Napa County
Technical Advisory Group

GSP Implementation: Progress Since 2022 and Work Underway

September 11, 2025

Outline

- GSP Implementation Progress and Roadmap
- GPR Programs and Progress
- NVIHM Scenarios
- CEFF Goals and Monitoring
- Water Conservation: Expanded Outreach
- Discussion

Napa Valley Subbasin GSP Roadmap

2022

GSP Submitted to DWR 1/2022; DWR approved 1/2023

WY 2022 Annual Report

TAG Meetings

2023

Develop 5 Workplans w/Stakeholder Input

WY 2022 Annual Report

Monitoring; installed 16 MWs

Model Update

2024

Complete 5 Workplans and Begin Implementation

WY 2023 Annual Report

Monitoring

Model Update

2025

Workplan Implementation

WY 2024 Annual Report

Monitoring, including add 2 MWs , 5 stream gages (CalSIP)

Model Update and Coordinate with SB SDA Unit on Napa River Watershed Model

2026

Prepare Five-Year Periodic Evaluation

WY 2025 Annual Report

Monitoring, including O&M CalSIP gages

Workplans & Initiatives Implementation

PMAs and Modeling Scenarios, including Climate

Coordinate with SB SDA on Watershed Model

2027

Five-Year Periodic Evaluation Due 1/2027

WY 2026 Annual Report

Workplans & Initiatives Implementation

Monitoring, CalSIP Gages

Modeling Scenarios

2028-2041

Ongoing Annual Reports

Monitoring and Modeling

PMA Implementation

Outreach

Adaptive Management

2042

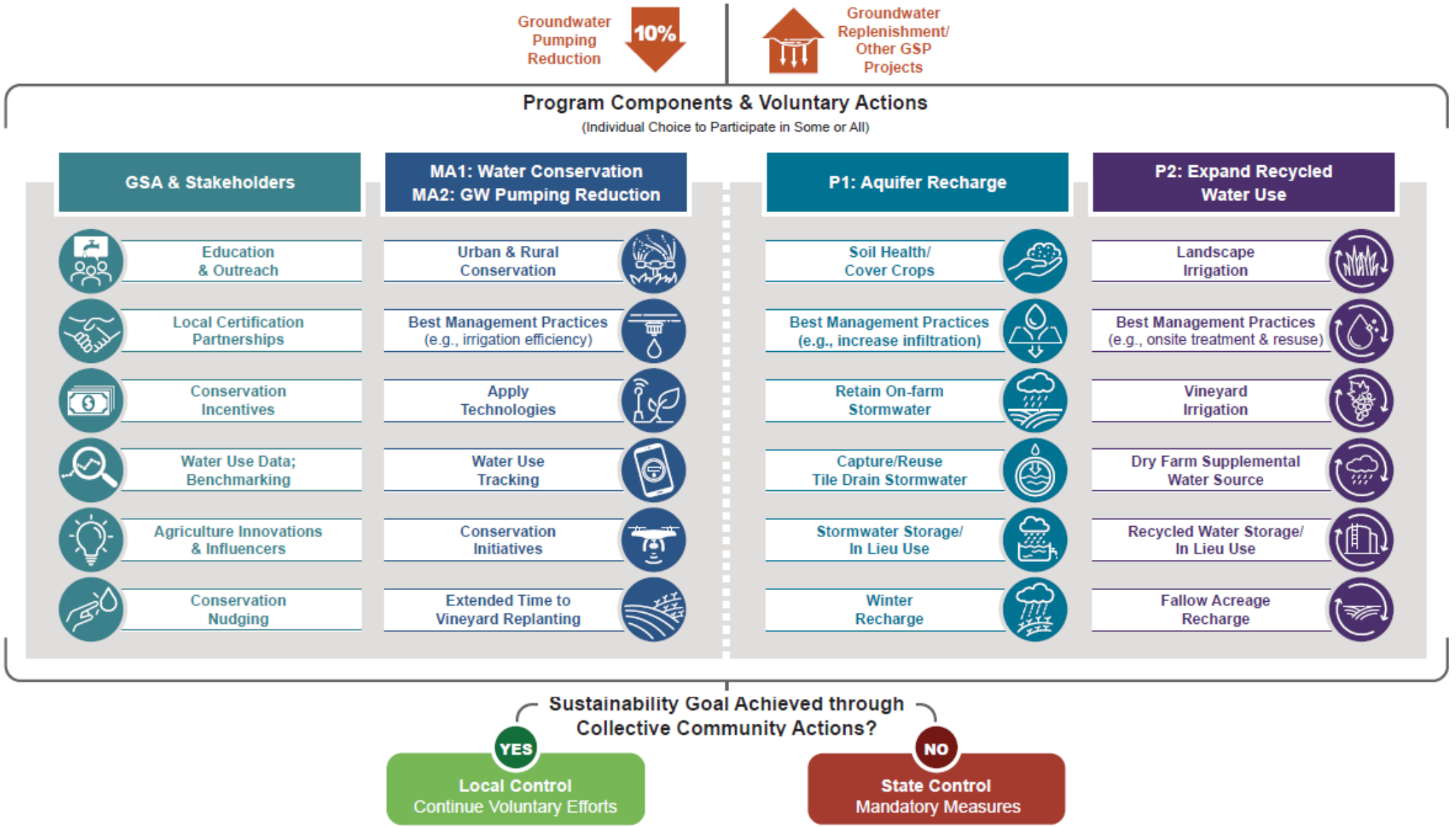
Achieve Subbasin Sustainability

GSP Implementation 2022 – 2025 (Highlights)

Community Engagement and Adaptive Management

Water Conservation (MA-1)	GW Pumping Reduction (MA-2)	Recharge (P-1); Recycled Water (P-2)	ISW & GDEs (Address Data Gaps)	GSP Monitoring	Integrated Hydrologic Modeling (NVIHM)
Workplan *Voluntary BMPs*	**Workplan** *Voluntary BMPs* *Reduce Subbasin Pumping ~10%*	**Recharge** *BMPs – Soil Health, Incr. Infiltration* *AgMAR*	**Workplan** *CEFF* *Eco Goals* *Establish Flow Needs*	**Groundwater** *+16 MWs (2023)* *+2 MWs (2025)*	**Annual Updates** *Hydrology* *Water Use* *Land Use*
Subbasin Coordination *RCD- DU, etc.* *NVG, WnGr, NG, FB – Education* *Dry Farming*	**Water Certification Program** *Demand Mgmt.* *Metering & Reporting* *Track Subbasin Response*	**Recharge** *Ponds* *Riparian Easement* *Multi-Benefit*	**Monitoring** *Aquatic* *Terrestrial* *Wet/Dry Mapping*	**Surface Water** *+8 Stns (2023-2024)* *+ 5 CalSIP (2025)* *StreamWatch*	**NVIHM Refine** *Channel Configuration* *Conceptualization* *Well Locations*
All Sectors *Water Conserv. BMPs* *WC Initiatives* *Incentives*	**Benchmark** *Pilot* *TAPP H2O* *Nudge*	**In Lieu Use** *SW Diversions* *Stormwater Capture* *Tile Drain Capture*	**Aquatic** *Seasonal Flows* *Fish Surveys* *Freshwater Shrimp*	**Other GSP** *GW Storage* *ISW & GDEs* *Subsidence*	**NVIHM Refine** *Parameters (e.g, ET)* *Soil Moisture* *Calibration*
Outreach *All Sectors* *Mind the Drip* *Collaboration/ Education*	**Other** *Replant* *Optimize pumping* *Incentives*	Recycled *St. Helena Coord.* *NapaSan* *Wineries*	**Terrestrial** *Vegetation* *Birds* *Amphibians*	**Other GSP** *SW Quality* *GW Quality* *Seawater Intrusion*	**NVIHM Scenarios** *Recharge* *Demand Mgmt.* *Climate*

Workplan Implementation:
Water Conservation and Groundwater Pumping Reduction



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.

Achieving Sustainability Relies on Best Available Data

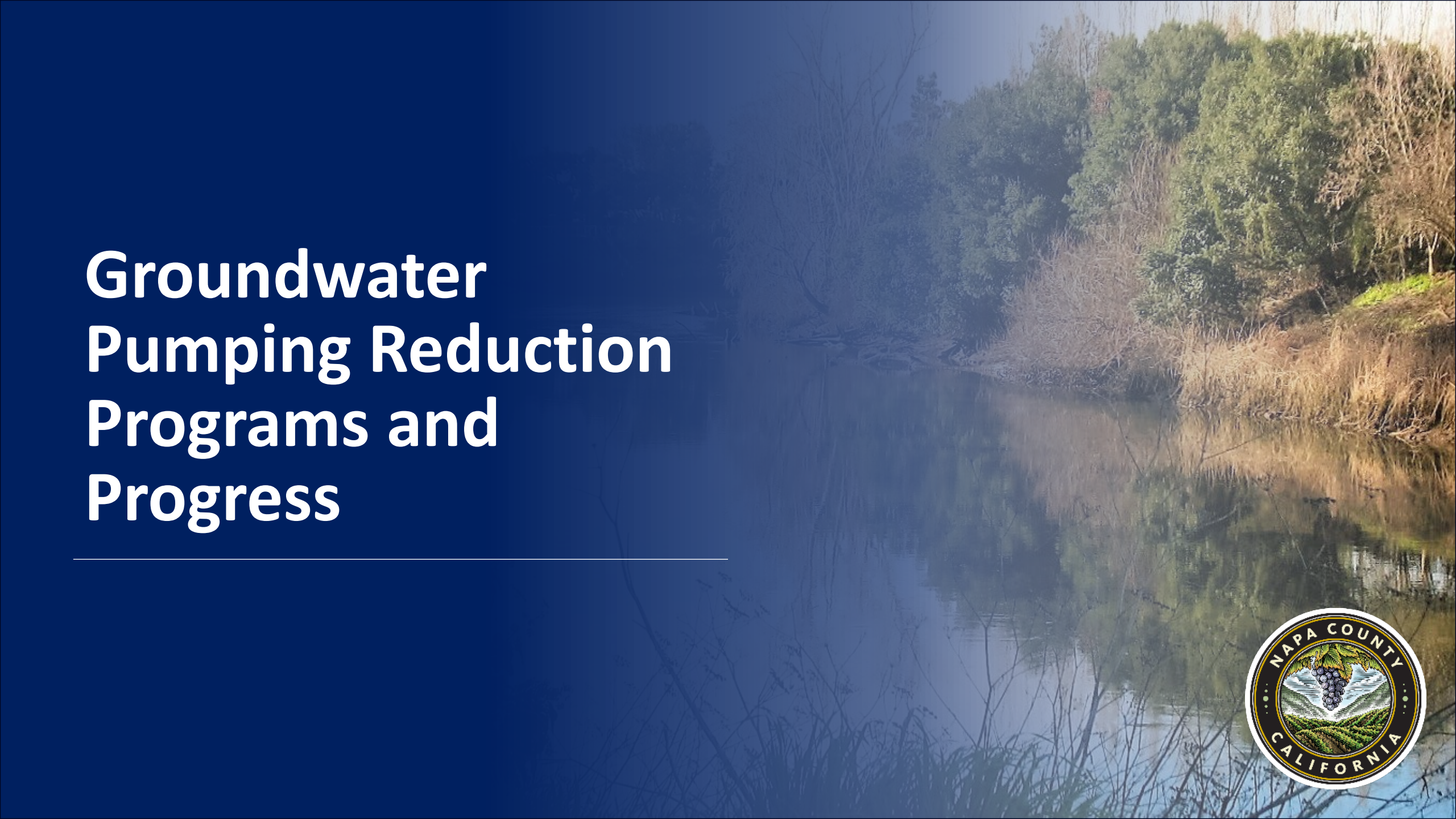
Bill Dodd (Senator 2016-2024):

"In 2016, I authored the Open and Transparent Water Data Act (AB 1755) with the recognition that greater public access to ***high-quality water and ecosystem data would support improved water management*** *outcomes for everyone living and working in California.*

I continue to believe this to be the case, and with the escalating impacts of climate change, more extreme climatic events, and the risks and opportunities associated with artificial intelligence and other technological drivers, the need to modernize California's water data systems is more urgent now than ever."

June 3, 2025, Opening Comments at
California Water Data Consortium Roundtable on Open and Actionable Data and Climate Adaptation Strategies

Groundwater Pumping Reduction Programs and Progress

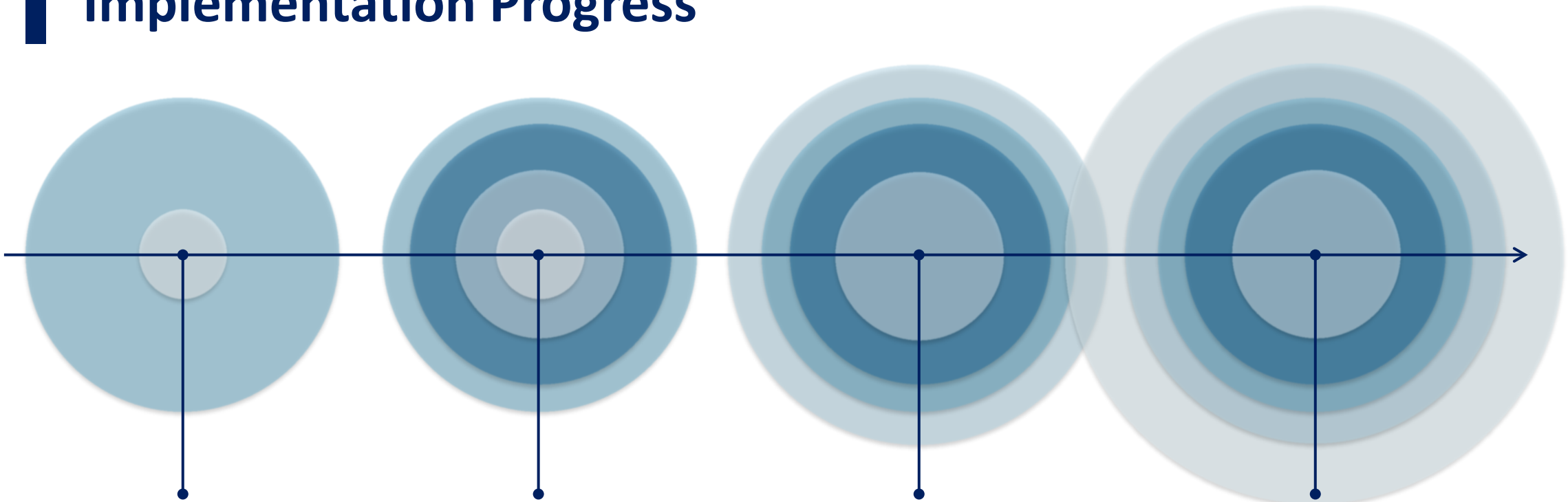


Water Conservation and Groundwater Pumping Reduction Workplans: Guiding Framework

- Focus on voluntary actions that achieve groundwater benefits for the Subbasin
- Assess the costs and benefits of alternative actions and focus on those that are most cost-effective
- Leverage existing programs and opportunities to generate value from a suite of voluntary actions
- Include adaptive management to adjust the program as data and sustainability indicators evolve
- Mandatory measures if voluntary programs do not achieve measurable reductions in groundwater pumping (e.g., mandatory metering/reporting)

MA1: Water Conservation
MA2: GW Pumping Reduction

WC & GPR Workplans: Implementation Progress



2022

GSP Adoption

Outreach & Engagement

2023

GSP Approval
Workplan Development
Outreach & Engagement
Measurement & Monitoring

2024

Workplan Implementation
Outreach & Engagement
Measurement & Monitoring
Certification Partnership
Benchmarking & Nudging

2025

Workplan Implementation
Outreach & Engagement
Measurement & Monitoring (Pilot)
Certification Partnership
Benchmarking & Nudging
Recharge & Replant
Domestic Programs

WC & GPR Workplans: Program Implementation

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

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 within the Napa Valley Subbasin
- Leveraging existing conservation efforts and ag industry commitment to sustainability

Pilot Water Certification Partnership Program (continued)

Current Development & Implementation Status

- Request for Qualifications (RFQ)
- Ongoing discussions with potential partners
- Analyzing a suite of potential incentives for both participating growers/wineries and partners
- Applying information learned in development process to domestic water conservation opportunities

Subbasin-Wide 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 GDE)

Subbasin-Wide Groundwater Recharge (continued)

Feasibility Study Overview

- Increase groundwater recharge
  - Target SGMA benefits (e.g., ISW and GDE)
  - Link to other GPR elements
- Assessment of recharge opportunities
  - Technical
  - Economic
  - Financial

Current Status

- Initial analysis
- Ongoing grower discussions for existing activities, feasibility, infrastructure, costs, existing experience and knowledge

Subbasin-Wide Groundwater Recharge (continued)

Technical and Economic Considerations

- Water Rights for Groundwater Recharge
  - Required for diversions
  - Existing water rights and permitting
  - Cost
- Vineyard Water Management
  - Infrastructure, such as tile drains and ponds, align with current practices for soil, drainage, frost, and irrigation
  - Challenges or opportunities?
- Pond Establishment or Expansion
  - Permits required from State Board and Napa County
  - Time and cost?

