Napa County

1195 THIRD STREET
SUITE 310
NAPA, CA 94559

Agenda

Thursday, November 14, 2024
1:30 PM

Board of Supervisors Chambers
1195 Third Street, Third Floor

Groundwater Technical Advisory Group

Albert Filipelli (Chair)
Monica Cooper (Vice-Chair)
Julie Chambon
Miguel Garcia
Mathias Kondolf

Brian D. Bordona, Secretary- Director
Chris Apallas, County Counsel
Jamison Crosby, Natural Resources Conservation Manager
Brendan McGovern, Principal Planner
Alexandria Quackenbush, Meeting Clerk
Angie Ramirez-Vega, Meeting Clerk

How to Watch or Listen to the Napa County Groundwater Technical Advisory Group Meetings

The Napa County Groundwater Technical Advisory Group will continue to meet the 2nd Thursday of each month. There will be no regular meeting in July or October. July 9, 2024 will be a special-joint meeting of the GTAG & GSA.

The Groundwater Technical Advisory Group realizes that not all County residents have the same ways to stay engaged, so several alternatives are offered. Remote Zoom participation for members of the public is provided for convenience only. In the event that the Zoom connection malfunctions for any reason, the Groundwater Technical Advisory Group reserves the right to conduct the meeting without remote access.

Please watch or listen to the Groundwater Technical Advisory Group meeting in one of the following ways:

1. Attend in-person at the Board of Supervisors Chambers, 1195 Third Street, Napa, Third Floor.
2. Watch on Zoom using the attendee link: https://countyofnapa.zoom.us/j/89426085834. Make sure the browser is up-to-date.
3. Listen on Zoom by calling 1-669-900-6833 (Meeting ID: 894-2608-5834).

If you are unable to attend the meeting in person and wish to submit a general public comment or a comment on a specific agenda item, please do the following:

1. Email your comment to meetingclerk@countyofnapa.org. Emails will not be read aloud but will still become part of the public record and shared with the Groundwater Technical Advisory Group.
2. Use the Zoom attendee link: https://Countyofnapa.zoom.us/j/89426085834. Make sure the browser is up-to-date. When the Chair calls for the item on which you wish to speak, click "raise hand". Please limit your remarks to three minutes.
3. Call the Zoom phone number: 1-669-900-6833. (Meeting ID: 894-2608-5834). When the Chair calls for the item on which you wish to speak, press *9 to raise hand. Please limit your remarks to three minutes.

   Please note that phone numbers in their entirety will be visible online while speakers are speaking

For more information, please contact us via telephone at (707) 253-4417 or send an email to meetingclerk@countyofnapa.org.

ANY MEMBER OF THE AUDIENCE DESIRING TO ADDRESS THE COMMITTEE:

ON A MATTER ON THE AGENDA
Please proceed to the podium when the matter is called and, after receiving recognition from the Chair, give your name and your comments or questions. In order that all interested parties have an opportunity to speak, please be brief and limit your comments to the specific subject under discussion. Time limitations shall be at the discretion of the Chair or Committee, but is generally limited to three minutes.

ON A MATTER NOT ON THE AGENDA
Public comment is an opportunity for members of the public to speak on items that are not on the agenda but are within the subject matter jurisdiction of the Committee. Public comment is limited to three minutes per speaker, subject to the discretion of the Chair. Comments should be brief and focused, and speakers should be respectful of one another who may have different opinions. Please remember this meeting is being recorded and broadcasted live via ZOOM. The County will not tolerate profanity, hate speech, abusive language, or threats. Also, while public input is appreciated, the Brown Act prohibits the Committee from taking any action on matters raised during public comment that are not on the agenda.

1. CALL TO ORDER; ROLL CALL

2. PUBLIC COMMENTS AND RECOMMENDATIONS
(The Committee invites comments and recommendations from the public concerning issues relevant to the charge of the Technical Advisory Group. Anyone who wishes to speak to the Technical Advisory Group on such a matter, if it is not on the agenda, may do so at this time. At the discretion of the Chair, individuals will be limited to a three-minute presentation. No action will be taken by the Technical Advisory Group as a result of any item presented at this time.)

3. APPROVAL OF MINUTES

A. The Secretary of the committee requests approval of the minutes from the September 12, 2024 TAG meeting. **24-1917**

Attachments: Draft September 12, 2024 Meeting Minutes

4. AGENDA REVIEW

5. ADMINISTRATIVE ITEMS

A. Elect officers (Chair and Vice-Chair) for 2025 for the Technical Advisory Group (TAG). **24-1918**

B. In this item the Technical Advisory Group (TAG) will review the proposed draft 2025 TAG meeting calendar for discussion and decision. The calendar proposes a schedule of meetings and topics for 2025 TAG Meetings. **24-1919**

Attachments: 2025 Draft TAG Regular Meeting Schedule

C. Review draft final comment letter from the TAG expressing concerns related to the State Water Resources Control Board's (State Water Board) Supply and Demand Assessment Unit and Paradigm Environmental, Inc. project to model water supply and demand in the Napa River Watershed. The TAG will be asked to: 1. Authorize and approve TAG Chair, Albert Filipelli, to sign the letter and 2. Recommend the NCGSA Board of Directors authorize and approve staff to send the letter on the TAG's behalf following the NCGSA's meeting on December 3, 2024. **24-1961**

Attachments: Draft Final Letter to SWRCB from TAG
Draft Final Letter to SWRCB from TAG - Revised.pdf

D. Provide an update on the Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan implementation with a focus on California Environmental Flows Framework (CEFF) steps. **24-1965**

Attachments: GDE Monitoring Presentation to TAG Nov. 14, 2024

E. Technical Advisory Group (TAG) members will receive a presentation of the current proposed framework for the NCGSA Water Conservation Certification Program minimum requirements and preview the vineyard benchmarking program. This will spur discussion, questions, and provide feedback to staff and participants. **24-1942**

Attachments: ERA Presentation on GPR Implementation Update, Nov. 14, 2024
DRAFT Water Conservation Certification Plan, November 2024

6. FUTURE AGENDA ITEMS

7. ADJOURNMENT

I HEREBY CERTIFY THAT THE AGENDA FOR THE ABOVE STATED MEETING WAS POSTED AT A LOCATION FREELY ACCESSIBLE TO MEMBERS OF THE PUBLIC AT THE NAPA COUNTY ADMINISTRATIVE BUILDING, 1195 THIRD STREET, NAPA, CALIFORNIA ON 11/7/2024 BY 5:00PM. A HARDCOPY SIGNED VERSION OF THE CERTIFICATE IS ON FILE WITH THE COMMITTEE CLERK AND AVAILABLE FOR PUBLIC INSPECTION.

ANGIE RAMIREZ VEGA (By e-signature)
Angie Ramirez Vega, Meeting Clerk

Napa County

Board Agenda Letter

1195 THIRD STREET
SUITE 310
NAPA, CA 94559
www.countyofnapa.org

Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1917

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian Bordona - Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: TAG Minutes from September 12, 2024

RECOMMENDATION

The Secretary of the committee requests approval of the minutes from the September 12, 2024 TAG meeting.

EXECUTIVE SUMMARY

The TAG held its twenty-first meeting on September 12, 2024. Minutes were prepared and are ready for the committee's approval.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

BACKGROUND AND DISCUSSION

The TAG held its twenty-first meeting on September 12, 2024. Minutes were prepared and are ready for the committee's approval.

Meeting Minutes

Technical Advisory Group

Julie Chambon
Monica Cooper *(Vice-Chair)*
Albert Filipelli *(Chair)*
Miguel Garcia
Mathias Kondolf

Brian D. Bordona, Director
Chris Apallas, County Counsel
Jamison Crosby, Natural Resources Manager
Brendan McGovern, Planner III
Alexandria Quackenbush, Meeting Clerk
Angie Ramirez-Vega, Meeting Clerk

Thursday, September 12, 2024	**1:30 PM**	**Board of Supervisors Chambers 1195 Third Street, Third Floor**

1. CALL TO ORDER / ROLL CALL

Group Members Present: Chair Albert Filipelli, Julie Chambon, Matt Kondolf, Monica Cooper, Miguel Garcia.
Group Members Excused: None.

2. PUBLIC COMMENTS AND RECOMMENDATIONS

(1) Public comment was received.

3. APPROVAL OF MINUTES

Motion by Member Garcia to approve minutes for the May 9, 2024, meeting as presented, seconded by Member Kondolf.
Vote: Carried 5-0-0
Yes: Garcia, Kondolf, Filipelli, Cooper, Chambon.
No: None
Absent: None

4. AGENDA REVIEW

Jamison Crosby provided the agenda review.

5. ADMINISTRATIVE ITEMS

A. The TAG will receive an overview of Napa County groundwater monitoring networks and associated data gaps.
Cab Esposito, LSCE and Christian Braudrick, Stillwater Sciences, presented the item.
Chair Filipelli opened public comment; one public comment was received.
Chair Filipelli closed public comment.

B. The Technical Advisory Group (TAG) members will receive a presentation of the current proposed framework for the water conservation certification program requirements and five topics requiring further review, pose questions, and provide feedback to staff and participants.
Duncan McEwan and Tori Laird, ERA Economics, presented the item.
Chair Filipelli opened public comment; four public comments were received.
Chair Filipelli closed public comment.

C. Receive a presentation from staff of the State Water Resources Control Board (SWRCB) Supply and Demand Assessment Unit and Paradigm Environmental, Inc. on Modeling Water Supply and Demand in the Napa River Watershed.
Philip Dutton, Jacob Walker, Francisco Correa, State Water Resources Control Board,and Steve Carter and Ali Tasdighi, Paradigm Environmental,presented the item.
Chair Filipelli opened public comment, two public comments were received.
Chair Filipelli closed public comment.

6. FUTURE AGENDA ITEMS
NONE.

7. ADJOURNMENT
Meeting adjourned at 4:52pm.

_____
ANGIE RAMIREZ VEGA, Meeting Clerk

Napa County

Board Agenda Letter

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Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1918

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian Bordona - Director, Planning, Building and Environmental Services

REPORT BY: Jamison Crosby - Natural Resources Conservation Manager

SUBJECT: Election of Officers (Chair and Vice-Chair) for 2025

RECOMMENDATION

Elect officers (Chair and Vice-Chair) for 2025 for the Technical Advisory Group (TAG).

EXECUTIVE SUMMARY

As stated in the Bylaws, at the first organizational meeting and annually thereafter, the membership of the TAG shall elect a Chair and Vice-Chair from among themselves. This election will be for officers to begin serving in 2025.

PROCEDURAL REQUIREMENTS

1. Staff reports.

2. Public comments.

3. Motion, second, discussion and vote on the item.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

BACKGROUND AND DISCUSSION

As stated in the Bylaws, at the first organizational meeting and annually thereafter, the membership of TAG shall elect a Chair and Vice-Chair from among themselves. This election will be for officers to begin serving in 2025.

As stated in the Bylaws, the Chair and Vice-Chair shall serve one (1) calendar year or until their successors are elected and assume office. If the office of the Chair becomes vacant during the term, the Vice-Chair shall become Chair. Vacancy in the office of Vice-Chair during the term shall be filled by election to serve for the remainder of the term.

As stated in the Bylaws, the duties of the Chair and Vice-Chair include:

1. The Chair, or the Vice Chair in the absence of the Chair, shall act as the presiding officer of the TAG and in that capacity shall preserve order and decorum, decide questions of order subject to being overruled by a two-thirds vote and perform such other duties as are required by the TAG.

2. The Chair shall have all the rights and duties enjoyed by any other member of the TAG, including the right to make and second motions.

3. "…any regularly scheduled meeting of the TAG may be canceled by majority vote or, if there is not a quorum, be adjourned by the Chair or Secretary…"

4. A special meeting may be called at any time by the Chair or upon the request of a majority of the members of the TAG…

5. Regarding public comment on unagendized items, the time limit is three (3) minutes per speaker. In the event total public comment exceeds ten (10) minutes, the Chair may, in the Chair's discretion, continue public comment on the unagendized items to the end of the meeting.

6. The Chair recognizes any person desiring to address the TAG and may, in the interests of facilitating the business of the TAG, set in advance of the presentation of testimony reasonable time limits for oral presentations.

7. A roll call vote may be required in voting upon any motion of the TAG at the discretion of the Chair.

8. Not in the bylaws, Secretary will consult with the Chair about content of TAG meeting agendas.

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Napa County

Board Agenda Letter

Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1919

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona, Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: Proposed 2025 Technical Advisory Group Calendar

RECOMMENDATION

In this item the Technical Advisory Group (TAG) will review the proposed draft 2025 TAG meeting calendar for discussion and decision. The calendar proposes a schedule of meetings and topics for 2025 TAG Meetings.

BACKGROUND AND DISCUSSION

In 2025, GSA staff propose the TAG continue to meet on the 2nd Thursday of every month from 1:30 to 5pm, with no meetings to be held on January 9th, May 8th, June 12th, and October 9th.

For the month of August, staff propose that instead of the regular TAG meeting on August 14, 2025, the TAG and GSA Board of Directors hold a joint meeting to coincide with the Board of Supervisors Regular Meeting dates on August 19, 2025.

Procedure
Staff introduces the item
Questions and answers with the TAG
Public comments

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

RELATED DOCUMENTS

A. Proposed 2025 TAG Meeting Calendar

2025 Meeting Schedule
Technical Advisory Group

A Tradition of Stewardship
A Commitment to Service

January

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

February

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

March

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

April

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

June

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

September

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

October

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

December

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

Regular Technical Advisory Group meetings are held on the 2nd Thursday of each month.

Board of Supervisors Chambers, 1195 Third Street, Suite 305, Napa CA 94559

- Regular TAG Meeting
- Joint GSA/TAG Meeting
- Tentative Meeting Dates
- County Holidays

2025 Meeting Schedule
Technical Advisory Group

February 13, 2025
March 13, 2025
April 10, 2025
July 10, 2025
August 19, 2025
September 11, 2025 (Tentative)
November 13, 2025
December 11, 2025 (Tentative)

Regular Technical Advisory Group meetings are held on the 2nd Thursday of each month.

Board of Supervisors Chambers, 1195 Third Street, Suite 305, Napa CA 94559

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Main: (707) 253-4580

Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1961

TO: Technical Advisory Group (TAG) for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona, Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: Comment letter regarding the State Water Resources Control Board's Water Supply and Demand Assessment for the Napa River Watershed

RECOMMENDATION

Review draft final comment letter from the TAG expressing concerns related to the State Water Resources Control Board's (State Water Board) Supply and Demand Assessment Unit and Paradigm Environmental, Inc. project to model water supply and demand in the Napa River Watershed.

The TAG will be asked to: 1. Authorize and approve TAG Chair, Albert Filipelli, to sign the letter and 2. Recommend the NCGSA Board of Directors authorize and approve staff to send the letter on the TAG's behalf following the NCGSA's meeting on December 3, 2024.

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.
Vote

BACKGROUND AND DISCUSSION

The Technical Advisory Group received a presentation from the State Water Board and their consultants, Paradigm Environmental, Inc., on a project called "Modeling Water Supply and Demand in the Napa River Watershed" on September 12, 2024. The State Water Board is responsible for allocating surface water through California's water rights priority system. The presentation provided an overview of the modeling effort proposed in the Napa River Watershed, which is to develop a water supply (hydrologic) model that assesses surface water availability where low flows and drought conditions may threaten water supplies, impair critical habitat, and/or create uncertainty for water users. The State Water Board's stated objective is to better allocate surface water through California's water rights priority system during critical drought periods to maintain water supplies in the Napa River critical for habitat and species. Please see the link (in the Supporting Documents) for the staff report from the September 12, 2024 TAG meeting, which includes an explanation of the model, the data needs, and the State Water Board's presentation providing an overview of the modeling.

The TAG posed questions and expressed several concerns regarding the proposed modeling effort to the State

Water Board and its consultants. Namely, the TAG expressed concern about the State Water Board's model, which (1) presents an overly simplified approach to groundwater and surface water interactions in Napa Valley, which have been well studied and incorporated into local efforts to model groundwater, (2) the impact surface water curtailments could have leading to further groundwater pumping by irrigators in lieu of surface water diversions, as well as (3) concerns about the lack of integration of the State Water Board's model with the existing Napa Valley Integrated Hydrologic Model (NVIHM), which was built and is actively used to model groundwater and surface water in the Napa River Watershed by the NCGSA.

The TAG remains concerned that utilizing a separate surface water model that does not accurately utilize and incorporate existing groundwater data and knowledge about surface water and groundwater interactions will lead to conflicting results and discrepancies. These discrepancies could lead to difficulties in communicating differences between model results to stakeholders within the Napa Valley and could undermine efforts by the NCGSA to work with stakeholders on implementing five workplans which have been prepared and adopted by the GSA. The workplans include:

- Napa County Water Conservation Workplan: A Guide for Vineyards, Wineries and Other Water Users
- Groundwater Pumping Reduction Workplan: Napa Valley Subbasin
- Interconnected Surface Water and Groundwater Dependent Ecosystems (GDEs) Workplan: Napa Valley Subbasin
- Stormwater Resource Plan
- Communication and Engagement Plan.

The TAG will be asked to: 1. Authorize and approve TAG Chair, Albert Filipelli, to sign the letter and 2. Recommend the NCGSA Board of Directors authorize and approve staff to send the letter on the TAG's behalf following the NCGSA's meeting on December 3, 2024.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

A. Comment letter from the Technical Advisory Group to State Water Board on their modeling effort

B. Link to September 12, 2024 TAG Staff Report: ≤ https://napa.legistar.com/LegislationDetail.aspx?ID=6855998&GUID=D525C9FA-DA46-49BB-B3A8-≥

A Tradition of Stewardship
A Commitment to Service

Planning, Building & Environmental Services

1195 Third Street, Suite 210
Napa, CA 94559
www.countyofnapa.org
Main: (707) 253-4417

Brian D. Bordona
Director

November 6, 2024

E. Joaquin Esquivel, Chair
Dorene D'Adamo, Vice Chair
Sean Maguire
Laurel Firestone
Nichole Morgan
Board.Clerk@waterboards.ca.gov

State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

SUBJECT: Napa County Groundwater Technical Advisory Group comments on SWRCB modeling of Napa River Subbasin

Dear Chair E. Joaquin Esquivel,

Introduction

The Napa County Groundwater Technical Advisory Group (TAG) was appointed by the Napa County Groundwater Sustainability Agency (NCGSA) in June 2022 to provide support and technical advice on implementation of the Groundwater Sustainability Plan (GSP) in the Napa Valley Subbasin. The five-member TAG has met approximately monthly since August 2022 to provide guidance on a number of technical matters. As part of our review of relevant issues, the TAG invited the State Water Resources Control Board (SWRCB) staff to present a summary of the SWRCB Supply and Demand Assessment Unit's ongoing modeling effort for the Napa River Watershed at the TAG's September 12, 2024 meeting. In response to this presentation and our further review of the PowerPoint slides presented, the TAG provides these comments in an effort to facilitate collaboration among the agencies and to improve the quality and utility of the resulting scientific outputs.

Background

Significant effort has been invested by the NCGSA to better understand the Napa Valley Subbasin, including groundwater / surface water interactions along the Napa River and its tributaries. Those efforts have included:

- Extensive data compilation (including collaboration with the Napa County Resource Conservation District [RCD] and compilation of data associated with the Stream Watch program[1]).
- Compilation and review of prior scientific work establishing that groundwater has a significant contribution to low flow in the Napa River, going back at least to the U.S. Geological Survey (USGS) analysis of 1973.[2] Subsequent studies have consistently confirmed this finding.
- Development of the Napa Valley Integrated Hydrologic Model (NVIHM), a comprehensive model of Napa Valley Subbasin, including groundwater / surface water interactions, and constructed and calibrated consistent with best practices specified by the California Department of Water Resources (DWR).[3]
- Additional investigations and data collection, including identification of a monitoring network associated with surface water / groundwater interactions.

These efforts are extensively documented in the GSP, which was adopted by the NCGSA Board and subsequently approved by DWR in January 2023. While still identifying data gaps, the GSP represents a significant advancement in understanding of water balance within the Napa Valley Subbasin. A significant outcome outlined in the GSP is the role of groundwater on interconnected surface water within the Napa Valley Subbasin. In addition, consistent with DWR guidance and best practices, [4] the NVIHM is a central tool for ongoing and future management of the Subbasin and for evaluation of sustainability indicators, including evaluation of depletion of surface water due to groundwater pumping.

As part of GSP implementation, five workplans have been prepared, including: the Napa County Water Conservation Workplan, Groundwater Pumping Reduction Workplan, Stormwater Resource Plan, Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan, and a Communication and Engagement Plan.

As part of the GSP implementation, the NCGSA is working on additional characterization (including expansion of the Napa RCD Stream Watch program and additional groundwater / surface water monitoring) that will further refine the understanding of groundwater / surface water interactions and its representation within the NVIHM. The County is expanding its monitoring and data collection efforts. In 2023, this included the installation of 16 additional groundwater monitoring wells and eight stream gaging stations at eight sites to further assess groundwater conditions and surface water connectivity. In 2024, scientific surveys were initiated to periodically assess specialized aquatic and terrestrial habitats (e.g., fish, California Freshwater shrimp, amphibians, birds, and vegetation) as part of the ISW and GDEs Workplan implementation.

Development of the GSP and associated tools, including the NVIHM, and current implementation of the GSP, have been and continue to be a public process, with multiple opportunities for the public and stakeholders to provide comments. As part of the GSP implementation, it is critical to build trust among the stakeholders, Napa Valley community, and the public, in the technical basis for water resource

[1] Stream Watch - Napa County RCD (naparcd.org)
[2] Faye, R.E. 1973. Ground-water hydrology of northern Napa Valley California. Water Resources Investigations 13-73, US Geological Survey, Menlo Park, CA, 64 p.
[3] DWR Best Management Practices for Hydrogeologic Conceptual Model, Water Budget, and Modeling - – available at Best Management Practices and Guidance Documents (ca.gov)
[4] DWR Guidance on Depletions of Interconnected Surface Water – available at Best Management Practices and Guidance Documents (ca.gov)

management decisions and associated tools used for sustainability evaluation. Specifically, the NVIHM and its outputs (such as estimated groundwater pumping and estimated depletion of surface water flow in response to pumping) are one of those tools and provide a commonly held factual basis that all stakeholders can refer to and build upon. While it is important to explicitly acknowledge its uncertainties and limitations, the NVIHM provides an essential tool with which to understand interactions among surface flows, groundwater, and pumping, thereby supporting reasoned public discourse on these important issues.

SWRCB Model

The TAG became aware of the ongoing SWRCB modeling effort for the Napa River Watershed at the TAG's September 2024 meeting, where SWRCB staff and technical team provided a presentation of the ongoing modeling effort. Based on the presentation and subsequent discussion, it appears that the SWRCB modeling effort has been undertaken with little consideration of the analyses completed for the development and implementation of the GSP and development of the NVIHM.

Concerns

The TAG has the following concerns with SWRCB ongoing modeling work of the Napa River Watershed:

SWRCB model/approach oversimplifies groundwater / surface water interactions – with groundwater represented as a simple "nob" that can be turned.

- The relationships as modeled are not consistent with historical and current understanding of the Napa River and interconnections with the groundwater subbasin.
- Groundwater discharge to surface water is a significant contribution during low flow, which is a critical time for agricultural water availability and for ecosystem processes.

SWRCB model development does not leverage previous work that has been performed in the Napa Valley Subbasin.

- Data previously compiled and critically reviewed as part of the GSP development are not leveraged in support of the SWRCB model development. For example, we understand that the SWRCB modeling uses California Irrigation Management Information System (CIMIS) evapotranspiration (ET) data to represent ET, but vetting of this and other potential ET data sources has demonstrated that ET data at the Oakville CIMIS station are unreliable due to issues with location and operation of the instruments (TAG's September 2024 meeting discussion).
- Coordination and knowledge sharing seem to have been very limited between the SWRCB technical team and the NCGSA technical team and other public agency scientific data collection efforts. For example, the SWRCB technical team does not seem to be aware of or to have used the Napa RCD Stream Watch data as part of SWRCB model calibration.

SWRCB model results will likely undermine trust in previous/other modeling efforts and in ongoing and future communication from the NCGSA to the Napa Valley community.

- The SWRCB model will provide outputs that are likely to conflict with previous results and information generated as part of the GSP development and implementation.

- The TAG has already heard concerns from knowledgeable stakeholders at the TAG's September 2024 meeting questioning the meaning of the multiple models, and other stakeholders will likely have similar questions.

SWRCB model will require additional effort from the NCGSA to explain discrepancies in outcomes and why the SWRCB model is different and has limitations for applicability to the Napa River. Ultimately, a hydrologic model that explicitly integrates surface water and groundwater interactions will be required to provide the scientific basis for informed water resources management decisions.

Recommendations

We strongly recommend holding a technical meeting between SWRCB and NCGSA technical teams ***prior to public release of the SWRCB model results*** to review the draft results and discuss potential discrepancies and concerns.

At a minimum, SWRCB should release the draft results for NCGSA review ***well in advance of public release*** so that the NCGSA can be prepared to communicate accordingly upon public release of the results.

Conclusion

This work should be an opportunity for collaboration between different public agencies with a similar goal – stewardship of our water resources. We strongly urge SWRCB to take this opportunity to work collaboratively with the NCGSA on this matter.

Signed,

Albert Filipelli
Chair, Napa County Groundwater Technical Advisory Group

Monica Cooper, Vice Chair, TAG
Julie Chambon, TAG
Matt Kondolf, TAG
Miguel Garcia, TAG

Attachments:
1. September 2024 TAG Meeting Staff Report and Powerpoint Slides

cc (by email):

Joelle Gallagher, Chair, NCGSA Board of Directors
Ryan Gregory, NCGSA Board of Directors
Anne Cottrell, Vice Chair, NCGSA Board of Directors
Alfredo Pedroza, NCGSA Board of Directors
Belia Ramos, NCGSA Board of Directors
Brian D. Bordona, Napa County

Paul Gosselin, California Department of Water Resources
Erik Ekdahl, SWRCB
Erin Ragazzi, SWRCB
Lucas Patzek, Napa RCD
Jessica Maxfield, CDFW
Adam Weinberg, CDFW
Rick Rogers, NOAA/NMFS
Vicki Kretsinger Grabert, LSCE
Cab Esposito, LSCE
Nick Watterson, LSCE

A Tradition of Stewardship
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Planning, Building & Environmental Services

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Brian D. Bordona
Director

November 6, 2024

E. Joaquin Esquivel, Chair
Dorene D'Adamo, Vice Chair
Sean Maguire
Laurel Firestone
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State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

SUBJECT: Napa County Groundwater Technical Advisory Group comments on SWRCB modeling of Napa River Subbasin

Dear Chair E. Joaquin Esquivel,

Introduction

The Napa County Groundwater Technical Advisory Group (TAG) was appointed by the Napa County Groundwater Sustainability Agency (NCGSA) in June 2022 to provide support and technical advice on implementation of the Groundwater Sustainability Plan (GSP) in the Napa Valley Subbasin. The five-member TAG has met approximately monthly since August 2022 to provide guidance on a number of technical matters. As part of our review of relevant issues, the TAG invited the State Water Resources Control Board (SWRCB) staff to present a summary of the SWRCB Supply and Demand Assessment Unit's ongoing modeling effort for the Napa River Watershed at the TAG's September 12, 2024 meeting. In response to this presentation and our further review of the PowerPoint slides presented, the TAG provides these comments in an effort to facilitate collaboration among the agencies and to improve the quality and utility of the resulting scientific outputs.

Background

Significant effort has been invested by the NCGSA to better understand the Napa Valley Subbasin, including groundwater / surface water interactions along the Napa River and its tributaries. Those efforts have included:

- Extensive data compilation (including collaboration with the Napa County Resource Conservation District [RCD] and compilation of data associated with the Stream Watch program[1]).
- Compilation and review of prior scientific work establishing that groundwater has a significant contribution to low flow in the Napa River, going back at least to the U.S. Geological Survey (USGS) analysis of 1973.[2] Subsequent studies have consistently confirmed this finding.
- Development of the Napa Valley Integrated Hydrologic Model (NVIHM), a comprehensive model of Napa Valley Subbasin, including groundwater / surface water interactions, and constructed and calibrated consistent with best practices specified by the California Department of Water Resources (DWR).[3]
- Additional investigations and data collection, including identification of a monitoring network associated with surface water / groundwater interactions.

These efforts are extensively documented in the GSP, which was adopted by the NCGSA Board and subsequently approved by DWR in January 2023. While still identifying data gaps, the GSP represents a significant advancement in understanding of water balance within the Napa Valley Subbasin. A significant outcome outlined in the GSP is the role of groundwater on interconnected surface water within the Napa Valley Subbasin. In addition, consistent with DWR guidance and best practices, [4] the NVIHM is a central tool for ongoing and future management of the Subbasin and for evaluation of sustainability indicators, including evaluation of depletion of surface water due to groundwater pumping.

