Napa County Groundwater Sustainability Agency

GSP Implementation: Progress Since 2022 and Work Underway

September 23, 2025

Outline

- GSP Implementation Progress and Roadmap
- Groundwater Pumping Reduction Programs and Progress
- Modeling Scenarios
- Water Conservation: Expanded Outreach
- Recommendations

Napa Valley Subbasin GSP Roadmap

2022
GSP Submitted to DWR
WY 2022 Annual Report
TAG Meetings

2023
GSP Approved by DWR
Develop 5 Workplans w/Stakeholder Input
WY 2022 Annual Report
Installed 16 Monitoring Wells
Model Update

2024
Complete 5 Workplans and Begin Implementation
WY 2023 Annual Report
Monitoring
Model Update

2025
Workplan Implementation
WY 2024 Annual Report
Installed 2 Monitoring Wells, 5 Stream Gages (CalSIP Grant)
Model Update and Coordinate with State Board on Napa River Watershed Model

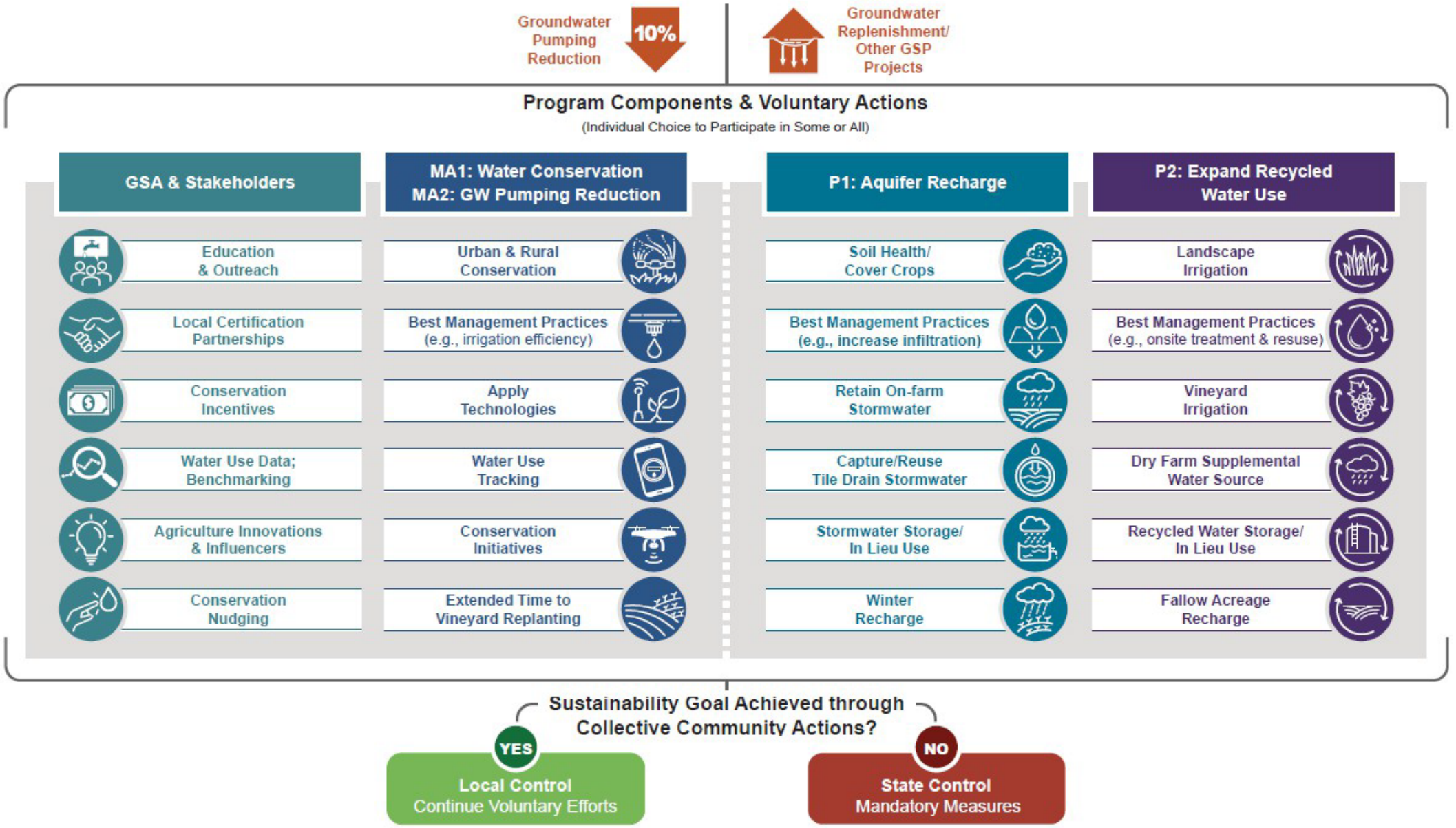
2026
Prepare Five-Year Periodic Evaluation
WY 2025 Annual Report
Monitoring, including O&M CalSIP gages
Workplans Implementation
Projects & Management Actions (PMAs) Implementation
Modeling Scenarios
Coordinate with State Board on Napa River Watershed Model

2027
Five-Year Periodic Evaluation Due 1/2027
WY 2026 Annual Report
Workplans Implementation
Monitoring, CalSIP Gages
Modeling Scenarios

2028-2041
Ongoing Annual Reports
Monitoring and Modeling
PMA Implementation
Outreach
Adaptive Management

2042
Achieve Subbasin Sustainability

Workplan Implementation:
Water Conservation (WC) and Groundwater Pumping Reduction (GPR)