MA1: Water Conservation
MA2: GW Pumping Reduction

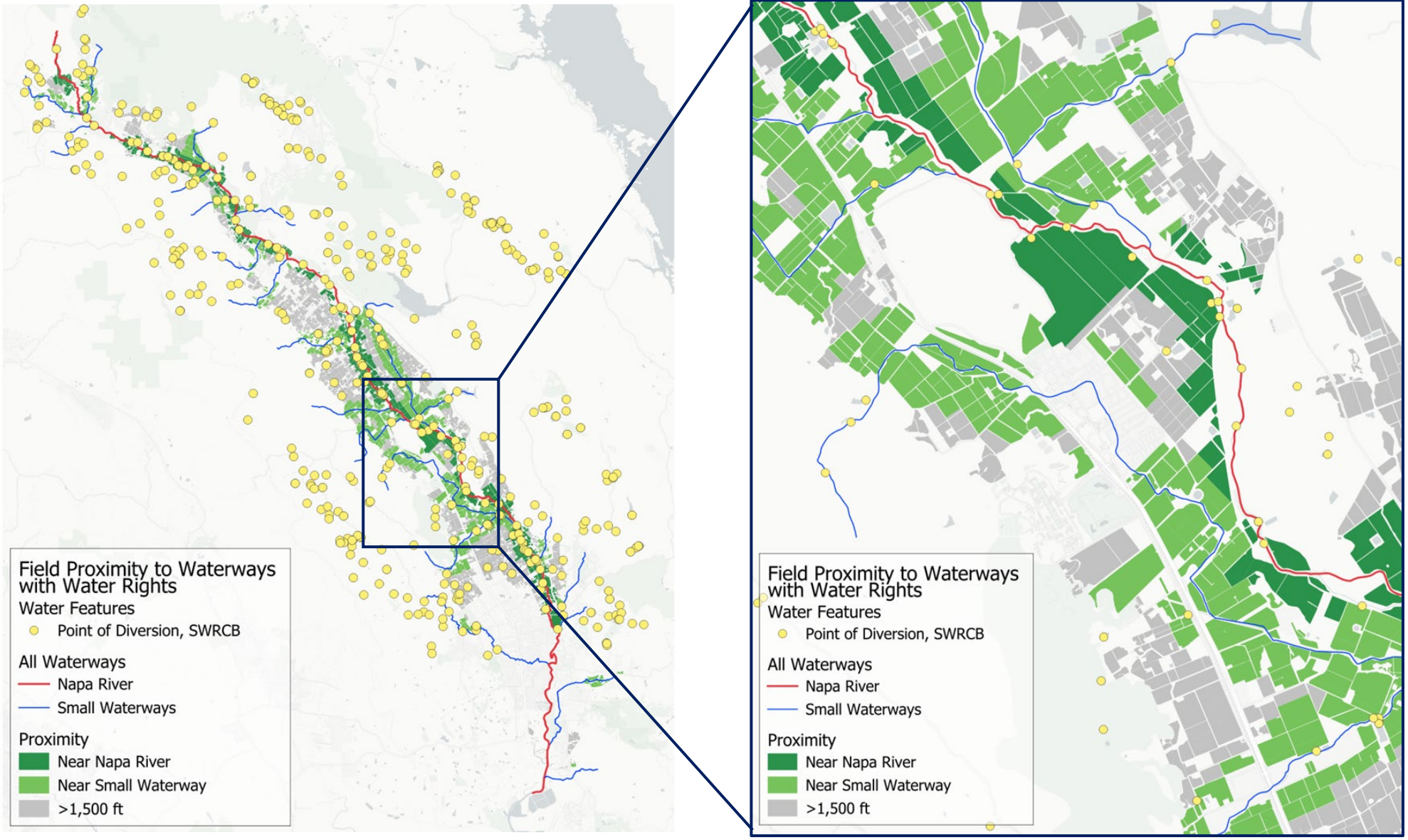
P1: Aquifer Recharge

Extended Vineyard Replant Concept

Concept Overview

- Voluntary program with incentive offered to increase the duration of idle/fallow 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 GDE
  - “Mothballing” is a similar potential concept

Replant & Recharge Analysis Overview



Replant and Recharge Analysis

MA1: Water Conservation
MA2: GW Pumping Reduction

P1: Aquifer Recharge

Current Development in Progress

- Assessing water rights and costs for each scenario
  - Grower outreach
  - Analysis
- Integrating groundwater (ISW and GDE) benefits with water rights
  - Co-benefit opportunities – suitability for conservation, recharge, and infrastructure
- Preparing feasibility study

Discussion

Subbasin-Wide Groundwater Recharge

- What other considerations should be included in the development of these scenarios for the recharge feasibility study? How can they be improved?

Replant and Recharge Spatial Analysis

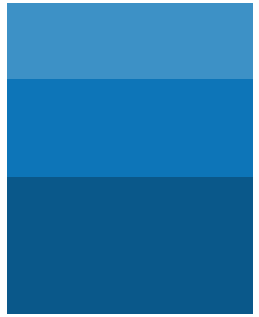
- What else should be considered in the analyses for these programs, especially from a vineyard operation or multi-benefit perspective?

GPR Water Conservation Programs

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

Estimated Potential Water Savings: 1,031 AFY

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



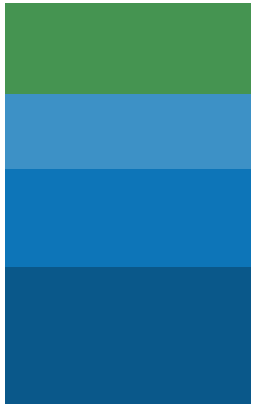
Average Annual Estimated Water Savings

GPR Water Conservation Programs

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

Estimated Potential Water Savings : 1,331 AFY

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



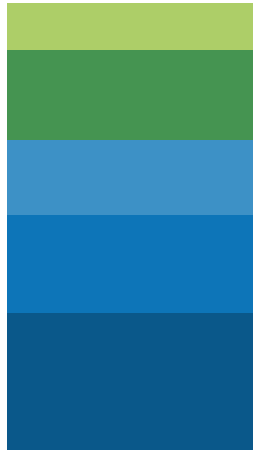
Average Annual Estimated Water Savings

GPR Water Conservation Programs

- NCGSA Water Certification Partnership
- Domestic Water Conservation/WELO
- Water Availability Analysis
- Education and Outreach Campaign
  - Benchmarking Program
- Land Fallowing Program
  - Extended Vineyard Replant Program
    - Emphasis on land near significant rivers and streams
  - On-Farm Recharge and Conservation Programs

Estimated Potential Water Savings : 1,484 AFY

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



Average Annual Estimated Water Savings

GPR Water Conservation Programs

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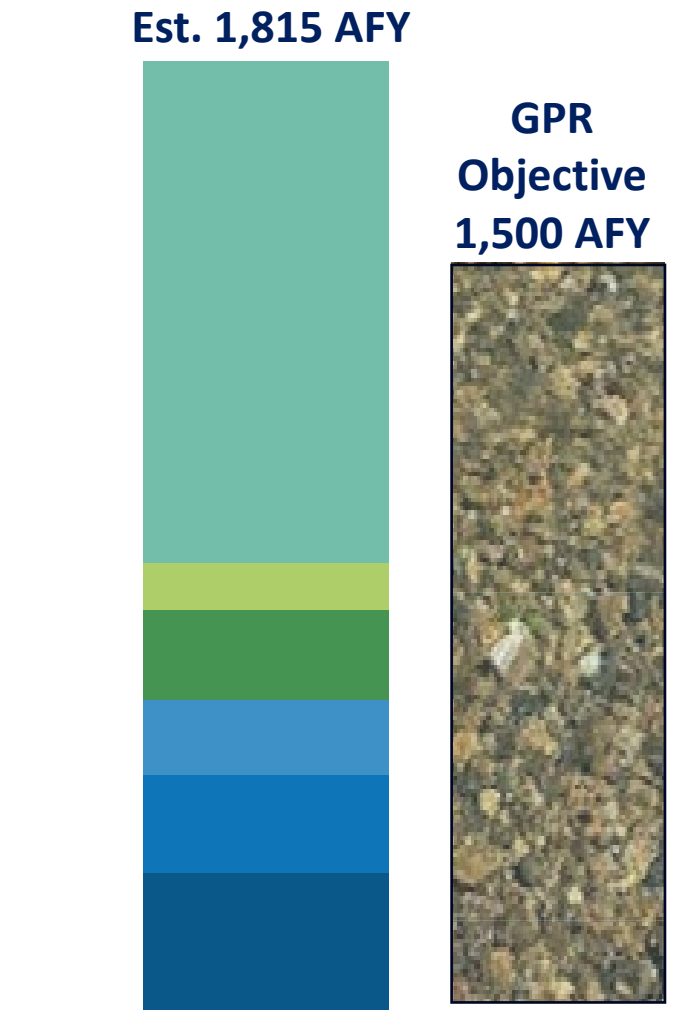
- Water Availability Analysis
- Education and Outreach Campaign
  - Benchmarking Program
- Land Fallowing Program
  - Extended Vineyard Replant Program
    - Emphasis on land near significant rivers and streams
  - On-Farm Recharge and Conservation Programs
- Other WC & GPR Workplan Measures

Estimated Potential Water Savings: 1,815 AFY

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



Average Annual Estimated Water Savings

Pilot Water Measurement: MST Area

Program Overview

- Milliken-Sarco-Tulucay Area (MST) is a groundwater deficient area with County reporting requirements
- Pilot project focus
  - Support water measurement
  - Standardize internal county data
- Progress
  - Pilot users onboarded covering domestic, agriculture, and industrial
  - Draft dashboard integrating new and historical data for seamless measurement and monitoring
  - Simplified water tracking

Pilot Water Measurement Reporting: Tracking Technology

- Simple water accounting and tracking
- Piloting in MST Area
- Simplify county data management and MST area reporting

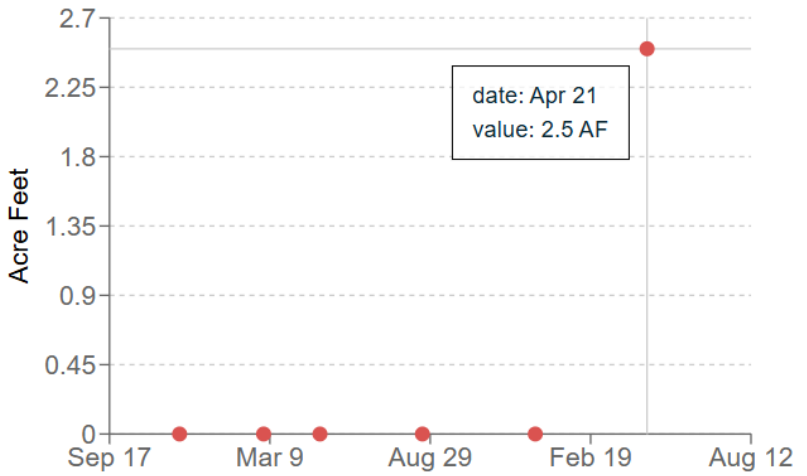
TAPP H2O User Dashboard (Example w/o Data)

Field-Level Data

DATE LAST READ	IRRIGATED ACRES	CROP TYPE	CURRENT READING	PUMPED SINCE LAST READING	YTD PUMPING
4/21/2025	40 acres	Grapes	680 AI	2.5 AF	2.5 AF

LAST NOTE TAKEN

YTD Pumping

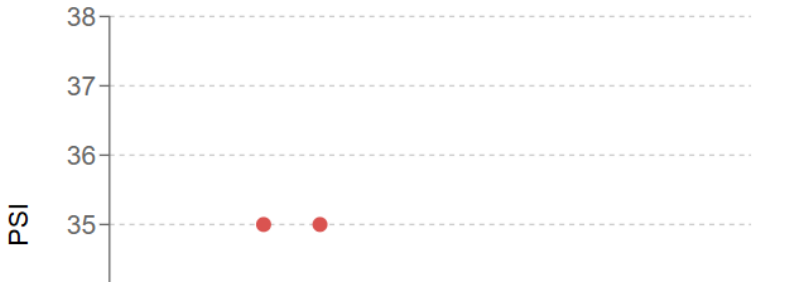


Water Rights

WATER RIGHT NUMBER	ALLOCATION PERIOD	PREVIOUS YEARS' USAGE	THIS YEARS' USAGE	REMAINING IN ALLOCATION	OVER
Example	1 year	-	2.5 AF	5.5 AF	0.0 AF

Well Health Indicators

GPM | PSI



Napa County Groundwater Permit Dashboard ≡

Water Usage Map

Field Opacity

Data Year

Permit Details

Permit: PRM:8

Owner:

Acres: 10.7

Allocation: 11.03 AF

YTD Pumping: 5.83 AF

Date of Last Reading: 04/01/21

Usage Ratio: 53%

Permit Data

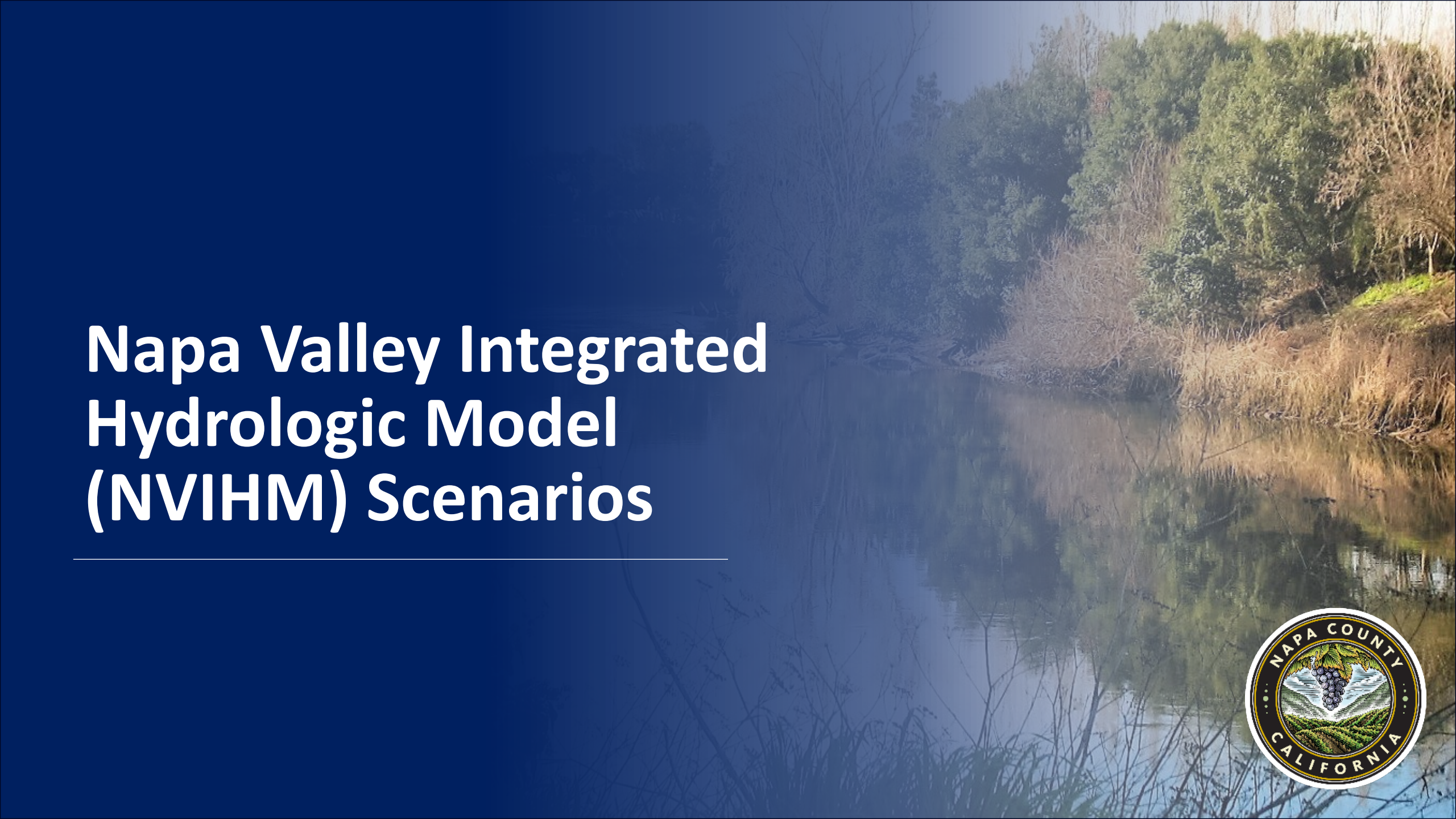
Previous 1 2 3 4 5 ... 30 Next

Date	Reading	Used (Gal)	Used (AF)	AF per Year	Well
12/31/99	1	1	0.12	0.12	AgWell
12/31/00	1	1	1.15	1.15	AgWell
12/31/01	1	1	1.62	1.62	AgWell
12/31/02	1	1	1.09	1.09	AgWell
12/31/03	1	1	0.23	0.23	AgWell
12/31/04	1	1	1.72	1.72	AgWell
12/31/05	1	1	1.67	1.67	AgWell

GPR Implementation – Next Steps

- Continue Water Certification Partnership Request for Qualifications Process
- Engage stakeholder groups for feedback and interest in extended replant and recharge programs
- Continue to implement programs, including:
  - Recharge Feasibility
  - Pilot Water Certification Partnership
  - Benchmarking
  - Community Engagement and Education
  - Pilot Measurement

Napa Valley Integrated Hydrologic Model (NVIHM) Scenarios



MA1: Water Conservation
MA2: GW Pumping Reduction

Demand Reduction Scenarios

Approach

Evaluate impact of 10% decrease in irrigation and groundwater pumping on lands located within 500 and 1,500 feet of "Significant Streams"

Irrigation Reduction Approach:

- Scaled crop coefficients in irrigated lands within 500 and 1,500 ft buffers respectively such that:

$$Irrigation_{final} = 0.9 \times Irrigation_{initial}$$

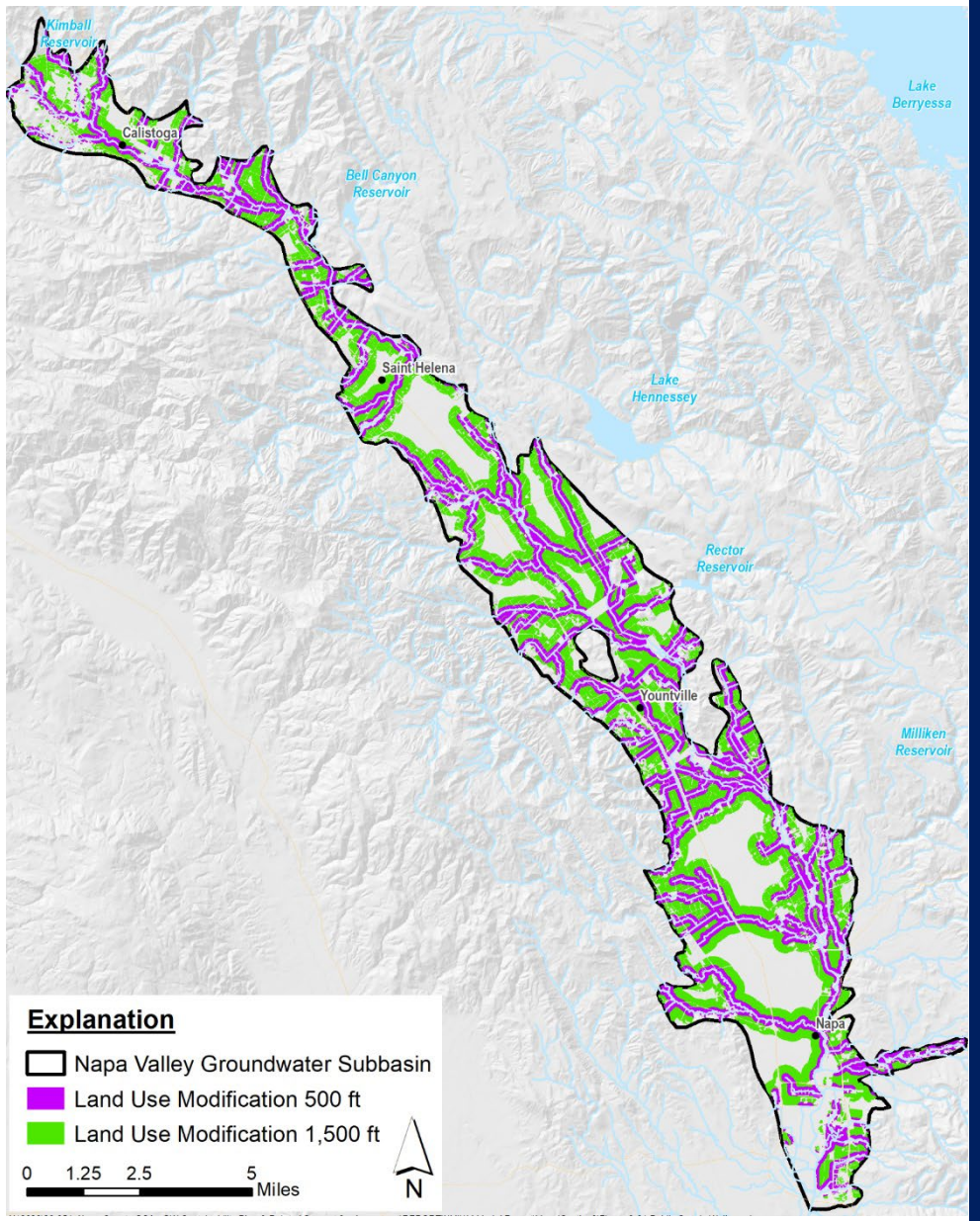
Pumping Reduction Approach:

- **Pumping for Irrigation (Calculated Internally)**: Reduced well capacity in wells located within 500 and 1,500 ft buffers such that:

$$Pumping_{final} = 0.9 \times Pumping_{initial}$$

- **Specified Pumping**: Directly reduced pumping specified in municipal wells, public water supply and winery wells, and for self-supplied indoor domestic pumping.

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



MA1: Water Conservation
MA2: GW Pumping Reduction

Demand Reduction Results: Pumping and Irrigation (WY 2005-2024)

Irrigation

500 ft Buffer: 834 AFY (3.6%) decrease in total irrigation in Subbasin

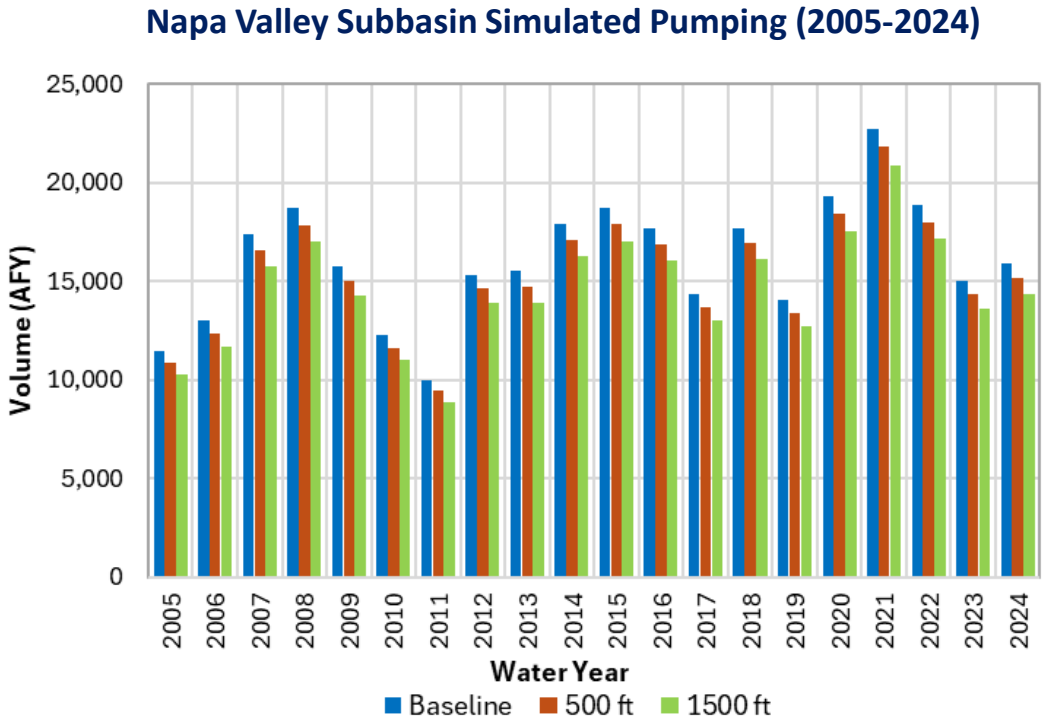
1,500 ft Buffer: 1,751 (7.5%) decrease in total irrigation in Subbasin

Pumping

500 ft Buffer: 750 AFY (4.7%) decrease in pumping in Subbasin

1,500 ft Buffer: 1,500 AFY (9.4%) decrease in pumping in Subbasin

**Difference in irrigation and pumping are not directly proportionate due to other sources of water for irrigation (stream diversions, local reservoirs, and imported water)



Demand Reduction Results: Impacts on Low Flow

Low flow defined as when simulated discharge at Pope Street in "Baseline" is less than 10 cfs

500 ft Buffer Scenario

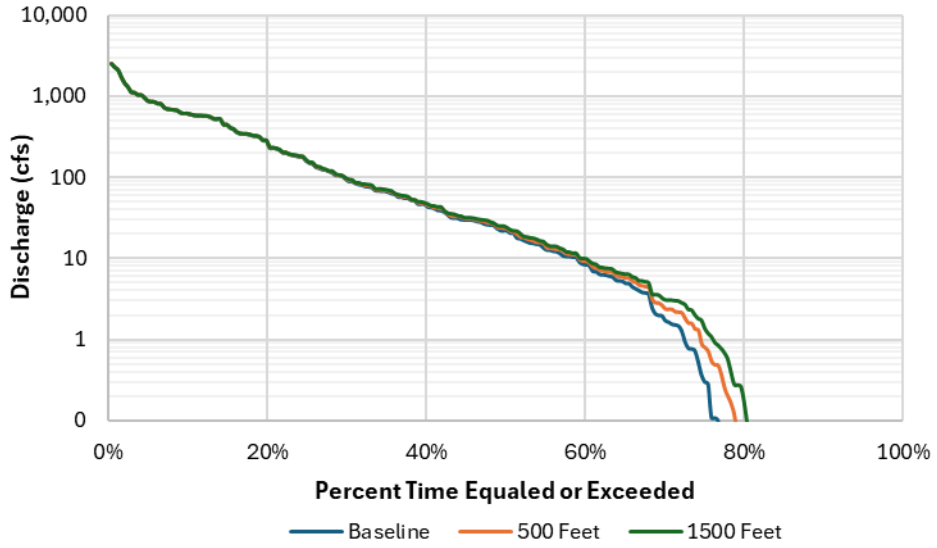
- Avg. monthly increase in low flow at **Pope Street** ranges from 0.1 to 0.2 cfs
- Avg. monthly increase in low flow at **Oak Knoll** ranges from 0.2 to 0.45 cfs

1,500 ft Buffer Scenario

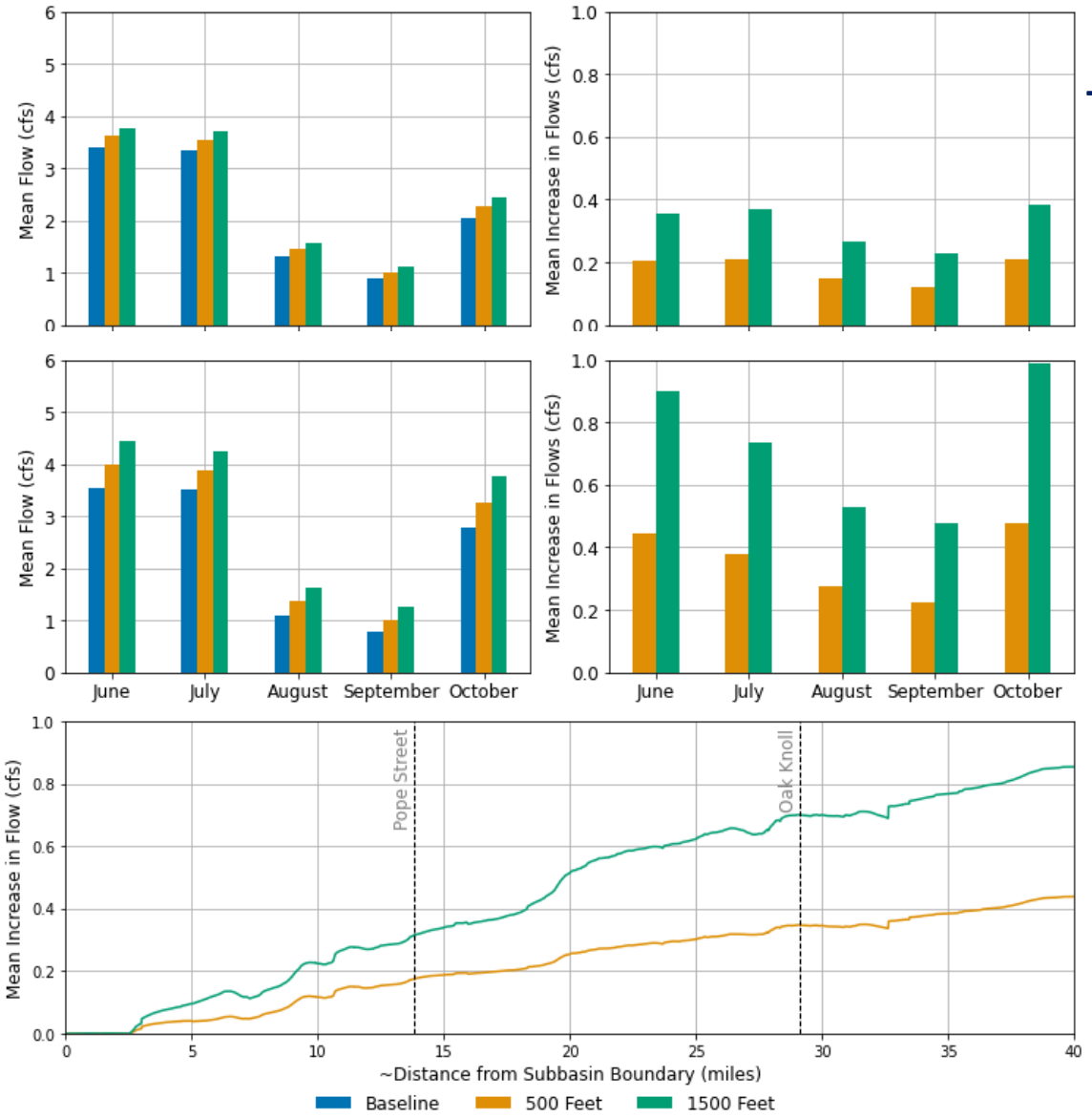
- Avg. monthly increase in low flow at **Pope Street** ranges from 0.2 to 0.4 cfs
- Avg. monthly increase in low flow at **Oak Knoll** ranges from 0.45 to 1 cfs