As part of GSP implementation, five workplans have been prepared, including: the Napa County Water Conservation Workplan, Groundwater Pumping Reduction Workplan, Stormwater Resource Plan, Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan, and a Communication and Engagement Plan.

As part of the GSP implementation, the NCGSA is working on additional characterization (including expansion of the Napa RCD Stream Watch program and additional groundwater / surface water monitoring) that will further refine the understanding of groundwater / surface water interactions and its representation within the NVIHM. The County is expanding its monitoring and data collection efforts. In 2023, this included the installation of 16 additional groundwater monitoring wells and eight stream gaging stations at eight sites to further assess groundwater conditions and surface water connectivity. In 2024, scientific surveys were initiated to periodically assess specialized aquatic and terrestrial habitats (e.g., fish, California Freshwater shrimp, amphibians, birds, and vegetation) as part of the ISW and GDEs Workplan implementation.

Development of the GSP and associated tools, including the NVIHM, and current implementation of the GSP, have been and continue to be a public process, with multiple opportunities for the public and stakeholders to provide comments. As part of the GSP implementation, it is critical to build trust among the stakeholders, Napa Valley community, and the public, in the technical basis for water resource

[1] Stream Watch - Napa County RCD (naparcd.org)
[2] Faye, R.E. 1973. Ground-water hydrology of northern Napa Valley California. Water Resources Investigations 13-73, US Geological Survey, Menlo Park, CA, 64 p.
[3] DWR Best Management Practices for Hydrogeologic Conceptual Model, Water Budget, and Modeling - – available at Best Management Practices and Guidance Documents (ca.gov)
[4] DWR Guidance on Depletions of Interconnected Surface Water – available at Best Management Practices and Guidance Documents (ca.gov)

management decisions and associated tools used for sustainability evaluation. Specifically, the NVIHM and its outputs (such as estimated groundwater pumping and estimated depletion of surface water flow in response to pumping) are one of those tools and provide a commonly held factual basis that all stakeholders can refer to and build upon. While it is important to explicitly acknowledge its uncertainties and limitations, the NVIHM provides an essential tool with which to understand interactions among surface flows, groundwater, and pumping, thereby supporting reasoned public discourse on these important issues.

SWRCB Model

The TAG became aware of the ongoing SWRCB modeling effort for the Napa River Watershed at the TAG's September 2024 meeting, where SWRCB staff and technical team provided a presentation of the ongoing modeling effort. Based on the presentation ~~and subsequent discussion~~, it appears that the SWRCB modeling effort has been undertaken with little consideration of the analyses completed for the development and implementation of the GSP and development of the NVIHM. At the time of this writing, SWRCB staff has contacted County staff and requested a meeting in the near term to learn more about the NVIHM. This is an encouraging development and the County will facilitate a meeting at the earliest opportunity. In the meantime, however, the TAG feels it is important to notify the Board Members of our concerns, as described below.

Concerns

The TAG has the following concerns with the SWRCB's ~~ongoing~~ modeling work of the Napa River Watershed as presented at the September 12, 2024 meeting:

SWRCB model/approach oversimplifies groundwater / surface water interactions – with groundwater represented as a simple "nob" that can be turned.

- The relationships as modeled are not consistent with historical and current understanding of the Napa River and interconnections with the groundwater subbasin.
- Groundwater discharge to surface water is a significant contribution during low flow, which is a critical time for agricultural water availability and for ecosystem processes.

SWRCB model development does not leverage previous work that has been performed in the Napa Valley Subbasin.

- Data previously compiled and critically reviewed as part of the GSP development are not leveraged in support of the SWRCB model development. For example, we understand that the SWRCB modeling uses California Irrigation Management Information System (CIMIS) evapotranspiration (ET) data to represent ET, but vetting of this and other potential ET data sources has demonstrated that ET data at the Oakville CIMIS station are unreliable due to issues with location and operation of the instruments (TAG's September 2024 meeting discussion).
- Coordination and knowledge sharing seem to have been very limited between the SWRCB technical team and the NCGSA technical team and other public agency scientific data collection efforts. For example, the SWRCB technical team does not seem to be aware of or to have used the Napa RCD Stream Watch data as part of SWRCB model calibration.

SWRCB model results will likely undermine trust in previous/other modeling efforts and in ongoing and future communication from the NCGSA to the Napa Valley community.

- The SWRCB model will provide outputs that are likely to conflict with previous results and information generated as part of the GSP development and implementation.
- The TAG has already heard concerns from knowledgeable stakeholders at the TAG's September 2024 meeting questioning the meaning of the multiple models, and other stakeholders will likely have similar questions.

SWRCB model will require additional effort from the NCGSA to explain discrepancies in outcomes and why the SWRCB model is different and has limitations for applicability to the Napa River. Ultimately, a hydrologic model that explicitly integrates surface water and groundwater interactions will be required to provide the scientific basis for informed water resources management decisions.

Recommendations

We strongly recommend holding a technical meeting between SWRCB and NCGSA technical teams ***prior to public release of the SWRCB model results*** to review the draft results and discuss potential discrepancies and concerns.

At a minimum, SWRCB should release the draft results for NCGSA review ***well in advance of public release*** so that the NCGSA can be prepared to communicate accordingly upon public release of the results.

Conclusion

This work should be an opportunity for collaboration between different public agencies with a similar goal – stewardship of our water resources. We strongly urge SWRCB to take this opportunity to work collaboratively with the NCGSA on this matter.

Signed,

Albert Filipelli
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Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1965

TO: Technical Advisory Group (TAG) for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona, Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: Update on the Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan Implementation and the California Environmental Flows Framework

RECOMMENDATION

Provide an update on the Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan implementation with a focus on California Environmental Flows Framework (CEFF) steps.

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.

BACKGROUND AND DISCUSSION

Monitoring groundwater dependent ecosystems in the Napa Valley Subbasin Groundwater Sustainability Plan (GSP) occurs through a combination of shallow monitoring wells and remotely sensed vegetation health. Data gaps associated with this monitoring identified the need for additional shallow monitoring wells, which was addressed in 2023 through the installation of dual-completion ISW monitoring wells at 8 additional sites, and the development of the ISW and GDEs Workplan that called for biological field assessments, review of existing data, investigations of stream habitat conditions, and evaluation of listed species. The Workplan was completed in March 2024 and implementation began in May 2024.

The Workplan identified six intensive survey sites: four on the Napa River (Napa River at Calistoga, Napa River at St. Helena, Napa River at Yountville, Napa River at Oak Knoll) and two tributary sites (Sulphur Creek and Bale Slough). Access to four of the sites was obtained for summer 2024 (Napa River at Calistoga, Napa River at St. Helena, Napa River at Yountville, and Sulphur Creek). Access was recently obtained to the Napa River at Oak Knoll site, and access permissions are still in progress for the Bale Slough site.

Surveys conducted in 2024 at each of the sites include:

- Flow connectivity studies;
- Fish habitat and fish population;

- Continuous water quality sampling for temperature and dissolved oxygen;
- Two surveys for aquatic wildlife (one in May and one in July);
- eDNA sampling for northwestern pond turtle and foothill yellow-legged frog (July);
- California freshwater shrimp surveys in the Calistoga Reach of the Napa River; and
- Surveys of groundwater-dependent vegetation community health and composition.

Precipitation, as measured at the Napa State Hospital, in Water Year (WY) 2024 was 22.9 inches, approximately 89 percent of average. Temperatures in Napa Valley were higher than average during the growing season. Based on local weather stations, Calistoga, St. Helena, and Oakville experienced 35, 35, and 12 days above 100 degrees Fahrenheit, respectively. Groundwater levels and stream stage were monitored at each site except the Napa River at Calistoga, which does not have an associated shallow groundwater well but does have a stage recorder. Groundwater data from the shallow wells have been downloaded and provided as preliminary data.

In 2024, stream habitat was evaluated at the four intensive survey sites through monthly wet-dry mapping to assess the extent of aquatic habitat and how that changed through time, and water quality measurements including dissolved oxygen (DO) and water temperature. The extent of wet and dry conditions was measured by the Napa County Resource Conservation District (RCD) monthly at each site over approximately one-mile reaches using GPS to note transitions between wet and dry conditions. The Napa River at Calistoga, Napa River at St. Helena, and Sulphur Creek reaches all exhibited increased drying during the surveys. Sulphur Creek had no dry reaches in the June 11 surveys, but had started to dry by July 9, with the downstream-most 57 percent of the reach going dry. In the subsequent surveys, the extent of wet conditions was reduced to approximately the upstream 20 percent of the reach, most of which was upstream of the Subbasin boundary. The Napa River at Calistoga transitioned to isolated pools starting in the August 8 surveys, with wet conditions in only approximately 53 percent of the reach, decreasing to 27 percent of the reach by the October survey. The extent of wet conditions for the Napa River at St. Helena location steadily decreased from no dry reaches on June 18 to only 1 percent of the reach mapped as wet in October 2024. In contrast, the Napa River at Yountville was mapped as having wet conditions on September 5 (when 29 percent of the reach surveyed for the Napa River at St. Helena was dry), and almost 98 percent of the Yountville reach maintained wet conditions on October 22. Longitudinal profiles of the channel bed were surveyed in October 2024 over 1000-2000 feet per intensive survey site.

Stream temperature and DO were measured with Hobo loggers at the four accessible sites. DO levels generally declined as stream temperatures increased. Stream temperatures increased to a maximum daily temperature of 74 to 86 degrees Fahrenheit at the four sites by mid-July to August. DO conditions in the Napa River mainstem were inhospitable to steelhead fry and parr, even at the Yountville site which had continuous surface flow through the September 2024 surveys. Stream temperatures were elevated beyond ideal temperatures for juvenile fish. Previous data collected along the mainstem of the Napa River at ISW sites have shown high water temperatures in the high 70’s degrees Fahrenheit. Both DO and water temperature can be highly heterogeneous in streams, particularly those fed by groundwater like the Napa River, and fish may be able to survive in pockets of highly oxygenated water with low temperature. Stream temperatures in the Napa Subbasin are complex and will be assessed under the California Environmental Flows Framework (CEFF). Stressors experienced in 2024 that directly impact streamflow and stream temperature include the normal (below average) rainfall and higher than average maximum and minimum temperatures.

The Napa County RCD conducted fish population and fish habitat surveys at the four accessible sites. The population surveys included snorkeling the four sites and counting the number and species of fish present and their lifestage, if applicable. The number of steelhead (O. mykiss) were counted directly while the population of other fish were placed in ranges (1-10, 11-50, 50-100, 101-500, and >500). Steelhead fry (fish < 100 mm that hatched this year) were observed at all four sites, with the largest numbers occurring in Napa River at Calistoga (118) and Napa River at Sulphur Creek (26) with significantly less at St. Helena (1) and Yountville (2). Steelhead parr (101-200 mm) are steelhead that emerged from spawning gravels in previous years and have yet to smolt and migrate to the ocean. Small numbers of steelhead parr were observed at Napa River at Calistoga (3) and Sulphur Creek (8). The only observed adult steelhead during the surveys were three adult steelhead observed in Sulphur Creek. Steelhead of all ages observed in Sulphur Creek were at the upstream end of the reach approximately 0.2 miles downstream of White Sulphur Springs Road. Other observed fish include roach, stickleback, largemouth bass, and blue gill.

The aquatic wildlife surveys included surveys for three listed wildlife species: foothill yellow legged frog (Rana boylii), northwestern pond turtle (Actinemys marmorata), and California freshwater shrimp (Syncaris pacifica). Visual encounter surveys (VES) and environmental DNA (eDNA) were used to assess the presence of foothill yellow-legged frogs and northwestern pond turtle at the four accessible sites in May and late July 2024. Foothill yellow-legged frog eggs were observed in the Napa River at St. Helena site in May and detected in the July eDNA samples. Foothill yellow-legged frog tadpoles, young of the year, and an adult were observed at Sulphur Creek. Northwestern pond turtles were observed during the VES at the Napa River at St. Helena and Napa River at Yountville sites in May and detected in the eDNA sample in July at the Napa River at Yountville site.

California freshwater shrimp were surveyed over a 1.5-mile reach of the Napa River near Calistoga from Lincoln Avenue to Greenwood Avenue and a 0.5-mile reach of Garnett Creek from the confluence with the Napa River to Grant Street. During the August 2024 surveys, 105 California freshwater shrimp were observed in pools throughout the Napa River reach. Flow in the Calistoga reach was discontinuous at the time of the surveys with isolated pools separated by dry riffle reaches. The observed shrimp included male adults, female adults, and juveniles, suggesting that the population is actively reproducing. No California freshwater shrimp were observed in Garnett Creek.

Groundwater dependent vegetation composition and vigor were assessed along two transects at each site. These were the only surveys that included the Napa River at Oak Knoll. The data from the GDE health surveys is still being processed. Preliminary results suggest that the GDEs along the channel corridor generally supported oaks at surfaces further above the channel bottom and mixed riparian vegetation on surfaces closer to the channel bottom. In general, many of the GDEs showed signs of water stress during the September surveys, particularly the oaks, which may be due to the timing of the surveys, when soil conditions were dry.

The studies described above will be conducted again in 2025 and expanded to the Napa River at Oak Knoll and Bale Slough sites (pending access approval). Over the next year, Workplan implementation will include further work on the CEFF assessment, including synthesis of the 2024 survey data described above. These monitoring data, together with the 2025 surveys, will be used to develop the ecological management goals at each site. Specific ecological management goals for each site will be assessed based on aquatic and terrestrial species present, their habitat needs during different life stages, and ecological-flow relationships.

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

A. Napa County Groundwater Sustainability Agency, Groundwater Dependent Ecosystem Monitoring 2024 (Stillwater, November 2024)

Groundwater Dependent Ecosystem Monitoring 2024

Stillwater Sciences

Luhdorff & Scalmanini Consulting Engineers

NAPA RCD

Workplan Objectives

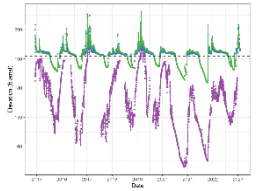
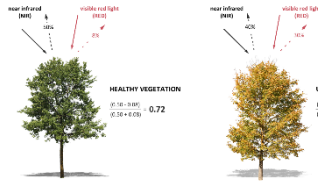
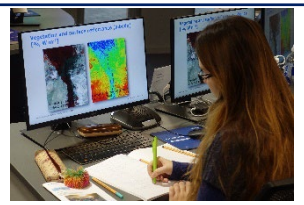
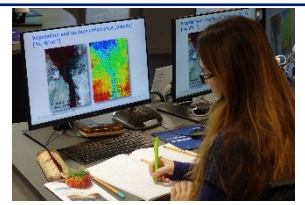
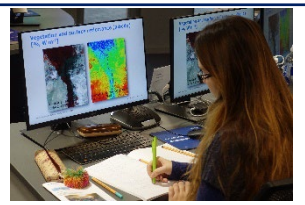
Monitoring

- What ecosystem components are at intensive monitoring sites (what species are present)?
- What are the groundwater elevation and surface water dynamics?

Analysis

- What are the biological flow and groundwater needs for each ecosystem component?
- Use California Environmental Flows Framework (CEFF) to assess ecological flow needs.

Ongoing Monitoring Schedule

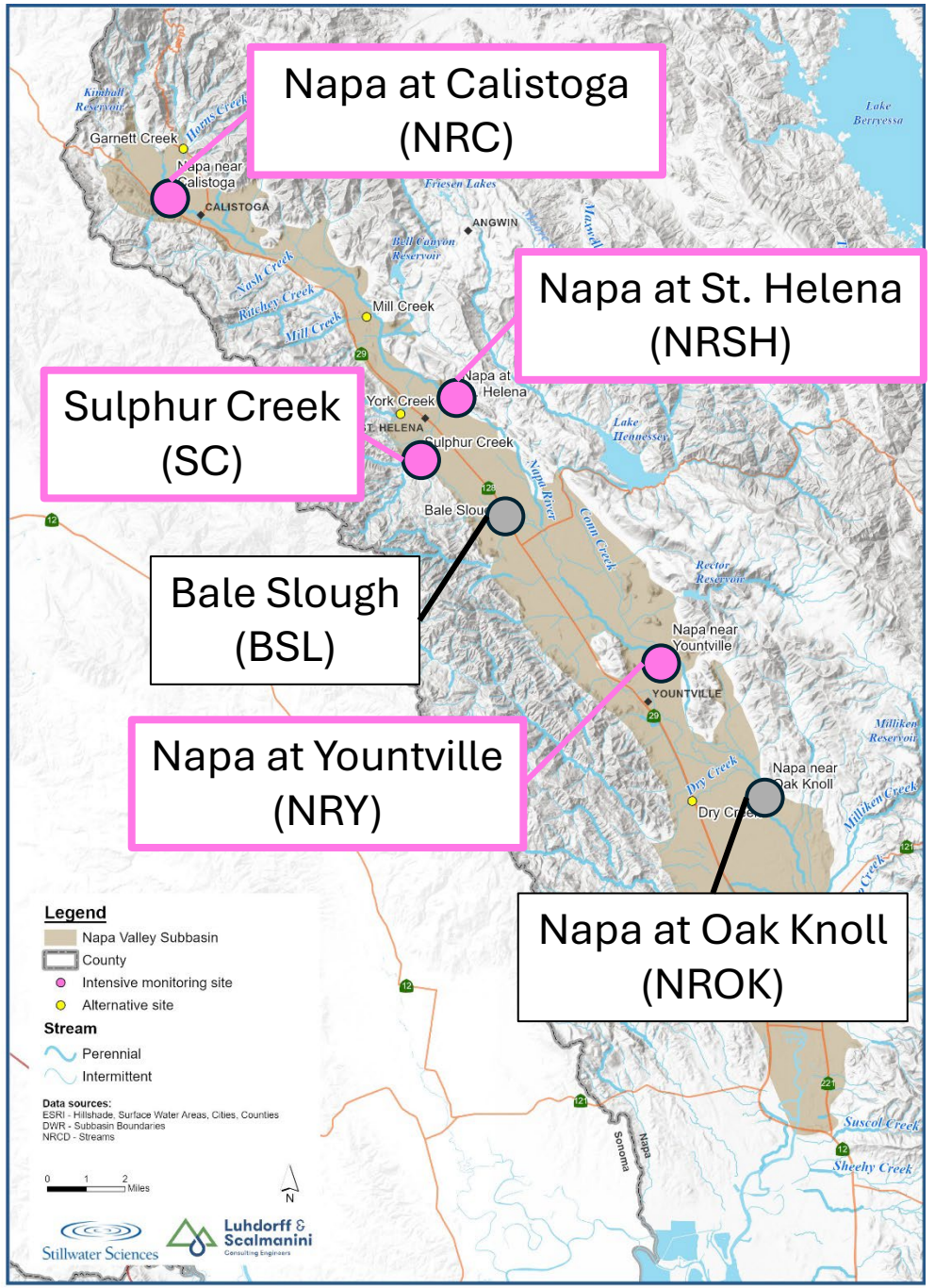
		2024	2025	2026	2027
NAPA RCD	Stream Watch				GSP Update January 2027
	Shallow Groundwater Monitoring				
	Napa RCD fish surveys				
	Remote Sensing of GDEs				

Ongoing Monitoring Schedule (continued)

		2024	2025	2026	2027
	Fish Habitat and Usage				GSP Update January 2027
	Aquatic Wildlife			Optional (Flood, Drought)	
	Vegetation Health and Rare Plants				
	Terrestrial Wildlife (Birds)				

ISW and GDEs Workplan Implementation

- Six intensive survey sites identified in the Workplan, initial surveys were conducted at 4 of the 6 sites.
- Stillwater conducted reconnaissance visit and field visit to 4 of the sites on May 2024 with the Technical Team plus TAG member Matt Kondolf.
- Napa River at Oak Knoll now approved
  - First round of surveys slated for spring 2025
- Bale Slough – access pending



2024 Monitoring

LSCE

- Stage recorders deployed at new sites, continued shallow groundwater monitoring

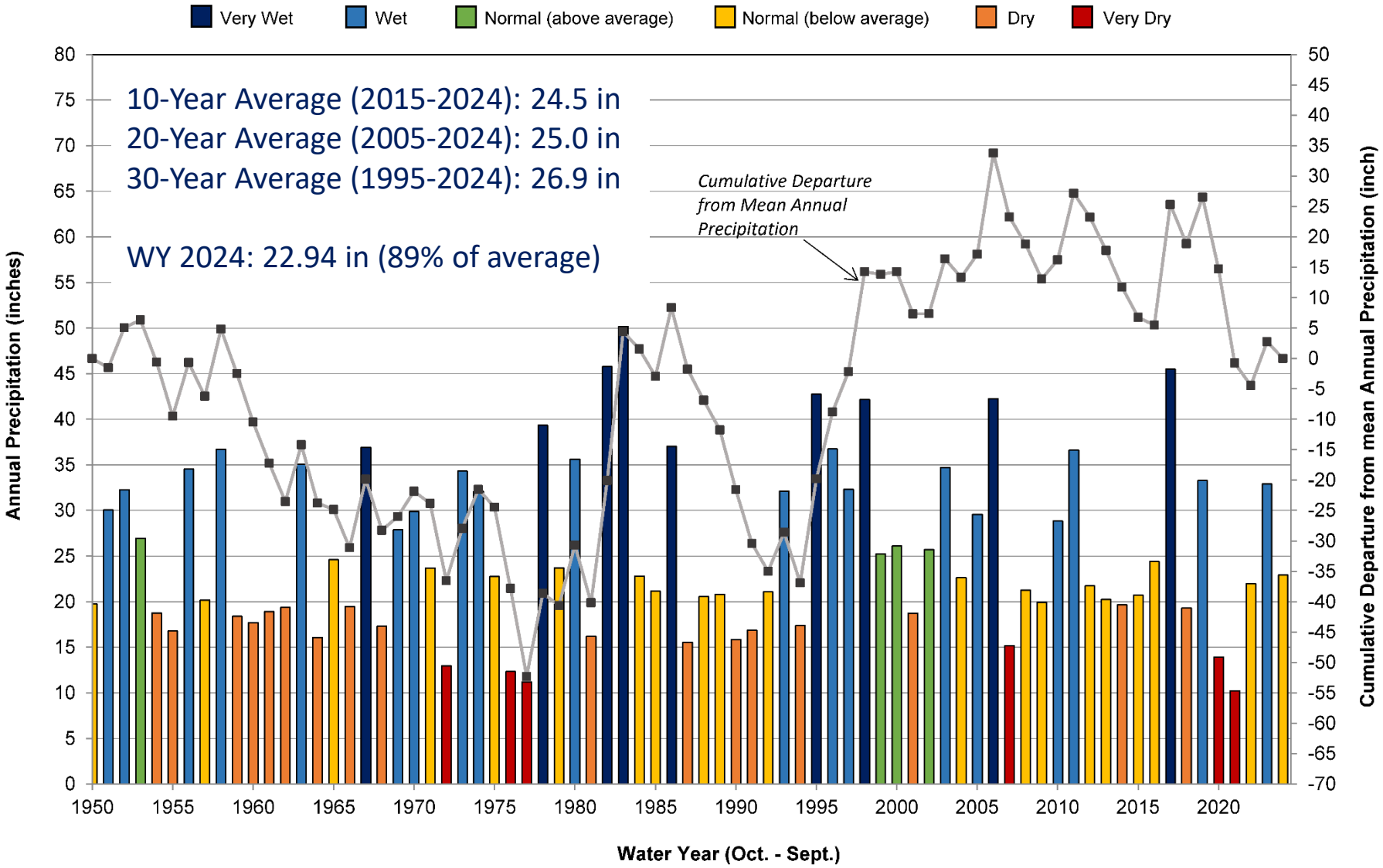
RCD summer 2024

- Dissolved oxygen and temperature monitoring
- Monthly flow connectivity (wet/dry mapping)
- Assess fish habitat
- Fish surveys

Stillwater

- Conducted amphibian surveys including eDNA
- GDE (vegetation) health surveys in late summer
- California freshwater shrimp surveys (Calistoga reach)
- Thalweg surveys

Historical Precipitation at Napa State Hospital



NOTE: Gaps in this data record have been reconstructed using data from the Oakville CIMIS station (77) and NOAA Saint Helena, CA station (GHCND:USC00047646).

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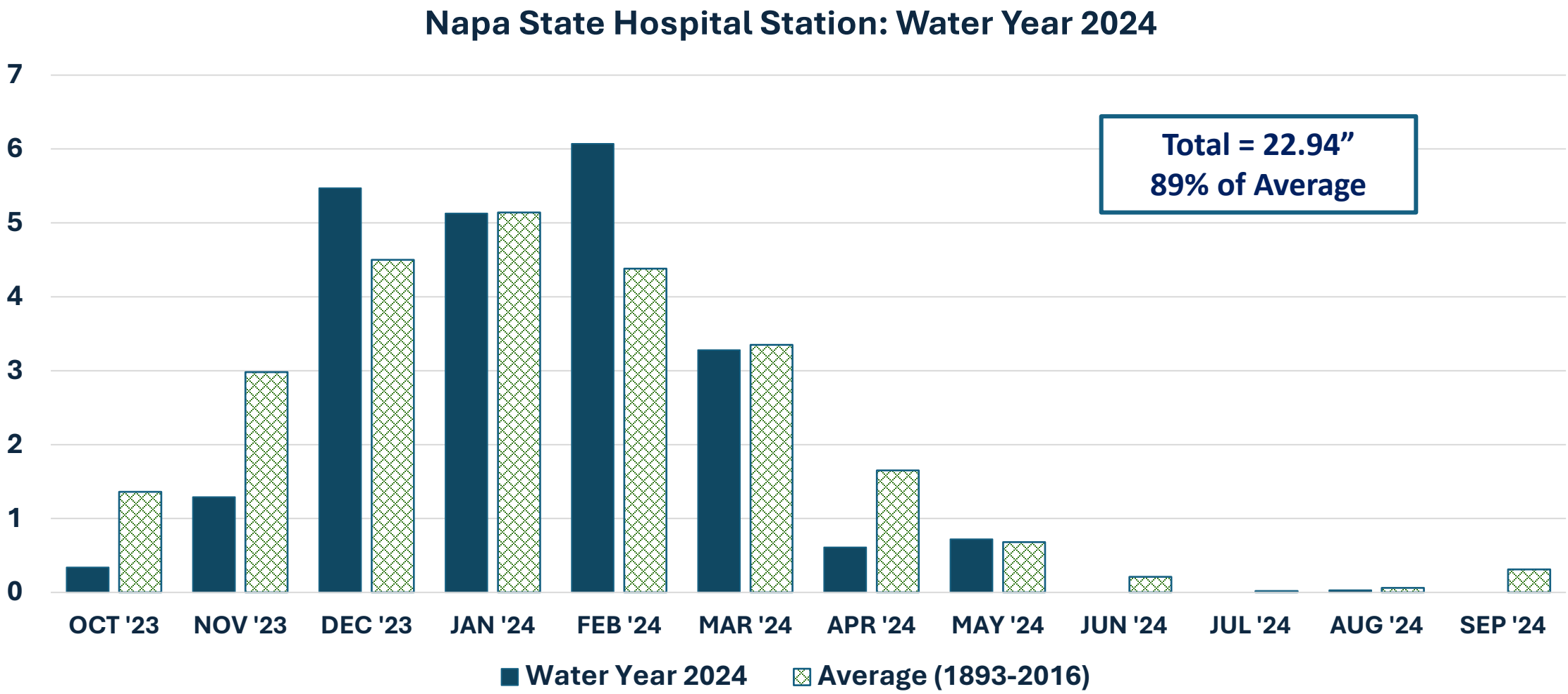
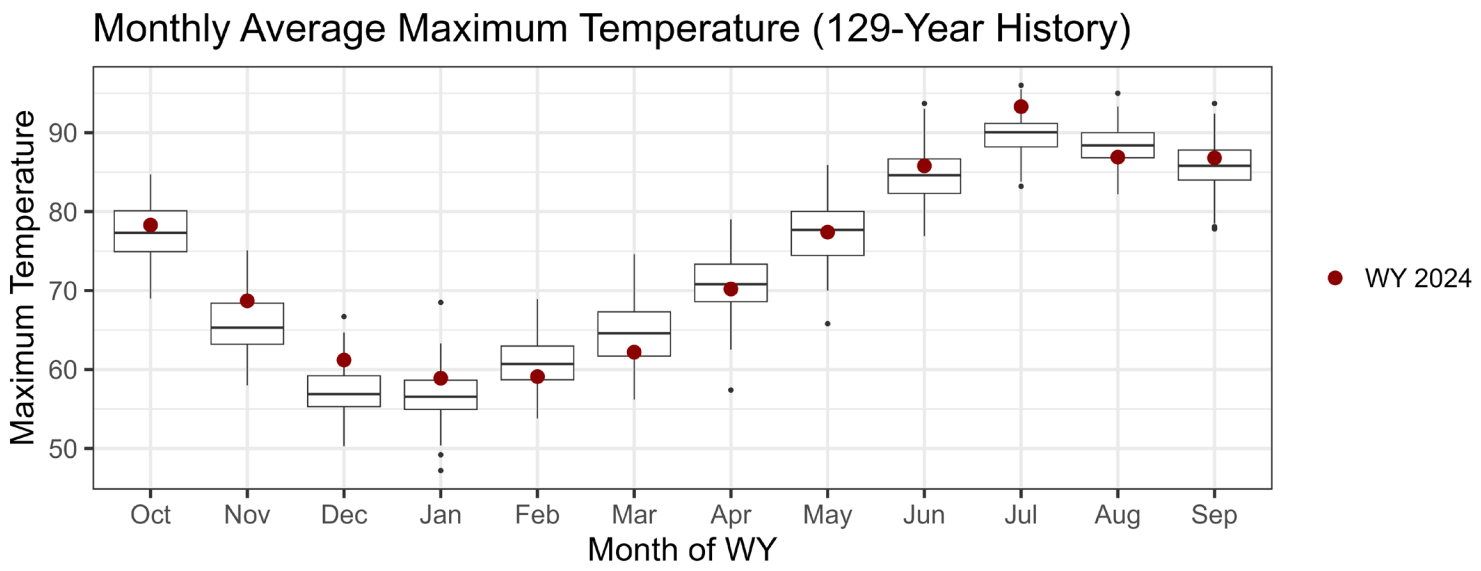
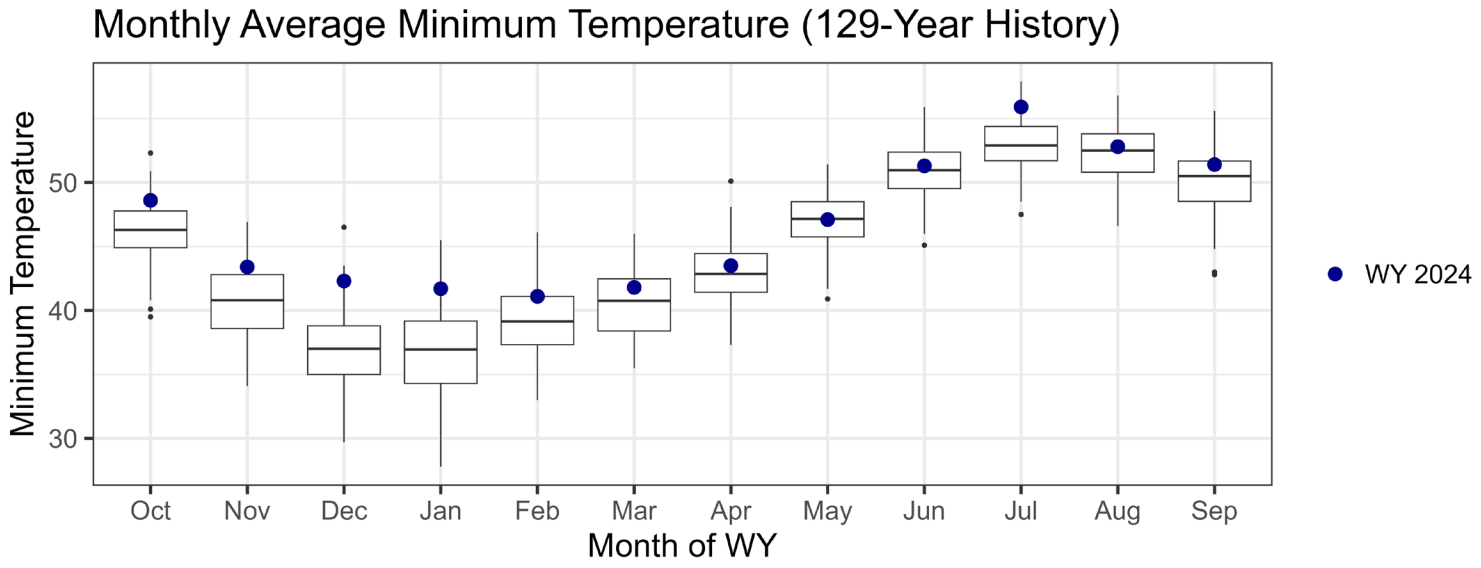
Precipitation: Water Year 2024



