



Union Public Utility District

Water Master Plan Progress Update

October 19, 2026

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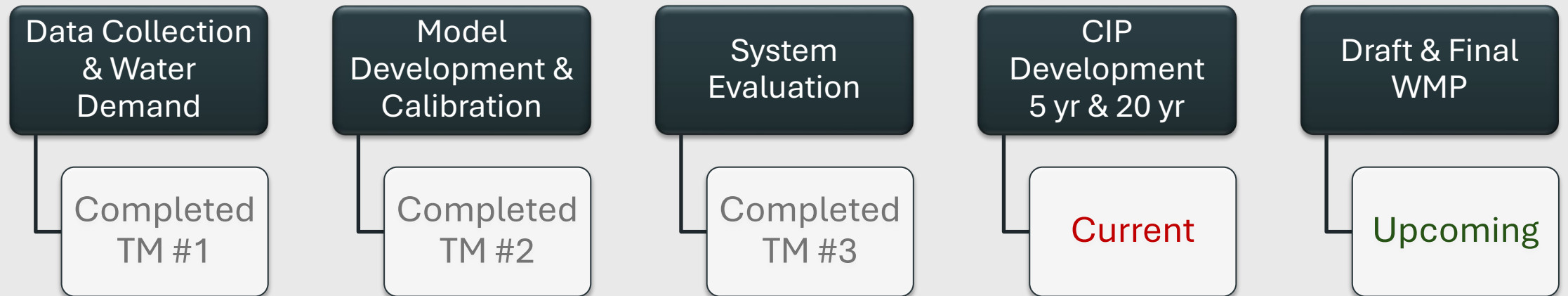
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Presentation Overview

- Where We Are - Project Timeline
- From Model to Evaluation Tool
- Summary of Findings
- Modeled Improvement Scenarios
- Domestic and Raw System Evaluation
- Example Projects and Modeling Demonstration
- CIP Planning Framework
- Example CIP Projects
- Next Steps & Board Input

Water Master Plan Status



From Model to Evaluation Tool

Two calibrated hydraulic models allow UPUD to test operating changes and capital improvements before committing to projects.

