proceeding, including but not limited to, court costs, staff time, costs for legal counsel, any award of attorney fees, and all other direct or indirect costs associated with the indemnified Members= response to any claim, action, or proceeding.

C. Nothing in this MOU is intended, nor shall it be construed, to create an employer/employee relationship, association, joint venture relationship, trust, or partnership. Each member shall remain responsible for the payment of costs of employment of its Member employees participating in this MOU including, but not limited to, contribution to the Public Employee Retirement System, health insurance, or other employee benefit, FICA, SSI, Workers' Compensation.

D. No provision of this MOU is intended to, or shall be for the benefit of, or construed to create rights in, or grant remedies to, any person or entity not a party hereto.

E. Each Member shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to this MOU. These records shall be made available for audit purposes to state and federal authorities, or any authorized representative of a Member having been granted authority by its legislative body to request access. Each Member shall retain such records for three (3) years after the expiration of this MOU.

F. All completed reports and other data or documents, or computer media and other materials provided or prepared as a result of this MOU, remain the property of each of the Members. The Members shall jointly and separately hold any work product created by a consultant retained by the EAGSA as its property. The Members shall jointly and separately retain all intellectual property rights including, but not limited to, copyright and patent rights, in said documents, computer media, and other materials provided by any consultant retained by the EAGSA.

G. Each Member, including its employees, and agents participating in the work authorized by this MOU shall not maintain or acquire any direct or indirect interest that conflicts with the performance of this MOU and each shall comply with all the requirements of the Political Reform Act (Government Code ' 8100 et seq.) and other laws relating to conflicts of interest. With regard to any consultant retained by the EAGSA, said consultant shall not make or participate in a decision made by any Member if it is reasonably foreseeable that the decision may have a material effect on the consultant=s economic interest. Each Member has authority to require any such retained consultant to file financial disclosure forms with said Member.

H. This MOU shall be deemed to have been entered into in Redding, California. All questions regarding the validity, interpretation, or performance of any of its terms or of any rights or obligations of the parties to this MOU shall be governed by

California law. If any claim, at law or otherwise, is made by any Member to this MOU after attempting to informally resolve the dispute through discussions as set forth in Section 10.Q, the prevailing party shall be entitled to its costs and reasonable attorneys' fees to have the claim adjudicated; provided, however, this attorney fee clause shall not apply to disputes to resolve GSA overlaps as set forth in Section 7.B.3.

I. This MOU, including all exhibits, contains the entire agreement between the parties and supersedes whatever oral or written understanding each may have had prior to the execution of this MOU. This MOU shall not be altered, amended, or modified except by a writing signed by the Members. No verbal agreement or conversation with any official, officer, agent, or employee of any Member, either before, during, or after the execution of this MOU, shall affect or modify any of the terms or conditions contained in this MOU.

J. No covenant or condition to be performed by a Member under this MOU can be waived except by the written consent of all of the Members made in writing. Forbearance or indulgence by a Member in any regard whatsoever shall not constitute a waiver of the covenant or condition in question. Each Member shall be entitled to invoke any remedy available to it under this MOU or by law or in equity despite said forbearance or indulgence.

K. If any portion of this MOU or the application thereof to any person or circumstance shall be invalid or unenforceable to any extent, the remainder of this MOU shall not be affected thereby and shall be enforced to the greatest extent permitted by law.

L. The headings in this MOU are inserted for convenience only and shall not constitute a part hereof.

M. Each Member hereto declares and represents that in entering into this MOU, it has relied and is relying solely upon its own judgment, belief, and knowledge of the nature, extent, effect, and consequence relating thereto. Each Member further declares and represents that this MOU is made without reliance upon any statement or representation not contained herein of any other Member or any representative, agent or attorney of the other Member. The Members agree that they are aware that they have the right to be advised by legal counsel with respect to the negotiations, terms, and conditions of this MOU and that the decision of whether or not to seek the advice of legal counsel with respect to this MOU is a decision which is the sole responsibility of each of the Members. Accordingly, no Member shall be deemed to have been the drafter hereof, and the principle of law set forth in Civil Code ' 1654 that contracts are construed against the drafter shall not apply.

N. Each of the Members hereto hereby irrevocably waives any and all right to trial by jury in any action, proceeding, claim, or counterclaim, whether in contract or

tort, at law or in equity, arising out of or in any way related to this MOU or the transactions contemplated hereby. Each Member further waives any right to consolidate any action which a jury trial has been waived with any other action in which a jury trial cannot be or has not been waived.

O. In the event of a conflict between the term and conditions of the body of this MOU and those of any exhibit or attachment hereto, the terms and conditions set forth in the body of this MOU proper shall prevail.

P. The Members shall comply with all applicable laws, ordinances, and codes of federal, state and local governments in the performance of this MOU. Further, the Members shall not discriminate against any employee or applicant for employment because of race, color, ancestry, national origin, religious creed, sex, sexual orientation, disability, age, marital status, political affiliation, or membership or nonmembership in any organization. The Members shall take affirmative action to ensure applicants are employed and that employees are treated during their employment without regard to their race, color, ancestry, national origin, religious creed, sex, sexual orientation, disability, age, marital status, political affiliation, or membership or nonmembership in any organization. Such actions shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay, or other forms of compensation and selection for training.

Q. If a Member believes there exists a dispute related to this MOU, the Member shall provide prompt notice to the other Members of the existence of the dispute. Disputes between two of the members agencies and not the GSA as a whole are not GSA disputes and are not subject to this dispute resolution provision. The Members that are party to the dispute shall set a time and place to meet and confer in person, and such meeting shall take place within fifteen (15) calendar days or as soon as practicable after notice of the dispute has been tendered and shall include the manager and at least one board member from each disputing Member.

Should the Members be unable to resolve the dispute within forty-five (45) calendar days or as soon as practicable after the dispute notice was tendered, the Member representatives shall again meet and confer in person to arrive at a mutually agreeable process to resolve the dispute. At this second meet and confer, the Members will specifically discuss and consider mediation, binding arbitration, appointment of a technical expert, or a panel of technical experts to offer an opinion on any disputes of a technical nature, and other forms of alternative dispute resolution. If within fifteen (15) calendar days or as soon as practicable after this second meet and confer the dispute remains or the Members are unable to arrive at a mutually agreeable process to resolve the dispute or both, then any Member may resort to all available legal and equitable remedies and means to resolve such dispute.

SECTION 11. SURVIVAL.

The provisions set forth in Section 10, Subdivisions (A), (B), (C), (E), (F), (H), (K), (M), (N), (O), and (Q) of this MOU shall survive termination of the MOU.

SECTION 12. REPRESENTATIVES.

A. Redding's representative for this MOU is Brian Crane, telephone number (530) 225-4170, and email bcrane@cityofredding.org. All questions relating to Redding's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

B. Anderson's representative for this MOU is Jeff Kiser, telephone number (530) 378-6646, and email jkiser@ci.anderson.ca.us. All questions relating to Anderson's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

C. County's representative for this MOU is Pat Minturn, telephone number (530) 225-5661, and email pminturn@co.shasta.ca.us. All questions relating to County's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

D. BVWD's representative for this MOU is David Coxey, telephone number (530) 241-1085, and email dcoxey@bvwd.org. All questions relating to BVWD's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

E. CCCSD's representative for this MOU is Rick Cascarina, telephone number (530) 357-2121, and email rickc@shasta.com. All questions relating to CCCSD's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

F. ACID's representative for this MOU is Mike Battles, telephone number (530) 365-7329, and email mbattlesacid@gmail.com. All questions relating to ACID's participation in this MOU shall be referred to the above-named person, or to the representative's designee.

G. The representatives set forth herein shall have authority to give and receive all notices required herein.

SECTION 13. DATE OF MOU.

The date of this MOU shall be the date it is signed by the last Member to sign.

IN WITNESS WHEREOF, the Members have executed this MOU on the days and year set forth below:

CITY OF REDDING,

Dated: May 5th, 2017

Brent Weaver, **Mayor**

ATTEST:

APPROVED AS TO FORM:

BARRY E. DeWALT
City Attorney

for **PAMELA MIZE, City Clerk**

By:

COUNTY OF SHASTA

Dated: April 18 2017

By: DAVID A. KEHOE, CHAIRMAN

ATTEST:

ATTEST:
LAWRENCE G. LEES
Clerk of the Board of Supervisors
By **Deputy**

APPROVED AS TO FORM:

RUBIN CRUSE
County Counsel

XXXXXXXXXXXXXXXXXXXXXXXXX, County Clerk

By: 4/5/17
David M. Yorton, Jr.
Senior Deputy County Counsel

CITY OF ANDERSON

Dated: 4/20, **2017**

By: Baron Browning, Mayor

ATTEST:

APPROVED AS TO FORM:

JODY BURGESS
City Attorney

Juanita Barnett, **City Clerk**

By: Jody Burgess, City Attorney

CLEAR CREEK CSD

Dated: April 20, **2017**

Johanna Greenway
By:

ATTEST:

APPROVED AS TO FORM:

WALT McNEIL
General Counsel

_____, **Clerk**

Walt McNeill
By:

BELLA VISTA WATER DISTRICT

Dated: May 1, 2017

By: James Smith, Board President

ATTEST:

APPROVED AS TO FORM:

JOHN KENNY
General Counsel

David J. Coxey
DAVID J. COXEY, Secretary

By: Rob Taylor for John Kenny

ANDERSON-COTTONWOOD IRRIGATION DISTRICT

Dated: April 13, 2017

By:

ATTEST:

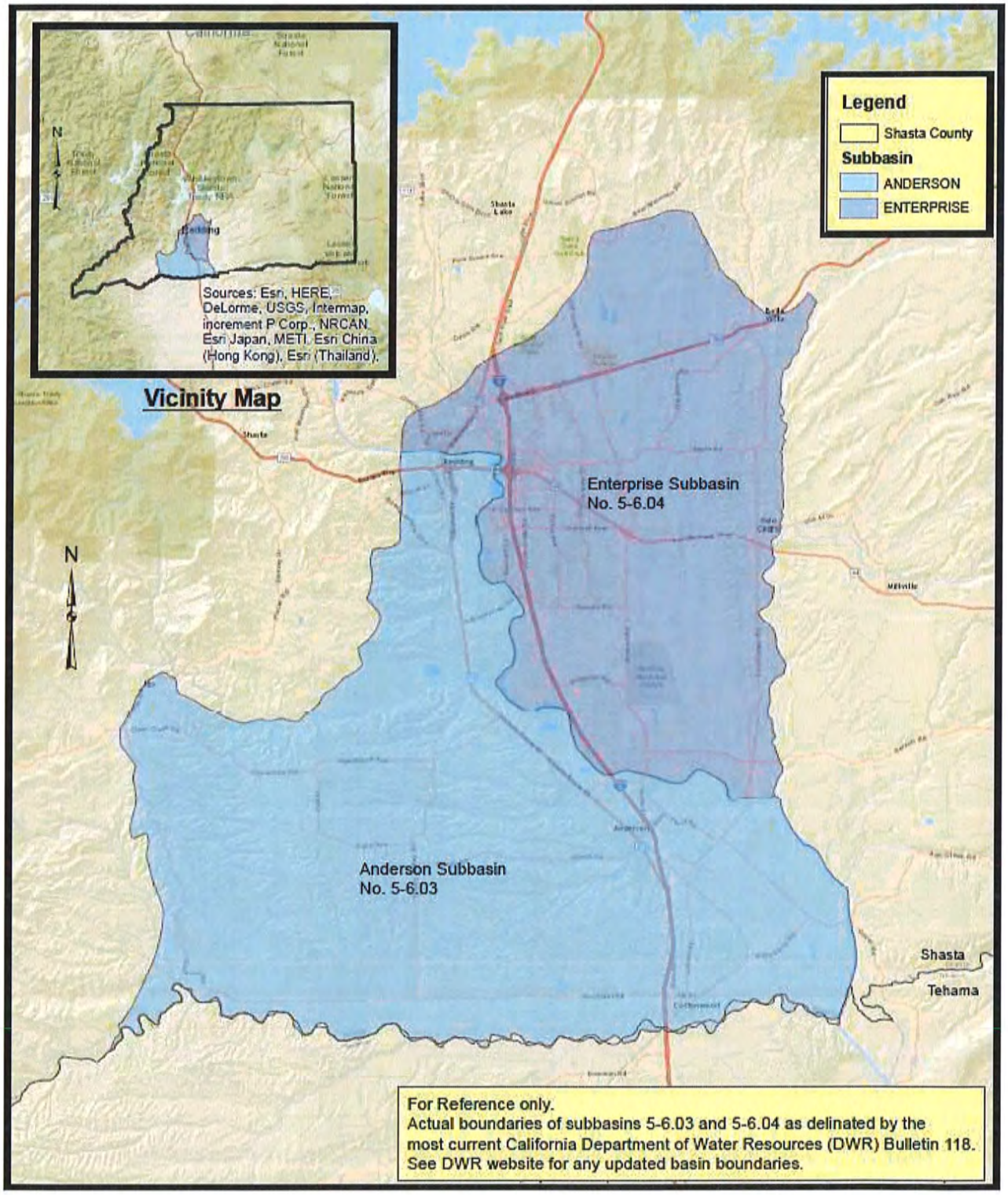
APPROVED AS TO FORM:

Dustin Cooper
General Counsel

Mike Battles
Mike Battles,
General Manager

Brenda L. Haynes
By: Brenda Haynes, Board President

Exhibit A
Redding Area Groundwater Basin



Appendix C
Public Outreach Materials

Appendix C-1
Communications and Engagement Plan

Sustainable Groundwater Management Act (SGMA)

Implementation

Enterprise Anderson Groundwater Sustainability Agency (EAGSA)

Shasta County

Stakeholder Communications and Engagement Plan

Version: May 28, 2019

Goal and Desired Outcomes of the Plan

The central objective of this Communications & Engagement Plan (Plan) is to provide a framework and to identify tools to engage stakeholders in current and future SGMA activities in the Enterprise and Anderson Subbasins. Stakeholder communication and engagement will continue throughout the Groundwater Sustainability Plan (GSP) planning and adoption process. GSP regulations require a communications section of the GSP that must include the following components:

- An explanation of the groundwater sustainability agency's (GSA's) decisionmaking process
- The identification of opportunities for public engagement and involvement
- A description of the GSA's encouragement of diverse populations' active involvement within the subbasin
- The method the GSA will follow to inform the public about GSP progress

This Plan will form the basis for the communications section of the GSP.

Figure 1 shows the timeline for concurrent processes of stakeholder engagement and other SGMA activities in the basin:

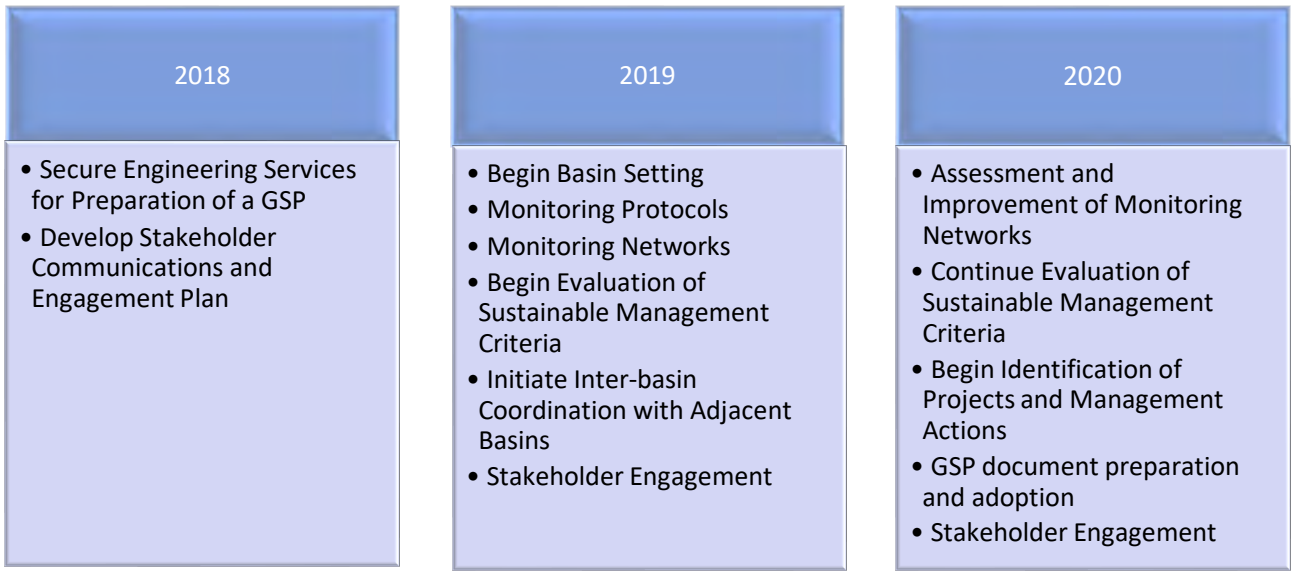


Figure 1 – Concurrent Stakeholder Engagement Timeline

SGMA Requirements for Stakeholder Outreach and Engagement

SGMA requires GSAs to consider the interests of all beneficial uses and users of groundwater as a part of GSP development and implementation.

Further, per Water Code Section 10727.8, "The GSA shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the GSP."

Affected Parties

As mentioned, SGMA requires GSAs to consider the interests of all beneficial uses and users of groundwater. These interests include, but are not limited to, the following:

a) *Holders of overlying groundwater rights, including:*
    1. *Agricultural users*
    2. *Domestic Well owners*
b) *Municipal well operators.*
c) *Public water systems.*
d) *Local land use planning agencies.*
e) *Environmental users of groundwater.*
f) *Surface water users, if there is a hydrologic connection between surface and groundwater bodies.*
g) *The federal government, including, but not limited to, the military and managers of federal lands.*
h) *California Native American Tribes.*
i) *Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems.*
j) *Entities listed in Section 10927 that are monitoring and reporting groundwater elevations in all or part of a groundwater basin managed by the GSA.*

Interested Parties List

The GSA must establish and maintain a list of interested parties, and explain how those interests will be considered, as required by Water Code Section 10723.2. The GSP must include a communication plan. During the EAGSA governance formation process, the EAGSA developed an initial list of interested parties (Attachment 1). Parties will be added to the list on an ongoing basis through individual requests and engagement activities, such as targeted outreach and public workshops.

Relevant Participants/Potential Audiences for GSP Development

EAGSA Member Agencies

Table 1 lists the six-member agencies that formed that EAGSA. The EAGSA Board of Directors is composed of one elected official from each of the six-member agencies. In turn, each member agency has appointed at least one staff member to serve on the GSA Management Committee. GSA managers maintain consistent communications with their agency's representative on the EAGSA Board. The EAGSA Board members and managers keep their respective agencies' governing bodies apprised of SGMA implementation activities.

Table 1. Participating EAGSA Member Agencies and their Overlying Basins

Participating EAGSA Member Agencies	Overlying Basin	
	Anderson Subbasin (groundwater basin number: 5—6.03)	**Enterprise Subbasin** (groundwater basin number: 5—6.04)
Anderson Cottonwood Irrigation District	x	x
Bella Vista Water District		x
City of Anderson	x	x
City of Redding	x	x
Clear Creek Community Services District	x	
Shasta County	x	x

Nonparticipating Agencies

Table 2 lists agencies that were eligible to form a GSA and chose not to participate in the EAGSA.

Table 2. Nonparticipating GSA-eligible Local Agencies and their Overlying Basins

Nonparticipating GSA-eligible Local Agencies	Overlying Basin	
	Anderson Subbasin (groundwater basin number: 5—6.03)	**Enterprise Subbasin** (groundwater basin number: 5—6.04)
Centerville Community Services District	x	
Cottonwood Water District	x	
Igo/Ono Community Services District	x	
Western Shasta Resource Conservation District	N/A	N/A

Centerville Community Services District, Cottonwood Water District, and Igo/Ono Community Services District elected not to participate in the EAGSA. SGMA requires the entire basin to be covered by a GSA. Therefore, for agencies that choose not to become a GSA member agency, Shasta County (County) becomes the default entity to represent these unmanaged areas. It will be important to engage these agencies during the GSP development process to confirm data and information sharing, and to create an opportunity for these agencies to participate in GSP development. The Public Outreach Consultant will ensure engagement with these agencies, through targeted engagement activities (such as the GSP technical consultants making presentations at their respective board meetings). If the targeted briefings are inadequate to meet the needs of these agencies, the Public Outreach Consultant and the GSA will explore options for more engagement, including a simple Memorandum of Understanding (MOU) specifying consultation between the EAGSA or the County, or both, or an ad hoc committee.

Resource Conservation Districts have been deemed GSA-eligible agencies by the State Water Resources Control Board. However, the Western Shasta Resource Conservation District (RCD) does not have water supply, water management, or land use responsibilities within the Anderson and Enterprise Subbasins. The RCD collaborates with private landowners and regulatory agencies on a range of watershed planning and implementation efforts. Therefore, the RCD could serve as a partner entity to assist with private landowner outreach activities, where relevant.

Area Tribes

Consistent with Water Code Section 10720.3, the federal government or any federally recognized Native Tribe may voluntarily agree to participate in the preparation or administration of a GSP through a joint powers authority or other agreement with local agencies in the basin. A participating Tribe will be eligible to participate fully in planning, financing, and management. Additionally, SGMA identifies California tribes (including those that are not federally recognized) as possible beneficial users whose interests will be considered in GSP development and implementation.

During GSA formation activities, the City of Redding took the lead on outreach and engagement with the Redding Rancheria, the only Tribe with public trust lands within the EAGSA's jurisdiction.

The GSA will be reaching out to the following area tribes to see they would like to join the GSA interested parties list:

- Redding Rancheria
- Pit River Tribe of California
- Nor-Rel-Muk Tribe
- Wintu Tribe of Northern California
- Winnemum Wintu Tribe

In this next phase of GSP development, the EAGSA's Public Outreach Consultant will initiate communication with tribal primary points of contact on the Interested Party List to gauge their interest in GSP development activities and to identify next steps.

Relevant Department of Water Resources Information

Table 3 lists relevant Department of Water Resources (DWR) information.

Table 3 – Department of Water Resources Information

SGMA Section 10720.3. "…any federally recognized Indian Tribe, appreciating the shared interest in assuring the sustainability of groundwater resources, may voluntarily agree to participate in the preparation or administration of a groundwater sustainability plan or groundwater management plan under this part through a joint powers authority or other agreement with local agencies in the basin. A participating Tribe shall be eligible to participate fully in planning, financing, and management under this part, including eligibility for grants and technical assistance, if any exercise of regulatory authority, enforcement, or imposition and collection of fees is pursuant to the Tribe's independent authority and not pursuant to authority granted to a groundwater sustainability agency under this part."
Draft Discussion Paper Tribal Participation with Groundwater Sustainability Agencies http://www.water.ca.gov/groundwater/sgm/pdfs/SGMA_Tribal_GSAs.pdf
Must a local agency exclude federal and tribal lands from its service area when forming a GSA? No, federal lands and tribal lands need not be excluded from a local agency's GSA area if a local agency has jurisdiction in those areas; however, those areas are not subject to SGMA. However, a local agency in its GSA formation notice must explain how it will consider the interests of the federal government and California Native American tribes when forming a GSA and developing a GSP. DWR strongly recommends that local agencies communicate with federal and tribal representatives before deciding to become a GSA. As stated in Water Code §10720.3, the federal government or any federally recognized Indian Tribe, appreciating the shared interest in assuring the sustainability of groundwater resources, may voluntarily agree to participate in the preparation or administration of a GSP or groundwater management plan through a joint powers authority or other agreement with local agencies in the basin. Water Code References: §10720.3, §10723.2, §10723.8

Tribal Outreach Resources

The following are links to agency tribal outreach resources and considerations, each of which captures important principles and resources for tribal outreach. A short summary of key outreach principles follows.

- Draft Discussion Paper Tribal Participation with Groundwater Sustainability Agencies
- CalEPA Tribal Consultation Policy Memo (August 2015)
- DWR Tribal Engagement Policy (May 2016)
- CA Natural Resources Agency Tribal Consultation Policy (November 2012)
- SWRCB Proposed Tribal Beneficial Uses
- CA Court Tribal Outreach and Engagement Strategies
- Traditional Ecological Knowledge resources
- Water Education Foundation Tribal Water Issues

Key Outreach Principles

- *Engage early and often.*
- *Consider tribal beneficial uses in decisionmaking (identified by region here); identify and seek to protect tribal cultural resources.*
- *Share relevant documentation with tribal officials.*
- *Conduct meetings at times convenient for tribal participation with ample notifications.*

- *Request relevant process input, data, and information from tribes.*
- *Empower tribes to act as tribal cultural resources caretakers.*
- *Designate a tribal liaison where appropriate.*
- *Share resources for tribal involvement as is feasible.*
- *Develop MOUs where relevant.*
- *Be mindful of the traditions and cultural norms of tribes in the area.*

Key Outreach Partners/Liaisons

The following are potential partners for EAGSA tribal SGMA outreach:

- California Indian Water Commission, Inc.
- DWR Office of Tribal Advisor
- DWR Regional Office

Mutual and Private Water Companies

There are many mutual and private water systems in the EAGSA area. The EAGSA will attempt to identify a point of contact and to obtain contact information from the County for these mutual and private water companies and add them to the Interested Parties List. Table 4 lists the private water systems and the EAGSA member agency jurisdiction where each resides. These water systems represent private pumpers, domestic users, and schools in disadvantaged communities, tracts, and blocks. The EAGSA will attempt to engage these water system users with targeted outreach activities during GSP development.

Table 4 – Private Water Systems and Associated EAGSA Member Agency Jurisdiction

Mutual or Private Water Systems	EAGSA Member Agency Jurisdiction
Airport Commercial Plaza	Shasta County
Airport Industrial Park	City of Redding
Airport Planet Water	Shasta County
Amberwood Mobile Home Park	Anderson Cottonwood Irrigation District
Anderson Mobile Home Park	Shasta County
Anderson Moose Lodge # 509	City of Anderson
Anderson Park Village	City of Anderson
Anderson Tucker Oaks Golf	Shasta County
Anderson Union High School	City of Anderson
Andreini Business Park Water System	Shasta County
Auction Mark Snack Bar	Shasta County
Balls Ferry Fishing Resort	Shasta County
Bart Ritter Water System	Anderson Cottonwood Irrigation District

Mutual or Private Water Systems	EAGSA Member Agency Jurisdiction
Cascade Racquet Club Mutual Water	City of Redding
Churn Creek Golf Course	Anderson Cottonwood Irrigation District
Clear Creek Market	City of Redding
Clear Creek Mobile Park	City of Redding
El Rio Estates	Anderson Cottonwood Irrigation District
Gary Gard Water System	Shasta County
Gotcha Creek Mobile Home Park	Anderson Cottonwood Irrigation District
Igo inn	Shasta County
JGW RV Park	Shasta County
Jolly Giant Flea Market	Anderson Cottonwood Irrigation District
Junction School District	Bella Vista Water District
Lazy Landing Mobile Home Park	Shasta County
Lone Tree Mobile Home Park	Anderson Cottonwood Irrigation District
McGee's Corner Saloon	Anderson Cottonwood Irrigation District
Meek's Anderson Water System	Anderson Cottonwood Irrigation District
Mel Mark Mutual Water Co	Bella Vista Water District
Midway Mobile Home Park	Anderson Cottonwood Irrigation District
Mister Taco	Anderson Cottonwood Irrigation District
Pacheco Elementary School	Anderson Cottonwood Irrigation District
Prairie Elementary School	Shasta County
Rapid River Mobile Home Park	Shasta County
Red Hill Mobile Home Park	Shasta County
Redding Travel Center	Shasta County
Rio Vista Mobile Home Estates	Shasta County
River Bend Mobile Park	Shasta County
River Breeze Mobile Home Park	Shasta County
River Cove Mobile Home Park	City of Anderson

Mutual or Private Water Systems	EAGSA Member Agency Jurisdiction
Riverland Mobile Home Park	Shasta County
Rooster's Landing	Shasta County
Sacramento River RV Park	Shasta County
Sierra Pacific Industries - Anderson	Shasta County
Siskiyou Forest Products	Shasta County
Stotts & Sons	Shasta County
Sun Oaks Racquet Club	City of Redding
Sunrise Mobile Home Park	Shasta County
Tucker Oaks East Water District	Shasta County
United Parcel Service - Anderson	Shasta County
Verde Vale Elementary School	Shasta County
Verde Vale Water Company	Shasta County
Village Green	Shasta County
West Cottonwood Apartments	Shasta County
West Valley High School	Clear Creek Community Services District
Wheelabrator Shasta Energy	Shasta County
Whispering Waters Trailer Park	Shasta County
White Oak Mutual Water Company	Shasta County
Zufall's Mobile Home Park	Clear Creek Community Services District
Notes: RV = recreational vehicle	

Inter-basin Coordination

The EAGSA will coordinate with the Tehama County Flood Control and Water Conservation District, which is the GSA in the adjacent subbasins. The purpose of this inter-basin coordination is to ensure a collaborative effort to coordinate GSPs. Inter-basin Agreements are optional under GSP regulations. However, the regulations specify that two or more GSAs may enter into an Inter-basin Agreement to establish compatible goals and understanding regarding fundamental elements of each GSP. Inter-basin Agreements apply where a groundwater hydraulic connection exists between basins, shares technical information, provides a process for resolving conflict, and can be in a GSP to support findings that implementation of a basin GSP will not adversely affect an adjacent basin and implementation of that basin GSP.