Temperature: Water Year 2024



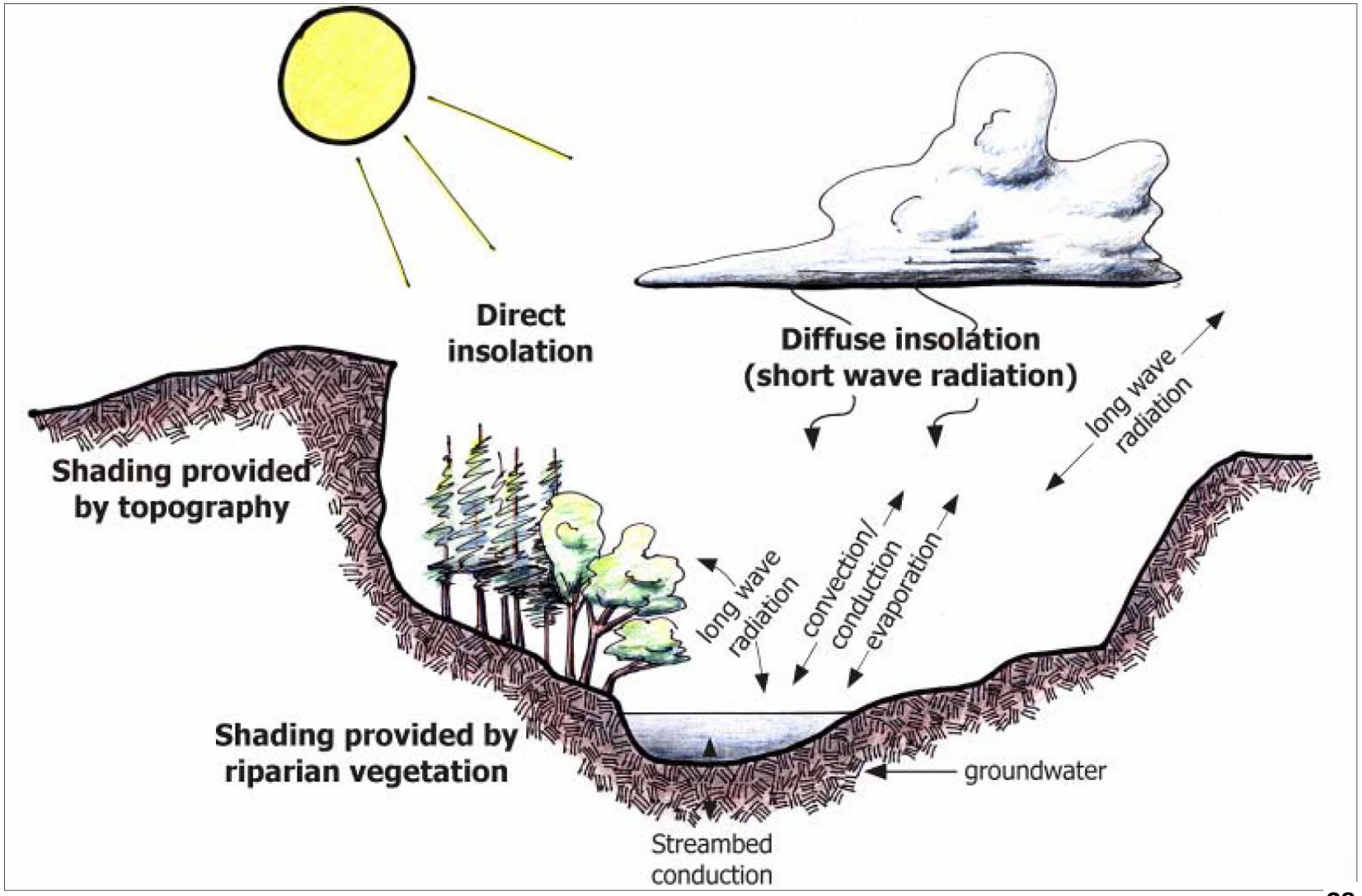


- WY 2024 characterized by a cool spring and hot summer.
- Winter saw very high minimum temperatures.
- July saw extremely high maximum temperatures.
- June through September saw above average minimum temperatures.
- Days above 100°F:

Site	2023	2024
Calistoga	16	35
St. Helena	15	35
Oakville	3	12

Influences on Stream Temperature

- Flow
- Air temperature
- Shading from vegetation and topography
- Channel width and depth (shallower wider channels warm more quickly)
- Groundwater inputs (groundwater can cool, or warm surface water)



2024 Climate summary

- 2024 had normal (below average) precipitation.
- Summer 2024 was very warm, particularly in July when minimum and maximum daily temperatures were high relative to the historical record.
- Calistoga, St. Helena, and Oakville experienced 35, 35, and 12 days above 100 degrees Fahrenheit, much higher than average.
- These conditions are likely to lead to higher stream temperature and low dissolved oxygen.

Fish and Habitat Surveys

- Completed snorkel surveys at each of the four sites
- Napa RCD mapped habitat (extent of pools, riffles, etc.)
- Napa RCD deployed dissolved oxygen and temperature sensors at four sites

Herpetology surveys

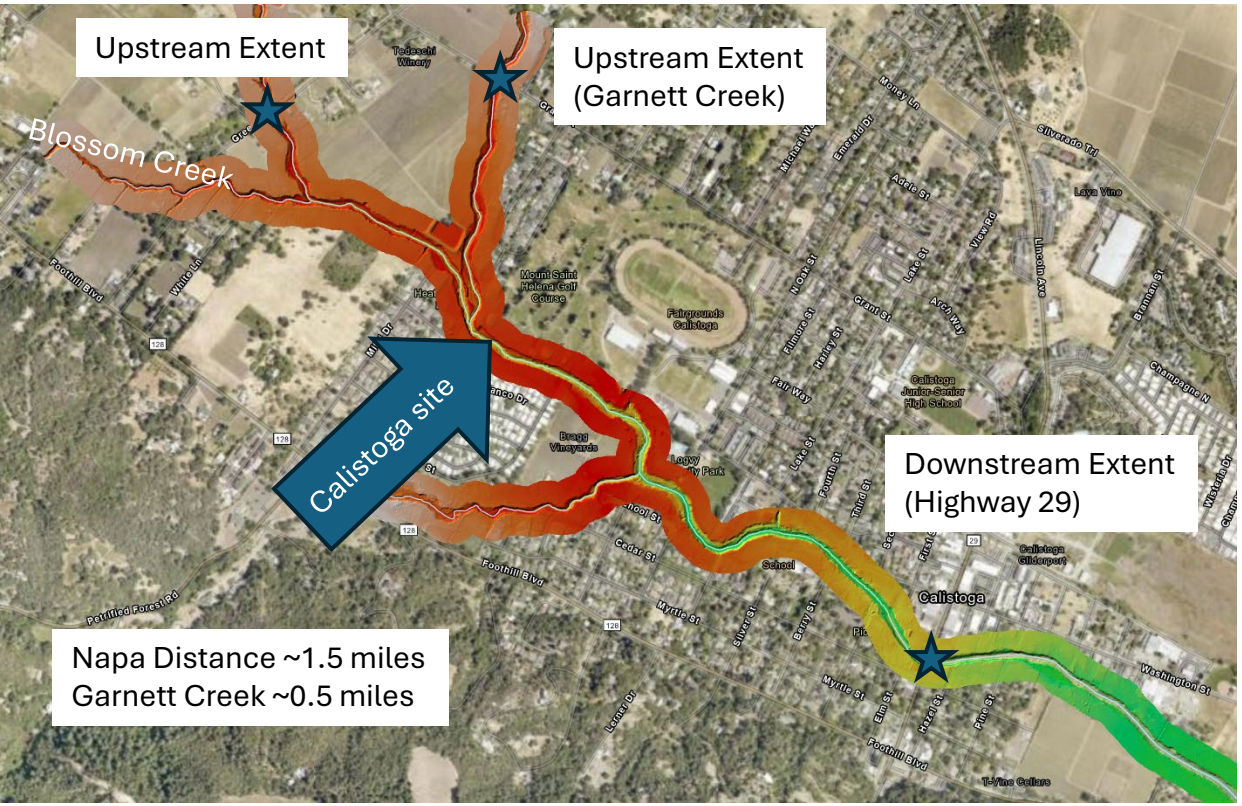
- Two visual encounter surveys and one eDNA sample for foothill yellow-legged frog and Northwestern pond turtle at Sulphur Creek, Napa River at Calistoga, Napa River at St. Helena, Napa River at Yountville.
- Other sites will be surveyed in 2025

eDNA sampling at the Napa River near Calistoga

Visual encounter surveys

California Freshwater Shrimp Surveys

- Surveyed August 2024
- Napa River at Calistoga and lower Garnett Creek



*Color scale shows relative elevation along river corridor.

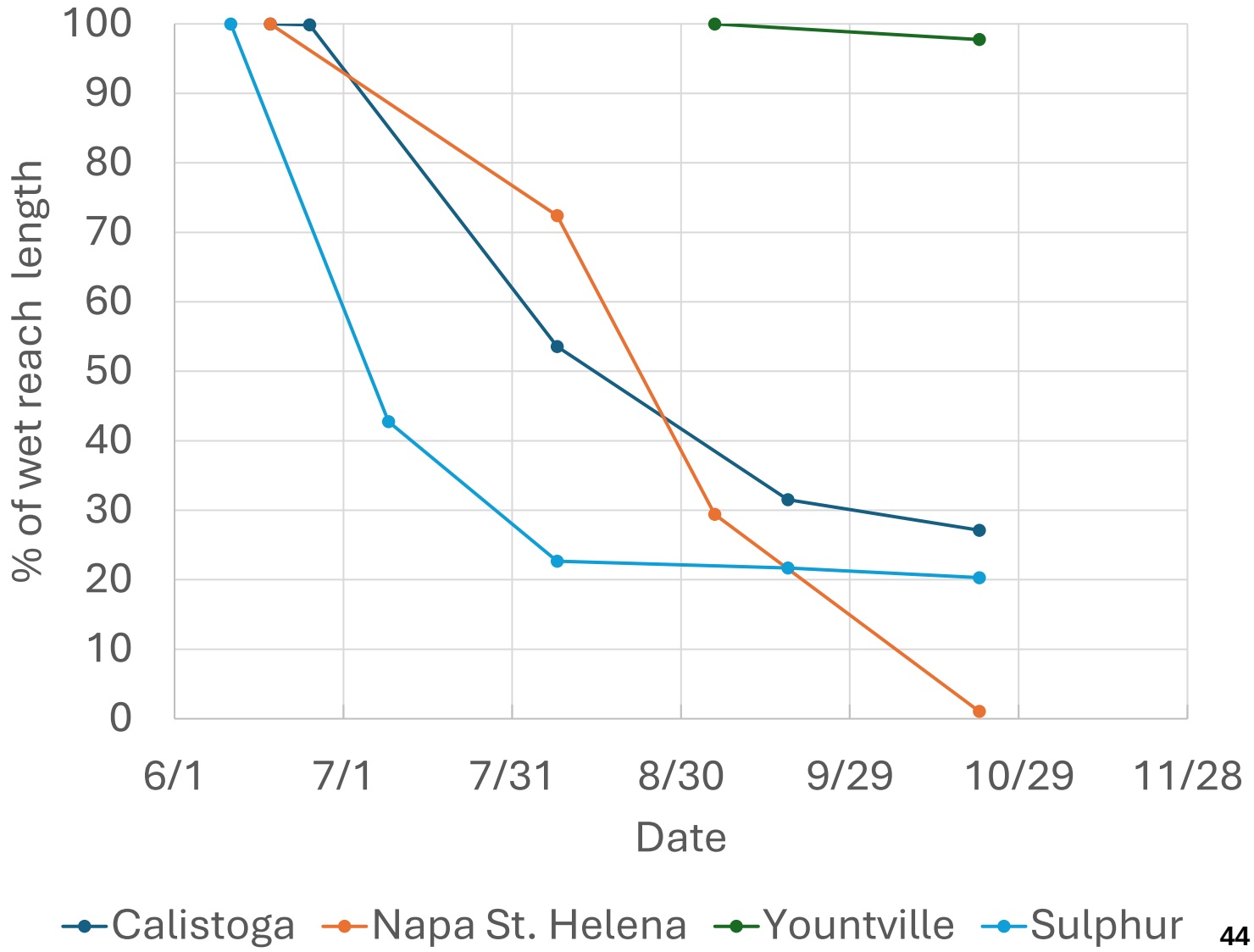
Vegetation Surveys

- Mapped riparian vegetation and assessed plant vigor in September 2024
- Two transects per site
- Data still being processed

Wet-Dry Mapping Summary

- Mapped approximately monthly
- The USGS gage at Oak Knoll went dry on September 10
- The USGS gage at St. Helena went dry on August 8

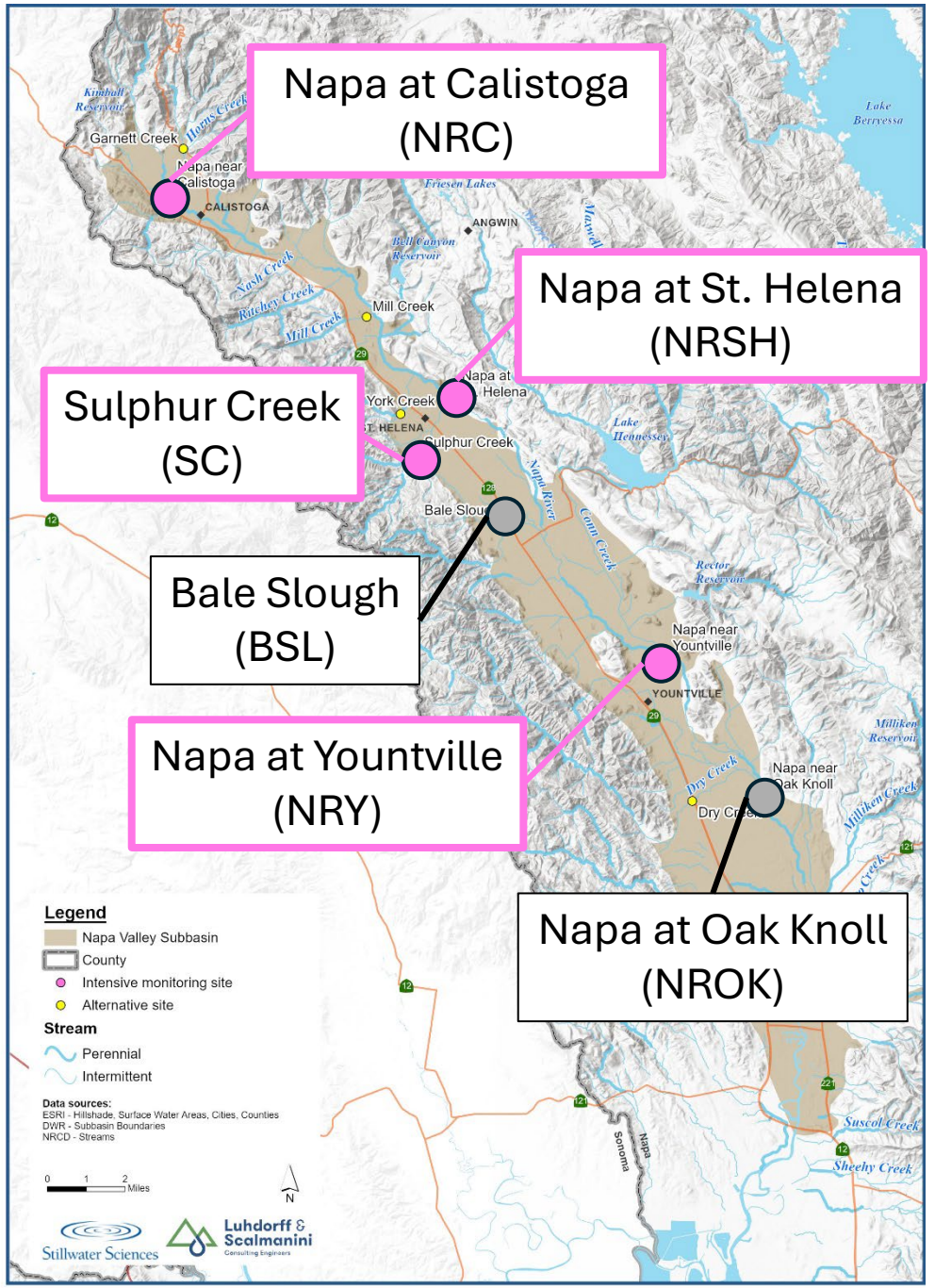
Reach	Length (miles)
Napa at Calistoga	1.2
Napa at St. Helena	1.3
Napa at Yountville	1.1
Sulphur Creek	1.0



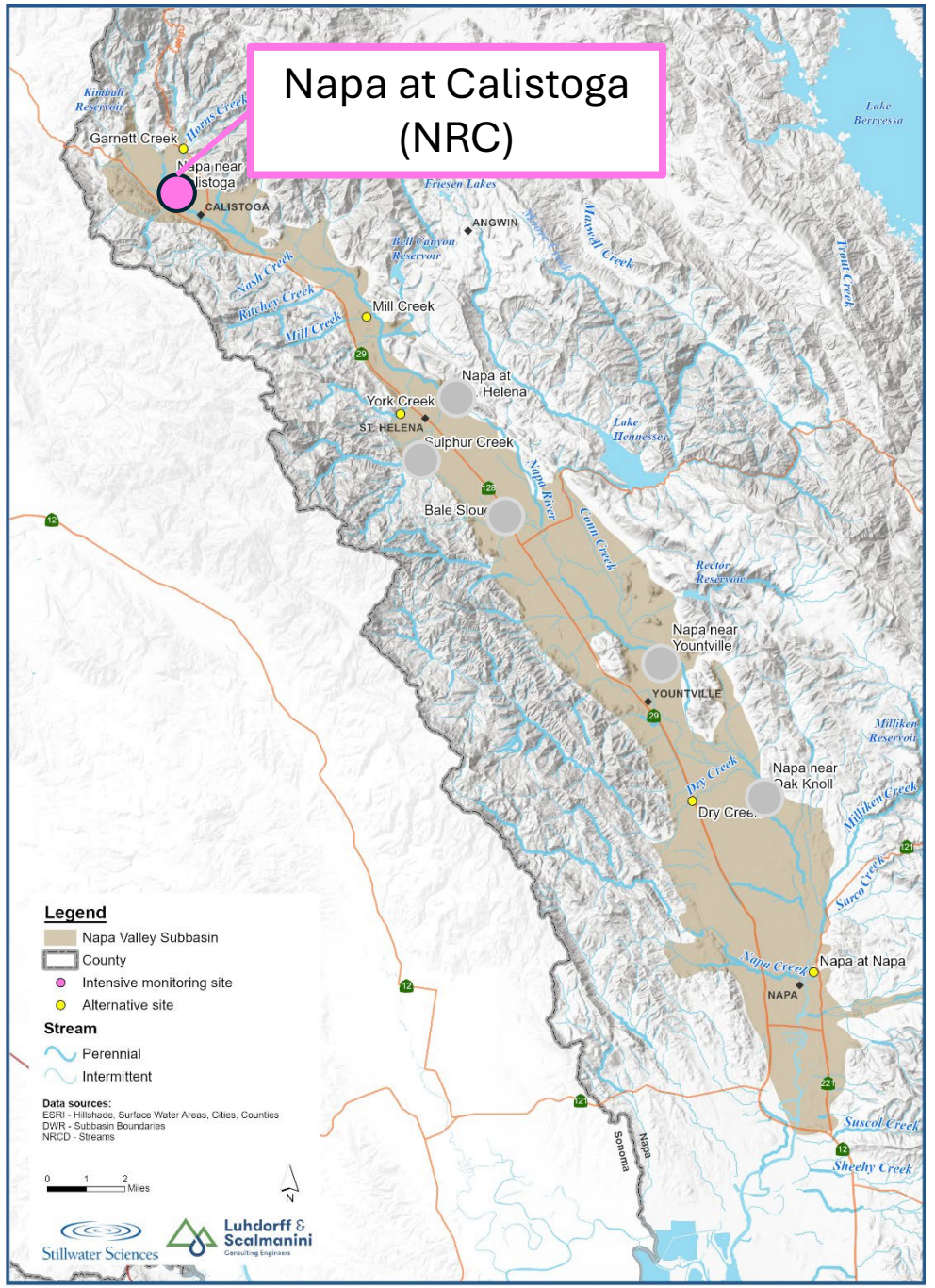
Longitudinal Profile surveys

- Thalweg profiles were surveyed at the four accessible sites in October 2024
- Surveys were conducted by RTK GPS and total station
- Some gaps will be filled in November 2024 and the data will be processed and finalized
- Surveys include the streambed and water elevation (where present)
- Surveys were 1000-2000 ft long at each site

Surveys by Site

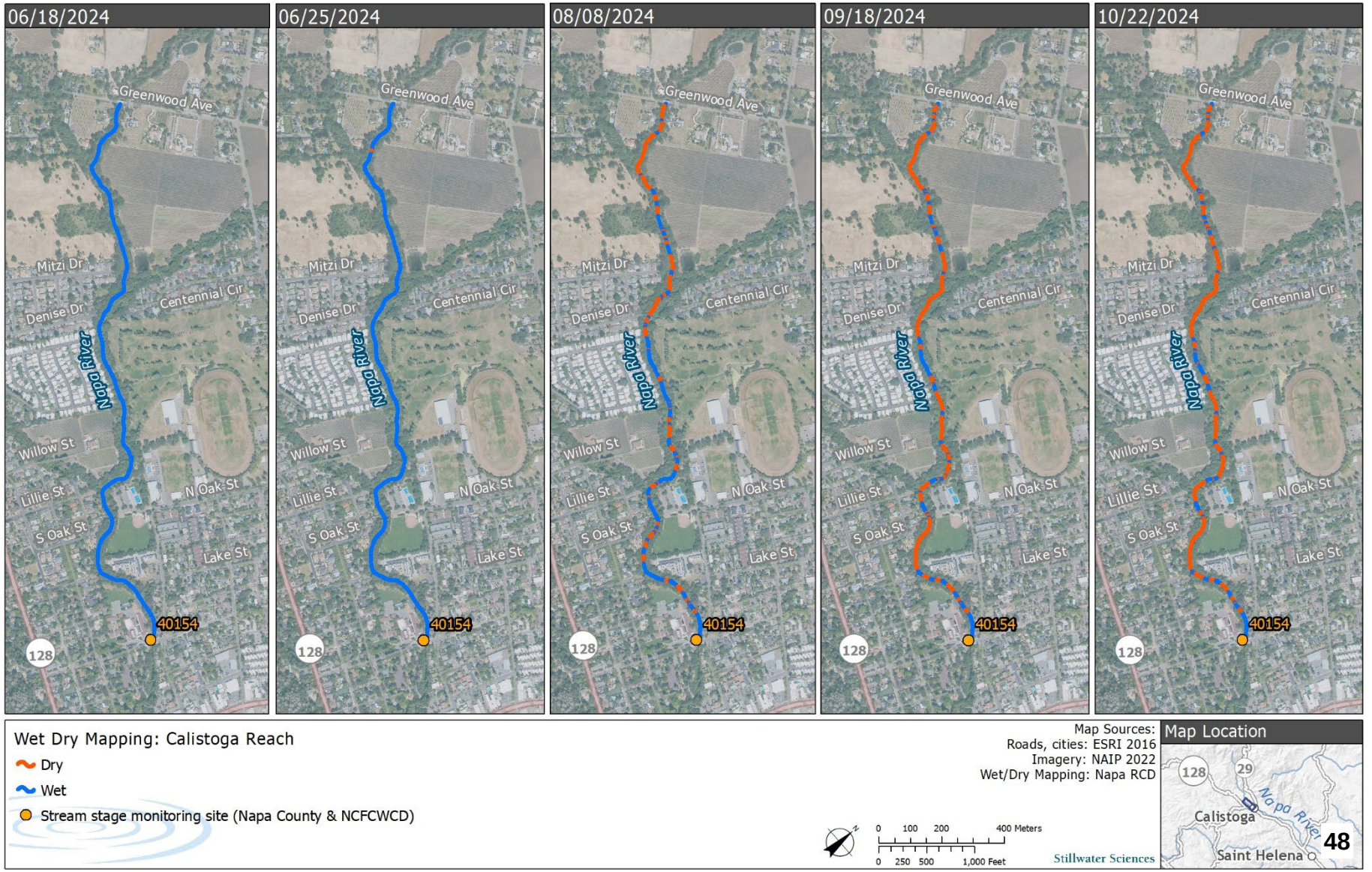


Napa River at Calistoga



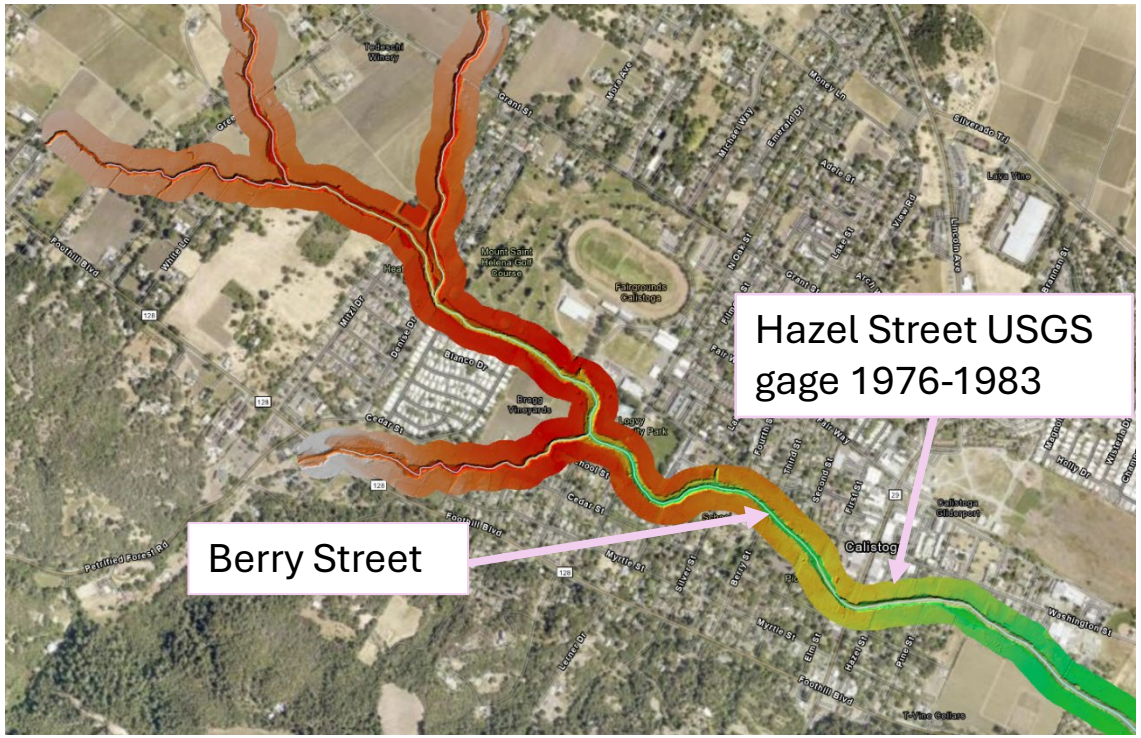
Napa River at Calistoga – Wet/Dry Mapping