Pressure and
System Capacity

Fire Flow

Pressure Zone
Configuration

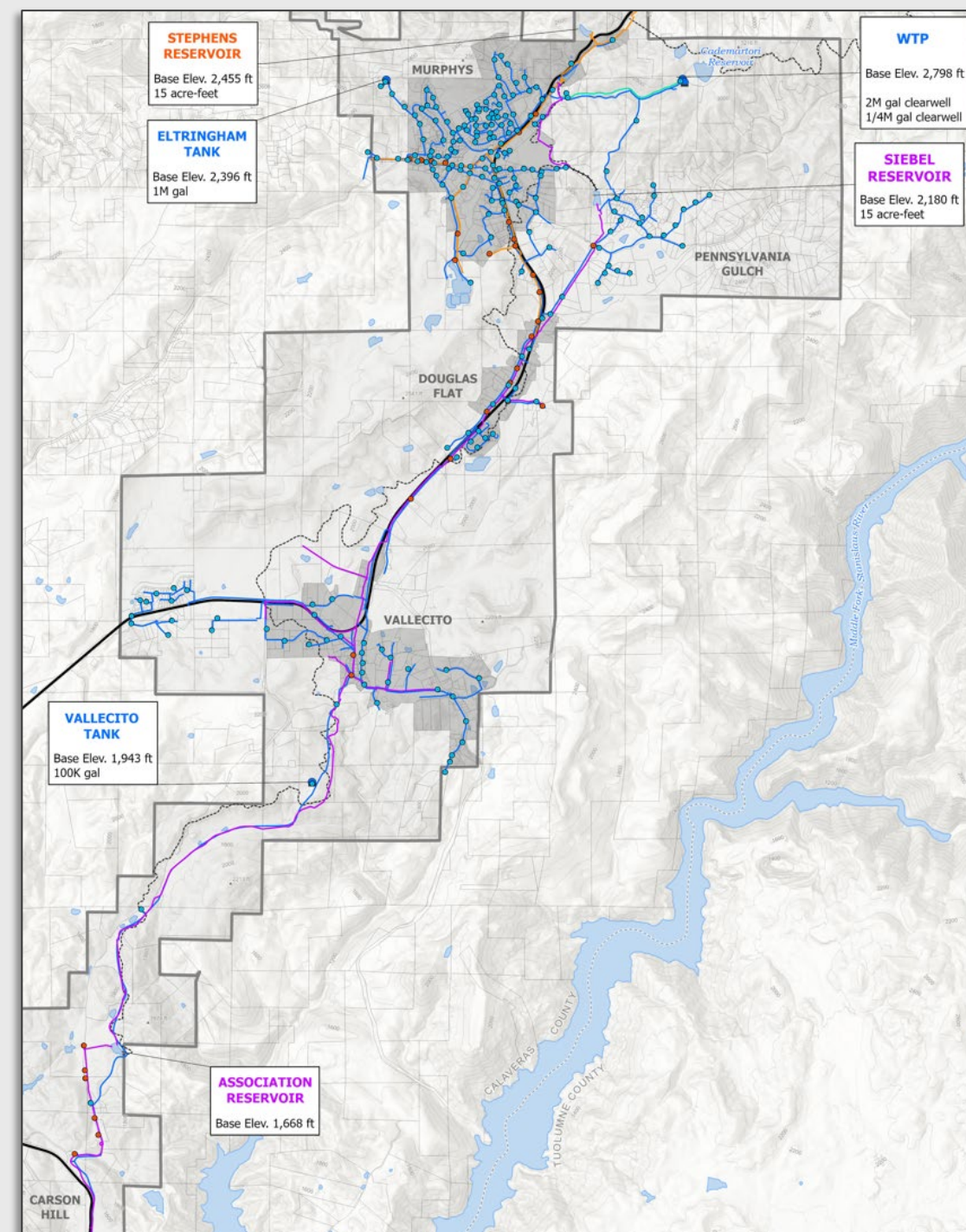
Infrastructure
Renewal



TM #3 presents results under normal, peak-demand, and fire flow conditions, explores hydraulic limitations and improvement concepts.

Model Evaluation

Focus Areas	Domestic	Raw
Pressure zone configurations	X	
PRV settings	X	
Fire flow and pressure	X	
Storage tank operations	X	
Irrigation pressures		X
Supplemental fire flow		X
Demand sensitivity		X
Targeted improvements	X	X
Long-term pipe renewal	X	X



System Evaluation Overall Findings

Domestic System

WTP: 3 filters – 2.9 MGD daily capacity

- Current MDD: 2.0 MGD
- Three filters adequate / recently rehabbed
- No immediate WTP expansion identified
- Future update driven by WQ/permit

Storage: 3.35 MG

- Calculated requirement: 1.80 MG
- Ample volume, shifts focus to operation, water age

Distribution Network: 12 pressure zones, ~43 miles

- Pressure generally adequate
- Localized high-elevation constrains Fire Flows
- Targeted improvements more effective than broad upsizing

Raw System

Network: ~17 miles, North & South Ditch

- North Ditch comparatively stable
- South Ditch more demand-sensitive
- Old welded steel creates significant headloss

Domestic System

What Controls Performance

Elevation / Pressure Zones

High elevations in each zone create limitations on meeting minimum residual pressure during Fire Flow.

- Murphys (PZ 2)
- Vallecito (PZ 9)

Air Management (ARVs)