Methods for Stakeholder Outreach and Engagement

Public Workshops

Public workshops serve as a venue for a broad range of stakeholders and interested members of the public to both learn about SGMA implementation in the basin and participate in GSP planning. Workshops would occur at key points in the planning process to provide stakeholders with opportunities to provide input and feedback on the GSP. Workshops also serve as a venue to reply to stakeholder comments on the GSP. Table 5 outlines the approximate number of workshops, the estimated timing of the workshops, and the expected purpose and topics for each workshop. If the EAGSA forms an advisory committee, fewer workshops may be warranted.

Table 5 – Workshop Summary

Workshop Number	Estimated Timing of Workshop	Primary Topics/Purpose
1	Third Quarter 2019	As warranted, the following topics will be discussed at public workshops: ➢ Data collection findings and analysis ➢ Hydrogeologic conceptual model of the Redding Groundwater Basin ➢ Results of initial groundwater flow modeling analysis ➢ Historical and current water budget results ➢ Discussion of undesirable results, minimum thresholds, measurable objectives, and data gaps assessments.
2	Third Quarter 2020	As appropriate, the following topics will be discussed at the public workshop: ➢ Predictive flow modeling results and water budgets ➢ Potential management actions ➢ Recommended sites for monitoring wells ➢ Discussion of elements of the draft GSPs for each subbasin

Targeted Stakeholder Briefings

Rather than hosting numerous public workshops, targeted briefings to existing groups are a proven and efficient method of reaching stakeholders in both subbasins. The briefings will likely occur on the following schedule (Table 6):

Table 6 – Stakeholder Briefing Schedule

Number of Briefings	Year	Target Audience	Briefing Content
Nine	2019-2020	Includes but is not limited to: • Mutual and private water companies • Farm Bureau • Cattleman's Association	• SGMA overview and milestones • GSP planning process timeline/work plan overview/project launch with technical consultant • Identification of opportunities for stakeholders to participate in GSP planning and reporting on initial project activities • Solicit data collection, values, undesirable results, potential management actions

EAGSA Board Meetings

While public workshops provide in-depth opportunities for stakeholder engagement, EAGSA Board meeting are open to the public and offer another venue for the public to participate in SGMA implementation discussions. Beginning in January 2019, the EAGSA will establish a regular, quarterly meeting schedule that will be publicized on the EAGSA website.

EAGSA Management Committee Meetings

The Management Committee will meet every other quarter, beginning with the second quarter of 2019. Management Committee meetings will address the following topics. As warranted, these topics will be addressed at public workshops and EAGSA Board meetings.

- Data collection findings and analysis
- Draft and final hydrogeologic conceptual model
- Recommendations for modeling platform
- Historical and current water budget results
- Historical and projected modeling results and future water budgets
- Discussion of proposed minimum thresholds, measurable objectives, data gaps assessments, and recommended sites for monitoring wells
- Discussion of draft GSPs for each subbasin

Ad Hoc Advisory Committees

During the GSA formation process, the County expressed interest in creating a representative advisory committee to advise the Board of Supervisors on SGMA implementation in the County-managed areas. The forming agencies had informal discussions about similar advisory committees in other member agency jurisdictions. During the GSP development, the EAGSA may identify a need to form ad hoc advisory committees for aspects of GSP development, as warranted, and in accordance with expressed stakeholder interest.

EAGSA Website

The GSP consulting firm will coordinate with Shasta County Public Works to provide outreach materials to post to the existing website.

Media Outreach

Methods of media outreach will include traditional newspaper postings, postings on public notice boards, and email communications. These methods will be used to keep stakeholders informed and engaged during the GSP development process.

The Redding area has poor-quality and spotty broadband service. Therefore, relying heavily on online communications would not be advisable.

Print Media/Newspaper Articles

The EAGSA Management Committee will prepare press releases and calendar announcements, and will engage with print media outlets to publish stories to inform stakeholders of opportunities for involvement, such as GSP public workshops

Media Contacts

Table 7 lists the media contacts for the GSP.

Table 7 – Media Contacts

	Publication Name	Format	Email
1	A News Café	Online	donig.anewscafe@gmail.com
2	East Valley Times	Online	Judy@eastvalleytimes.com
3	Record Searchlight	Paper/online	rrsedit@redding.com

Newsletters, Member Agency Websites, and Direct Mail

EAGSA member agencies will use individual agency websites, newsletters, and social media (where applicable) to provide general SGMA implementation information and to announce board and council meetings where GSP development and the SGMA are discussed. The EAGSA may send postcard invitations to relevant engagement activities to target audiences, when warranted.

Interested Party List Updates

Under the leadership of the Management Committee, the EAGSA will collect names and contact information of interested parties at public meetings and through individual requests. The EAGSA will build and refine the Interested Party List over time.

Messages and Talking Points

Key Messages

Three overriding messages will be developed that explain the goals and outcomes for development of the GSP, such as:

1. The EAGSA's aim is to comply with state law and protect the local groundwater resources.

2. The EAGSA is committed to working with stakeholders using an open and transparent engagement process.
3. The EAGSA was formed as a joint effort among six local agencies to leverage/pool resources for effective management of groundwater resources.

Frequently Asked Questions

The Public Outreach Consultant and the EAGSA will anticipate, and plan to answer likely questions to support effective engagement with stakeholders. Examples of such questions include:

1. What is SGMA (or the Sustainable Groundwater Management Act) and what are the key milestones for SGMA implementation?
2. What is a GSA (or Groundwater Sustainability Agency) and what are the responsibilities of a GSA?
3. What is the EAGSA (Enterprise Anderson Groundwater Sustainability Agency)?
4. What is a GSP (or Groundwater Sustainability Plan)?
5. What are the six sustainability indicators identified in SGMA?
6. What is the extent of local reliance on groundwater?
7. Do water demands exceed water supply? If so, under what conditions and does this represent an issue beyond natural variability?
8. Do all residents in the Enterprise and Anderson Subbasins have access to safe and reliable drinking water? If no, which communities are water insecure and what is being done to address this issue?
9. What are the known groundwater conditions in the Enterprise and Anderson Subbasins? Are there any known undesirable results (degraded water quality, lowering of groundwater levels, reduced groundwater storage, etc.)?
10. What is groundwater substitution, and does it occur in the Enterprise and Anderson Subbasins?
11. Do local agencies transfer water out of the basin and what are the impacts of water transfers to local beneficial users and uses of groundwater?
12. How do downstream water uses affect the reliability of water uses and users in the Enterprise and Anderson Subbasins?

Schedule of Outreach and Engagement Activities

Table 8 provides a schedule for outreach and engagement activities.

Table 8 – Outreach and Engagement Activity Schedule

Activities	Description	Responsible Party	Schedule
	EAGSA and Participating Member Agencies		
EAGSA Board Meetings	The Enterprise Anderson GSA Board of Directors is composed of one elected official for each of the six members agencies: 1. Shasta County 2. City of Redding 3. City of Anderson 4. Clear Creek Community Services District 5. Anderson Cottonwood Irrigation District 6. Bella Vista Water District The EAGSA meetings are Brown Act public meetings. These meetings provide an opportunity for the public to become aware of and informed about GSP development activities in the Anderson and Enterprise Subbasins.	EAGSA	Trimester meeting schedule
Meetings of Member Agencies' Governing Boards and Councils	The governing bodies of participating GSA-eligible agencies periodically discuss GSP development at their respective meetings, which are Brown Act public meetings. These meetings provide an opportunity for the public to become aware of and informed about GSP development activities in the Anderson and Enterprise Subbasins.	Members of EAGSA	• Set schedule of regular meetings for each agency • GSP development addressed as agendized
	Targeted Outreach: Nonparticipating GSA-eligible Local Agencies		
Centerville Community Services District, Igo/Ono Community Services District, and Cottonwood Water District Board of Directors' Meetings	The County will coordinate with the general managers of these agencies. Kearns & West and Jacobs will reach out to them to explain the process.	Shasta County Kearns & West, and Jacobs	Ongoing quarterly coordination
	Public Events		
Public Workshops	The purpose of public workshops is to provide general information about SGMA and to receive public input and feedback on the GSP. This engagement	Kearns & West, Public Outreach Consultant	Two public workshops

Activities	Description	Responsible Party	Schedule
	venue also provides a forum for public comments and the EAGSA's responses to those comments.		
	Targeted Outreach to Other Affected Parties		
Maintenance of and Updates to Interested Party List	The list of interested parties will be maintained and updated, and an explanation will be provided about how those interests will be considered in the GSP.	Kearns & West and Shasta County	Ongoing- trimester
Targeted Outreach to all Beneficial Users in Anderson and Enterprise Subbasins and Tribes in the Subbasins and Adjacent Basins	The County or EAGSA, or both, may establish a representative advisory committee in to advise on GSP development and SGMA implementation in the County-managed areas. The EAGSA Management Committee will conduct individualized outreach and engagement with tribes in and adjacent to the Anderson and Enterprise Subbasins.	Kearns & West and Jacobs Engineering	Ongoing- trimester
Inter-Basin Coordination	The Public Outreach Consultant will send formal notifications, inviting coordination with the Tehama County Flood Control and Water Conservation District, as well as the GSA in the adjacent basins, and determine whether an Inter-basin Agreement is warranted. The EAGSA will follow up with continued coordination, as appropriate.	Kearns & West and EAGSA	2nd quarter 2019
	Media Campaign		
Existing Websites; Emails Notifications	Member agencies will use existing websites and email notifications to post general SGMA implementation information and to announce board and council meetings where GSP development and SGMA is discussed.	Member agencies and Kearns & West	Ongoing
Make Educational Materials and Reference Documents Available to Appropriate Stakeholder Groups	DWR and other entities have developed various educational materials about SGMA and GSP development that are listed here in Table 9 of this document, and should be made available to stakeholder groups, when relevant.	Kearns & West	Ongoing
Physical Bulletin Boards	The Consulting Team will post informational materials on community bulletin boards to inform the general public about the GSP process.	Kearns & West and Jacobs	Second quarter 2019

Reference Materials

DWR has developed various reference materials about SGMA and GSP development. While not comprehensive, Table 9 lists some essential SGMA reference materials to aid with successful GSP development.

Table 9 – Reference Documents for SGMA Implementation

Reference Document Titles—include documents for inclusion at public workshops, for example: SGMA brochure, domestic well user brochure, data and tools resources, GSP regulations, guidance documents, best management practices, a link to SGMA list server subscription, and link to the SGMA portal (and include an introductory piece)	Publishing Entity	Date/ Year of Publication
Groundwater Sustainability Plan (GSP) Emergency Regulations Guide http://www.water.ca.gov/groundwater/sgm/pdfs/GSP_Final_Regs_Guidebook.pdf	DWR	July 2016
The 2014 Sustainable Groundwater Management Act: A Handbook to Understanding and Implementing the Law http://www.watereducation.org/sites/main/files/file-attachments/groundwatermgthandbook_oct2015.pdf	Water Education Foundation	October 2015
Best Management Practices Documents: 1. Monitoring Protocols Standards and Sites 2. Monitoring Networks and Identification of Data Gaps 3. Hydrogeologic Conceptual Model 4. Water Budget 5. Modeling 6. Sustainable Management Criteria **https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents**	Department of Water Resources	2016-2018
Guidance Documents: **1.** Resource Guide for Climate Change Data and Guidance **2.** Guidance for Climate Change Data Use During Sustainability Plan Development **3.** Stakeholder Communications and Engagement **4.** Engagement with Tribal Governments **5.** GSP Annotated Outline **6.** Preparation Checklist for GSP Submittal **https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents**	Department of Water Resources	2016-2018

Evaluation and Assessment

Any communication strategy should include opportunities to check in at various points during implementation to ensure it is meeting the communication and engagement goals and complying with SGMA. These periodic check-ins can include:

- ✓ What worked well?
- ✓ What didn't work as planned?
- ✓ Meeting notes with action items and next steps
- ✓ Listing lessons learned and developing mid-course corrections

Attachment 1. EAGSA Interested Parties

Agency/Affiliation	Name
ACID Alternate	Zac Mazzotta
ACID Board Member	Brenda Haynes
AIRPORT COMMERCIAL PLAZA	AIRPORT COMM PLAZA PROPERTY OWNERS ASSOC
AIRPORT INDUSTRIAL PARK	REDDING BUSINESS PARK LLC
AIRPORT PLANET WATER	RICHARD PRATER, ROBERT/CHARLENE DRABANT
AMBERWOOD MOBILE HOME PARK	CYNTHIA & MICHAEL FOLEY
ANDERSON MOBILE HOME PARK	ANDERSON MOBILE HOME PARK LLC
ANDERSON MOOSE LODGE # 509	ANDERSON MOOSE LODGE # 509
ANDERSON PARK VILLAGE	STEVEN H JORDAN
ANDERSON TUCKER OAKS GOLF	KOH ATLAS CORP - JAMES HOFFMAN
ANDERSON UNION HIGH SCHOOL	ANDERSON UNION HIGH SCHOOL DIST
ANDERSON UNION HIGH SCHOOL	ANDERSON UNION HIGH SCHOOL DIST, Jennifer Parks
ANDREINI BUSINESS PARK WATER SYSTEM	LINDA ANDREINI
AUCTION MART SNACK BAR	JACK EPPERSON
Audubon	Janet Wall
BALLS FERRY FISHING RESORT	MIKE MORGAN
BART RITTER WATER SYSTEM	NOAH CHOW & JESSICA LEE
Bird Watcher	Nola Wade
BLM	Charley Wright
BVWD Alternate	Bob Nash
BVWD Board Member	James Smith
California Department of Fish and Wildlife	Briana Seapy
CASCADE RACQUET CLUB MUTUAL WATER	CASCADE RACQUET CLUB MUTUAL WC
CCCSD Alternate	Virgina Bassham
CCCSD Board Member	Irwin Fust
Centerville CSD	Chris Meuhlbacher
Jacobs	Brett Isbell
Chico State Student	Maggie Scarpa
CHURN CREEK GOLF COURSE	CHURN CREEK GOLF COURSE INC
Citizen	Michael Koterba
Citizen	Peter Stiglich
Citizen	Sharyn Cornelius
Citizen	Susan Whitby
Citizen	William Christman
City of Anderson (Clerk)	Christy White
City of Anderson Alternate	Stan Neutze
City of Anderson Board Member	Melissa Hunt
City of Redding	Jaclyn Disney
City of Redding	Josh Watkins
City of Redding	Julie Winter
City of Redding	Ryan Bailey
City of Redding	Stephanie McCollum
City of Redding Alternate	Mark Mezzano
City of Redding Board Member	Erin Resner
CLEAR CREEK MARKET	BRUCE & SHARON HUDSON
CLEAR CREEK MOBILE PARK	STINSON FAMILY TRUST, R STINSON, TRUSTEE

Attachment 1. EAGSA Interested Parties

Agency/Affiliation	Name
Cottonwood Water District	John Hollmer
Department of Water Resources	Mark Nordberg
Department of Water Resources	Mary Randall
Department of Water Resources	Pat Vellines
DWR	Ian Espinoza
DWR	Michelle Dooley
DWR	Pat Vellines
DWR - retired	Mary Randall
EL RIO ESTATES	RIVER PROPERTIES
El Rio Mobile Estates	Larry Elliott
Environmental Health - Shasta County	Carla Serio
Environmental Health - Shasta County	Christy Gilbreath
GARY GARD WATER SYSTEM	JEAN GARD
GHD	Michael Bombard
GOTCHA CREEK MOBILEHOME PARK	WALTER LEACHMAN
IGO INN	MAX SNYDER
Igo/Ono CSD	Gil Spencer
Jacobs	Heather Perry
Jacobs	Lyna Black
Jacobs	Nate Brown
JGW RV PARK	GEORGE & JOAN HAGEMAN
JOLLY GIANT FLEA MARKET	JAMES B SMITH
Kearns and West	Julie Leimbach
Kearns and West	Rafael Silberblatt
KIXE	Julie Driver
LAZY LANDING MOBILE HOME PARK	THOMAS F SCHWOOB
League of Women Voters	Kathy Furey
League of Women Voters	Pam Crowe
League of Women Voters	Virginia Phelps
LONE TREE MOBILE HOME PARK	MEARDY LEE
Luhdorff & Scalmanini	Eddy Teasdale
McGEE'S CORNER SALOON	ERNEST E & AUDREY F BAUGH
MEEK'S ANDERSON WATER SYSTEM	ENTERPRISE REALTY
MEL MAR MUTUAL WATER CO	MEL MAR MUTUAL WATER CO
MIDWAY MOBILEHOME PARK	ROY & CHRIS DANIELS
MISTER TACO	F & K BALDERRAMA & T ANDONIAN
NOAA	Rick Rogers
PACHECO ELEMENTARY SCHOOL	PACHECO UNION SCHOOL DIST
PRAIRIE ELEMENTARY SCHOOL	PACHECO UNION SCHOOL DIST
Private Citizen	Nick Gardner
Private Citizen	Peggy Rebol
Private Citizen	Susan Whitby
RAPID RIVER MOBILEHOME PARK	PRABHAT CHANDRA
RED HILL MOBILEHOME PARK	TIMOTHY STEURER
Redding DPW Director	Chuck Aukland
Redding Rancheria	Jason Hart

Attachment 1. EAGSA Interested Parties

Agency/Affiliation	Name
Redding Rancheria	Rob Krikorian
Representative Dahles Representative	Alice Bennett
Residential Well User	Susan Bradfield
RIO VISTA MOBILEHOME ESTATES	LONG FAMILY TRUST OF 2002
RIVER BEND MOBILE PARK	MAHESH & SHILPA GOGRI
RIVER BREEZE MOBILE HOME PARK	SANDRA DOWNS
RIVER COVE MOBILEHOME PARK	LOCKHEED INVESTMENTS LLC
RIVERLAND MOBILEHOME PARK	HANNAH DORFMAN
ROOSTER'S LANDING	PERRY FORE
S.E.A	Mary Ann McCrary
SACRAMENTO RIVER RV PARK	CORAL ISLE MOBILE HOME PARK LLC
Senator Dahle's Representative	Sheldon Fort
Shasta County	Charleen Beard
Shasta County Alternate	Les Baugh
Shasta County Board Member	Leonard Moty
Shasta County Farm Bureau	Erin Johnson
Shasta County Farm Bureau	Tiffany Martinez
Shasta Environmental Alliance	David Ledger
Sierra Club	John Livingston
Sierra Pacific Industries	Jeremy Higgins
SISKIYOU FOREST PRODUCTS	SISKIYOU FOREST PRODUCTS
State Water Board	Monique Gaido
STOTTS & SONS	STOTTS FAMILY TRUST
SUNRISE MOBILEHOME PARK	ROARK O'NEILL
Sunside Mobile Home Park	Roark O'Neill
Tehama County FC&WRM	Ryan Teubert
Tehama County RCD	Emmy Westlake
TUCKER OAKS EAST WATER DISTRICT	KOH ATLAS CORPORATION
UNITED PARCEL SVC - ANDERSON	BT - OH, LLC
VERDE VALE ELEMENTARY SCHOOL	CASCADE UNION ELEM SCHOOL DIST
VERDE VALE WATER COMPANY	VERDE VALE WATER CO
Verde Vale Water Company	William Heffner
Village Green	Shirley Summer
VILLAGE GREEN	SHIRLEY SUMMER (VERDE VALE LLC)
WEST COTTONWOOD APARTMENTS	BRANI CHURCHIN / STEVE & MINDY CHURCHIN
Western Shasta RCD	Maureen Teubert
Western Shasta RCD	Ross Perry
WHEELABRATOR SHASTA ENERGY	WHEELABRATOR SHASTA ENERGY CO INC
Wheelabrator Technologies	Derrick Boom
WHISPERING WATERS TRAILER PARK	BOB BORTOLUSSI, TRUSTEE, STANLEY MORGAN
Whispering Waters Trailer Park	Jenifer Lazetera
WHITE OAK MUTUAL WATER COMPANY	WHITE OAK MUTUAL WATER CO
Whole Earth & Watershed Festival	Peggy Rebol
Wintu Tribe	Kelli Hayward
ZUFALL'S MOBILEHOME PARK	ROBERTA TURNER/RON, JOHN & ROBERT ZUFALL

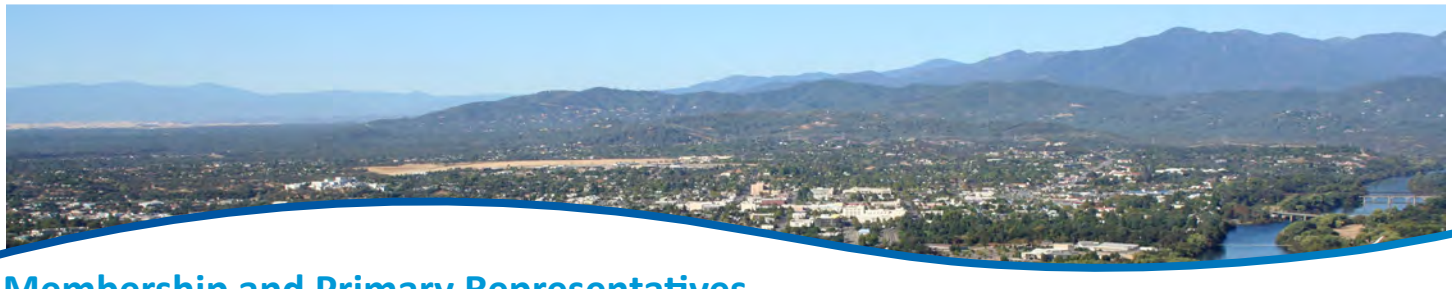
Appendix C-2
Public Outreach Materials

Enterprise Anderson Groundwater Sustainability Agency, Groundwater Sustainability Plan Project Brief

Enterprise-Anderson Groundwater Sustainability Planning

Project Brief

The Enterprise-Anderson Groundwater Sustainability Agency (EAGSA) has been formed to ensure the continued sustainability of the Enterprise and Anderson groundwater basins.

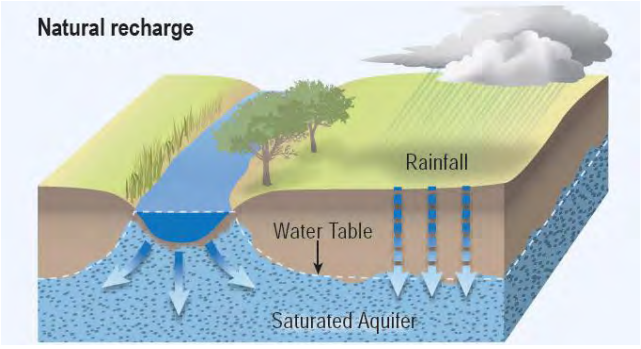


Membership and Primary Representatives

County of Shasta	Leonard Moty, County Supervisor
City of Anderson	Melissa Hunt, Vice-Mayor
City of Redding	Erin Resner, City Council Member
Bella Vista Water District	James Smith, Director
Anderson Cottonwood Irrigation District (ACID)	Brenda Haynes, President
Clear Creek Community Services District (CCCSD)	Irwin Fust, Director

Objectives

1. Comply with the Sustainable Groundwater Management Act (SGMA).
2. Ensure the continued sustainability of the Anderson and Enterprise Subbasins.
3. Develop and manage a Groundwater Sustainability Plan for the sustainable management of groundwater within the Enterprise and Anderson Subbasins of the Redding Area Groundwater Basin. Keep the complexity and costs as low as practicable.
4. Local management of groundwater based on local plan, local stakeholder input, and local values.



FOR MORE INFORMATION:
www.cityofredding.org/departments/public-works/eagsa.com

CONTACT:
Interested Parties List (Shasta County):
Charleen Beard| Supervising Engineer | 530-225-5661 | cbeard@co.shasta.ca.us

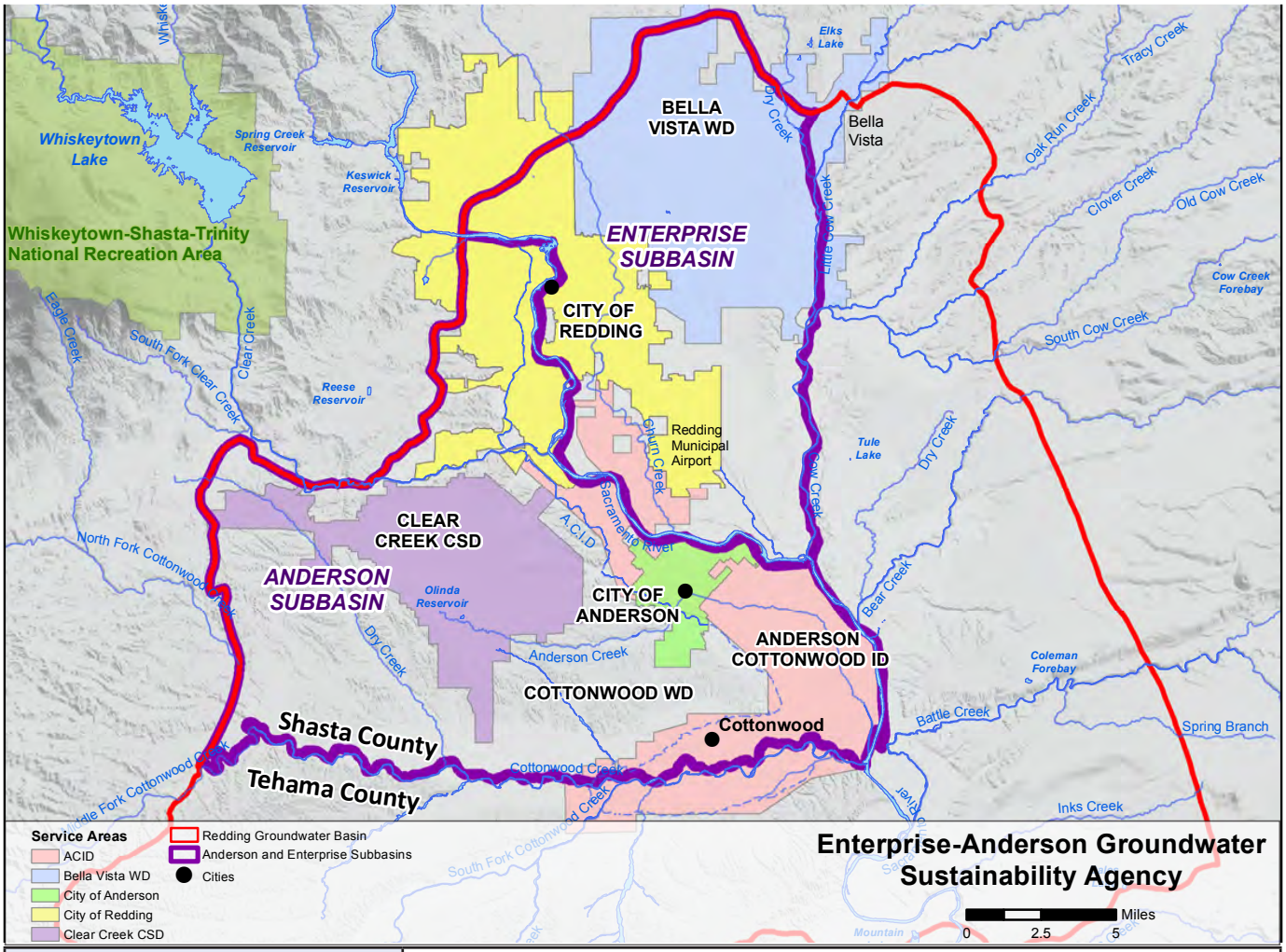
Sustainable Groundwater Management Act

1) What is the Sustainable Groundwater Management Act (SGMA)?
SGMA is a law requiring local agencies to sustainably manage groundwater use so it doesn't run out. While there are no known problems with the Redding Area Groundwater Basin, the creation of a Groundwater Sustainability Plan will help us work together to manage groundwater to support future community, wildlife, and economic prosperity.

2) What is a Groundwater Sustainability Plan (GSP)?
A GSP is a long term plan to manage groundwater by preventing: 1) continual lowering of groundwater levels, 2) decreased groundwater storage, 3) poor water quality, 4) settled or sunken land, and 5) depletion of rivers, streams, springs and wetlands.

3) What happens next?
A local engineering firm will collect, analyze and share groundwater data at public meetings. Local stakeholders will be invited to give input at future public meetings and EAGSA Board meetings regarding undesirable results and (if necessary) management actions. The EAGSA must finalize the Groundwater Sustainability Plan by January 31, 2022.