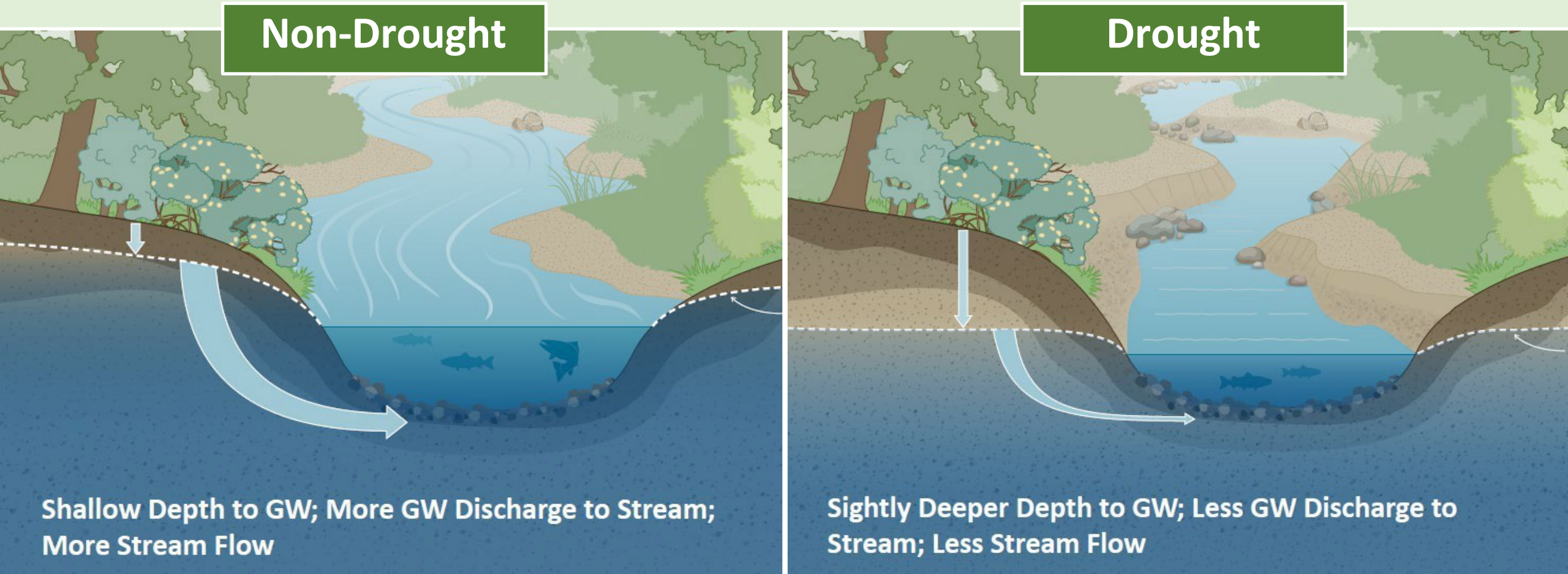
Preparing for Future Water Resources Resiliency

- Complex groundwater and interconnected surface water conditions in the Napa Valley Subbasin
- Regulatory requirements govern implementation of the DWR-approved Subbasin GSP
- Uncertain climate change and drought effects must be integrated into water resource monitoring and management

Finding common ground for future water resources resiliency must encompass all the County's communities, agricultural heritage, and ecosystems.

The Napa Valley Subbasin is very susceptible to uncertain precipitation patterns, drought, and less natural recharge. Slight differences in groundwater levels affect flow in the stream system.

Ecosystems, vineyards, and other land uses rely on groundwater during the summer months. Climate change necessitates new strategies and innovation to use less groundwater and increase groundwater replenishment regardless of Non-Drought or Drought Conditions.

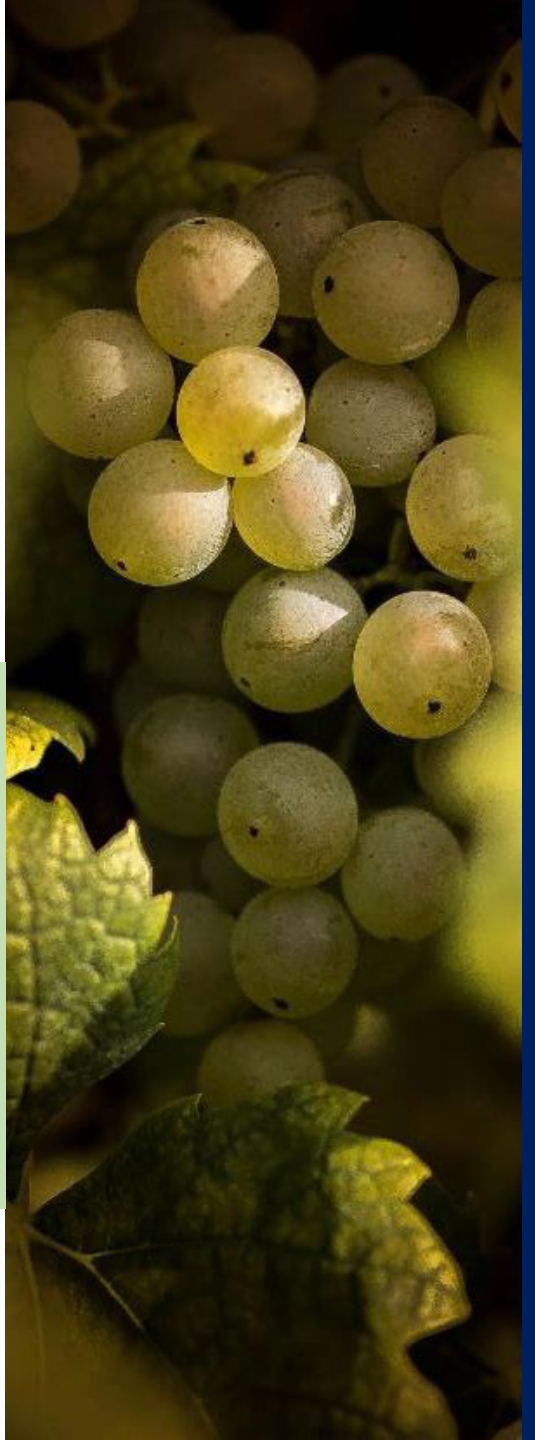


Current Progress and Other Considerations

Many programs are underway related to demand management and groundwater replenishment.

Recommendations for Additional Management Measures

- *Implement Policy Initiatives in County 2023 Safety Element pertaining to conservation*
- *Implement program to incentivize measuring and reporting in vicinity of significant streams*



Groundwater Pumping Reduction Programs and Progress

Water Conservation & Groundwater Pumping Reduction Workplans: Program Implementation

Focus on incentive-driven actions that achieve groundwater benefits for the Subbasin


Pilot Sites


Benchmarking


Certification Partnership


Community Engagement


Incentives


Expanded Measurement


Domestic Initiatives


Extended Replant


Groundwater Recharge

Water Conservation Practices

- The WC Workplan developed a list of water conservation best management practices (BMPs) for all water users
- Cost, adoption, water saving potential, and economic analysis of alternatives