- Transition to isolated pools separated by dry glides and riffles in August
- 27% of the reach was wet on 10/22/2024

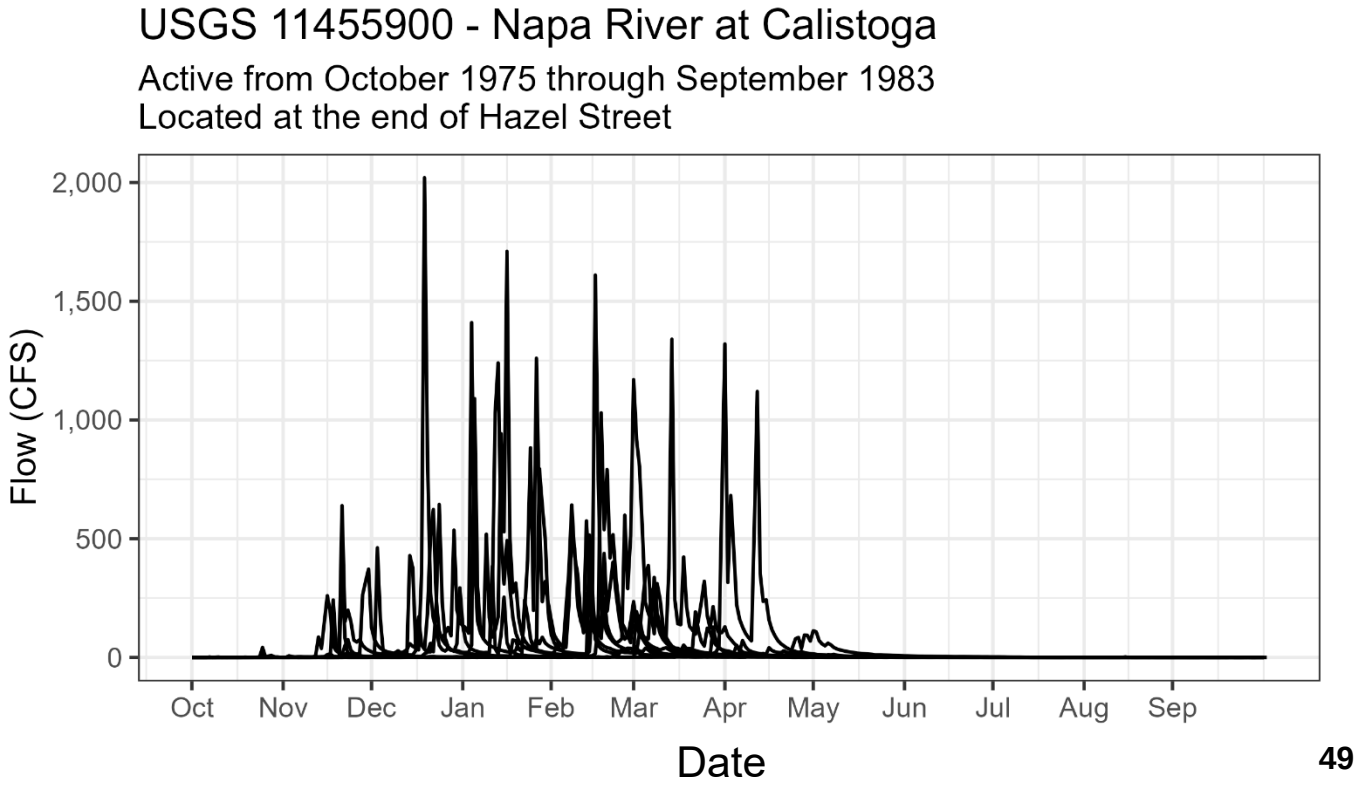


Napa River at Calistoga – Historical Flow

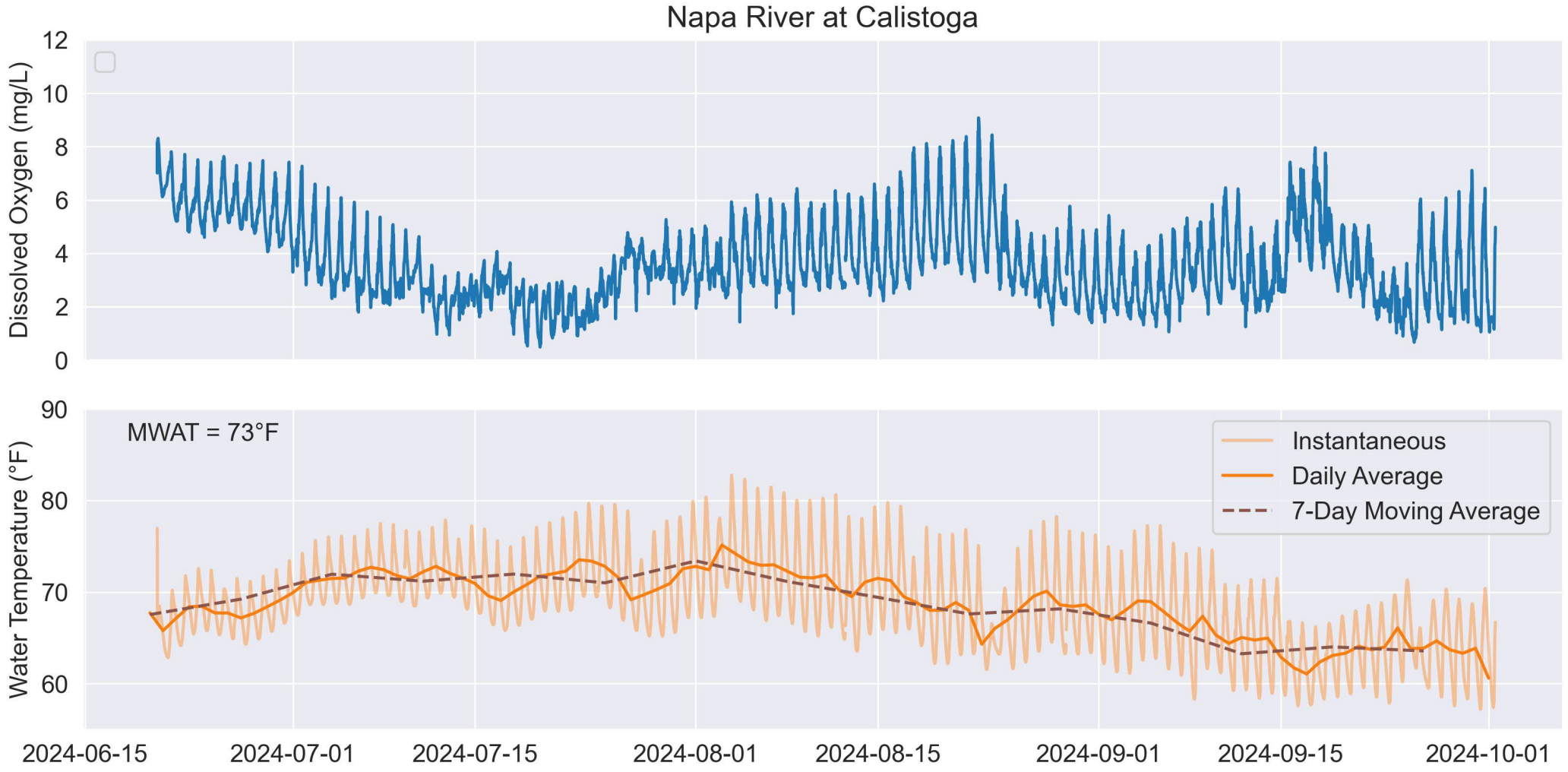
- Stream Watch: Napa River at Berry Street continuously flowing from 11/2018-1/2022 (since retired)
- Stream Watch site located approximately 1,300 ft upstream of historical USGS Gage



*Color scale shows relative elevation along river corridor.



Temperature and Dissolved Oxygen Napa River at Calistoga



*Conditions reflect high summer temperatures.

2024 Napa River at Calistoga – Observation Summary

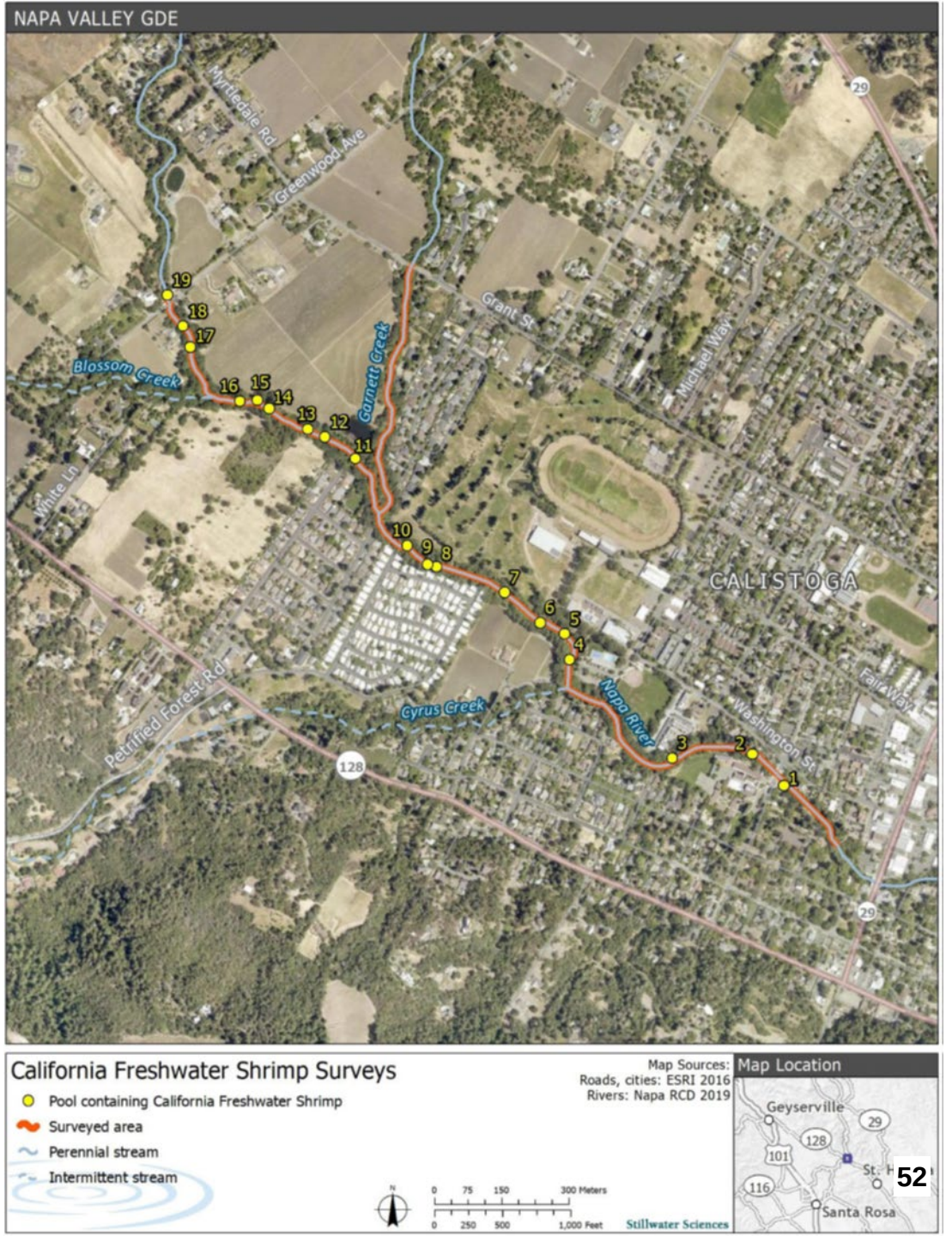
Survey	May	Jun	Jul	Aug	Sep	Oct
Flow Connectivity	Flowing (site visit)	Flowing	Isolated pools	Isolated pools	Isolated pools	Isolated pools
Water Quality		DO and Temperature stressful	Low DO, high temperature	Low DO, high temperature	Low DO	Low DO
Fish surveys		Steelhead fry (118), steelhead parr				
Herps	Absent		No , eDNA negative			
California freshwater shrimp				105 individuals		

Key

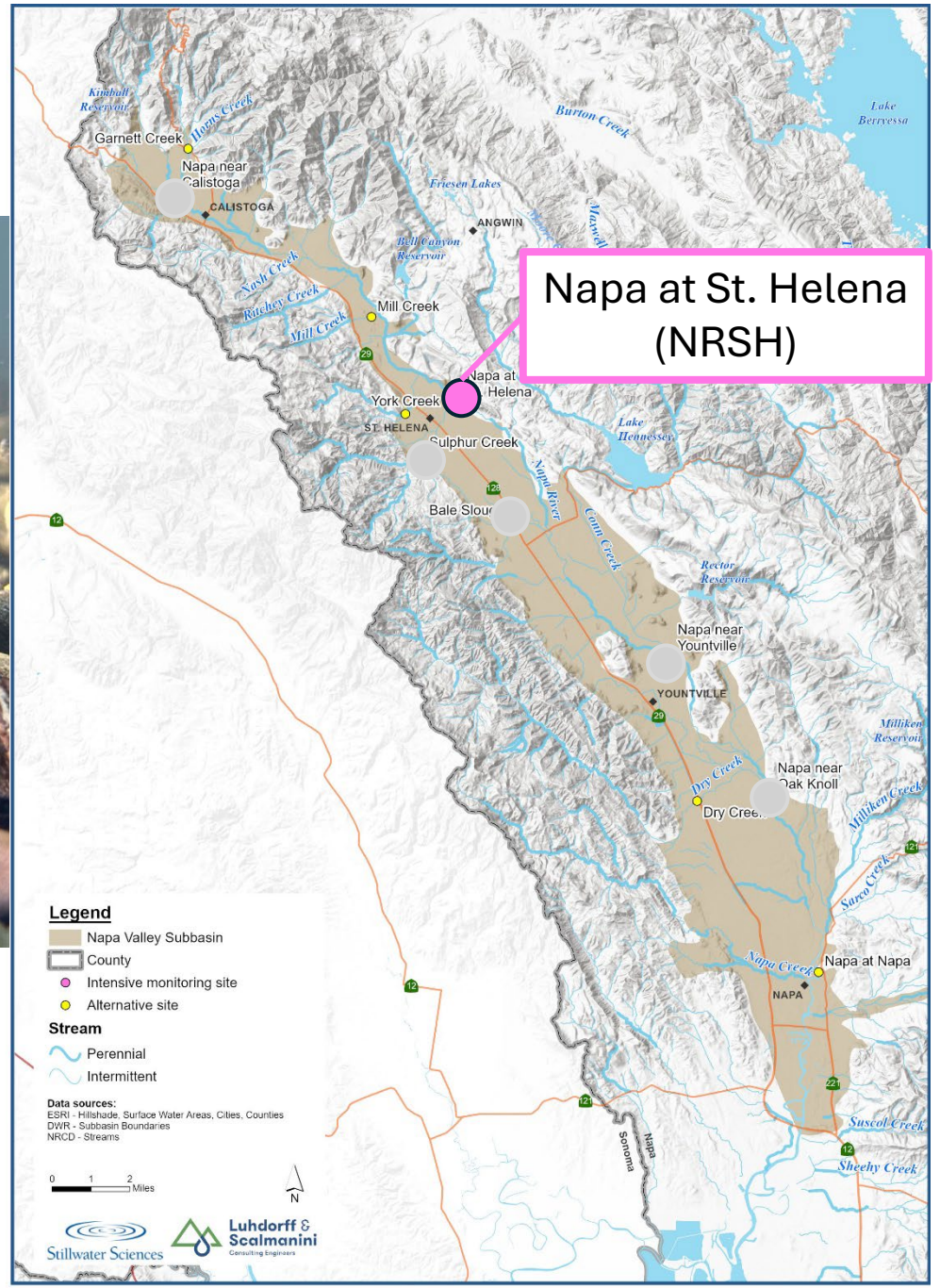
	Species observed, Suitable DO/T, flowing
	Small number of individuals present, Intermediate DO/T, isolated pools
	Species absent, poor DO/T, Mostly dry
	No monitoring

California Freshwater Shrimp (Calistoga)

- 105 shrimp observed in isolated pools
- 41 males, 19 females, 45 juveniles
- Found throughout the reach
- Most of the pools were still wetted in October, but a couple of the pools dried out



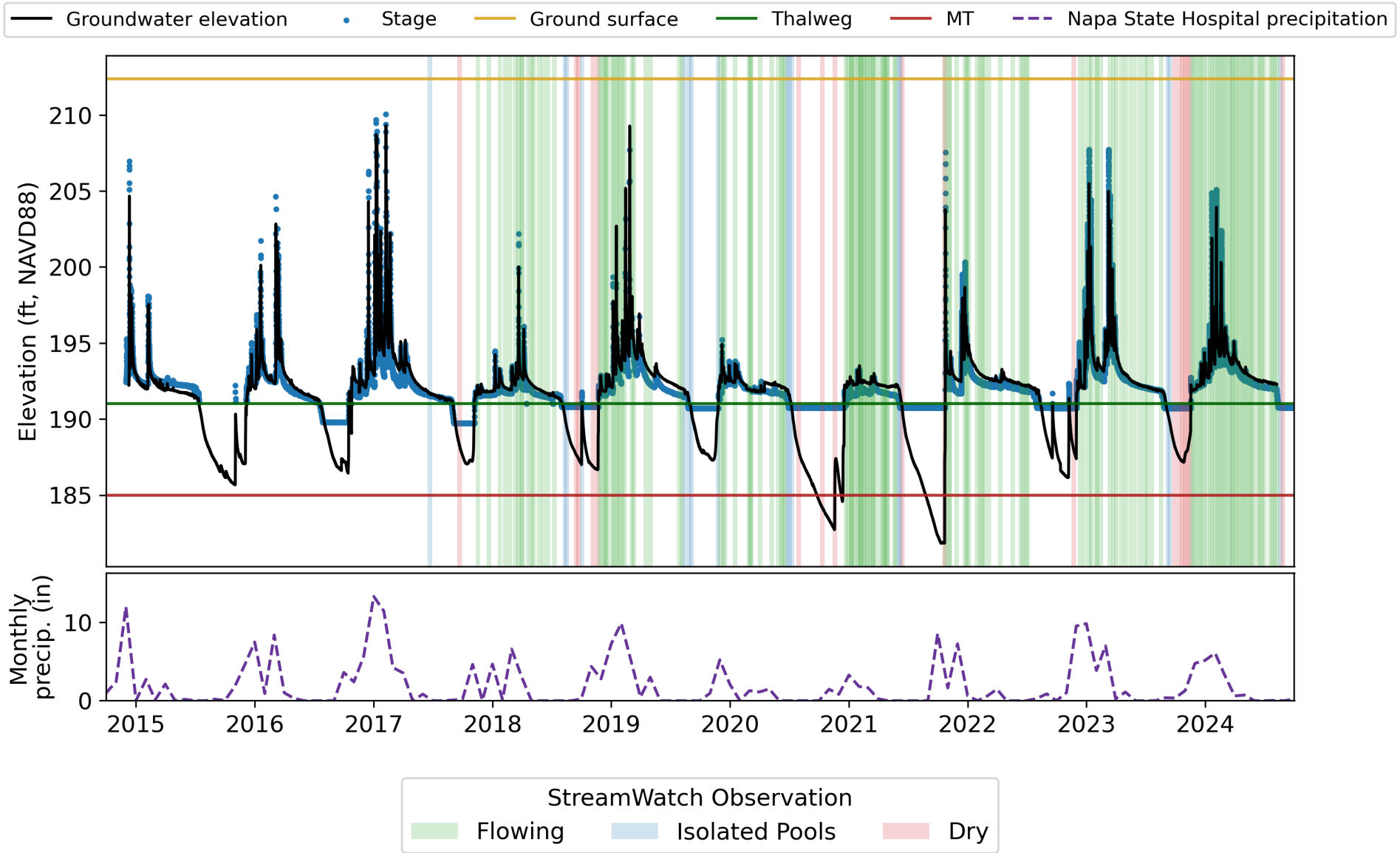
Napa River at St. Helena



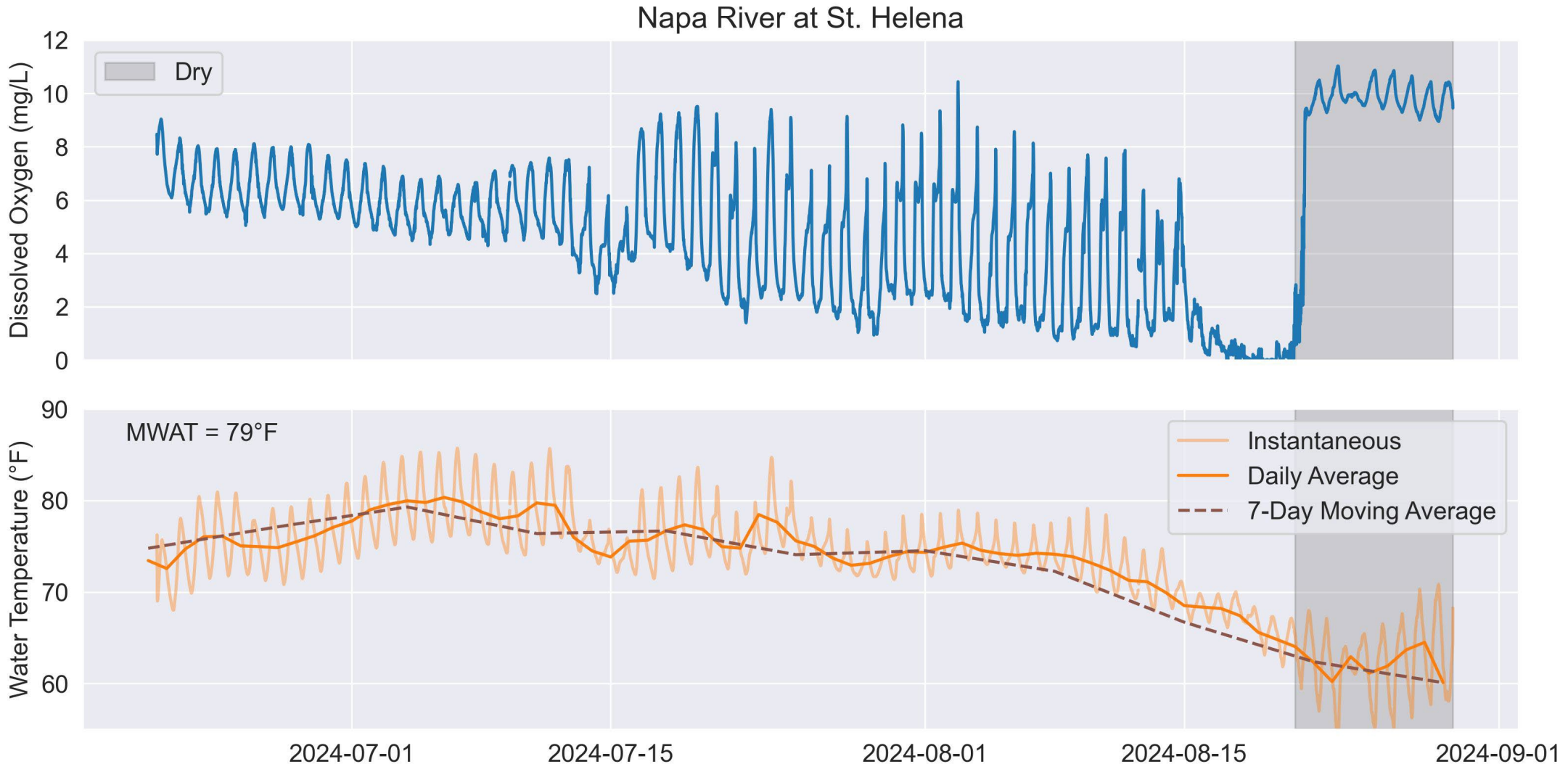
Napa River at St. Helena – Wet/Dry Mapping

- Upstream section of channel stayed wet through early August
- Surface flow observed at Pope Street on 8/9, isolated pools by 8/16
- Middle section dried out in early August

NapaCounty-222s-swgw5 (depth = 40 ft, screened from 25 to 35 ft)
StreamWatch Site 2: Napa R mainstem at Pope St



Temperature and Dissolved Oxygen
Napa River at St. Helena



*Conditions reflect high summer temperatures.