Enterprise-Anderson Groundwater Sustainability Plan

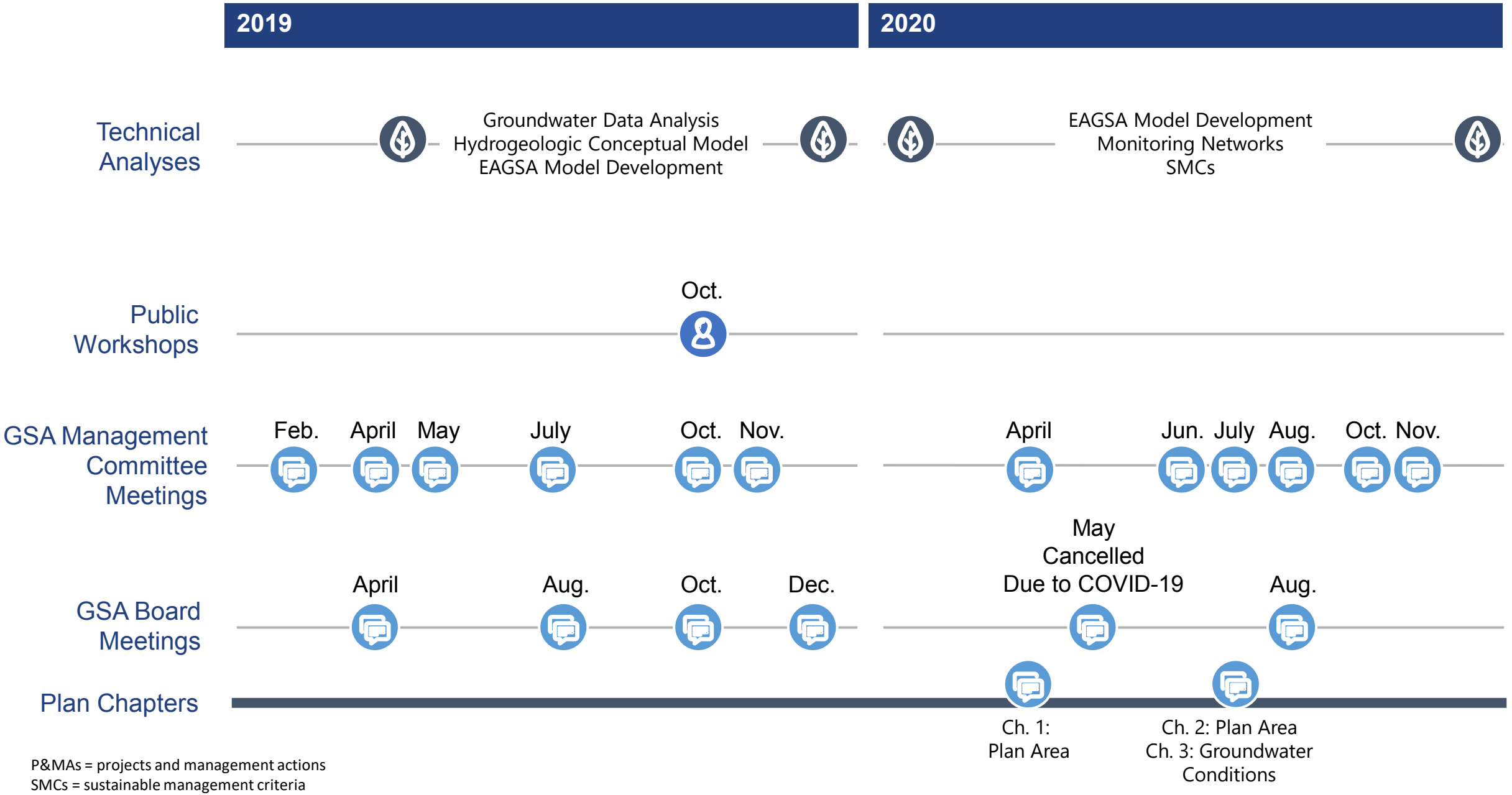


MYTH	FACT
The State of California is going to come in and manage our local wells and groundwater in the Redding Area – Enterprise and Anderson Subbasins.	Ownership and operation of wells connected to groundwater will remain intact. The locally led EAGSA will manage groundwater to meet the sustainability criteria as required by State law - but if the EAGSA fails to manage groundwater sustainably or if the EAGSA dissolves, the management of the groundwater could revert to the State.
Water meters are going to be required on private wells.	Neither the EAGSA nor the State are requiring meters for private wells.
I am going to get a bill for this Groundwater Sustainability Plan.	The EAGSA applied for and received a State grant to develop the Groundwater Sustainability Plans for the Enterprise and Anderson subbasins. Staffing costs are being borne by the six member agencies.
The State wants us to quantify our groundwater so they can take it and send it to the cities down south.	Having a GSP allows the locals to better manage and control the groundwater. If water rights holders choose to sell water down south, they would receive financial compensation and the sale would be temporary - there would not be any permanent change in rights to the groundwater. Additionally, environmental studies would be done before any sale took place to ensure that there are no adverse impacts to the environment or to neighboring wells, and all sales would be required to comply with the County Groundwater Ordinance.

For More Information: www.cityofredding.org/departments/public-works/eagsa

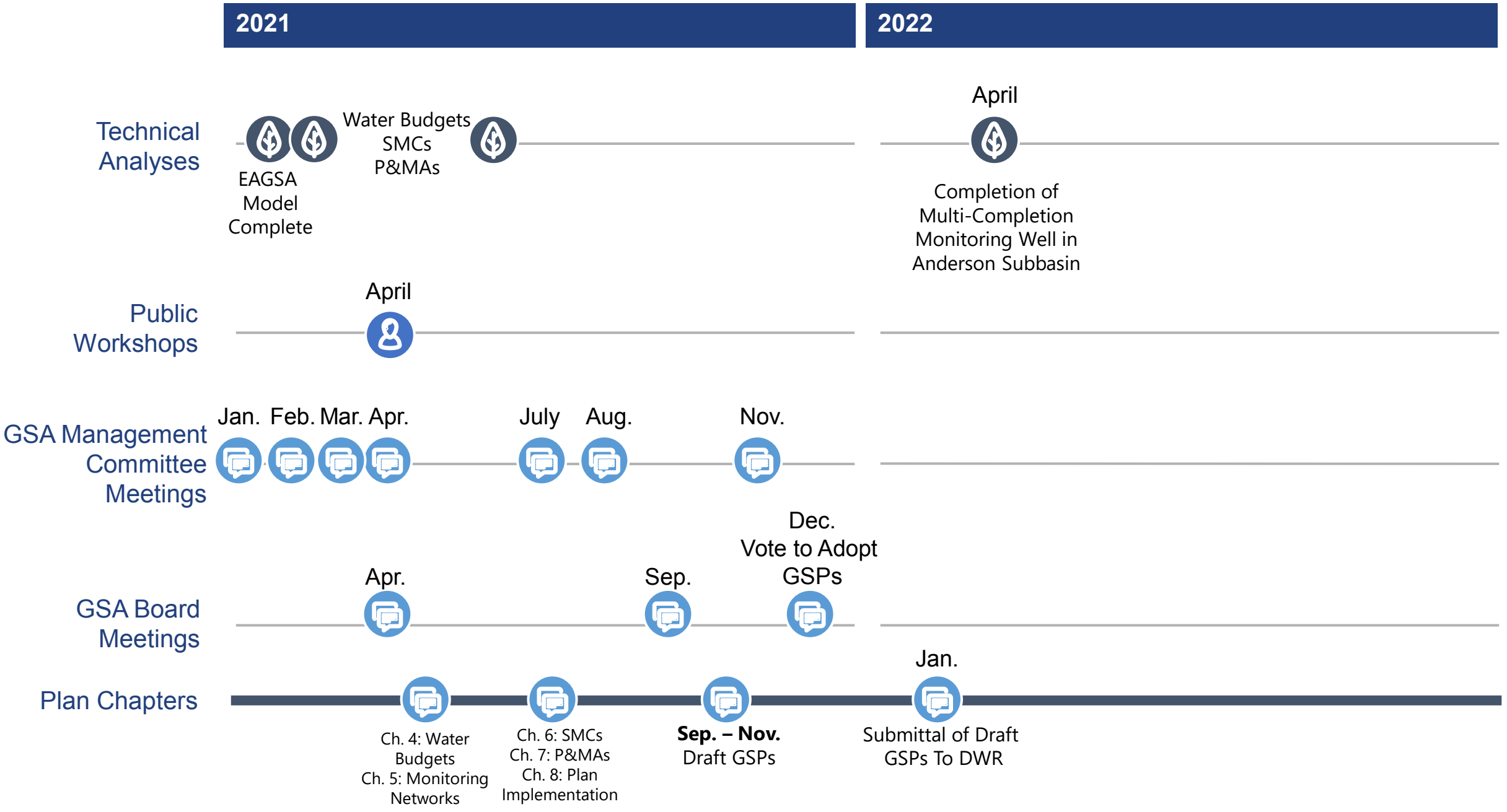
Enterprise Anderson Groundwater Sustainability Agency, Groundwater Sustainability Plan Timeline

Enterprise Anderson Groundwater Sustainability Planning Schedule



P&MAs = projects and management actions
SMCs = sustainable management criteria

Enterprise Anderson Groundwater Sustainability Planning Schedule



Enterprise Anderson Groundwater Sustainability Agency, Groundwater Sustainability Plan Frequently Asked Questions

Enterprise-Anderson Groundwater Sustainability Plan

Frequently Asked Questions

What is the Sustainable Groundwater Management Act (SGMA)?
SGMA is a law that requires local agencies to manage groundwater use to avoid undesirable results. All groundwater basins rated medium or high priority in Department of Water Resources Bulletin 118 must create a Groundwater Sustainability Agency (GSA) and a Groundwater Sustainability Plan (GSP), or the State will step in to manage groundwater. For more information visit: http://www.water.ca.gov/cagroundwater/docs/sgma_brochure_jan_2015.pdf

What is the Enterprise Anderson Groundwater Sustainability Agency (EAGSA)? The EAGSA is comprised of Shasta County, City of Anderson, City of Redding, Anderson-Cottonwood Irrigation District, Bella Vista Water District, and Clear Creek Community Services District. The purpose of the EAGSA is to sustainably manage the Enterprise and Anderson subbasins and comply with SGMA, while keeping taxpayer costs down. The GSA formed with a memorandum of understanding on June 30, 2017 and plans to develop a GSP by January 31, 2022. The EAGSA is responsible for sustainably managing groundwater in the Enterprise and Anderson subbasins. The EAGSA will develop and implement a Groundwater Sustainability Plan (GSP).

Any local public agency that has water supply, water management, or land use responsibilities in a basin can become a GSA. Two GSA's cannot overlap. More GSA Information can be found at: http://www.water.ca.gov/groundwater/sgm/pdfs/DWR_GSA_FAQ_2016-01-07.pdf

What is a Groundwater Sustainability Plan (GSP)?
A GSP is a long-term plan to sustainably manage groundwater and prevent undesirable results. The legislation lists six undesirable results: chronic lowering of groundwater levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, and depletion of interconnected surface water. Some undesirable results are non-issues in the Redding Basin, but all must be considered in the GSP. A guide for the GSP regulations can be found at: http://water.ca.gov/groundwater/sgm/pdfs/GSP_Final_Regs_Guidebook.pdf

Is there a GSP for the Anderson and Enterprise Subbasins?
The EAGSA is working on the planning process now. The EAGSA has contracted Jacobs Engineering, Redding, CA to help study the groundwater basin and write the Groundwater Sustainability Plan. They have hired Kearns & West, a public outreach consultant to help stakeholders learn about their groundwater planning process and provide input to the plan. The EAGSA anticipates adopting the GSP prior to the 2022 deadline.

In the interim, groundwater is managed in accordance with the Coordinated AB3030 Groundwater Management Plan, adopted by the County in May 2007. The AB 3030 plan can be found at: http://www.co.shasta.ca.us/index/pw_index/engineering/water_agency/ab3030_plan.aspx

How can we maintain local control of our groundwater?
Local agencies have formed the EAGSA to maintain local control of groundwater resources and management. If groundwater resources matter to you, please contact the EAGSA to join the Interested Parties list and contribute to sustainable groundwater management.

Does Shasta County have a groundwater problem?
There are no known problems with the Redding Area Groundwater Basin. The State has identified both Enterprise and Anderson subbasins as medium priority – meaning they are not in critical condition. This rating is mostly based on a heavy weighting of the criteria for population overlying the basin and its dependence on groundwater.

To view a complete map of all alluvial groundwater basins in California and their rating, go to https://gis.water.ca.gov/app/gicima/. On the upper left side of the page, click on the "Boundaries" tab and then check the box next to "CASGEM Groundwater Basin Prioritization".

How could the Groundwater Sustainability Plan affect me?
Groundwater users will need to work together to make sure that the use of groundwater supplies are not consistently decreasing groundwater, taking too much water away from rivers and wetlands, nor making the ground settle or sink.

If you own a well or rent a home that uses a well, the sustainable management of groundwater could help ensure that your well doesn't go dry due to others' groundwater use. If you enjoy fishing, duck hunting or other water-related recreation, this sustainable management could ensure that groundwater use does not damage the wildlife habitat that is dependent on groundwater supplies. If you irrigate lands for agriculture or ranching, the EAGSA seeks to ensure that your groundwater supply will be predictable and reliable to sustain your and your family's livelihood. Studying the groundwater basin will improve our understanding of our groundwater supply and how to manage it to support future community and economic prosperity.

How do I get involved?

- Contact Shasta County Public Works at (530) 225-5661 to be added to the Interested Parties list for email updates on the planning process.
- Come to the EAGSA Board meetings each trimester in April, August, and December.
- Participate in Public Workshops in August/September 2019 and August/September 2020 to learn and provide your values, objectives, data needs, and alternatives for the future.
- Learn more at the EAGSA website: https://www.cityofredding.org/departments/public-works/eagsa where you can find Board meeting minutes and maps.
- Attend your local water supplier's Board meeting to learn more.

Enterprise Anderson Groundwater Sustainability Agency, Sustainable Management Criteria Summaries

EAGSP Update

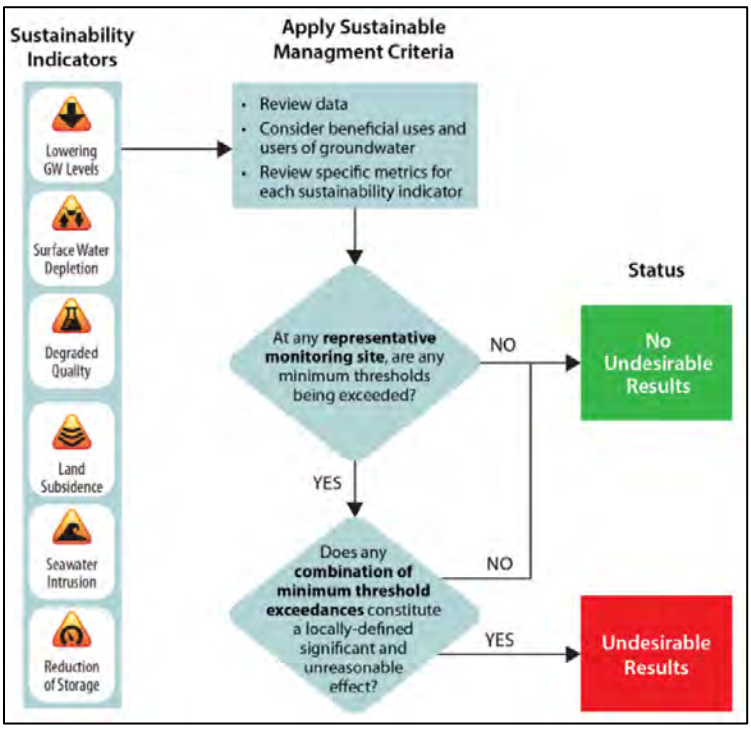
The Enterprise Anderson Groundwater Sustainability Agency (EAGSA) is currently working on developing the groundwater sustainability plans (GSPs) for the Enterprise and Anderson Subbasins. The following updates are drawn from the draft GSPs and is being shared with you to provide some additional context for the draft chapters. Please note that information in the draft chapters and these online updates are draft and subject to change.

Sustainable Management Criteria

Sustainable management of groundwater, as defined under Sustainable Groundwater Management Act (SGMA), refers to "*the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.*" In both draft GSPs, Chapter 6 covers the Sustainable Management Criteria (SMC) that are used to evaluate sustainability. The six sustainability indicators included in SGMA are:

- Chronic lowering of groundwater levels
- Reduction of groundwater storage
- Degraded water quality
- Land subsidence
- Depletion of interconnected surface water
- Seawater intrusion

Sustainability is determined by collecting and analyzing data to demonstrate that local groundwater basins are being managed to avoid undesirable results associated with these sustainability indicators. The EAGSA must set ***minimum thresholds*** (with corresponding justification) for the level at which each sustainability indicator becomes ***significant and unreasonable*** at designated representative monitoring locations. In addition, the EAGSA must set ***measurable objectives*** at designated representative monitoring locations (i.e., quantitative goals that reflect desired groundwater conditions to be achieved within 20 years). The following flow diagram illustrates Best Management Practice guidance for applying sustainable management criteria:



In their review of available data for the subbasins, the EAGSA has determined that the Enterprise and Anderson Subbasins are, and have historically been, managed sustainably.

For more information about sustainability indicators, please view the following recordings taken from the virtual public workshop held on April 27, 2021:

1. Sustainability Indicators: Introduction

2. Seawater Intrusion

3. Land Subsidence

4. Groundwater Levels

5. Reduction of Groundwater Storage & Depletion of Interconnected Surface Water

6. Degraded Groundwater Quality

7. Sustainability Indicators: Conclusion

Opportunities for Public Input

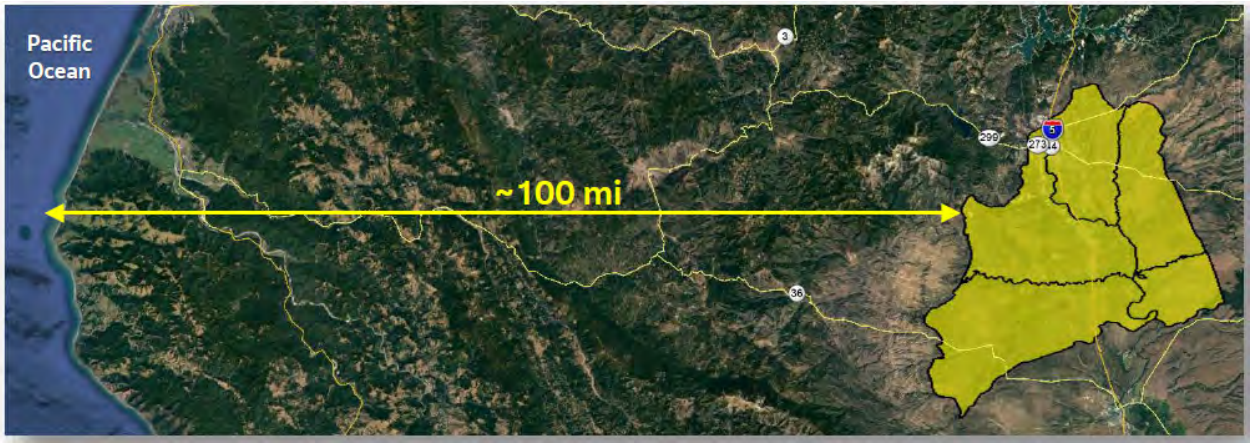
Please note the following opportunities for engaging in the GSP process and providing input:

- Attend GSA Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

Sea Water Intrusion

Sea water intrusion is not applicable to the Enterprise or Anderson Subbasins due to their location being more than 100 miles from the ocean.

The following graphic shows the distance between the Pacific Ocean and the Enterprise and Anderson subbasins.



For more information about Sea Water Intrusion please review Chapter 6.3 of the groundwater sustainability plans (GSPs). The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

2. Seawater Intrusion

Opportunities for Public Input

Please note the following opportunities for engaging in the GSP process and providing input:

- Attend Enterprise Anderson Groundwater Sustainability Agency Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

Chronic Lowering of Groundwater Levels

Groundwater levels rise and fall seasonally during each year and are generally higher in the winter and spring (because there is more precipitation and streamflow and less groundwater pumping) and lower in the summer and fall (because there is less precipitation and more groundwater pumping). During above- or below-normal water years, groundwater levels generally recover to or very near the previous year's spring levels. During dry or critically dry water years, groundwater levels may decline over multiple years. In a sustainably managed basin, once climatic conditions return to wet or normal conditions, groundwater levels recover to pre-drought levels.

During development of the groundwater sustainability plans (GSPs) available historical and current groundwater level data from wells within the Enterprise and Anderson Subbasins were reviewed and it was determined that significant and unreasonable conditions are not present, nor are the likely to occur under future conditions of population growth and climate change. The proposed **minimum threshold is the lower of either the minimum historical measured groundwater level or the minimum projected groundwater level under extreme future water demand conditions** (that is, water demand beyond that anticipated due to population growth and climate change).

The following definition of an undesirable result for lowering groundwater levels has been proposed for the Enterprise Anderson Groundwater Sustainability Agency (EAGSA) subbasins:

> *Significant and unreasonable chronic lowering of groundwater levels are those that would cause reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses during the planning and implementation horizon of the GSPs. Undesirable results would occur when 25 percent of the same representative monitoring points exceed the minimum thresholds for three consecutive spring groundwater-level measurements.*

At this time, there are no undesirable results to mitigate. This is evidenced by the fact that:

- There is no long-term decline in groundwater levels
- Groundwater levels recover after drought periods
- Groundwater levels today are similar to groundwater levels 30-years ago.

For more information about Lowering Groundwater Levels please review Chapter 6.3 of the GSPs. The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

4. Groundwater Levels

Opportunities for Public Input

Please note the following opportunities for engaging in the GSP process and providing input:

- Attend EAGSA Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

Reduction of Groundwater Storage

Groundwater storage can be calculated as the thickness of the principal aquifer (i.e., the depth to bedrock forming the bottom of the principal aquifer minus the depth to the water table) times the area of the principal aquifer times the specific yield of the aquifer. Specific yield is a parameter related to how much groundwater can drain by gravity from the principal aquifer. The *change* in groundwater storage is the difference between the groundwater inflow to the principal aquifer and the groundwater outflow from the principal aquifer during a specified period. A subbasin is considered sustainable when the overall long-term volume of groundwater in storage over multiple decades does not change significantly.

The figure below provides a simplified graphical representation of the correlation between groundwater levels and groundwater in storage. This figure illustrates the concept that if there were reductions in groundwater storage, the decrease would be reflected in declining groundwater levels measured at representative monitoring points. Because groundwater levels and the groundwater in storage are inter-related, the Enterprise Anderson Groundwater Sustainability Agency (EAGSA) is proposing to use the criteria for chronic lowering of groundwater levels as a proxy for reduction of groundwater storage. This means that both the measurable objectives and minimum thresholds are the same for these two sustainability indicators.

The following definition of an undesirable result for reduction of groundwater storage has been proposed for the EAGSA subbasins:

> *Significant and unreasonable reduction in groundwater storage is that which would cause reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses during the planning & implementation horizon of the groundwater sustainability plans (GSPs). Using groundwater levels as a proxy, undesirable results occur when 25 percent of the same representative monitoring points exceed the chronic lowering of groundwater level minimum thresholds for three consecutive spring measurements.*

At this time, the subbasin is not currently experiencing undesirable results associated with the reduction of groundwater storage. This is evidenced by the fact that:

- There is no indication of overdraft condition
- Evaluation of groundwater in storage under extreme future water demand conditions (that is, water demand 6 times more than anticipated due to population growth and climate change) does not indicate much decrease in storage (less than 2 percent by 2072)

For more information about Reduction of Groundwater Storage please review Chapter 6.3 of the GSPs. The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

5. Reduction of Groundwater Storage & Depletion of Interconnected Surface Water

Opportunities for Public Input

Please note the following opportunities for engaging in the GSP process and providing input:

- Attend EAGSA Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

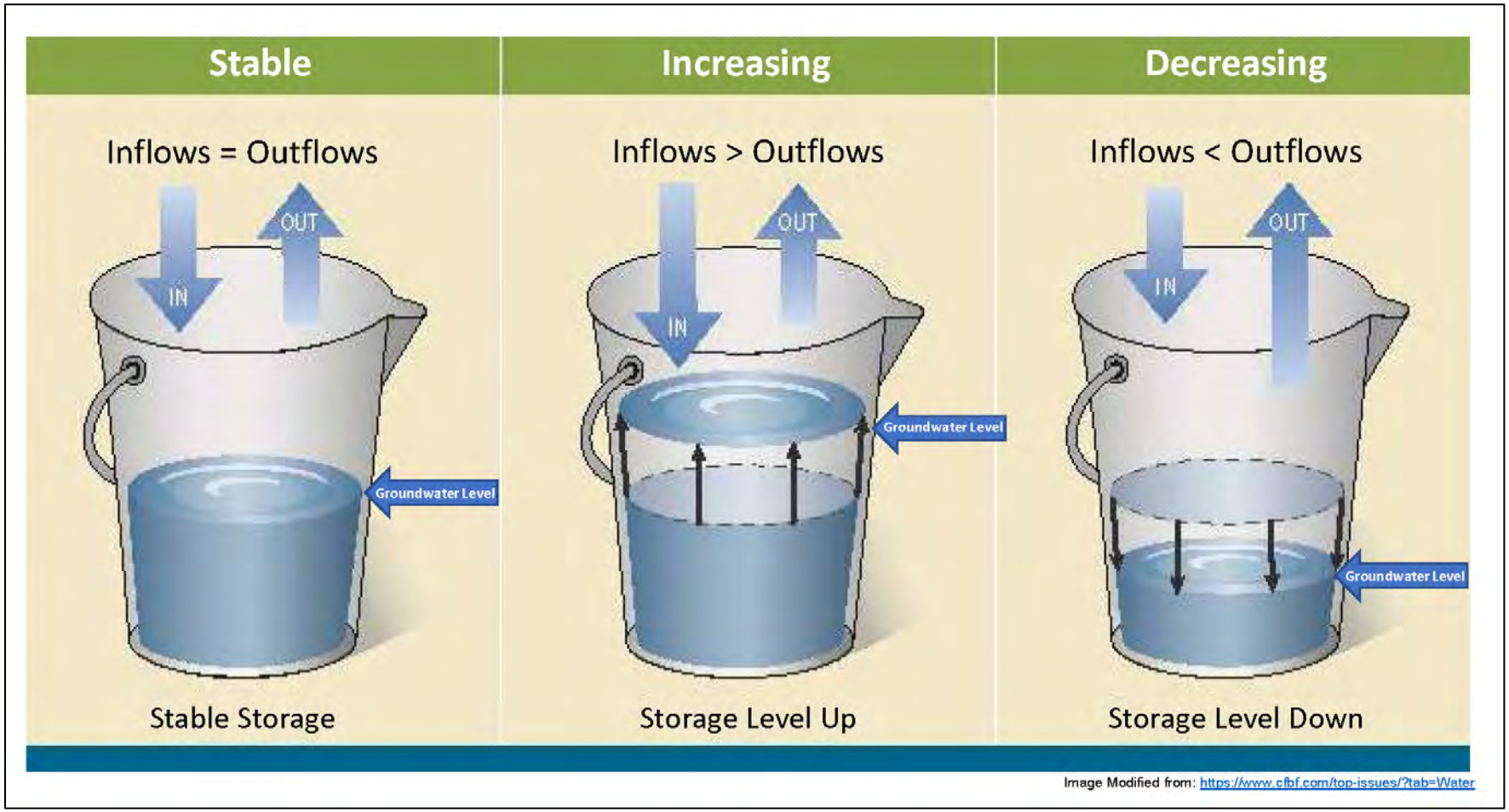


Figure 1. Example of the Relationship Between Groundwater Levels and Groundwater in Storage

Depletion of Interconnected Surface Water

Interconnected surface water is defined as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer," and where "the overlying surface water is not completely depleted." Depletion of interconnected surface water can occur when an aquifer discharges less water to the connected streams or when there is increased leakage from the stream to the aquifer. During development of the groundwater sustainability plans (GSPs) available historical and current streamflow data from interconnected surface water bodies within the Enterprise and Anderson Subbasins and it was determined that significant and unreasonable conditions are not present.

The figures below show the extent of interconnected surface water in the Enterprise and Anderson Subbasins under average seasonal high groundwater conditions. The lengths of interconnected surface water presented on the figures below represent approximately 30 (Enterprise Subbasin) to 50 (Anderson Subbasin) river miles. It is not practical to estimate depletions of interconnected surface water with observational data, because it would require significantly more infrastructure than is present. The GSPs propose to use the criteria for chronic lowering of groundwater levels as a proxy. This means that both the measurable objectives and minimum thresholds are the same for these two sustainability indicators.

The following definition of an undesirable result for depletion of interconnected surface water has been proposed for the Enterprise Anderson Groundwater Sustainability Agency (EAGSA) subbasins:

> *Significant and unreasonable depletions of interconnected surface water are those which result in adverse effects on beneficial uses and users of interconnected surface water, such as inadequate supply for water rights holders, decreased groundwater dependent ecosystem acreage within the Enterprise or Anderson Subbasins, and reduced surface water outflow from the Subbasins such that downstream beneficial users in the northern Sacramento Valley are impacted, during the planning and implementation horizon of these GSPs. Using groundwater-levels as a proxy, undesirable results occur when 25 percent of the same representative monitoring points exceed the chronic lowering of groundwater level minimum thresholds for three consecutive spring measurements.*

Potential depletions of interconnected surface water under extreme future water demand conditions (that is, water demand 6 times more than anticipated due to population growth and climate change) were evaluated to establish the SMCs for chronic lowering of groundwater levels. The results of these analyses indicated that:

- Water purveyors that use surface water from the Sacramento River, Cottonwood Creek, or Little Cow/Cow Creek as supply and other surface water rights holders are not anticipated to be unreasonably affected by the estimated depletions in interconnected surface water. Downstream surface water users are not anticipated to be unreasonably affected given that the reduction in Sacramento River flow exiting the subbasins would likely be within the measurement error of its stream gauge.
- Groundwater dependent ecosystem acreage overlying areas of shallow groundwater is only approximately 3 to 5.5 percent smaller under the lowest groundwater level condition with extreme future water demands as compared to recent seasonal high groundwater conditions.

