



**Vina Groundwater
Sustainability Agency**
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(530) 552-3592

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Reclamation District**
P.O. Box 1679
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Board Members:

Evan Tuchinsky, Chair
Jeff Rohwer, Vice-Chair
Raymond Cooper
Tod Kimmelshue
Kasey Reynolds

Board Members:

Hal Crain, Chair
Darren Rice, Vice-Chair
Elvin Bentz
Jon Lavy
Bruce McGowan
Dan Paiva
Sue Vanella

VINA GROUNDWATER SUSTAINABILITY AGENCY AND ROCK CREEK RECLAMATION DISTRICT JOINT BOARD MEETING

Meeting Agenda

November 15, 2021, 5:30 p.m.

Chico City Council Chamber Building, 421 Main Street, Chico CA
IN-PERSON AND ONLINE MEETING VIA ZOOM

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PUBLIC PARTICIPATION:

This public meeting will be held in-person and online using the Zoom format for those who wish to participate remotely. Please use the following information to remotely view and participate in this meeting online:

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To access the live meeting, you have the following options:

1. Join Zoom Meeting
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PUBLIC COMMENT INFORMATION:

All members of the public may address the GSA Boards on any item listed on the agenda or during Business from the Floor. Members of the public can submit public comment in one of three ways:

1. **EMAIL TO VINAGSAPUBLICCOMMENTS@CHICOCA.GOV.** When submitting public comment via email, please indicate the item number your comment corresponds to in the subject line. Comments submitted will be sent to the full GSA Board members electronically prior to the start of the meeting. At the meeting, email comments will be acknowledged and read into the record by name only during the public comment period for the corresponding Agenda Item. Comments received after an agenda item has been heard will be made part of the written record if received prior to the end of the meeting.
2. **VERBALLY IN-PERSON AT THE MEETING.** Each Speaker will be asked to complete a Speaker Card and turn it into the Management Committee Staff prior to the conclusion of the staff presentation of the pertinent agenda item. Speakers are also asked to please state their name at the podium before speaking.
3. **VERBALLY VIA ZOOM APPLICATION OR BY TELEPHONE.** A member of the public may indicate their intent to speak by raising their hand any time after the item number has been called. Speakers will be called upon by both Chairs and unmuted by the Meeting Host.
 - a. If attending by Zoom application, please click the "raise hand button".
 - b. If attending by telephone dial *9 to raise your hand. *6 to mute/unmute yourself.
4. **TIME LIMIT.** Verbal comments, whether in person or on Zoom, will be limited to one comment per Agenda item, per attendee for no more than three (3) minutes, unless the Board Chairs specify a different time limit due to the number of speakers.

Groups or organizations are encouraged to select a spokesperson to speak on their behalf. Each subsequent speaker is also encouraged to only submit new information rather than repeating comments made by prior speakers or to simply indicate their agreement with a prior speaker.

PROCEDURE FOR PUBLIC AND BOARD MEMBER COMMENTS ON AGENDA ITEMS

After the staff report for each agenda item, the Chairs will take questions and/or comments from other Board members, with the Chairs commenting last. Speakers are to address their comments directly to the respective Boards. Staff and Legal Counsel will respond to questions from the public at the direction of the Chairs.

REQUIREMENT FOR ROLLCALL VOTES ON ALL MOTIONS

Pursuant to government code section 5495(a), "all votes taken during a teleconferenced meeting shall be by rollcall." All rollcall votes will be taken in alphabetic order by the last name of the respective Board members, with each Board Vice-Chairs and Chairs voting last.

The audio and video recording of the Joint Vina GSA and RCRD GSA meeting and related materials will be posted at on the Vina GSA website at: <https://www.vinagsa.org/meetings>.

Agenda Prepared: 11/11/2021

Agenda Posted: 11/12/2021

Prior to: 5:30 p.m.



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**VINA GROUNDWATER SUSTAINABILITY AGENCY (GSA) AND
ROCK CREEK RECLAMATION DISTRICT GSA
JOINT BOARD MEETING OF NOVEMBER 15, 2021**

1. VINA GROUNDWATER SUSTAINABILITY AGENCY (GSA) REGULAR BOARD MEETING

- 1.1. Call to Order - Chair Tuchinsky
- 1.2. Roll Call
- 1.3. **CONSENT AGENDA** - all matters listed under the consent agenda are to be considered routine and enacted by one motion.
- 1.3.1. **ADOPTION OF A RESOLUTION RENEWING THE AUTHORIZATION TO CONDUCT TELECONFERENCE MEETINGS FOR BOTH THE VINA GSA BOARD AND STAKEHOLDER ADVISORY COMMITTEE (SHAC) MEETINGS.**

The Vina GSA Board will consider a resolution finding that the state of the COVID-19 emergency still exists, that meeting in person continues to present imminent risks to the health or safety of attendees, and that renews the Board's prior authorization for meetings to be held by teleconference as authorized by subdivision (e)(1)(C) of section 54943 of the Government Code.

Action: Adopt the following resolution:

**RESOLUTION OF THE VINA GROUNDWATER SUSTAINABILITY AGENCY BOARD
RENEWING THE AUTHORIZATION TO CONDUCT REMOTE TELECONFERENCE
MEETINGS OF THE BOARD AND ITS STAKEHOLDER ADVISORY COMMITTEE FOR 30
DAYS PURSUANT TO THE RALPH M. BROWN ACT AND CALIFORNIA ASSEMBLY BILL
361.**

**1.3.2 ACCEPTANCE OF MEETING NOTES OF THE 10/19/21 AND 11/04/21 STAKEHOLDER
ADVISORY COMMITTEE (SHAC) MEETINGS.**

Action: Accept the 10/19/21 and draft 11/4/21 SHAC meeting notes

2. ROCK CREEK RECLAMATION DISTRICT (RCRD) GSA SPECIAL BOARD MEETING

- 2.1. Call to Order – Chair Crain
- 2.2. Roll Call
- 2.3. **CONSENT AGENDA** - all matters listed under the consent agenda are to be considered routine and enacted by one motion.
- 2.3.1. **RESOLUTION AUTHORIZING TELECONFERENCE MEETINGS FOR THE RCRD GSA AND
REGULAR BOARD MEETINGS.**

The RCRD Board will consider a resolution authorizing remote teleconference meetings of the RCRD GSA and regular Board meetings for a period of 30-days.

Recommendation: Approval of the following resolution.

**A RESOLUTION OF THE BOARD OF TRUSTEES OF THE ROCK CREEK RECLAMATION
DISTRICT AUTHORIZING REMOTE MEETINGS OF THE BOARD OF ROCK CREEK
RECLAMATION DISTRICT CONSISTENT WITH AB 361 AND THE BROWN ACT**

2.3.2. APPROVAL OF PAYMENT OF CURRENT INVOICES

The RCRD Board will consider approving payment of current outstanding invoices presented by RCRD Board Secretary Winley Durham.

Recommendation: Approve payment of the current invoices.

3. PUBLIC HEARING

3.1. PUBLIC HEARING FOR THE CONSIDERATION OF THE DRAFT GROUNDWATER SUSTAINABILITY PLAN (GSP) FOR THE VINA GROUNDWATER SUBBASIN.

The Vina GSA Management Committee will provide information on the Draft GSP for the Vina subbasin including a summary of comments received during the 40-day public comment period. The Vina and RCRD GSA Boards will provide their comments and consider public comments on the Draft GSP during this public hearing. The Boards will also consider the following proposed revisions to the following components of the GSP. (*Report – Management Committee*).

3.1.1. CONSIDERATION OF AN ALTERNATIVE MEASURABLE OBJECTIVE FOR DECLINING GROUNDWATER LEVELS FOR THE VINA GSP.

Based on numerous public comments, the Boards will consider a proposed alternative Measurable Objective (MO) that uses a 2010-2020 year average of declining groundwater levels rather than the year 2030 MO currently proposed in the Draft GSP.

3.1.2. CONSIDERATION OF ADDING THE DEVELOPMENT OF AN INTERIM MILESTONE ACTION PLAN (IMAP) AS A MANAGEMENT ACTION IN THE GSP

Both GSA Boards will consider a recommendation to add a Management Action project to the Projects and Management Action (PMA) Chapter 5 of GSP to develop an Interim Milestone Action Plan.

3.1.3. CONSIDERATION OF PROPOSED REVISIONS TO THE PROJECT AND MANAGEMENT ACTIONS (PMA) CHAPTER 5 OF THE DRAFT GSP.

The Boards will consider recommendations from the RCRD Ad-Hoc Committee regarding proposed changes to the status of certain projects and management actions identified in Projects and Management Action (PMA) Chapter 5 of the Draft GSP, as well as proposed language from the Vina and RCRD GSA legal counselors for Section 5.1 entitled “Projects, Management Actions, and Adaptive Management Strategies”.

Action: The Management Committee is requesting direction or recommendations on the above proposed revisions, or any other revisions to the Draft GSP that arise from the Public Hearing.

4. BUSINESS FROM THE FLOOR

Members of the public may address the Vina and RCRD GSA Boards at this time on any matter not already listed on the agenda; comments are limited to three minutes. The Boards cannot take any action at this meeting on requests made under this section of the agenda.

- 5. ADJOURNMENT**—the Vina and RCRD GSA Boards will adjourn to a joint Vina/RCRD GSA Board Meeting to be held on December 15, 2021, at 6:00 p.m. at the Chico City Council Chamber Building, 421 Main Street. Chico, CA 95928.



**Vina
Groundwater Sustainability Agency
Agenda Transmittal**

Agenda Item: 1.3.1

Subject: Resolution renewing the authorization of Teleconference Meetings

Contact: Linda Herman

Phone: 530.896.7800

Meeting Date: 11/15/21

Regular Agenda

Department Summary:

On September 16, 2021, Governor Newsom signed AB 361 to amend the Brown Act to allow legislative bodies to meet via teleconference during a proclaimed state of emergency in accordance with procedures established by AB 361 rather than under the Brown Act's more narrow standard rules. If the Vina GSA Board desires to continue to have the Board and its Stakeholder Advisory Committee (SHAC) the ability to meet remotely via teleconference without meeting the narrower standard Brown Act rules, the Vina GSA Board is required to adopt a resolution making the findings required by AB 361.

The Vina GSA Board may meet using the alternative rules of AB 361 if there is (1) a current state of emergency declared by the Governor pursuant to California Government Code section 8625 and either (2) state or local officials have imposed or recommended measures to promote social distancing or (3) the Vina GSA Board has met or is meeting to decide by a majority vote that meeting in person presents imminent risks to the health or safety of attendees.

On March 4, 2020, Governor Gavin Newsom issued a Proclamation of State of Emergency. Additionally, the Centers for Disease Control indicates that COVID-19 is a highly transmissible virus that is spread when an infected person breathes out droplets and very small particles that contain the virus, and such droplets and particles are breathed in by other people. Since June of 2021, a more infectious variant of the virus, known as the Delta Variant, has emerged and now accounts for the vast majority of COVID-19 cases.

Based on the state of emergency and the potential imminent risks to attendees of in-person meetings, the Vina GSA Board authorized tele/video conference meetings for both the Board and its SHAC at its meeting on 10/13/21 for 30-days. To continue conducting remote meetings after the 30-days, AB 361 requires that the Board redetermine whether the state of emergency and the potential imminent risk to attendees of in-person meetings still exist.

Therefore, the Board will consider the attached resolution making the following findings:

1. The Governor's COVID-19 State of Emergency Declaration issued on March 4, 2020, proclaiming a State of Emergency in the State of California still exists.
2. That meeting in person within the next 30 days could pose imminent health and safety risks to attendees.
3. That the Board desires to renew its authorization to conduct meetings via tele/video conference for all Regular and Special Meetings of the Board and the SHAC for the 30 days following this resolution, in accordance with Government Code Section 54953(e)(1)(C) and other applicable provisions of the Brown Act.