Difference in simulated flow between demand reduction scenarios and Baseline increases in downstream direction

Napa River at Oak Knoll – Flow Duration Curve (2005-2024)



Napa River Low Flow Statistics (2005-2024)



Demand Reduction Results: Impacts to SMCs

Minimum Thresholds

- Both the 500 ft and 1500 ft buffer scenarios eliminate exceedances of the MT in the Baseline Period (2005-2014) at Pope Street and Oak Knoll
- Both the 500 ft and 1500 ft buffer scenarios reduce exceedances of the MT in the Recent Period (2015-2024) at Pope Street and Oak Knoll

Measurable Objectives

- Both the 500 ft and 1500 ft buffer scenarios increase the number of years the MO is met in the Baseline Period (2005-2014) at Pope Street and Oak Knoll
- The 500 ft and 1500 ft buffer scenarios have no impact on the number of years the MO is met in the Recent Period (2015-2024)

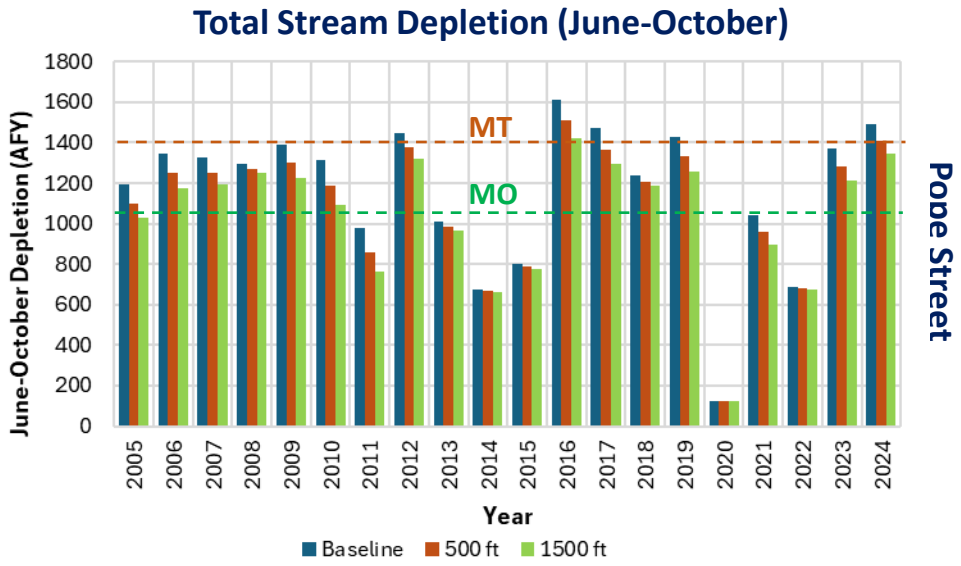
SMC Summary

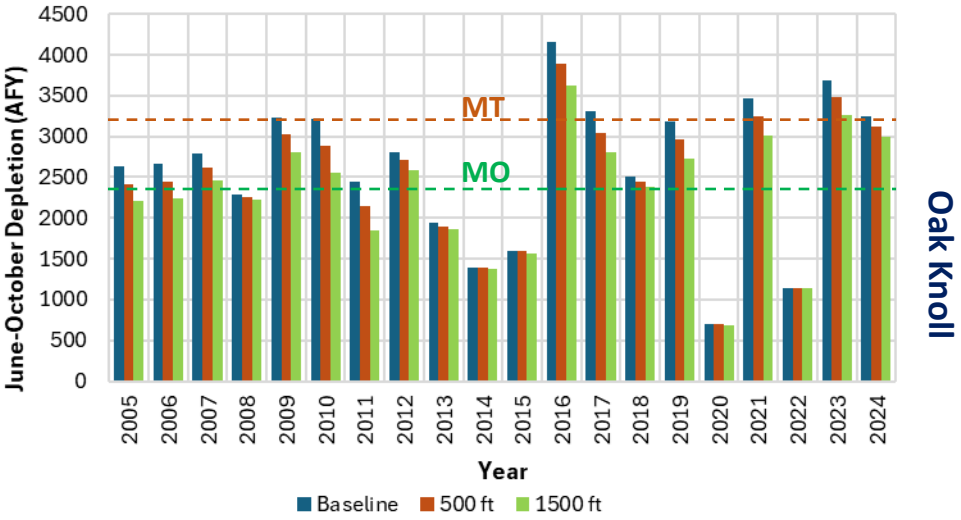
Pope Street

	Period	2005-2014			2015-2024		
SMC (AFY)	Scenario	Baseline	500 ft	1500 ft	Baseline	500 ft	1500 ft
1,400	Exceeds MT	1	0	0	4	2	1
1,120	Meets MO	3	4	5	4	4	4

Oak Knoll

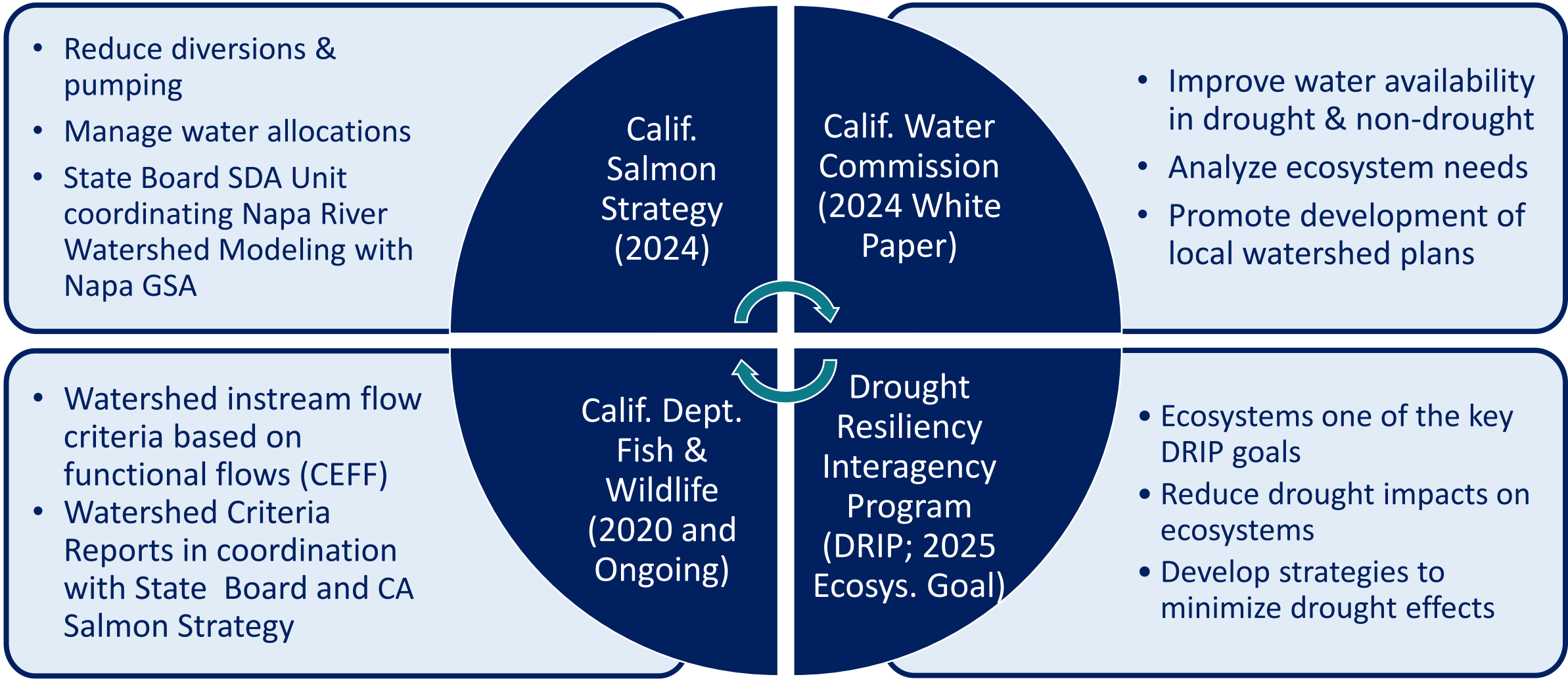
	Period	2005-2014			2015-2024		
SMC (AFY)	Scenario	Baseline	500 ft	1500 ft	Baseline	500 ft	1500 ft
3,190	Exceeds MT	1	0	0	5	3	2
2,370	Meets MO	3	4	6	3	3	3





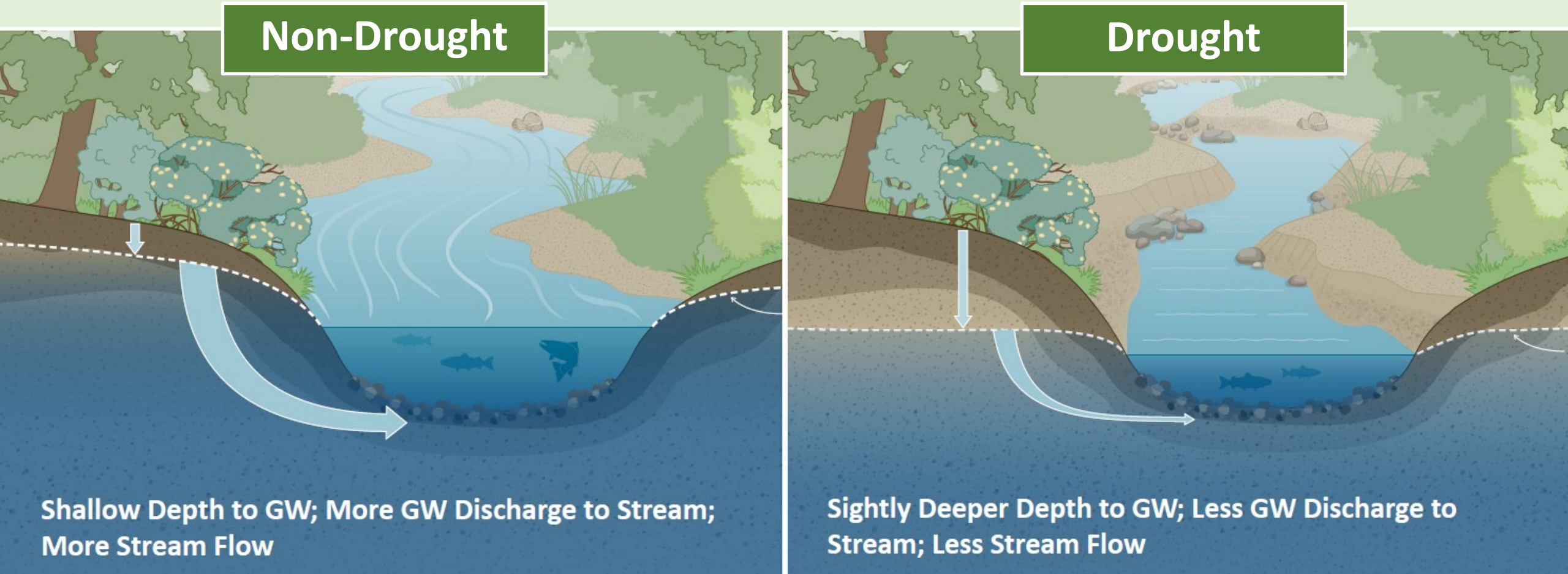
California Environmental Flows Framework, Goals, and Ecological Monitoring

State-Related Water Management, Interconnected Surface Water and Ecosystem Programs

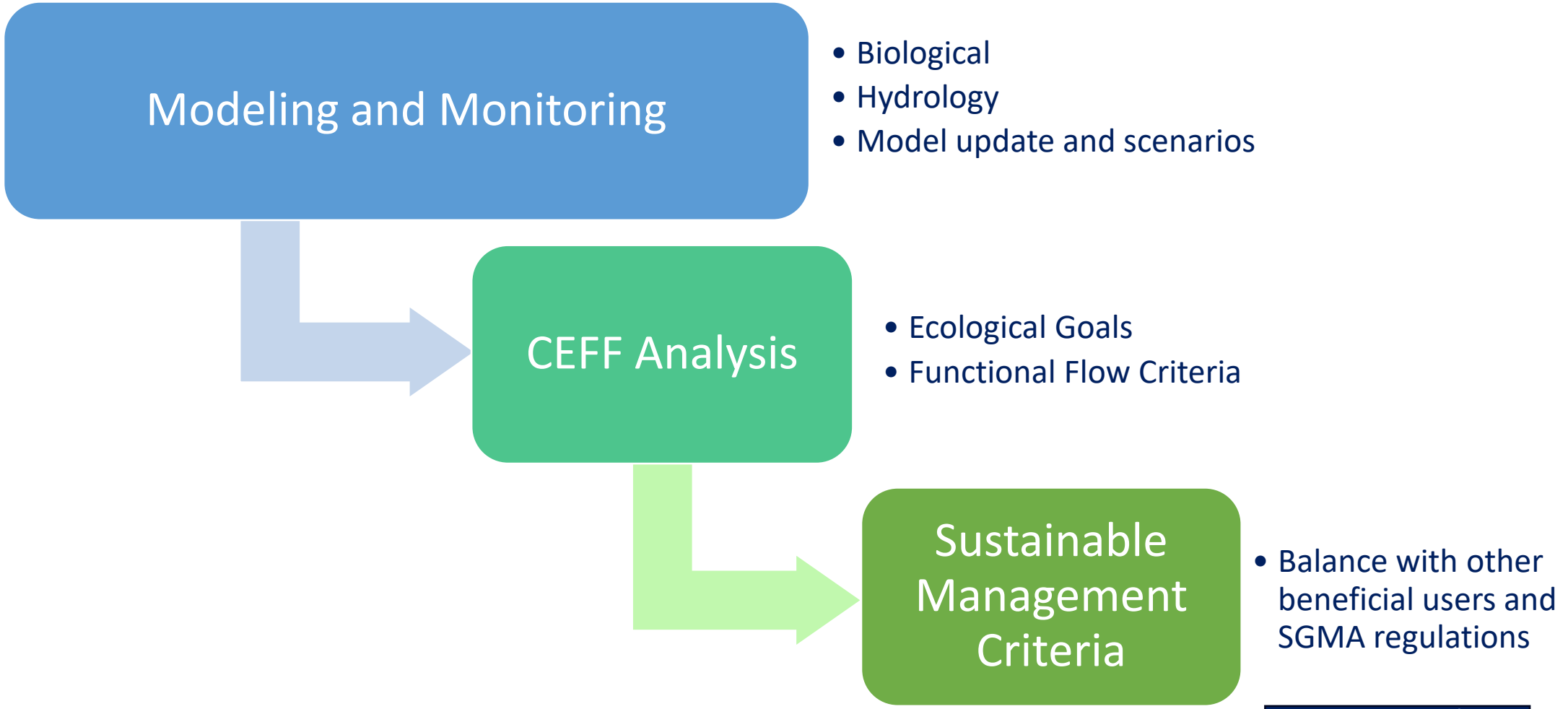


The Napa Valley Subbasin is very susceptible to uncertain precipitation patterns, drought, and less natural recharge. Slight differences in groundwater levels affect flow in the stream system.