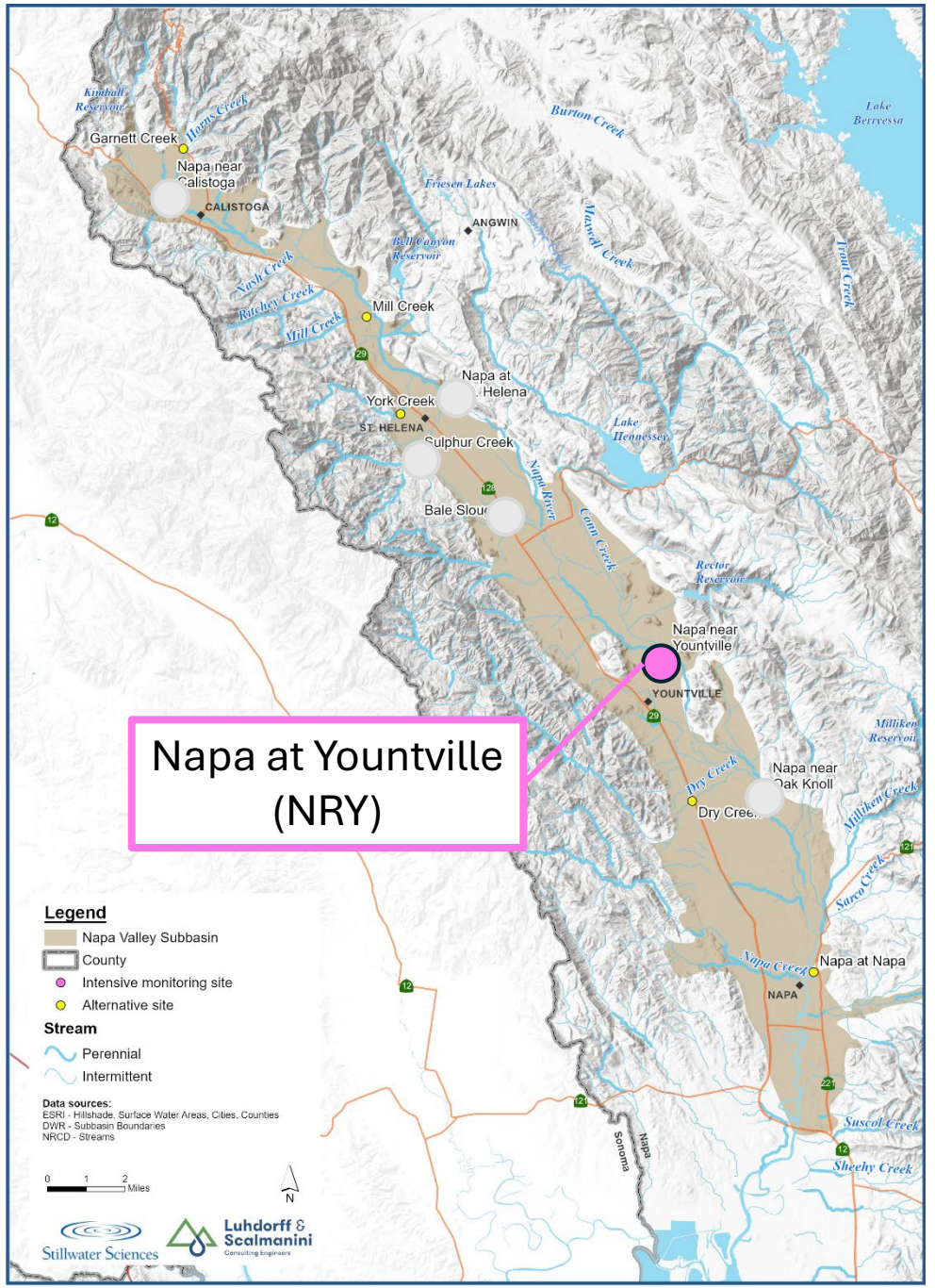
2024 Napa River at St. Helena

Survey	May	Jun	Jul	Aug	Sep	Oct
Flow Connectivity	*Flowing (stream watch)*	flowing	flowing	Long dry reach	Dry	Dry
Water Quality		Moderate DO and temp	Low DO, high temp	Low DO, high temp		
Fish surveys		Steelhead fry (2)				
Herps	VES: Foothill yellow legged frog eggs, northwestern pond turtle adult		eDNA: Foothill yellow legged frog			

Key

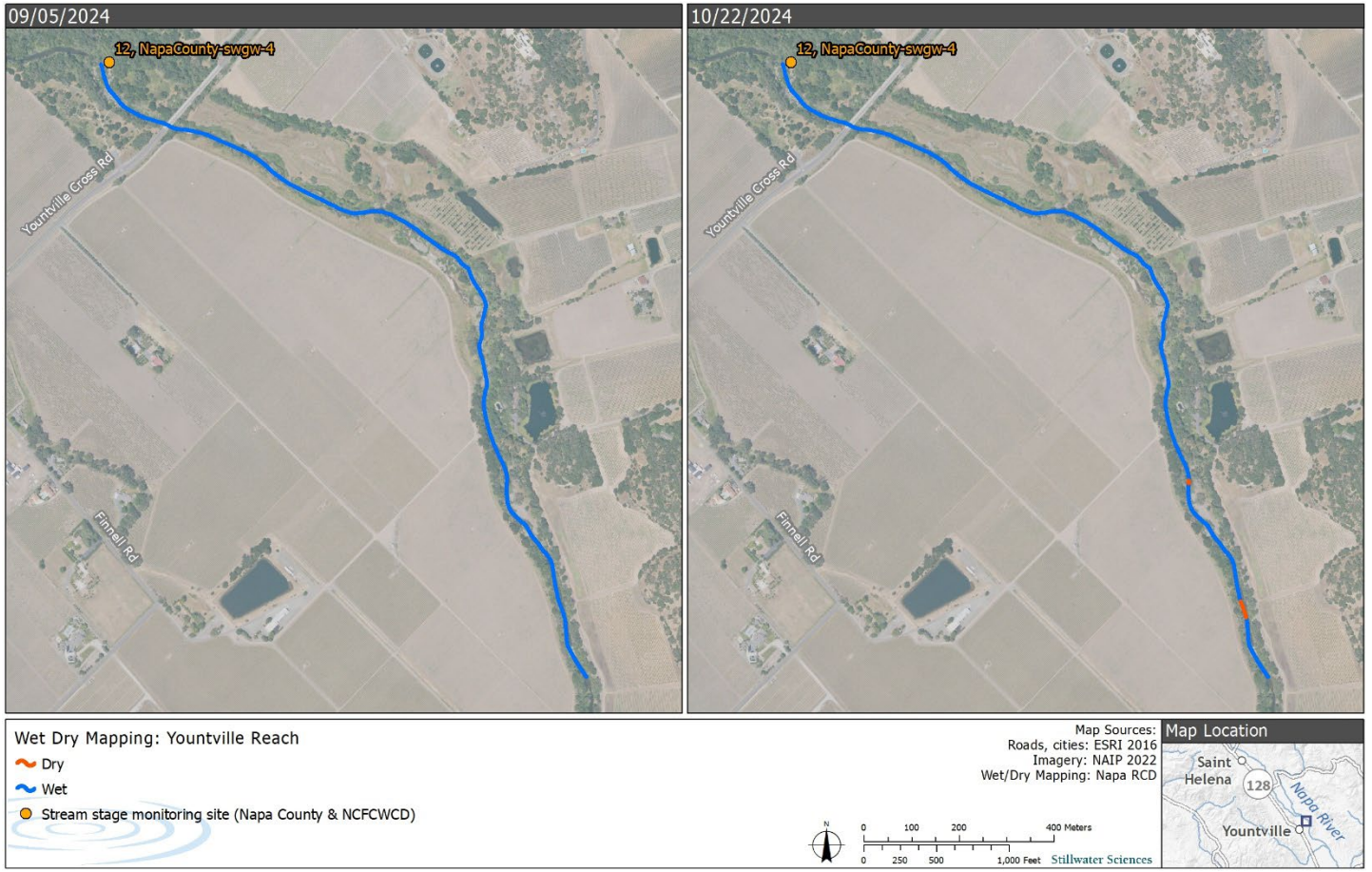
	Species observed, Suitable DO/T, flowing
	Small number of individuals present, Intermediate DO/T, isolated pools
	Species absent, poor DO/T, Mostly dry
	No monitoring

Napa River at Yountville

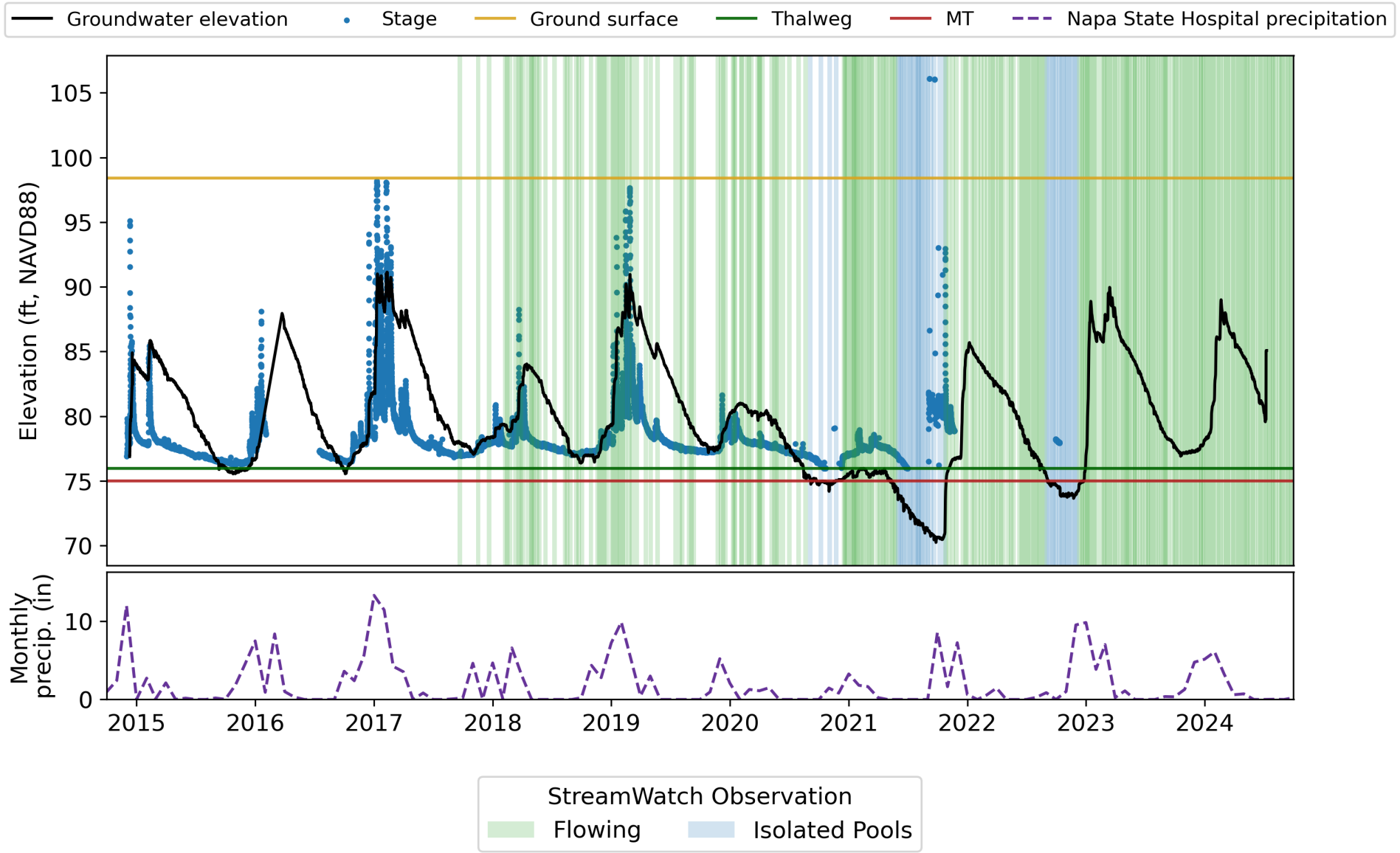


Napa River at Yountville – Wet/Dry Mapping

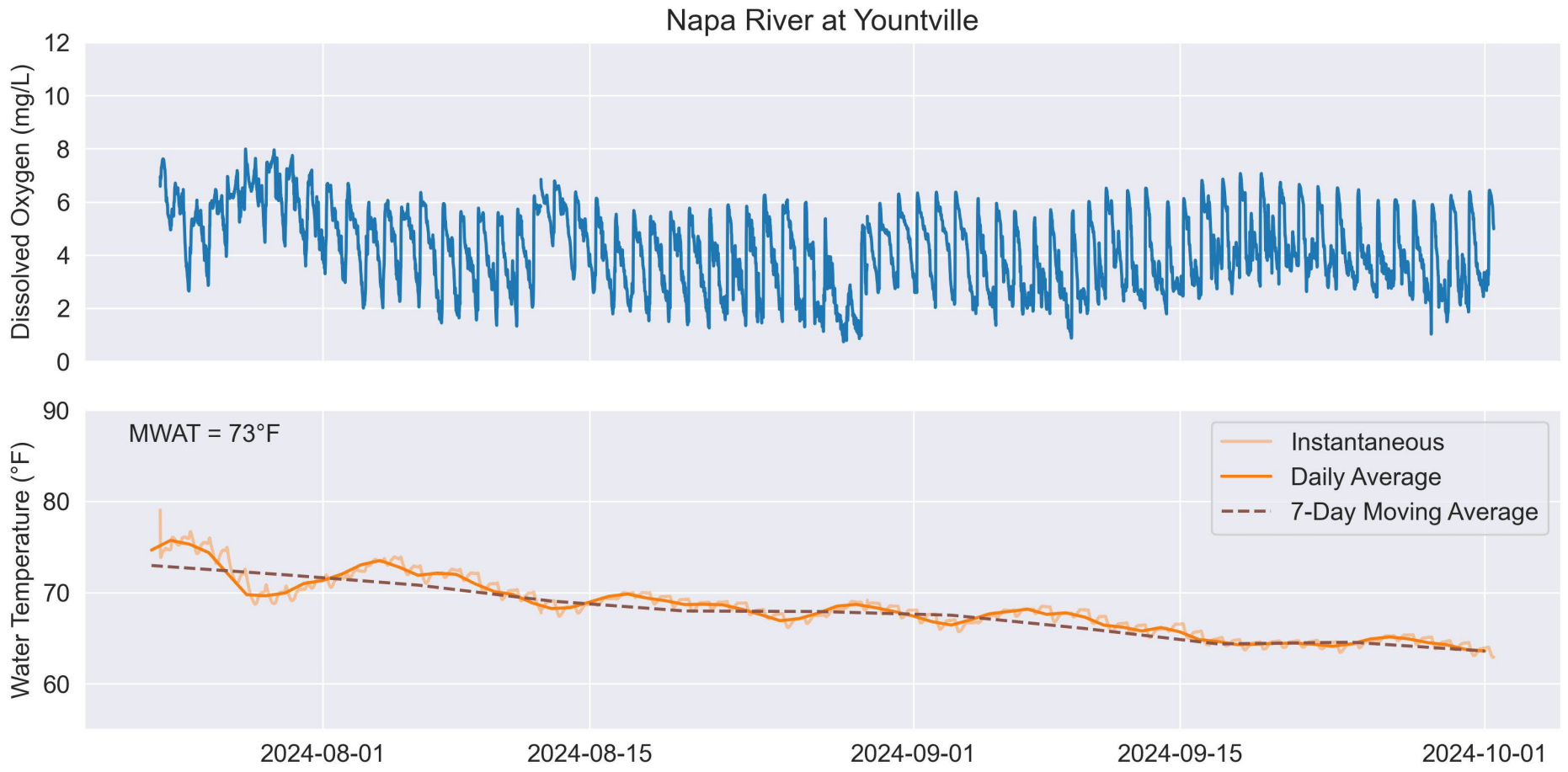
- Almost entirely wetted, even in October (98% wetted)
- Poor dissolved oxygen conditions, mapped dry conditions in upstream reaches



NapaCounty-220s-swgw4 (depth = 45 ft, screened from 25 to 40 ft)
StreamWatch Site 1: Napa R mainstem at Yountville EcoReserve



Temperature and Dissolved Oxygen
Napa River at Yountville



*Conditions reflect high summer temperatures.

2024 Napa River at Yountville

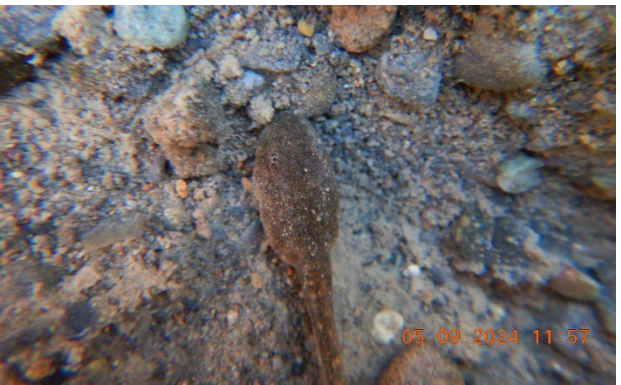
Survey	May	Jun	Jul	Aug	Sep	Oct
Flow Connectivity	*Flowing (stream watch*	*Flowing (stream watch)*	*Flowing (stream watch)*	*Flowing (stream watch)*	Flowing	Mostly flowing
Water Quality				Low DO, stressful temperature	Low DO	
Fish surveys		Steelhead fry (2)				
Herps	north-western pond turtle		eDNA: north-western pond turtle			

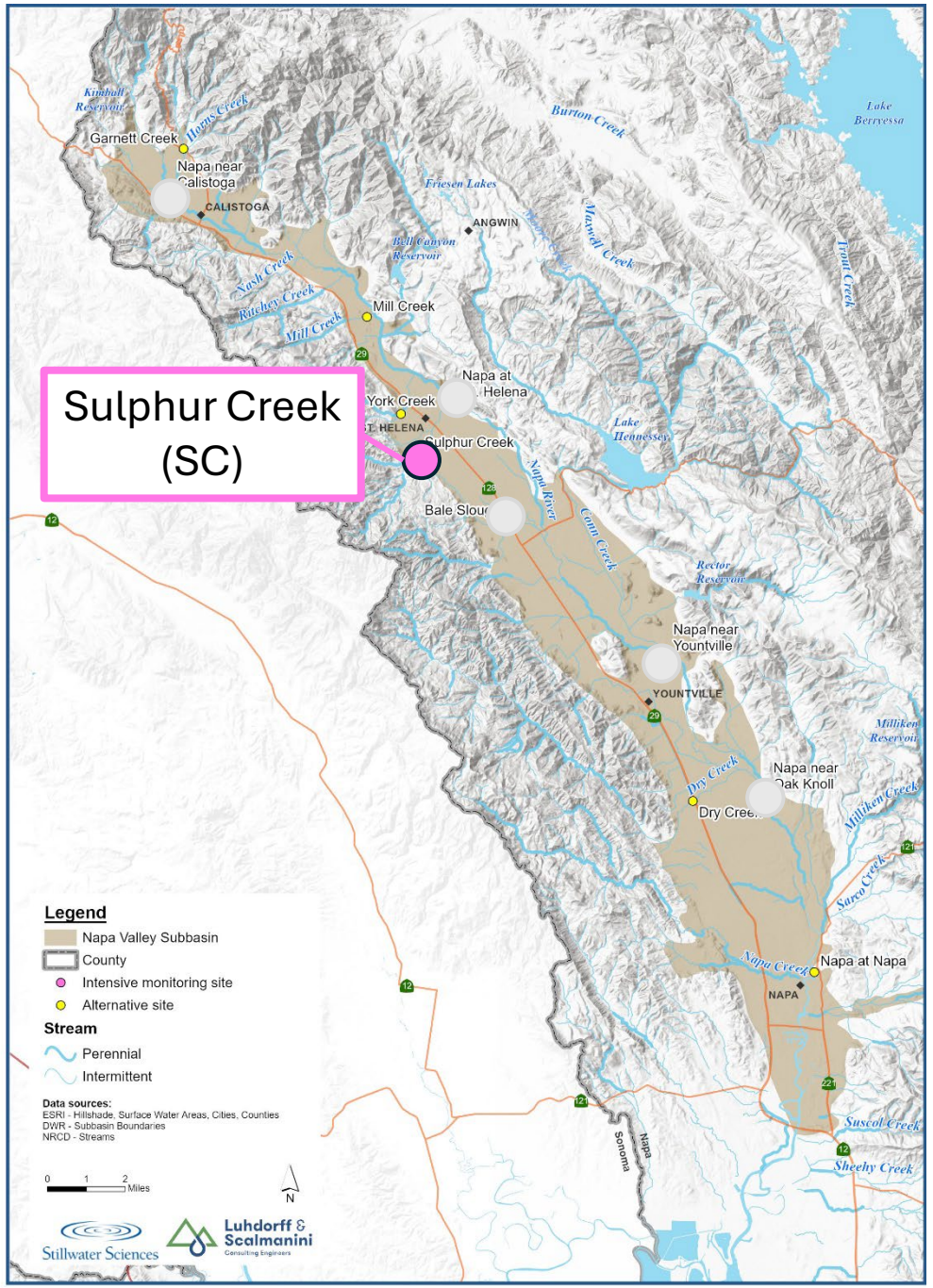
Key

	Species observed, Suitable DO/T, flowing
	Small number of individuals present, Intermediate DO/T, isolated pools
	Species absent, poor DO/T, Mostly dry
	No monitoring

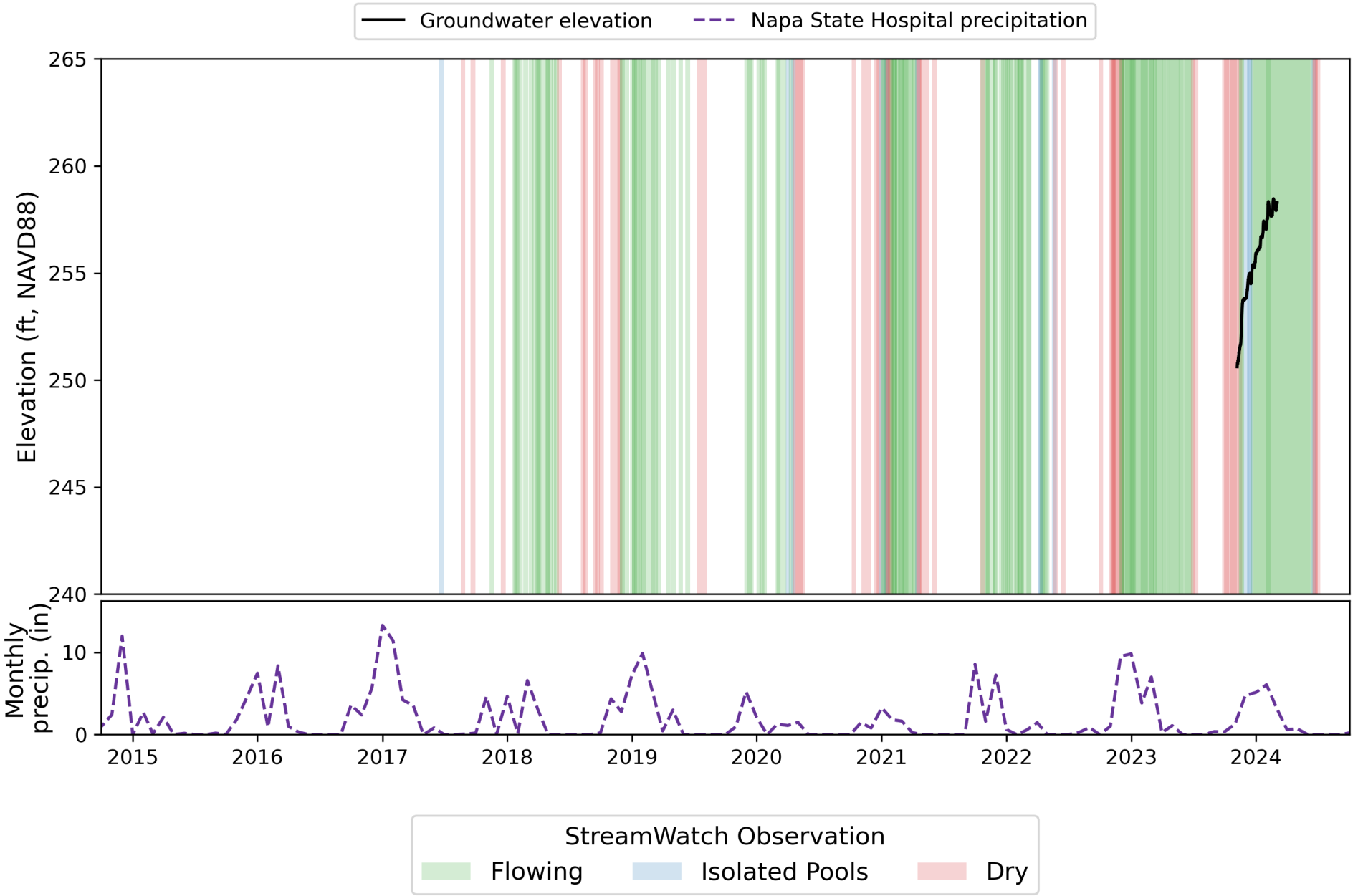
Sulphur Creek

- Foothill yellow-legged frog tadpole and adult
- *O. Mykiss* observed at upstream end of reach (perennial)