Potential trapped-air → high headloss

- ~28 candidate ARV sites identified

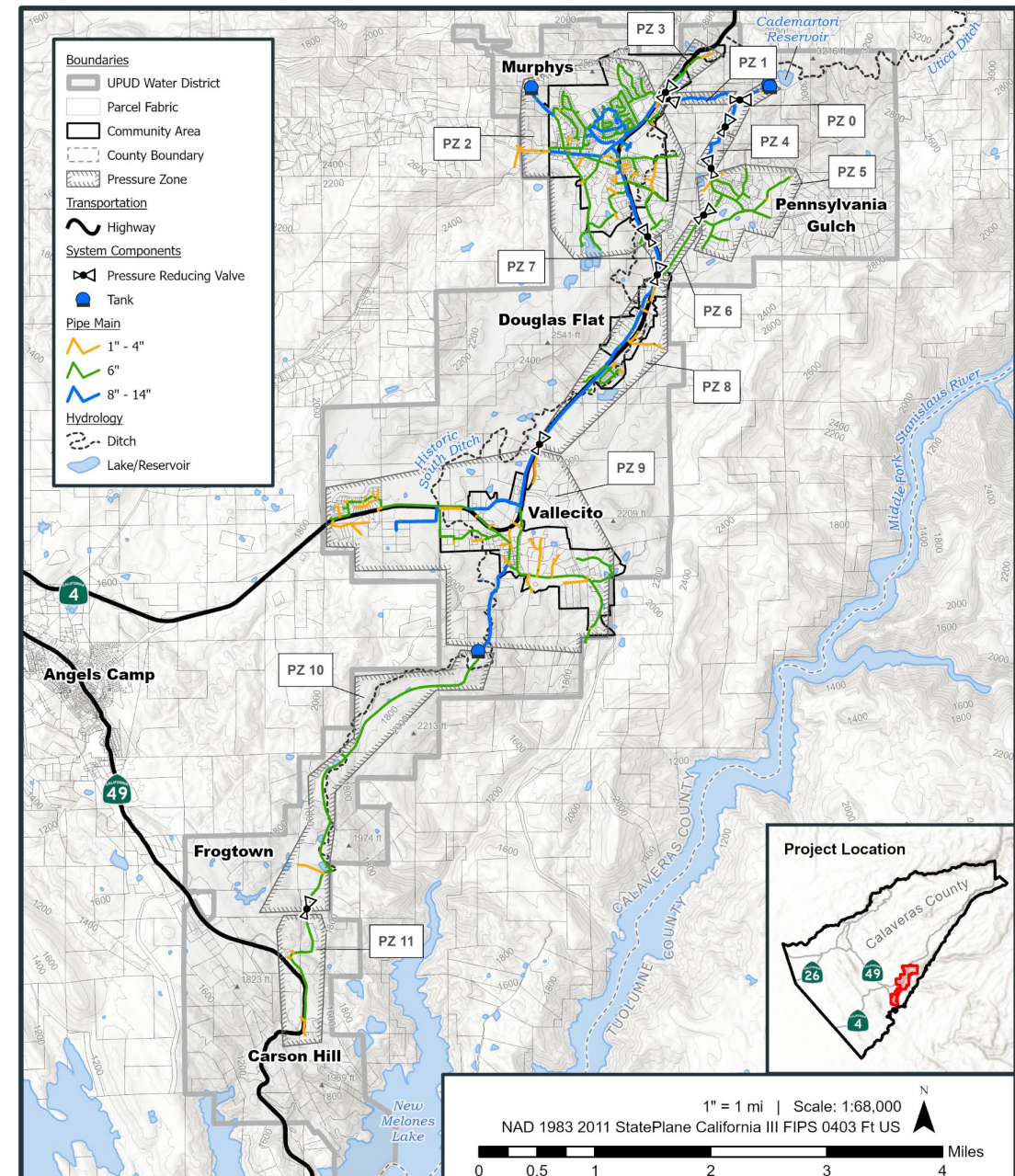
PRV Settings

Opportunities for PRV adjustments

- Condition assessment to confirm

Targeted Improvements vs. Pipe Renewal

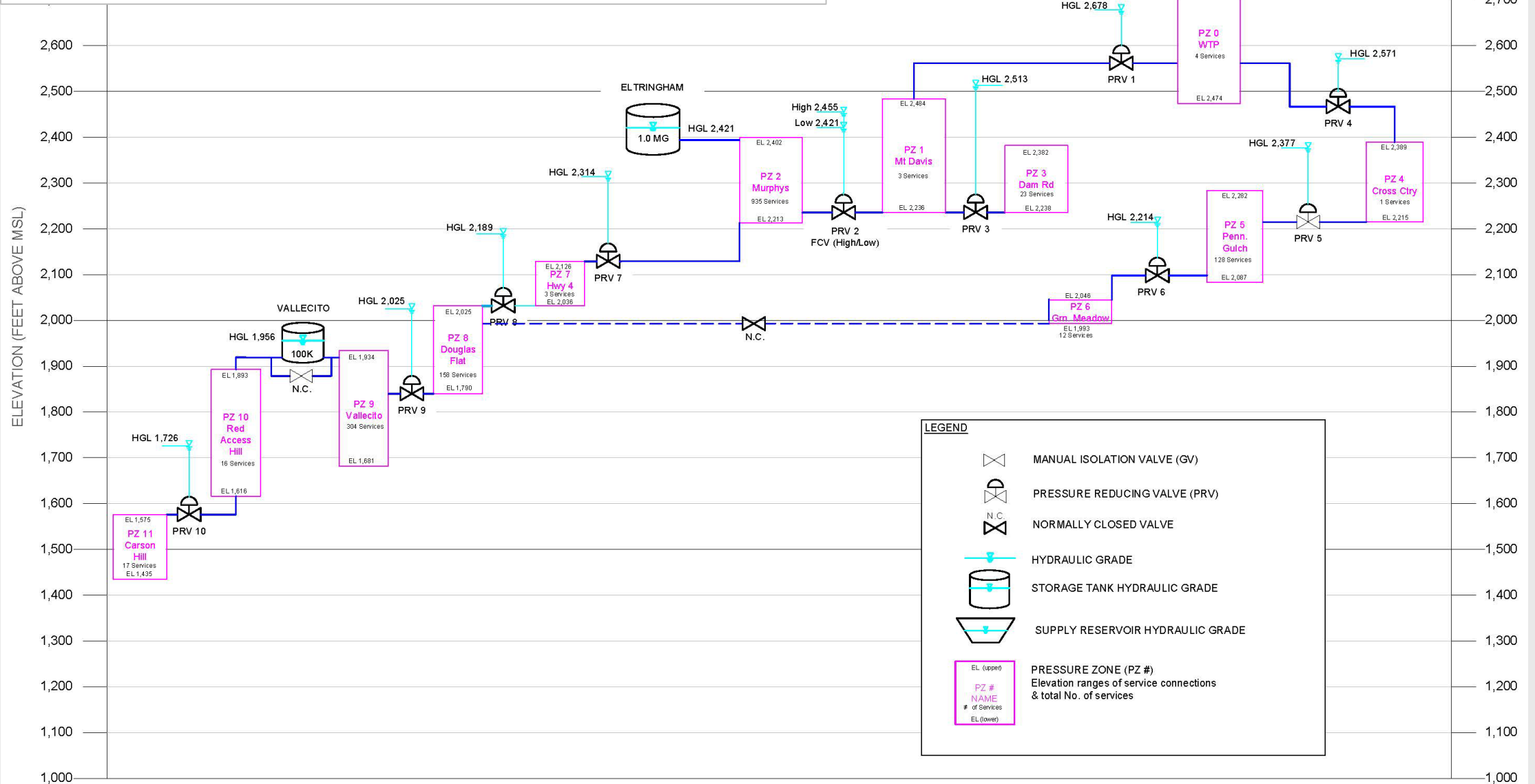
- Targeted projects provide greatest benefits overall.
- Broad replacement improves reliability.



