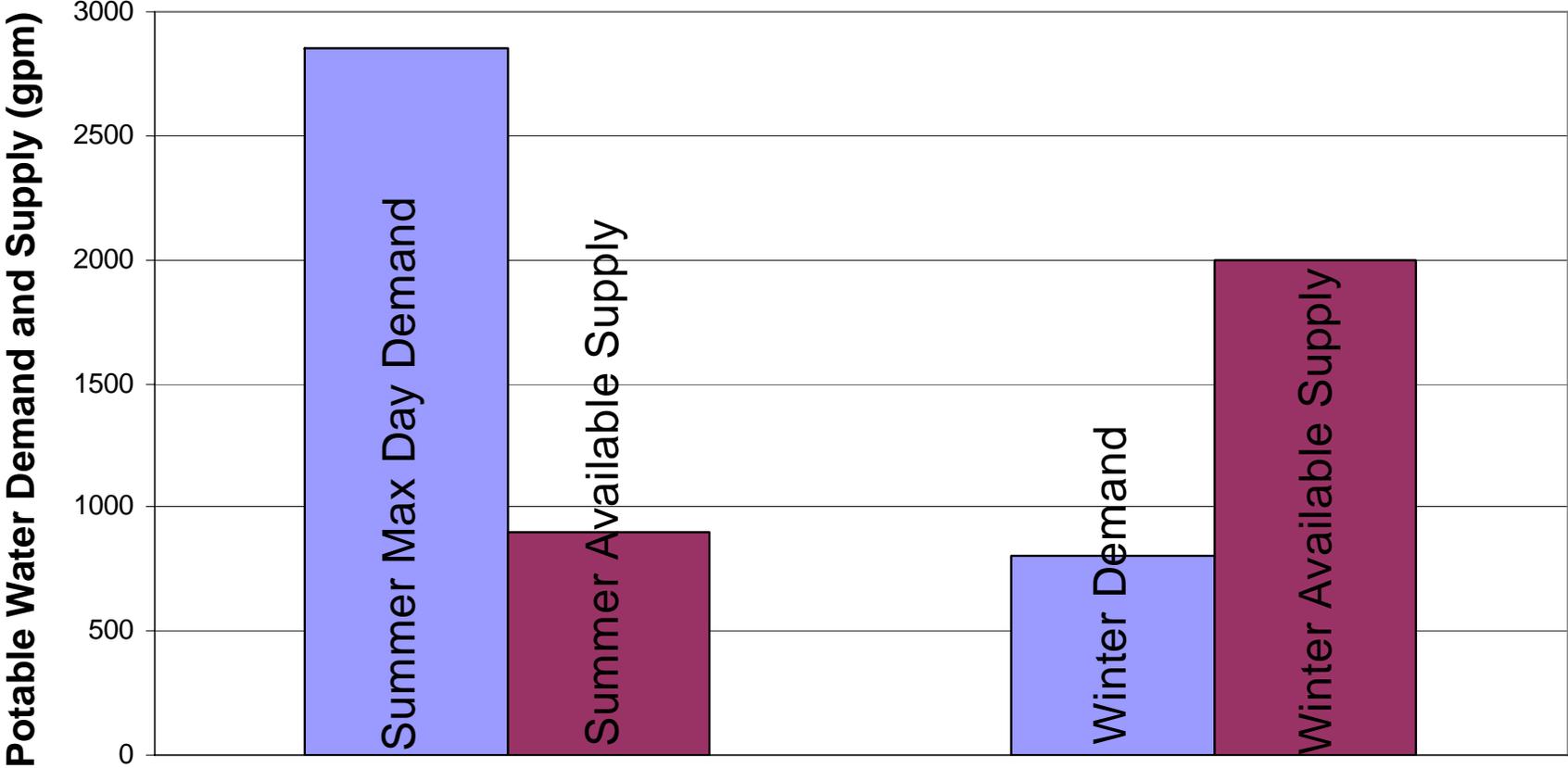
Avimor Water Conservation: 30% Reduction from Typical Demands



Open Space Irrigation from Non-Potable Sources



Avimor Core Area Water Supply and Demand



Aquifer Storage and Recovery

- **Is an aquifer available with the necessary characteristics for storage and recovery?**