Practice	Estimated Annualized Cost per AF Conserved* $/AF	Estimated Potential Subbasin-wide Water Savings AFY	Adoption Timeline** Years	Overall Feasibility Ranking
Water Practices for All Users				
★Water Metering	$150 - $2,500	350 - 550	Medium-Term	High
★Recycled Water	$362 - $720	200 - 300	Medium-Term	High
★Benchmarking	$100 - $350	300 - 1,100	Medium-Term	High
Water Practices for Vineyards (Established)				
Drip Irrigation	$2,800 - $9,200	75 - 250	Near-Term	Medium
★Distribution Uniformity	$175 - $450	500 - 2,100	Near-Term	High
★Plant Water and Soil Moisture Monitoring	$155 - $3,340	1,000 – 2,000	Near-Term	High
High Tech, Low Labor	$350 - $1,450			
Medium Tech, Medium Labor	$740 - $3,340			
Low Tech, High Labor	$155 - $1,170			
Cover Cropping	$5,000 - $18,000	50 - 550	Medium-Term	Low
Canopy Management	$3,500 - $5,000	200 - 300	Near-Term	Medium
Water Practices for Vineyards (New Plantings)				
Row Orientation	No additional cost	200 - 325	Long-Term	High
★Rootstock Selection	No additional cost	Data Gaps	Long-Term	Data Gaps
Water Practices for Wineries				
Waterless Sanitation	$1,900 - $2,800	100 - 165	Near-Term	Low
Process Water Treatment and Reuse	Data Gaps	275 - 450	Long-Term	Medium
Water Practices for Residential, Commercial, and Hospitality				
★WaterSense Devices	$775 - $1,200	500 - 575	Near-Term	High
Other Urban Water Conservation	Data Gaps	Data Gaps	Near-Term	Data Gaps

★ *High Priority Practices*

Domestic Water Conservation

Overview and Current Status

- A domestic conservation concept for increasing adoption of water conservation practices in the Napa Valley Subbasin
- Includes practices for urban, rural residential, and municipal users
- Leveraging existing water conservation frameworks and community's commitment to sustainability
- Currently under development

MA1: Water Conservation
MA2: GW Pumping Reduction

Example Practices

Water Measurement

Recycled Water Use

Irrigation System Efficiency

Monitor Plant/Soil Moisture

WaterSense Devices

Low Water Use Fixtures

Irrigation Controllers

Water Efficient Landscaping

Pilot Water Certification Partnership Program

Program Overview

- Voluntary, incentive-driven partnership to:
  - Encourage more water conservation practices
  - Increase awareness of groundwater management
- Partnership with existing certification programs or other organizations to recognize vineyards and wineries implementing practices in the Subbasin
- Leveraging existing conservation efforts and ag industry commitment to sustainability

Current Status

- Request for Qualifications (RFQ)
- Pilot in MST: Simple water accounting and tracking

TAPPH2O

Subbasin-Wide Groundwater Recharge

Feasibility Study

- Increase groundwater recharge

Currently Planned Recharge Project Scenarios

- **Scenario 1:** Surface water diversion for direct recharge
- **Scenario 2:** Surface water diversion to on-farm pond or reservoir for in-lieu use
- **Scenario 3:** Recharge combined with repurposing (e.g., riparian, recharge basin) for SGMA benefits (e.g., ISW and GDEs)

Assessment of Recharge Opportunities

- Technical
- Economic
- Financial

MA1: Water Conservation
MA2: GW Pumping Reduction

P1: Aquifer Recharge

Extended Vineyard Replant Concept

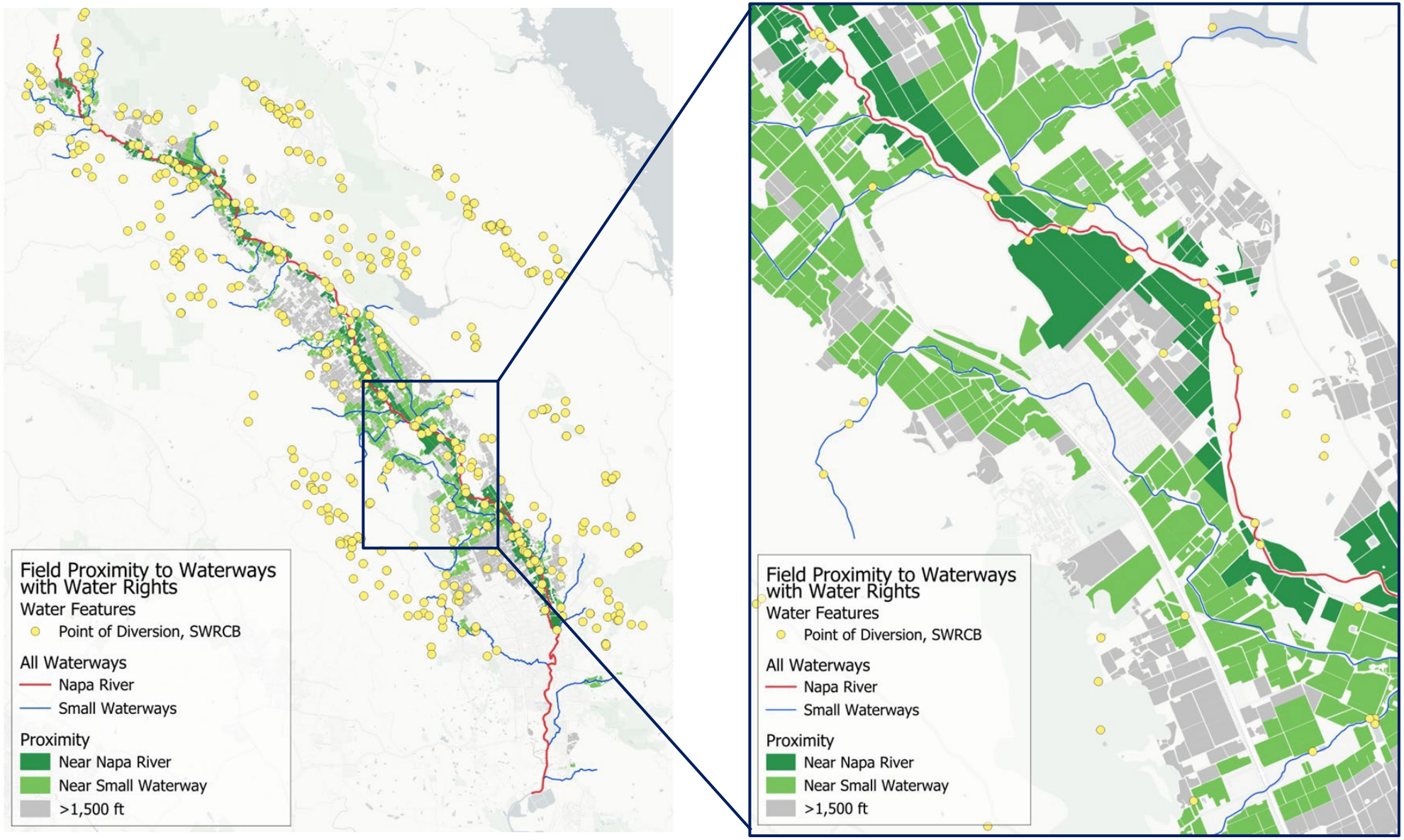
Concept Overview

- Voluntary program with incentive offered to increase the duration of idle lands between removal and replanting
  - Water savings as replants are shifted
- Explore in combination with other practices to increase benefits (Recharge Scenario 3)
- Considerations
  - Market conditions
  - ISW and GDEs
  - “Mothballing” is a similar potential concept
- Development in Progress