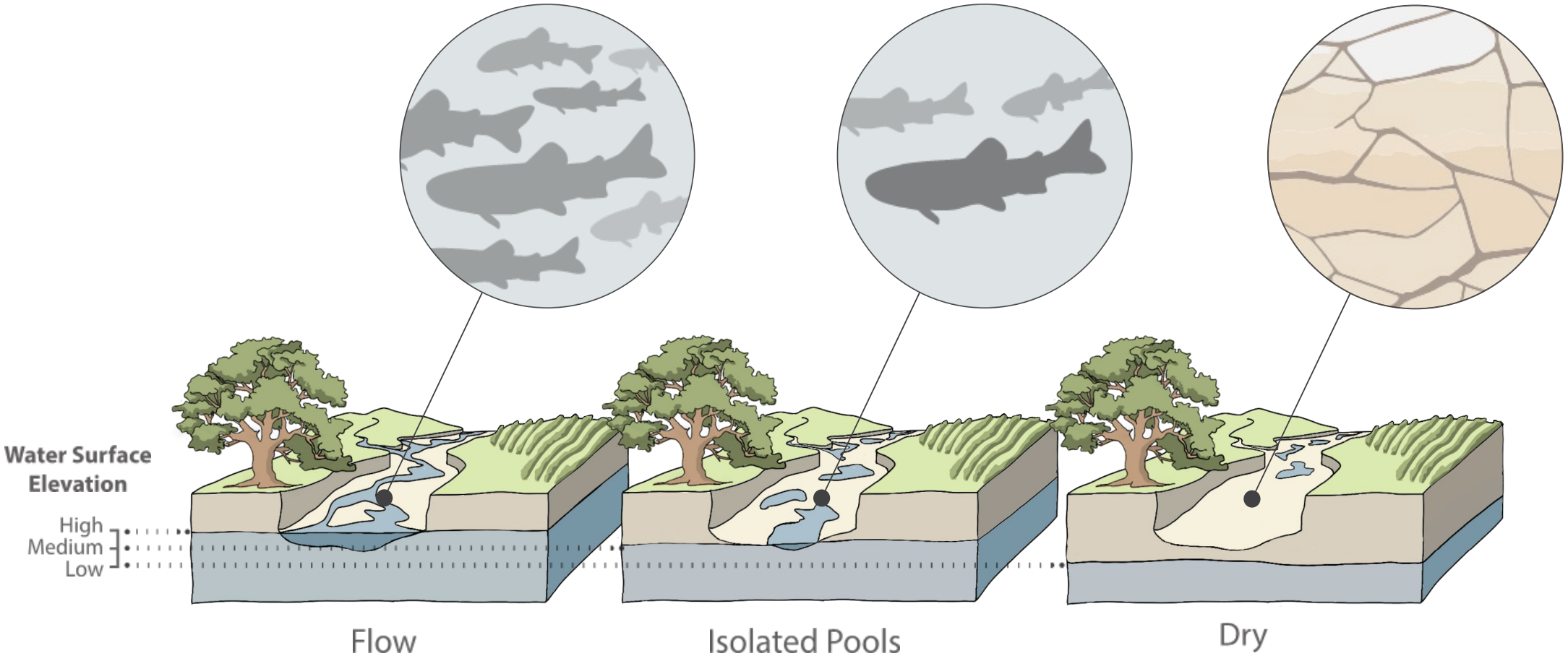
Ecosystems, vineyards, and other land uses rely on groundwater during the summer months. Climate change necessitates new strategies and innovation to use less groundwater and increase groundwater replenishment regardless of Non-Drought or Drought Conditions.



Process and Timing



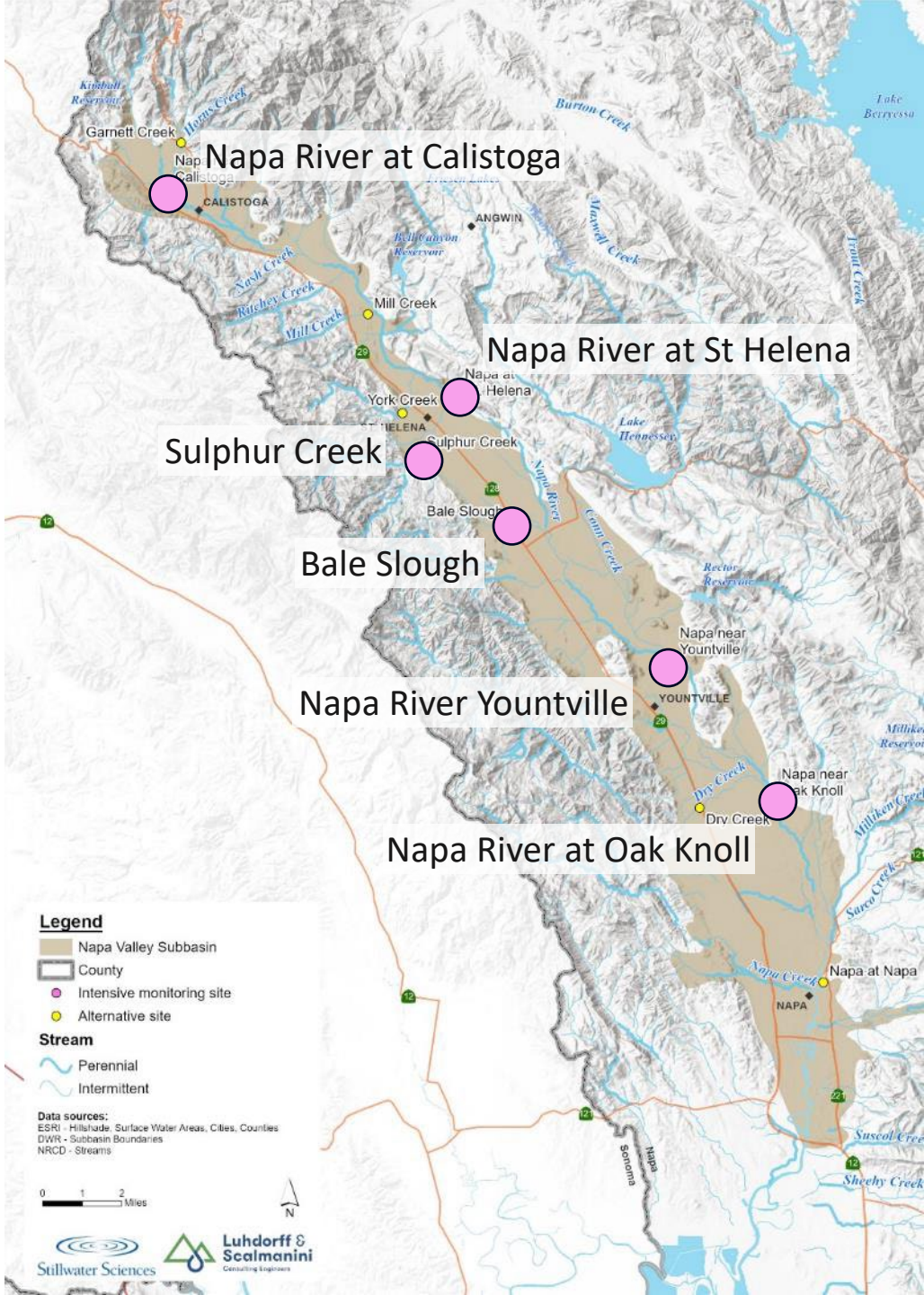
Hydrology, Biological Surveys and Literature Inform Functional Flow Criteria and Linkage to GSP



Functional Flow Criteria >> Used to Inform Ongoing Interconnected Surface Water Monitoring and Refining/Establishing Sustainable Management Criteria

ISW and GDEs Workplan Implementation

- Six intensive survey sites
  - 4 mainstem sites and 2 tributaries
- Field visit to 4 sites in May 2025 with Stillwater Sciences, Napa County, Napa RCD, LSCE, and TAG members
- CEFF aquatic and terrestrial GDEs data collection



ID species present

(biological monitoring)

Water conditions in the Subbasin

(physical monitoring and modeling)

ID water requirements for different species life stages (timing, magnitude)?

Groundwater levels and surface flows required to meet Napa-specific ecological goals

CEFF

Other beneficial uses and users

Sustainable Management Criteria

CEFF and Ecological Goals

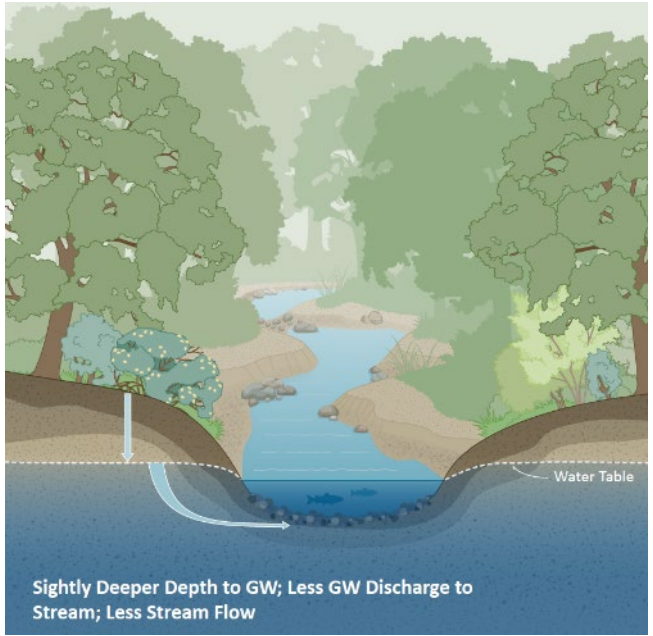
The ISW and GDEs Workplan goal is to use physical and biological data coupled with integrated hydrologic modeling to better understand the conditions required to protect and enhance healthy terrestrial and aquatic GDEs. The Workplan describes the steps needed to understand the conditions necessary to:

- Protect and enhance steelhead spawning, rearing, and migration in the watershed,
- Support special-status aquatic species, and
- Protect and enhance terrestrial GDEs and special-status species.

Ecological Goals

Vary by site and are a function of:

- Hydrology
- Habitat (physical habitat, water quality, etc.)
- Biological use (species present)



Questions:

- What species use the site?
- What are their biological needs?
- How do these needs depend on groundwater management?

Ecological Goals (continued)

Goals at All Sites

- Support groundwater-dependent riparian vegetation (maintain summer groundwater within the rooting zone of riparian trees)
- Support upstream and downstream fish passage
- Maintain ecosystem diversity

Site-Specific Goals

- Calistoga: maintain isolated pools for California Freshwater Shrimp
- Sulphur Creek, Napa at St. Helena, Dry Creek: maintain foothill yellow legged frog habitat to support metamorphosis
- Steelhead/Chinook rearing were present and sufficient temperatures

Ecological goals will likely focus on timing of flows and sufficient water quality to support migration of juveniles/metamorphs.

Data Analysis

Hydrology

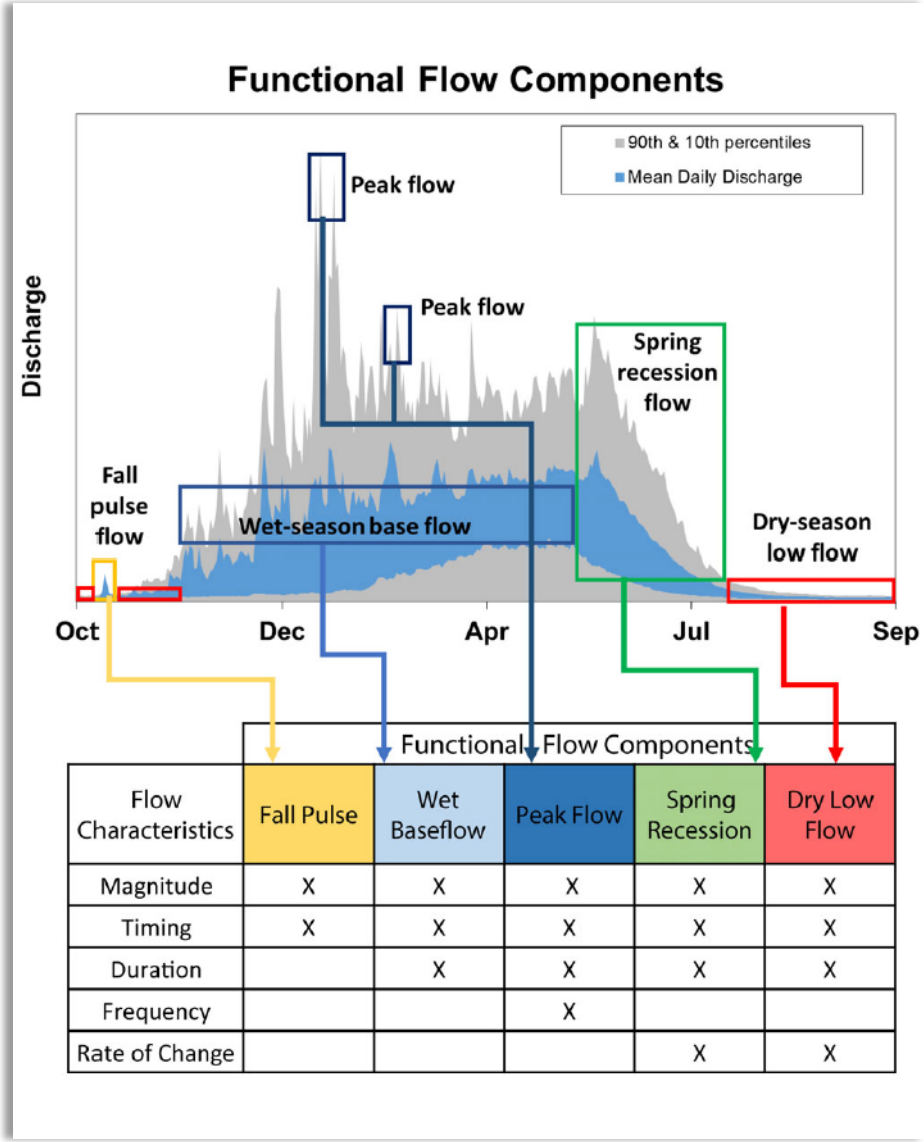
Compare existing condition versus "no pumping" or "natural" scenario

- NVIHM (dry season, spring recession)
- Natural Flows Database (fall pulse flow, peaks)

Biology

Biological monitoring (2024-2025, plus literature)

- What species use the site? Ecological goals?
- What are the biological needs and constraints (e.g., habitat)?
- What are the flow-ecology relationships (including magnitude, timing, and duration of flows)?
- How do these goals depend on groundwater management?