Ideal Aquifer Characteristics

- **Containment with Sufficient Volume**



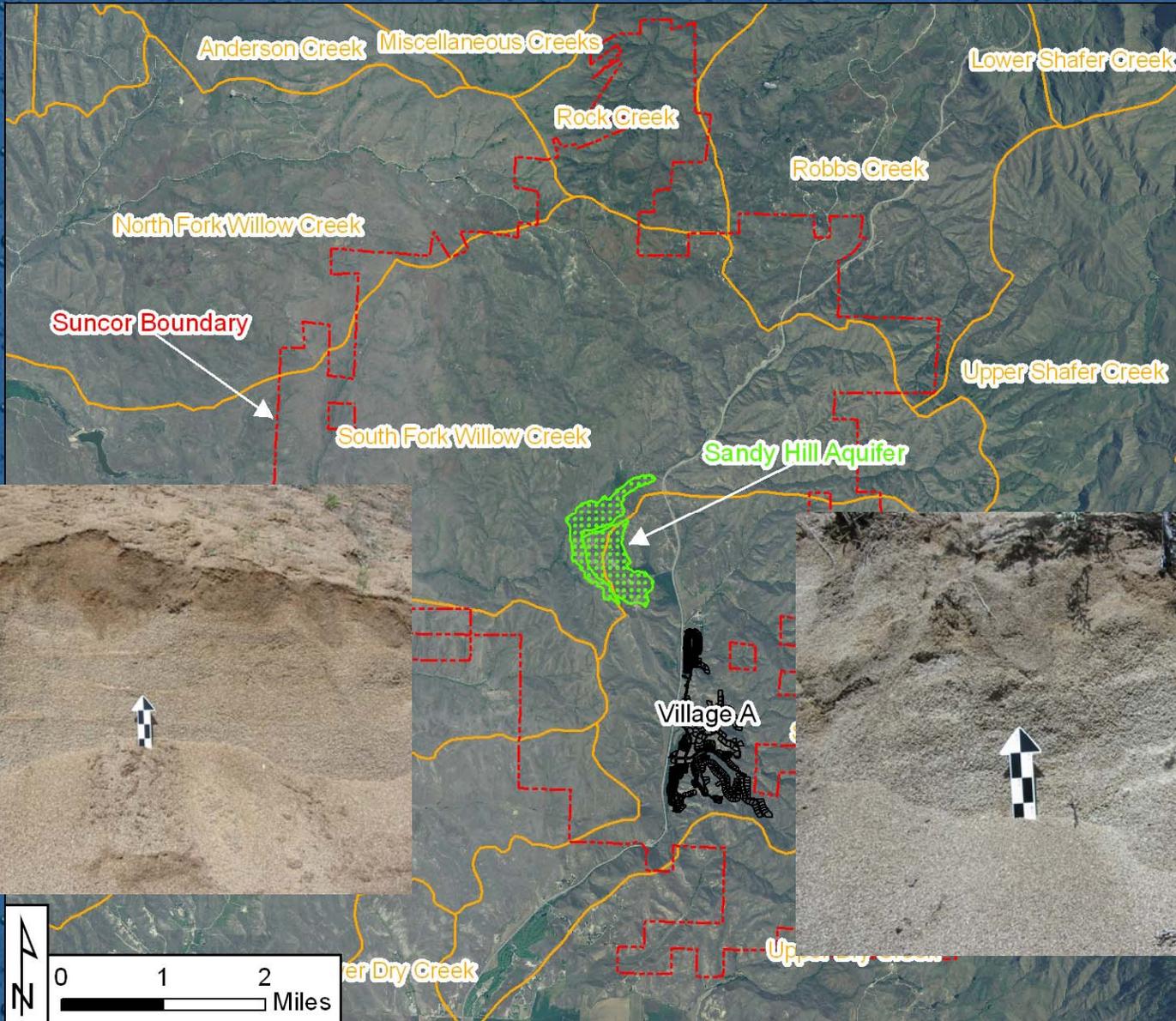
- **Highly Productive**



Well Drilling and Aquifer Testing



Aquifer Delineation



Aquifer Boundaries: ~ 500 MG Storage



Sandy Hill Aquifer

- **Sustainability of water supply from natural recharge is limited**
 - 200 home supply
- **Aquifer Storage and Recovery**
 - 2,500 – 3,000 home supply