MA1: Water Conservation
MA2: GW Pumping Reduction

P1: Aquifer Recharge

Replant & Recharge Analysis Overview



GPR Water Conservation Programs

- NCGSA Water Certification Partnership
- Domestic Water Conservation/WELO
- Water Availability Analysis (In Progress)

Average Annual Estimated Water Savings

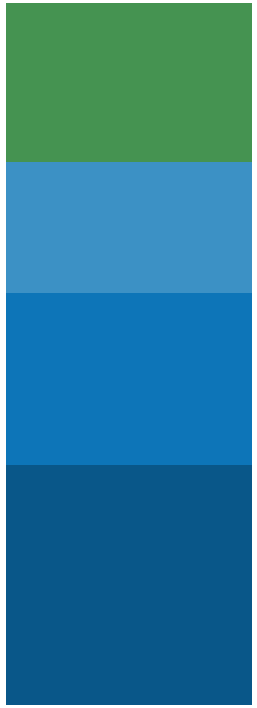
Estimated Potential Water Savings: 1,031 AFY

Sustainable Yield 15,000 AFY;
GPR Objective 10% Reduction, or ~1,500 AFY

MA1: Water Conservation
MA2: GW Pumping Reduction

GPR Water Conservation Programs

- Pilot Water Certification Partnership
- Domestic Water Conservation/WELO
- Water Availability Analysis (in Progress)
- Education and Outreach Campaign
  - Benchmarking Program



Average Annual Estimated Water Savings

Estimated Potential Water Savings: 1,331 AFY

Sustainable Yield 15,000 AFY;
GPR Objective 10% Reduction, or ~1,500 AFY

MA1: Water Conservation
MA2: GW Pumping Reduction

GPR Water Conservation Programs

- NCGSA Water Certification Partnership
- Domestic Water Conservation/WELO
- Water Availability Analysis
- Education and Outreach Campaign
  - Benchmarking Program
- Agricultural Water Conservation Programs
  - Extended Vineyard Replant Program
  - On-Farm Recharge and Conservation Programs

Average Annual Estimated Water Savings

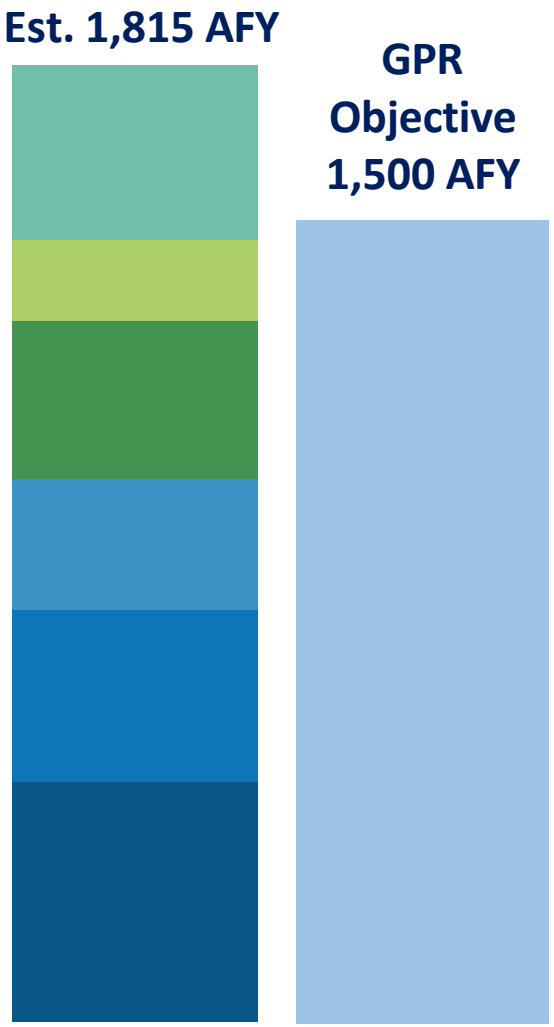
Estimated Potential Water Savings: 1,484 AFY

Sustainable Yield 15,000 AFY;
GPR Objective 10% Reduction, or ~1,500 AFY

GPR Water Conservation Programs

MA1: Water Conservation
MA2: GW Pumping Reduction

- NCGSA Water Certification Partnership
- Domestic Water Conservation/WELO
- Water Availability Analysis
- Education and Outreach Campaign
  - Benchmarking Program
- Agricultural Water Conservation Programs
  - Extended Vineyard Replant Program
  - On-Farm Recharge and Conservation Programs
- Other WC & GPR Workplan Measures



Estimated Potential Water Savings: 1,815 AFY

Sustainable Yield 15,000 AFY;
GPR Objective 10% Reduction, or ~1,500 AFY

Napa Valley Integrated Hydrologic Model (NVIHM) Scenarios

Demand Reduction Scenarios

MA1: Water Conservation
MA2: GW Pumping Reduction

Approach

Evaluate impact of 10% decrease in irrigation relative to ***Base Period (2005-2014)*** and groundwater pumping on lands located within:

- 500 ft of "Significant Streams" → 12,000 irrigated acres
- 1,500 ft of "Significant Streams" → 26,000 irrigated acres
- Entire Groundwater Subbasin → 33,000 irrigated acres