Flow Characteristics	Fall Pulse	Wet Baseflow	Peak Flow	Spring Recession	Dry Low Flow
	Functional Flow Components				
Magnitude	X	X	X	X	X
Timing	X	X	X	X	X
Duration		X	X	X	X
Frequency			X		
Rate of Change				X	X

Biological and Habitat Monitoring 2024 and 2025

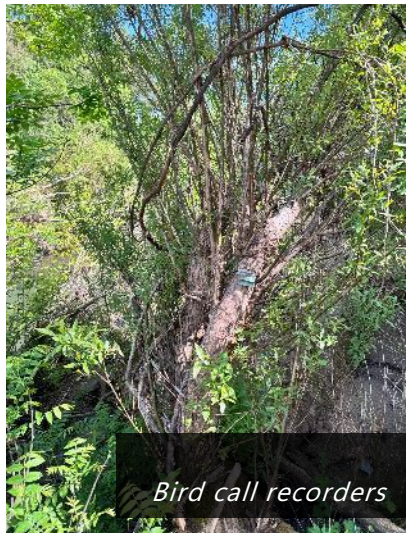
Biological Surveys:

- Amphibians and reptiles (2024 and 2025)
- California Freshwater Shrimp surveys (Calistoga only) (2024 and 2025)
- Riparian bird surveys (2025)
- Vegetation health and special-status plants (2024 and 2025)

Habitat Surveys:

- Fish habitat at each site (2024 or 2025)
- Stream temperature (2024 and 2025)
- Dissolved oxygen (2024 and 2025)
- Wet-dry mapping and flow connectivity (2024 and 2025)
- Shallow groundwater and streamflow


Herpetology visual encounter surveys

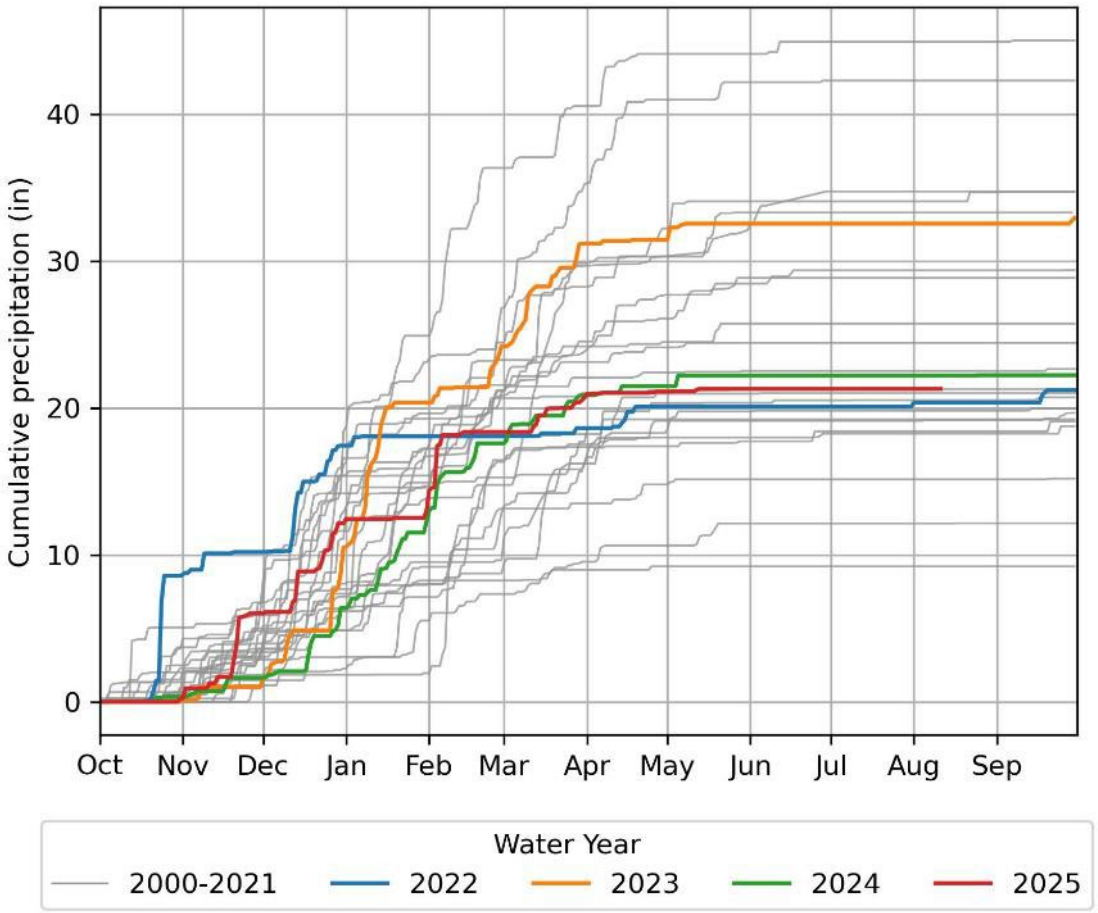

Bird call recorders

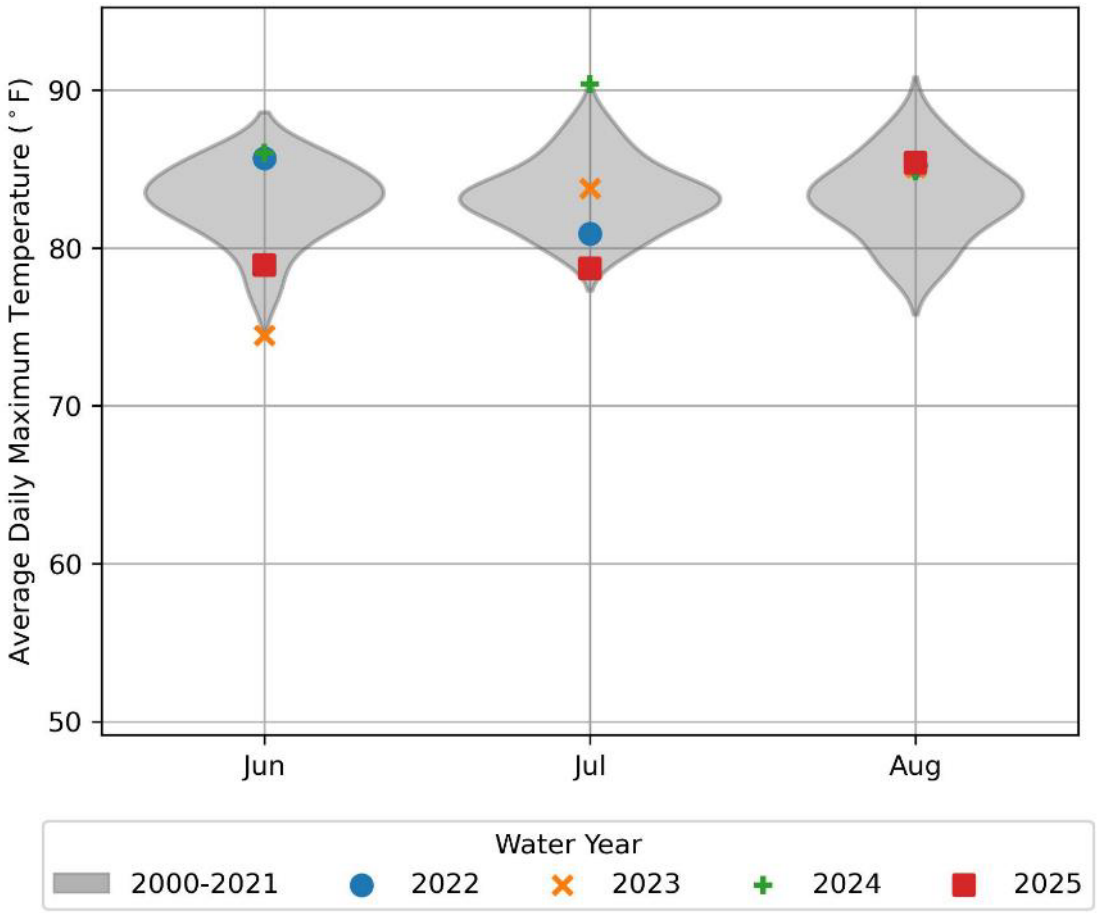

Vegetation surveys


Napa RCD staff mapping flow connectivity

Year-to-Year Variability

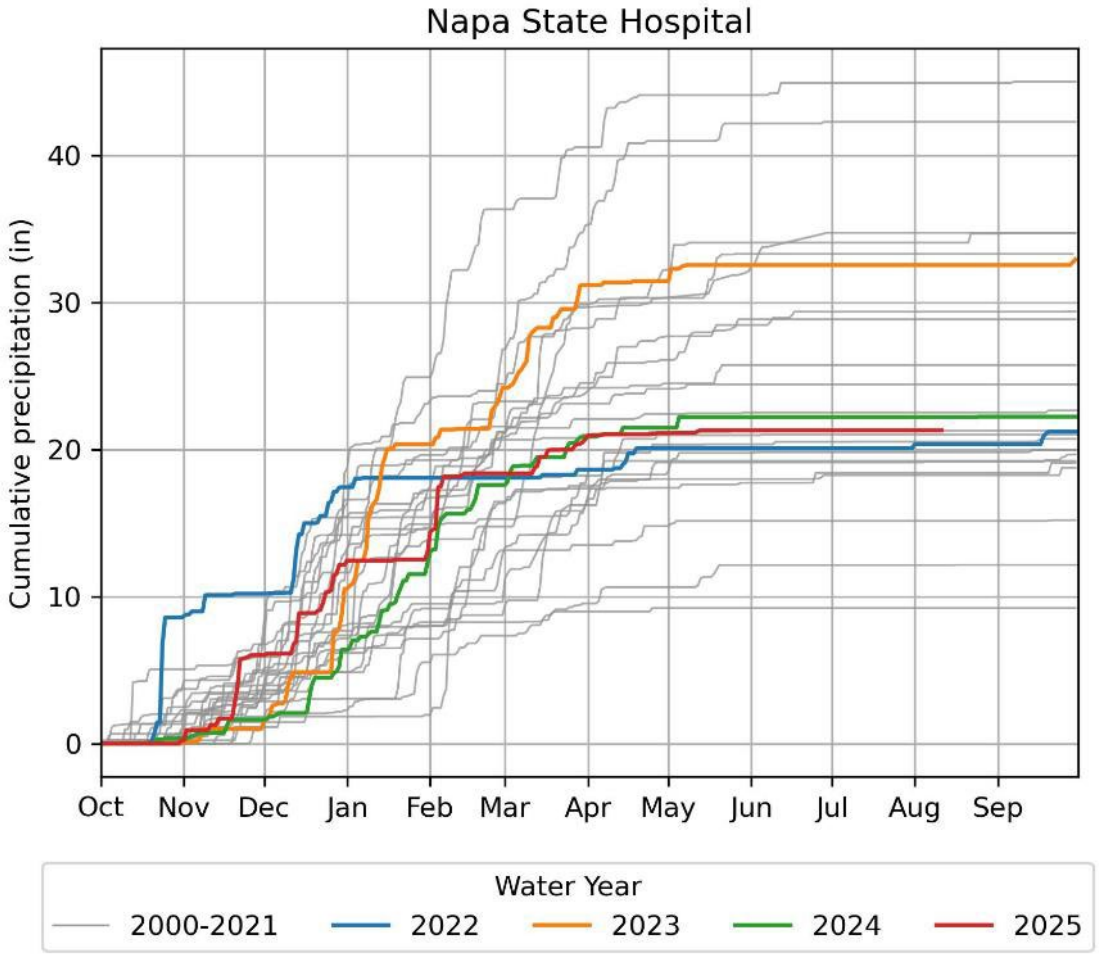
- 2025 had less rainfall than 2024 (at Napa State Hospital) but was much cooler.

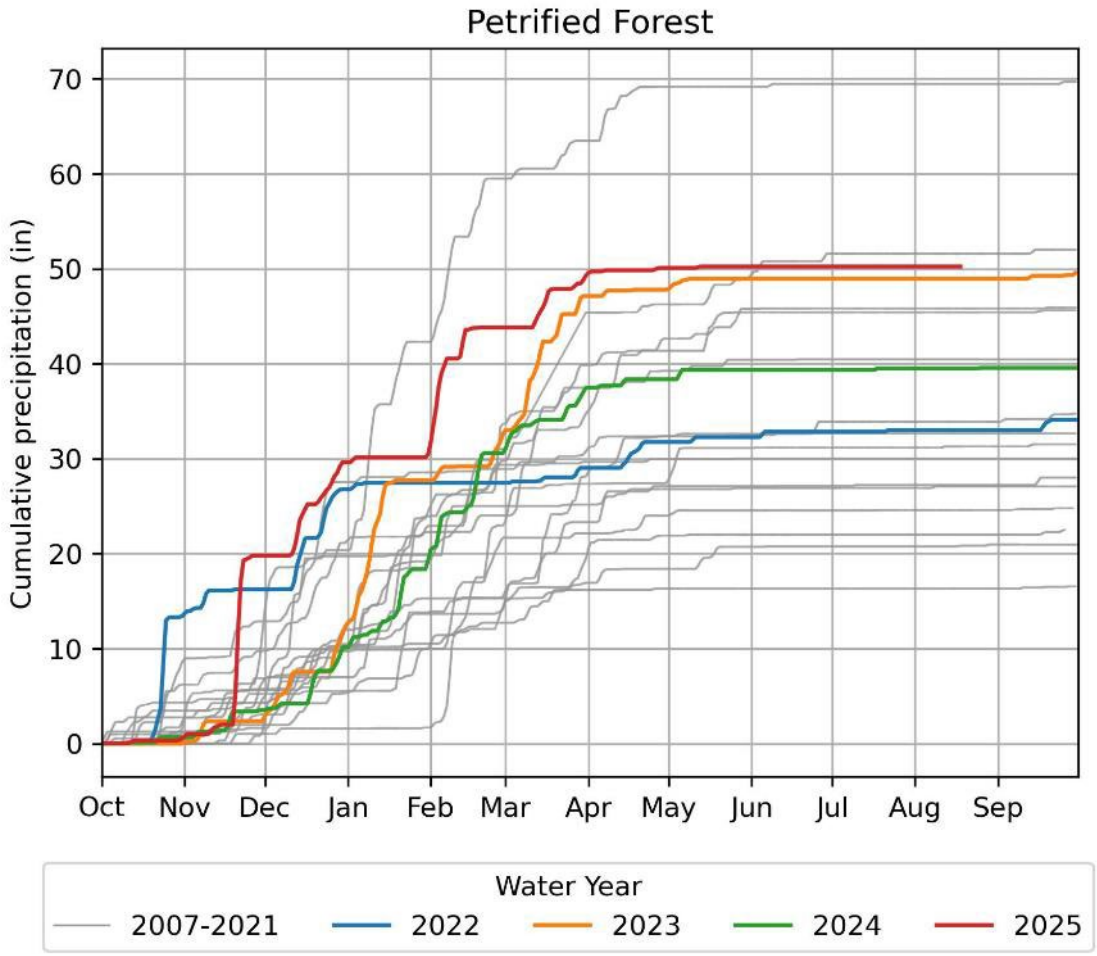




Spatial Variability

- 2025 was slightly below average at Napa State Hospital, but more like a wet year in the northern parts of the watershed