The resolution does not require the Vina GSA Board to hold meetings via teleconference, but rather provides it as an option if so needed. If the teleconference meeting authorization renewal is not approved by a majority vote of the Board, tonight's meeting will continue, but future Vina GSA Board and SHAC meetings will be in-person only meetings.

Fiscal Impact: None

Staff Recommendation: The Management Committee recommends approval of the following Resolution:

RESOLUTION OF THE VINA GROUNDWATER SUSTAINABILITY AGENCY BOARD RENEWING THE AUTHORIZATION TO CONDUCT REMOTE TELECONFERENCE MEETINGS OF THE BOARD AND ITS STAKEHOLDER ADVISORY COMMITTEE FOR 30 DAYS PURSUANT TO THE RALPH M. BROWN ACT AND CALIFORNIA ASSEMBLY BILL 361.

Attachment 1: - AB361 Renewal Resolution

RESOLUTION NO. _____

RESOLUTION OF THE VINA GROUNDWATER SUSTAINABILITY AGENCY BOARD RENEWING THE AUTHORIZATION TO CONDUCT REMOTE TELECONFERENCE MEETINGS OF THE BOARD AND ITS STAKEHOLDER ADVISORY COMMITTEE FOR 30 DAYS PURSUANT TO THE RALPH M. BROWN ACT AND CALIFORNIA ASSEMBLY BILL 361.

WHEREAS, all meetings of the Vina Groundwater Sustainability Agency Board (“Board”) and its Stakeholder Advisory Committee (“SHAC”) are open and public, as required by the Ralph M. Brown Act (Cal. Gov’t Code section 54950 et seq.), so that any member of the public may attend, participate, and view the SHAC’ conduct while conducting their business; and

WHEREAS, the Brown Act, Government Code section 54953(e), makes provisions for remote teleconferencing participation in meetings by members of a legislative body, without compliance with the requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions and requirements; and

WHEREAS, Government Code section 54953(e) requirements include but are not limited to (1) the existence of a state of emergency declared by the Governor pursuant to Government Code section 8625 and (2) State or local officials have imposed or recommended measures to promote social distancing; and

WHEREAS, on March 4, 2020, Governor Gavin Newsom issued a Proclamation of State of Emergency in response to the COVID-19 pandemic and as of the date of this Resolution, the proclaimed state of emergency remains in effect; and

WHEREAS, on March 17, 2020, Governor Newsom issued Executive Order N-29-20, which suspended and modified the teleconferencing requirements under the Brown Act (California Government Code Section 54950 *et seq.*) to allow local legislative bodies to hold public meetings via teleconference; and

WHEREAS, on June 11, 2021, the Governor issued Executive Order N-08-21, which extended the provisions of N-29-20 concerning the conduct of public meetings through September 30, 2021, and the Governor subsequently signed legislation revising Brown Act requirements for teleconferenced public meetings (Assembly Bill 361, referred to hereinafter as “AB 361”); and

WHEREAS, the Board has considered the circumstances of the continued state of emergency, including all information related to this matter, the associated staff report and other information relating to COVID-19, its variants, and AB 361; and

WHEREAS, based on the foregoing, the Board finds that meeting in person could pose imminent health and safety risks to attendees; and

WHEREAS, on 10/13/21, the Board authorized conducting remote tele/video conference meetings for both the Board and its SHAC without compliance with Government Code section 54953(b)(3) pursuant to section 54953(e), and authorized such meetings to comply with the requirements to provide the public with access to the meetings as prescribed by section 54953(e)(2); and

WHEREAS, the Board desires to continue to have the flexibility to conduct remote tele/video conference meetings of the Board and its SHAC.

NOW, THEREFORE, BE IT RESOLVED, by the Board of Directors of the Vina GSA hereby finds as follows:

1. The facts set forth in the above recitals are true and correct and incorporated into this resolution by reference.

2. Pursuant to the Governor's COVID-19 State of Emergency Declaration issued on March 4, 2020, the proclaimed State of Emergency in the State of California still exists.
3. That meeting in person within the next 30 days could pose imminent health and safety risks to attendees.
4. That the Board renews its authorization to conduct meetings via tele/video conference for all Regular and Special Meetings of the Board and the SHAC for the 30 days following this resolution, in accordance with Government Code Section 54953(e)(1)(C) and other applicable provisions of the Brown Act.
5. This Resolution shall take effect immediately upon its adoption and shall be effective for 30 days, or at such time the Board adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which the Board and its SHAC may continue to teleconference without compliance with Section 54953(b)(3) of the Brown Act.

THIS RESOLUTION IS PASSED AND ADOPTED by the Vina Groundwater Sustainability Agency Board this 15th day of November 2021, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Evan Tuchinsky, Chair
Vina Groundwater Sustainability Agency

ATTEST:

By: _____
Kamie Loeser, Management Committee Member
Vina Groundwater Sustainability Agency



Vina
Groundwater Sustainability Agency
Agenda Transmittal

Agenda Item: 1.3.2

Subject: Management Committee Report - Vina GSA Stakeholder Advisory Committee Update

Contact: Kelly Peterson Phone: (530) 552-3595 Meeting Date: November 15, 2021 Consent Agenda

Department Summary: The Vina GSA Stakeholder Advisory Committee (SHAC) met virtually on 10/19/21 and 11/4/21 the revised final meeting notes for their October meeting and the draft November meeting notes are attached.

SHAC membership details, meeting materials, detailed meeting notes and recordings of the meetings are on the Vina GSA website: <https://www.vinagsa.org/>. SHAC meetings are open to the public. SHAC meetings have concluded for 2021. The next SHAC meeting is scheduled for February 15, 2021 from 9:00 a.m. – 12:00 p.m. Meeting details are still under development and will be provided prior to the meeting.

Fiscal Impact: None

Staff Recommendation: Accept as an information item.



1 Meeting Brief

- 2 ➤ The Vina Stakeholder Advisory Committee (SHAC) met virtually on October 19, 2021 [[Access](#)
3 [Recording Here](#)].
- 4 ➤ **Chapter-by- Chapter Discussion of Draft Groundwater Sustainability Plan (GSP)**
5 Staff summarized key themes and topics from public workshop comments on draft GSP for
6 SHAC discussion. SHAC provided chapter-by-chapter comments on draft GSP and considered
7 recommendations to the Vina GSA Board of Directors. The public had an opportunity to
8 provide comment [[Access Presentation](#)].
- 9 ➤ **GSA Staff Proposed changes to GSP and Requested SHAC Input**
10 Staff provided Groundwater Level Measurable Objective Alternatives, proposed a new
11 Project and Management Action (PMA), the Interim Milestone Action Plan Proposal (IMAP),
12 and suggested PMA Chapter Revisions in Paragraph in Section 5.1.
- 13 ➤ **Next Meeting:** The SHAC will meet again via video conference on November 4, 2021, from
14 1:30-4:30.

15 Action Items

Item	Lead	Completion
• Provide hydrographs for Groundwater Level Measurable Objective Alternative 1 (levels from 2010-2020) for SHAC to consider on November 4th	Management Committee	
• Provide language for Interim Milestone Action Plan Proposal for SHAC to review on November 4th	Management Committee	
• Review and edit GSP Chapters to ensure accuracy, particularly responding to comments provided by T. Greene	Management Committee in coordination with Geosyntec	
• Post SHAC meeting recording on the website.	CBI & Management Committee	[Access Here]

16 Summary

17 The Vina SHAC met on October 19, 2021, via video conference, because of COVID-19. Participants
18 included Vina SHAC members, GSA member agency staff, technical consultants, representatives
19 from the CA Department of Water Resources (DWR), and members of the public. Below is a
20 detailed summary of key themes and next steps discussed at the meeting. This document is not
21 intended to be a meeting transcript. Rather, it focuses on the main points covered during the
22 group's discussions. The video-conference meeting recording is available on the Vina GSA
23 website [[Access Here](#)].



1 1. Introductions & Agenda Review (0:00:00)

2 The facilitator introduced the three new SHAC members, Joanne Parsley, Evan Markey, and Todd
3 Greene. All SHAC members introduced themselves. The facilitator gave a brief overview of the
4 agenda.

5

6 2. Public Comment for Items Not on the Agenda (0:11:15)

7 *Public Comments:*

- 8 • A member of the public asked if water rights are taken into account when determining
9 inputs and outputs in the water budget.
- 10 • C. Buck (Butte County) responded that in the Butte Basin Groundwater Model (BBGM), the
11 DWR land use maps are used to identify water source (irrigation source), so it's more
12 looking at it from a water supply or water source perspective, which is related to water
13 rights, but doesn't take a close look at which water rights are behind the potential surface
14 water supply. Water rights are documented in the integrated water resources plan of the
15 county, the inventory analysis report from 2001, and in an appendix from the 2016 report.
16 There is a drought Request For Proposals (RFP) out for a drought analysis study, and that
17 includes a task to look at riparian water rights.

18

19 3. Meeting Notes (00:14:30)

20 The Vina SHAC reviewed and voted on the approval of the 8/17/21 meeting notes. The meeting
21 notes were approved. [[Access Here](#)].

22

Yes	G. Sohnrey, S. Lewis , A. Dawson, J. Brobeck, B. Smith,
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Abstain	J. Parsley, E. Markey, T. Greene
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23

24 4. Chapter-by-Chapter Discussion of Draft Groundwater Sustainability Plan (GSP): (0:16:58)

25 The SHAC received a presentation of a high-level overview of GSP chapters and summary of the
26 of key comments received at the public workshops. The Management Committee informed the
27 SHAC that while they are submitting comments as an entity, they are also welcomed to submit
28 comments as individuals. The deadline for the public comment period on the draft GSP is October
29 19, 11:59 p.m.. At the November 4th SHAC meeting, the SHAC will have an opportunity to review
30 all public comments on the Draft GSP and to provide final recommendations on the GSP to the
31 Vina GSA Board. [[Access Presentation](#)]

32 *GSP Public Comments by Chapter*

33 C. Buck summarized key themes taken from public comments made at the GSP Public
34 Workshops on October 4th and October 13th.

35 ➤ **Chapter 1 - Plan Area, and Chapter 2 – Basin Setting:** Key themes were around the
36 importance of inter-basin coordination with regard to monitoring and water budgets,
37 monitoring tools, cross sections. AEM and well log data should be utilized to the maximum
38 extent possible.

39 ➤ **Chapter 3 - Sustainable Management Criteria (SMC), and Chapter 4 – Monitoring
40 Networks:** Key themes were that the groundwater Minimum Threshold is too low, the



1 groundwater Measurable Objective is too low, and a weak justification exists for how the
 2 MT is set coincident with when the undesirable results would begin to occur. Also, the
 3 importance of shallow groundwater and its role for GDE's, the Chico Urban Forest, and
 4 streams.

5 **► Chapter 5 – Projects and Management Actions:** Key themes were around the ownership
 6 of recharged water, specifically, the legal implications of recharge. Preference from some
 7 to emphasize conservation as a key strategy and to prioritize projects accordingly.
 8 Concern about timing of projects, in that some could take years.

9 **► Chapter 6 – Implementation:** An overall lack of clarity as to when the GSA will act. What
 10 groundwater level conditions will spur on what type of actions by the GSAs?

11
 12 5. GSA staff identified the following proposed changes to the GSP and requested SHAC input:
 13 (0:24:41)

- 14 1. Consideration of Groundwater Level Measurable Objective Alternatives
- 15 2. Interim Milestone Action Plan Proposal (IMAP)
- 16 3. PMA Chapter Revisions in Paragraph in Section 5.1

17
 18 *Consideration of Groundwater Level Measurable Objective (MO) Alternatives*

19 Currently: "Groundwater level based on groundwater trend line for dry periods (since 2000) of
 20 observed short-term climatic cycles extended to 2030."