Domestic System

Domestic Profile

Vertical Schematic of the Hydraulic Grade



Domestic Modeling

Sequential Improvement Scenarios

1) Operational	2) Targeted Projects	3) Pipe Renewal
• PRV adjustments • ARV additions	• Reconfigure Murphys (PZ 2) ❖ Sweetwater Dr → Dam Rd (PZ 3) • Vallecito Looping ❖ Pyshon Rd, ❖ Golden Creek Dr, ❖ Hwy 4 @ Val. Bypass Road, ❖ Parrotts Ferry Road	• ACP Replacement • Small-main upsize
Findings		
• Reasonable fire flow improvement • Requires pipe condition assessment	• PZ 2 is greatly improved • Vallecito has opportunity for Raw supplement	• Some hydraulic benefit • Greatest benefit is long-term reliability

Domestic (Example)

Pressure Zone Reconfiguration

Apple Blossom, Sweetwater & Wyldewood Drive

Existing

- High-elevation neighborhood within Murphys PZ #2
- Pressure limited by available hydraulic grade

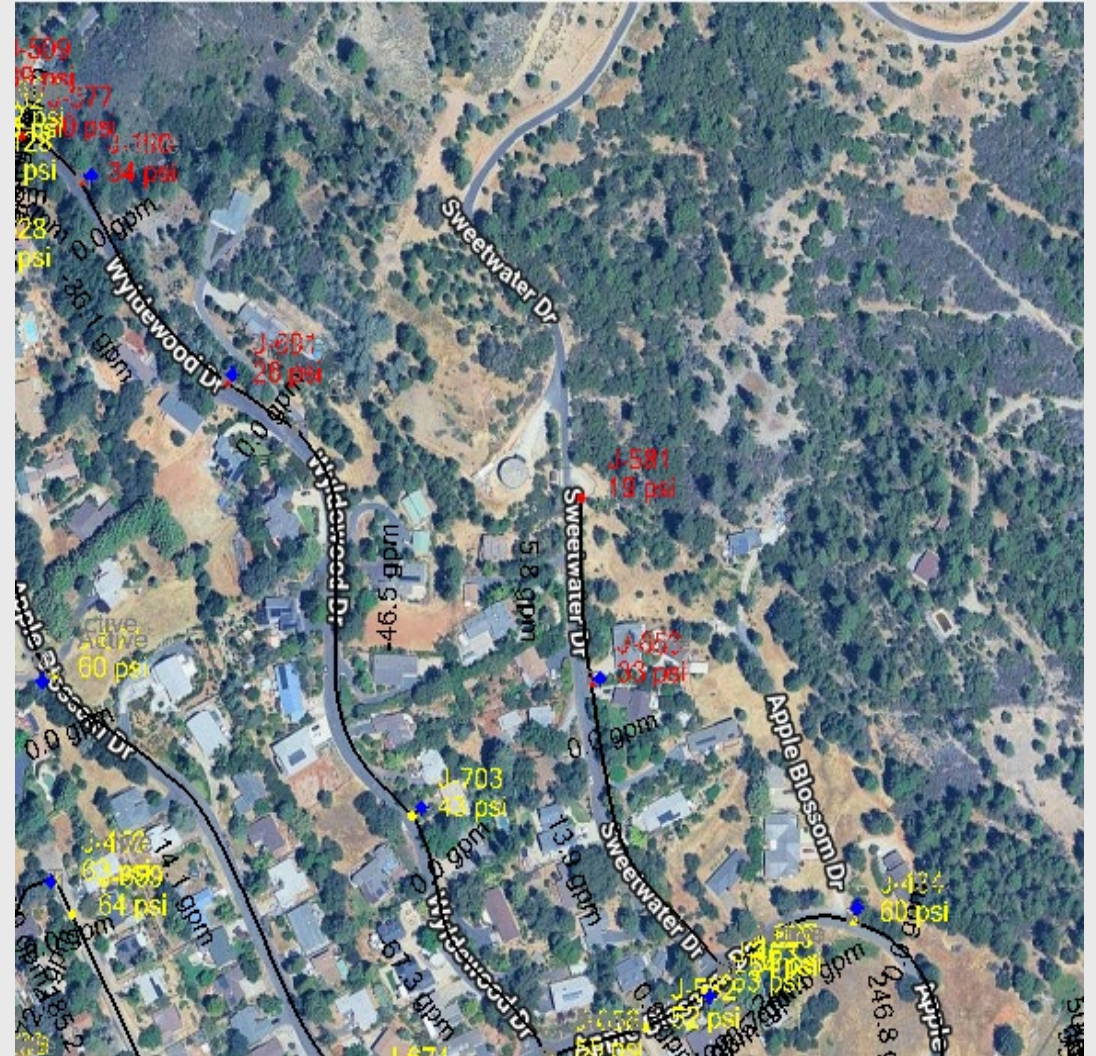
Modeled Improvement

- Transmission main to transfer to higher Dam Road PZ #3
- New connection and pressure-zone controls

Results

- +40 psi improvement in the transferred neighborhood
- Average Fire Flow meets 1,000 gpm @ 20 psi residual
- Fair Oaks Lane becomes the remaining controlling high point in PZ 2