Significant and unreasonable depletion of interconnected surface water in the subbasins is highly unlikely.

For more information about Interconnected Surface Water please review Chapter 6.3 of the GSP. The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

5. Reduction of Groundwater Storage & Depletion of Interconnected Surface Water

Opportunities for Public Input

Please note the following opportunities for engaging in the GSP process and providing input:

- Attend GSA Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

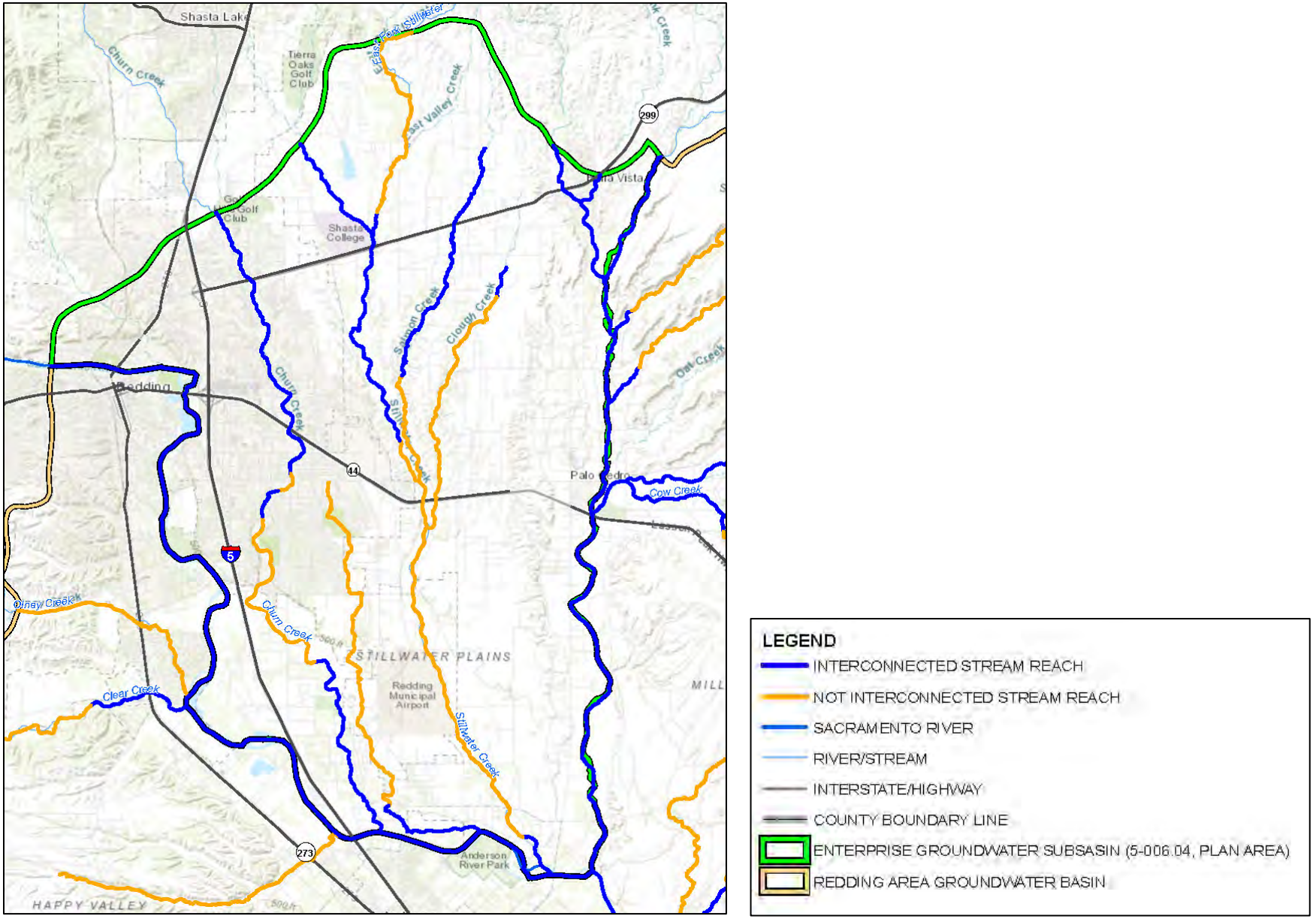


Figure 1. Extent of Interconnected Surface Water in the Enterprise Subbasin Under Average Seasonal High Groundwater Conditions

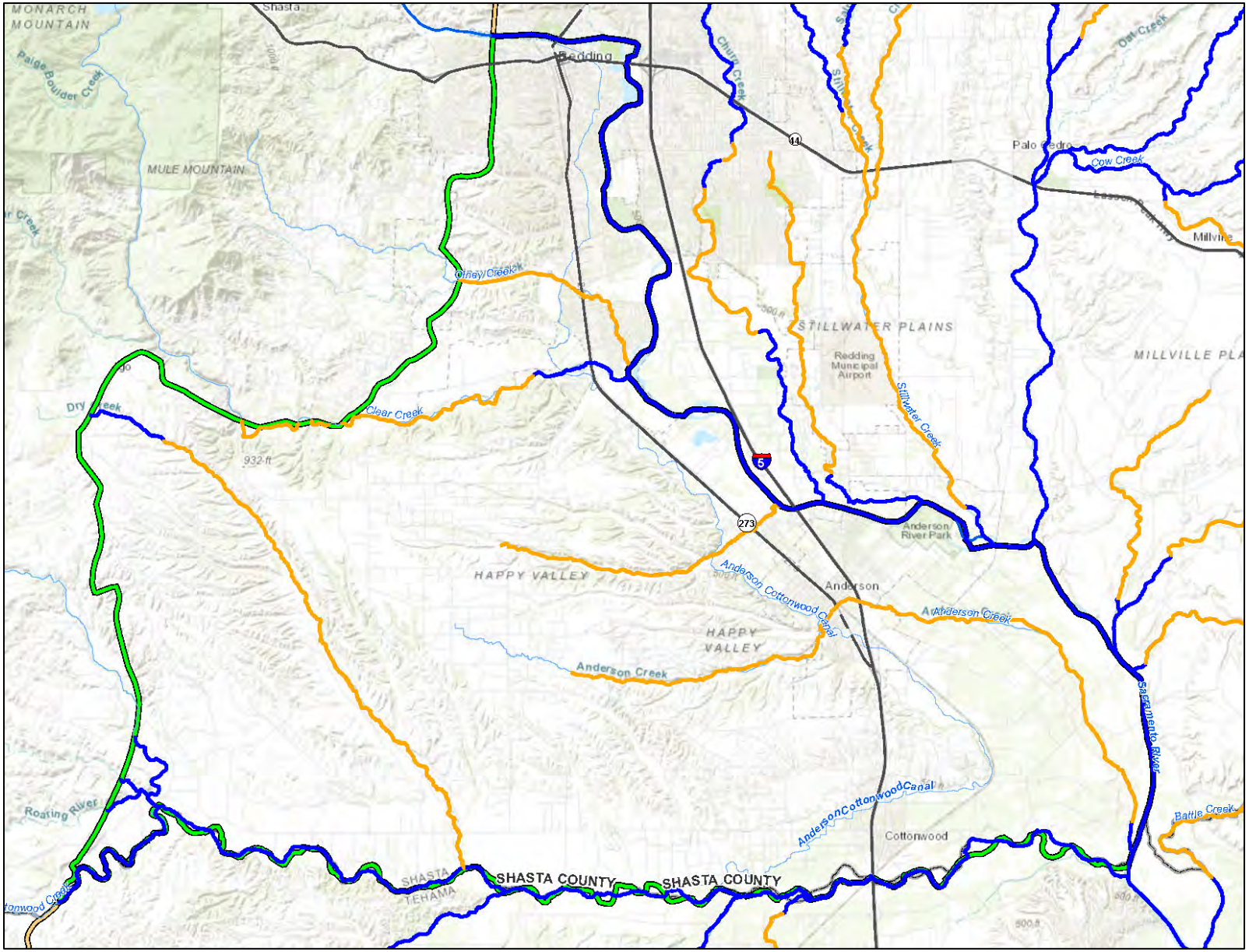


Figure 2. Extent of Interconnected Surface Water in the Anderson Subbasin Under Average Seasonal High Groundwater Conditions

Degraded Water Quality

Water quality in California is regulated by several federal, state, and local agencies. These entities are charged with enforcing federal and state water quality regulations, including both drinking water and agricultural uses. The groundwater sustainability plans (GSPs) aim to ensure that operation of the Enterprise and Anderson Subbasins does not cause additional water quality degradation. Both groundwater extraction and the implementation of projects to achieve or maintain sustainability have the potential to cause water quality impacts from migration of contaminant plumes, changes in the concentration of contaminants due to reduction in the volume of water stored in the basin, or release of harmful naturally occurring constituents.

During development of the GSPs available groundwater quality data were compared to the maximum contaminant levels (MCLs) and secondary maximum contaminant levels (SMCLs) for drinking water. Locations with multiple exceedances of the MCLs and SMCLs are considered areas of existing, local impairments and are shown as orange circles on the maps attached. **The proposed measurable objective is "no change" to the existing distribution of groundwater quality in the subbasins**. **The proposed minimum threshold has been set as a violation of the MCL or SMCL at a new well or for a new chemical.**

A GSP considers whether water quality constituents in the basin could impact the state's policy of protecting the right of every human being to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. With this in mind, the following definition of an undesirable result for the degraded water quality sustainability indicator has been proposed for the Enterprise and Anderson Subbasins:

> *The undesirable result for degraded water quality is an impact stemming from SGMA-related groundwater management activities, such as groundwater extraction or recharge, that causes significant and unreasonable degradation of groundwater quality for beneficial users during the GSP planning and implementation horizon. Undesirable results would occur when 25 percent of the same representative monitoring points violate the minimum thresholds for two consecutive sampling events.*

At this time there are no undesirable results to mitigate.

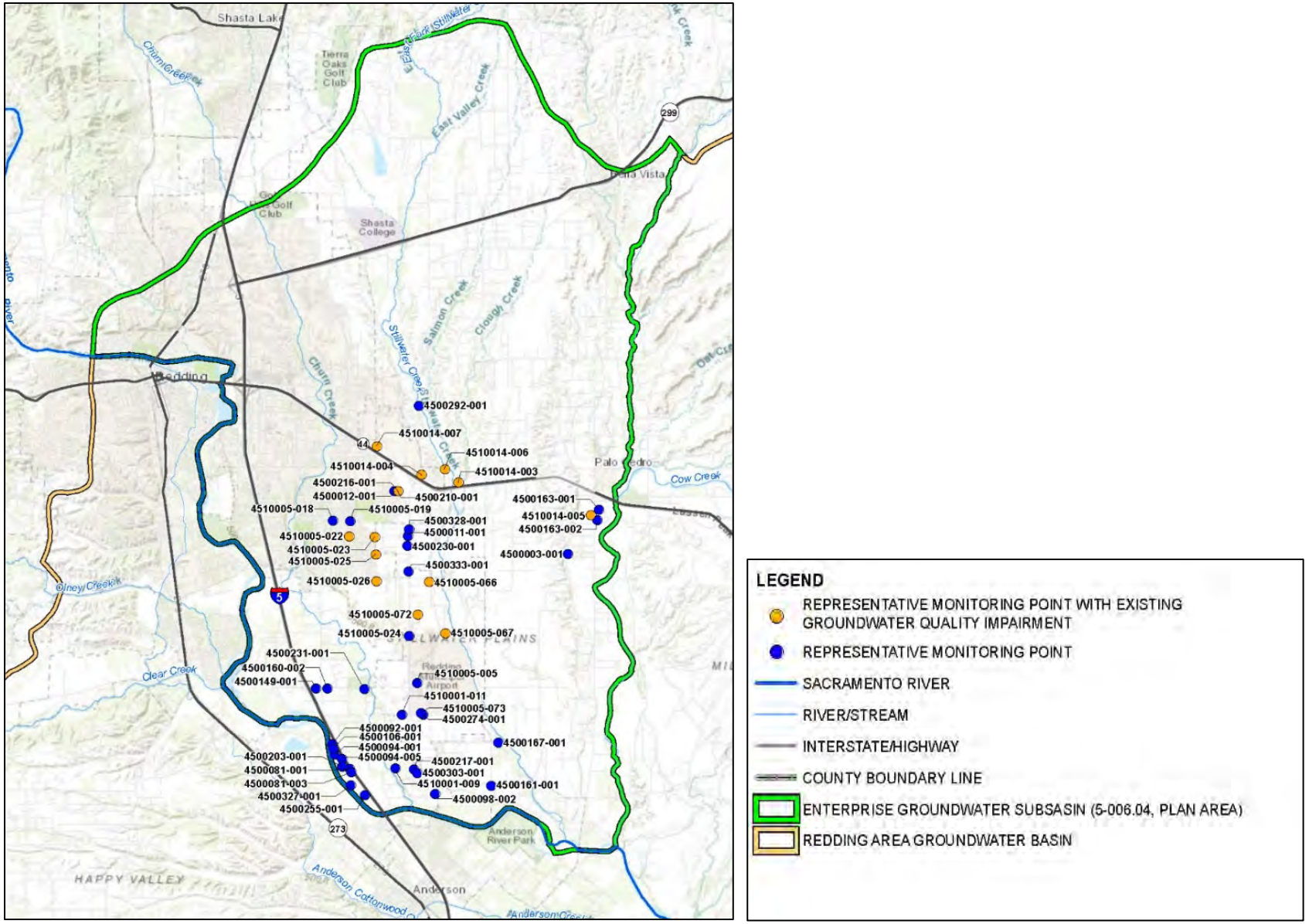
For more information about degraded groundwater quality please review Chapter 6.3 of the GSPs. The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

6. Degraded Groundwater Quality

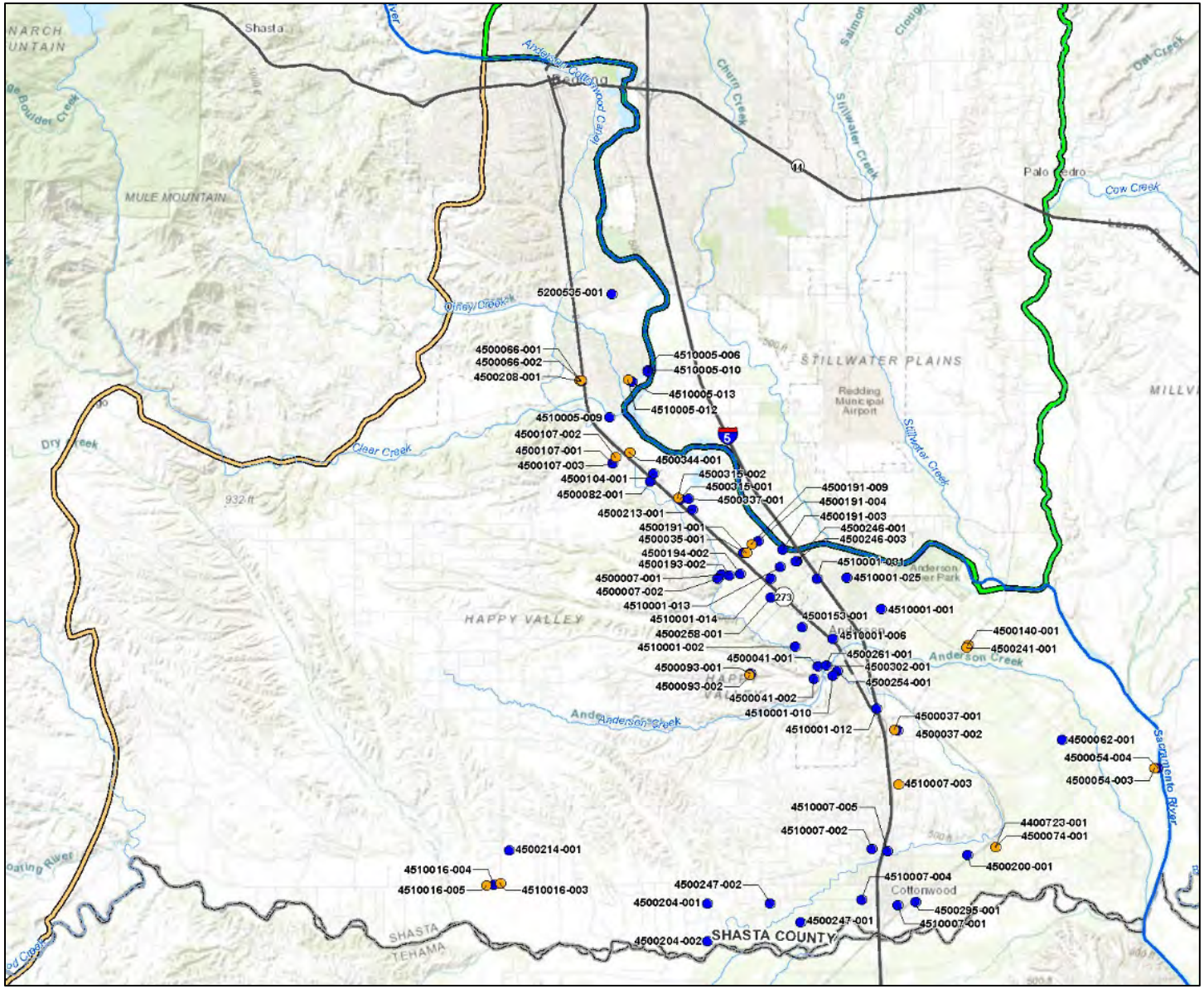
Opportunities for Public Input

Please note the following opportunities for engaging in the GSP process and providing input:

- Attend Enterprise Anderson Groundwater Sustainability Agency Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links



Map 1. Enterprise Subbasin Degraded Water Quality Representative Monitoring Network



Map 2. Anderson Subbasin Degraded Water Quality Representative Monitoring Network

Land Subsidence

Land subsidence refers to the gradual settling or sinking of the ground surface due to the removal or displacement of underground materials. The groundwater sustainability plans (GSPs) are only concerned with land subsidence associated with groundwater pumping.

During development of the GSPs available land subsidence data for the Enterprise and Anderson Subbasins estimated via periodic surveys of global positioning system monuments and satellite data (interferometric synthetic aperture radar [InSAR]) were reviewed. These data indicate that no measurable land subsidence due to groundwater pumping has occurred in the subbasins in the past. See attached maps.

The proposed minimum threshold for Land Subsidence is 6 inches (0.5 foot) of groundwater pumping induced land subsidence at any point on the InSAR grid in either the Enterprise or Anderson Subbasin over a 5-year period.

The following definition of an undesirable result was developed by the Enterprise Anderson Groundwater Sustainability Agency (EAGSA) with consideration of local beneficial uses:

> *The undesirable result is land subsidence resulting from groundwater extraction that causes significant and unreasonable negative impacts on public and private infrastructure* during the planning and implementation period of the GSPs. More specifically, *an undesirable result occurs when 6 inches (0.5 foot) over 5 years averaged across either the Enterprise or Anderson Subbasin is exceeded.*

There are no undesirable results to mitigate at this time and it is unlikely that land subsidence due to groundwater pumping in the subbasins will occur due to the fact that the aquifer materials beneath the subbasin are not considered to be susceptible to land subsidence and future groundwater levels are projected to be similar to past groundwater levels.

For more information about Land Subsidence please review Chapter 6.3 of the GSPs. The following recording taken from the virtual public workshop held on April 27, 2021 is also available:

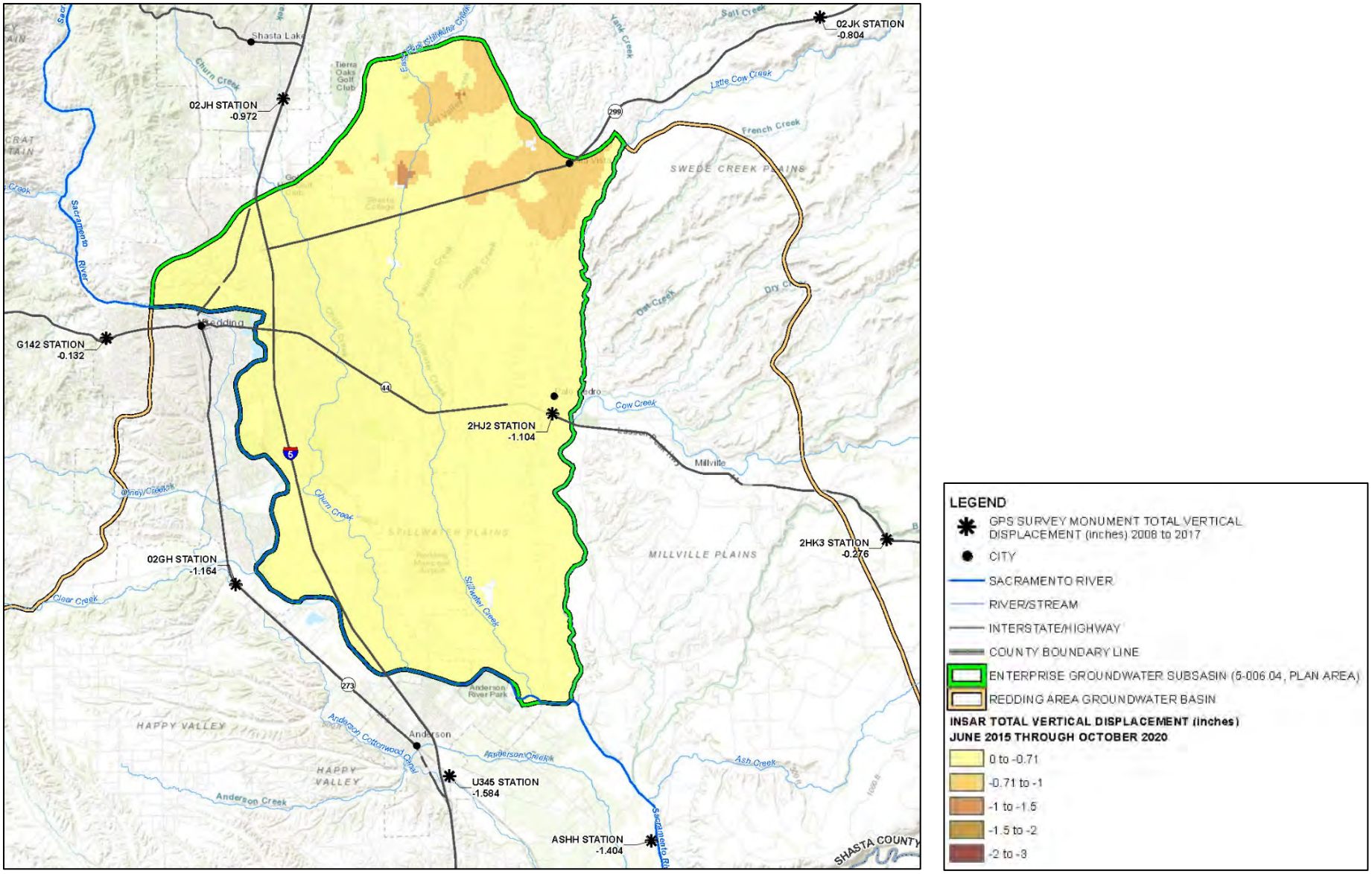
3. Land Subsidence

Opportunities for Public Input

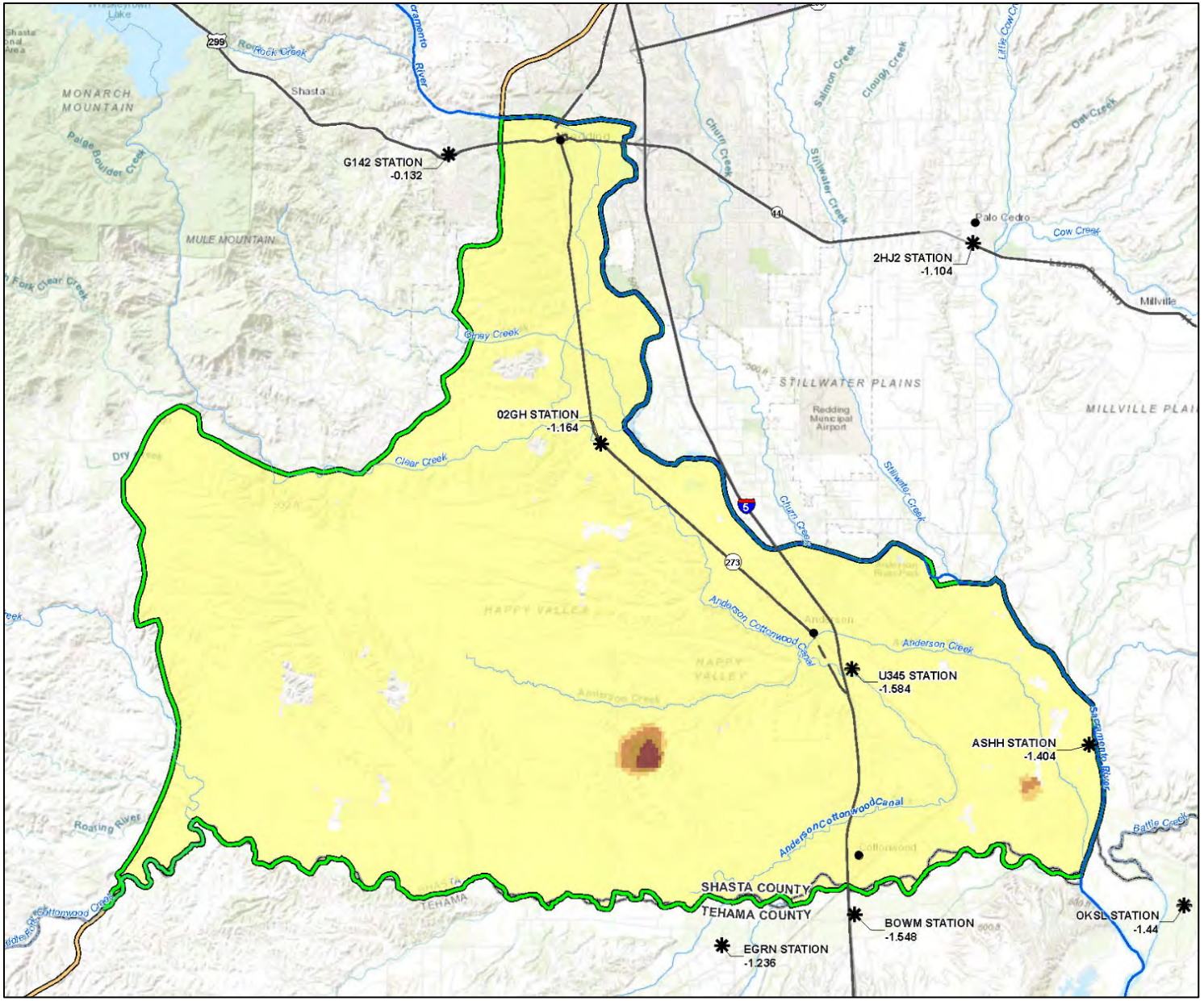
Please note the following opportunities for engaging in the GSP process and providing input:

- Attend EAGSA Board Meetings (by webinar and in-person when available)
- Comment on Draft GSP Chapters
    - https://eagsa-jacobs.hub.arcgis.com/pages/eagsa-agendas-and-related-links

The following maps shows total land subsidence (in inches), estimated from InSAR data, over a roughly five-year period:



Map 1. Enterprise Subbasin Existing Subsidence Monitoring Data



Map 2. Anderson Subbasin Existing Subsidence Monitoring Data

Appendix C-3
Public Workshop Summaries

Enterprise Anderson Groundwater Sustainability Agency (EAGSA) Public Workshop Summary

October 16, 2019
First United Methodist Church, 1825 East Street, Redding, CA 96001
5:30 PM - 7:30 PM

Attendees

EAGSA Members

1. Chuck Aukland, City of Redding
2. Charleen Beard, Shasta County
3. Jaclyn Disney, City of Redding
4. Brenda Haynes, Anderson-Cottonwood Irrigation District (ACID)
5. Chris Johnson, Anderson-Cottonwood Irrigation District (ACID)
6. Wayne Ohlin, Bella Vista Water District (BVWD)
7. Josh Watkins, City of Redding
8. Eric Wedemeyer, Shasta County Water Agency (SCWA)
9. Terri White, Anderson-Cottonwood Irrigation District (ACID)

DWR

1. Ian Espinoza, DWR

EAGSA Project Team

2. Lyna Black, Jacobs
3. Nate Brown, Jacobs
4. Sharon Hu, Kearns & West
5. Peter Lawson, Jacobs
6. Julie Leimbach, Kearns & West
7. Heather Perry, Jacobs

Members of the Public

1. Alice Bennett, Senator Dahle's District Office
2. John B. Crowe, Interested party
3. Pam Crowe, League of Women Voters - Redding Area
4. Larry Elliott, Commercial
5. Nick Gardner, Self
6. Art Jarrett, Interested citizen
7. Michael Koterba, Citizen, retired USGS hydrogeochemist
8. John Livingston, Sierra Club
9. R Llende, Green power
10. Mary Ann McCrary, Shasta Environmental Alliance (SEA)
11. Virginia Phelps, League of Women Voters
12. Peggy Rebol, Whole Earth & Watershed Festival
13. Ryan Teubert, Tehama Co GSA and domestic water user in Redding
14. Nola Wade, Bird watcher
15. Janet Wall, Audubon
16. Charles Wright, BLM

1. Meeting Objectives

The Enterprise Anderson Groundwater Sustainability Agency (EAGSA) hosted a Public Meeting on October 16, 2019 for the following objectives:

- Share information on the Sustainable Groundwater Management Act (SGMA) and planning process.
- Share our collective understanding of the status and trends for groundwater in the Enterprise and Anderson sub-basins.
- Gather input from stakeholders on interests and potential management actions.