21
 22 Conceptual Alternatives:

- 23 1. Average available historical groundwater levels from 2010-2020
- 24 2. Fall 2020 groundwater level

25
 26 *SHAC Discussion (31:45)*

- 27 • S. Lewis (ag representative) asked if SHAC would learn about the alternatives in greater depth
 28 at the November 4th meeting. C. Buck (Butte County) shared that they are waiting to find out
 29 whether the group is interested in considering an alternative, indicating that if there wasn't
 30 sufficient interest, the Management Committee would not 'crunch numbers' and that the
 31 team wanted to wait for input from the SHAC on that question first.
- 32 • G. Sohnrey (ag representative) reflected that he did not understand why they would make this
 33 change at such a late date. He noted that it, 'seemed like a waste of time,' in that much time
 34 was spent generating the MO in the past and that there was not likely enough time at the
 35 November 4th SHAC meeting to reconsider the MO.
- 36 • T. Greene (CSU Chico representative) acknowledged that he was new and had not been in
 37 past discussions, but that his new set of eyes on this in combination with seeing the public
 38 not happy led him to want to revisit the MO. He shared that he believed it was set too low.
 39 He expressed a desire to learn why the GSA had set the desired outcome at the lowest
 40 historical number, that it didn't make sense to him. He expressed feeling shocked when he
 41 first saw how low the MO was set. Regarding the interim milestone action plan, he noted that



1 it would take a lot of work and wondered when that work would have to be done. C. Buck
2 (Butte County) answered the timing question, saying that the Interim Milestone Action Plan
3 could be added to the GSP, and that it would be just a paragraph describing the action plan,
4 but the plan itself would be developed during implementation. The first step would be to get
5 the plan adopted, and then afterwards tackle the development of an action plan.

- 6 • J. Brobeck (environmental rep) stated that the hydrographs in the draft GSP are problematic
7 on many levels, and that one of his main concerns was that he didn't believe the hydrographs
8 had ever been presented to the SHAC. The graphs he recalled were all whisker graphs that
9 had to do with deciding how many shallow domestic wells they were willing to sacrifice in the
10 name of setting the MO. J. Brobeck further requested clarification on whether groundwater
11 levels would be measured during the spring or fall. Last, he wanted to recognize that water
12 code explains that an agency may establish MOs that exceed the reasonable margin of
13 operational flexibility for the purpose of improving overall conditions in the basin, and failure
14 to achieve those objectives would not be grounds for finding inadequacy in the plan. He
15 stated therefore that there was no reason not to set optimistic and progressive MOs. He
16 expressed a desire to have more detailed discussions illustrating the MO and Minimum
17 Threshold (MT) and stated that he did not think they had been properly vetted through the
18 SHAC.

- 19 • A. Dawson (domestic well user representative) explained that when MTs were originally
20 established it was with the view of a different data set that was solely based on the number
21 of domestic wells that would potentially go dry, and it felt to her that the hydrographs in the
22 draft GSP had been presented to the board and immediately passed without review by SHAC.
23 She expressed that it felt demoralizing. She spoke with concern about the Valley Oaks that
24 will not be sustained by the water depths, naming that those trees on her property have been
25 there since the 1950s and have never been watered, and that the thought of losing all of
26 those trees is devastating. She wants to review the data with some criterion like how many
27 valley oaks can be saved. A. Dawson noted that this available data is new and that she would
28 therefore push to review it and to have the alternatives C. Buck presented to be added to the
29 graphs. C. Buck addressed the Valley Oaks issue, noting that there is a disconnect between
30 using these wells and the observed water levels in them and then making that jump to
31 whether those water levels are representative of the shallow aquifer conditions and are
32 below the 80 ft and serve valley oaks. The wells were selected to be representative for
33 monitoring domestic wells, but that doesn't necessarily provide information about the
34 shallow aquifer, and there is a data gap there.

- 35 • B. Smith (business rep) noted that the hydrographs are very useful, but they don't tell us
36 where they are screened or how much water is coming in and from where. He emphasized
37 the importance of well logs. He shared that he had looked at 40-50 wells in the area, as well
38 as the data library from DWR, and that he did not like that the MTs are so far below where
39 the lows and highs are on these hydrographs, noting, "I think it's disastrous." He also



1 expressed concern that adjacent subbasin GSAs would look at what exists and if their MTs
 2 are higher than it could lead to significant issues. He reiterated that the MOs and MTs are far
 3 too low and that enough time hasn't been spent talking about them.
 4

5 Interim Milestone Action Plan Proposal presented by Kamie Loeser (Butte County)
 6 (00:49:03):

- 7 • Interim Milestone (IM) Action Plan
 - 8 ○ IM is a target value representing measurable groundwater conditions in increments
 9 of five years to demonstrate progress towards sustainability
 - 10 ▪ Show how the GSAs anticipate moving from a downward trending condition
 11 to an upward trending condition
- 12 • The Interim Milestone Action Plan (IMAP) would identify:
 - 13 ○ Local Triggers
 - 14 ▪ Determine conditions that trigger the implementation of specific PMAs that
 15 address each Sustainability Indicator
 - 16 ▪ X number of multiple dry year conditions,
 - 17 ▪ Project: Establish a reporting system (for dry wells, sediment in wells etc.)
- 18 • Projects and Actions:
 - 19 ○ Implementation of specific PMAs (with description of the MO that will benefit and
 20 move toward upward trending IM condition)
 - 21 ○ Short-term projects vs. long-term projects
 - 22 ▪ “Emergency” Drought response, i.e., drought
 - 23 ▪ County / GSA collaboration and interface during drought/emergency
 24 response

26 PMA Chapter: Paragraph in Section 5.1 Revisions received from Vina GSA and RCRD GSA
 27 Counsel Section 5.1 presented by C. Buck (Butte County)
 28 (Italics indicate additions to paragraph)

29 “The objective and purpose of the GSP is to achieve groundwater sustainability in the Vina
 30 Subbasin. *This will require projects and management actions aimed at avoiding undesirable*
 31 *results, achieving measurable objectives, and responding to changing conditions in the basin.*
 32 ~~*This will require projects aimed at increasing water supplies and decreasing groundwater*~~
 33 ~~*dependence, as well as management actions designed to reduce groundwater demand.*~~ The
 34 Vina GSA and the RCRD GSA have identified projects and management actions tailored to
 35 benefit the Vina Subbasin’s groundwater supply and quality for the benefit of rural areas,
 36 communities, agricultural users and the environment. The approach targets both *identifying*
 37 *and increasing alternative sources of supply and reducing groundwater demand.* The GSP
 38 identifies groundwater monitoring programs to monitor groundwater conditions, investigation
 39 of additional water sources to supplement the use of groundwater, and conservation and
 40 educational programs to reduce groundwater demand.

41
 42 SHAC Discussion (57:23)



- 1 • G. Sohnrey (ag representative) asked how the IMAP would differ from what is already in place
2 according to SGMA, which is the requirement to update the GSP every five years. K. Loeser
3 (Butte County) responded that while this is in place, the IMAP would add more detail for the
4 interim milestones, so that specific triggers could be identified. K. Loeser likened it to the
5 Basin Management Objectives (BMOs), which had warning stages. This would be similar,
6 where certain triggers would be identified to ensure they are not continuing in a downward
7 trending line.
- 8 • T. Greene (CSU Chico representative) wanted to second what B. Smith said about needing to
9 know the screens of the monitoring wells. He noted that there isn't sufficient screen
10 information for the entire North Vina Management Area, and that this information for such
11 a huge area is important. He added that especially if one of the objectives is to use the AEM
12 data, one must know the depth in question, and not just the depth of the wells but also the
13 screen depth. He added that he may have been mistaken, but that still, there exist only 2
14 wells with useful information for screens for the entire area. T. Greene also raised the issue
15 of water budget analysis and noted that the climate models being used both predict more
16 precipitation in the future. He wondered about the scenario where there is less precipitation
17 in the future and pointed out that this is not being considered. He also noted that there are
18 issues with the tables and the actual numbers. He called '10,000 acre feet/year' the magic
19 number and noted that it's a very significant number, in that people are putting a lot of weight
20 on it. He stated his hope is that there is justification for why that number is being used. T.
21 Caralone thanked T. Greene and asked the SHAC about their willingness to explore either
22 proposed alternatives for resetting the MO.
- 23 • J. Turner (Geosyntec) shared that the 10,000 acre feet number is not derived solely from the
24 model, but that it came from an average of many things, including groundwater levels going
25 down and considering where things would be in 2042 if nothing is done. J. Turner emphasized
26 that it would be incorrect to say that the number is derived solely from the model, and he
27 reminded the group that there was a presentation with the board to review different
28 scenarios and that's where the number was decided upon. S. Lewis (ag representative)
29 remembered that when the number 10,000 was discussed, C. Buck (Butte County) had said
30 that it was due to climate change and urban growth, and she reminded the group not to
31 forget about considering the role of urban growth.
- 32 • T. Caralone (facilitator) asked what information the SHAC would need in order to be able to
33 have a robust conversation at the November 4th meeting and come to a clearer
34 recommendation?
- 35 • G. Sohnrey (ag representative) acknowledged that this should be addressed but expressed
36 concern about it being done at the November 4th meeting because of how long these
37 discussions would need to be. He reminded the SHAC that they had spent a great deal of time
38 already over many meetings. He also reminded SHAC that this is a work in progress and that
39 the purpose of the next few years would be to continue to look at what comes up over time.



1 He noted that there were varying views on climate change, and that while T. Greene thinks it
 2 will be drier and hotter, others think it might be cooler and more snow, with a higher water
 3 table. He concluded that the group would not be able to agree to this by November 4th.

- 4 • J. Brobeck (environmental representative) reflected that was having a difficult time with the
 5 question and shared that when he sees the hydrograph having a slow overall decline, he
 6 assumes that valley-wide water levels are dropping. He stated that he was grateful to now
 7 have Dr. Greene involved and wished he had been involved from the beginning. He expressed
 8 concern that the SHAC is spending so much time on the MOs and MTs, which he would like
 9 to see set higher, but doesn't see how to control that if the water levels continue to go
 10 downward.
- 11 • T. Greene (CSU Chico representative) expressed that he would like to entertain the idea of
 12 moving the MOs up and that he likes Alternative 1 because it is more in line with Butte
 13 Subbasin and also because it makes more sense to him as the desired level, which is the way
 14 it is defined for SGMA. He also acknowledged that he knew the 10,000 acre-foot number
 15 didn't only come from modeling but appreciated the acknowledgment that it partly did.
- 16 • S. Lewis (ag representative) stated that according to her understanding of SGMA, what the
 17 SHAC had done by setting the MO according to the 2030 made logical sense. She stated that
 18 comparing Vina to the Butte subbasin was not compelling because there many GSAs all doing
 19 things differently, and it would be best to stick to how the law was written.
- 20 • B. Smith (business representative) shared that because Butte Subbasin is the neighboring
 21 subbasin and buts up almost to Chico, it is particularly relevant. He cautioned that if Vina's
 22 MOs are too low and water comes to the contaminated plumes, the plumes could migrate.
 23 He expressed that he would want to raise the MO and look at new information. He
 24 reiterated that he wants to know where the wells are screened and which have available
 25 logs. He would need to know that information prior to the Nov 4th meeting. He has asked
 26 for that information many times. C. Buck (Butte County) responded that the information is
 27 available in Table 4-5 on page 132 of the plan. She noted that regarding the well logs, she
 28 has put it down as a top priority. While she cannot promise it will be available, she agrees
 29 that it is important information.