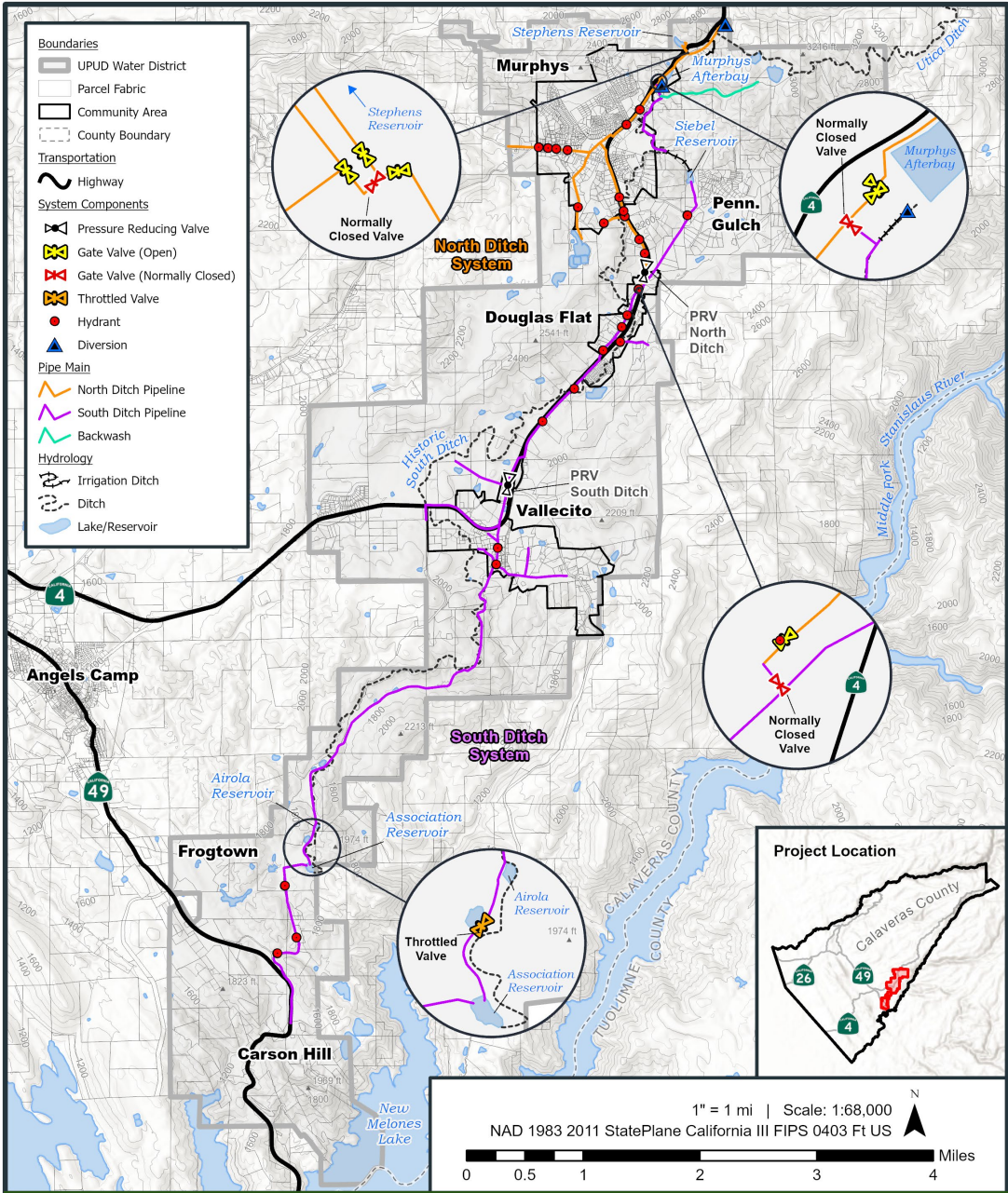
→ **MODEL DEMONSTRATION**



Raw System

Baseline Results

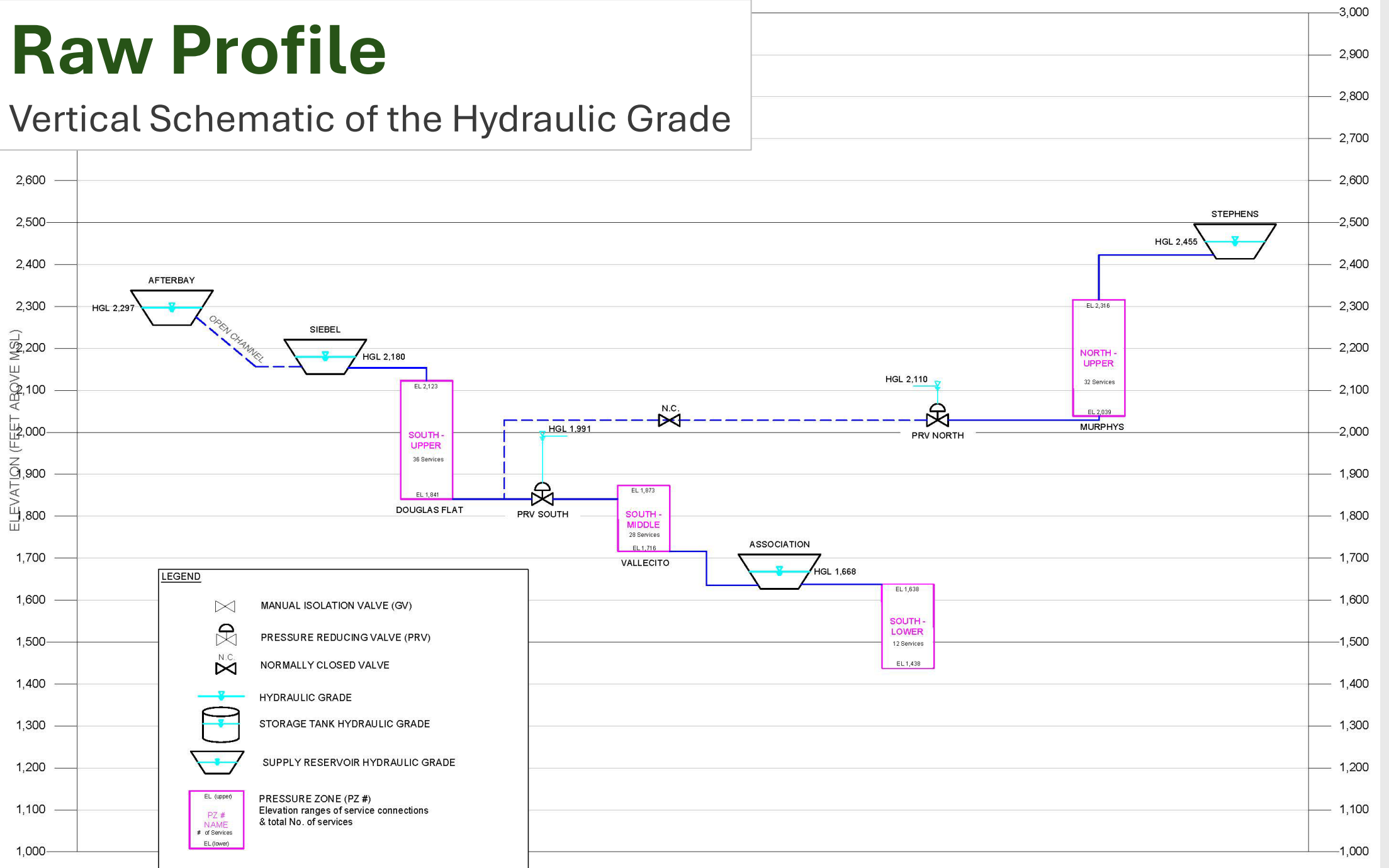
Zone	MDD Avg PSI	Key Finding
Murphys North Ditch	92 psi	Relatively stable
Douglas Flat South Upper	13 psi	High transmission loss
Vallecito South Middle	48 psi	Demand sensitive
Carson Hill South Lower	50 psi	Stable