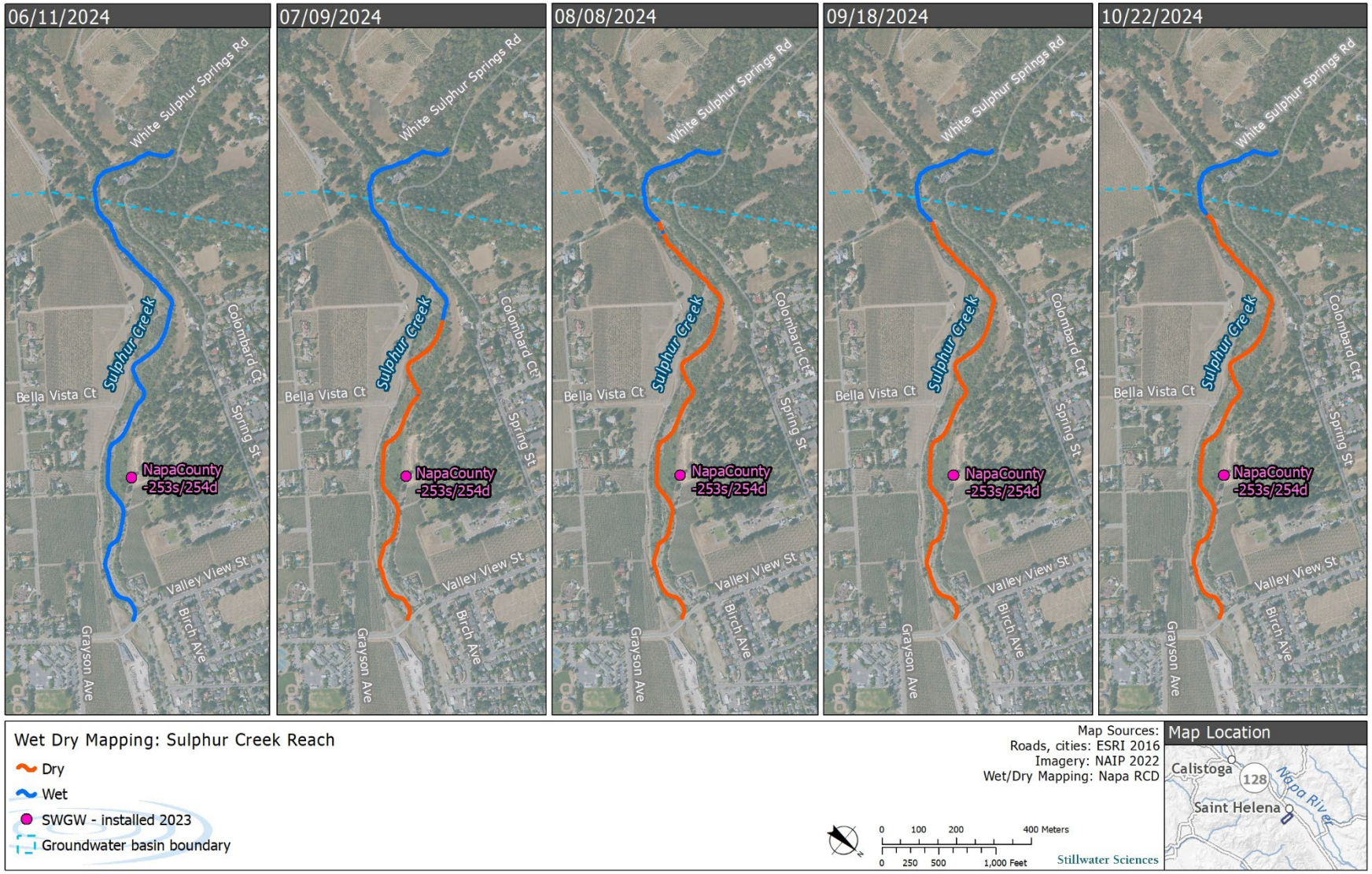


NapaCounty-253s
StreamWatch Site 9: Sulphur Cr at Valley View St

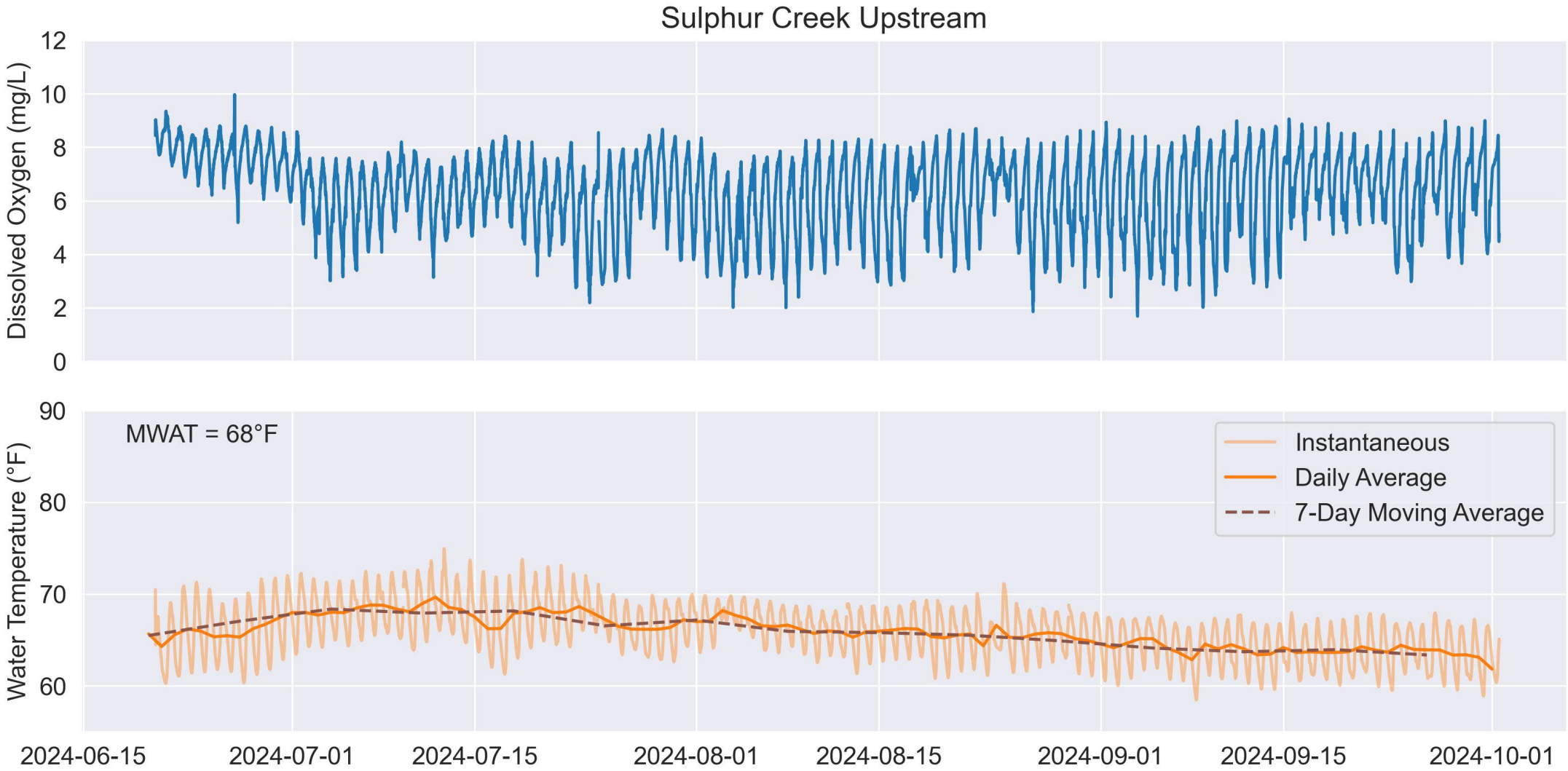


Sulphur Creek

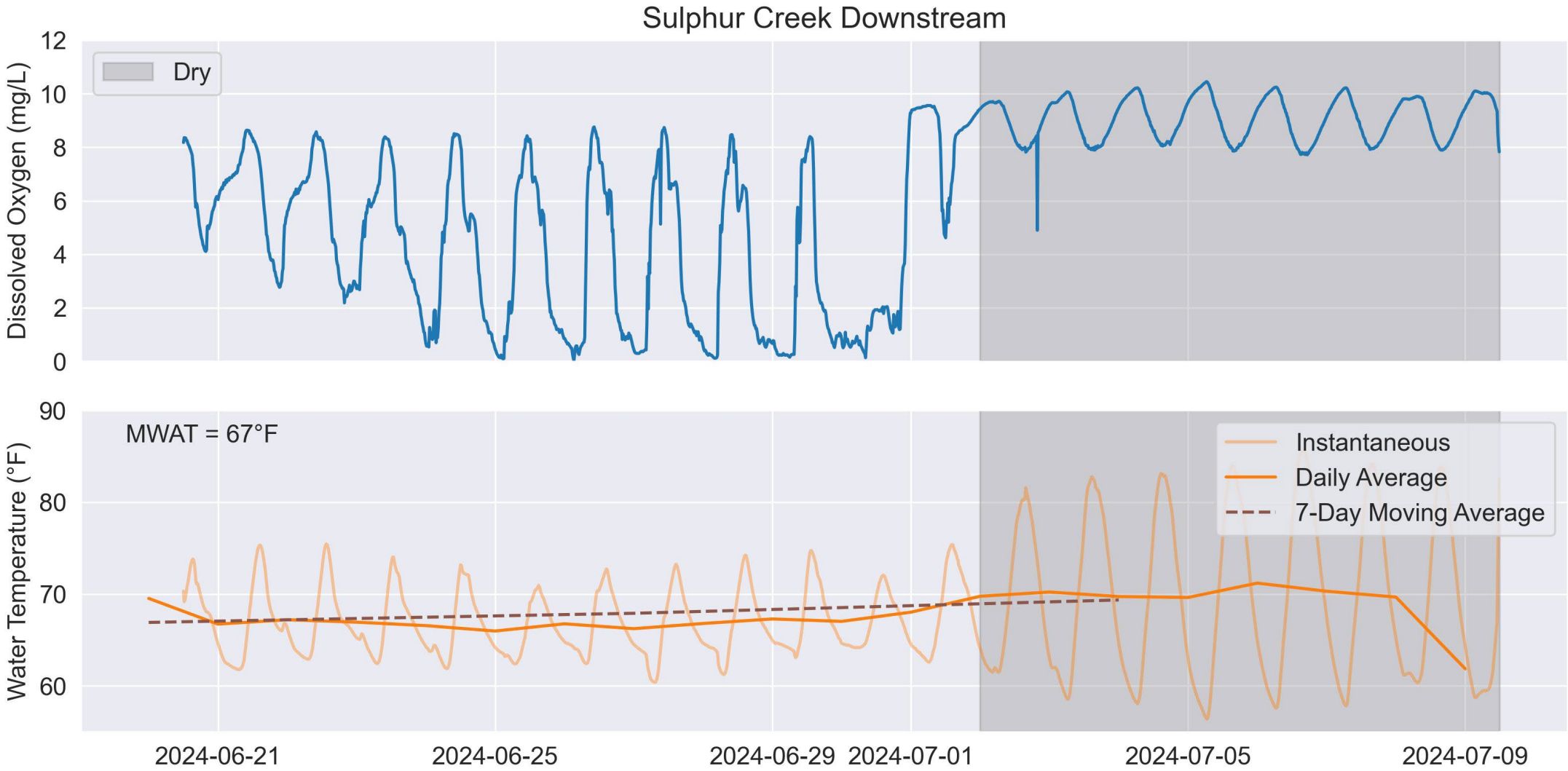
- Upstream section of channel stayed wet, most of which is outside the groundwater Subbasin
- Downstream section of channel dried out in June
- Water quality monitored upstream (at confluence of tributaries) and downstream.



Temperature and Dissolved Oxygen Sulphur Creek Upstream at Heath Creek



Temperature and Dissolved Oxygen Sulphur Creek Downstream



2024 Sulphur Creek

Survey	May	Jun	Jul	Aug	Sep	Oct
Flow Connectivity		Flowing	Dry downstream, flowing upstream	Dry downstream, flowing upstream	Dry downstream, flowing upstream	Dry downstream, flowing upstream
Water Quality (downstream)		Poor DO				
Water Quality (upstream)		Good temp, impaired DO	Good temp, impaired DO	Good temp, impaired DO	Good temp, impaired DO	
Fish surveys		Steelhead fry (26), steelhead parr (8), steelhead adult (3)*				
Herps	Foothill yellow legged frog tadpoles and adult		Foothill yellow legged frog juveniles			

Key

	Species observed, Suitable DO/T, flowing
	Small number of individuals present, Intermediate DO/T, isolated pools
	Species absent, poor DO/T, Mostly dry
	No monitoring

* Fish found in upstream, perennial reach

Next steps

- **Continue data analysis**
- **Summarize 2024 results in a technical memorandum for inclusion in the 2024 Annual Report**
- **CEFF analysis**

Stillwater

- Special status plants (spring 2025)
- Vegetation surveys (summer 2025)
- Birds (spring 2025)
- Amphibian surveys (spring/summer 2025)
- Shrimp surveys (summer 2025)
- CEFF analysis (starting fall 2024 through 2025)

2025 Planned Surveys

RCD

- Redeploy dissolved oxygen and temperature sensors next spring/summer
- Continue habitat connectivity surveys (wet/dry mapping)

Stillwater

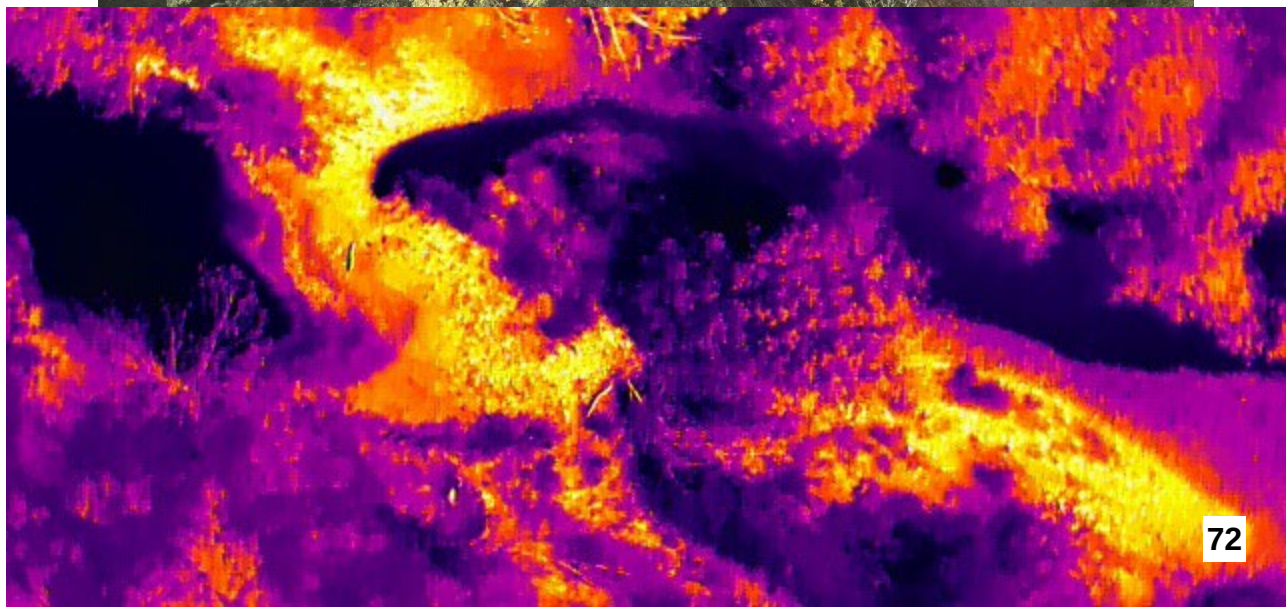
- Special status plants (spring 2025)
- Vegetation surveys (summer 2025)
- Birds (spring 2025)
- Amphibian surveys (spring/summer 2025)
- Shrimp surveys (summer 2025)

Refinements to the 2025 Surveys – Preliminary

- Install water quality monitoring earlier in the season
- Monitor fish in May
- Survey Herps in late spring and early summer
- Potentially add a second fish survey later in the season to track changes
- Investigating use of thermal imagery

Aerial Imagery

- Drone imagery, using both visual and thermal bands, was flown in October 2024.
- Thermal mapping allows for easier identification of wet/dry conditions.
- Currently investigating uses of thermal data in understanding ISW conditions.



ISW and GDE Workplan Goal:
...better understand the conditions required to protect and enhance healthy terrestrial and aquatic GDEs

Current Conditions:

- Napa Calistoga: Juvenile steelhead, California freshwater shrimp, riparian vegetation
- Napa St. Helena: Foothill yellow-legged frog eggs and tadpoles, riparian vegetation
- Napa Yountville: Riparian vegetation and Northwestern pond turtle
- Sulphur Creek: Foothill yellow-legged frog eggs and tadpoles, juvenile fish at the upstream end of the site

ISW and GDE Workplan Goal:
...better understand the conditions required to protect and enhance healthy terrestrial and aquatic GDEs

In 2025:

- Discuss ecological goals
- Investigate ecological-flow relationships
- Scenario analysis with NVIHM

Questions and Discussion

Thank You

Napa County Groundwater Sustainability Agency

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Groundwater Technical Advisory Group **Agenda Date:** 11/14/2024 **File ID #:** 24-1942

TO: Technical Advisory Group for the Napa County Groundwater Sustainability Agency

FROM: Brian D. Bordona, Director of Planning, Building and Environmental Services

REPORT BY: Jamison Crosby, Natural Resources Conservation Manager

SUBJECT: Napa Valley Subbasin GPR Implementation: TAG Review of Vineyard and Winery Certification Program Framework

RECOMMENDATION

Technical Advisory Group (TAG) members will receive a presentation of the current proposed framework for the NCGSA Water Conservation Certification Program minimum requirements and preview the vineyard benchmarking program. This will spur discussion, questions, and provide feedback to staff and participants.

Procedure
Staff introduces.
Questions and answers with the TAG.
Public comments.

BACKGROUND AND DISCUSSION

The Napa County Groundwater Sustainability Agency (NCGSA) has developed and is implementing the Water Conservation (WC) and Groundwater Pumping Reduction (GPR) Workplans. The WC Workplan identified a suite of water conservation practices and the GPR Workplan includes an implementation plan and anticipated timeline for a broad program to achieve measurable reductions in groundwater pumping in the Napa Valley Subbasin (Subbasin). GPR implementation anticipates a voluntary program that incentivizes growers and other water users/industries in the Subbasin to adopt and expand water conservation practices. Water conservation actions include those that reduce total groundwater pumping and those that may additionally reduce net depletion of groundwater (total groundwater pumping less usable groundwater that returns to the aquifer).

One opportunity identified in the GPR implementation plan for encouraging voluntary adoption of water conservation practices is certification programs. Certification programs require producers to meet specified standards to become certified. In exchange, certified businesses can demonstrate to peers and others good stewardship of resources, meet regulatory standards, satisfy buyer specifications, label their product in a certain way, and potentially have access to new markets. This can also create additional value (higher price or cost savings) for some producers.

In addition, benchmarking was also identified in the GPR implementation plan. To encourage voluntary water conservation, an agricultural benchmarking program can provide anonymous data on crop evapotranspiration (or other measures of water use) to show how an individual vineyard operation compares to a group of its peers. This program establishes a structured framework for tracking and assessing water use, defines comparable anonymous water user types, and provides this information to water users. Then, each water user can make informed changes to reduce water use. It can also be applied to other contexts beyond agriculture, such as municipal and industrial water use. Benchmarking has the potential to create behavioral changes among participants, reduce water use, and potentially inform system-wide improvements over time.

For certification, the GPR implementation plan specifies that NCGSA staff and its consultants will work with existing certification programs, or potentially a new program, to develop specific water conservation practices, standards, and a method for reporting and sharing data. In short, the goal is to develop or expand one or more certification programs to achieve and verify additional water conservation in the Subbasin, above and beyond the levels of conservation which have already been achieved by growers over many years. Over the last few months, NCGSA staff and consultants have been working to develop the potential framework (including minimum requirements) for a water conservation certification program. The draft framework presented in this meeting outlines program structure, monitored water conservation practices, data reporting and verification, water use measurement, impact evaluation, costs and funding, and outreach and education. At the same time, NCGSA staff and consultants have also been developing the framework and methodology for a vineyard benchmarking program in the Subbasin.

The TAG has received information and presentations regarding certification and benchmarking programs from NCGSA staff and consultants at multiple TAG meetings in 2022, 2023, and 2024. During today's meeting, the TAG will have an opportunity to review the draft proposed Water Conservation Certification Program guidelines and preview the vineyard benchmarking program framework. To guide the discussion, topics/questions on certification are identified that would benefit from input from TAG members for effective program implementation.

Question/Prompts for TAG Discussion

For a voluntary certification program to be a successful part of GPR implementation, it must result in the adoption of new water conservation practices (and expansion of existing practices that are already widely adopted), verification of water conservation, and result in demonstrable, collective progress towards reducing groundwater pumping (for the entire Subbasin in aggregate).

At this time, the complete draft "NCGSA Water Certification Program: Structure and Minimum Requirements" document is ready for review and feedback.

One (1) overarching question with four (4) specific certification program sections were identified for this TAG meeting. In addition, one (1) question was identified regarding the benchmarking program. Questions are presented below.

1. **What feedback and questions are there for the current framework of the NCGSA Water Conservation Certification Program?**

    - Additional context: This program has benefited from continual feedback from the TAG and stakeholders throughout its development. Currently, four program sections describe the key minimum requirements for the NCGSA Water Conservation Certification Program and how those differ from other, existing certification program practices: practices, verification, data

calculation and reporting, and incentives and outreach. Potential areas of discussion are included below.

- **Minimum water conservation practices.** Six vineyard practices and three winery practices have been developed into the program framework as minimum requirements for recognized certification. This includes installing meters within a period of 3 years. In addition, this includes irrigation system efficiency, distribution uniformity, recycled water, agronomic practices, planting design practices, water wise winery processes, and processing water treatment and reuse.
- **Verifying water conservation.** To be certified, participants must provide proof of practices. Third-party audits are required. There are a variety of verification methods under third-party auditing and program auditing, including records/documentation, photos, and in-person inspection/review.
- **Program water conservation.** Water conservation is measured relative to a baseline that should represent what water use would have been in the absence of adopting water conservation practices. Data from participants/partner programs will be necessary to measure changes in water use and program impacts overtime. A program baseline is defined for average annual and water year-specific water use. The program requires annual reporting for aggregate regions (specifically American Viticultural Areas or AVAs) to protect individual water user data.
- **Program incentives.** There are several different potential types of incentives the NCGSA can develop to encourage participation in the certification program. To ensure these incentives and the program will be effective, ongoing outreach efforts have solicited feedback from a range of stakeholders, with additional activities planned as the program is refined and finalized. A separate document describing incentives will be developed and presented at a future TAG meeting.

2. What other factors should be considered in the release of the benchmarking program?

- Additional context: The benchmarking program offers opportunities to empower stakeholders to improve water use though comparison to an anonymous peer group. The framework and methodology currently utilize parcel and APN data to develop peer-to-peer comparison. Peer groups are based on several factors, including field characteristics, grape characteristics, and location. As the program is rolled out, several factors will impact the success of the program's release.
- Potential discussion topics:
  - How should the results be presented to parcel owners and growers?
  - What factors should be considered when enrolling pilot sites?

ENVIRONMENTAL IMPACT

ENVIRONMENTAL DETERMINATION: The proposed action is not a project as defined by 14 California Code of Regulations 15378 (State CEQA Guidelines) and therefore CEQA is not applicable.

SUPPORTING DOCUMENTS

A. ERA Economics PowerPoint Presentation: Certification Program for GPR Implementation, November 2024

B. NCGSA Water Conservation Certification Program: Structure and Minimum Requirements (Draft), November 2024

Napa Valley Subbasin

Groundwater Pumping Reduction Workplan Implementation Update

Napa County GSA TAG Meeting

Overview

1. GPR Implementation
2. NCGSA Water Conservation Certification Program: Structure and Minimum Requirements
   - Water Conservation Practices
   - Verification
   - Water savings and program evaluation
   - Incentives and outreach
3. Benchmark Program Development
4. Next Steps

GROUNDWATER PUMPING REDUCTION WORKPLAN

Groundwater Pumping Reduction

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

Development & Implementation Timeline

Component/Activity	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25
Component 1: Education and Outreach; Feasibility Analysis						
Educational Materials	D	I	I	I	I	I
Partnership Building	D	D	D	D	I	I
Messaging System	D	D	I	I	I	I
Feasibility Analysis	D	D	I	I	I	I
Component 2: Voluntary Adoption						
Incentivize Adoption	D	D	I	I	I	I
Benchmarking Pilot Program	D	D	D	D	I	I
Meter Data and Reporting Program	D	D	D	D	I	I
Component 3: Voluntary Certification						
Incentivize Certification	D	D	D	D	D	I

D = Development, I = Implementation

Implementation Progress

Component/Activity	Work-in-Progress
Component 1: Education and Outreach; Feasibility Analysis	
Educational Materials	✓
Partnership Building	✓
Messaging System	
Feasibility Analysis	
Component 2: Voluntary Adoption	
Incentivize Adoption	✓
Benchmarking Pilot Program	✓
Meter Data and Reporting Program	✓
Component 3: Voluntary Certification	
Incentivize Certification	✓

- GPR Workplan implementation components are all integrated
  - Voluntary certification, benchmarking, data, water conservation practices are all part of education and outreach

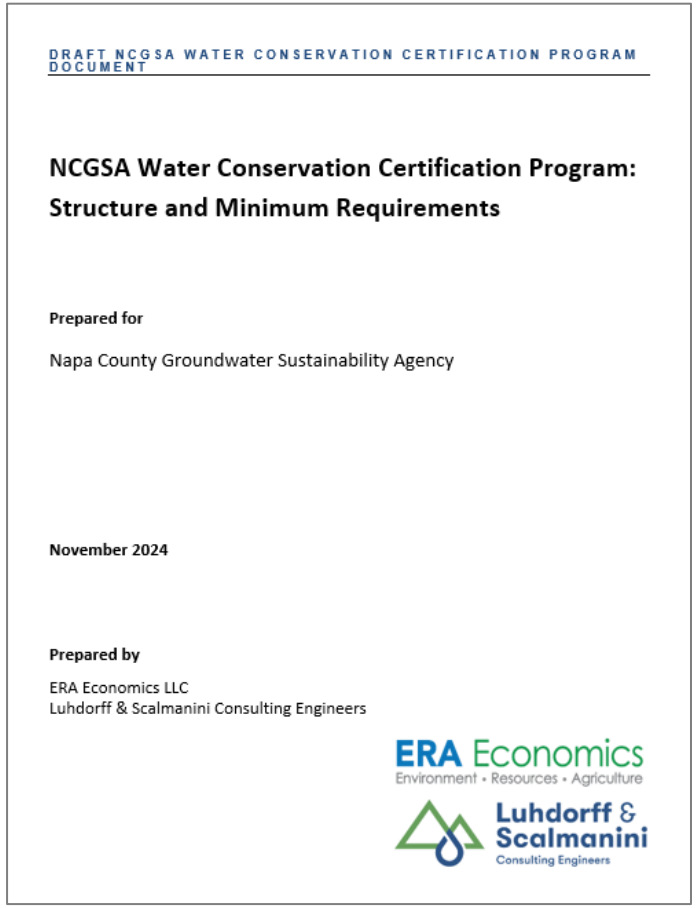
What are we working on currently?

1. Finishing draft certification program guidelines (today's presentation) **with stakeholder input**
   - Continued industry input for program design
   - Continued certification program feedback
   - TAG and other public input
2. Developing benchmarking program framework
3. Education, outreach, and parallel programs
   - Benchmarking
   - Outreach
   - Incentives
   - Cost-effectiveness analysis considering supply options

NCGSA WATER CONSERVATION CERTIFICATION PROGRAM: STRUCTURE AND MINIMUM REQUIREMENTS

Water Conservation Certification Guidelines

- Voluntary certification program for water conservation practices to support sustainable groundwater conditions in the Napa Valley Subbasin
- Framework defines minimum standards and structure for partnering with existing certification programs



DRAFT NCGSA WATER CONSERVATION CERTIFICATION PROGRAM DOCUMENT

NCGSA Water Conservation Certification Program: Structure and Minimum Requirements

Prepared for

Napa County Groundwater Sustainability Agency

November 2024

Prepared by

ERA Economics LLC
Luhdorff & Scalmanini Consulting Engineers

ERA Economics
Environment • Resources • Agriculture

Luhdorff & Scalmanini
Consulting Engineers

How will the program work?

- NCGSA Water Conservation Certification Program (WCCP)defines minimum requirements
  - NCGSA works with one or more partner programs to implement the program
- Partner certification program(s):
  - Implements the certification program
  - Specifies details that work with their programs, as long as NCGSA minimum requirements are met
  - Manage audits, data, reporting and similar processes
- Vineyards/wineries:
  - Choose to enroll with one or more partner certification programs
  - Implement practices
- Incentives are being developed in a separate document
  - Presented at future TAG meetings

Program Highlights

- **Practices:** water management, reporting, recycling, and wastewater use
- **Metering:** required after 3-year transition period
- **Verification:** required through a third-party audit
- **Data Reporting:** certification program manages data and reports aggregate use (protects individual operation data)
- **Calculations:** estimations of water savings for practices implemented
- **Reporting:** aggregate measures of impact across Napa Valley Subbasin

Overview of Practices

Vineyard Water Conservation Practices

- Water Metering/Measurement
- Irrigation Efficiency
- Distribution Uniformity
- Recycled Water
- Agronomic Management Practices
- Planting Design Practices

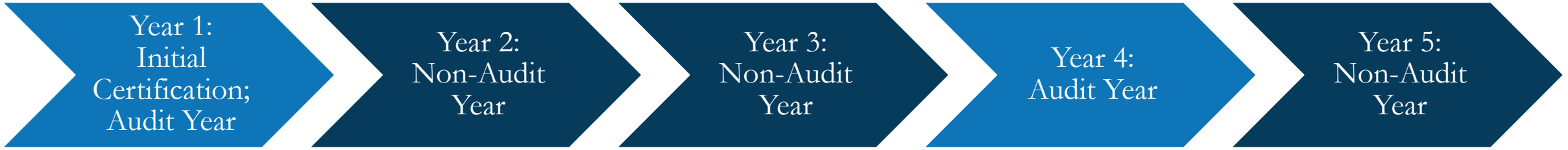
Winery Water Conservation Practices

- Water Metering/Measurement
- Waterwise Winery Processes
- Processing Water Treatment and Reuse

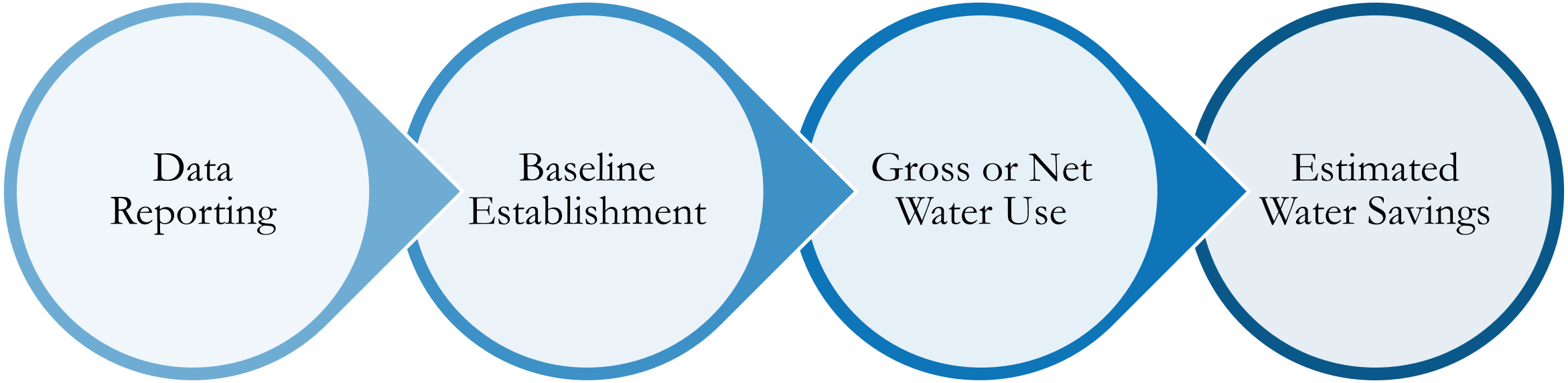
Overview of Verification

- To become certified (and qualify for any incentives), water conservation practices must be verified.
- The partner certification program(s) will ensure that certified vineyards and wineries meet requirements, develop documentation each year, and complete third-party audits.
- Verification of water conservation practices must be completed by a third-party auditor at initial certification and at least every three years after.

Example Minimum Verification Schedule



Water Savings Calculation Process



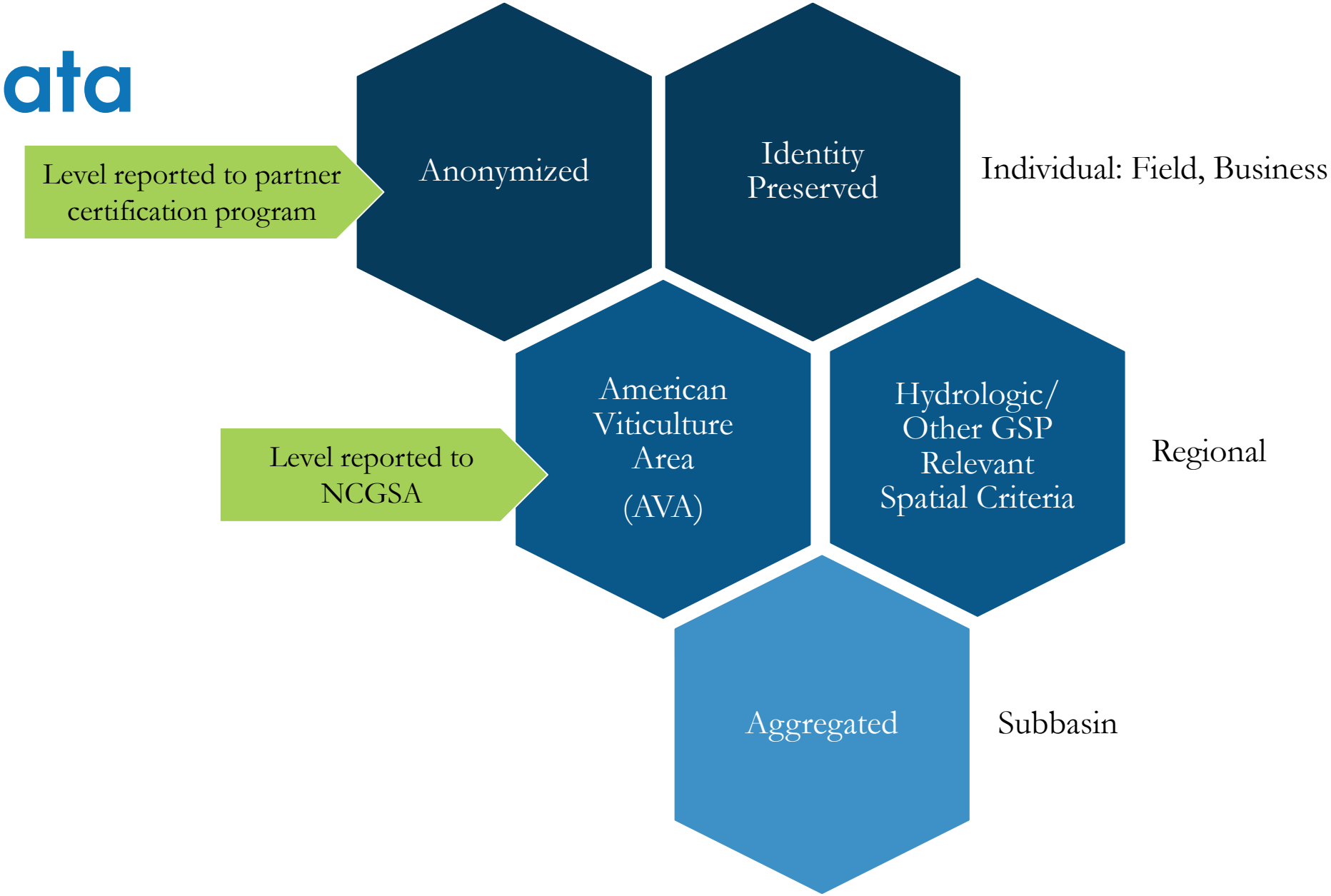
- Participant water use data shared during initial onboarding and annual reporting to partner certification program.
- Certification program may engage third-party to assist with calculating water savings.