30
 31 SHAC voted on whether to leave MO where it is currently or examine MOs presented at the
 32 November 4th Meeting (1:26:23)

Yes	A. Dawson, J. Brobeck, Bruce, T. Greene
No	G. Sohnrey, S. Lewis, J. Parsley, Evan, C. Madden

33 *SHAC Discussion While Casting Votes*

- 34 • G. Sohnrey (ag representative) expressed his wish to leave it because it's not something
 35 that can be accomplished by Nov. 4th.
- 36 • S. Lewis (ag representative) expressed her wish to leave it. She reiterated that one cannot
 37 compare Vina to Butte; it's apples to oranges.



- 1 • J. Parsley (ag representative) expressed that if it is a fluid document that can be changed
2 later, it would be better to get the document submitted and have more time to get
3 necessary information.
- 4 • A. Dawson (domestic well user representative) remained unconvinced that it is as flexible of
5 a document that they might wish. She expressed that there would be great resistance to
6 changing things once in place and that she would like to see more information on
7 Alternative 1 and wanted to see how it would look on the remainder of the hydrographs.
- 8 • J. Brobeck (environmental representative) asked a clarifying question, would the MO
9 measurement be taking place at the top or the bottom of the hydrograph? In other words,
10 would the measurement take place in the spring, summer, or fall? C. Buck (Butte County)
11 answered that she preferred spring measurements because they are more stable on a
12 flatter portion of the hydrograph after recovery that occurs in the fall and through the
13 winter. J. Turner (Geosyntec) agreed with C. Buck that the level desired is after the recharge
14 occurs, which is in the spring. He concluded that they would be looking at both because
15 over the course of the year, he would want to ensure that the levels stay around the right
16 mark, but that the spring would be more important than the fall. C. Buck explained that the
17 reason they hadn't created total clarity around whether spring or fall was because it would
18 never land right on the line, but would be above and below during different seasons, but
19 she agreed that creating clarity would be helpful.
- 20 • J. Brobeck (environmental representative) affirmed that he was in favor of revisiting the MO.
21 • B. Smith (business rep) voted that he wished to raise the MO to Alternative 1, and he added
22 that he assumed whatever would be written in the GSP would be difficult to change later.
23 • E. Markey (Cal Water) stated that J. Parsley had articulated his stance perfectly, and that
24 because it is a living document, there would be opportunity to change it moving forward.
25 • C. Madden (Butte College) agreed that it should not be changed from 2030, but he added a
26 caveat that he agreed with much of what was said. He thought it would be important at the
27 5-year review to look at the effect of the MO selected on the overall aquifer capacity, and
28 that depending on that, he may want to move it up to Alternative 1 or 2.
29 • T. Greene expressed desire to raise the MO to Alternative 1.
30 • A. Dawson (domestic well user) noted that one of the PMA's S. Lewis had submitted
31 suggested that farmers could take up to two years to replant their orchards, and in light of
32 that, it occurred to her that if she were a farmer, she would want to know in the fall if there
33 were some kind of problem, maybe with a trigger being instituted, so that she could plan for
34 the spring.
35 • S. Lewis (ag representative) responded by asking A. Dawson to please not confuse her
36 proposed project for being indicative of how farmers plant. She explained that it takes years
37 of planning to remove an orchard and to replace the orchard. One must order multiple years
38 in advance in order for nurseries to be able to grow the trees, so farmers planting in the spring
39 wanting to know by the fall would not make any sense. Farmers actually need to know



1 multiple years in advance if they are going to plant because it takes that long to grow trees in
2 a nursery and to order them.

- 3 • T. Carlone (facilitator) announced that the vote was 5 – 4, with 5 who feel it's best to leave it
4 where it is, and 4 who would like to further explore it and would like to Alternative 1. She
5 turned to the Management Committee, noting that there were SHAC members who wanted
6 to look at the numbers, and proposing that maybe it would be good to provide more
7 information so SHAC could have another look at this on November 4th. T. Carlone reminded
8 C. Buck (Butte County) that it is not a majority rule body, so perhaps what would make sense
9 is to bring the information to the November 4th meeting, do a roll call to hear what people
10 have to say, and then bring that to the Vina GSA board.
- 11 • S. Lewis (ag representative) asked how SHAC is not a majority rule body, and also asked what
12 would be the point of bringing this question back on November 4th for more discussion just
13 to have another 5-4 vote. T. Carlone (facilitator) reminded her that they could amend the
14 charter if the SHAC wished to change their decision-making rule.
- 15 • G. Sohnrey (ag representative) stated that he too believed it was majority rule.
- 16 • S. Lewis (ag representative) requested that legal counsel weigh in the question of whether or
17 not it is a majority rule body, citing that a vote is taken every time on whether to approve
18 meeting minutes. T. Carlone (facilitator) explained that minutes are approved through
19 consensus, not majority rule, and that when someone proposes a change to the minutes, they
20 work to reflect the change to get it to a level of accuracy and acceptance by the whole group.
- 21 • S. Lewis (ag representative) reminded the group that this is a Brown Act body, stating that a
22 Brown Act body cannot be run through consensus and that it is a majority rule group.
- 23 • G. Sohnrey (ag representative) expressed agreement with S. Lewis. K. Loeser responded,
24 reminding the group that the Brown Act is about noticing responsibilities, specifically public
25 noticing. K. Loeser recalled that the idea of voting in the SHAC was so that if the board wanted
26 to reflect back to see how the SHAC was leaning on one issue or another, they could see it
27 based on “a vote,” but it was not for the purpose of making the SHAC a majority voting body.
28 K. Loeser (Butte County) emphasized that it was not written up that way, but that it could be
29 changed in the future. She noted that with regard to examining an Alternative, it would be
30 important to take into consideration the public comments on the document, specifically the
31 many concerns expressed about the MO. K. Loeser also offered to verify the questions raised
32 with legal counsel.
- 33 • S. Lewis (ag representative) reiterated that if SHAC is committed to this process, they should
34 adhere to that 5-4 decision, and it should be presented to the GSA for the GSA to make the
35 decision about whether to pursue staff time for looking at it. She recalled that in the past, the
36 process has been to send SHAC's thoughts to the GSA for the GSA to make a decision, but
37 now what is happening is we are making a decision and then it will go back to us for a decision
38 before it goes to the GSA. That's not the process.



- 1 • T. Carbone (Facilitator) suggested that we return to who wanted the GSA to consider changing
2 the MO and asked if they felt that their views had been well enough expressed with enough
3 information for it to be adequately considered by the board.
- 4 • B. Smith (business rep) answered that he wished to see more hydrographs because he would
5 need to see how the current MO is on the other graphs and how the proposed is. He noted
6 that this is aside from the need to have access to those electric logs, which is separate issue,
7 regardless of whether the MO is changed. He expressed a need to at least review the
8 information, in order to make an informed recommendation to the board.
- 9 • J. Parsley (ag representative) stated that more information would not lead her to change her
10 mind. She clarified that this did not mean that things should not be looked at, but she did not
11 like the idea of trying to gather a great deal of information to only talk about it for three
12 hours.
- 13 • A. Dawson (domestic well user representative) stated that she probably would not change
14 her mind either, but that she did feel it was very important to see more information. She
15 emphasized that the whole plan hinges on the MT and the MO, and that four of the
16 undesirable results are based on that. There is so much new information that has come out
17 since these decisions were made and the group never sat down to review those hydrographs.
18 She requested the information in an email so that they could review it and send in their
19 opinion, so that they wouldn't have to talk about it in the meeting, and she apologized to S.
20 Lewis for presuming to tell her about her business, clarifying that it was not her intent. She
21 stated that she is a believer in, 'forewarned and forearmed,' and hoped she would accept her
22 apology.
- 23 • T. Carbone (facilitator) responded that since SHAC is an advisory committee seated by a board,
24 even if it is a short item, they would need to agendize it at the next meeting so that they could
25 weigh in in a public forum, but it would not need to take up the three hour meeting. T. Carbone
26 reminded the group that is a public information effort and that having those hydrographs
27 available could be very beneficial to people's understanding of this plan and how
28 groundwater is going to be managed.
- 29 • T. Greene (CSU Chico representative) stated that his opinion would not change, but did think
30 they needed to do the hydrographs again. He pointed out that it wouldn't be a lot of work;
31 it's a relatively simple statistical exercise. Once that was done, he believed the board would
32 have more than enough information. He suggested that the board knows how the public feels
33 and knows that the SHAC is split.
- 34 • J. Brobeck (environmental representative) stated that he looked forward to another
35 opportunity to try to convince his colleagues who think that these MOs are reasonable. He
36 wanted to remind them that SGMA water code said that margin of flexibility can be set to
37 improve the conditions and there is no penalty for failing to meet those objectives. He does
38 not see any downside to setting them high. He believes the SHAC needs to respond to the



1 public's concern about these unreasonably low MOs, set below historic lows. He hopes for an
 2 opportunity to talk about the MTs as well.

- 3 • Darrin Rice (Rep from Rock Creek Reclamation District) weighed in that the MOs and MTs
 4 took hundreds of hours of consideration and are responsible. He believes that changing the
 5 MO to historic levels beyond 2015 levels would be very expensive. He added that there are
 6 data gaps that could be filled in, but he would like the plan to stay the way it is.
- 7 • T. Carlone reminded the group that this is the last day of the public comment period. On
 8 November 4th the SHAC would see a compilation of the public comments received on the
 9 draft GSP and would not be able to spend the three hours on the MO because it will be
 10 important to look at the comments. This would therefore be a short item and could be an
 11 opportunity for the public, this body, and the board to see more information. Then the SHAC
 12 could go through the roll call again, and if it remains the same, all that would have happened
 13 is the SHAC would all have been provided with more information. T. Carlone reiterated that
 14 in her role she is doing her best to listen to everyone and to find a common pathway to move
 15 forward. C. Buck responded that this seemed reasonable and that they would work up the
 16 hydrographs.

17 SHAC votes on whether to review draft language of new PMA: Interim Milestone Action Plan on
 18 November 4th (2:05:25)

Yes	A. Dawson, J. Brobeck, B. Smith, T. Greene, E. Markey, C. Madden
No	G. Sohnrey, S. Lewis
Abstain	J. Parsley

19 *SHAC Discussion While Casting Votes*

- 20 • G. Sohnrey (ag representative) voted no because it is already in the plan, and he does not
 21 want to bring up the Interim Milestone Action Plan on Nov 4th because there is too much to
 22 bring up as it is.
- 23 • S. Lewis (ag representative) voted no because it would just be repeating what is already in
 24 the document.
- 25 • J. Parsley (ag representative) voted to abstain because she did not know enough to say yes
 26 or no.
- 27 • A. Dawson (domestic well user) voted yes.
- 28 • J. Brobeck (environmental rep) noted that much can happen in one year, and five years may
 29 be too long. He said that in general, he would be inclined to vote yes and was curious to hear
 30 from T. Greene.
- 31 • B. Smith (business rep) voted yes.
- 32 • E. Markey (Cal Water) voted yes.
- 33 • C. Madden (Butte College) voted yes.
- 34 • T. Greene (CSU Chico) voted yes.

35 SHAC Votes on Proposed Revisions to PMA Chapter (2:10:00)



- 1 • First, Aidan Wallace (Legal Counsel), provided background, noting that the first sentence
 2 added comes directly from the SGMA regulations and is probably more in line with what DWR
 3 is looking for. He also noted that they added a few words to more explicitly state that you
 4 have the demand knob and the supply knob.