Julie Leimbach, Kearns & West, provided an overview of the Sustainable Groundwater Management process. This presentation introduced the role of the Enterprise Anderson Groundwater Sustainability Agency and the objectives of the Groundwater Sustainability Plan.

Pete Lawson, Jacobs Engineer, provided an overview of the status of the Enterprise and Anderson sub-basins. This presentation introduced the technical analysis process and aspects and how they inform the Groundwater Sustainability Plan, including the sustainability indicators and undesirable results.

In addition to Jacobs staff, representatives from the EAGSA member agencies and the Department of Water Resources were present to listen and answer questions from meeting participants.

2. Overview of Groundwater Sustainability Plan Table of Contents

The Enterprise Anderson Groundwater Sustainability Plan Table of Contents is based on the DWR Annotated SGMA Regulations. The following topics will be included in the GSP:

- Description of Plan Area
    - Beneficial uses and users of groundwater in the basin
    - Decision-making process
    - Public and Interested Stakeholder engagement and comments
- Basin Setting
    - Hydrogeologic Conceptual Model
    - Groundwater Conditions
    - Water Budget
    - Management Areas
- Sustainable Management Criteria
    - Sustainability Goal
    - Undesirable Results
    - Minimum Thresholds
    - Measurable Objectives
- Monitoring Networks
    - Introduction of Monitoring Networks
    - Monitoring Network
    - Representative Monitoring
    - Assessment and Improvement of Monitoring Network
    - Reporting Monitoring Data to the Department

- Projects and Management Actions
    - Projects and Management Actions

3. Public Comments and Feedback

Below is a table of the comments and questions captured at the public meeting and the responses provided by the EAGSA project team. Italics denote where the facilitator re-stated the interest, comment, or request for clarification in relation to the groundwater planning.

The comments have been categorized as follows:

Undesirable Result Issues identified:	Process Issues are identified as:	GSP issues are identified as:
1. Water Quality 2. Water Supply 3. Groundwater Dependent Ecosystems (GDE)	1. Local Control 2. Water Transfers 3. Regulatory Policy 4. Public Process	1. Basin Setting 2. Undesirable Results 3. Min. threshold 4. Monitoring 5. Modeling 6. Technical Analysis 7. Management Actions 8. Funding Plan

3.1 Questions and Comments Received Verbally During the Public Meeting

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
Larry Elliott, Commercial	Q: Can the state pass a law to allow them to send EAGSA basin groundwater to Los Angeles? Q: Can Sacramento override local ordinances on out of basin transfers?		Local Control, Water Transfers	Management Action	• GSAs make decisions about managing water sustainably • Shasta County ordinances prevent basin transfers of water • State has said that if the basin fails to reach their own standards of sustainability, they will take over management
Unidentified Speaker	Q: Will we not know until 2042 if EAGSA is sufficiently managing groundwater sustainably on its own?			Monitoring	• EAGSA will submit a GSP to DWR for review. EAGSA will also submit annual updates and five-year comprehensive updates to DWR.
Unidentified Speaker	C: As water users, can we figure out ways to design how we use water that is wasted (greywater, blackwater)? E.g. Composting toilets, greywater for landscaping, beyond rain barrels. There is a lot that we can do to reduce demand on aquifer that is having a hard time keeping up.	Water Supply water Quality		Management Action	• • *Rephrased comment: You are suggesting a management action to conserve groundwater and achieve sustainability. Let's see what the presentation on the status of the basin tells us.* • *Rephrased comment: The plan should take into account the interlinked effects of fuel and forest management on the impacts on groundwater.*
Unidentified Speaker	C: There are no teeth to this thing. [Referring to the regulatory limits on EAGSA's authority]		EAGSA Authority		• Members of the public are invited to speak with EAGSA representatives and Jacobs staff with concerns about implementation.
Larry Elliott Commercial	C: What happened to Shasta County Environmental Health? There are 120 of us with [a specific number of] connections that report to them. Why weren't we notified about this process?		Public Process		• The City of Redding sent out a notice over a year ago asking interested parties to contact us. We have also sent out emails to interested parties. • *Rephrased concern: Request for all well owners to receive all notices by default for EAGSA activities regardless of whether they signed up for the interested parties list.*

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
Larry Elliott, Commercial	Q: Is there a map of the EAGSA area? Q: How come the map doesn't go up to the headwaters of the creeks in the area?			Basin Setting	• There is a map of the EAGSA subbasins on the Project Brief handout provided at this meeting. • The SGMA process only manages Alluvial groundwater basins which do not include the upland watershed areas.
Unidentified Speaker	Q: So the Sacramento River is charging the aquifer or vice versa?	Water Supply; GDE		Basins Setting	• The Sacramento River is gaining an average of 2 MAF water annually from the Enterprise and Anderson groundwater subbasins. This average gain includes dry water years.
Unidentified Speaker	Q: How much of [the fluctuations in groundwater elevation] is a function of population? Q: Would these hydrographs look the same even with half the number of people?	Water Supply		Modeling and Technical Analysis	• Agricultural uses dwarf the typical person's daily usage. People use very little water. Agriculture uses about 80 percent of our water because high-water crops are using groundwater more and more.
Unidentified Speaker	Q: What are the water well levels in our basin? Q: Is that trend going to continue? [Referring to agricultural water using mostly surface water]	Water Supply		Basin Setting	• These are shown in the hydrographs. Our water well levels are very stable. • Almost all agricultural water applied in the Enterprise Anderson subbasin is diverted from surface water. ACID has some of the most senior water rights in the state. It is unlikely that they would substitute groundwater for surface water for agricultural uses.
Unidentified Speaker	Q: If I live outside of the EAGSA basin border, can I pump a lot of water and make my neighbor that lives in the EAGSA area go dry?		Adjacent Basins	Technical Analysis, Management Actions	• Technical analysis includes water that is near the subbasin. Anything that can influence the water balance will be reflected in the water basin management. • Well owners are still subject to Shasta County water ordinances. Water must be pumped for beneficial use, and well owners will be accountable for negative impacts they cause to others
Unidentified Speaker	Q: Are groundwater graphs markedly different before and after the dam water was put in?	Water Supply		Basin Setting	• No, Shasta Dam does not provide a lot of water for locals in the Redding Area. The dam provides water for the Central Valley Project and is primarily a facility for this state water distribution system.

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
					• This would be different if the Sacramento River were a losing river versus a gaining river as it passes through the Redding Area
Michael Koterba, Citizen	Q: What is the water quality data based on? In my experience, sampling is very limited and may not be comprehensive enough to see the impacts of activities on water quality over time. I see water quality as a real weak link.	Water Quality		Basin Setting, Management Actions	• The GSP is responsible for setting the EAGSA standards. • *Rephrased comment: Suggestion for planners to monitor water quality from shallow to deep to get a comprehensive water quality data set and add more monitoring wells, in addition to looking into volume of water.*
Larry Elliott, Commercial	C: I worry about the volcano north of Lassen. If that goes off, it will send all kinds of ash down the creek.	Water Quality		Management Actions	• *Suggestion for management action: Independent well owners should take independent actions that create redundancies in supply [as related to water quality concerns and potability of water]* • DWR is offering to work with well owners to measure their wells free of charge. Well owners can use their wells to contribute to DWR monitoring data. • There is a plan to put a 1200 ft sampling well to measure water volume and quality differences with depth. • Water purveyors already conduct extensive sampling throughout the year for their residential customers. This data is available to the technical analysis team.
Unidentified Speaker	C: No lead pipes!	Water Quality			• No response.
Unidentified Speaker	Q: Why do we put treated wastewater into the river? C: It's not right. No amount of information will change my mind.	Water Quality		Basin Setting, Monitoring, Management Actions	• Treating wastewater and putting it back into the river is how we recycle water. • *Would you like more information on contamination of groundwater or management actions with respect to treated water discharge?*
Unidentified Speaker	Q: Is there anything preventing people from selling their water rights and pumping water out of this aquifer? Can I	Water Supply	Water Transfers		• Local County ordinances govern the sale of groundwater. Such sales are only allowed by permit through Shasta County.

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
	sell a bunch of my water to Modesto and replace it with aquifer water?				• The amount of water that water rights holders have transferred downstream in the past are an order of magnitude less than that same water could produce if applied to the local land to recharge the aquifer.
Unidentified Speaker	C: I hope that the amount of water that can be extracted before impacting sustainability will be detailed in the plan.	Water Supply, Water Quality, GDE		Technical Analysis and Modeling	• We will be able to answer that with technical analysis and modeling to produce a sustainable yield.
Unidentified Speaker	Q: Are surface water withdrawals more highly regulated?	GDE			• Yes, surface water rights are more restrictive.
Michael Koterba, Citizen	Q: In your scenario, are you looking at what happens if we have another 5-10 year drought, sans snow pack? All precipitation, no snow – is precipitation incorporated as snow? Do you look at climate change? Q: What level of severity do you use in your modeling?	Water Supply; Climate Change	Technical analysis and modeling	Modeling	• SGMA requires us to incorporate climate change into all of our forecasts. We take forecasts from global simulation models and downscale to this basin. These are predictive simulations and projects. • DWR uses VIC (variable infiltration capacity), and USGS has another set of tools. There is flexibility in tools, but we are looking for the most updated GSMs for our basin. The groundwater flow models do not deal with snowpack because Redding Area groundwater is not fed by snow.. There is a basin characterization model that provides inputs to the streams that provide inputs to the GSM. Precipitation is incorporated as snow in the basin characterization model.
Larry Elliott, Commercial	Q: When I lived in the Mammoth Lakes area in the 1990's, we used tree rings to determine likelihood of droughts. Do we have old trees that can be used for this in the Redding area?	Water Supply		Technical Analysis and Modeling	• No response.
Virginia Phelps, League of	C: From the environmental perspective, the SF Bay and Delta area in serious trouble. I think EAGSA should have an obligation to these other parts of the	GDE	Water Transfers	Chinook salmon, Delta Ecosystem	• *Suggestion for GSP: With regards to the GSP, would like to see out of basin linkages and downstream linkages. The GSP should address groundwater dependent ecosystem including connection to the*

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
Women Voters	state. It is not our water, as I understand it. It belongs to the earth and we need to figure out how to share it equitably.				*Sacramento River, Delta, and migratory species including Chinook salmon.*
Unidentified Speaker	Q: How do environmental regulations play into your models?	Water Supply, Water Quality, GDE		Modeling; Management Action	• Environmental regulations do not really play into our models, which are more concerned with surface water and groundwater exchange, streamflows driven by Shasta water releases. We assume that Biological Opinions, Central Valley Project (CVP), and State Water Project (SWP) are managed. • Curtailment is a management action. The end product of environmental effects is curtailing from the Sacramento River.
Unidentified Speaker	Q: Will we be talking about how much water we will provide downstream?	Water supply, GDE		Basin Setting	• Managing water availability for downstream use is not a SGMA goal. SGMA's goals are around project uses, a 50-year planning horizon, and sustainability. • We already send a lot of water downstream, as mentioned earlier in the presentation, even though it is not a SGMA goal. • EAGSA would not be able to decide to claim water that is sent downstream.
Larry Elliott, Commercial	Q: Water that is sent downstream is wasted – we need more dams.	Water supply		Management Action	• *Suggestion for management actions: Increased dammed surface water to recharge groundwater.*
	Q: Is there anything preventing Bella Vista from using groundwater as a primary source of water? Q: Is Bella Vista prohibited from buying groundwater? C: I would like more information about Sacramento River water and whether there would ever be a situation in which	GDE		Management Action	• Bella Vista was created because there was not enough good quality water. We cannot get the volume out of the ground in significant enough amounts. We use it to the best of our ability. Buying groundwater is complicated because it depends on transfers between water agencies. Bella Vista also has infrastructure limitations because there is no storage, just tanks, which limits our ability to use groundwater. • *Rephrased comment: Interest in protecting surface water for ecosystems and species. Would like to*

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
	there is a massive switch from surface water to groundwater.				*explore using more groundwater to substitute for surface water.*
Michael Koterba, Citizen	C: I see a potential problem with the GSA using unanimous vote to take actions because any single member holds veto power. What is the point of the GSP, monitoring, etc. if one person holds veto power that can prevent necessary management action? C: I see funding as a potential issue in the future. At some point the state may make it difficult to monitor and assess. EAGSA may need to do something in the future to raise money, which is it unable to do now.		Public Process	Funding Plan, Management Actions	• EAGSA is incentivized to implement this GSP because we are subject to DWR enforcement. All members want to cooperate and stay in compliance and avoid undesirable results. • This point is valid, but if there is a holdout member agency, then all members risk losing local control, which nobody wants. I believe changes will occur as needed. • EAGSA is currently applying for more funding. Nate Brown with Jacobs needs more letters of support which can help. Please reach out to Nate directly. • EAGSA is a no staff agency with limited powers, which was intentional. Some other GSAs are looking at fee structures, but when EAGSA was developed in 2017, there was a lot of resistance to extra financial burdens across the basin. • *Rephrased concern: Concern about process and the self-imposed limits on EAGSA's authority.* • *Rephrased concern: EAGSA needs to make a funding plan, which is required by SGMA.*
Michael Koterba, Citizen	C: I study the impact of land use on groundwater. EAGSA will need to go into communities and farms to conduct analyses.	Water Supply and Water Quality	Public process	Modeling and Technical Analysis	• *Rephrased comment: Suggestion to have targeted meetings for specific groups, including councils and people you expect to be resistant to the GSP.* • *I hear you suggesting EAGSA monitoring could include a more robust monitoring network that includes shallow groundwater monitoring because that is where the contamination starts to show.*

3.2 Written Questions and Comments Received

These questions and comments were provided by various stakeholders in the following ways:

- Verbal questions and comments individual conversations just before and just after the public meeting in individual conversations.
- Written comments submitted to the comment box on comment cards and in response to the three breakout group questions.

There are no documented responses to them yet because the Project Team was just gathering the questions and comments at this point.

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
Anonymous	Why is Rio Alto in the GW pumping slide? And, is it Rio Alto or Rio Alta?	Water Supply		Basin Setting	*Comment Noted.*
Brenda Haynes	I heard a comment/request tonight to include studies on how EAGSP impacts conditions in the Bay Area. I do not agree. This is outside our scope.	GDE		Basin Setting	*Comment Noted.*
Brenda Haynes	Please consider the enormous consequences if ACID were to out of business. ACID must be allowed to explore water transfers including GW substitution transfers in order to remain financially viable and keep our water right to the benefit of Shasta and Tehama Counties.	Water supply		Basin Setting, Management actions	*Comment Noted.*
Anonymous	Can we increase ground water storage – to increase storage while reducing evaporation?	Water Supply		Technical Analysis; Management Ations	*Comment Noted.*
Anonymous	Should we be cautious of “local” control when we are all so interconnected?	All	Local Control and Adjacent Basins	Basin Setting, Management Actions	*Comment Noted.*
Anonymous	How will CA law affect when ranches are fined if surface water runs off property? Ranches are building earthen dams to hold water.	All	Regulatory Policy	Basin Setting, Technical Analysis,	*Comment Noted.*

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
				Management Actions	
Anonymous	Look at 12,000 year tree ring study of Bristlecone Pines in White Mountains. Any comparable tree ring studies here [for hydrologic analysis]?	Water Supply and Quality		Technical analysis	
Anonymous	Look at other river areas, underground rivers like Salinas and Monterey where underground river is many times surface water.	Water Supply		Technical analysis	
Anonymous	From Red Bluff register of wells – How many wells in the EA Area are there, and what depths, total water pumped	Water Supply		Monitoring	
Anonymous	My residents use 3-5 more water in summer ___ (swamp coolers, landscaping)	Water Supply		Basin Setting; Monitoring; Management Actions	
Peggy Rebol, Whole Earth and Watershed Festival	Is there a plan for any connection between surface water management and groundwater management across the state? My concern is as surface water becomes more of an issue due to climate change how is that factored into this plan – or do you feel it is necessary?	GDE		Basin Setting, Technical analysis	
Anonymous	*What matters to you about how groundwater is managed in the Redding Area?* Sustainable management: Indications in place that are regularly reviewed; a committee that represents all interests, with power to take action if necessary.	All	Public process: multi-stakeholder decision making	Basin Setting, Management Actions	
Anonymous	*What outcomes would you like to avoid in relation to the Redding Area's groundwater?* Maintain or improve groundwater quality; local control of resources	Water Quality	Local control	Technical Analysis; Management Actions	

NAME AND AFFILIATION	QUESTION OR COMMENT	WATER ISSUE	PROCESS ISSUE	GSP ISSUE	RESPONSE
Anonymous	*Please identify any other stakeholders that this groundwater plan will impact.* __ Reps and interested stakeholders list seems adequately inclusive		Public Process		
Anonymous	For the next meeting – make sure location of venue entrance is in advertisement		Public Process		
Anonymous	Treated sewage put into the river – don't live down stream	Water Quality		Basin Setting; Management Actions	
Anonymous	Will GSA address natural wildlife sustainability – e.g. sufficient water for fish, amphibians, insects, plants for bees, etc.?	GDE			
Alice Bennett, Senator Dahle's office	Some orchards in the Redding Area are dry-farmed and are not dependent on irrigation systems. However, they are dependent on the groundwater table being high enough to water the roots of the trees. Please consider for monitoring and min. thresholds for groundwater. It is not just well infrastructure that needs to be able to reach the groundwater.	Water Supply		Basin Setting; Monitoring; Technical Analysis	
Mike Koterba	How can the EAGSA plan to avoid contamination from an increase in pesticide use from farming and in particular, marijuana growers?	Water Quality		Basin Setting; Monitoring; Modeling; Management Actions	

Enterprise Anderson Groundwater Sustainability Agency (EAGSA) Public Workshop Summary

April 27, 2021
This meeting was held virtually via webinar.
6:00 PM – 8:00 PM

Attendees

EAGSA Members

1. Chuck Auckland, City of Redding
2. Charleen Beard, Shasta County
3. David Coxey, Anderson-Cottonwood Irrigation District (ACID)
4. John Curry, Anderson-Cottonwood Irrigation District (ACID)
5. Bob Nash, Bella Vista Water District
6. Wayne Ohlin, Bella Vista Water District
7. Josh Watkins, City of Redding

Members of the Public

1. John Montgomery, Private Citizen
2. Virginia Phelps, League of Women Voters
3. Eddy Teasdale, LSCE

EAGSA Project Team

1. Lyna Black, Jacobs
2. Nate Brown, Jacobs
3. Sharon Hu, Kearns & West
4. Peter Lawson, Jacobs
5. Heather Perry, Jacobs
6. Rafael Silberblatt, Kearns & West

1. Meeting Objectives

The Enterprise Anderson Groundwater Sustainability Agency (EAGSA) hosted a Public Meeting on April 27, 2021 with the following objectives:

- Provide an update on the Enterprise and Anderson Groundwater Sustainability planning process with a focus on the sustainable management criteria.
- Gather input from community members.

Rafael Silberblatt, Kearns & West, provided an overview of the Sustainable Groundwater Management process. This presentation included the objectives of the Sustainable Groundwater Management (SGMA) Act, EAGSA priorities, and EAGSA's role in developing standards for the groundwater sustainability plans (GSPs).

Pete Lawson, Jacobs Engineer, provided an overview of the sustainable management criteria for the Anderson and Enterprise Subbasins. This presentation included an overview of the SGMA roadmap to

sustainability, introduction of the sustainability indicators, the application of the sustainable management criteria to the Anderson and Enterprise Subbasins, and opportunities for public engagement.

In addition to Jacobs staff, representatives from the EAGSA member agencies were present to listen and answer questions from meeting participants.

2. Groundwater Sustainability Planning Process Update

To date, EAGSA has developed several draft chapters of the Anderson and Enterprise GSPs, which are available on the EAGSA website. GSP chapters are being released individually for public review and comments can be submitted via the EAGSA web-hub. The Draft GSP will be issued for public review and comment later this summer.

The EAGSA Sustainability Goal is as follows:

> Maintain a locally managed, economically viable, sustainable groundwater resource for existing and future beneficial use in Shasta County by continuing existing management and operation within the sustainable yield or by modification of existing management to address unforeseen future conditions.

Sustainable Management Criteria (SMC) are used to evaluate sustainability for each GSP. SGMA requires that sustainability can be demonstrated by 2042 using measurable objectives and minimum thresholds. The GSPs are intended to forecast a path toward sustainability that avoids undesirable results.

- The **measurable objective** is the target measurement for sustainability (e.g., target groundwater elevation in 2042).
- Violation of the **minimum threshold** for a particular SMC could indicate "significant and unreasonable conditions." If these significant and unreasonable conditions lead to "undesirable results," the State Water Resources Control Board may intervene to bring the subbasins back to sustainable conditions.
- Each GSP includes **interim milestones**, which indicated forecasted progress toward the measurable objectives.

EAGSA has evaluated each sustainability indicator and determined that there are no undesirable results present for any of the SMCs.

1. **Significant and Unreasonable Seawater Intrusion**. Seawater intrusion is not applicable because the subbasins are 100 miles away from the ocean.
2. **Significant and Unreasonable Land Subsidence**.
    - The undesirable result occurs when the minimum threshold of six inches of subsidence occurs over five years is exceeded.
    - According to historical groundwater levels, local hydrogeologic conditions, and satellite data analyses, there are no known issues with groundwater-induced land subsidence in the subbasins.
3. **Significant and Unreasonable Chronic Lowering of Groundwater Levels**.
    - The undesirable result occurs when 25 percent of the same representative monitoring points (RMPs) exceed the minimum threshold for three consecutive spring measurements.

- A Redding Basin groundwater model has been developed to simulate how processes in the basin could affect groundwater levels for the next fifty years. The minimum threshold and measurable objectives have been set using this model to provide operational flexibility and sustainability for the basin.
- Based on historic data and projected groundwater use, there is no known long-term declines in groundwater levels in the subbasins.

4. **Significant and Unreasonable Reduction of Groundwater Storage.** EAGSA is using groundwater levels as a proxy for evaluating this SMC.
    - The undesirable result" occurs when 25 percent of the same RMPs exceed the minimum threshold for three consecutive spring measurements.
    - Based on historic data and simulated groundwater levels, there is no significant decrease in groundwater storage from the baseline and no indication of overdraft conditions.
5. **Significant and Unreasonable Depletion of Interconnected Surface Water**. EAGSA is using groundwater levels as a proxy for evaluating this SMC.
    - The undesirable result occurs when 25 percent of the same RMPs exceed the minimum threshold for three consecutive spring measurements.
    - Based on measured data and evaluations of the Sacramento River, Cottonwood Creek, Cow Creek, and Clear Creek, Keswick Gage, and Bend Bridge Gage, there is no significant concern for depletion associated with interconnected surface water.
6. **Significant and Unreasonable Degraded Groundwater Quality**.
    - The undesirable result occurs when 25 percent of the same RMPs violate the minimum, thresholds for two consecutive sampling events.
    - EAGSA is responsible for ensuring that the groundwater operations within the subbasins do not worsen groundwater quality. Groundwater quality has been assessed using RMPs (the State Water Resources Control Board monitoring well network). While there are some exceedances of drinking water standards, these are generally associated with naturally occurring constituents and known environmental sites. There are no known issues with degrading water quality.

If undesirable results for a groundwater-level-related sustainability indicator occur, EAGSA would continue to coordinate with monitoring entities collecting data in the subbasins. If the results are found to be related to groundwater management activities, then EAGSA member agencies would implement water conservation strategies, consider expanding in-basin water exchange programs, and look for opportunities to enhance groundwater recharge.

3. Public Input

Members of the public are invited to review provide comments on draft chapters of the GSP via the EAGSA web-hub. EAGSA Board Meetings are also open to the public.

- Question: What assumptions for increased water demand and precipitation trends were used in the groundwater model?
    - Answer: The groundwater model incorporated several factors related to increased water demand and precipitation trends. These projections and models will be updated along with the GSP update every five years.

- Population growth: Urban water management plans, where available, specified population growth rates, which generally projected modest growth (less than 1% growth per year).
- Land use: The model assumes that land use and crop patterns do not change substantially over the next couple of decades (based on historical data).
- Precipitation levels: The global climate model was selected based on applicability to conditions in California and long-term average precipitation. The model includes a variety of wet and dry years as well as a significant drought near the end of the model period.