Raw System

Raw Profile

Vertical Schematic of the Hydraulic Grade



Raw System

Sequential Improvement Scenarios

1) Existing	2) Targeted Projects	3) Pipe Renewal
Modeled under MDD and Fire Flow	- North-South Interconnection - PRV Settings	- WSP (~15,700 ft) - Small-main (~6,300 ft)
Findings		
Douglas Flat - Pressure 13 psi - Fire Flow 0 gpm Vallecito - Fire Flow 0 gpm	Murphys - Pressure 92 → 78 psi (impact) Douglas Flat - Pressure 34 psi - Fire Flow 400 gpm Vallecito - Fire Flow 200 gpm	Douglas Flat - Pressure 61 psi - Fire Flow 1,350 gpm Vallecito - Fire Flow 1,000 gpm

**Average pressures and fire flows presented*

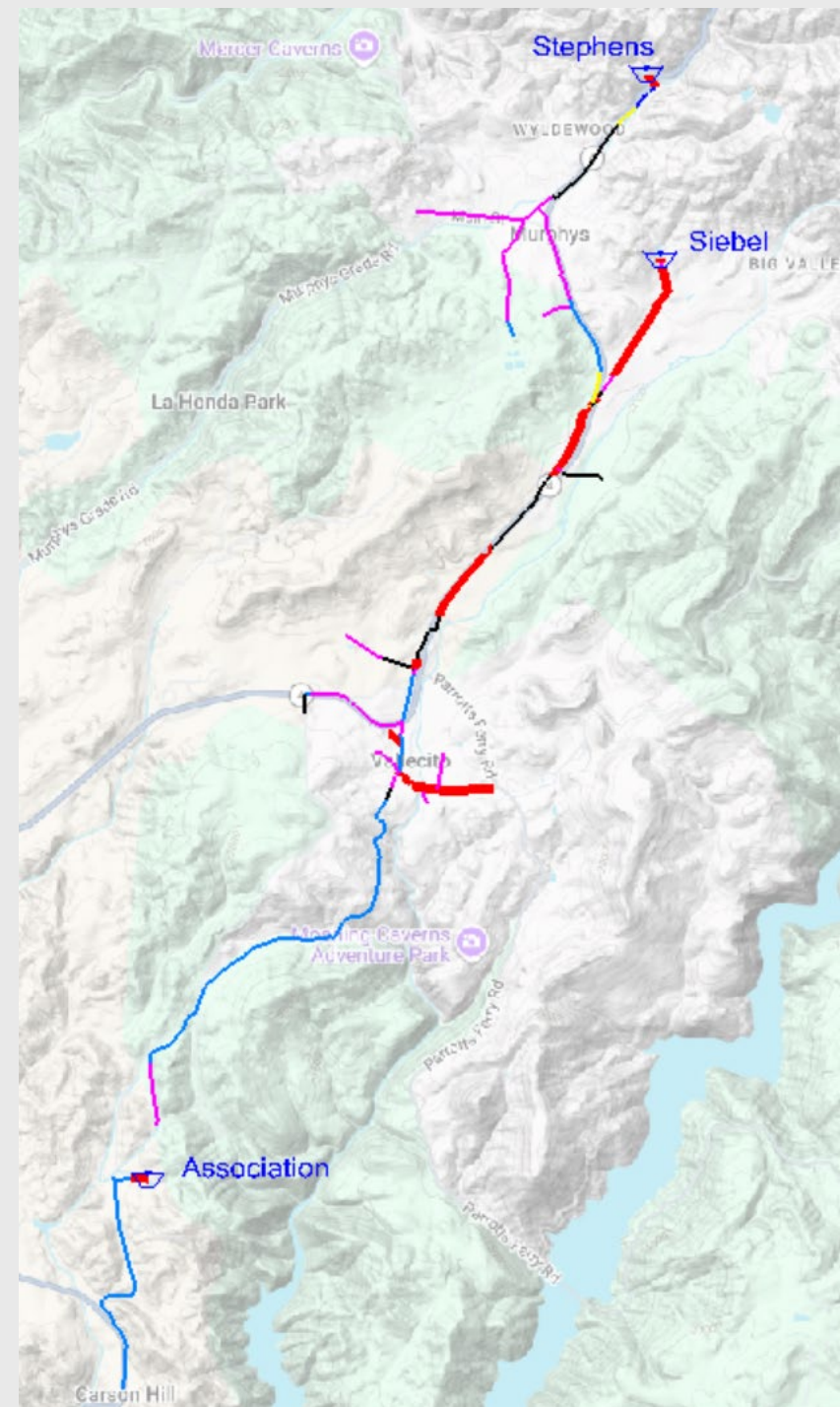
Raw (Example)