Yes	G. Sohnrey, S. Lewis, J. Parsley, A. Dawson, J. Brobeck, B. Smith, E. Markey, C. Madden, T. Greene
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Abstain	J. Brobeck
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5 *SHAC Discussion While Casting Votes*

- 6 • B. Smith (business representative) asked if “reducing groundwater demand,” refers to this
 7 area or from the entirety of California?

8 *Public Comment (2:13:15)*

- 9 • A member of the public noted that in general she supported the Interim Milestone Action
 10 Plan because it speaks to her concern that there was no statement about what kind of actions
 11 would be taken if a downward trend was occurring toward the MT. She stated her full support
 12 for raising the MT. She also spoke to the question of the fluidity of the document, noting that
 13 Amer Hussein (Geosyntec) had referenced that topic and said that even in districts already in
 14 severe overdraft, it has been relatively impossible to get those numbers changed. She
 15 emphasized that many people in the public workshops spoke in opposition to that MT, and
 16 she wondered if there is a count of how many letters have been received and whether there
 17 was a calculation of how many people objected to that number. T. Carlone (facilitator)
 18 answered that since today is the last day of public comment, the staff would be compiling all
 19 the comments and bringing them to the SHAC at the next meeting on November 4th.

20 6. *Public and SHAC Comment on Items Not On Agenda (2:20:43)*

- 21 • G. Sohnrey (ag representative) noted that on line 308, he wished to add the word “possibly”
 22 in front of “required” because it’s an estimate, and the 10,000 acre feet number could go up
 23 and down. He also asked a clarifying question, in the paragraph in lines 313-318, does it refer
 24 to groundwater pumping for domestic or agricultural use? C. Buck (Butte County) responded
 25 that even though it is wetter from a precipitation standpoint, the changed climate is
 26 expected to have higher Evapotranspiration rates (ET) so that drives a higher agricultural
 27 groundwater demand even with increased water efficiency.

- 28 • G. Sohnrey (ag representative) emphasized that there is a lot in this plan that is based on
 29 climate change which is not everybody’s point of view. Also, in line 5206, he noted a possible
 30 error of a zero instead of a comma.

- 31 • T. Greene (CSU Chico representative) noted that in figure ES-10, it says there are supposed
 32 to be 17 wells in the map, he noted only 16. On page 30, line 1423, it says “in figure 2-6, the
 33 reddish colored area represents out crops,” but the figure doesn’t have a reddish colored
 34 area.



- 1 • T. Greene (CSU Chico representative) added that some of the features about the Chico
2 Monocline are incorrect and that he would add that in a follow up email. Some of the bigger,
3 more significant issues, like I mentioned about the water estimate in the water budget,
4 referring to table 2-7, “water budget summary” – those numbers don’t equal the total
5 inflow. For example, the surface water inflows, that is an accumulation of everything that is
6 underneath it, outside diversions all the way to applied water returns. Also, in table 2-8, the
7 total number 838-acre feet per year, it wasn’t clear how that number was derived. C. Buck
8 (Butte County) responded that they were working with some old tables that were supposed
9 to be traded out and thanked T. Greene for pointing out the inaccuracies.
- 10 • T. Greene (CSU Chico representative) added that for the MTs, the language states two
11 consecutive non-dry years, which means if there weren’t two consecutive non-dry years,
12 there wouldn’t be a trigger. It read a little bit like a loophole. C. Buck (Butte County)
13 responded that this topic had been discussed extensively and revisited it with the GSA
14 boards, and that is the direction they’ve given at this point.
- 15 • T. Greene (CSU Chico representative) suggested that the uncertainty with the water budgets
16 is not adequately addressed in the GSP. He does not know how uncertain the numbers are
17 that are presented or which factors are causing the most uncertainty. He would appreciate
18 having a percentage. He also raised the issue of the data gaps around the need for the
19 shallow wells. He referenced that the groundwater quality monitoring locations for the
20 entire North Vina Water Management area is one well and he wondered whether that was
21 enough and asked about that well’s screening information? He wondered if that was enough
22 information about water quality for the entire Management Area? He also pointed out a
23 discrepancy between the text and the figures in 5-1 and 5-2.
- 24 • A. Dawson (domestic well user representative) added concern that she does not understand
25 how the MT was established for North and South Vina Management Areas. Was there a
26 percentage of wells included in that? She noted that if she cannot figure it out, how would
27 a member of the public sort that out? She pointed out line 275 in the executive summary
28 table 1, in conjunction with the appendices, the margin of operational flexibility in North
29 Vina is around 80 ft in several of these wells, and she stated that it seems excessive and that
30 if they were to get anywhere close to that, she could not imagine how they would remediate
31 impacts. Last, she noted that in the Vina Chico Management Area well numbering, the
32 numbers in table ES-1 are different from the numbers in appendix 3A, and she asked if these
33 were different wells. C. Buck (Butte County) responded that she identified that discrepancy
34 as well. The intent is to have 4 Cal Water wells and 1 other monitoring well. C. Buck said that
35 they would fix the error.
- 36 • J. Brobeck (environmental representative) pointed out that the MT, the quantitative
37 threshold for sustainability indicator, is defined as ‘when the undesirable results may begin
38 to occur.’ He expressed his opinion that the designated MTs are the most egregious violation
39 of common sense in the whole GSP. He explained that undesirable results begin to occur



1 even before these historic low levels, such as domestic well failures, destruction at
2 ecosystems, and more.

- 3 • B. Smith (business representative) said that when he read about the two consecutive non-
4 dry years, he noticed the same problem, in that it provides a loophole. He also noted how
5 helpful it was to have the plan printed out and expressed appreciation to whomever did
6 that.

7 *Public Comment (2:45:03)*

- 8 • A member of the public noted that she sees the same names on the Butte County Board of
9 Supervisors as she does on the Vina GSA, as well as other agencies, and that it seems heavily
10 slanted in favor of agricultural interests. She says it feels like things are just getting pushed
11 through.
- 12 • A member of the public expressed that she remains concerned that information has not
13 been thoroughly vetted and then presented to the Vina GSA Board for voting. It happened
14 previously when the hydrology maps were changed and there were different measurements
15 used, and that was never vetted through the SHAC. She is also concerned about the MTs and
16 MOs being too low. She is concerned about the 10,000 acre feet water budget, how that was
17 arrived at. She is also concerned about the undue influence of the Rock Creek Reclamation
18 District on the Vina GSA Board when joint meetings are held, and even today when Mr. Rice
19 was allowed to speak, she is not sure in what role he was speaking, but she believes it should
20 be as a member of the public. She stated that she would like to have that clarified. She
21 remains concerned that there are no triggering conditions to initiate conservation or
22 demand reduction. She is also concerned that the drought has had no forbearance on this
23 process because what happens in 2 years or even 1 year if there is still drought? She remains
24 concerned about the lack of current well data and its timeliness. She believes there needs
25 to be better coordination between agencies and that more information is needed about
26 water rights and SGMA credits, as in, who is receiving them now and how does it work? She
27 remains concerned that there is no mention of the groundwater markets that are being
28 discussed throughout the state, and that there is no mention of this in the GSP.
- 29 • K. Loeser clarified on behalf of the Management Committee, with regard to participation
30 from Rock Creek and asking for Darren's opinion, that was because the thought was for the
31 SHAC to get a sense of Rock Creek's position, which would help understand the influence on
32 some of the decisions at the board level, since both boards need to approve the plan.
- 33 • K. Peterson added that both public workshop recordings from 10/4 and 10/13 are available
34 online.
- 35 • C. Buck (Butte County) added that the SHAC will meet again on 11/4. There will be a joint
36 meeting of the Rock Creek and Vina and GSA boards on 11/15. Between 11/15 – 12/15, any
37 final revisions will be made to the plan, and then they will consider a resolution to approve



1 the final GSP at a joint board meeting on 12/15, and it will all be submitted to DWR by the
2 January 31, 2022 regulatory deadline.

3 **Next Steps**

4 The SHAC will meet again via video conference on November 4th from 1:30-4:30, and the
5 following meeting after that will be February 15, 2022



1 Participants

Participant	Representation/Affiliation	Present
Vina Stakeholder Advisory Committee (SHAC) Members		
Anne Dawson	Domestic well user	Y
Bruce Smith	Business representative	Y
Christopher Madden	Butte College	Y
Evan Markey	California Water Service	Y
Greg Sohnrey	Agricultural well user	Y
James Brobeck	Environmental representative	Y
Joanne Parsley	Agricultural well user	Y
Sam Goepp	Domestic well user	N
Samantha Lewis	Agricultural well user	Y
Todd Greene	CSU Chico	Y
Groundwater Sustainability Agency (GSA) Member Agency Representatives		
Christina Buck	Butte County	Y
Kelly Peterson	Butte County	Y
Kamie Loeser	Butte County	Y
Linda Herman	City of Chico	Y
Erik Gustafson	City of Chico	N
Jeff Carter	Durham Irrigation District	N
Colin Klinesteker	Mechoopda Indian Tribe	Y
Darren Rice	Rock Creek Reclamation District GSA	Y
Technical Consultants		
Joe Turner	Geosyntec	Y
Other Representatives		
Pat Vellines	CA Department of Water Resources	Y
Aidan Wallace	Rock Creek Reclamation District attorney	Y
Facilitator		
Tania Carlone	Consensus Building Institute	Y

2 Approximately 13 members of the public attended the meeting.



- 1
2 1. Introductions & Agenda Review (0:00:00)
3 The facilitator gave a brief overview of the agenda.
4
5 2. Public Comment for Items Not on the Agenda (0:05:56)
6 *Public Comments:*
7 • T. Greene (CSU Chico) wished to place on record that not enough time was given to review
8 the data before the meeting, and that this felt too rushed.
9 • A. Raymond (member of public) identified one well where the Minimum Threshold (MT)
10 level was set 10 feet below the depth of that water level, and she requested that the MT
11 level be altered. She noted that another well MT is set at 10% empty by the time that well
12 would hit its MT level and stated this deserves scrutiny.
13 • D. Lucero (member of public) wondered if public comments could be posted as soon as they
14 were received. K. Loeser (Butte County) responded that the delay was not due to a
15 procedural choice, but simply about the time it takes to organize comments and that it
16 could potentially be adjusted.
17 • J. Brobeck (Environmental Rep) asked about contingency plans if the GSP were deemed
18 inadequate by local stakeholders or by state agencies once submitted. T. Carlone (CBI)
19 responded that the State has 2 years to review adequacy of plan. She stated that one way
20 forward could be for the State to identify information gaps, make those requests of the
21 subbasin, subbasin would respond with the missing information, and then it would be
22 deemed adequate. The other possibility, if the plan were deemed inadequate, would be
23 that the GSP would be referred to the State Water Resources Control Board (SWRCB). K.
24 Loeser (Butte County) added that this plan is a living document that will be updated and
25 revised as information is obtained over the life of the document. Especially as DWR starts to
26 respond to the critically over-drafted basins GSPs and their adequacy, she noted that would
27 lead to more information. She hoped to take an adaptive management approach and hoped
28 the GSAs would continue to do that over time. She reiterated that the initial goal is to get
29 the GSP adopted in December and to address data gaps and observe changes desired in the
30 document over time.
31
32 Meeting Notes (00:15:28)
33 The Vina SHAC reviewed and voted on the approval of the 10/19/21 meeting notes. The
34 meeting notes were approved pending minor changes. [Access Here].
35 ➤ T. Greene (CSU Chico) wished to correct a mistaken quote attributed to him about
36 there being no useful well screen information in the Chico Management Area and
37 clarified that this is not true because two wells are useful, but the other four are not.
38 He suggested it read that there isn't sufficient screen information, not that there isn't
39 any at all.
40 ➤ A. Wallace (Rock Creek Reclamation District Attorney) asked for his affiliation to be
41 corrected, as he was incorrectly identified as Vina GSA's attorney, when in actuality he
42 is the attorney for the Rock Creek Reclamation District.