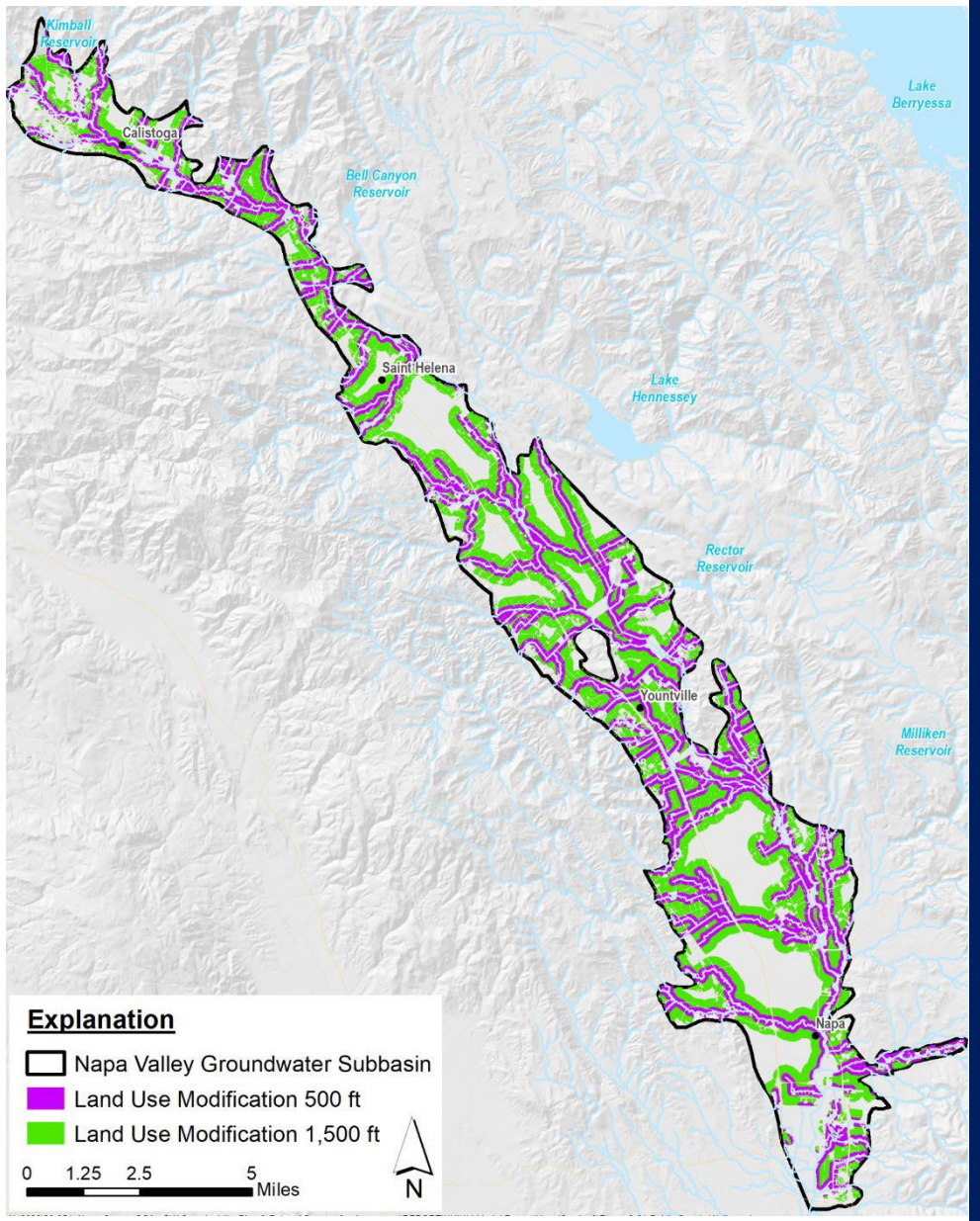
Irrigation Reduction Approach:

- Adjusted crop coefficient within stream buffers to reduce irrigation demand

Pumping Reduction Approach:

- **Irrigation Pumping (calculated)**: Adjusted well capacities in wells within stream buffers
- **Specified Pumping**: Directly reduced pumping specified pumping in municipal & public water supply wells

Irrigated Lands within 500 and 1,500 ft of Significant Streams



Demand Reduction Scenarios (2005-2024)

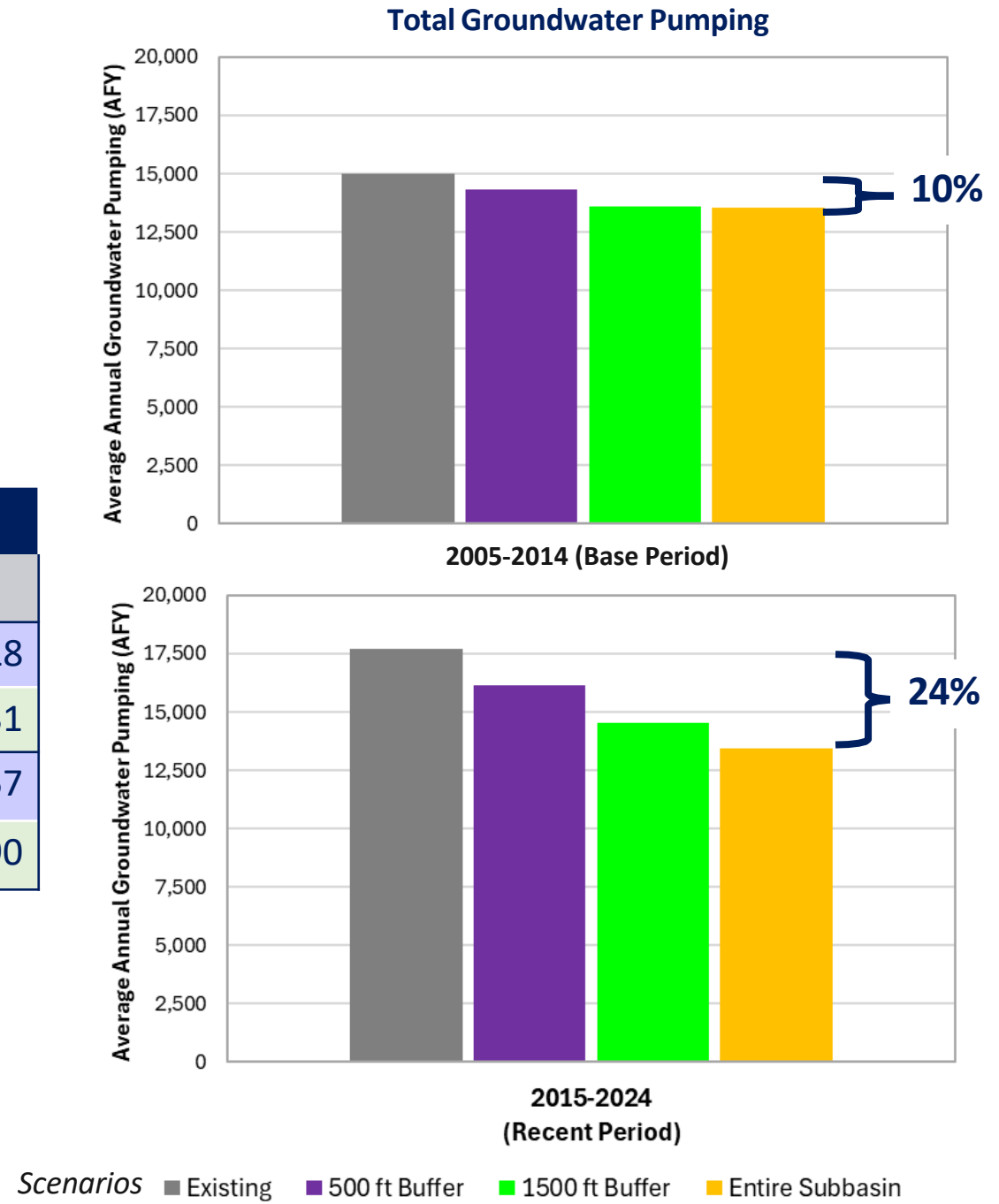
Pumping:

- **Base Period (2005-2014): 15,000 AFY**
- Recent Period (2015-2024): **17,700 AFY**
- **Sustainability Goal: 13,500 AFY**

Pumping Difference in Buffer Areas Compared to Entire Subbasin (Units AFY)

Period	Buffer (ft)	Within Buffer		Entire Subbasin	
		Original	Reduction	Original	Reduction
Base	500	6,646	600	15,020	718
Base	1,500	12,411	1,244	15,020	1,431
Recent	500	7,837	1,630	17,702	1,557
Recent	1,500	14,647	3,333	17,702	3,190

- Pumping increased significantly in more recent years (2015-2024) due to hotter, drier conditions
- To achieve the Sustainability Goal, such conditions necessitate increased demand management, complemented by supply augmentation where feasible



Demand Reduction Results: Relation to Sustainable Management Criteria

Sustainable Management Criteria for Stream Depletion:

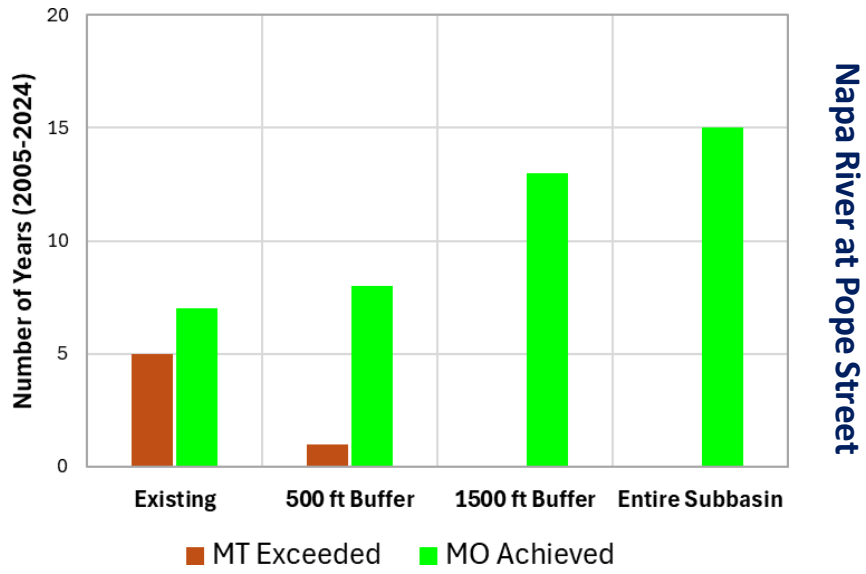
- Calculated as the total volume of stream depletion from June through October determined from ***Base Period 2005-2014***.
  - **Pope Street:** MT is 1,400 AF and MO is 1,120 AF
  - **Oak Knoll:** MT is 3,190 AF and MO is 2,370 AF

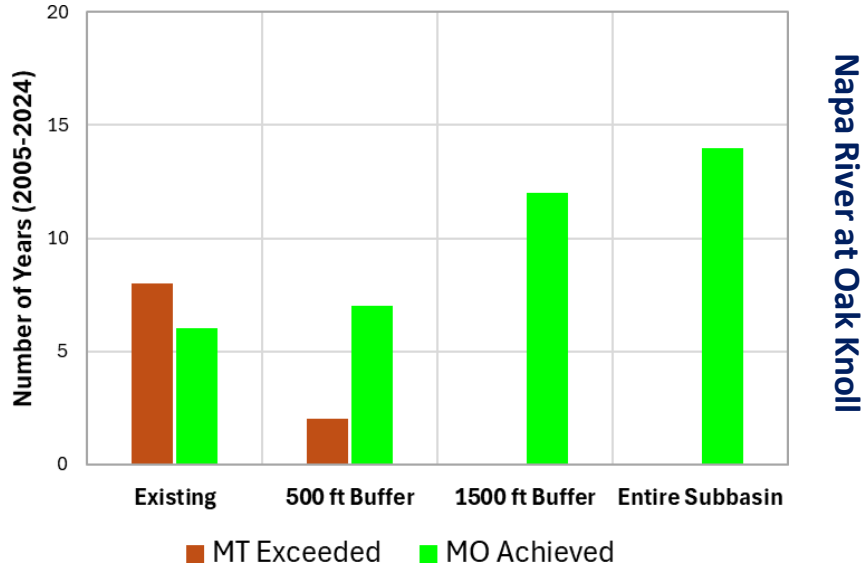
  (MT=Minimum Threshold; MO= Measurable Objective)

Summary of Model Results:

- Demand reduction within only 500 feet of significant streams substantially reduces the number of years where MT is exceeded between 2005-2024
  - **Decreases undesirable results as defined in GSP**
- Demand reduction over more of the Subbasin leads to more years where the GSA achieves the MO between 2005-2024
  - **Moves towards <u>long-term</u> sustainability goal as defined in the GSP**
  - **Scale of the pumping reduction matters**