Water Temperature More Suitable in 2025 than 2024

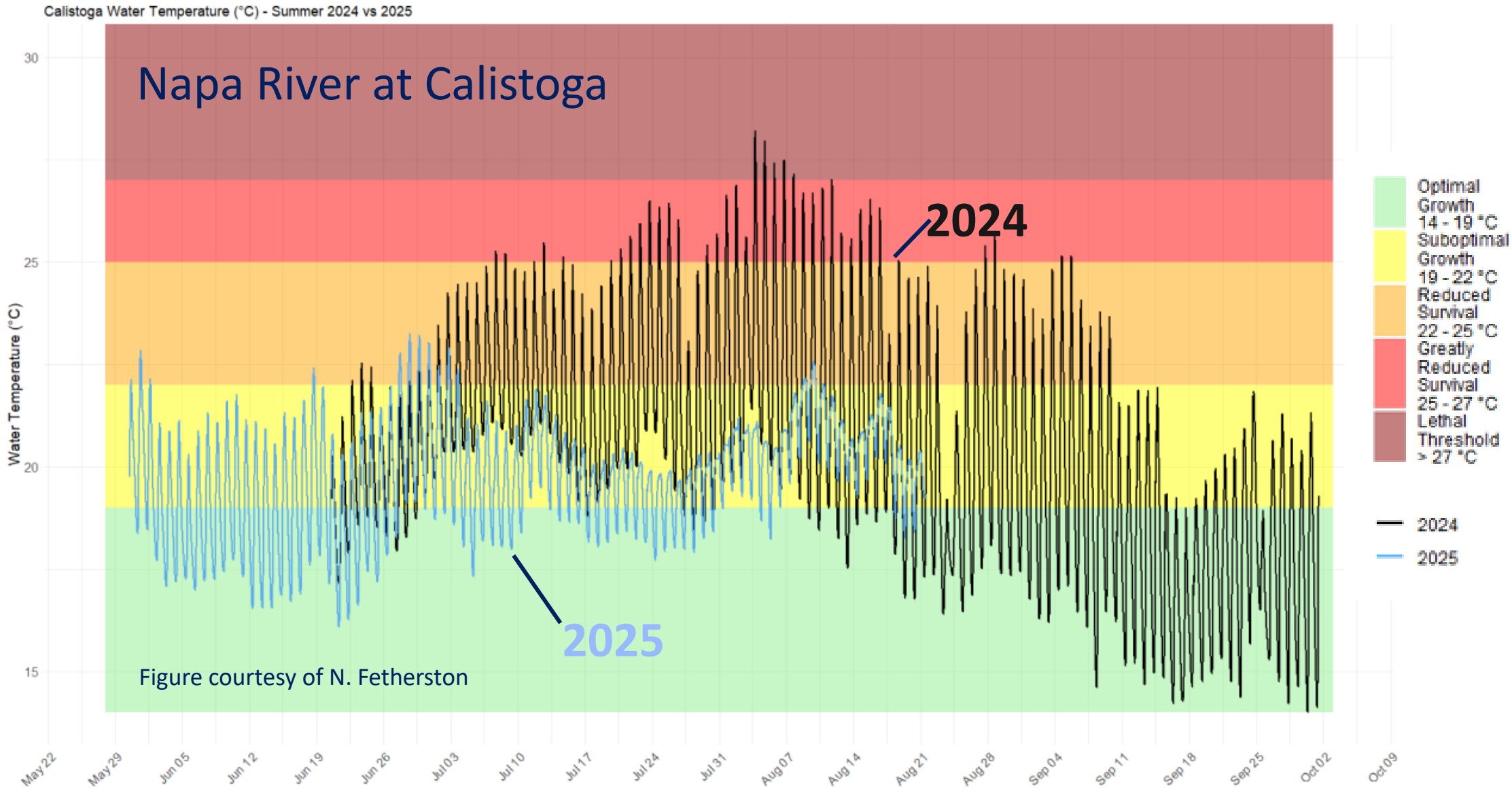


Figure courtesy of N. Fetherston

Water temperature more suitable in 2025 than 2024

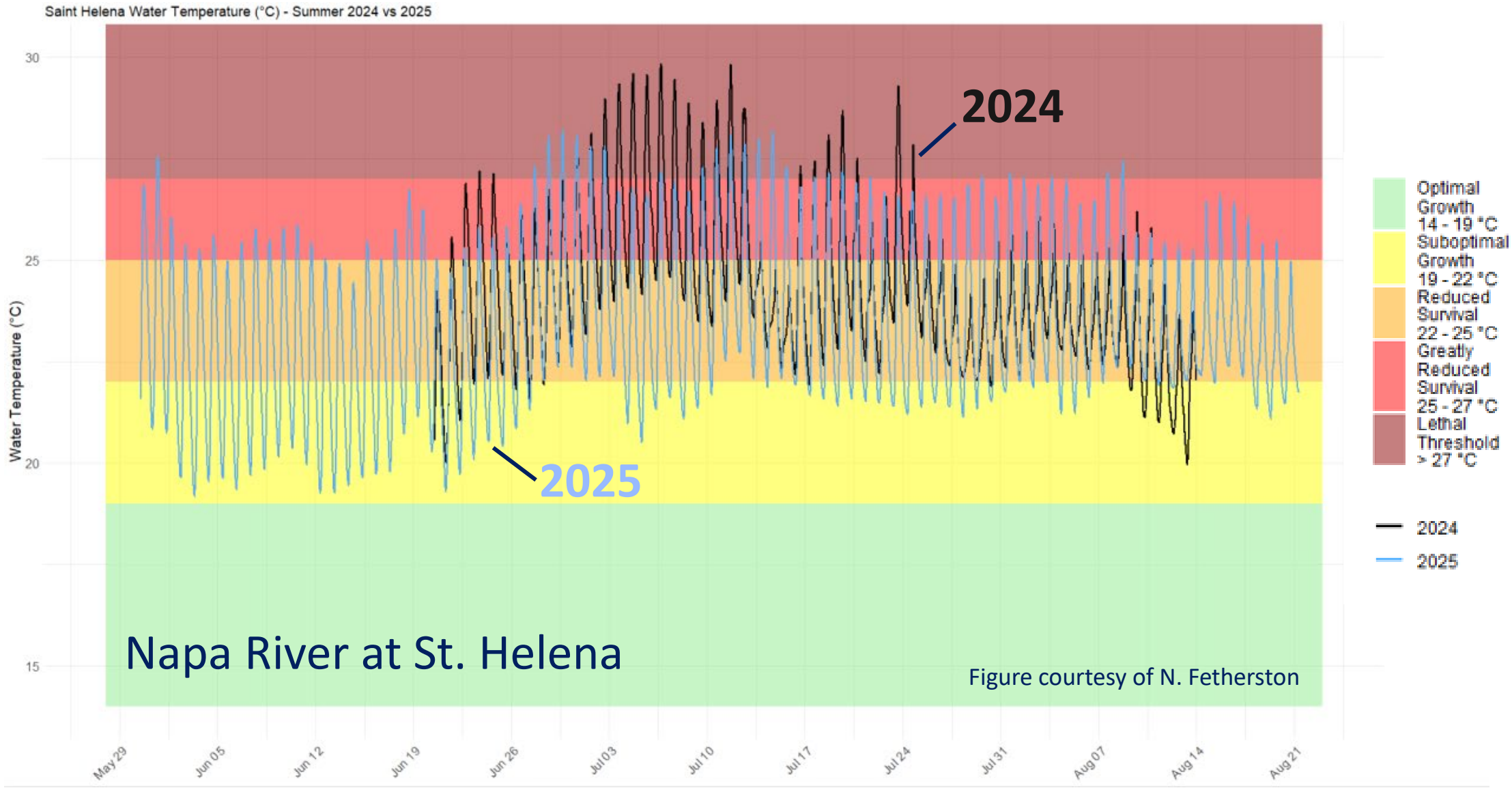


Figure courtesy of N. Fetherston

Biological Surveys

- Foothill yellow-legged frog metamorphs observed prior to Sulphur Creek going dry
- Steelhead and Chinook juveniles were more widespread and abundant in 2025 than 2024
- GDE vegetation mapped at each site (2024, 2025 surveys in September)
- 62 bird species identified using sound recorders at 5 of the sites (data still being processed)

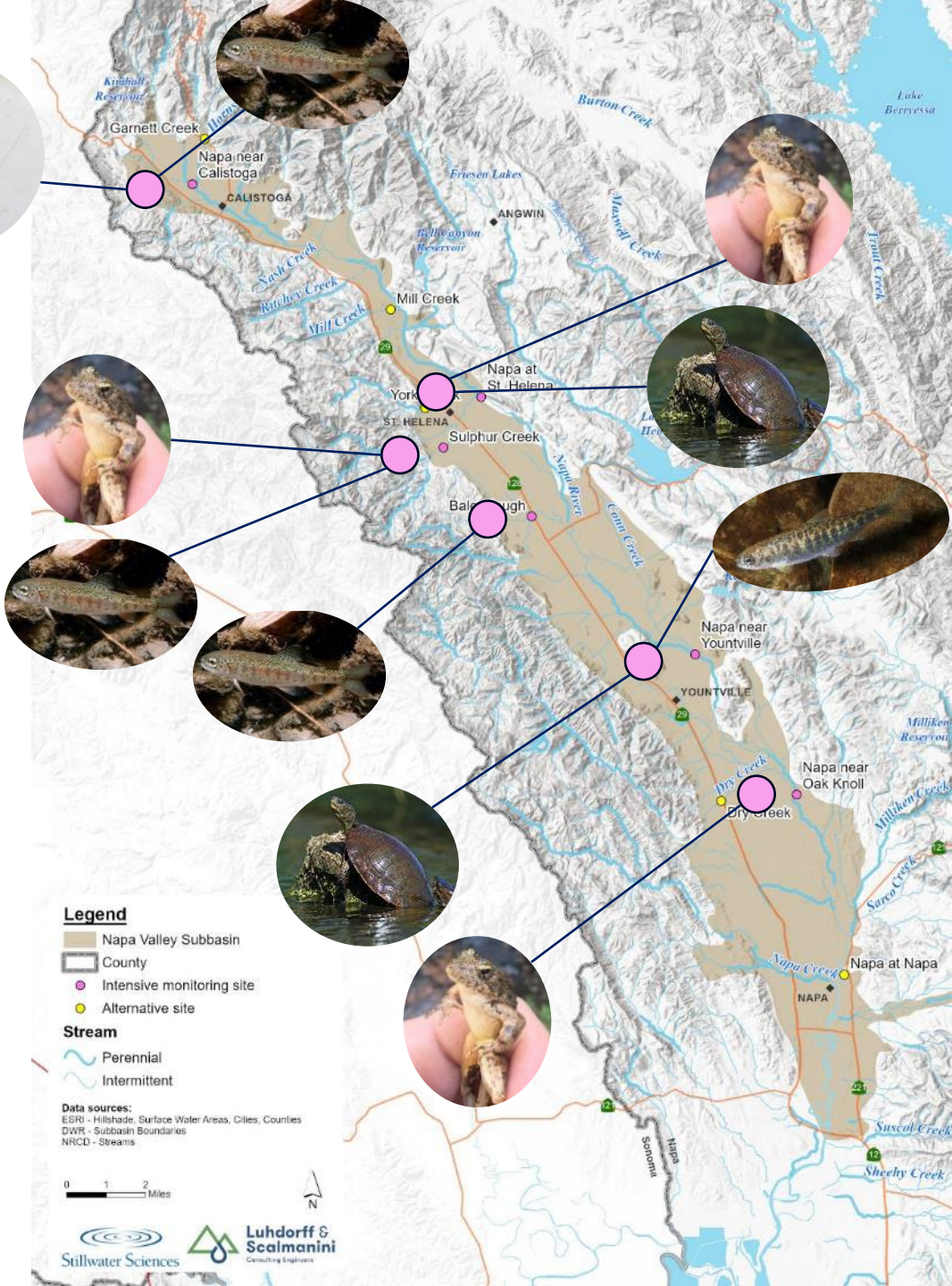
Fish Survey Results

Site	2024				2025			
	O. Mykiss* Adult	O. Mykiss (100-200 mm)	O. Mykiss (<100 mm)	Chinook parr	O. Mykiss Adult	O. Mykiss (100-200 mm)	O. Mykiss (<100 mm)	Chinook parr
Napa R. @Calistoga	0	3	118	0	0	0	0	2592
Napa R. @ St Helena	0	0	2	0	0	10	5	13
Napa R. @ Yountville	0	0	1	0	12	0	0	42
Napa R. @ Oak Knoll	N/A	N/A	N/A	N/A	2	0	0	1
Sulphur Creek (May)	N/A	N/A	N/A	N/A	0	5	773	239
Sulphur Creek (June)	26	8	3	1	0	4	244	128
Bale Slough	N/A	N/A	N/A	N/A	0	0	0	19

*Oncorhynchus mykiss = Steelhead

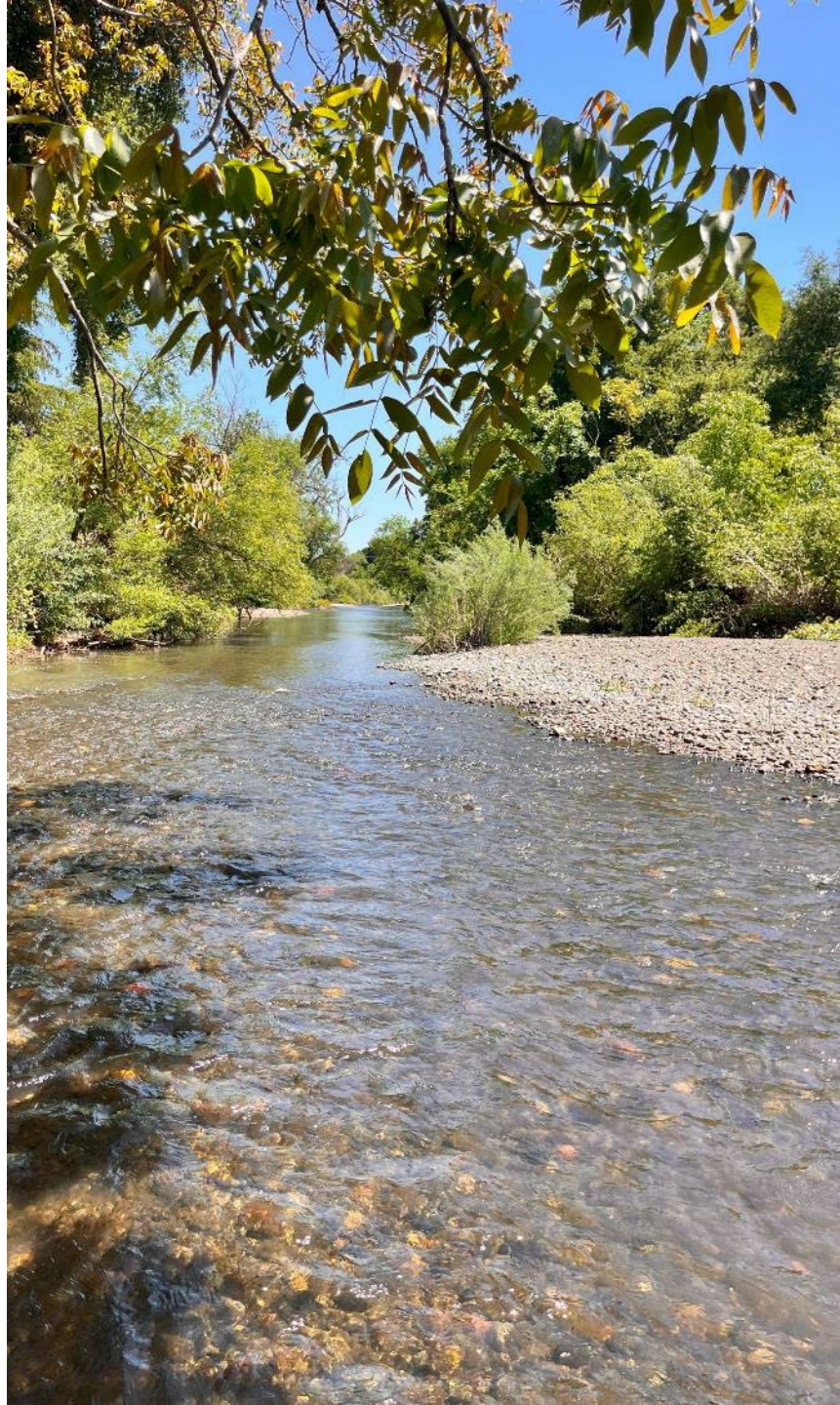
Biological Survey Results

- **Napa River at Calistoga:** Steelhead fry (2024), Chinook fry (2025), and California Freshwater Shrimp (2024)
- **Napa River at St. Helena:** Foothill yellow-legged frog (2024), Northwestern pond turtle (2024-2025)
- **Napa River at Yountville:** Northwestern pond turtle (2024)
- **Napa River at Oak Knoll:** Foothill yellow-legged frog eDNA (likely from Dry Creek)
- **Sulphur Creek:** Foothill yellow-legged frog (2024 and 2025). Steelhead fry, parr, and adults (2024-2025), Chinook fry (2025).
- **Bale Slough:** Chinook fry (2025) (western toad and Sierra chorus frogs)