- 1 ➤ S. Lewis (Agricultural Rep) requested that the SHAC receive the meeting notes via email
 2 before they are conveyed to the Vina GSA board. C. Buck (Butte County) responded
 3 that this would probably not be possible this time around because the turn-around
 4 would need to occur so quickly.

Yes	G. Sohnrey (Agricultural Rep), S. Lewis (Agricultural Rep), A. Dawson (Domestic Well User), J. Brobeck (Environmental Rep), B. Smith (Business Rep), E. Markey (Cal Water), T. Greene (CSU Chico)
Abstain	S. Goepf (Domestic well User)

- 6
 7 3. Alternative Measurable Objective Presentation (0:21:23)
 8 C. Buck (Butte County) gave a presentation providing an overview of a possible MO alternative
 9 for the SHAC's consideration. The alternative MO is based on an average of the 2010-2020
 10 measured groundwater levels at each RMS well, which was shown on hydrographs. The MO
 11 based on projected levels to 2040, was also shown on the graphs for comparison. If the
 12 alternative MO were selected, staff recommended keeping the 2027 and 2032 interim milestones
 13 (IM); however, the 2037 IM would be set roughly halfway between the 2032 IM and the
 14 alternative MO. Spring levels would be compared against the MO and IM for evaluation. [Access
 15 [Updated Hydrographs](#)].

16 *SHAC Discussion (25:16)*

- 17 • B. Smith (Business Rep) noted that four of the wells have little information about the
 18 screened intervals which is important. He stated that a high percentage of the wells were
 19 missing the information needed, so the quality of the conversation was poor, at best.
 20 • J. Brobeck (Environmental Rep) appreciated that the Management Committee decided to
 21 raise the MOs; however, he did not believe it was sufficient. He stated that the MOs are
 22 based on the lower aquifer readings rather than the upper aquifers, which means the
 23 management objective is significantly lower than the springtime levels. He reflected that
 24 this is an MO that indicates a willingness to allow for extreme declines in the aquifer. Also,
 25 the IMs do not attempt to hit the MOs. They provide a long timeline to get anywhere near
 26 the MOs that this alternate MO seems to be just an effort to calm the public's concern
 27 rather than a sincere effort. He said that he would not be happy if a springtime level is this
 28 low and requested feedback. C. Buck (Butte County) responded that she understood his
 29 comment and his concern, and noted that the alternate MO is the average of all measured
 30 data, including the spring, summer, and fall. This year's spring measurement is essentially
 31 what the MO is. J. Brobeck (Environmental Rep) responded that means the MO is set at
 32 historical lows, which he asserted does not meet the California water code, which states
 33 that a target which improves water conditions can be selected and would not be deemed
 34 deficient. He emphasized there is no reason not to set at a higher MO. He continued that
 35 this is a very pessimistic forecast, to set the springtime MO at that level. If this were a June
 36 reading, it might make more sense. He reiterated that it is alarming to set an MO at so far
 37 below usual springtime levels.



- 1 • T. Greene (CSU Chico) stated that one of the big things missing is the potential
2 consequences of operating in this zone. If it's just a number, it doesn't provide a sense of
3 reality of how the system is going to respond. He encouraged discussion of the
4 consequences of bringing the water level down this low. He said that the alternative MOs
5 were still a great improvement from the original MOs, and so he would still support them as
6 opposed to the original.
- 7 • G. Sohnrey (Agricultural Rep) registered confusion about J. Brobeck's (Environmental Rep)
8 prior comment about being glad the management had changed the MOs, and asked if the
9 Management Committee had in fact changed the MOs between the last meeting and this
10 one. He explained that the reason the MO was put a little lower is that otherwise, almost
11 every well would have been below the MO prompting the need for immediate action. He
12 explained that they did not want to begin by having to take implement PMAs right away. C.
13 Buck (Butte County) clarified that no change had been made to the MO, and that the Vina
14 GSA and Rock Creek boards would determine whether to change the MO. She confirmed
15 that G. Sohnrey (Agricultural Rep) was correct in identifying the trade-offs for setting the
16 MO at a lower level. She added that the MO is the goal for operating, but the law describes
17 an operational range, and that during drought years water levels would be expected to drop
18 below the MO, but once out of drought years, levels would likely rebound.
- 19 • B. Smith (Business Rep) suggested for the future that it would have been nice to have a map
20 with an aerial view of where the wells are located, to ascertain if there is a water resource
21 next to the wells, like creeks. This ties into why it's important to know where the screens
22 are. He reiterated what T. Greene (CSU Chico) had said earlier, that receiving public
23 comments so close to the meeting meant that he did not have time to research the more
24 interesting comments.

25
26 Roll Call if the group supports existing 2030 MO in the draft GSP (00:15:28)

Yes	G. Sohnrey (Agricultural Rep), S. Lewis (Agricultural Rep), J. Parsley, S. Goepp (Domestic well user), E. Markey (Cal Water),
No, Prefer	J. Brobeck (Environmental Rep) (with reservation), B. Smith (Business Rep), T. Greene
Alternative 1	(CSU Chico), A. Dawson (Domestic well user)

27 Public Comment:

- 28 • P. Stoesser (member of public) registered her disappointment in hearing an advisory
29 committee state that it is acceptable to enter worse conditions before trying to 'save
30 ourselves,' especially after hearing so many members of the public raise concerns. She
31 asked how the public comments are being taken into consideration?
- 32 • D. Lucero (member of public) echoed that this process has felt slanted for some time,
33 and that the MOs and MTs are serious. She added that when statistical engineers are
34 saying that one of the MTs is 10 ft below where the well is, it's disappointing. She
35 appreciated that this has been a lot of work for the staff and people involved,
36 volunteers, but it appears that we're okay with urban forests dying off, domestic
37 wells going dry, and worsening conditions. She reminded the group that everything is
38 pointing toward extreme climate change.



- 1 • A. Raymond echoed what B. Smith (Business Rep) had stated about selection of wells.
2 She relayed that she had done an independent analysis of the data, and that data from
3 1960 to today show the drop off in water levels began to occur in 1990. She explained
4 that the MOs are the way of saying, “Is our process in control?” Work needs to happen,
5 and the process needs to be taken back into control. For that reason, she articulated
6 support for the alternative MO. She relayed to the group that they should not fear
7 having an MO that gets back to the 1990 level where water ran as it should in creeks
8 and fish could swim as they should.
- 9 • T. Greene (CSU Chico) wanted to add that maybe there should be a dissenting opinion
10 that is organized point by point, rather than the board having to go through all the
11 comments and hundreds of opinions. T. Carlone (CBI) responded that the board will see
12 the vote and see the discussion. She reiterated that this is not a majority rule body. The
13 charter states that they will seek consensus, and if consensus cannot be achieved, they
14 will detail the individual preferences expressed. SHAC makes recommendations about
15 its charter but ultimately the Vina GSA is the decisionmakers. She told SHAC that if they
16 wished to change the charter, that could be discussed in the future.
- 17 • R. Harriman (member of public) noted that there is no Brown Act prohibition for SHAC
18 members to convene and prepare a dissenting report to show to the board members.
19 SHAC members are not elected, can participate in this process, and can submit a
20 minority report. He also noted that in hearing the presentation on the evidence-based
21 materials, he is perplexed because he did not hear a scientific basis for why not set the
22 MO at a safer level. He addressed G. Sohnrey's (Agricultural Rep) point about ‘why start
23 something now when you can delay it?’ He wished to turn it around and say, ‘why delay
24 something that you know you’ll need to do while you are continuing to dig yourself
25 deeper into the hole?’

26
27 4. Presentation on Proposed Interim Milestone (IM) Action Plan (IMAP) and Discussion
28 (0:55:15)

29 K. Loeser (Butte County) explained that the IMs are target values that represent measurable
30 groundwater conditions, in increments of five years. IMs are set for each representative
31 monitoring site so that the GSAs can monitor their progress towards maintaining or achieving
32 the MOs. The IMAP would identify quantitative and qualitative triggers for corrective action
33 implementation if negative trends are occurring, the timing for implementation of GSP PMAs,
34 and specific corrective actions that may be taken by the GSAs to address downward trending
35 conditions. The IMAP would be developed at different levels to evaluate and document what
36 actions will be taken if targets are not met. The IMAP would also outline the decision-making
37 process around whether and which PMAs would be implemented. K. Loeser provided the
38 proposed language to add to section 5.3 that would constitute the IMAP, which would be
39 section 5.3.8. [Access [IMAP Memo](#)].

40
41 *SHAC Discussion (1:05:38)*



- 1 • G. Sohnrey (Agricultural Rep) suggested that adding this IMAP would be repetitive, given that
2 the GSP does this anyway. He asked what ‘qualitative’ means. He expressed concern that the
3 IMAP would simply ‘muddy the waters.’ T. Carbone (CBI) responded that including the IMAP
4 as a management action would not mean that it needs to be developed now. K. Loeser
5 responded that the IMAP provides something currently missing in the GSP, which is
6 identifying when actions would be triggered. C. Buck (Butte County) added that the IMAP is
7 an opportunity to provide more quantitative responses around, ‘when these conditions
8 occur, we will take these actions.’ She also made the distinction between ‘quantitative,’ which
9 she defined as, ‘using numbers to describe a phenomenon,’ and ‘qualitative,’ which is ‘using
10 words to describe a phenomenon.’
- 11 • S. Lewis (Agricultural Rep) asked about the last sentence in the first paragraph that refers to
12 “other corrective actions,” and asked, “what could ‘other corrective actions’ be?” She wished
13 to know why these other management actions that could exist weren’t already included in
14 the plan? K. Loeser explained that the impetus for adding the IMAP is that in chapter 33A,
15 warning stages are delineated, and the thought is that the IMAP could act to provide some
16 more detail around what additional corrective action could be. S. Lewis requested
17 confirmation that the IMAP would commence in 2022 and would take more than one year to
18 develop, given the diversity of opinions in the county. She expressed concern that the IMAP
19 might prevent the group from focusing on addressing the legal ramifications of projects and
20 getting them off the ground. K. Loeser agreed that the IMAP would be initiated in 2022 and
21 that it would take time to prepare.
- 22 • E. Markey (Cal Water) asked a clarifying question based on the graphic on the IMAP, which
23 to him suggested that the goal is bringing the MO closer to the alternative objective over the
24 course of the next 25 years. K. Loeser answered that the graphic was used as an example. C.
25 Buck confirmed that if the original MO remains, the graphic would look slightly different; it
26 would not have the upward trend of the IMs.
- 27 • T. Greene (CSU Chico) stated that he thinks the IMAP and what SGMA already supplies can
28 work together. It’s not ‘muddying the waters.’ The IMAPs provide true quantitative
29 milestones, and without these, ‘you would be floating freely between the MOs and MTs while
30 trying to implement plans.’ He noted that the operational range is wide, so the IMAP and
31 what is provided by SGMA can work together to provide a little bit more security and
32 foundation to the plans, rather than leaving a huge operational range in place without clear
33 direction.
- 34 • S. Lewis (Agricultural Rep) reminded the group that there isn’t a lot of money. While she
35 applauded the group for thinking big, she thinks it is important to focus the efforts where
36 they need to be to correct the downward trend.
- 37 • Roll Call to determine if the group supports a recommendation to the Vina GSA Board to
38 include the IMAP management action in the GSP (01:19:00)



Yes	T. Greene (CSU Chico), E. Markey (Cal Water), B. Smith (Business Rep), J. Brobeck (Environmental Rep) with reservation (supports if SHAC has more input on designating IMs), A. Dawson (Domestic Well User)
No	J. Parsley, S. Lewis (Agricultural Rep), G. Sohnrey (Agricultural Rep) (because he does not know who is paying, what the time frame is, and who is providing the info; too many questions remaining), S. Goepp (Domestic Well User)