Summary of Stream Depletion Relative to SMCs



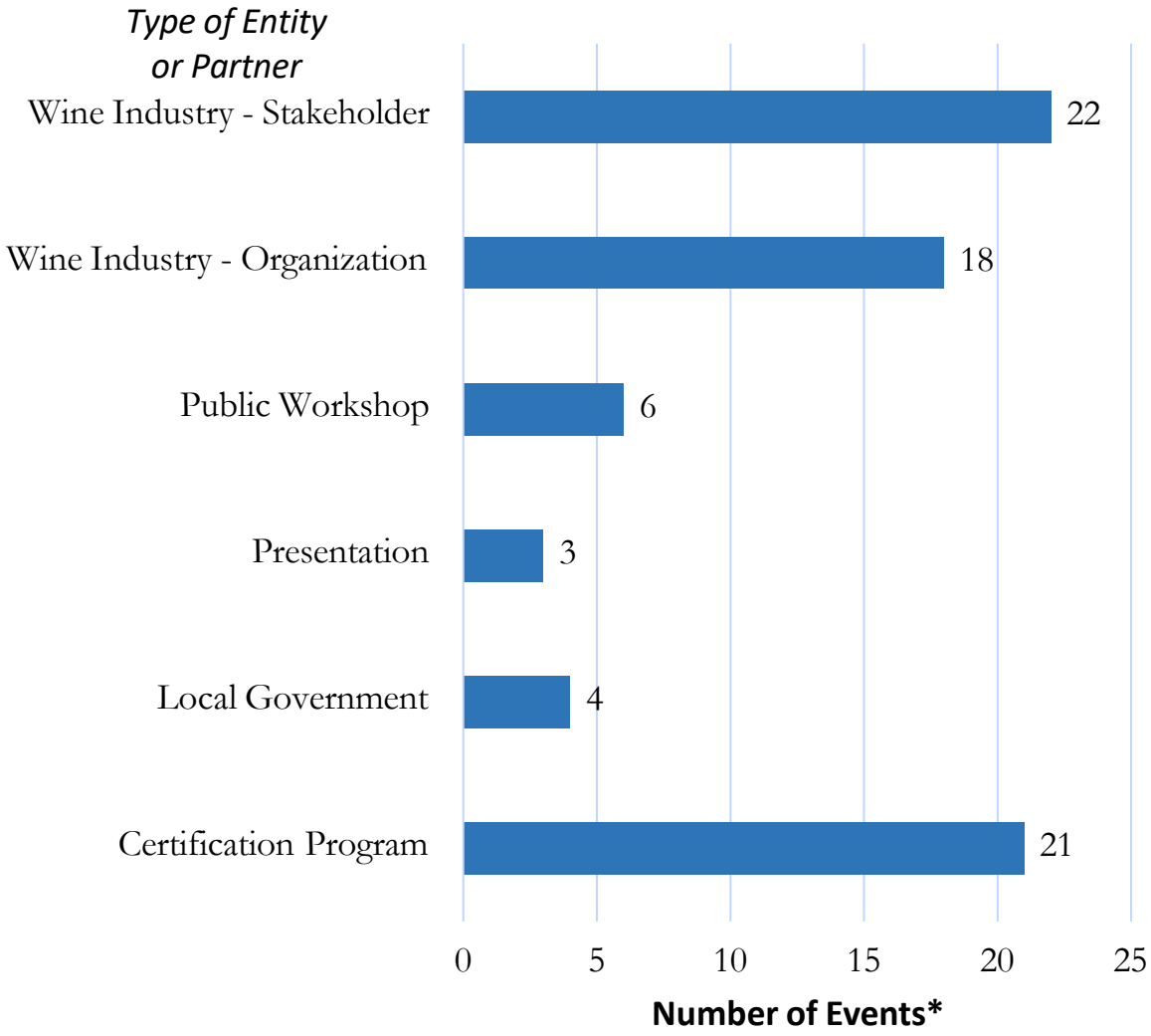


Water Conservation: Expanded Outreach

Outreach and Engagement

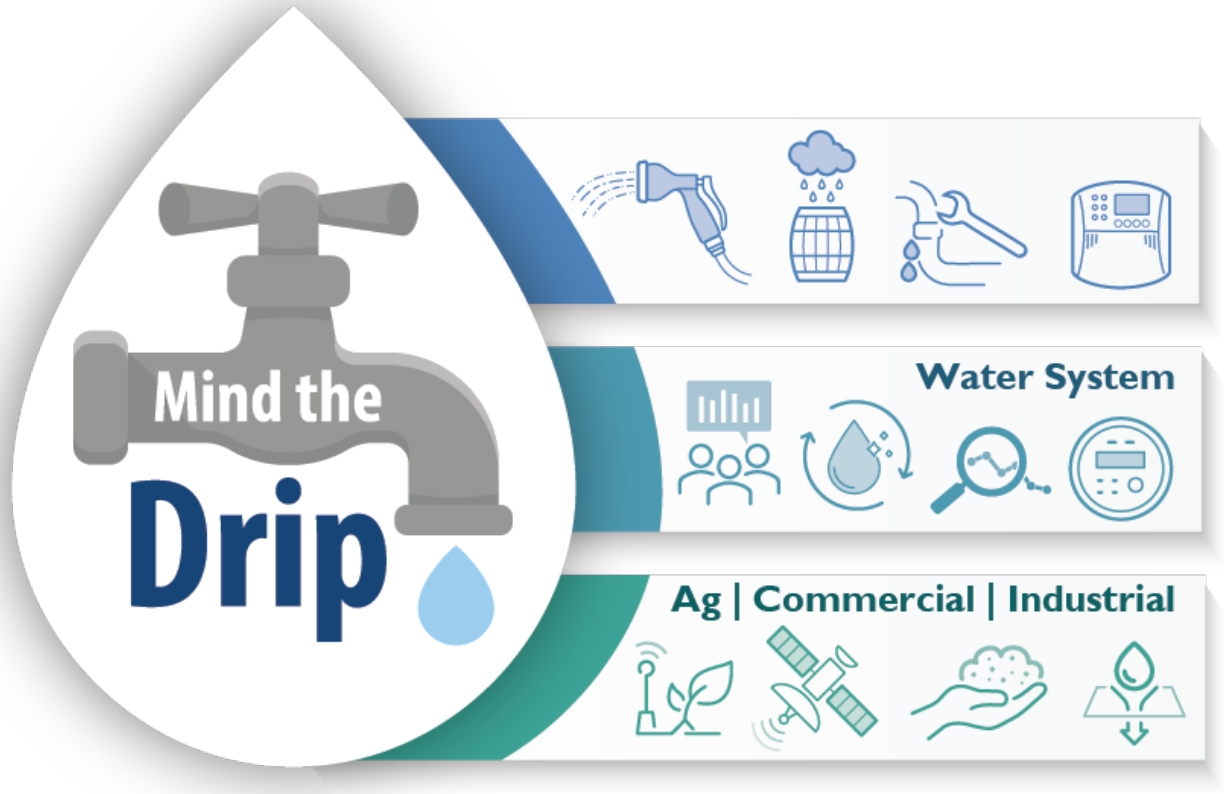
- Since 2023, outreach to and education of stakeholders through presentations, workshops, and one-on-one meetings.
- Last year, outreach focused on the winegrape industry and sustainability programs during development of the Water Certification Partnership.

Outreach and Education, September 2023 to July 2025



*Excludes coordination meetings, other public meetings (e.g., TAG, GSA), and technical meetings

Water Conservation: A Napa Way of Life



Future Water Resources Resiliency and Stewardship

- All sectors engage in Water Conservation.
- Additional Conservation will help achieve the sustainability goal.
- Organizing and implementing educational workshops, briefing service organizations and others, and delivering simple messages for effective actions.