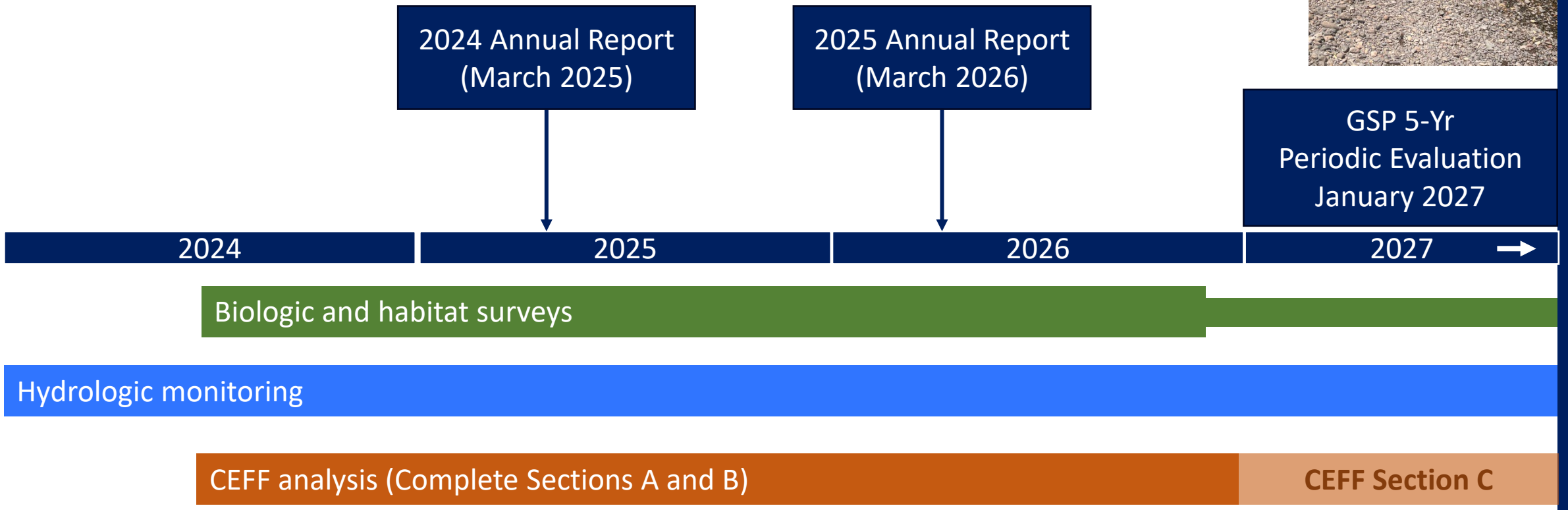
2025 Monitoring Implications for Ecological Goals

- Stream temperatures (and dissolved oxygen) may be suitable for longer in the Napa mainstem during wetter, cooler years like 2025.
- Fish observations varied from year-to-year; importance of habitat to be explored. Chinook juveniles were at nearly all the sites in 2025 and none in 2024. Do rearing juveniles survive sites that go dry or become isolated pools?
- Tributaries (and mainstem channels near junctions) provide good foothill-yellow-legged frog habitat (more bars and pools)



Next Steps

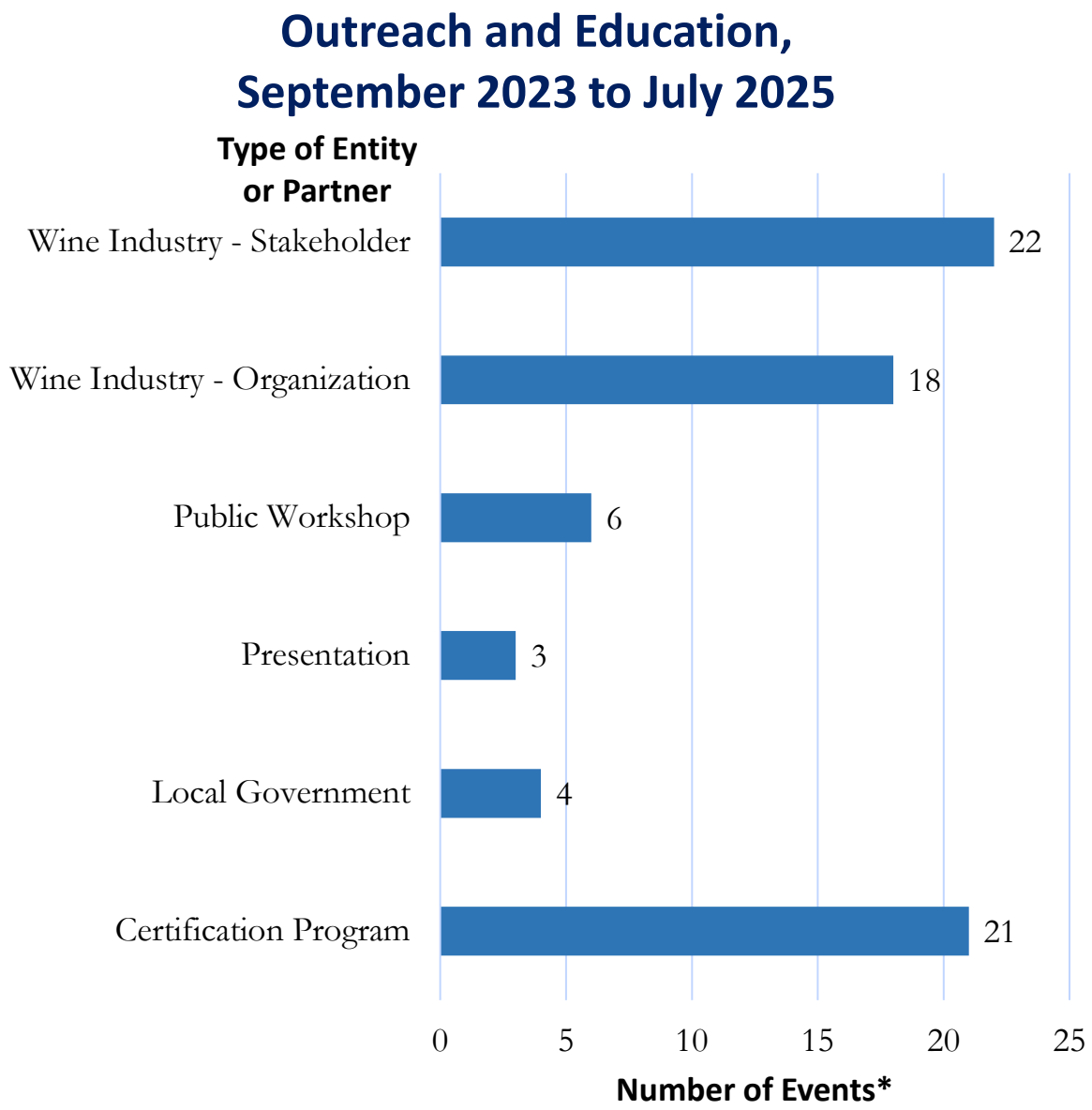
- Continued monitoring in 2026
- CEFF Analysis



Water Conservation: Expanded Outreach

Outreach and Engagement

- Since 2023, outreach and education has reached a wide range of stakeholders through presentations, workshops, and one-on-one meetings.
- Last year, outreach heavily focused on outreach to the wine industry and sustainability programs during development of the certification partnership.

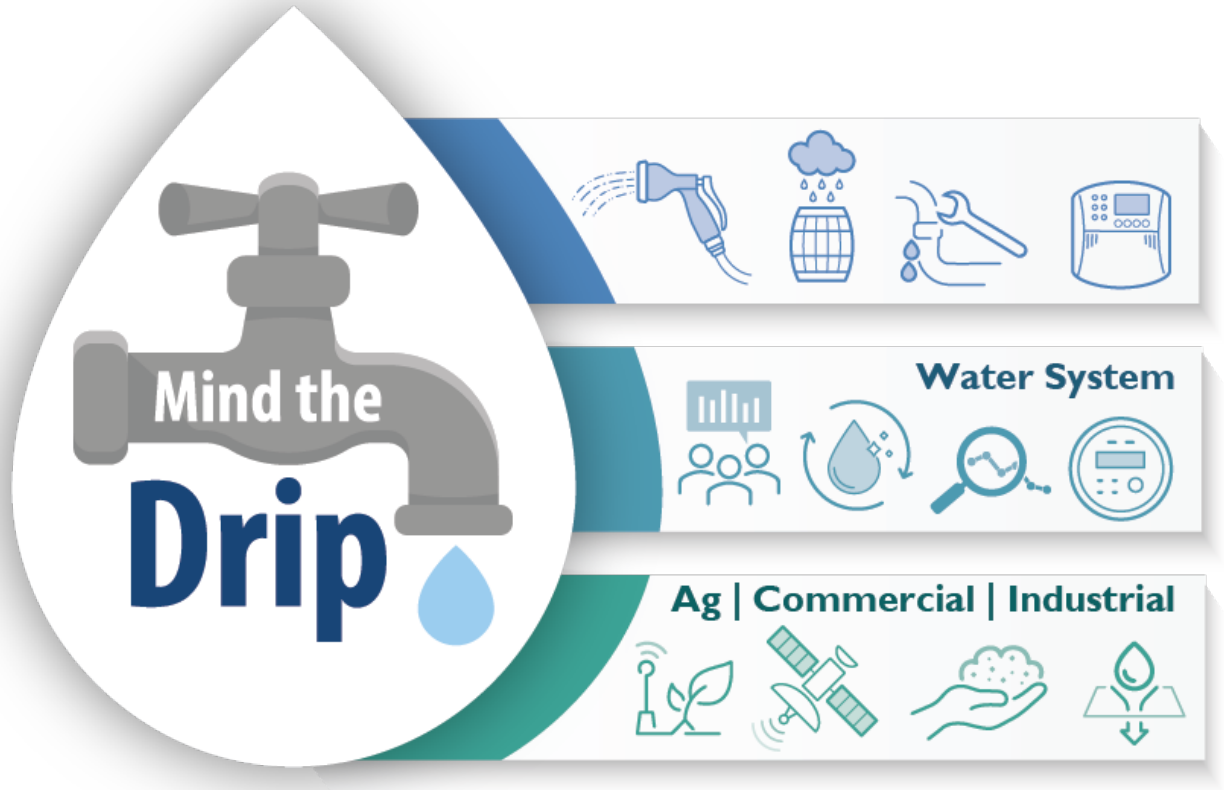


*Excludes coordination meetings, other public meetings (e.g., TAG, GSA), and technical meetings

Expanded Outreach and Engagement

- Now, broadening outreach efforts, including development of Water Conservation Community Engagement and Education Plan (WCCEEP).
- The WCCEEP seeks to support effective implementation of the GSP by creating an actionable strategic plan for meaningful stakeholder engagement, outreach, and education. The plan is intended to meet the following goals:

Water Conservation:
A Napa Way of Life



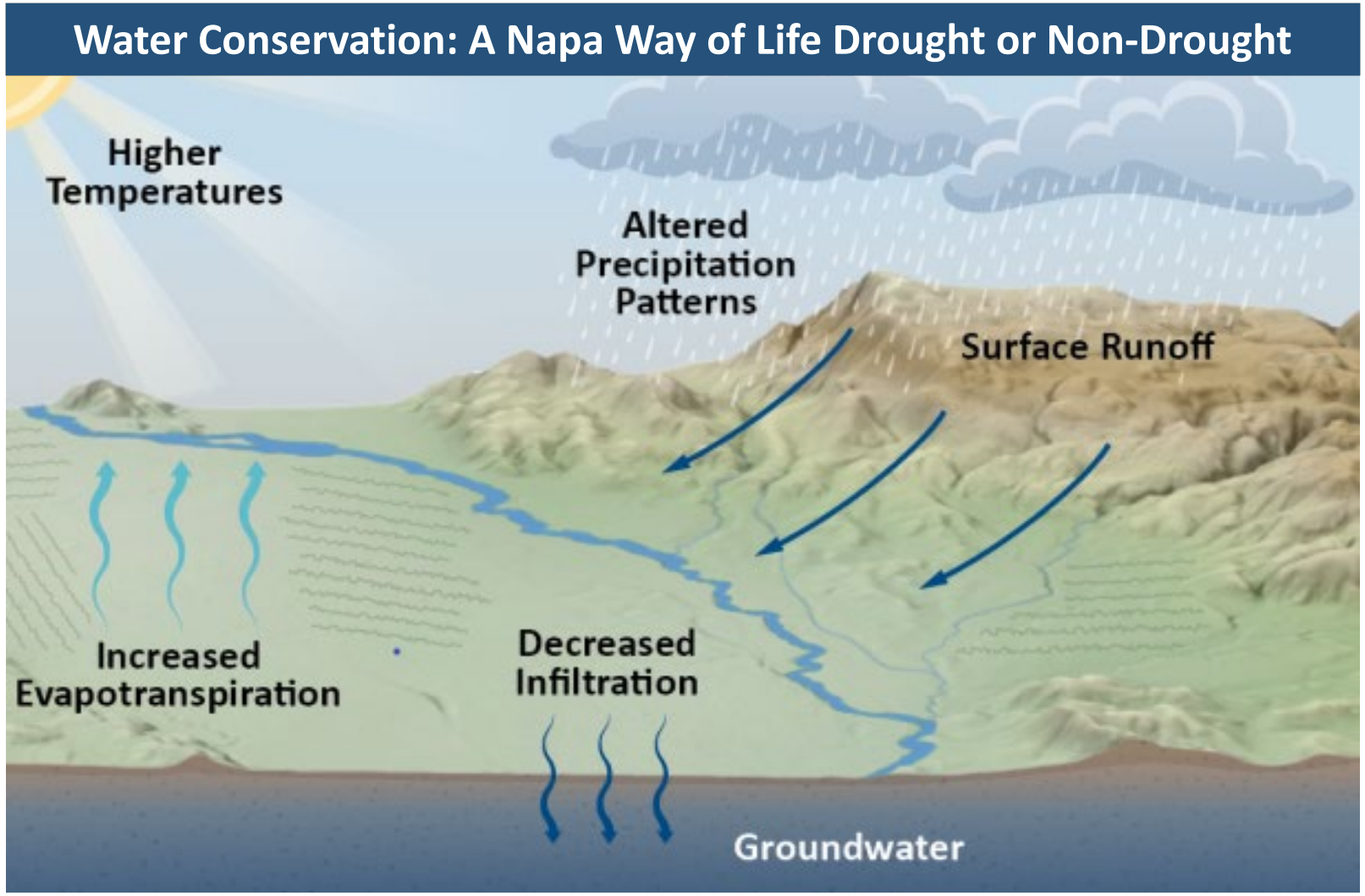
Use Water Wisely:
Become a Water Steward

- All sectors are engaged in Water Conservation.
- Additional conservation will help achieve the sustainability goal.
- What actions are needed to increase water conservation?

Achieving More Conservation Together

- Everyone has an interest in watershed resiliency.
- Collaboration among entities already knowledgeable of natural resource stewardship is needed for public outreach and education to achieve additional countywide water conservation.
- Organizing and implementing educational workshops, briefing service organizations and others, and delivering simple messages for effective actions.

Community Engagement and Education: Plan & Partners



Potential Partnering Organizations (Examples)

- Napa RCD
- Napa Co. FCWCD
- WICC
- Local Ag and Wine Industry Organizations
- Sustainability Certification Programs
- Business, civic, and community organizations
- Conservation and environmental organizations

Discussion

Thank You

Napa County Groundwater Sustainability Agency

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