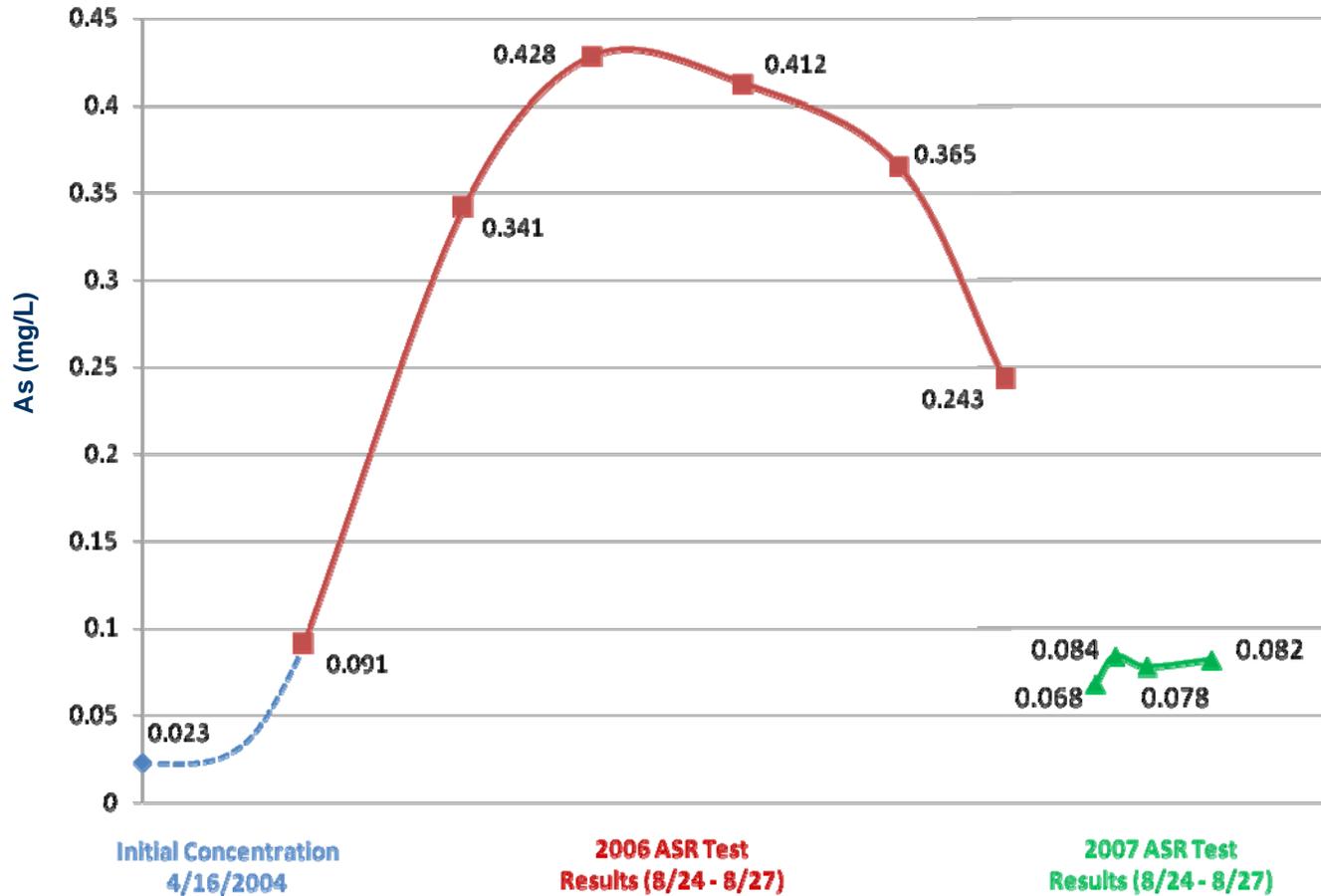
Arsenic

- **Natural Background Arsenic Concentration: 0.023-0.038 mg/L**
- **Drinking Water Maximum Contaminant Level: 0.010 mg/L**

Initial Injection/Recovery Testing

- **Injected and Recovered 1 MG**
- **Arsenic Concentration in First Cycle of Recovered Water > 0.800 mg/L**
- **Arsenic mobilized from aquifer sediments**