Recommendations

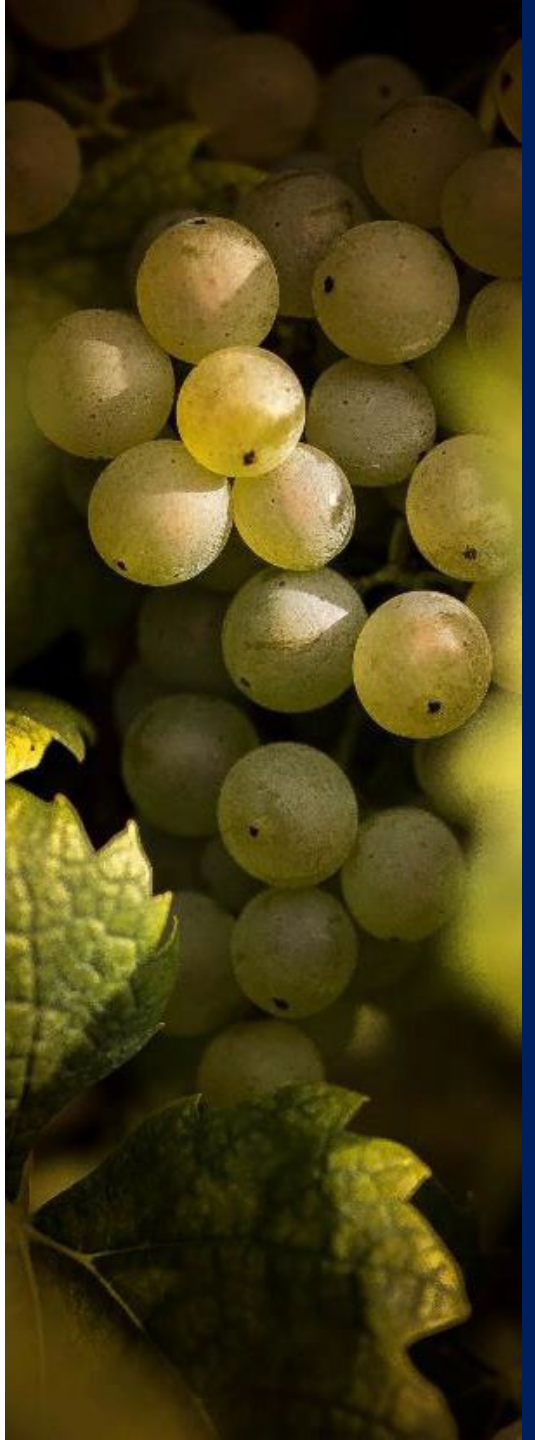
Recommendations

Additional Conservation Measures

- 2023 Safety Element Goals & Policies: Examples of additional measures
  - Policy SAF-5.1: Develop a public water conservation campaign.
  - Policy SAF-5.5: Update water conservation policies for landscaping.
  - Policy SAF-5.6: Adopt an outdoor watering conservation ordinance.
  - Policy SAF-5.7: Invest in water use efficiency and conservation. Continue to invest in programs that help residential and non-residential customers save water and money by using the most efficient appliances and fixtures, fixing leaks, and practicing water-wise landscaping and indoor water consumption.

Recommendation

- County Ordinance changes related to water use efficiency and conservation – update Napa MWELO



Recommendations (continued)

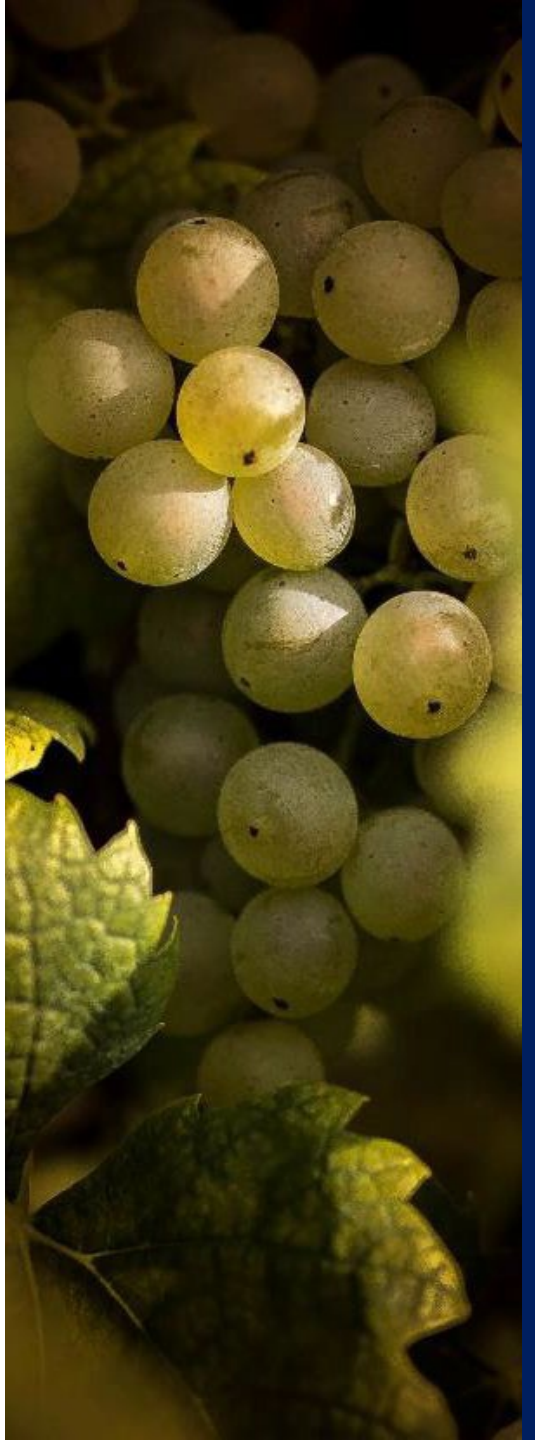
Implement Program to Incentivize Measuring and Understanding Groundwater Use, Especially in Vicinity of Significant Streams

- Measuring and reporting by all types of groundwater users
- Improve the understanding of groundwater use
- Assess opportunities for additional conservation and/or measure recharge or extended vineyard replant benefits to the local area and Subbasin

Recommendation

❖ Incentivize measuring and reporting groundwater use; incentives for participation could include:

- Reduced/waived fee for participation in Pilot Water Certification Partnership Program
- Waiver of some portion of costs to administer the groundwater program
- Cost-share or direct incentive payments for specific equipment, technologies and reporting assistance



Thank You

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