Pipe Renewal

South Ditch Welded Steel Pipe Replacement

- Replaces aging welded steel pipe (~15,700 LF)
- Reduces headloss & leakage
- Greatly improves performance
- Creates supplemental Fire Flow opportunities

→ MODEL DEMONSTRATION



Model Demonstrations

Domestic System

- Model Configuration and Operating Scenarios
- Sweetwater/Wyldewood Pressure Zone Reconfiguration

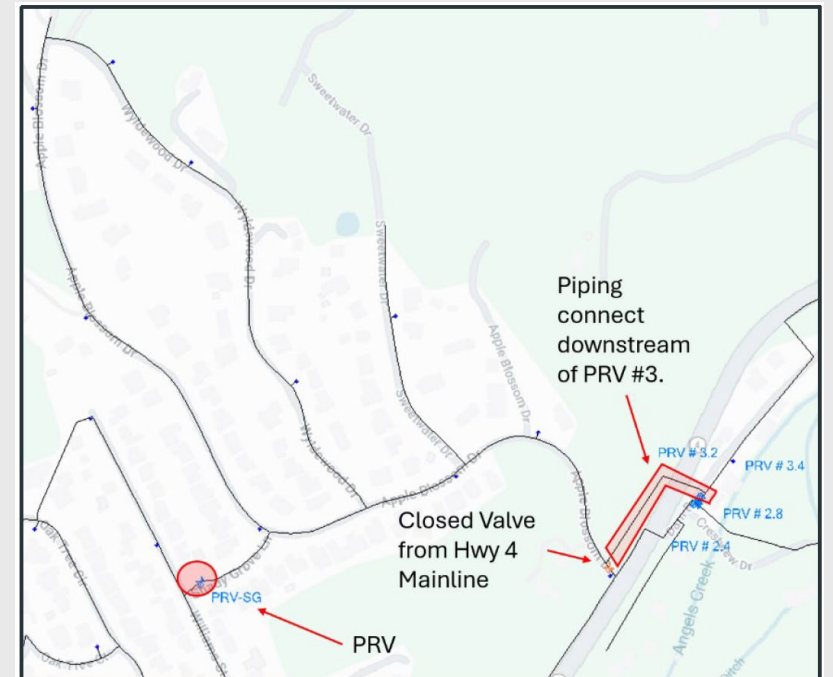
Raw System

- North and South Ditch Operation
- Pipe Renewal Scenario

From Model Analysis to CIP Projects



Not every model finding becomes a CIP project. Some become operational recommendations, policy items, or future study items.



Example pressure zone reconfiguration for Apple Blossom, Sweetwater, Wyldewood Drive

CIP Themes Developing

PRESSURE & FIRE PROTECTION

- ARV additions & PRV adjustments
- Sweetwater reconfiguration
- Vallecito strategy
 - *Parrotts Ferry Transmission*
 - *Raw system expansion*

RELIABILITY & REDUNDANCY

- Pyshon Rd & Golden Creek Loop
- Pennsylvania Gulch intertie
- Isolation valves

ASSET RENEWAL

- Domestic aging, and small diameter pipelines
- Raw welded steel
- Raw ACP & small mains

LONG-TERM WTP & OPERATIONS

- WTP study for future modernization
- Storage/Water Age & DBP Study

CIP Planning Framework

5-Year CIP

- Near term priority projects

20-Year CIP

- Long-term renewal and funding readiness planning

Operational / Policy

- Items that do not require capital construction but can improve performance

Funding Contingent

- Projects advanced when outside funding becomes available

Next Steps & Board Input

Next Steps

- Define individual CIP projects
- Develop planning-level costs
- Prioritize 5-year and 20-year projects
- Identify funding opportunities
- Prepare CIP memo and Master Plan

Board Input

- Overall direction
- Project priorities
- Funding strategy
- Near-term vs. long-term emphasis

Thank you