2nd Test: Injection with Chemical Conditioning



Additional Testing Planned

- **Large-Scale Injection and Recovery Cycles: 20 MG**
- **Injection Water Chemical Conditioning**
- **Multiple Cycles**

Source Water Facilities:

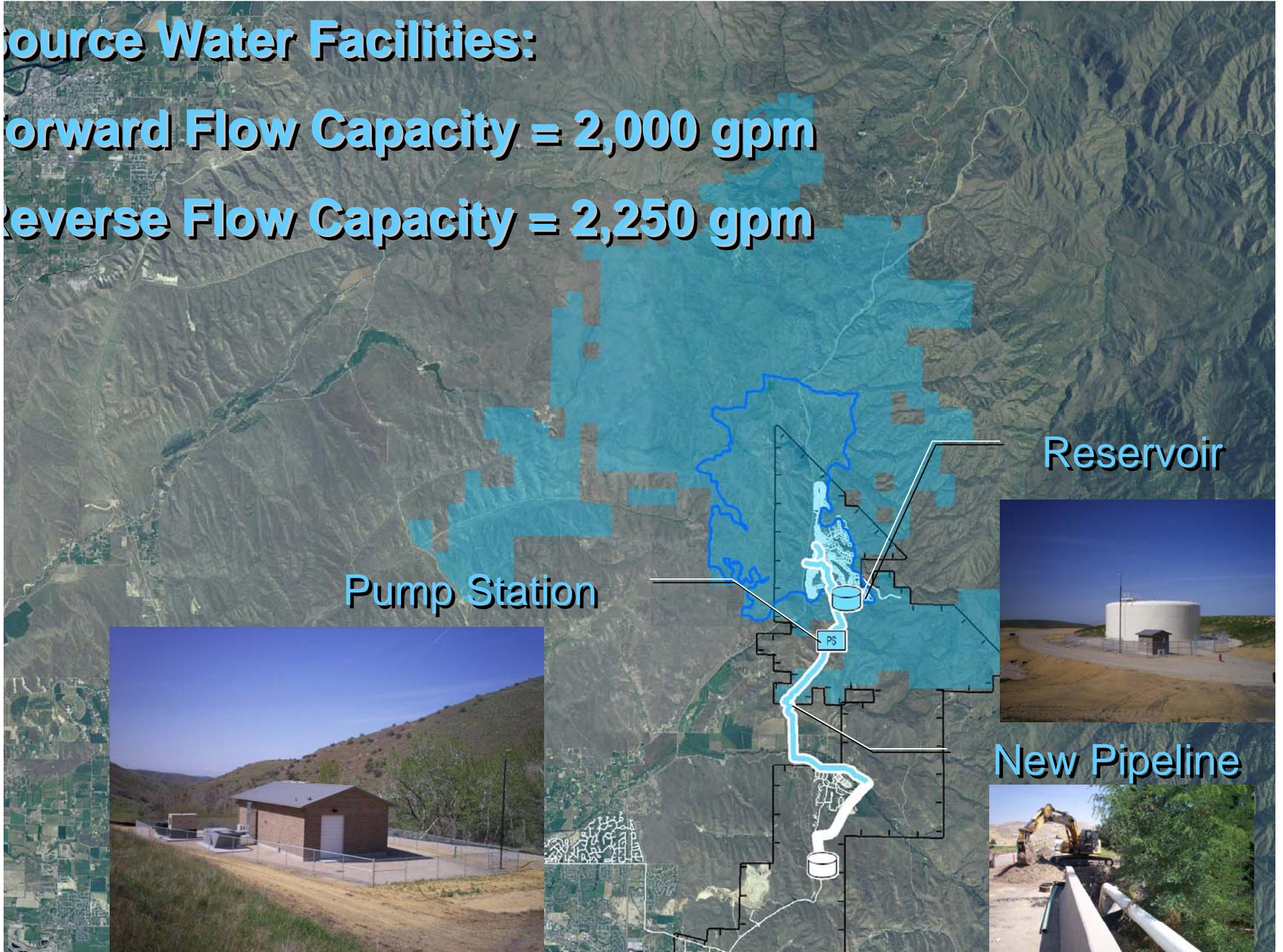
Forward Flow Capacity = 2,000 gpm

Reverse Flow Capacity = 2,250 gpm

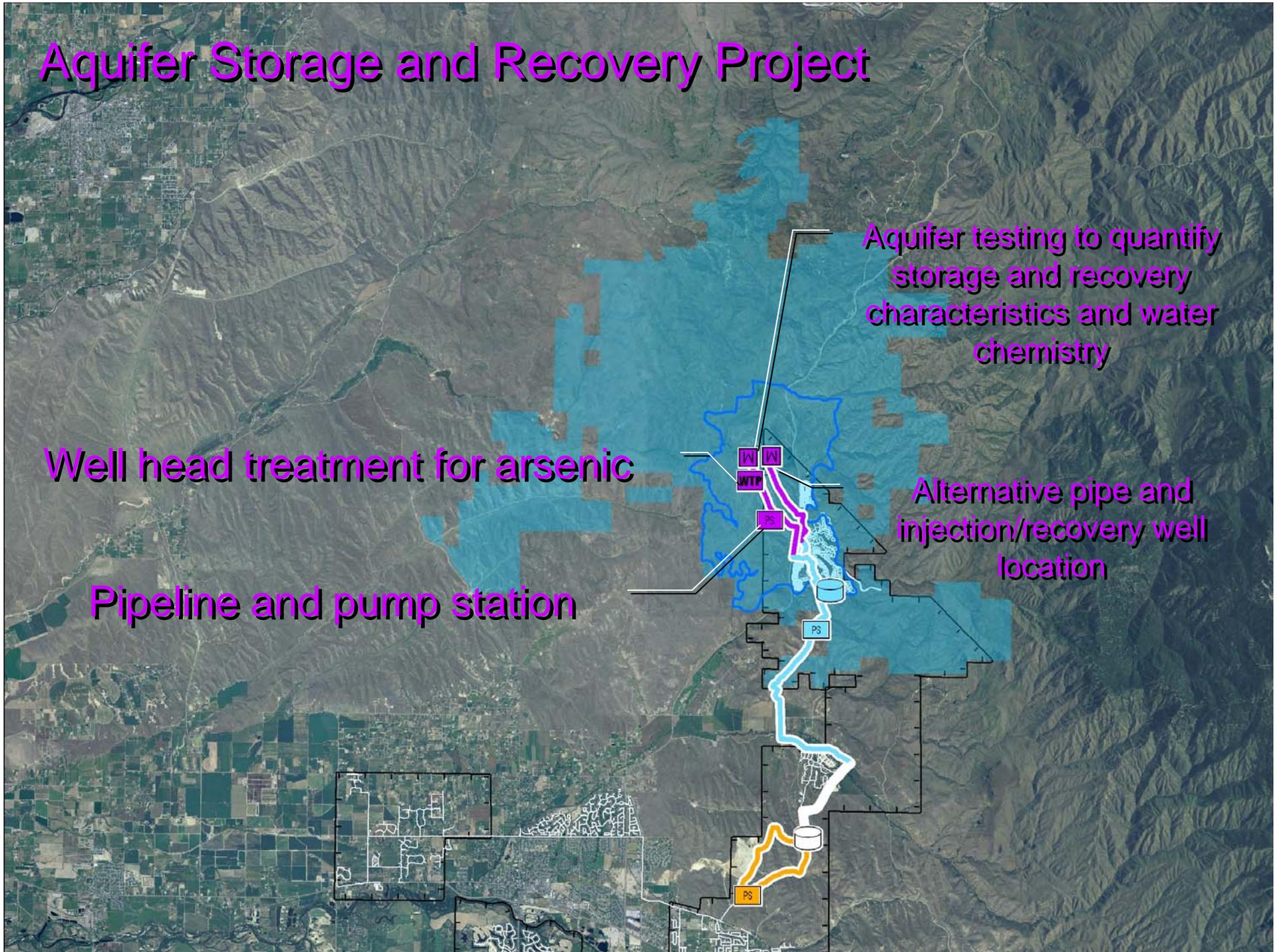
Pump Station

Reservoir

New Pipeline



Aquifer Storage and Recovery Project



Joint Benefit of Project

- **Water Utility has an interest to bring this project into its system:**
 - **Postpone large capital improvement projects**
 - **Expanded service area**
 - **Reliability of water supply within service area**

Take-Home Messages

- **Maximize existing water resources through aquifer storage and recovery**
- **Aquifer delineation and testing critical in the planning process**

Questions