1

- 2 • P. Stoesser (member of public) named that she is finding these comments hard to believe.
 3 She asked, 'how could anyone not do everything they could possibly do to protect our
 4 aquifer?' She recalled how in the prior meeting, there had been an issue with how the
 5 paragraph was written about the MT, that it was about when 'undesirable effects would begin
 6 to happen,' which was simply untrue because undesirable effects are already occurring. She
 7 recalled that the discussion about interim milestones had begun at that juncture to try to
 8 ameliorate that issue.
- 9 • A. Raymond wanted to address S. Lewis (Agricultural Rep) and her concern around additional
 10 costs. She stated that in her experience, IMAPs tended to be a resource saver because they
 11 require anticipating responses to a problem before it occurs. She stated that it would help
 12 prioritize which PMA actions would work best in each circumstance and help quantify and
 13 know that one is working on the issue in the right order.
- 14 • A. Dawson (Domestic Well User) thought it shortsighted not to plan for how to respond. The
 15 IMAP enables the plan to be more nimble, in that the problem would have already been
 16 reviewed and strategies would already be in place. She believed it to be in agriculture's
 17 interest to have this IMAP in place because if the subbasin were in trouble, since conservation
 18 efforts have been exhausted, the only thing left would be demand reduction. Agriculture will
 19 be the ones most affected by that. She reflected that it would be "like a hospital saying, 'we
 20 won't plan for COVID until it gets here.'"
- 21 • S. Lewis (Agricultural Rep) responded to say that she was considering all of this, and that the
 22 word 'plan' is in the name of the plan itself, 'Groundwater Sustainability Plan.' She noted that
 23 there are no-brainer type conservation projects that need to get off the ground. She also
 24 reminded the group that there are a lot of data gaps. She believed that trying to add another
 25 plan at this point is shortsighted. She stated that she is not against an IMAP and in fact
 26 believes it's a good idea, but that it should be done in five years after conservation measures
 27 have been implemented, 90% of which are on the backs of agriculture, as well as once the
 28 data gaps have been filled.
- 29 • J. Parsley (Agricultural Rep) echoed S. Lewis (Agricultural Rep) that she is not against the IMAP
 30 per se but that she feels the same sense of urgency. In her experience working for the State,
 31 where there are so many layers of paper, she believes there needs to be more shortcuts to
 32 do what you need to do, instead of adding constraints. That's why she voted no.



- 1 • S. Goepf (Domestic Well User) stated that he was encouraged by J. Parsley (Agricultural Rep)
2 and therefore would vote no.

3

4 5. Overview of Public Comments Received (1:33:26)

5 K. Loeser (Butte County) presented on the public comments received during the 40-day public
6 review period that occurred September 10- October 19. She relayed that there had been an in-
7 person workshop on October 4th and a virtual workshop on October 13th, and that both were
8 very well attended. Approximately 200 comments were submitted, and commenters used
9 tracking sheets or submitted letters. Primary themes were around MOs and the MTs being too
10 low, the Groundwater Dependent Ecosystems (GDEs), needing additional RMS wells, flood
11 water storage, surface water recharge, groundwater and interbasin connection/sub-surface
12 flows, triggers for response to negative conditions/schedule when action occurs,
13 implementation schedule of PMAs, data gaps, domestic wells going dry, sustainable yield
14 estimates and calculations, changes or elimination to some of the suggested PMAs, water
15 conservation, agricultural efficiency, currently experiencing undesirable results within the
16 basin. She informed the group that the staff and consultant team would review all comments
17 received and that any that would result in changes to the GSP, would be documented in track
18 changes. Comments not specific to the GSP would be noted in the comment tracking table,
19 which will be included as an appendix to the GSP. She also showed the comment tracking table.
20 [Access [Comment Tracking Table](#)].

21

22 *SHAC Discussion (1:42:05)*

- 23 • G. Sohnrey (Agricultural Rep) requested clarification on what was being asked of the group,
24 as each one of the comments would take several meetings to go over. T. Carlone (CBI)
25 responded now that the group has had the chance to see the public comments, the idea is to
26 hear whether the SHAC has any thoughts or observations based on these public comments.
- 27 • T. Greene (CSU Chico) stated that reading the letters brought out a lot of insufficiency related
28 to Groundwater Dependent Ecosystems (GDEs). He noted that the GDE methodology was
29 likely problematic, and that it appeared that polygons were removed when they should have
30 been left in, there was a lack of species lists, and there was a lack of information on root
31 depth on many of these species. T. Greene stated that his recommendation would be to show
32 the maps of the original NCCAG dataset to show GDEs and then reevaluate what the GSP calls
33 'not likely a GDE,' especially in that 150-feet away from irrigated lands. He noted that there
34 seemed to be a lot of concern from multiple agencies about that. There were also many
35 concerns about what were termed as 'beneficial users,' in that the environmental uses of
36 groundwater should have been included as beneficial users because the environment is a
37 beneficial user, not just people and entities. In sum, the GSP was inadequate in its GDEs and
38 did not bring in environmental users nearly enough as a beneficial use.



- 1 • S. Goepf (Domestic well User) noted that since the comments were being directed towards
2 consultants, who were being given a fee to provide a service, he wished to know what their
3 thoughts were on the comments on the plan. C. Buck (Butte County) stated that the
4 Management Committee was teaming up with the consultants to coordinate with them
5 around these comments. She noted that there are a lot of big topics and there is work to be
6 done. She reiterated that the overall goal should be to meet the compliance deadline and get
7 the plan adopted, and that there were certain comments that were much bigger than what
8 could be accomplished to get the plan done in time. She added, however, that there were
9 types of changes that could be made in time, such as language changes that may have policy
10 implications. She said that it would be helpful to have the SHAC weigh in on those.
- 11 • S. Lewis (Agricultural Rep) thanked everyone who took the time to submit public comments.
12 She mentioned that one comment that resonated with her was Eric Lundberg's comment, "it
13 is the responsibility of the well owner for the maintenance of its well, not the GSA."
- 14 • J. Brobeck (Environmental Rep) stated that the absence of undesirable results indicators for
15 dry water years means beneficial users of groundwater and interconnected surface water
16 may experience significant and unreasonable effects throughout the duration of dry or
17 critical water years before the undesirable results are 'identified' and managed. This leaves
18 no groundwater management accountability during the most challenging of years for water
19 resource managers and fish and wildlife beneficial users alike. Moreover, the frequency and
20 intensity of dry water year types is expected to increase in California (Mann & Gleick, 2015),
21 meaning if accepted as is, this GSP would have no groundwater management accountability
22 during increasingly prevalent and challenging periods of dryness without the certainty of
23 subsequent wet periods. The Vina GSP must revise MTs that would better protect
24 environmental uses and users of groundwater, rather than enabling immense declines in
25 groundwater over the implementation period. The GSP needs to include additional
26 information related to how environmental beneficial users of groundwater may experience
27 the effects of undesirable results. For instance, the GSP should explicitly discuss
28 the impacts of lowering groundwater levels below historic lows on GDEs. The GSP should
29 also identify undesirable results indicators for dry and critically dry water years for all
30 sustainability indicators. For environmental users of groundwater, including GDE triggers
31 should include not only groundwater levels but also physical indicators such as the
32 Normalized Difference Vegetation Index to identify Groundwater Dependent vegetation
33 health. The GSP primarily considered domestic well protection when establishing SMCs for
34 groundwater levels and selecting representative monitoring sites. The selected
35 groundwater level monitoring wells admittedly are deficient in protecting GDEs that include
36 rooting depths of nearby GDE communities. Groundwater monitoring wells should be
37 installed to capture groundwater trends that would affect priority GDEs. The shallow
38 aquifer monitoring network should be completed prior to the first 5-year plan update so
39 that management criteria can be effectively established to protect environmental users of



1 groundwater and interconnected surface waters throughout the implementation period.
2 The environmental community recommends that the Vina Subbasin GSAs address the above
3 comments before GSP submission to DWR to best prepare for the regulatory criteria for
4 plan evaluation. J. Brobeck added that he urged participants to study the letter submitted
5 by the California Department of Fish and Wildlife.

- 6 • A. Dawson (Domestic Well User) stated that she did not appreciate Mr. Lundberg's comments
7 on domestic wells. She said that it was grossly unfair that the 1900 well users in the Vina GSA
8 region are the only ones being asked to pay for the effects of lowering groundwater levels.
9 She noted that these domestic well users were the ones who are going to run out of water,
10 must go buy water, trek it home, get it into the house, and use it for landscaping. She said
11 that it would be extremely challenging not to have a well and that these users only use 4% of
12 the water, so why were they paying 100% of the costs? She called it an injustice, and she
13 registered her disagreement with S. Lewis and E. Lundberg. She believed the cost of the plan
14 needs to be spread across all stakeholders.
- 15 • T. Greene (CSU Chico) noted that some of the comments raised the question of the legal
16 ramifications of who owns the recharged groundwater. He recalled that Valerie Kincaid had
17 been clear in that whoever recharges it, owns that water. He noted that the GSP does not
18 address that and asked if they should be considering when these PMAs that involve recharge,
19 perhaps they should add language affirming that those people who recharge it, own that
20 water, or should they have language that says that those who recharge it should abandon
21 their rights so that it can be native and common waters. He added that the legal question is
22 'still right there rearing its ugly head.' Seeing the letter from Valerie Kincaid reminded him
23 that yes, those people who recharge do own it.
- 24 • A. Wallace (Rock Creek Reclamation District Attorney) commented that recharge is
25 considered in the SGMA regulations, so he would not be recommending to the Rock Creek
26 Reclamation District to exclude consideration of recharge from the projects and management
27 actions. As far as trying to limit what the law says about recharge, he stated that he did not
28 think it was within the purview of the GSA to do that at this stage because that would have
29 to be considered in the courts or addressed by state legislation. The GSP cannot address the
30 legal implications of who owns recharge.
- 31 • S. Lewis (Agricultural Rep) directed A. Wallace (Rock Creek Reclamation District Attorney) to
32 the comments made by Joe Connell and asked if he agreed with that comment. A. Wallace
33 (Rock Creek Reclamation District Attorney) said that he agreed with the portion of the
34 comment that said that these legal issues need to be addressed elsewhere. However, he said
35 that SGMA regulations do want GSAs to include considerations of recharge, such as
36 responding to changing conditions in the subbasin.
- 37 • B. Smith (Business Rep) was reading about the farmer going out on his alfalfa feed, and that
38 reminded him of how at a water commission meeting years ago, there had been talk about
39 the Colorado River pumps being shut off, and no one thought it would happen, but at the



1 following water commission meeting, those pumps had been turned off. He recalled the
2 feeling at that meeting had been like watching deer in the headlights. He also remembered
3 reading a comment with concern about interconnected surface water, and he could
4 understand that perspective. He added that GDEs, interconnected surface water, and water
5 quality which ties into Cal Water, these are the main things he's looking at. He emphasized
6 that whether it will be the Tuscan Water District or GCID, there will be a demand on water,
7 and that 'if it gets wet, we're not going to care,' but if it continues declining, 'we are right
8 where that water commission was about 15 years ago, where we don't think it's going to
9 happen, but it is.' He expressed the need to all get together and talk, and continue to talk.