- Certification program develops baseline water use for each participant, taking into account investments in water conservation practices and variability in precipitation.

- Certification program measures or calculates gross or net water use from annual provided data.

- Certification program calculates estimated water savings, the difference in current year water use from the baseline, for each participant.
- After aggregation, water savings are reported to NCGSA

Data


Level reported to partner certification program
Anonymized
Identity Preserved
Individual: Field, Business
Level reported to NCGSA
American Viticulture Area (AVA)
Hydrologic/ Other GSP Relevant Spatial Criteria
Regional
Aggregated
Subbasin

Incentives

- Forthcoming in a separate document, preliminary concepts:
  - NCGSA may offer incentives to encourage voluntary participation in the Water Conservation Certification Program (WCCP).
  - Incentives can be offered to partner programs for meeting standards, participants for actively implementing practices, or a combination of both.
  - Other grant funding opportunities.

Direct Payments	Cost Share	Reducing Barriers to Entry	Creating Value	Other

Implementation Timeline

November 2024

- Present full draft of WCCP document to TAG
- Finalize program details based on feedback
- Meet with growers and vintners for feedback
- Develop outreach/meetings/ facilitation framework
- Develop incentive analysis report

December 2024

- Finalize full WCCP document based on feedback
- Develop incentive analysis report

January 2025

- Finalize full WCCP document based on feedback
- Implement targeted outreach to existing certification programs
- Implement targeted outreach to industry groups (ideally, presentations at workshops and other public forums)
- Continue meetings with growers and vintners for feedback

February 2025

- Present WCCP for TAG approval
- Host informational resource meetings/ workshops
- Continue meetings with growers and vintners
- Continue coordination with other GPR implementation programs

March/April 2025 (and beyond)

- Present WCCP for NCGSA Board approval
- NCGSA begins identifying partner certification programs that meet requirements
- Establish partnerships with certification programs
- Continue outreach and education
- Program evaluation
- Program updates
- Continue work on other GPR programs

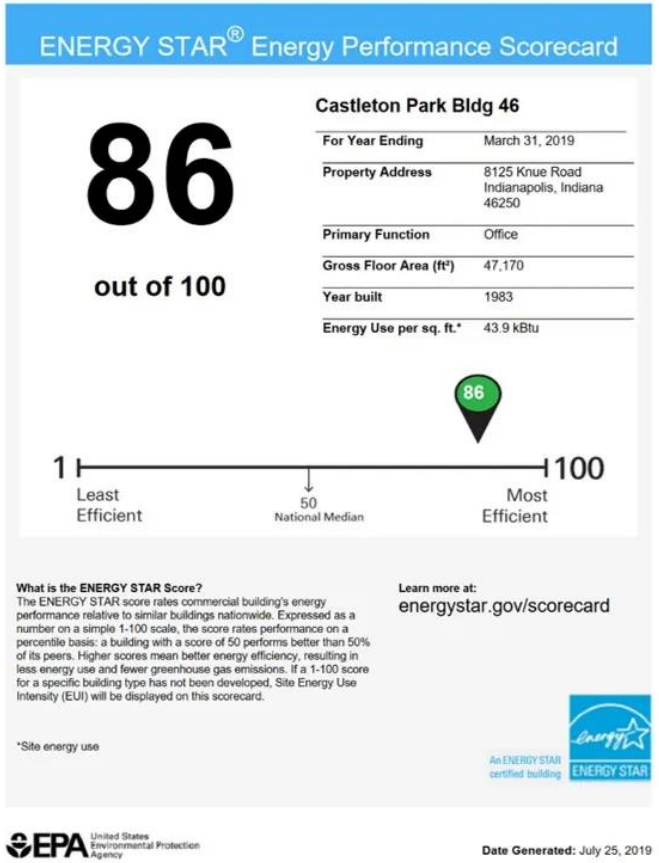
What feedback and questions are there for the draft framework of the NCGSA Water Conservation Certification Program?

BENCHMARKING PROGRAM DEVELOPMENT

Background

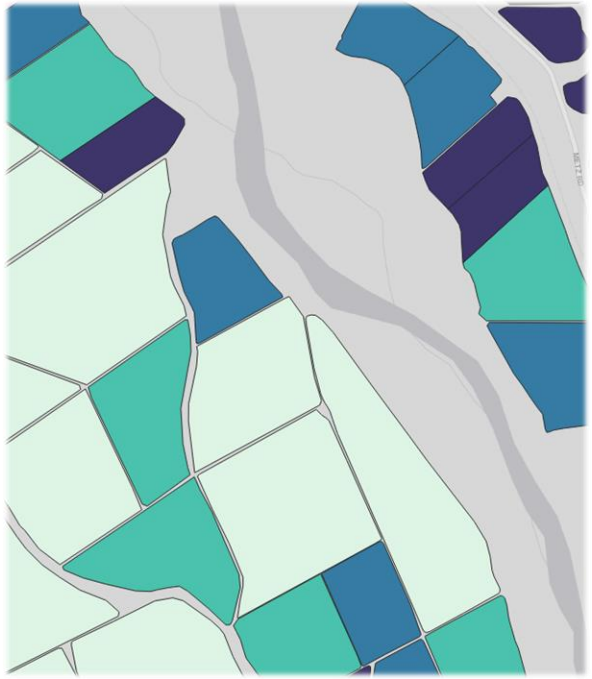
- Benchmarking allows growers to compare their performance over time to anonymous peer group
- Enables growers to identify areas of potential for water savings
- Encourages voluntary water conservation

Example: EPA Energy Star Program



Methodology

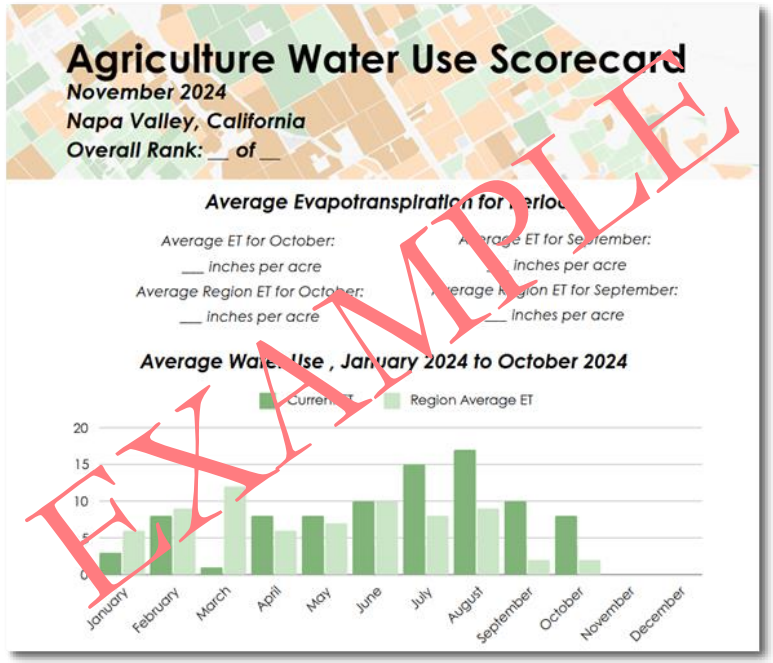
Parcel & APN Data



Peer to Peer Comparison

- Field characteristics
- Grape characteristics
- Location

Monthly Report Card



What other factors should be considered in the release of the benchmarking program?

NEXT STEPS

Next Steps

Continue to implement the GPR Workplan

- Outreach
- Certification
- Incentives
- Benchmarking
- Pilot Sites

NCGSA Water Conservation Certification Program: Structure and Minimum Requirements

Prepared for

Napa County Groundwater Sustainability Agency

November 2024

Prepared by

ERA Economics LLC
Luhdorff & Scalmanini Consulting Engineers

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1. Purpose and Background

The Napa County Groundwater Sustainability Agency (NCGSA) has developed and is implementing the Water Conservation (WC)[1] and Groundwater Pumping Reduction (GPR)[2] Workplans. The GPR Workplan includes an implementation plan and anticipated timeline for a broad program to achieve measurable reductions in groundwater pumping in the NCGSA. The WC Workplan identified a suite of water conservation practices and the GPR Workplan developed an implementation plan to achieve measurable water savings in the Napa Valley Subbasin. GPR implementation anticipates a voluntary program that incentivizes growers and other water users/industries in the Subbasin to adopt and expand water conservation practices. Water conservation actions include those that reduce total groundwater pumping and those that may additionally reduce net depletion of groundwater (total groundwater pumping less usable groundwater that returns to the aquifer).

One opportunity identified in the GPR implementation plan for encouraging voluntary adoption of water conservation practices is certification programs. Certification programs require participating operations to meet specified standards to become certified. In exchange, certified businesses can demonstrate good stewardship of resources, meet regulatory standards, satisfy buyer specifications, label their product in a certain way, and potentially have access to new markets. This can also create additional value (higher price or cost savings) for some producers.

This document defines the framework/elements for the **NCGSA Water Conservation Certification Program**, a voluntary certification program for water conservation practices to support sustainable groundwater conditions in the Napa Valley Subbasin. The program applies to vineyards and wineries[3]. Program elements include defining minimum standards for:

- Requirements for water conservation practices implemented by vineyards and wineries. This includes specific practices and the timeline for implementing practices.
- Standards for third-party audits and verification to ensure that practices are implemented and maintained.
- Data and reporting requirements for measuring program outcomes.
- Preliminary estimates of program costs and incentives for encouraging program adoption.

This document defines the minimum standards for the NCGSA Water Conservation Certification Program. The standards are specific in key components, but they are also purposefully flexible to encourage participation and adoption of the program. The NCGSA anticipates working with one or more existing certification programs to implement this program. The following sections of this document provide an overview of existing certification programs, define minimum water conservation practices for

[1] https://www.countyofnapa.org/DocumentCenter/View/30301/Napa-County-Water-Conservation-Workplan-PDF?bidId=
[2] https://www.countyofnapa.org/DocumentCenter/View/30303/Groundwater-Pumping-Reduction-Workplan-PDF?bidId=
[3] Water conservation is being evaluated for all industries in Napa County, including municipal and industrial (M&I) water users. M&I water use, conservation opportunities, and existing programs are different than opportunities for vineyards and wineries. Programs and water conservation opportunities for M&I water uses are described in the Water Conservation and Groundwater Pumping Reduction Workplans. M&I water conservation is being evaluated under other GPR Workplan implementation components.

the NCGSA Water Conservation Certification Program, requirements for data and reporting, and opportunities for incentives to encourage program participation.

2. Current Winery and Vineyard Certification Programs

There are multiple sustainability certification programs currently used in Napa County. These programs have different water conservation practices, standards, verification methods, data reporting, and program costs. Due to the complexity of the program requirements and different program objectives, it is difficult to directly compare the programs. In general, Napa vineyards and wineries utilize these programs to meet various goals related to regulatory compliance, stewardship, sustainability, and marketing.

2.1 Certification Goals

In Napa Valley, wineries and vineyards have various motivations to pursue certification, from demonstrating responsible business practices to fulfilling market expectations. Interviews with industry representatives, certification bodies, and businesses reveal key goals and incentives for certification:

- **Business practices and resource stewardship**. Many Napa wineries and vineyards view certification as a mark of commitment to high standards and environmental stewardship. This allows businesses to showcase their dedication to industry-leading practices and resource conservation, enhancing their reputation among peers and consumers.
- **Consumer preferences and marketing**. Growing consumer interest in responsibly produced wines may provide some certified businesses with a marketing edge. Certification sets these businesses and their products apart from their competitors by validating their sustainability claims through third-party verification of a set of standards. Some certified producers may achieve a modest price premium, although in Napa Valley, isolating the premium from factors like grape quality, brand reputation, and broader industry practices is challenging.
- **Regulatory compliance**. Some programs can also assist vineyards and wineries with meeting regulatory requirements for farming and other businesses practices in industry.
- **Buyer specifications**. Components of some certification programs are recognized by international buyers. This reduces barriers for businesses exporting wine to meet requirements, regulations, and evolving trade expectations related to sustainability.

Certification for everything except regulatory compliance is voluntary. Expanding participation in certification programs—especially for water conservation practices—will require developing incentives that align with business objectives and industry goals.

2.2 Existing Programs

There are four prominent vineyard and winery certification programs used by California wineries and vineyards, and/or by producers in Napa County. While there are other programs in the region, such as

Napa County Resource Conservation District (RCD) LandSmart, these four include water conservation practices closely aligned with the goals of the GPR Workplan.

- **Napa Green (NG)**. Napa Green is a sustainable winegrowing certification program focusing specifically on water efficiency, supply chain efficiency, energy efficiency, regenerative farming, soil health, and social equity. The local program has 90 Napa Green Certified wineries and 70 growers certified or in the process of becoming certified, representing over 7,200 vineyard acres in Napa County.
- **California Sustainable Winegrowing Alliance (CSWA)**. Certified California Sustainable Winegrowing is a certification program dedicated to producing quality winegrapes and wine while protecting the environment, people, and businesses. The program operates statewide and has approximately 44 wineries and 260 vineyards on 15,500 acres certified in Napa County.
- **Sustainability In Practice Certified (SIP)**. SIP is a certification program for winegrowers and winemakers centered around economic viability (prosperity), environmental stewardship (planet), and social equity (people) outcomes and practices. This program focuses on vineyards and wineries on the Central Coast of California but with some small additional certifications in other parts of California, Oregon, and Michigan.
- **Fish Friendly Farming (FFF)**. Fish Friendly Farming is a vineyard and agricultural regulatory compliance program that serves over 39,600 acres of vineyards in 10 California counties, supporting regulatory compliance with water quality regulations and other environmental improvements, including water conservation and efficiency. It is the only program listed here that is specifically for regulatory compliance.

Every sustainability program certifies other practices in addition to water conservation. This includes practices such as pest management, fertilizer, soil health, social equity, ecosystem, fire, air quality, energy, and climate. In short, certification programs offer their members a wide scope of certified practices in addition to water conservation. These additional practices are developed, in part, to meet consumer expectations and buyer specifications, and for the broader program objectives for the certification program.

Figures 1 and 2 summarize four existing certification programs. Since the programs differ in the practices certified, the programs are not directly comparable in all aspects, but the figures provide a concise summary of practices certified, presence in Napa and other regions, and program costs. Fish Friendly Farming has the most certified area of vineyards because it provides regulatory compliance for the Regional Water Quality Control Board Irrigated Lands Regulatory Program. Napa Green and CSWA have around 7,200 and 15,500 acres certified in Napa County, respectively. SIP Certified has a smaller presence in Napa County but has certified over 46,000 acres in California, Oregon, and Michigan. Similarly, CWSA and Fish Friendly Farming have a broader certification program in California, with over 200,000 certified acres each.

Figure 1: Vineyard Certification Matrix

	California Sustainable Winegrowing Alliance	Fish Friendly Farming	Napa Green	SIP Certified
Vineyard Certification?	Yes	Yes	Yes	Yes
Costs				
Certification Cost (Up Front)	0	95% of vineyards in Napa have already paid	$800-$1,200	$500/$1,000
Certification Cost (Annual)	$250-$2,500	0	$450-$3,100	$5-$20/acre
Additional Costs	$250 for vineyard management companies	$2.00 per vineyard acre for direct access to the FFF data base for managers to see their required actions and timelines	0	0
Third-Party Audit	$650-$2,000+, depending on size	$500 every 5 years	$500-$2,000+ every 3 years, depending on size	$100 - $2,000+ annually, depending on size and Cycle type
Water Conservation Practices				
Distribution Uniformity Testing	Yes	Yes	Yes	Yes
Metering	Yes (category 3)	Yes	Yes	Yes
Soil Moisture Monitoring	Yes	Yes	Yes	Yes
Plant Moisture Monitoring	Yes	Yes	Yes	Yes
Erosion Control	Yes	Yes	Yes	Yes
Water Source Documenting	No (auditors check data collection methods, and site specific efforts are made to minimize negative impacts on watershed issues)	Yes	Yes	Yes (wells are mentioned several times; when a well isn't used, source water is identified so backflow prevention can be implemented)
Low-Volume Irrigation (e.g., drip)	Yes	Yes	Yes (baseline)	Yes
Water Conservation for Replanting	No	Yes	Yes	No
Cover Cropping	Yes	Yes	Yes	Yes
Verification Process				
Third Party Verification?	Yes	Yes	Yes	Yes
Report Metered Water Use?	Yes	Surface water diversions are reported to the State Water Board	Yes	Yes
Verification Frequency	Annual	5 years	Annual	Annual
Other Notes	Must rank category 2 for 85% of 148 practices; 60 required practices; main costs from annual audit	Certified by National Marine Fisheries Service and County Agricultural Commissioner; annual online audits	Interim annual desk audits; third-party audit every 3 years	Third-party desk audit annually; Third-party onsite visit every 3 years
Napa County Presence				
Acres Certified	15,500	40,000 (100k including roads, creeks, etc.)	6,000 (14,000 acres including properties)	
Vineyards Certified	260	1,100	62	
California Presence				
Acres Certified	204,000	224,000	6,000	46,000+ (CA, OR, MI)
Vineyards Certified	2,247	2,000	62	400+
Other Program Certifications				
Pest Management	Yes	Yes	Yes	Yes
Applied Nitrogen	Yes	Yes	Yes	Yes
Social Equity	Yes	Yes	Yes	Yes
Forest/Fire Management	No (not required, but provide resources for fire preparedness and practices to help with fire prevention)	No (in process of developing separate Fire Risk Reducion certificaiton in cooperation with CAL FIRE)	Yes	No
Ecosystem Management	Yes	Yes	Yes	Yes
Air Quality and Climate Protection	Yes	No (separate Climate Adaptation certification)	Yes	Yes
Other Program Considerations				
Educational Tools/Events	Yes	Yes	Yes	Yes
Process for Program Updates	Annually reviewed	Scientific review	Bi-annual update; Updates more frequently as needed	Annual Review; 5-year Peer Review

Figure 2: Winery Certification Matrix

	California Sustainable Winegrowing Alliance	Fish Friendly Farming	Napa Green	SIP Certified
Winery Certification?	Yes	No	Yes	Yes
Costs				
Certification Cost (Up Front)	0	NA	0	$500/$1,000
Certification Cost (Annual)	$300-$5,000	NA	$550-$3,850	$0.002-$0.03/gallon; 25% discount if combined with Vineyard certification
Additional Costs	$100 discount for certifying both winery and vineyard	NA	Integrated resource audit year 1, 6, 12,... $1,350-$2,250; abbreviated resource audit year 3, 9, 15,... $750-$1,500	0
Third-Party Audit	$650-$2,000+ per year, depending on size		$500-$2,000+ every 3 years, depending on size	$100 - $2,000+ annually, depending on size and Cycle type
Water Conservation Practices				
Waste Water Management	Yes	NA	Yes	Yes
Metering	Yes (category 3)	NA	Yes	Yes
Sanitation	Yes	NA	Yes	Yes
Landscaping	Yes	NA	Yes	Yes
Process Water Reuse	Yes	NA	Yes	Yes
Water Timing (off-peak hours)	Yes	NA	Yes	Yes
Verification Process				
Third Party Verification?	Yes	NA	Yes	Yes
Report Metered Water Use?	Yes	NA	Yes	Yes
Verification Frequency	Annual	NA	Annual	Annual
Other Notes	Annual self-assessment; 4 categories; must rank category 2 for 85% of 108 requirements; 41 required practices; main costs from annual audit	NA	Annual desk audit; third-party audit every 3 years; Winery Irrigation Resource Assessment is an "Upfront Cost" because it is required to be certified.	Third-party desk audit annually; Third-party onsite visit every 3 years
Napa County Presence				
Wineries Certified	44	NA	90	
California Presence				
Wineries Certified	171	NA	90	5 (CA & MI)
Other Program Certifications				
Energy or Greenhouse Gas Reporting	Yes	NA	Yes	Yes
Social Equity	Yes	NA	Yes	Yes
Labor/Employee Practices	Yes	NA	Yes	Yes
Sustainable Purchasing	Yes	NA	Yes	Yes
Air Quality and Climate Protection	Yes	NA	Yes	Yes
Other Program Considerations				
Educational Tools/Events	Yes	NA	Yes	Yes
Process for Program Updates	Annually reviewed; regulatory compliance	NA	Annually reviewed	Annual Review; 5-year Peer Review

3. NCGSA Water Conservation Certification Program

This section defines the NCGSA Water Conservation Certification Program, including the program structure, minimum requirements for water conservation, verification, reporting, and implementation.

Potential participants in the program include both:

- **Partner certification programs**. These are one or more existing certification programs that would be approved/recognized by the NCGSA as meeting the minimum requirements of the NCGSA Water Conservation Certification Program.
- **Certified vineyard and winery participants**. Eligible participants include wineries and vineyards located within the Napa Valley Subbasin. Participants become certified through one or more of the partner certification programs.

Certification program participation will be voluntary. It is not intended to be an additional regulatory burden and cost for participants but an opportunity to be recognized for conserving water in a region with significant concerns for the future of water and agriculture sustainability. The NCGSA Water Conservation Certification Program furthers outreach and education about water stewardship in the Napa Valley Subbasin and provides a process for measuring and validating water conservation practices in the Napa Valley Subbasin.

3.1 Program Structure

The NCGSA Water Conservation Certification Program structure defines how the program will be implemented by the NCGSA. The following options were considered:

1. A stand-alone program managed by NCGSA staff. There would be no partner programs (the NCGSA would be the program), but this would impose a substantial administrative burden on the NCGSA and would duplicate some of the efforts of other certification programs that already operate in the county.
2. NCGSA partners with one or more local organizations to develop the program (the NCGSA jointly runs the program). For example, the Napa County RCD manages the LandSmart program that assists growers with resource management. This or similar programs could be expanded to become the NCGSA Water Conservation Certification Program.
3. An existing certification program endorsed by NCGSA that meets minimum requirements for water conservation practices and verification. This would reduce the administrative burden on the NCGSA and would leverage an existing certification program that meets minimum requirements defined by NCGSA. It may also require an existing certification program to modify standards to meet NCGSA requirements.
4. Multiple existing certification program endorsed by NCGSA that meet minimum requirements for water conservation practices. This would reduce the administrative burden on the NCGSA and would leverage multiple existing certification programs that meet minimum requirements defined by NCGSA. It could also require existing certification programs to modify standards to meet NCGSA requirements.

After discussion and feedback, the recommended program structure is partnering with multiple existing certification programs that meet the minimum requirements for water certification practices (#4). This gives businesses the most options for certification compliance while reducing the administrative burden for the NCGSA.

Partner certification programs that meet the minimum standards for implementing the NCGSA Water Conservation Certification Program will be identified through a process defined by the NCGSA.

3.2 Minimum Water Conservation Practices

This section defines the minimum water conservation practices required for the NCGSA Water Conservation Certification Program. For a certification program, these minimum required practices are described across vineyards and wineries, with some practices possible in both business types. Wineries with a vineyard enrolled in the program would be expected to verify both vineyard and winery practices to be certified.

Minimum water conservation practices define the timeline and general requirements for the NCGSA Water Conservation Certification Program. Specific practices are included. Some requirements are purposefully flexible to allow existing certification programs to align requirements with their existing programs. For example, Napa vineyards use different plant and soil moisture monitoring technologies. The minimum requirements do not define which practices must be implemented. Rather, the minimum requirements list the range of alternatives and require that one or more practices are implemented and documented. Any specific guidelines are left to the partner certification program.

To receive certification, participants must meet all minimum standards within three years of initial certification, fulfill third-party audit requirements, and provide required documentation annually to maintain compliance.

3.2.1 Vineyard Minimum Water Conservation Practices

The NCGSA Water Conservation Certification Program defines minimum water conservation practices for vineyards. The practices are based on industry outreach, certification program outreach, the analyses described in the Water Conservation and Groundwater Pumping Reduction Workplans, and subsequent analyses to implement the Workplans.

Table 1 summarizes the minimum program water conservation practices for certifying vineyards.

Table 1: Vineyard Minimum Water Conservation Practices

Practice	NCGSA Program Minimum Requirement
Water Measurement/Metering	All wells or other water sources providing irrigation must be metered within three years of initial certification. Meter installation, maintenance, and recalibration must be completed according to manufacturer's recommendations. If transitioning to metering, water use must be measured with remote sensing of evapotranspiration (ET), irrigation timing and specifications, or well electricity records and specifications in the interim. Water use must be documented and reviewed during the irrigation season, and a cumulative measurement of water use must be recorded each year. Evidence of installation and operation can be provided through photos and appropriate documentation.
Irrigation System Maintenance and Efficiency	All irrigation systems must be monitored and inspected for leaks, flow issues, and filter cleaning frequently. Inspections and remediation actions must be documented and recorded, including an inspection plan and schedule. Vineyards are responsible for taking action to fix issues and adjusting systems for efficiency.
Distribution Uniformity	All irrigation systems must be tested for distribution uniformity at least once every five years. Upon completion of testing, vineyards must address issues with emitter outflows and pressure differences within the recommended timeframe, no more than three years since the receipt of testing results and recommendations. Testing and remediation actions must be documented and recorded.
Recycled Water	Vineyards that are able to receive recycled water deliveries must prioritize and utilize those supplies for irrigation. Deliveries must be documented and recorded.
Management Practices:	Vineyards must create a vineyard management plan describing the management practices the operation utilizes, including the standard methods, timing, and record keeping requirements of each practice. Because not all practices fit each vineyard's specific microclimate, resources, and grape quality goals, vineyards would be required to select and implement at least one practice from each of the categories (plant and soil moisture monitoring, soil management, and canopy management), explaining why other possible practices do not fit with their operations. Implemented practices must be documented and recorded.
Plant and Soil Moisture Monitoring	
Soil Management	
Canopy Management	
Planting Design Practices:	When installing new plantings, vineyards must design blocks for optimal water conservation without sacrificing grape quality using row orientation, rootstock selection, and irrigation system design factors. Descriptions of the practices, explanations for decisions, and final installation must be documented.
Row Orientation	
Rootstock Selection	
Irrigation Systems	

The following describes each practice[4] and minimum requirements listed in Table 1.

Water Measurement/Metering. Providing water use information to water users who do not currently measure or meter allows them to understand water use volume and patterns and take actions to reduce water use. Data show that this results in measurable conservation. To capture this information, meters must be installed and maintained to track water use overtime. Prior to meter installation, water use can be estimated with other measurement methods, including remote sensing of ET, irrigation timing and specifications, or well electricity records and specifications.

- **Requirement**: All wells or other water sources providing irrigation must be metered within three years of initial certification. Meter installation, maintenance, and recalibration must be completed according to manufacturer's recommendations. If transitioning to metering, water use must be measured with remote sensing of ET, irrigation timing and specifications, or well electricity records and specifications in the interim. Water use must be documented and reviewed during the irrigation season, and a cumulative measurement of water use must be recorded each year. Evidence of installation and operation can be provided through photos and appropriate documentation.

Irrigation System Efficiency. When managed successfully, irrigation systems can effectively provide water to vines to reach an operation's fruit goals. System improvements can increase the efficiency of water delivery, reducing water loss. These improvements include a range of actions, from fixing leaks to improving system management and monitoring.

- **Requirement**: All irrigation systems must be monitored and inspected for leaks, flow issues, and filter cleaning frequently. Inspections and remediation actions must be documented and recorded, including an inspection plan and schedule. Vineyards are responsible for taking action to fix issues and adjusting systems for efficiency.