Appendix C-4
Public Comments on Draft GSP

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 2, Plan Area	My great concern is that water diversions/sales will be viewed looking at the bounty of a limited geographical area & not connecting to the total Northern California Watershed which needs to include effects on the San Francisco Bay & Delta. Line #87 ACID "water transfers" 2013, 2014, 2015 Line #474 ACID additional "water transfers" planned for 2020. Who did they sell the water to, for how much, what did they do with the money? Is there log of all water transfers that includes the amount of purchase within the Redding Basin?	The volume and timing of historical and potential future ACID water transfers were incorporated into the GSP process, as documented in Chapter 4, Water Budgets and Appendix F, Numerical Flow Model Documentation, to inform sustainable groundwater management decisions. Disclosure of financial information associated with purveyor water transfers is beyond the scope of SGMA.
William Heffner Interested Party	EAGSA Web-Hub comment portal	Chapter 2, Plan Area	Chapter 2 (Basin Setting), Section 2.13.1 - Lines 403-404: What will the "majority of the total membership of the commission" consist of (i.e., how many members will it take to approve an extraction permit)? Will small water districts and/or all concerned in the area that will be extracted from, be informed when there will be votes on permits to extract water for commercial use?	Section 2.13.1 of the GSPs provide an overview of the Shasta County permitting process for out-of-basin water transfers. Shasta County Municipal Codes 18.08.060 and 18.08.070 describe the public notice, review, and comment process associated with groundwater export permits. https://library.municode.com/ca/shasta_county/codes/municipal_code?nodeId=CD_ORD_TIT18EN_CH18.08GRMA
William Heffner Interested Party	EAGSA Web-Hub comment portal	Chapter 2, Plan Area	Chapter 2 Plan Area: Lines 473 - 476: I would like to see a total number of commission members required to approve an export permit vice "majority of total membership". I would not like to see 2 or 3 members approving an export permit without public comments prior to the voting.	Shasta County regulates groundwater export permits. The commentor is referred to Shasta County Public Works Department and Chapter 18.08 of the Shasta County Municipal Codes for additional information. https://library.municode.com/ca/shasta_county/codes/municipal_code?nodeId=CD_ORD_TIT18EN_CH18.08GRMA
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 2, Plan Area	Groundwater chapter 2 draft comment #289 – Northern Sacramento Valley Integrated Water Management Plan 2014 six counties Butte, Colusa, Glenn, Shasta, Sutter & Tehama develop water policy framework #302 – 6 goals – 4 & 12 within each #309 – objectives ranked as Foundational, critical, high (economic), medium (environmental) Does placing the environment on a lower rank than economic needs meet the standards of wise resource management?	The comment is referencing the Northern Sacramento Valley Integrated Regional Water Management Plan, which is not constrained by the requirements of SGMA. The GSPs were developed to sustainably manage groundwater resources within the Enterprise and Anderson Subbasin with the consideration of all beneficial users.
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 4; Water Budgets	"After approximately 2050, the selected GCM includes a nearly 20-year drought, during which the groundwater outflows in the Future Baseline simulation exceed the groundwater inflows, resulting in a downward trend in the total groundwater storage. Having groundwater outflows exceed groundwater inflows during droughts is normal and not itself an indicator of overdraft conditions. Regardless, the amount of groundwater in storage at the end of WY 2071 is nearly the same as the groundwater storage at the beginning of the projection period starting in WY 2019. As such, groundwater pumping at these levels, according to the EAGSA Model and the definitions of SMCs discussed in Chapter 6, will not produce undesirable results" I do not understand how this is possible. Is water seeping in from elsewhere?	As described in Chapter 3, groundwater levels have fluctuated over the period of record, declining during droughts and recovering during wetter water years. Groundwater in the subbasin is recharged by infiltrating precipitation, infiltrating applied water, infiltrating surface water from streams and canals, and subsurface inflow from adjacent groundwater basins. These processes have occurred in the past and will continue to occur in the future.
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 5; Monitoring Networks	"As shown on Figure 5-1, relatively large areas of the Anderson Subbasin lack groundwater-level monitoring wells, particularly in the northern and central portions of the subbasin." Will historic groundwater levels be available to give context to current levels? Looking at groundwater levels 10, 20, 50 years back will show if replenishment is indeed occurring. I would imagine well permits would be able to help.	Groundwater levels from wells not currently gauged were considered when developing GSPs. These locations provide context for how the subbasin has responded to historical drought conditions. Appendix D contains hydrographs of groundwater levels versus time for all wells currently and historically gauged within the subbasin as well as the water year type associated with the groundwater-level data.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 8; Plan Implementation	The Plan. 8.2.3 Outreach The EAGSA will continue public outreach and provide opportunities for engagement during GSP implementation. The EAGSA website will be maintained as the primary communication tool for SGMA related content, monitoring data, reports, and meeting information. The goal of this tool is to make the GSP process as accessible to the public as possible. The website reality. The agenda and related documents will be made available on this website. ▪ May 12, 2021 Agenda 4. APPROVAL OF MINUTES FROM PREVIOUS EAGSA BOARD MEETING The Board will motion to approve the minutes from the August 11, 2020, EAGSA Board meeting. (See Attachment 1 Attachment 1 is blank December 8, 2020 Agenda **Meeting cancelled**** ▪ August 11, 2020 Minutes (Draft)	The EAGSA web-hub was still under development at the time that Chapter 8 was submitted for review. The EAGSA web-hub contains Interested Party updates, EAGSA Board meeting agendas, EAGSA Board meeting minutes, and other SGMA-related resources. The EAGSA will continue to maintain the web-hub during GSP implementation.
Christy Gilbreath Shasta County Environmental Health Division	EAGSA Web-Hub comment portal	Chapter 6	In both documents, the table located on pages 11 & 12 (6-11 & 6-13) is hard to read and it looks like the page numbers do not match the pages before and after the table. Are pages missing or are the pages miss numbered?	The pagination was incorrect in the initial submittal of Chapter 6 as a standalone chapter. Page numbering and display of Table 6-1 have been corrected in the compiled draft GSP.
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 6	"Potential Causes of Undesirable Results Significant and unreasonable lowering of groundwater levels in the Enterprise Subbasin is highly unlikely. However, if such conditions were to occur, they would more likely result from increased groundwater pumping due to unforeseen factors, such as unexpected population growth, substantial changes in land use, greater-than-anticipated surface-water curtailments, or climatic conditions more severe than those considered in the Future Baseline and Increased Groundwater Use Scenarios" How do you define “unforeseen factors”? “We’re not just moving back and forth between wet years and dry years, but the number of dry years is really increasing,” said Mount of the Public Policy Institute of California. “And the wet years are getting few and far between.” https://enewspaper.latimes.com/infinity/article_share.aspx?guid=0ed72e67-655e-437a-8060-b9ac44963361	As listed in the quoted text from Section 6.3.2.3 of the GSPs, unforeseen factors may include, but are not limited to, unexpected population growth, substantial changes in land use, greater-than-anticipated surface-water curtailments, or climatic conditions more severe than those considered in the Future Baseline and Increased Groundwater Use Scenarios. As described in Section 4.3, a Future Baseline groundwater simulation was performed to project potential groundwater conditions. This simulation accounts for reasonably anticipated population growth and associated water demands, water conservation targets established by water purveyors, and climate change. The Increased Groundwater Use Scenario was generated to account for potential future conditions that are not reasonably anticipated and incorporate such factors into the groundwater management strategy for the subbasins.
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	Chapter 6	"The margin of operational flexibility is not part of the SGMA-defined SMCs; however, this component is an important consideration for local water purveyors. The margin of operational flexibility represents the difference between the MO and the MT. This margin allows local water purveyors to pump more groundwater periodically to meet local water demands, while still operating the basin sustainably." Local control as its’ most creative. This is an example where well levels, current and “historic” would be helpful for “the Public” to understand how pumping more in a severe drought will guarantee sustainability.	Groundwater levels from wells not currently gauged were considered when developing the GSPs. These locations provide context for how the subbasin has responded to historical drought conditions. Appendix D contains hydrographs of groundwater levels versus time for all wells currently and historically gauged within the subbasin as well as the water year type associated with the groundwater-level data. These data show that groundwater levels have declined during past drought periods and subsequently recovered. Additionally, as discussed in Chapter 4 and Appendix F, climate change and future multi-year drought periods were considered in the development of SMCs for the subbasin.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
Virginia Phelps Interested Party	email	Chapter 6	The Groundwater Impairment Graph on page 34 of the EASGA Chapter 6 draft shows significant low water levels in 2020 and 2025 and strong recover through 2040. I did not find any "historic" groundwater levels in the draft. Is it possible to include some? I do understand they will vary widely but believe groundwater levels from 10, 15, 20 years ago along with population figures would help explain this decline. I am particularly interested in the graph on page 46, "groundwater impairment" # 4510014-005 which is close to my home. Can the well numbers be connected to those on the DWR map? There are only so many wells. Are these the same wells with different numbers for different agencies?	Groundwater levels from wells not currently gauged were considered when developing the GSPs. These locations provide context for how the subbasin has responded to historical drought conditions. Appendix D contains hydrographs of groundwater levels versus time for all wells currently and historically gauged within the subbasin as well as the water year type associated with the groundwater-level data. These data show that groundwater levels have declined during past drought periods and subsequently recovered. Well labels have been added to the groundwater quality monitoring network (Figure 6-10). The labels represent the SWRCB naming convention and can be correlated to the groundwater quality dataset included in Appendix E and the SWRCB website.
Virginia Phelps Interested Party	EAGSA Web-Hub comment portal	General	How will Shasta County's 15,000 wells be replenished when groundwater demand is increasing due to surface water cutbacks? https://www.abc10.com › reservoir-levels-California Sep 7, 2021 — Shasta Lake has 1186057 acre feet of water stored. Breaking that down into percentages, the reservoir is at 26% capacity and 42% of average ...	Drought conditions have historically been and will continue to be a part of the natural climate cycle in California. As described in Chapter 7, during drought periods, water purveyors have successfully implemented a series of water conservation and demand management strategies to manage water resources in the subbasin. These programs may be expanded, if necessary, in the future to adapt to unanticipated changing conditions within the subbasin. Furthermore, based on observations during historical drought periods and model simulations of potential future drought conditions, groundwater in the subbasin will be replenished during wetter climatic periods between droughts.
NGO Consortiuma	Comment Letter	Section 1.5, Notice and Communication	Provide the population of each identified DAC. Identify the sources of drinking water for DAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems).	The text in Section 1.5.10 of the GSP has been updated to reflect that 99.9% of the populated area of the Anderson Subbasin is considered DAC or SDAC. As such, all components of the GSP (including population and water supply) are considered to be applicable to DACs or SDACs.
NGO Consortiuma	Comment Letter	Chapter 2, Plan Area	Include a map showing domestic well locations and average well depth across the subbasin.	A map of average domestic well depth by Township/Range/Section has been added as Figure 2-6b.
NGO Consortium[a]	Comment Letter	Section 3.2.2, Interconnected Surface Water	Figure 3-17 showing interconnected reaches could be improved by clarifying the legend labels and colors used for the stream reaches. For example, reaches of the Sacramento River are shown as either a thick blue line or a thin blue line inside a green border. Similarly, reaches of Little Cow Creek are alternating blue and green. It is unclear what the differences are since the text states that the entire lengths of the Sacramento River and Little Cow Creek are interconnected.	Because the geospatial data representing surface-water features and the subbasin boundary are not completely aligned, portions of the interconnected surface-water lines for subbasin boundary streams were inadvertently "clipped" to the subbasin extent. Figure 3-17 has been updated to include information for the full stream lengths.
NGO Consortium[a]	Comment Letter	Section 3.2.2, Interconnected Surface Water	Describe data gaps for the ISW analysis. We recommend that the GSP considers any segments with data gaps as potential ISWs and clearly marks them as such on maps provided in the GSP.	SGMA does not prescribe a methodology for defining or delineating interconnected surface waters. The approach to delineating described in the GSP is considered robust in that it integrates physical data (such as stream elevations) and output from a calibrated integrated groundwater/surface-water flow model. As such, reaches of interconnected and non-interconnected surface water can be estimated at a much higher resolution than that estimated using monitoring infrastructure. Installation of infrastructure to delineate interconnected surface waters at a resolution higher than or equal to that presented on Figure 3-17 would be both financially and logistically infeasible. Additional surface-water and associated groundwater elevation data would be useful to inform the conceptual model; however, such data alone includes inherent measurement errors and uncertainty, and should be coupled with other information (such as numerical modeling). As discussed in Section 8, the EAGSA will look for opportunities to expand monitoring capabilities within the subbasin and to coordinate with local, state, and federal agencies on data collection activities.
NGO Consortium[a]	Comment Letter	3.1.6.6, Natural Groundwater Discharge Areas	Use depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. Refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer.	The approach to mapping areas of groundwater within 30 feet of land surface described in this GSP is conservative in that it is based on a seasonal high water table under current conditions (April 2018). The analysis is considered to be sufficient for identifying natural communities that may be connected to groundwater. This analysis may be revised to include additional water year types during future GSP updates.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
NGO Consortium[a]	Comment Letter	3.1.6.6, Natural Groundwater Discharge Areas	Provide depth-to-groundwater contour maps, noting the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape.	The depth to water was computed by subtracting the spring 2018 groundwater elevation contours from the digital ground surface elevation distribution, as suggested in the comment and in the best practices. Text in Section 3.1.6.6 has been revised to clearly state this step in the process. Depth to groundwater within 30 feet of ground surface is presented on Figure 3-11.
NGO Consortium[a]	Comment Letter	3.1.6.6, Natural Groundwater Discharge Areas	Refer to Attachment B for more information on TNC's plant rooting depth database. Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30-ft threshold, such as Valley Oak (Quercus lobata). We recommend that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30-ft threshold, when verifying whether Valley Oak polygons from the NC Dataset are connected to groundwater. It is important to emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.	Thank you for this information, the comment is noted. The potential GDE analysis included in this GSP is consistent with recommendations available at the time of initial GSP development (that is, the use of a 30-foot depth to groundwater). The EAGSA may consider deeper rooting depths in future analyses, as applicable to the subbasin's principal aquifer (that is, an alluvial rather than a fractured bedrock aquifer system).
NGO Consortium[a]	Comment Letter	3.1.6.6, Natural Groundwater Discharge Areas	Discuss data gaps for GDEs. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.	Data gaps are included in Section 5.3.6 of this GSP.
NGO Consortium[a]	Comment Letter	1.5.1.1, Beneficial Uses and Users	Provide a complete inventory, map, or description of fauna (e.g., birds, fish, amphibian) and flora (e.g., plants) species in the subbasin and note any threatened or endangered species (see Attachment C in this letter for a list of freshwater species located in the Enterprise Subbasin).	Thank you for providing the list of freshwater species within the Anderson Subbasin. This information has been included as Appendix C-5 of the GSP.
NGO Consortium[a]	Comment Letter	Chapter 4, Water Budgets	Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation and managed wetlands.	The water budget tables in Chapter 4 and Appendix F have been revised to include water demands for native and non-native vegetation as well as groundwater pumping by water use sector. The discussions of land use and water use sectors included in Chapter 2 have been updated to reflect information included in the 2018 land use data made available by DWR. This dataset included ground truthing of land use in Shasta County. Although there were managed wetlands identified in the 2016 land use dataset, these features were not identified in the ground-truthed 2018 datasets. As such, it is concluded that there are no managed wetlands within the Anderson Subbasin. The absence of managed wetlands in the subbasin is also consistent with the 2014 land use dataset incorporated into the numerical model.
NGO Consortium[a]	Comment Letter	Section 1.5, Notice and Communication	In the Communications & Engagement Plan, describe active and targeted outreach to engage all stakeholders throughout the GSP development and implementation phases. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.	A description of targeted outreach is included in Section 1.5.13 of the GSPs. Additionally, summaries of targeted outreach have been added as Appendix C-6 of the GSPs. The Communications and Engagement Plan may be revised during GSP implementation, as necessary.
NGO Consortium[a]	Comment Letter	Section 1.5, Notice and Communication	Utilize DWR's tribal engagement guidance to comprehensively address all tribes and tribal interests in the subbasin within the GSP.	Section 1.5 describes identification of tribal interests within the Anderson Subbasin and outreach to tribes. The team attempted to conduct outreach to the tribes in accordance with DWR's guidance but was met with lack of response. The team made early attempts to email and call contacts as well as discover new contacts through known tribal coordinators such as California Indian Environmental Alliance. The team was not successful in finding any existing meetings where sovereign tribal entities were already engaged. At one point, the team did engage with Redding Rancheria Tribe and schedule a briefing meeting, but due to the COVID-19 pandemic, the Tribe cancelled and never responded to the request for reschedule. Unfortunately, during COVID, and with little response from the tribes and a desire to respect the unresponsiveness during COVID, the outreach team did not meet with the tribes in a way that would have meaningfully met with DWR's Engagement with Tribal Governments Guidance Document. The EAGSA would like to continue to respect sovereign tribes' priorities and plans for another attempt at early engagement at the outset of the implementation planning phase.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
NGO Consortium[a]	Comment Letter	Section 6.3.2.3, Minimum Thresholds	Chronic Lowering of Groundwater Levels Describe direct and indirect impacts on DACs, drinking water users, and tribes when describing undesirable results and defining minimum thresholds for chronic lowering of groundwater levels.	Section 6.3.2.3 describes how minimum thresholds for chronic lowering of groundwater may affect the interests of beneficial uses and users of groundwater or land uses and property interests. Because approximately 99.9% of the populated areas of the Anderson Subbasin are DACs or SDACs, they are considered in the analysis of potential impacts to public and private groundwater users described in this section. Additionally, because SMCs are established with consideration of all beneficial uses and users, they are considered protective of tribal water resources.
NGO Consortium[a]	Comment Letter	Section 6.3.5.3, Minimum Thresholds	Degraded Water Quality Describe direct and indirect impacts on DACs, drinking water users, and tribes when defining undesirable results for degraded water quality. For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act."	Section 6.3.5.3 describes how minimum thresholds for degraded groundwater quality may affect the interests of beneficial uses and users of groundwater or land uses and property interests. Because approximately 99.9% of the populated areas of the Anderson Subbasin are DACs or SDACs, they are considered in the analysis of potential impacts to public and private groundwater users described in this section. Additionally, because SMCs are established with consideration of all beneficial uses and users, they are considered protective of tribal water resources.
NGO Consortium[a]	Comment Letter	Section 6.3.5.3, Minimum Thresholds	Degraded Water Quality Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs and drinking water users.	Section 6.3.5.3 describes how minimum thresholds for degraded groundwater quality may affect the interests of beneficial uses and users of groundwater or land uses and property interests. Because approximately 99.9% percent of the populated areas of the Anderson Subbasin are DACs or SDACs, they are considered in the analysis of potential impacts to public and private groundwater users described in this section.
NGO Consortium[a]	Comment Letter	Section 6.3.5.3, Minimum Thresholds	Degraded Water Quality Set minimum thresholds and measurable objectives for all water quality constituents within the subbasin that are impacted or exacerbated by groundwater use and/or management.	The majority of groundwater used in the Anderson Subbasin is for drinking water. As such, setting the MTs with respect to the lower of either the California or federal promulgated drinking water standards is considered appropriate.
NGO Consortium[a]	Comment Letter	Section 6.3.5.2, Measurable Objectives	Degraded Water Quality Set measurable objectives at lower levels than minimum thresholds (i.e., indicative of better water quality).	SGMA is not intended to function as a groundwater cleanup program. Remediation of groundwater is regulated by state and federal agencies, that is, DTSC, RWQCB, and EPA. As discussed in Section 6.3.5.2, the MOs have been set at current conditions (that is, the current distribution of groundwater impairments).
NGO Consortium[a]	Comment Letter	Section 6.3.5.3, Minimum Thresholds	Degraded Water Quality Set minimum thresholds that do not allow water quality to degrade to levels at or above the MCL trigger level.	As defined in Section 6.3.5.3, the MTs for degraded groundwater quality is zero additional exceedances for any chemical that has an established MCL or SMCL at the RMPs. As such, any new chemical being detected above the MCL or SMCL at a given RMP or any COC being detected above the MCL or SMCL at an RMP where it had not previously been detected is a violation of the MT. This is consistent with how drinking water resources are managed at the state and federal level and is, therefore, considered appropriate.
NGO Consortium[a]	Comment Letter	Section 6.3.2.4, Undesirable Results	When defining undesirable results for chronic lowering of groundwater levels, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results in the subbasin. Defining undesirable results is the crucial first step before the minimum thresholds can be determined.	Per GSP regulations, undesirable results are defined as a combination of MT violations. This GSP includes descriptions of undesirable results for applicable sustainability indicators in Chapter 6.
NGO Consortium[a]	Comment Letter	6.3.4, Depletions of Interconnected Surface Water	When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when minimum thresholds in the subbasin are reached. The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law.	Section 6.3.4.2 provides a summary of justification for use of the SMCs for chronic lowering of groundwater levels as a proxy for depletions of interconnected surface water. This section provides an analysis that concludes that there would be minimal impacts to aquatic species, because the potential Sacramento River streamflow reductions are negligible compared to the total streamflow.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
NGO Consortium[a]	Comment Letter	Chapter 6	When establishing SMC for the subbasin, consider that the SGMA statute [Water Code §10727.4(l)] specifically calls out that GSPs shall include "impacts on groundwater dependent ecosystems".	A discussion of how ecological beneficial users, including GDEs, may be affected by the selected SMCs are included for each applicable sustainability indicator.
NGO Consortium[a]	Comment Letter	Chapter 4, Water Budgets, and Appendix F, Numerical Flow Model Documentation	Consider other GCM projections to account for uncertainty beyond median statistics.	Four GCMs were considered in the development of projected conditions as simulated in the EAGSA Model. Section 3.5.1 of Appendix F describes this analysis in detail. Through this analysis, the HadGEM2-ES RCP 8.5 was selected as the scenario of interest to support the development of the GSP due to the warm and dry tendencies of the projection, as described by Pierce et al., 2018. Considering the GSP is a water supply planning effort, the GSA determined that the scenario representing warm and dry conditions would provide a conservative outlook for GSP planning and development.
NGO Consortium[a]	Comment Letter	Chapter 4, Water Budgets, and Appendix F, Numerical Flow Model Documentation	Integrate climate change, including extreme climate scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.	Climate change has been incorporated into all aspects of the projected water budget. Additionally, a second projection was developed, which includes climate change on top of increased water use demands to stress the subbasin beyond historical low groundwater levels within the subbasin. Thus, the water budget information used to support the development of sustainable management criteria and projects and management actions has adequately complied with GSP regulations.
NGO Consortium[a]	Comment Letter	Chapter 4, Water Budgets, and Appendix F, Numerical Flow Model Documentation	Incorporate climate change into surface water flow inputs, including imported water, for the projected water budget.	Climate change projections were incorporated into various components of the surface-water budget, including surface-water inflows from ungauged watersheds, reservoir releases, and surface-water diversions. Refer to Section 5.1 of Appendix F for further discussions regarding how assumptions of climate change were incorporated into the EAGSA Model for development of projected water budgets.
NGO Consortium[a]	Comment Letter	Chapter 7, Projects and Management Actions, and Appendix F, Numerical Flow Model Documentation	Incorporate climate change scenarios into projects and management actions.	Based on EAGSA Model results used to develop projected water budgets and an additional "Increased Groundwater Use" scenario, the GSA determined that PMAs are not necessary to achieve sustainability (however, projects and management actions to maintain sustainability are discussed in Chapter 7). Thus, the incorporation of climate change has been accounted for in the determination of the need for PMAs.
NGO Consortium[a]	Comment Letter	Chapter 5, Monitoring Networks	Provide maps that overlay current and proposed monitoring well locations with the locations of DACs, domestic wells, tribes, and GDEs to clearly identify monitored areas.	The maps included in this GSP adequately convey this information. Additional graphics may be considered during development of annual reports or future GSP updates, as needed.
NGO Consortium[a]	Comment Letter	Chapter 5, Monitoring Networks	Increase the number of RMPs in the shallow aquifer across the subbasin as needed to map ISWs and adequately monitor all groundwater condition indicators across the subbasin and at appropriate depths for all beneficial users. Prioritize proximity to DACs, domestic wells, tribes, GDEs, and ISWs when identifying new RMPs.	The RMP network and identification of data gaps in Chapter 5 take all beneficial users into account.
NGO Consortium[a]	Comment Letter	Chapter 5, Monitoring Networks	Ensure groundwater elevation and water quality RMPs are monitoring groundwater conditions spatially and at the correct depth for all beneficial users - especially DACs, domestic wells, tribes, and GDEs.	The RMP network and identification of data gaps in Chapter 5 take all beneficial users into account.
NGO Consortium[a]	Comment Letter	Chapter 5, Monitoring Networks	Describe biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.	In addition to the distinct monitoring networks described in Chapter 5, the EAGSA will use the GDE Pulse online interactive mapping tool (as updates are published) during GSP implementation to assess the overall health of GDEs in the subbasin compared to historical conditions.
NGO Consortium[a]	Comment Letter	Chapter 7, Projects and Management Actions	For DACs and domestic well owners, include a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.	As discussed in Section 6.3.2.3, many wells included in the statewide dataset are located within water purveyor service areas, and many wells have relatively old (pre-1960) construction dates. These observations, coupled with a lack of well abandonment/destruction information, result in uncertainty in the reliability of the reported number or location of private and public wells for the purpose of assessing potential impacts on these wells. Section 6.3.2.4 of the GSP has been updated to direct readers to the DWR Household Water Supply Shortage Reporting System and specifies that the EAGSA will consider information in this reporting system when reviewing SMCs during development of the 5-year GSP updates.
NGO Consortium[a]	Comment Letter	Chapter 7, Projects and Management Actions	For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts.	Chapter 7 describes that projects and management actions to maintain sustainability will be programs successfully implemented by local water purveyors in the past. These programs have not resulted in degraded groundwater quality in the past; therefore, they would not be anticipated to do so in the future.

Commentor/ Commentor Affiliation	Comment Submittal Method	Section	Comment	Response
NGO Consortium[a]	Comment Letter	Chapter 7, Projects and Management Actions	Recharge ponds, reservoirs, and facilities for managed aquifer recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document."	Comment noted. As described in this GSP, the Anderson Subbasin is not in groundwater overdraft and is not projected to experience groundwater overdraft in the future (based on projections that include climate change and increases in future groundwater use beyond what is reasonably anticipated). As such, managed aquifer recharge programs are not necessary to mitigate overdraft conditions. Such programs may be considered if unanticipated conditions occur in the future, at which time the suggested Multi-Benefit Recharge Project guidance would be among the approaches considered.
NGO Consortium[a]	Comment Letter	Chapter 7, Projects and Management Actions, and Appendix F, Numerical Flow Model Documentation	Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.	Based on EAGSA Model results used to develop projected water budgets, and an additional "Increased Groundwater Use" scenario, the GSA determined that PMAs are not necessary to achieve sustainability (however, projects and management actions to maintain sustainability are discussed in Chapter 7). Thus, the incorporation of climate change has been accounted for in the determination of the need for PMAs.

[a] NGO Consortium is composed of The Nature Conservancy, Audubon California, Local Government Commission, Union of Concerned Scientists, and Clean Water Action/Clean Water Fund.

Notes:

ACID = Anderson-Cottonwood Irrigation District
COC = chemicals of concern
DAC = disadvantaged community
DTSC = California Department of Toxic Substances Control
DWR = California Department of Water Resources
EAGSA = Enterprise Anderson Groundwater Sustainability Agency
EPA = U.S. Environmental Protection Agency
GCM = global climate model
GDE = groundwater-dependent ecosystem
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
MCL = maximum contaminant level
MT = minimum threshold
PMA = projects and management actions
RMP = representative monitoring point
RWQCB = Regional Water Quality Control Board
SDAC = severely disadvantaged community
SGMA = Sustainable Groundwater Management Act
SMC = sustainable management criteria
SMCL = secondary maximum contaminant level
SWRCB = State Water Resources Control Board

Reference:

Pierce, D.W., J.F. Kalansky, and D.R. Cayan. 2018. *Climate, Drought, and Sea Level Rise Scenarios for the Fourth California Climate Assessment*. Scripps Institution of Oceanography, California's Fourth Climate Change Assessment, California Energy Commission. Publication Number: CNRA-CEC-2018-006.

November 13, 2021

Enterprise Anderson Groundwater Sustainability Agency

Submitted via email: Lyna.Black@jacobs.com

Re: Public Comment Letter for Anderson Subbasin Draft GSP

Dear Lyna Black,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Anderson Subbasin being prepared under the Sustainable Groundwater Management Act (SGMA). Our organizations are deeply engaged in and committed to the successful implementation of SGMA because we understand that groundwater is critical for the resilience of California's water portfolio, particularly in light of changing climate. Under the requirements of SGMA, Groundwater Sustainability Agencies (GSAs) must consider the interests of all beneficial uses and users of groundwater, such as domestic well owners, environmental users, surface water users, federal government, California Native American tribes and disadvantaged communities (Water Code 10723.2).

As stakeholder representatives for beneficial users of groundwater, our GSP review focuses on how well disadvantaged communities, drinking water users, tribes, climate change, and the environment were addressed in the GSP. While we appreciate that some basins have consulted us directly via focus groups, workshops, and working groups, we are providing public comment letters to all GSAs as a means to engage in the development of 2022 GSPs across the state. Recognizing that GSPs are complicated and resource intensive to develop, the intention of this letter is to provide constructive stakeholder feedback that can improve the GSP prior to submission to the State.

Based on our review, we have significant concerns regarding the treatment of key beneficial users in the Draft GSP and consider the GSP to be **insufficient** under SGMA. We highlight the following findings:

1. Beneficial uses and users **are not sufficiently** considered in GSP development.
    a. Human Right to Water considerations **are not sufficiently** incorporated.
    b. Public trust resources **are not sufficiently** considered.
    c. Impacts of Minimum Thresholds, Measurable Objectives and Undesirable Results on beneficial uses and users **are not sufficiently** analyzed.
2. Climate change **is not sufficiently** considered.
3. Data gaps **are not sufficiently** identified and the GSP **does not have a plan** to eliminate them.

4. Projects and Management Actions **do not sufficiently consider** potential impacts or benefits to beneficial uses and users.

Our specific comments related to the deficiencies of the Anderson Subbasin Draft GSP along with recommendations on how to reconcile them, are provided in detail in **Attachment A.**

Please refer to the enclosed list of attachments for additional technical recommendations:

Attachment A	GSP Specific Comments
Attachment B	SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users
Attachment C	Freshwater species located in the basin
Attachment D	The Nature Conservancy's "Identifying GDEs under SGMA: Best Practices for using the NC Dataset"
Attachment E	Maps of representative monitoring sites in relation to key beneficial users

Thank you for fully considering our comments as you finalize your GSP.

Best Regards,

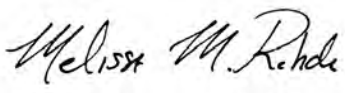
Ngodoo Atume
Water Policy Analyst
Clean Water Action/Clean Water Fund

J. Pablo Ortiz-Partida, Ph.D.
Western States Climate and Water Scientist
Union of Concerned Scientists

Samantha Arthur
Working Lands Program Director
Audubon California

Danielle V. Dolan
Water Program Director
Local Government Commission

E.J. Remson
Senior Project Director, California Water Program
The Nature Conservancy



Melissa M. Rohde
Groundwater Scientist
The Nature Conservancy

Attachment A

Specific Comments on the Anderson Subbasin Draft Groundwater Sustainability Plan

1. Consideration of Beneficial Uses and Users in GSP development

Consideration of beneficial uses and users in GSP development is contingent upon adequate identification and engagement of the appropriate stakeholders. The (A) identification, (B) engagement, and (C) consideration of disadvantaged communities, drinking water users, tribes,[1] groundwater dependent ecosystems, streams, wetlands, and freshwater species are essential for ensuring the GSP integrates existing state policies on the Human Right to Water and the Public Trust Doctrine.

A. Identification of Key Beneficial Uses and Users

Disadvantaged Communities, Drinking Water Users, and Tribes

The identification of Disadvantaged Communities (DACs) and drinking water users is **incomplete**. The GSP describes and maps tribal lands in the subbasin (Figure 2-2). The GSP provides information on DACs and Severely Disadvantaged Communities (SDACs) within the subbasin, including identification by name and location a map (Figures 1-2 to 1-4). However, the GSP fails to clearly state the population of each DAC or include the population dependent on groundwater as their source of drinking water in the subbasin.

While the plan provides a density map of domestic wells in the subbasin (Figure 2-6), the GSP fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the subbasin. This information is necessary to understand the distribution of shallow and vulnerable drinking water wells within the subbasin.

These missing elements are required for the GSA to fully understand the specific interests and water demands of these beneficial users, and to support the consideration of beneficial users in the development of sustainable management criteria and selection of projects and management actions.

RECOMMENDATIONS

- Provide the population of each identified DAC. Identify the sources of drinking water for DAC members, including an estimate of how many people rely on groundwater (e.g., domestic wells, state small water systems, and public water systems).
- Include a map showing domestic well locations and average well depth across the subbasin.