Distribution Uniformity. An evenly pressurized irrigation system can ensure each vine in a vineyard receives water equally, improving fruit quality as well as helping identify system issues to reduce water use. Testing irrigation systems helps identify issues and prevent over or under-irrigation. Distribution Uniformity (DU) tests evaluate how evenly water is distributed to the block or field throughout the irrigation system. In Napa Valley, several local businesses and organizations provide DU testing at little to no cost to the producer.

- **Requirement**: All irrigation systems must be tested for DU at least once every five years. Upon completion of testing, vineyards must address issues with emitter outflows and pressure differences within the recommended timeframe, no more than three years after the receipt of testing results and recommendations. Testing and remediation actions must be documented and recorded.

Recycled Water. Recycled water is treated wastewater that is then delivered for other uses, such as irrigation. Some vineyards can recycle (reuse) winery wastewater under specific conditions, and the

[4] Additional technical details and cost estimates for each practice are available in the Water Conservation Workplan and the Groundwater Pumping Reduction Workplan.

Napa Sanitation District (NapaSan) treats, manages, and provides recycled water for delivery to specific areas in the county. Not all parcels are able to receive recycled water.

- **Requirement**: Vineyards that are able to receive recycled water deliveries must prioritize and utilize those supplies for irrigation. Deliveries must be documented and recorded.

Management Practices. Several agronomic practices can help manage the ET in a vineyard, impacting water use each season. These practices fall under three categories:

- *Plant and Soil Moisture Monitoring*. Multiple technologies are available to vineyards to monitor plant and soil moisture. These data inform irrigation scheduling and help protect productivity and fruit quality. These can be soil-based monitoring for soil moisture depletion and/or plant-based monitoring for vineyard moisture uptake and use. The technologies recommended as part of the GPR Workplan include time temperature domain reflectometry, neutron probe, and tensiometers.
- *Soil Management*. Managing soil health can provide water benefits by improving infiltration and soil retention. These practices include implementing cover crops, mulching, and reduced tillage.
- *Canopy Management.* Vineyard canopies are carefully managed for productivity and fruit quality. Specific actions can be taken to reduce crop consumptive water use and save water, such as microclimate monitoring, fruit to pruning weight ratio, shoot density, and leaf pulling.

Individual operations have different goals and management approaches. A vineyard management plan or similar document describes the practices a vineyard utilizes in pursuit of its goals, including the standard methods, timing, and record keeping requirements of each practice.

- **Requirement**: Vineyards must create a vineyard management plan describing the management practices the operation utilizes, including the standard methods, timing, and record keeping requirements of each practice. Because not all practices fit each vineyard's specific microclimate, resources, and grape quality goals, vineyards would be required to select and implement at least one practice from each category (plant and soil moisture monitoring, soil management, and canopy management), explaining why other possible practices do not fit with their operations. Implemented practices must be documented and recorded.

Planting Design Practices. The permanent structure of a vineyard can impact its long-term water consumption patterns. When planting or replanting a vineyard, producers have control over these design factors and can optimize them to reduce water use over the vineyard's lifetime. These factors can include:

- *Row Orientation*. The orientation of vineyard rows affects sun and wind exposure, which affects crop consumptive water use. Adjusting row orientation to optimize these elements can reduce water use over the vineyard's lifetime.
- *Rootstock Selection*. Vineyard rootstocks are selected for pest and disease resistance, and some varieties provide drought tolerance. These traits enable healthy vines to uptake water more effectively under stress and can help manage water during times of shortage.

- *Irrigation Systems*. During replanting, vineyards can install updated low-flow irrigation systems to improve efficiency and reduce applied water, typically through drip irrigation. Producers may also forgo systems in favor of dry land farming if it meets their production requirements.

These factors can be considered and developed through a design plan or similar document, which shows the vineyard's design and describes how these factors are addressed for optimal water conservation considering the operation's goals.

- **Requirement**: When installing new plantings, vineyards must design blocks for optimal water conservation without sacrificing grape quality using row orientation, rootstock selection, and irrigation system design factors. Descriptions of the practices, explanations for decisions, and final installation must be documented.

3.2.2 Winery Water Conservation Practices

The NCGSA Water Conservation Certification Program defines minimum water conservation practices for wineries. The practices are based on industry outreach, certification program outreach, and the analyses described in the Water Conservation and Groundwater Pumping Reduction Workplans. A summary of the minimum program water conservation practices for certifying wineries is presented in Table 2.

Table 2: Winery Minimum Water Conservation Practices

Practice	NCGSA Program Minimum Requirement
Water Measurement/Metering	All wells or other water sources providing water for irrigation and operations must be metered within three years of initial certification. Meter installation, maintenance, and recalibration must be completed according to manufacturer's recommendations. If transitioning to metering, water use must be measured with remote sensing of ET, irrigation timing and specifications, or well electricity records and specifications in the interim. Water use must be documented and reviewed frequently, documenting cumulative use for the year. Evidence of installation and operation can be provided through photos and appropriate documentation.
Winery Sanitation Processes	Wineries must implement water-saving technologies and other enhanced water-saving techniques in winery processes.
Processing Water Treatment and Reuse	Wineries able to implement additional treatment processes to recycle treated wastewater must prioritize utilizing treated wastewater for either for landscaping or agricultural irrigation purposes. Descriptions of the practices and explanations for decisions must be documented.

Water Measurement/Metering. Providing water use information to water users who do not currently measure or meter allows them to understand water use volume and patterns and take actions to reduce water use. To capture this information, meters can be installed and maintained to track water use

overtime. Alternatively, water use can be estimated with other measurement methods, including remote sensing of ET, irrigation timing and specifications, or well electricity records and specifications.

- **Requirement**: All wells or other water sources providing water for irrigation and operations must be metered within three years of initial certification. Meter installation, maintenance, and recalibration must be completed according to manufacturer's recommendations. If transitioning to metering, water use must be measured with remote sensing of ET, irrigation timing and specifications, or well electricity records and specifications in the interim. Water use must be documented and reviewed frequently, documenting cumulative use for the year. Evidence of installation and operation can be provided through photos and appropriate documentation.

Winery Sanitation Processes. Wineries must clean tanks and complete other activities, typically using significant amounts of water. New technologies are available to reduce or eliminate water use in these processes, such as waterless tank and barrel steamers. In addition, other management practices can help reduce water use during sanitation processes, such as timers and automatic shut off valves.

- **Requirement**: Wineries must implement water-saving sanitation technologies and other enhanced water-saving techniques in winery processes. Descriptions of the practices, explanations for decisions, and photos of processes must be documented.

Processing Water Treatment and Reuse. Similar to recycled water use in vineyards, reusing water in wineries optimizes utilization and can help reduce water demand. Winery process water must currently be treated and managed before discharging to land to comply with state regulations. Some treatment processes can make the water usable for landscaping or vineyard irrigation purposes.

- **Requirement**: Wineries able to receive recycled water from NapaSan must utilize that water for irrigation or other uses at the winery. In addition, the winery must prioritize opportunities for utilizing on-site treated wastewater for either landscaping or agricultural irrigation purposes. Descriptions of the practices and explanations for decisions must be documented.

3.3 Minimum Verification and Audit Requirements

The partner certification program(s) will certify vineyard and winery certification program participants. To become certified (and qualify for any incentives), water conservation practices must be verified. The partner certification program(s) will ensure that certified vineyards and wineries meet requirements, develop documentation each year, and complete third-party audits.

Verification of water conservation practices must be completed by a third-party auditor.

An on-site third-party audit is required in the first year for a business seeking to become certified to demonstrate compliance with certification requirements. The partner certification program(s) will identify appropriate third-party auditors for water conservation practices. Participants will be required to provide auditors with access to properties, company records, and other requested documentation necessary to demonstrate compliance. If participants complete the audit and the third-party auditor determines that they meet the requirements, they receive certification for the year.

After the initial audit, certified participants are required to complete additional third-party audits at least every three years to maintain certification. The partner certification program(s) will identify appropriate third-party auditors for water conservation practices for ongoing audits.

To maintain certification (whether in an audit or non-audit year), participants are required to maintain and submit data to the certification program(s) that demonstrate compliance with each practice. This includes submitting data and records to the certification program. If participants meet the requirements, they receive certification for the year.

Tables 3 and 4 define minimum verification requirements for practices in audit and non-audit years. Most practices will need to be verified with records, but photos and other documentation may be required to validate implementation. While a third-party auditor will be able to verify practices and installations in person, participants will need to submit documentation to the certifying program(s) in non-audit years to maintain certification.

Table 3: Vineyard Water Conservation Practice Minimum Verification Methods

Practice	Verification – Third Party Audit Years	Verification – Non-Audit Years
Water Measurement/ Metering	• Auditor visually inspects water meter(s) and verifies operation. • Auditor reviews meter maintenance records. • Auditor reviews water use records, showing total calculated or measured water use for certified acres/business.	• Participant provides photos of meter and/or installation. • Participant provides meter maintenance records. • Participant provides water use records, showing total calculated or measured water use for certified acres/business.
Irrigation System Management and Efficiency	• Auditor reviews irrigation system inspection records, showing inspection schedule, issues, and actions taken to address issues. • Participant provides records for irrigation system maintenance and supporting documentation.	• Participant provides irrigation system inspection records, showing inspection schedule, issues, and actions taken to address issues.
Distribution Uniformity	• Auditor verifies irrigation systems have been tested for DU at least once every five years and recommended remediation actions have been taken to address issues within the recommended timeframe, no more than three years since the receipt of testing results and recommendations. *If DU test completed:* • Participant provides DU test results with recommended remediation actions • Participant provides remediation action records	*If DU test completed:* • Participant provides DU test results with recommended remediation actions • Participant provides remediation action records *If no DU test completed:* • Participant provides year of DU test • Participant provides remediation action records

	If no DU test completed: • Participant provides year of DU test • Participant provides remediation action records	
Recycled Water	• Auditor reviews whether the operation has access to recycled water and any implementation records	• Participant indicates whether the property has access to recycled water, and any implementation records
Management Practices: *Plant and Soil Moisture Monitoring* *Soil Management* *Canopy Management*	• Auditor reviews vineyard management plan and records of implemented practices for plant and soil moisture monitoring, soil management, and canopy management.	• Participant provides vineyard management records for year, detailing practices implemented for plant and soil moisture monitoring, soil management, and canopy management to improve water use.
Planting Design Practices: *Row Orientation* *Rootstock Selection* *Irrigation Systems*	*If planting or replanting vineyard in certification year:* • Auditor reviews current design plan with description of practices, including explanation of how design will optimize water conservation. • Auditor visually inspects the final installation if completed. *If not planting or planning vineyard in certification year:* • No action.	*If planting or replanting vineyard in certification year:* • Participant provides current design plan with description of practices, including explanation of how design will optimize water conservation. • Participant provides photos of the final installation. *If not planting or planning vineyard in certification year:* • No action.

Table 4: Winery Water Conservation Practice Minimum Verification Methods

Practice	Verification – Third Party Audit Years	Verification – Non-Audit Years
Water Measurement/ Metering	• Auditor visually inspects water meter(s) and verifies operation. • Auditor reviews meter maintenance records. • Auditor reviews water use records, showing total calculated or measured water use for winery.	• Participant provides photos of meter and/or installation. • Participant provides meter maintenance records. • Participant provides water use records, showing total calculated or measured water use for winery.
Winery Sanitation Processes	• Auditor reviews winery process water records, detailing implemented water-saving technologies and techniques. • Auditor visually inspects technologies.	• Participant provides winery process records, detailing implemented water-saving technologies and techniques. • Participant provides photos of technologies.

Processing Water Treatment and Reuse	• Auditor reviews records of recycled water treatments and application.	• Participant provides records of recycled water treatments and application.

4. Program Water Conservation Measurement

The NCGSA Water Conservation Certification Program is intended to achieve measurable reductions in groundwater pumping across the Napa Valley Subbasin. The partner certification program(s) will be required to collect and summarize data, some of which are submitted to the NCGSA for program tracking purposes.

4.1 Data Reporting

The NCGSA Water Conservation Certification Program requires data and reporting. Data collection comes from two levels—the participant (certified vineyard or winery) and the partner certification program.

Participant data reporting. Participants are required to submit data to the certification program and third-party auditor. This includes current season water use in addition to historical water use.

During the first year in the program, participants complete an onboarding process, which includes sharing five years of historical water use data. If the participant has water meter(s) installed, these data should come from meter records. However, it is unlikely that every participant will already have meters installed, maintained correctly, and accurate records. Participants may instead provide alternative historical water use data for baseline[5] years (and the three-year transition period into metering). Data used for the calculations shall be submitted on paper, electronically, or provided during an in-person interview. Water data can include:

- Remote sensing of ET and an estimate of irrigation efficiency.
- Irrigation timing and specifications and application of a formula to calculate total irrigation water application.
- Well electricity records and specifications and application of a formula to calculate total irrigation water application.

Some participants may not have these data available. The program or a third-party auditor will review available data to determine water use of certified areas.

Participants will report data directly to their selected partner certification program each year to meet certification standards. At a minimum, the reported data include vineyard acres enrolled, wineries enrolled, practices completed with year of implementation, and water use measurement data for both baseline and current periods. To ensure data confidentiality, the program's data management would be

[5] See Section 4.2: Measuring Water Conservation for definition.

required to meet the highest standards for confidentiality. Individual participant's data would not leave the program unless aggregated and anonymized for reporting purposes or within the confines of a confidentiality agreement for analysis with a third party.

Partner certification program data reporting. The partner certification program will be responsible for managing, analyzing, and submitting reports to the NCGSA. The certification program maintains confidentiality of participant water use data.

The certification program will summarize, aggregate, and report water use metrics annually to the NCGSA. The partner certification program may either report calculated water savings to NCGSA or engage a third-party for calculating water savings from all participants in the Subbasin. The certification program will submit data in a standardized format. Data include:

- Number of wineries and vineyards enrolled
- Acres enrolled
- Water conservation practices implemented
- Baseline water use, which identifies groundwater and/or surface water uses separately
- Current period groundwater use, and any reported surface water use
- Calculated groundwater savings.

NCGSA will use this information to estimate water savings and analyze the impact of the program over time. Program participant data are held by the certification program and only reported to the NCGSA in aggregate. The minimum level of reported data aggregation is the American Viticulture Area (AVA).

4.2 Measuring Water Conservation

Implementing water conservation practices is intended to reduce gross, and ideally, net water use. To measure or estimate the impact of these practices, the certification program(s) (or a third party) will calculate and estimate water conservation using the method outlined below.

1. Calculate baseline water use. Water use can include one or both gross (applied) and net (consumptive) water use.
    a. The baseline is defined as average annual water use over a five-year historical period prior to certification or with a more limited number of water conservation practices implemented in the operation.
    b. The baseline is also calculated separately for different water year (precipitation and weather) conditions that affect gross and net water use. Each year is classified by Water Year type (WY) as: very dry, dry, average, wet, or very wet using the Napa Watershed Water Year Classification Methodology.[6] This is based on the average rainfall recorded at a station on the valley floor each year.
    c. The resulting baseline will define average annual water use (gross and/or net) as the:
        i. Five-year (simple) average annual water use

[6] https://www.napawatersheds.org/managed_files/Document/6838/WaterYear_Methodology.pdf

ii. Five-year average annual water use by WY type

This definition of baseline water use accounts for both investments in water conservation practices and variability in precipitation that affects gross and net water use. Historical data from participants are likely to be limited for many operations. The certification programs will work with participants to develop this information over time. If data are not available, regional average data can be used to approximate an initial baseline, which would be refined as additional data are available over time.

Water use will be measured on a gross and/or net basis. The reporting period will be a water year (October 1 – September 30). Gross water use measures the total water applied, or how much water was pumped and applied to the land or used in the winery. If utilizing meter data, gross water use is already available. Net water use measures the total water consumed, or how much water was evaporated and transpired by a crop.

2. Compile water use (gross or net) information from each participant. The availability of data for measurement will determine if gross and/or net water use is utilized for each participant. There are four data measurement options to calculate water use from.
    a. Groundwater well meter data. This is a measure of gross (applied) water.
    b. Remote sensing of ET. This provides an estimate of consumptive water use. Gross water application can be calculated from remote sensing estimates if it is combined with irrigation efficiency and effective precipitation data, which are typically drawn from other public data and studies.
    c. Irrigation timing records can be used to estimate gross (applied) water when combined with irrigation system specifications.
    d. Well electricity usage records or timing records. These can create proxy data for water use, but would require well specifications (pump energy use, well and pump efficiency, depth to water, etc.) and other data to be an effective measurement method.

The NCGSA Water Conservation Certification Program requires meters after a period of three years. As vineyards and wineries transition into the Program there will be sufficient data to calculate gross (applied) water. The last step in the process is calculating the water savings attributable to the certification program. It is important to differentiate between groundwater savings and surface water savings, where possible/feasible to do so. The steps below describe methods for calculating water savings. It is understood that water savings here refers to both groundwater and surface water savings, reported separately.

3. Calculate water savings by subtracting current year water use from the baseline defined in Step 1. This calculation is made for each individual participant.
    a. If calculating from an average baseline, the current water use may be averaged over a given period and compared to the baseline with a similar composition of water years.
    b. If calculating for a single year, that year can be compared to the historical average annual water use by WY type.

The certification program (or its designated third-party) will apply the steps outlined above to calculate water savings. The certification program will aggregate water conservation for each of the individual participants to the level of an American Viticultural Area (AVA) and submit a report to the NCGSA each year. The report will include:

- Number of wineries and vineyards enrolled
- Total acres enrolled
- List of water conservation practices implemented
- Baseline groundwater and surface water use in acre feet
- Current period water use in acre feet
- Calculated water conservation in acre feet

The certification program maintains individual participant data. An aggregated report is submitted to the NCGSA, which is used to evaluate program performance and ensure that water conservation objectives are being met.

Impact evaluation is a set of evidence-based economic tools that assess the changes in outcomes attributed to a particular project, program, or policy. The NCGSA will track reporting over time and apply tools to measure program outcomes.

5. Program Costs, Incentives, and Funding

The NCGSA Water Conservation Certification Program is voluntary. It is anticipated that incentives will be offered to both encourage partner certification programs and encourage participants to join the Program. Program incentives will be targeted to Program participants and partner certification programs. A separate document[7] will describe incentives. This NCGSA Certification Program document provides an initial overview of Program incentives and opportunities.

5.1 Certification Program Costs

Partnering with existing certification programs is expected to cost significantly less overall than developing a stand-alone program. Programs may need to modify standards, require certain elective practices, or modify certain certification tiers to meet the requirements of the NCGSA Water Conservation Certification Program. Since most existing programs have these water conservation practices included in some form, program administration costs are not expected to change significantly. The resulting costs may be absorbed by the program administration, accounted for with minor changes in fees, or offset with other funding sources (e.g., incentives).

5.2 Program Participant Costs

Vineyards and wineries that choose to become certified will incur costs. This includes paying the certification costs, implementation costs, and other administrative costs.

[7] See Section 6.1: Outreach and Education Timeline for an overview of when materials will be available.

Under existing sustainability certification programs in Napa Valley, program costs for participating businesses vary by program. Most programs, apart from CSWA, have an initial cost for the application and certification process. Fees are typically per acre (vineyard) or per gallon of wine produced (winery). All programs have an annual cost for continued certification that varies by winery or vineyard size. These are generally between $500 and $3,000. A third-party audit is required after initial certification every three to five years, with reported audit costs between $500 and $2,000 depending on the size of the operation and complexity of the audit. Discounts are available for participants that audit more than one property or type of business or who join concurrent education programs. Annually, a 200-acre vineyard operation can expect to pay a total cost between $500 and $5,000 in audited years and between $0 and $2,700 in non-audit years, depending on the program and level of complexity. For wineries, a small 40,000 case winery can expect to incur a total cost between $1,000 and $5,000 in audited years and $1,000 and $2,500 in non-audit years, depending on the program and level of complexity.

Other costs for participants to remain in compliance might increase if now required to include new practices to meet a modified standard. For example, the NCGSA Water Conservation Certification Program requires participants to meter all water sources, requiring individuals to purchase, calibrate, and maintain water meters on properties. This is a significant expense for growers and wineries and may create resistance to the program changes, a factor to be addressed through outreach and incentives.

The Water Conservation Workplan[8] includes a summary of capital and operating expenses for different water management technologies and practices.

5.3 Incentive Opportunities

NCGSA may offer incentives to encourage voluntary participation in the water conservation certification program. These incentives will be designed to address barriers to entry, defray costs, or offer value for participation. Incentives can be offered to programs for meeting standards, participants for actively implementing practices, or a combination of both.

Incentive mechanisms may include cost shares, direct payments, grants, or other non-financial options.

Potential incentives for partner certification programs include but are not limited to:

- Cost share for administering new water conservation standards, offsetting the costs to integrating practices into standards, change resources, or request approval from governing bodies. The expected scale of this cost varies across programs and depends on the final standards of the program; however, based on current outreach, it is not expected to be significant.
- NCGSA could offer a direct payment to assist programs with expanding staff and resources to handle the influx of certifications expected from establishing this Program. This could take the form of a single lump sum or payment per certified business each year. Several programs have

[8] See Section 3: Voluntary Approaches to Reduce Groundwater Pumping
https://www.countyofnapa.org/DocumentCenter/View/30301/Napa-County-Water-Conservation-Workplan-PDF?bidId=

asserted that the fees they charge do not cover the costs to certify businesses, and this payment could make up for that difference.

- Other incentive options would be to offer partner programs promotion and marketing in the valley, which could scale in size with the campaign.

While engaging partner programs is essential, the overall goal is meant to encourage growers and vintners to actively sign up or continue certification while coming into compliance with standards for water conservation. However, they face significant barriers to meeting these expectations. Potential incentives for vineyards and wineries include but are not limited to:

- Direct payments for auditing costs. Auditing costs are a significant portion of certification for participants, with the greatest cost occurring at initial certification and every five years afterwards. This fee may be paid to a third-party auditor, the program, or a combination of both, depending on the program and year of certification. Offering a cost share on audits would incentivize participants to engage with the program. Determining a scale is difficult, as costs will vary with program, year, and operation, but current audit costs range from $500 to $2,000 per business.
- Direct payments for certification costs. Another incentive could offer a cost share of the annual certification fees over a defined period. These fees are typically paid by the grower or winery directly to the program at initial certification and each year after, creating regular, stable revenue for the program. Fees range from $500 to $3,000 each year, a similar scale to audit costs but with more consistency.
- Grant funding and cost-share for water conservation practices. For example, groundwater well meters are an expensive investment, and with the proposed practices, participants will be required to install them to remain in compliance. NCGSA could offer grants or direct payments for producers that install a meter as part of the Program, which could also be facilitated through existing grant programs.
- Wineries and vineyards that become certified save costs for NCGSA. An incentive program could include forgoing any GSP implementation fees or similar service fees.

Financial incentives could be reimbursed through payment to a program for invoiced costs or directly to producers who apply.

5.4 Funding Opportunities

To create incentives or cost shares attached to the Program, NCGSA may pursue grant funding opportunities. Funds may come from a variety of sources. These may include existing funding sources, regulatory or property fees established through Water Code §10730, grants from state and federal sources, or alternative mechanisms such as special taxes and benefit assessments. A separate GPR program incentives report is being prepared that will more fully address funding opportunities.

6. Program Implementation

The NCGSA Water Conservation Certification Program will be implemented concurrently with other components of the GPR Workplan implementation. This includes education and outreach, a benchmarking program, incentives, and water measurement technology.

Continued education and outreach are a core component of the GPR implementation, including this Water Conservation Certification Program. These activities create opportunities to receive feedback, improve the Program's design, partner with other organizations, and educate water users.

During initial Program development, most input and feedback is discussed during one-on-one meetings with existing certification programs. Implementation is expected to include outreach with:

- **Local certification programs.** Since these programs are likely to become partners and administrators for this certification, their experience and knowledge is key to ensuring the Program's success. Significant questions about practices, structure, data collection/sharing, incentives, and water savings calculations have been reviewed with several programs so far, with additional meetings upcoming.
- **Local agriculture, wine, and water industry representatives**. Additional one-on-one outreach will engage Napa Valley Grapegrowers, Napa Valley Vintners, Napa County Farm Bureau, and other local organizations for their perspective and input on the Program and develop connections to growers and vintners in the region who may be willing to provide input.
- **Wine industry member meetings to review Program design.** Meetings with growers in either one-on-one or facilitated group settings can be set up in late November 2024. Harvest will be complete, and gaining a better understanding of stakeholders' enthusiasm or hesitation to participate would be invaluable. Growers would have opportunities to review the Program in a complete form and give direct feedback to be incorporated before the NCGSA selects one or more partner programs. Outreach will continue through informational resource meetings with the public to answer questions, receive commentary, and update stakeholders on the process.
- **Program feedback.** Feedback will be received through public processes including during scheduled Technical Advisory Group (TAG) meetings and other stakeholder meetings for additional feedback at various stages of Program development and implementation.

6.1 Implementation Timeline

Table 5 presents the timeline for implementation and outreach activities for the NCGSA Water Conservation Certification Program.

Through December 2024, activities have centered around cultivating feedback from existing certification programs, local organizations, and growers during Program development. The Program framework will go before the TAG for feedback in November and December, and it may receive final approval from the group in February 2025. In the interim, the document will be revised to its final version while other GPR program components are developed (e.g., incentives, benchmarking, and continuing education and

outreach). Full NCGSA Water Conservation Certification Program rollout can begin once final NCGSA approval is received.

Similar to the development of this framework, input and feedback from stakeholders will continue to shape the Program's implementation. Program education and outreach developed in partnership with local organizations and individuals will offer interested certification programs opportunities to understand the framework and prepare growers and vintners for certification. These workshops and presentations at public forums will begin in February 2025 post-approval and continue through the next phases of implementation. The NCGSA will begin working with interested partner certification programs in the Spring of 2025. Education and outreach would continue during this period while certification programs adjust standards to meet Program requirements. Once partner certification programs are prepared, the Water Conservation Certification Program would be released to the public for participation, potentially as early as Quarter 2 of 2025.

Table 5: Implementation Timeline

Timeline	Actions
August 2024	Certification program development Meet with certification programs for feedback Meet with grower/vintner groups for feedback and contact discovery
September 2024	Present annotated outline of program to Technical Advisory Group (TAG) Refine program based on feedback Meet with certification programs for feedback Meet with grower/vintner groups for feedback and contact discovery
October 2024	Refine program based on feedback Meet with certification programs for feedback Meet with grower/vintner groups for feedback and contact discovery Initiate contact with growers for one-on-one meetings Host or one-on-one meetings with growers for feedback
November/December 2024	Present full draft of NCGSA Program document to TAG Continue one-on-one meetings with growers and vintners for feedback Develop partnerships for Program education and outreach Develop incentive analysis document
January 2025	Finalize full NCGSA Program document based on feedback Initiate Program education and outreach Implement targeted outreach to certification programs and growers Host facilitated or one-on-one meetings with growers for feedback
February 2025	Present NCGSA Program for TAG approval Host informational resource meetings Host meetings with growers for feedback and insights Develop and present incentive analysis report
March/April 2025	Present NCGSA Program for NCGSA approval Begin identifying partner programs Establish partnerships with certification programs Continue outreach and education

May-July 2025	Support certification programs in processes to adjust program standards Release Water Conservation Certification Program with partner programs Develop process for measuring water savings Continue to define program incentives Continue outreach and education
Q3 2025 and beyond	Continue outreach, education, and partnership building Refine incentives Pursue potential grant opportunities to support Program implementation Conduct periodic evaluation of the Program Modify Program (adaptive management) as needed

6.2 Ongoing Program Implementation and Evaluation

The Water Conservation Certification Program will be evaluated and periodically updated. This will include evaluating funding opportunities, partners, participation, and measurable outcomes from Program implementation. These activities will be developed and presented through the public process, including at periodic TAG meetings, NCGSA Board meetings, and other public workshops.

Measurable outcomes from the Program will be evaluated, including but not limited to water savings attributable to the Program. This will ensure that the Program is effective, and any financial incentives are providing an acceptable return on investment.

Evidence based impact evaluation methods will be applied. This will evaluate what changes can be directly attributed to the actions taken using evidence gathered and analyzed through the duration of the Program. For the Water Conservation Certification Program, the main outcomes of interest are reductions in groundwater pumping and annual water use in acre feet. Program impacts will be measured using data provided by the partner certification program (aggregated groundwater use) combined with other GSP and public data. Standard impact evaluation methods will be applied to quantify program water savings by the NCGSA. This impact evaluation can be a standalone analysis or combined with evaluations for other NCGSA programs designed to make changes on similar outcomes.

The Water Conservation Certification Program is part of several programs being developed for GPR implementation. A common theme across all programs is continuing education and outreach to let all water users in the Napa Valley Subbasin and Napa County learn about ways to reduce groundwater use. The NCGSA and its partners will continue to identify opportunities for outreach and engagement under this Program and other GPR programs.