[1] Our letter provides a review of the identification and consideration of federally recognized tribes (Data source: SGMA Data viewer) within the GSP from non-tribal members and NGOs. Based on the likely incomplete information available to our organizations for this review, we recommend that the GSA utilize the California Department of Water Resources' "Engagement with Tribal Governments" Guidance Document (https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents) to comprehensively address these important beneficial users in their GSP.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISWs) is **incomplete**. To assess ISWs in the subbasin, water table elevations as simulated by the EAGSA Model (described in GSP Appendix F) were averaged over 1999-2018 to develop a seasonal high-water-table distribution for the month of April and compared to the stream bottom elevations. This process was utilized to evaluate where modeled streams and the water table were in direct connection. The resulting map of interconnected reaches in the subbasin is presented on Figure 3-17.

The ISW section of the GSP could be further improved by including discussion of data gaps for ISWs. We recommend that the GSP considers any segments with data gaps as potential ISWs and clearly marks them as such on maps provided in the GSP.

RECOMMENDATIONS

- Figure 3-17 showing interconnected reaches could be improved by clarifying the legend labels and colors used for the stream reaches. For example, reaches of the Sacramento River are shown as either a thick blue line or a thin blue line inside a green border. It is unclear what the difference is since the text states that the entire length of the Sacramento River is interconnected.

- Describe data gaps for the ISW analysis. We recommend that the GSP considers any segments with data gaps as potential ISWs and clearly marks them as such on maps provided in the GSP.

Groundwater Dependent Ecosystems

The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**. The GSP took initial steps to identify and map GDEs using the Natural Communities Commonly Associated with Groundwater dataset (NC dataset). Potential GDEs were identified in areas overlying groundwater within 30 feet of land surface based on April 2018 groundwater conditions. Even though the GSP points out that this is conservative because spring represents seasonal high groundwater conditions, we recommend using data from multiple seasons and water year types to determine the range of depth to groundwater around NC dataset polygons. We would also like to see additional discussion and use of groundwater data from the pre-SGMA benchmark date of 2015 where available to determine which GDE units are connected to groundwater.

The GSP states that 29 percent of the NC vegetation in the subbasin is Valley Oak. We recommend that an 80-foot depth-to-groundwater threshold be used when inferring whether Valley Oak polygons in the NC dataset are likely reliant on groundwater. This recommendation is based on a recent correction in TNC's rooting depth database,[2] after finding a typo in the max rooting depth units for Valley Oak. This resulted in a specific change in the max rooting depth of Valley Oak from 24 feet to 24 meters (80 feet). For all other phreatophytes, we continue to recommend that a 30-foot depth-to-groundwater threshold be used when inferring whether all other NC dataset polygons are likely reliant on groundwater.

The GSP does not provide an inventory of flora and fauna in the subbasin, except to list the main vegetation types in the subbasin's GDEs. No discussion of threatened or endangered species was provided.

[2] TNC. 2021. Plant Rooting Depth Database. Available at: https://groundwaterresourcehub.org/sgma-tools/gde-rooting-depths-database-for-gdes/

RECOMMENDATIONS

- Use depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. We recommend that a baseline period (10 years from 2005 to 2015) be established to characterize groundwater conditions over multiple water year types. Refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer.

- Provide depth-to-groundwater contour maps, noting the best practices presented in Attachment D. Specifically, ensure that the first step is contouring groundwater elevations, and then subtracting this layer from land surface elevations from a digital elevation model (DEM) to estimate depth-to-groundwater contours across the landscape.

- Refer to Attachment B for more information on TNC's plant rooting depth database. Deeper thresholds are necessary for plants that have reported maximum root depths that exceed the averaged 30-ft threshold, such as Valley Oak (*Quercus lobata*). We recommend that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to-groundwater threshold of 80 feet should be used instead of the 30-ft threshold, when verifying whether Valley Oak polygons from the NC Dataset are connected to groundwater. It is important to emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

- Discuss data gaps for GDEs. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons as "Potential GDEs" in the GSP until data gaps are reconciled in the monitoring network.

- Provide a complete inventory, map, or description of fauna (e.g., birds, fish, amphibian) and flora (e.g., plants) species in the subbasin and note any threatened or endangered species (see Attachment C in this letter for a list of freshwater species located in the Anderson Subbasin).

Native Vegetation and Managed Wetlands

Native vegetation and managed wetlands are water use sectors that are required to be included in the water budget.[3,4] The integration of these ecosystems into the water budget is **insufficient**. The water budget did not include the current, historical, and projected demands of native vegetation and managed wetlands. The GSP states that 6% of the subbasin (480 acres) is comprised of managed wetlands (p. 2-5; mapped on Figure 2-4). The omission of explicit water demands for native vegetation and managed wetlands is problematic because key environmental uses of groundwater are not being accounted for as water supply decisions are made using this budget, nor will they likely be considered in project and management actions.

[3] "'Water use sector' refers to categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation." [23 CCR §351(al)]

[4] "The water budget shall quantify the following, either through direct measurements or estimates based on data: (3) Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow." [23 CCR §354.18]

RECOMMENDATION

- Quantify and present all water use sector demands in the historical, current, and projected water budgets with individual line items for each water use sector, including native vegetation and managed wetlands.

B. Engaging Stakeholders

Stakeholder Engagement During GSP Development

Stakeholder engagement during GSP development is **insufficient**. SGMA's requirement for public notice and engagement of stakeholders is not fully met by the description in the Communications & Engagement Plan (Appendix C-1).[5]

The GSP notes targeted engagement with tribal stakeholders (Redding Rancheria) and environmental stakeholders (The Nature Conservancy and Department of Fish & Wildlife) during the GSP development process via phone calls, email notifications, and targeted briefings and interviews. However, we note the following deficiencies with the overall stakeholder engagement process:

- The GSP documents opportunities for public involvement and engagement through outreach materials, soliciting comments and promoting meetings through partnering organizations' newsletters, public workshops, GSA Board meetings, targeted briefings, individual interviews to clarify written comments, and providing the online GSP public comment portal. Specific details of outreach and engagement targeted to DACs include providing Spanish-language versions of outreach materials and announcements, posting flyers in community health centers, engaging with partner organizations such as the Rural Community Assistance Corporation, and training that serves target DAC and Spanish-speaking populations in Redding and Anderson. However, the GSP does not make clear whether DACs are represented on a GSA Advisory Committee or Board, or how their needs and concerns were otherwise considered and incorporated during the GSP development process.

- Aside from the continuation of engagement strategies used during the GSP development process, the GSP does not include a detailed plan for continual opportunities for engagement through the *implementation* phase of the GSP that is specifically directed to DACs, tribes, domestic well owners, and environmental stakeholders.

RECOMMENDATIONS

- In the Communications & Engagement Plan, describe active and targeted outreach to engage all stakeholders throughout the GSP development and implementation phases. Refer to Attachment B for specific recommendations on how to actively engage stakeholders during all phases of the GSP process.

[5] "A communication section of the Plan shall include a requirement that the GSP identify how it encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin." [23 CCR §354.10(d)(3)]

- Utilize DWR's tribal engagement guidance to comprehensively address all tribes and tribal interests in the subbasin within the GSP.[6]

C. Considering Beneficial Uses and Users When Establishing Sustainable Management Criteria and Analyzing Impacts on Beneficial Uses and Users

The consideration of beneficial uses and users when establishing sustainable management criteria (SMC) is **insufficient**. The consideration of potential impacts on all beneficial users of groundwater in the basin are required when defining undesirable results and establishing minimum thresholds.[7,8,9]

Disadvantaged Communities and Drinking Water Users

For chronic lowering of groundwater levels, the GSP uses a model simulation entitled 'Increased Groundwater Use Scenario' to examine impacts on beneficial users of groundwater. Minimum thresholds are established as follows (p. 6-6): *"The MTs for chronic lowering of groundwater levels were selected as the lower of either the historical minimum measured groundwater elevation or the minimum projected groundwater elevation under the Increased Groundwater Use Scenario at each RMP."*

To examine impacts of minimum thresholds on domestic wells, the GSP states (p. 6-9): *"The MTs for chronic lowering of groundwater levels were compared to the range of public and private well depths in the Anderson Subbasin to evaluate whether the selected MTs are reasonably protective of these beneficial users."* The GSP continues (p. 6-9): *"The comparison showed that if groundwater levels consistent with those projected in October 2069 under the Increased Groundwater Use Scenario were to occur, then 78 percent of domestic wells in the Anderson Subbasin would have at least 10 feet of water in them."* However, the GSP does not sufficiently describe whether minimum thresholds will avoid significant and unreasonable loss of drinking water to domestic well users that are not protected by the minimum threshold, and whether the undesirable results are consistent with the Human Right to Water policy,[10] especially given the absence of a domestic well mitigation plan in the GSP.

In addition, the GSP does not sufficiently describe or analyze direct or indirect impacts on DACs, domestic well owners, or tribes when defining undesirable results, nor does it describe how the plan will avoid significant and unreasonable impacts on these beneficial users.

For degraded water quality, minimum thresholds are established for constituents of concern (COCs) as zero additional exceedances of the maximum contaminant level (MCL) or secondary MCL at the representative monitoring points (RMPs). This information suggests that exceedances

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[6] Engagement with Tribal Governments Guidance Document. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Doc-for-SGM-Engagement-with-Tribal-Govt_ay_19.pdf

[7] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results." [23 CCR §354.26(b)(3)]

[8] "The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]

[9] "The description of minimum thresholds shall include [...] how state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the agency shall explain the nature of and the basis for the difference." [23 CCR §354.28(b)(5)]

[10] California Water Code §106.3. Available at: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=106.3

from other existing sites are acceptable under this GSP. However, any exceedance of MCL or SMCL is a violation of the state's water quality law and is not permitted. Additionally, according to the state's anti-degradation policy,[11] high water quality should be protected and is only allowed to worsen if a finding is made that it is in the best interest of the people of the State of California. No analysis has been done and no such finding has been made.

The GSP sets measurable objectives identical to minimum thresholds. The GSP states (p. 6-23): *"The EAGSA has established the MOs for degraded water quality in the Anderson Subbasin as the existing distribution of groundwater impairments (i.e., no change from current conditions)."* The exceedance of minimum thresholds is supposed to trigger additional actions but since minimum thresholds are identified as measurable objectives, it is unclear what action is triggered.

Section 3.2.5 of the GSP (Water Quality) and Appendix E (Anderson Subbasin Groundwater Quality Dataset) present water quality data and discuss trends for several other constituents, including naturally occurring water quality constituents and constituents related to human activity including fuel-related compounds. No SMC have been established for these additional constituents, however. SMC should be established for all COCs in the subbasin impacted or exacerbated by groundwater use and/or management, in addition to coordinating with water quality regulatory programs.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

- Describe direct and indirect impacts on DACs, drinking water users, and tribes when describing undesirable results and defining minimum thresholds for chronic lowering of groundwater levels.

Degraded Water Quality

- Describe direct and indirect impacts on DACs, drinking water users, and tribes when defining undesirable results for degraded water quality.[12] For specific guidance on how to consider these users, refer to "Guide to Protecting Water Quality Under the Sustainable Groundwater Management Act."[13]
- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on DACs, drinking water users, and tribes.
- Set minimum thresholds and measurable objectives for all water quality constituents within the subbasin that are impacted or exacerbated by groundwater use and/or management.
- Set measurable objectives at lower levels than minimum thresholds (i.e., indicative of better water quality).

[11] Anti-degradation Policy https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1968/rs68_016.pdf

[12] "Degraded Water Quality [...] collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues." [23 CCR §354.34(c)(4)]

[13] Guide to Protecting Water Quality under the Sustainable Groundwater Management Act https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858.

- Set minimum thresholds that do not allow water quality to degrade to levels at or above the MCL trigger level.

Groundwater Dependent Ecosystems and Interconnected Surface Waters

For chronic lowering of groundwater levels, minimum thresholds are established in the same manner as stated above under Disadvantaged Communities and Drinking Water Users (i.e., established as the lower of two elevations). The same model simulation described above (Increased Groundwater Use Scenario) was used to examine impacts on environmental beneficial users of groundwater.

The GSP states (p. 6-10): *"An assessment of potential effects of the MTs on ecological beneficial users was performed by comparing potential impacts on the extent of GDEs overlying areas of groundwater within 30 feet bgs. Figure 6-5 presents a comparison of the extent of shallow groundwater (depth to water less than or equal to 30 feet bgs) between spring 2018 and a dry month during the projection period under the Increased Groundwater Use Scenario (fall 2069). The latter condition was selected as a conservative estimate of potential depth to water under a multi-year drought and substantially higher than current groundwater pumping within the basin (i.e., a "worst-case" scenario). As shown on Figure 6-5, the lateral extents of groundwater within 30 feet of ground surface in the south/southeastern of the subbasin where most GDE communities thrive are less in fall 2069 under the Increased Groundwater Use Scenario as compared to spring 2018. The total GDE acreage within the 30-feet-to-groundwater zone is approximately 3 percent less (approximately 3,880 acres in fall 2069 compared to 4,000 acres in spring 2018). Therefore, the selected MTs are considered protective of ecological beneficial users."* However, by simply providing the percentage difference in GDE coverage from current conditions to future worst-case conditions, the cumulative impacts to ecosystems under this worst-case scenario are not discussed in the GSP. By assuming that GDEs can be sustained on historic low groundwater levels (or lower) and the subbasin is allowed to operate at or close to those levels over many years, there is a risk of causing catastrophic damage to ecosystems that are more adverse than what was occurring at the height of the 2012-2016 drought. This is because California ecosystems, which are adapted to our Mediterranean climate, have some drought strategies that they can utilize to deal with short-term water stress. However, if the drought conditions are prolonged, the adverse impacts (such as widespread tree mortality or loss of critical habitat for aquatic species) can exceed what had occurred prior to 2015.

For depletions of interconnected surface water, the GSP uses groundwater elevations by proxy to establish SMC. The GSP uses the Increased Groundwater Use Scenario model simulation to examine whether significant and unreasonable conditions would likely result due to groundwater pumping under this scenario. The GSP estimates that Sacramento River streamflow would be reduced by 1.8% and Cottonwood Creek Streamflow would be reduced by 7.1% under the Increased Groundwater Use Scenario. The GSP states (6-21): *"Because the estimated depletion of interconnected surface water in the Sacramento River is projected to be within the measurement error of its stream gauge, aquatic species (such as salmon) would not be affected."* However, no conclusions are drawn about Cottonwood Creek streamflow, and whether depletions of interconnected surface water would cause significant and unreasonable conditions. Furthermore, because the GSP does not provide or discuss the aquatic species in the subbasin except for the single mention in the quoted sentence (see Attachment C for a list of environmental users in the subbasin), it has not determined if proposed minimum thresholds avoid significant and unreasonable effects on these surface water beneficial users, such as increased mortality and inability to perform key life processes (e.g., reproduction, migration).

RECOMMENDATIONS

- When defining undesirable results for chronic lowering of groundwater levels, provide specifics on what biological responses (e.g., extent of habitat, growth, recruitment rates) would best characterize a significant and unreasonable impact to GDEs. Undesirable results to environmental users occur when 'significant and unreasonable' effects on beneficial users are caused by one of the sustainability indicators (i.e., chronic lowering of groundwater levels, degraded water quality, or depletion of interconnected surface water). Thus, potential impacts on environmental beneficial uses and users need to be considered when defining undesirable results in the subbasin.[14] Defining undesirable results is the crucial first step before the minimum thresholds can be determined.[15]

- When defining undesirable results for depletion of interconnected surface water, include a description of potential impacts on instream habitats within ISWs when minimum thresholds in the subbasin are reached.[16] The GSP should confirm that minimum thresholds for ISWs avoid adverse impacts to environmental beneficial users of interconnected surface waters as these environmental users could be left unprotected by the GSP. These recommendations apply especially to environmental beneficial users that are already protected under pre-existing state or federal law.[6,17]

- When establishing SMC for the subbasin, consider that the SGMA statute [Water Code §10727.4(l)] specifically calls out that GSPs shall include "impacts on groundwater dependent ecosystems".

2. Climate Change

The SGMA statute identifies climate change as a significant threat to groundwater resources and one that must be examined and incorporated in the GSPs. The GSP Regulations require integration of climate change into the projected water budget to ensure that projects and management actions sufficiently account for the range of potential climate futures.[18] The effects of climate change will intensify the impacts of water stress on GDEs, making available shallow groundwater resources especially critical to their survival. Condon *et al.* (2020) shows that GDEs are more likely to succumb to water stress and rely more

[14] "The description of undesirable results shall include [...] potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results". [23 CCR §354.26(b)(3)]
[15] The description of minimum thresholds shall include [...] how minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests." [23 CCR §354.28(b)(4)]
[16] "The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." [23 CCR §354.28(c)(6)]
[17] Rohde MM, Seapy B, Rogers R, Castañeda X, editors. 2019. Critical Species LookBook: A compendium of California's threatened and endangered species for sustainable groundwater management. The Nature Conservancy, San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/Critical_Species_LookBook_91819.pdf
[18] "Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." [23 CCR §354.18(e)]

on groundwater during times of drought.[19] When shallow groundwater is unavailable, riparian forests can die off and key life processes (e.g., migration and spawning) for aquatic organisms, such as steelhead, can be impeded.

The integration of climate change into the projected water budget is **insufficient**. The GSP does incorporate climate change into the projected water budget using RCP 8.5 and the HadGEM2-ES Global Climate Model. However, the GSP does not consider other extreme climate scenarios in the projected water budget. We encourage you to consider other GCM projections. While HadGEM2-ES may better represent median conditions, other models may better capture other statistics relevant for your subbasin and may reveal valuable information to account for uncertainty. In addition, the GSP should clearly and transparently incorporate extremely wet and dry scenarios or select more appropriate extreme scenarios for their subbasin. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant and their inclusion can help identify important vulnerabilities in the subbasin's approach to groundwater management.

The GSP integrates climate change into key inputs (e.g., changes in precipitation and evapotranspiration) of the projected water budget. However, water imported via the Central Valley Project should also be adjusted for climate change and incorporated into the surface water flow inputs of the projected water budget. The sustainable yield is calculated based on the projected water budget with climate change incorporated. However, if the water budgets are incomplete, including the omission of extreme climate scenarios and the omission of projected climate change effects on imported water flow inputs, then there is increased uncertainty in virtually every subsequent calculation used to plan for projects, derive measurable objectives, and set minimum thresholds. Plans that do not adequately include climate change projections may underestimate future impacts on vulnerable beneficial users of groundwater such as ecosystems, DACs, tribes, and domestic well owners.

RECOMMENDATIONS

- Consider other GCM projections to account for uncertainty beyond median statistics.
- Integrate climate change, including extreme climate scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.
- Incorporate climate change into surface water flow inputs, including imported water, for the projected water budget.
- Incorporate climate change scenarios into projects and management actions.

3. Data Gaps

The consideration of beneficial users when establishing monitoring networks is **insufficient**, due to lack of specific plans to increase the Representative Monitoring Points (RMPs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs, domestic wells, tribes, GDEs, and ISWs in the subbasin. These beneficial users may remain unprotected by the GSP

[19] Condon et al. 2020. Evapotranspiration depletes groundwater under warming over the contiguous United States. Nature Communications. Available at: https://www.nature.com/articles/s41467-020-14688-0

without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network.[20]

Figure 5-1 (Groundwater Level Monitoring Network) shows insufficient representation of DACs, drinking water users, and tribes for groundwater elevation monitoring. Figure 5-2 (Groundwater Quality Well Network) shows insufficient representation of DACs and drinking water users for water quality monitoring. Refer to Attachment E for maps of these monitoring sites in relation to key beneficial users of groundwater.

The GSP provides some discussion of data gaps for GDEs in Section 8.3.1 (Groundwater Level Data Gaps), but does not provide specific plans, such as locations or a timeline, to fill the data gaps.

RECOMMENDATIONS

- Provide maps that overlay current and proposed monitoring well locations with the locations of DACs, domestic wells, tribes, and GDEs to clearly identify monitored areas.
- Increase the number of RMPs in the shallow aquifer across the subbasin as needed to map ISWs and adequately monitor all groundwater condition indicators across the subbasin and at appropriate depths for *all* beneficial users. Prioritize proximity to DACs, domestic wells, tribes, GDEs, and ISWs when identifying new RMPs.
- Ensure groundwater elevation and water quality RMPs are monitoring groundwater conditions spatially and at the correct depth for *all* beneficial users - especially DACs, domestic wells, tribes, and GDEs.
- Describe biological monitoring that can be used to assess the potential for significant and unreasonable impacts to GDEs or ISWs due to groundwater conditions in the subbasin.

4. Addressing Beneficial Users in Projects and Management Actions

The consideration of beneficial users when developing projects and management actions is **insufficient** due to the failure to completely identify benefits or impacts of identified projects and management actions, including water quality impacts, to key beneficial users of groundwater such as GDEs, aquatic habitats, surface water users, DACs, drinking water users, and tribes. Therefore, potential project and management actions may not protect these beneficial users. Groundwater sustainability under SGMA is defined not just by sustainable yield, but by the avoidance of undesirable results for *all* beneficial users.

While the GSP (Section 7.1.3) describes the environmental benefits of Storm Water Resources Plans, the GSP fails to describe this or other project's explicit benefits or impacts to other beneficial users, such as DACs. The GSP also fails to include a domestic well mitigation program to avoid significant and unreasonable loss of drinking water.

[20] "The monitoring network objectives shall be implemented to accomplish the following: [...] (2) Monitor impacts to the beneficial uses or users of groundwater." [23 CCR §354.34(b)(2)]

RECOMMENDATIONS

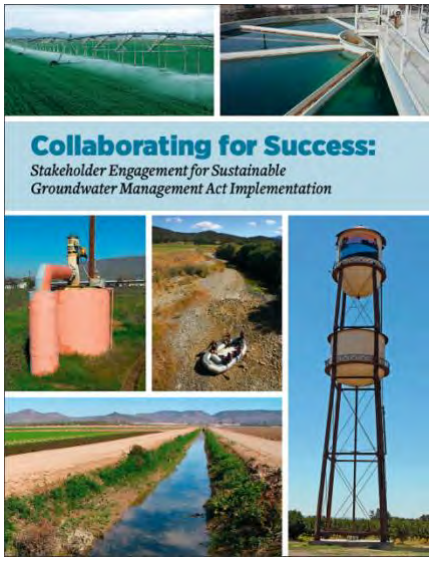
- For DACs and domestic well owners, include a drinking water well impact mitigation program to proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.
- For DACs and domestic well owners, include a discussion of whether potential impacts to water quality from projects and management actions could occur and how the GSA plans to mitigate such impacts.
- Recharge ponds, reservoirs, and facilities for managed aquifer recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. For guidance on how to integrate multi-benefit recharge projects into your GSP, refer to the "Multi-Benefit Recharge Project Methodology Guidance Document."[21]
- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

[21] The Nature Conservancy. 2021. Multi-Benefit Recharge Project Methodology for Inclusion in Groundwater Sustainability Plans. Sacramento. Available at: https://groundwaterresourcehub.org/sgma-tools/multi-benefit-recharge-project-methodology-guidance/

Attachment B

SGMA Tools to address DAC, drinking water, and environmental beneficial uses and users

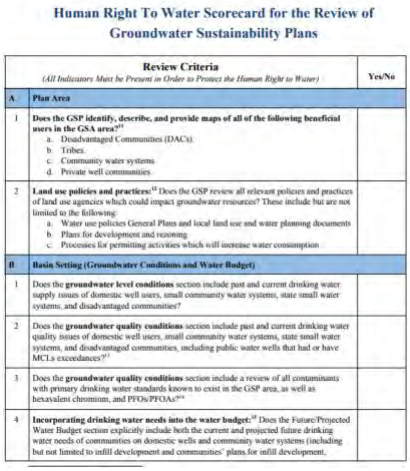
Stakeholder Engagement and Outreach



Clean Water Action, Community Water Center and Union of Concerned Scientists developed a guidance document called Collaborating for success: Stakeholder engagement for Sustainable Groundwater Management Act Implementation. It provides details on how to conduct targeted and broad outreach and engagement during Groundwater Sustainability Plan (GSP) development and implementation. Conducting a targeted outreach involves:

- Developing a robust Stakeholder Communication and Engagement plan that includes outreach at frequented locations (schools, farmers markets, religious settings, events) across the plan area to increase the involvement and participation of disadvantaged communities, drinking water users and the environmental stakeholders.
- Providing translation services during meetings and technical assistance to enable easy participation for non-English speaking stakeholders.
- GSP should adequately describe the process for requesting input from beneficial users and provide details on how input is incorporated into the GSP.

The Human Right to Water

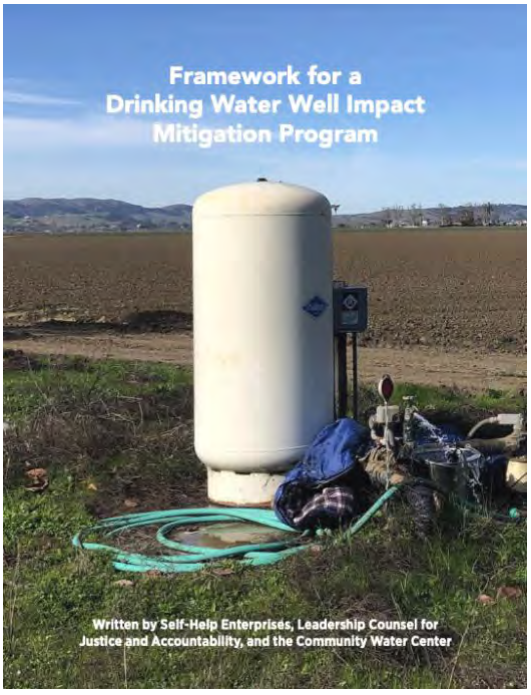


Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

	Review Criteria *(All Indicators Must be Present in Order to Protect the Human Right to Water)*	Yes/No
A	**Plan Area**	
1	**Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area?**[43] a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems. d. Private well communities.	
2	**Land use policies and practices:**[44] Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and rezoning. c. Processes for permitting activities which will increase water consumption.	
B	**Basin Setting (Groundwater Conditions and Water Budget)**	
1	Does the **groundwater level conditions** section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the **groundwater quality conditions** section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances?[51]	
3	Does the **groundwater quality conditions** section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs?[54]	
4	**Incorporating drinking water needs into the water budget:**[55] Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development,	

The [Human Right to Water Scorecard] was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist in GSPs to adequately protect the Human Right to Drinking water.

Drinking Water Well Impact Mitigation Framework



The [Drinking Water Well Impact Mitigation Framework] was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid GSAs in the development and implementation of their GSPs. The framework provides a clear roadmap for how a GSA can best structure its data gathering, monitoring network and management actions to proactively monitor and protect drinking water wells and mitigate impacts should they occur.

Groundwater Resource Hub

The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Rooting Depth Database

The Plant Rooting Depth Database provides information that can help assess whether groundwater-dependent vegetation are accessing groundwater. Actual rooting depths will depend on the plant species and site-specific conditions, such as soil type and

availability of other water sources. Site-specific knowledge of depth to groundwater combined with rooting depths will help provide an understanding of the potential groundwater levels are needed to sustain GDEs.

How to use the database

The maximum rooting depth information in the Plant Rooting Depth Database is useful when verifying whether vegetation in the Natural Communities Commonly Associated with Groundwater (NC Dataset) are connected to groundwater. A 30 ft depth-to-groundwater threshold, which is based on averaged global rooting depth data for phreatophytes[1], is relevant for most plants identified in the NC Dataset since most plants have a max rooting depth of less than 30 feet. However, it is important to note that deeper thresholds are necessary for other plants that have reported maximum root depths that exceed the averaged 30 feet threshold, such as valley oak (*Quercus lobata*), Euphrates poplar (*Populus euphratica*), salt cedar (*Tamarix spp.*), and shadescale (*Atriplex confertifolia*). The Nature Conservancy advises that the reported max rooting depth for these deeper-rooted plants be used. For example, a depth-to groundwater threshold of 80 feet should be used instead of the 30 ft threshold, when verifying whether valley oak polygons from the NC Dataset are connected to groundwater. It is important to re-emphasize that actual rooting depth data are limited and will depend on the plant species and site-specific conditions such as soil and aquifer types, and availability to other water sources.

The Plant Rooting Depth Database is an Excel workbook composed of four worksheets:

1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

How the database was compiled

The Plant Rooting Depth Database is a compilation of rooting depth information for the groundwater-dependent plant species identified in the NC Dataset. Rooting depth data were compiled from published scientific literature and expert opinion through a crowdsourcing campaign. As more information becomes available, the database of rooting depths will be updated. Please Contact Us if you have additional rooting depth data for California phreatophytes.

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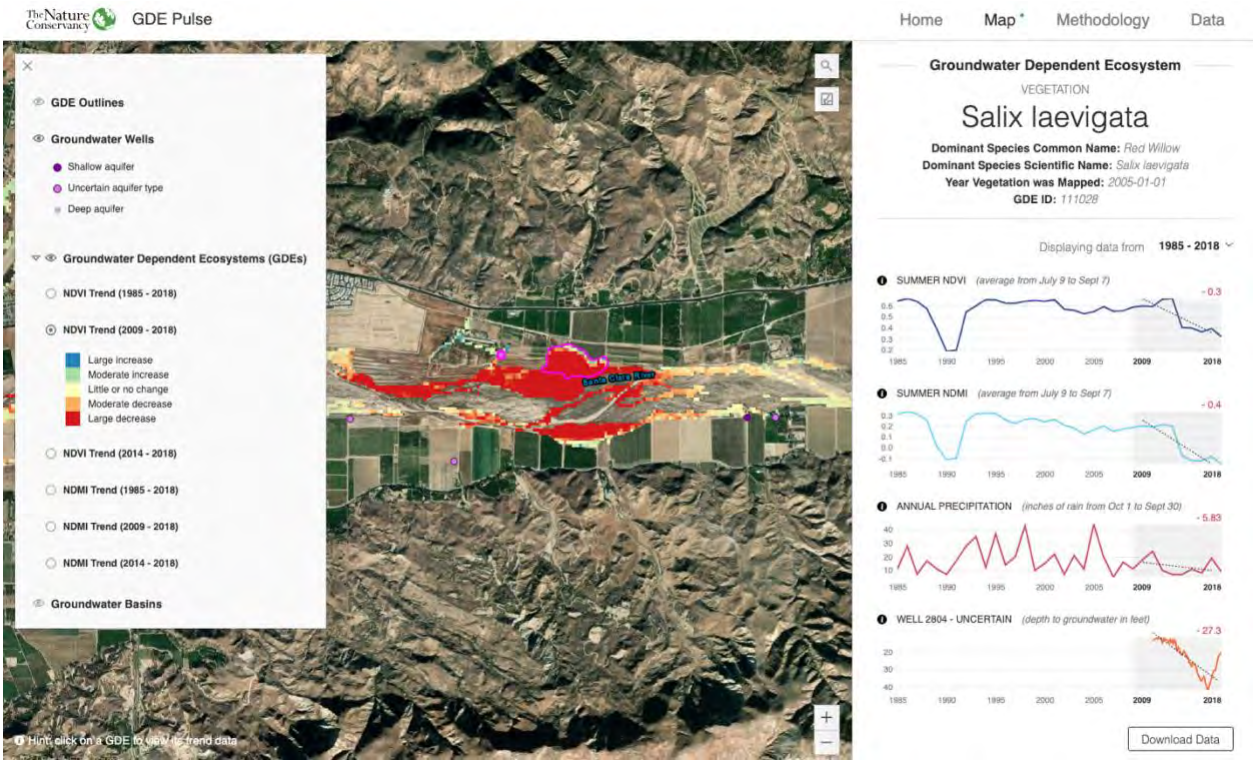
[1] Canadell, J., Jackson, R.B., Ehleringer, J.B. et al. 1996. Maximum rooting depth of vegetation types at the global scale. Oecologia 108, 583–595. https://doi.org/10.1007/BF00329030

GDE Pulse



GDE Pulse is a free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data. Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset. The following datasets are available for downloading:

Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

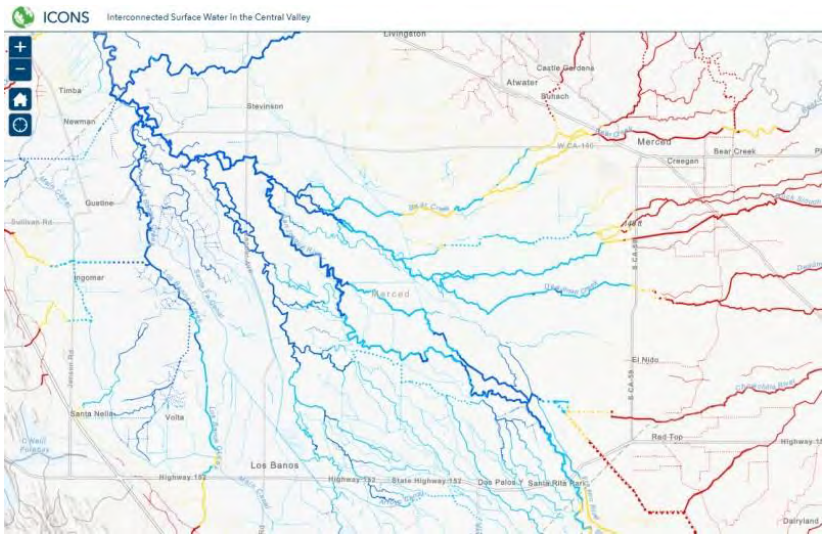
Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

Annual Precipitation is the total precipitation for the water year (October 1st – September 30th) from the PRISM dataset. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

Depth to Groundwater measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

ICONOS Mapper

Interconnected Surface Water in the Central Valley



ICONS maps the likely presence of interconnected surface water (ISW) in the Central Valley using depth to groundwater data. Using data from 2011-2018, the ISW dataset represents the likely connection between surface water and groundwater for rivers and streams in California's Central Valley. It includes information on the mean, maximum, and minimum depth to groundwater for each stream segment over the years with available data, as well as the likely presence of ISW based on the minimum depth to groundwater. The Nature Conservancy developed this database, with guidance and input from expert academics, consultants, and state agencies.

We developed this dataset using groundwater elevation data available online from the California Department of Water Resources (DWR). DWR only provides this data for the Central Valley. For GSAs outside of the valley, who have groundwater well measurements, we recommend following our methods to determine likely ISW in your region. The Nature Conservancy's ISW dataset should be used as a first step in reviewing ISW and should be supplemented with local or more recent groundwater depth data.

Attachment C

Freshwater Species Located in the Anderson Basin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the Anderson Basin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the basin boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[1]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[2] as well as on The Nature Conservancy's science website[3].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Anas platyrhynchos	Mallard			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Butorides virescens	Green Heron			
Egretta thula	Snowy Egret			
Megaceryle alcyon	Belted Kingfisher			
FISH				
Oncorhynchus mykiss - NC summer	Northern California coast summer steelhead	Threatened	Special Concern	Endangered - Moyle 2013
Oncorhynchus mykiss - NC winter	Northern California coast winter steelhead	Threatened		Near-Threatened - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma gracile	Northwestern Salamander			
Anaxyrus boreas boreas	Boreal Toad			

[1] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710

[2] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS

[3] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Dicamptodon tenebrosus	Pacific Giant Salamander			
Rana aurora	Northern Red-legged Frog		Special Concern	ARSSC
Rana boylii	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Taricha granulosa	Rough-skinned Newt			
Taricha rivularis	Red-bellied Newt			ARSSC
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS & OTHER INVERTS				
Ablabesmyia spp.	Ablabesmyia spp.			
Ambrysus spp.	Ambrysus spp.			
Antocha spp.	Antocha spp.			
Apedilum spp.	Apedilum spp.			
Argia spp.	Argia spp.			
Baetis spp.	Baetis spp.			
Baetis tricaudatus	A Mayfly			
Calineuria californica	Western Stone			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Cheumatopsyche spp.	Cheumatopsyche spp.			
Chironomidae fam.	Chironomidae fam.			
Cladotanytarsus spp.	Cladotanytarsus spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Diphetor hageni	Hagen's Small Minnow Mayfly			
Dytiscidae fam.	Dytiscidae fam.			
Ephydridae fam.	Ephydridae fam.			

Eubrianax edwardsii				Not on any status lists
Eukiefferiella spp.	Eukiefferiella spp.			
Fallceon quilleri	A Mayfly			
Glossosoma spp.	Glossosoma spp.			
Gomphidae fam.	Gomphidae fam.			
Gumaga spp.	Gumaga spp.			
Haploperla chilnualna	Yosemite Sallfly			
Helichus spp.	Helichus spp.			
Helicopsyche spp.	Helicopsyche spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hydropsyche spp.	Hydropsyche spp.			
Hydroptila spp.	Hydroptila spp.			
Isonychia velma	A Mayfly			
Isoperla spp.	Isoperla spp.			
Lepidostoma spp.	Lepidostoma spp.			
Macromia magnifica	Western River Cruiser			
Malenka spp.	Malenka spp.			
Marilia flexuosa	A Caddisfly			
Maruina lanceolata				Not on any status lists
Mesovelia spp.	Mesovelia spp.			
Micropsectra spp.	Micropsectra spp.			
Microtendipes spp.	Microtendipes spp.			
Mideopsis spp.	Mideopsis spp.			
Mystacides spp.	Mystacides spp.			
Nilothauma spp.	Nilothauma spp.			
Oecetis spp.	Oecetis spp.			
Ophiogomphus bison	Bison Snaketail			
Ophiogomphus spp.	Ophiogomphus spp.			
Optioservus spp.	Optioservus spp.			
Ordobrevia nubifera				Not on any

				status lists
Paraleptophlebia spp.	Paraleptophlebia spp.			
Parametriocnemus spp.	Parametriocnemus spp.			
Paraphaenocladius spp.	Paraphaenocladius spp.			
Pentaneura spp.	Pentaneura spp.			
Petrophila spp.	Petrophila spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Protoptila spp.	Protoptila spp.			
Psectrocladius spp.	Psectrocladius spp.			
Psephenus falli				Not on any status lists
Pseudochironomus spp.	Pseudochironomus spp.			
Pteronarcys spp.	Pteronarcys spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhithrogena spp.	Rhithrogena spp.			
Rhyacophila spp.	Rhyacophila spp.			
Sialis spp.	Sialis spp.			
Simulium spp.	Simulium spp.			
Sperchon spp.	Sperchon spp.			
Sweltsa spp.	Sweltsa spp.			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Tricorythodes spp.	Tricorythodes spp.			
Zaitzevia spp.	Zaitzevia spp.			
MAMMALS				
Lontra canadensis canadensis	North American River Otter			Not on any status lists
Neovison vison	American Mink			Not on any status lists
MOLLUSKS				

Ferrissia spp.	Ferrissia spp.			
PLANTS				
Arundo donax	NA			
Carex densa	Dense Sedge			
Pleuropogon hooverianus	North Coast False Semaphore Grass		Threatened	CRPR - 1B.1
Pluchea odorata odorata	Scented Conyza			
Solidago lepida salebrosa				Not on any status lists

Attachment D

The Nature Conservancy

July 2019

IDENTIFYING GDEs UNDER SGMA

Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[1] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[2]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.

Figure 1. Considerations for GDE identification.
Source: DWR[2]

[1] NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/
[2] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[3]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[4] on the Groundwater Resource Hub[5], a website dedicated to GDEs.

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2a) or multiple aquifers stacked on top of each other (Figure 2b). In unconfined aquifers (Figure 2a), using the depth-to-groundwater and the rooting depth of the vegetation is a reasonable method to infer groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2d). However, it is important to consider local conditions (e.g., soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2c). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

[3] For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf
[4] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/
[5] The Groundwater Resource Hub: www.GroundwaterResourceHub.org

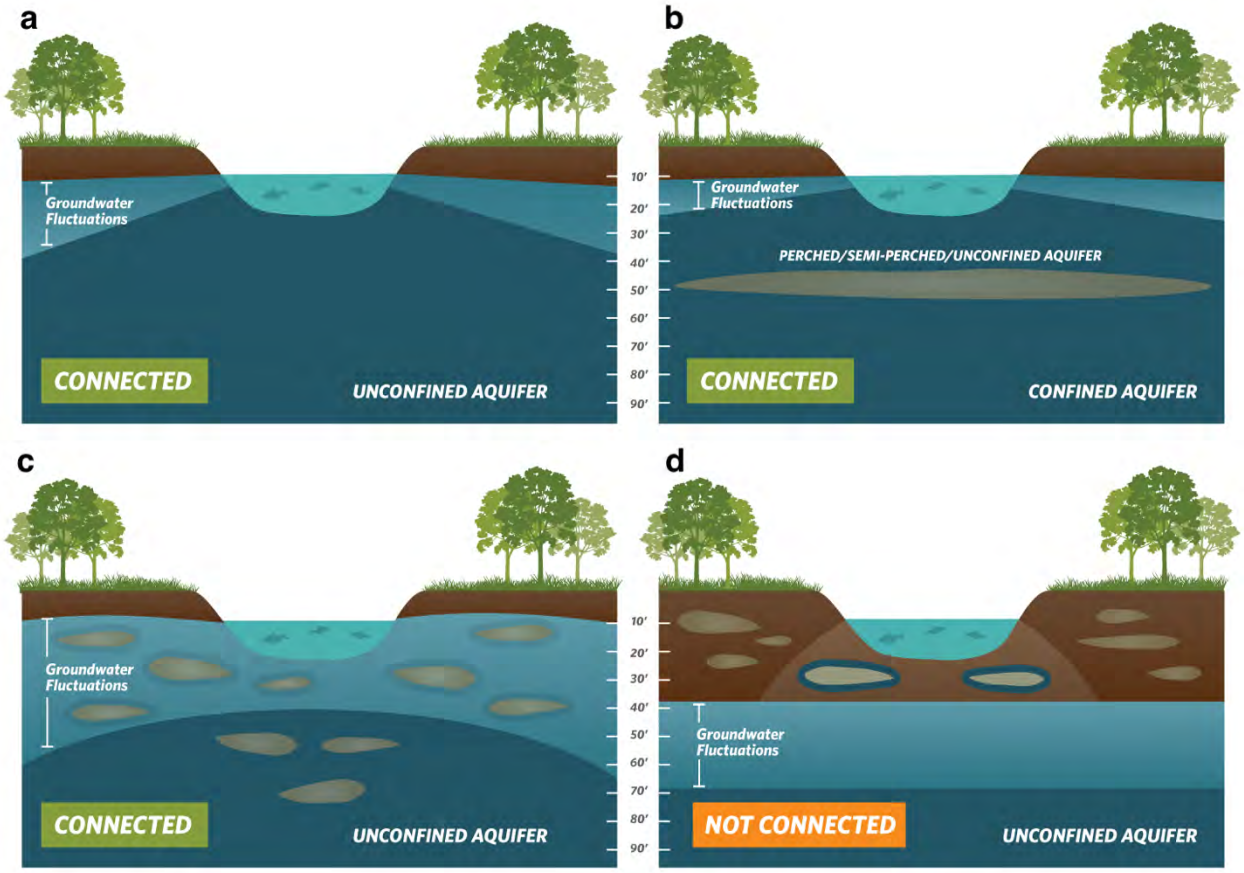


Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. **(b)** Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. **Bottom: (c)** Depth-to-groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. **(d)** Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under the surface water feature. These areas are not connected to groundwater and typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[6] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[7] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[8] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[9]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).

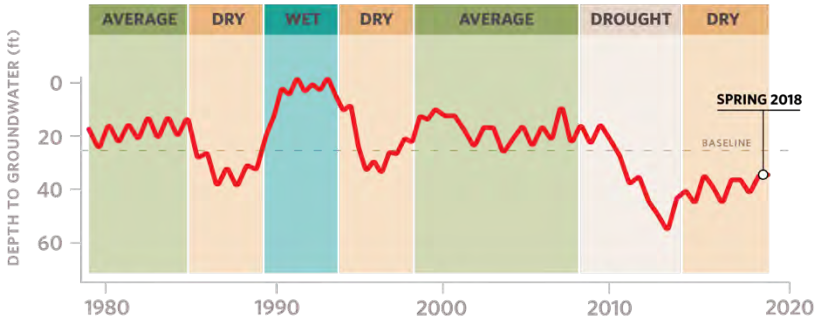


Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[6] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[7] Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]

[8] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs[4]).

[9] SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[10], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

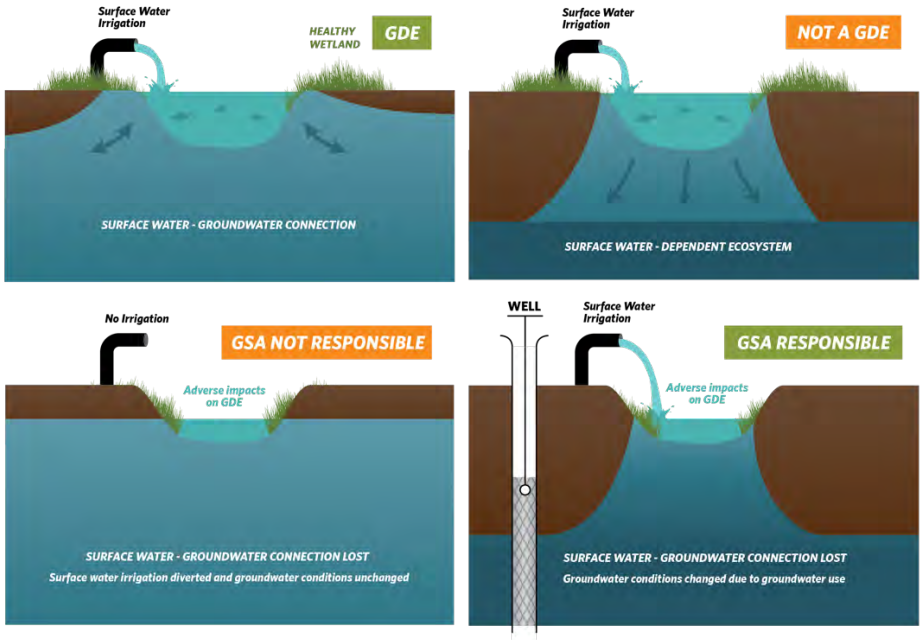


Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. **(Right)** Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. **Bottom: (Left)** An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. **(Right)** Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[10] For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

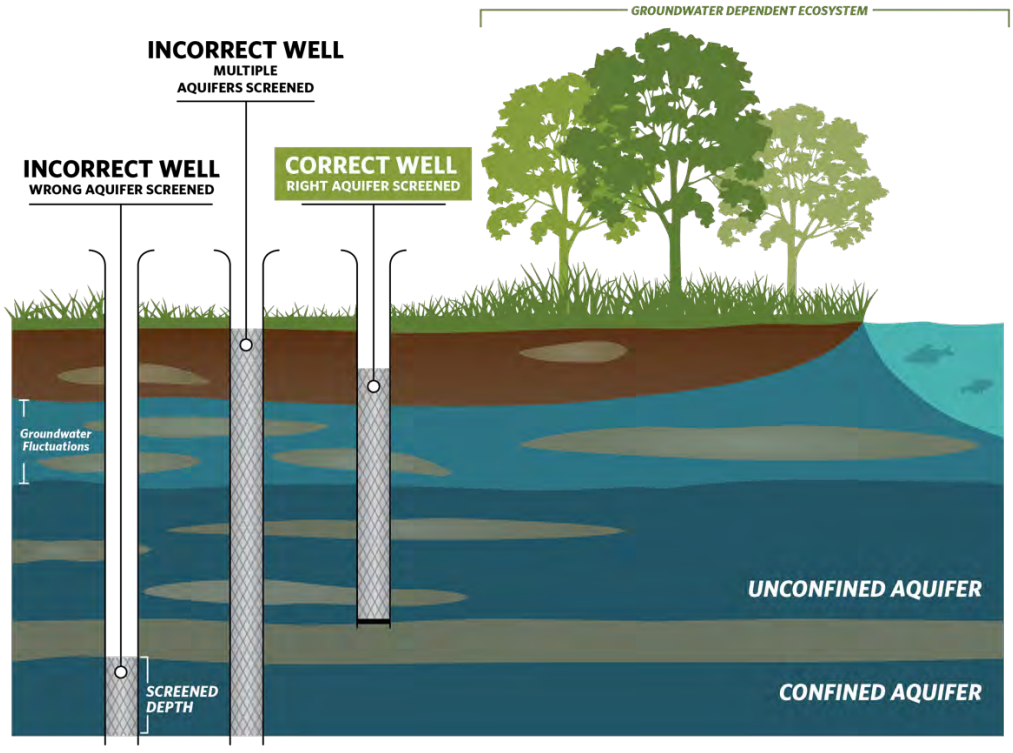


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate **groundwater elevations** at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)[11] to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

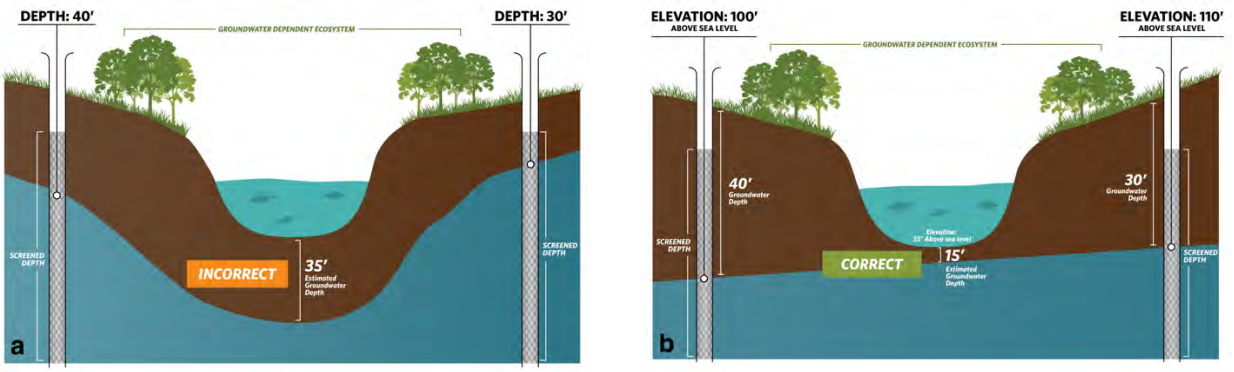


Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. **(b)** Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

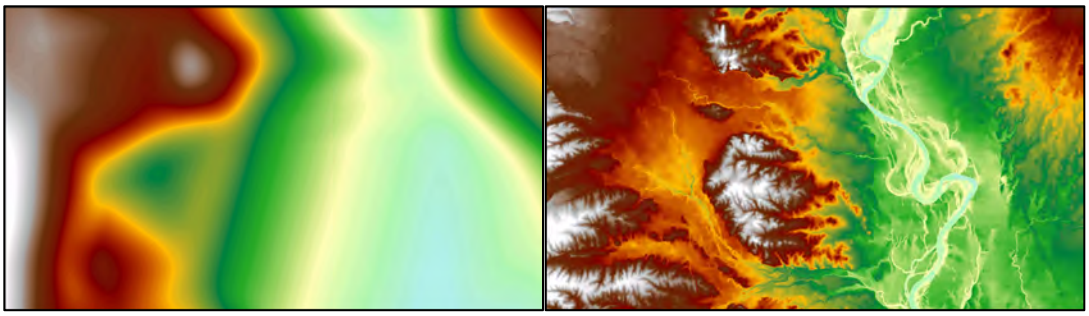


Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. **(Right)** Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth-to-groundwater contours. The image on the right shows a more accurate depth-to-groundwater estimate because it takes the local topography and elevation changes into account.

[11] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://iewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring programs to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, **The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network.** Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Attachment E

Maps of representative monitoring sites in relation to key beneficial users

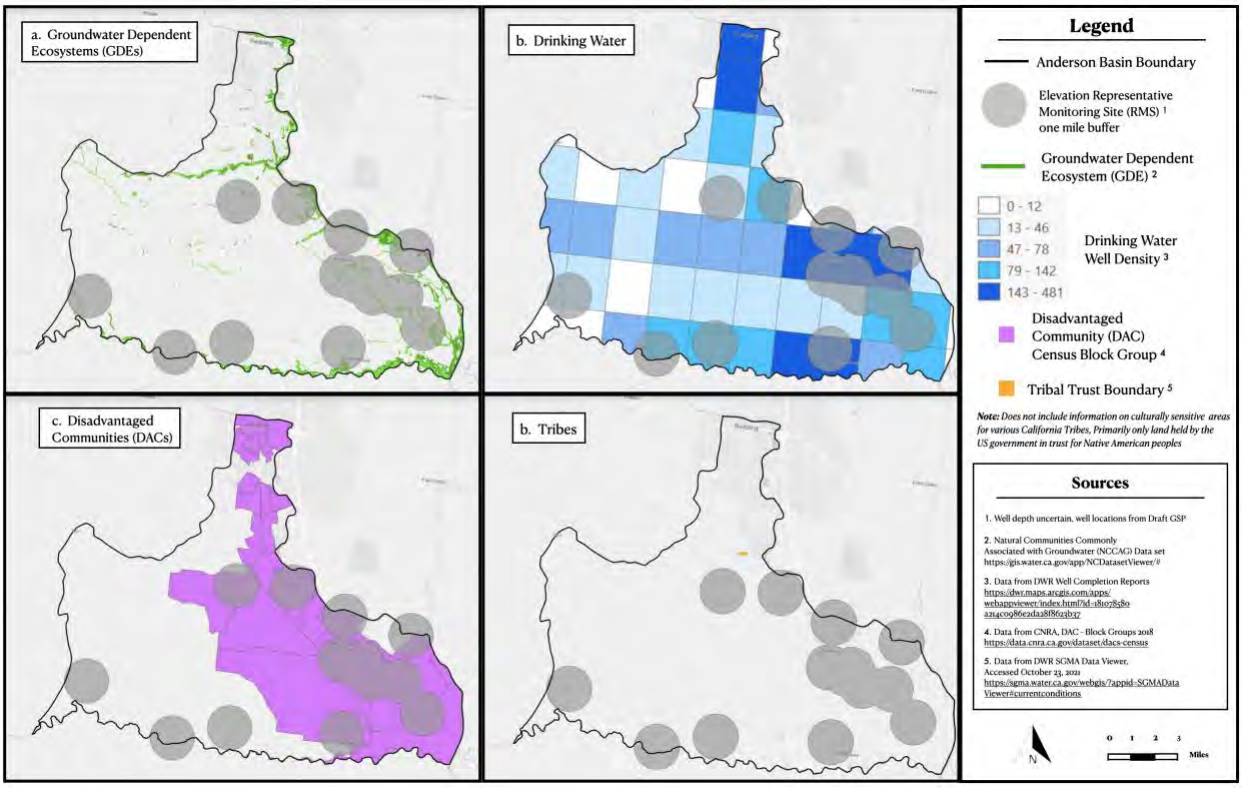


Figure 1. Groundwater elevation representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

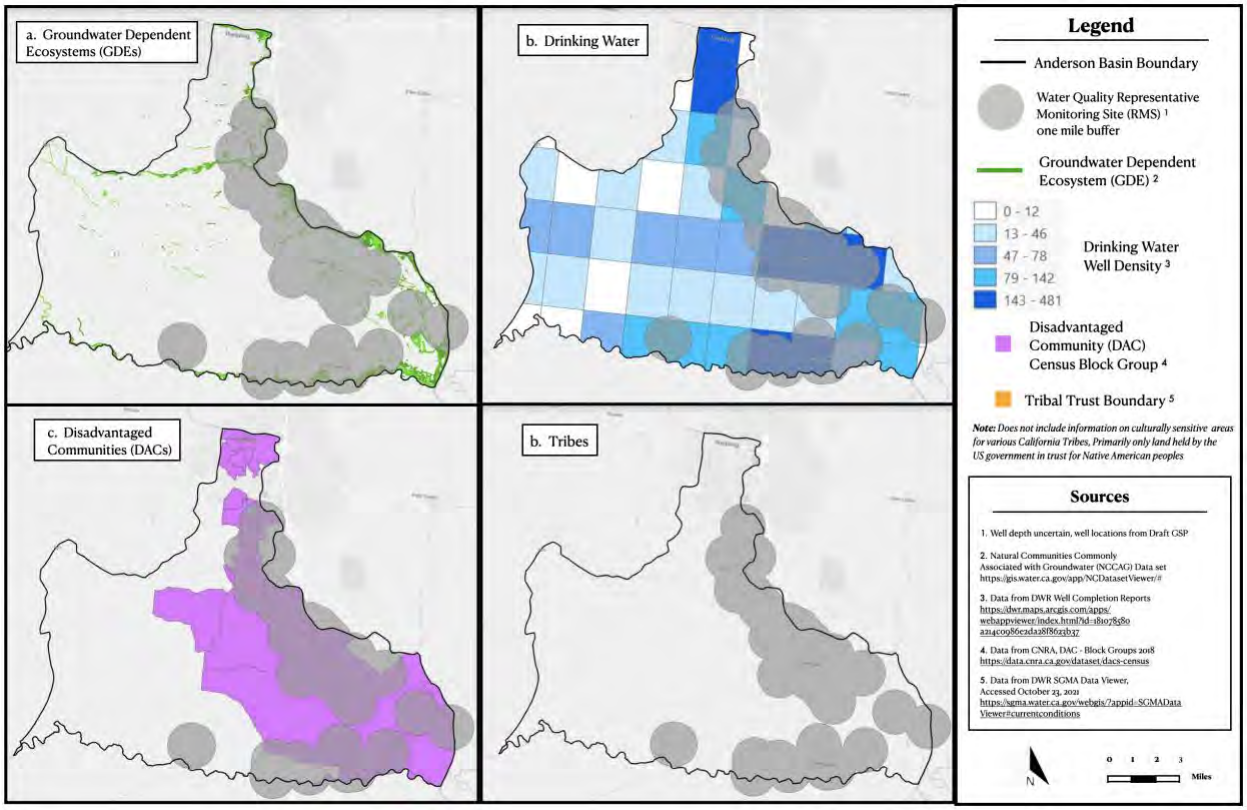


Figure 2. Groundwater quality representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.