- 10 • J. Brobeck (Environmental Rep) weighed in on legal consequences, as he has studied the
11 document and spoken with lawyers, and he is aware that county ordinances can be overruled
12 by legislature. Recharge of common groundwater aquifer is not considered a beneficial use
13 of diverted water under state water law while water banking and subsequent recovery and
14 pumping of the recharged water into the state water supply, whether local, regional, or state,
15 is considered beneficial. So, these assurances that we can deal with this through a county
16 ordinance is not true. He added that the Kincaid document discusses that. He stated that as
17 they consider PMAs in the future, after the survey is done, this needs to be considered. He
18 believed it to be a deficit that it is still absent from the GSP, especially given how much the
19 group has discussed this. He encouraged the group to have these discussions between
20 themselves and not leave it up to others who are part of the rapidly growing water market in
21 this area.

22 *Public Comments (2:08:20)*

- 23 • D. Lucero (member of public) noted that there is no mention of water allocations in the GSP.
24 She participated in recent water commission workshop on water market trading, and based
25 on what she learned, she wondered why that was not included in the GSP. C. Buck responded
26 that this kind of management action was considered by the GSA boards, but she couldn't
27 recall whether it was decided to be included or removed. There were trade-offs. K. Peterson
28 (Butte County) weighed in to confirm that it had been included as a management action. It
29 involves allocating on a per acre basis some volume of water that folks have available to use
30 on their land. C. Buck added that this becomes baseline for who can trade what in a market
31 situation, and that water allocation as a management action is included in the draft GSP in
32 item 5.3.7 on p. 160, line 4990.
- 33 • A. Dawson (Domestic Well User) added that according to her recollection, this was put in at
34 Valerie Kincaid's suggestion.
- 35 • D. Lucero (member of public) asked a follow-up question, noting that it was included as a 'last
36 resort' if milestones are not achieved, and she asked if other basins had that water allocation
37 management action in their GSP. K. Peterson responded that in Wyandotte Creek they voted
38 to remove it, and she didn't believe it was in the Butte GSP either. L. Herman (City of Chico)



1 reminded that DWR would not accept the GSP if there were not some language about water
2 allocations. A. Wallace (Rock Creek Reclamation District Attorney) seconded L. Herman (City
3 of Chico)'s comment.

- 4 • P. Stoesser (member of public) noted that as a member of the public and as someone who
5 has been trying hard to educate herself on the water issues by attending as many meetings
6 as possible, she felt as though the public was being patronized. She said that it seemed not
7 to matter what they felt or said, but that the people put in leadership already had their minds
8 made up and would decide what to do regardless of the public's wishes.
- 9 • P. Hanford (member of public) stated that it is critically important that allocations be
10 considered because there is nothing in CA law that regulates groundwater unless it is an
11 adjudicated basin. She added that should the recharge issue come up, and it will, there should
12 be the beginning glimmer of some regulation in procedure under chapter 33. Then,
13 depending on the actions of the local boards, the SHACs and the GSAs, there could be the
14 application of CEQA to any program, either required or requested. She added that there must
15 be a complete environmental review for what the implications will be of the recharge and
16 who would be able to use the water, for what purpose, and who would pay for it. Also, she
17 noted that the data gathering and the science is critical to this, and she encouraged the
18 Management Committee to continue to do what they are doing but to remember that this
19 issue must be directly addressed. K. Loeser added in response that all projects are subject to
20 CEQA, even if it's a beneficial impact.
- 21 • R. Harriman (member of public) thanked the comments from A. Dawson (Domestic Well User)
22 and P. Hanford. He noted that regarding CEQA, the wild card is that the state legislature can
23 adopt actions to waive CEQA, and that this had been done for eight cities previously. While
24 he shared the concerns of agriculture and wanted to reach out to G. Sohnrey and S. Geopp,
25 in that he understood why it was important to them to not expend great amounts of money,
26 he wished to adopt A. Raymond's comment that if one waits too long, it will actually cost
27 more to resolve the issues down the road. He agreed that it is important to address the
28 allocation issue and the legal issues that were raised and partially addressed by the Kincaid
29 legal memo. He emphasized that it would be a disservice not to include them in the GSP. He
30 added that he agrees with G. Sohnrey (Agricultural Rep) on one thing for sure, which is that
31 regardless of who prevails, there will be litigation. All that means is someone will pay lawyers
32 a lot of money for a lot of time, that may not be in the public's interest in the long run.
33 Therefore, he believed it would be better to deal with the issues now rather than kick them
34 down the road. He agreed with the comments of B. Smith (Business Rep) and T. Greene (CSU
35 Chico).
- 36 • J. Brobeck (Environmental Rep) said in response to the comment that any projects would
37 undergo CEQA analysis, that people should look at the 2020 State of California water plan as
38 it directs agencies to streamline CEQA analysis of water diversions, flood flows, recharge
39 projects, and groundwater substitution transfers. The governor has allowed for big water



1 extraction projects to go through without CEQA analysis. Therefore, he cautioned that the
2 group could not depend on CEQA analysis. He emphasized that the subbasin is in an area of
3 origin and must protect itself.

4 **Updated Draft Communications & Engagement Plan (2:29:22)**

5 T. Carlon (CBI) briefly noted that the plan had been updated with an eye toward
6 implementation and requested SHAC input prior to bringing to board for their consideration.
7 [\[Access Plan\]](#).

8 ***SHAC Discussion***

- 9 • S. Lewis (Agricultural Rep) noted that on page 4, where it discusses the draft plan being
10 available or 60-day review, that this had been shortened to 40-day review. This is also on
11 page 5. T. Carlon (CBI) confirmed that this should be changed for accuracy. S. Lewis also
12 noted that on page 8, the Groundwater Pumpers Advisory Committee (GPAC) had been
13 decommissioned, so they would not be able to partner with them. C. Buck stated that this
14 group is not active but has not officially been disbanded yet. T. Carlon (CBI) noted that it
15 had been left there because there is a possibility that it could be reactivated. C. Buck stated
16 that the Management Committee would circle back on that and possibly make the
17 correction.
- 18 • J. Brobeck (Environmental Rep) wished to make comments on Inter -Basin Coordination and
19 issue-resolution process. State and federal agencies have long viewed the Northern
20 Sacramento Valley as a source of so-called “surplus” water that will one day serve the
21 accelerating water market through conjunctive-use and water banking. The Plan as
22 proposed will degrade the groundwater basin and harm groundwater users who are not
23 involved in conjunctive use or water banking but are reliant on the same groundwater
24 basin. The GSAs have internal and external points of potential conflict. Questions regarding
25 aquifer ownership, streamlined legal and regulatory timelines, a lack of existing precedents,
26 and the need to represent agency and constituent interests will likely exacerbate regional
27 conflicts under SGMA. In some cases, where authoritative interpretations of legal authority
28 and truly sustainable limits have not been established yet, litigation may be
29 necessary and warranted. He asserted that the public and SGMA governing bodies and
30 committees have been excluded from inter-basin discussions. When participants in the Vina
31 Stakeholder Advisory Committee asked staff if discrepancies in inter-basin flow
32 volumes/direction that are estimated in the adjacent GSA Basin Settings had been resolved
33 within the Inter-Basin Coordinating Committee, they answered that they were too busy, but
34 might model the issue after the GSPs are submitted in 2022. This does not inspire
35 confidence in the basin setting foundation of the Vina GSP.
- 36 • B. Smith (Business Rep) noted that regardless of where anyone stands, the better everyone
37 understands the hydrology and how it's connected the better off everyone will be. He
38 appreciated having Stanford, the AEM study, Chico state, T. Greene (CSU Chico), and access
39 to well logs because access to that information would be crucial to understanding the
40 aquifer as well as possible. He emphasized the need for truly good science.



- 1 • S. Goepp (Domestic well User) expressed that the development community should be
2 involved in this because of his concerns about development on land that was never irrigated,
3 areas that were dry-land farmed, and now would be turned into subdivisions. Providing water
4 there would be a big drain on the aquifer, so it would be wise to address that.
5

6 *Public Comments*

- 7 • D. Lucero (member of public) observed that Butte County is not listed in there as a partner
8 and should be, as land use will be very important when it comes to water use. She noted that
9 Cal Water should be listed as well.
10

11 *Management Committee Updates*

- 12 • K. Peterson (Butte County) announced that the Next Vina Board meeting will be November
13 15 at 5:30 PM. This will be a joint public hearing with the RCRD GSA with both in-person and
14 online options. SHAC and public may provide comment at the meeting or before the meeting
15 by written comment. She added that the 11/4/21 draft meeting summary will be presented
16 to the Board; however unfortunately, due to timing constraints there won't be adequate time
17 to distribute it to the SHAC and incorporate their comments into it before the Board mtg.
18 packet is sent out. She let SHAC members know that if there were suggestions for changes
19 to the meeting summary, everyone should feel free state them via written comments to the
20 email address listed on the agenda or in person at the meeting.
21 • T. Carlone (CBI) affirmed that the meeting summary would be turned around as quickly as
22 possible to the SHAC. She announced that the SHAC would not meet again until February 15,
23 2022, when the SHAC will look at first annual report due to DWR on April 1st and determine
24 the 2022 meeting schedule and priorities. T. Carlone (CBI) added that she will not be sending
25 out a meeting invitation because she will no longer be under contract, so the Management
26 Committee will do that.
27 • K. Peterson thanked members of the SHAC and public for all of their participation and added
28 that it had not gone unnoticed.
29 • C. Buck thanked T. Carlone (CBI) for her participation in the process, as well as everyone else
30 and their contributions. She added that there were many differing opinions but this group
31 has gotten very far despite the differences. She reminded SHAC that this is just the first step,
32 getting the GSP adopted and submitted. She believed the varied opinions had made the
33 document and work even stronger.
34 • D. Lucero (member of the public) also thanked T. Carlone (CBI) for her work and
35 professionalism, and she thanked the public and especially the SHAC members for donating
36 their time.
37 • P. Hanford (member of public) applauded T. Carlone (CBI) for the masterful way she
38 facilitated these very complex and conflictual meetings. She added a congratulations to all
39 for their hard work.
40

41 *Next Steps*



- 1 The SHAC will meet again February 15, 2022.

DRAFT



1 Participants

Participant	Representation/Affiliation	Present
Vina Stakeholder Advisory Committee (SHAC) Members		
Anne Dawson	Domestic well user	Y
Bruce Smith	Business representative	Y
Christopher Madden	Butte College	N
Evan Markey	California Water Service	Y
Greg Sohnrey	Agricultural well user	Y
James Brobeck	Environmental representative	Y
Joanne Parsley	Agricultural well user	Y
Sam Goepp	Domestic well user	Y
Samantha Lewis	Agricultural well user	Y
Todd Greene	CSU Chico	Y
Groundwater Sustainability Agency (GSA) Member Agency Representatives		
Christina Buck	Butte County	Y
Kelly Peterson	Butte County	Y
Kamie Loeser	Butte County	Y
Linda Herman	City of Chico	Y
Erik Gustafson	City of Chico	N
Jeff Carter	Durham Irrigation District	N
Colin Klinesteker	Mechoopda Indian Tribe	Y
Darren Rice	Rock Creek Reclamation District GSA	N
Technical Consultants		
Joe Turner	Geosyntec	Y
Other Representatives		
Pat Vellines	CA Department of Water Resources	N
Aidan Wallace	Rock Creek Reclamation District Attorney	Y
Facilitator		
Tania Caralone	Consensus Building Institute	Y
Dorit Price-Levine	Consensus Building Institute	Y

2 Approximately 11 members of the public attended the meeting.

ITEM 2.3.1

RESOLUTION NO. 2021-04

A RESOLUTION OF THE BOARD OF TRUSTEES OF THE ROCK CREEK RECLAMATION DISTRICT AUTHORIZING REMOTE MEETINGS OF THE BOARD OF ROCK CREEK RECLAMATION DISTRICT CONSISTENT WITH AB 361 AND THE BROWN ACT

WHEREAS, the Rock Creek Reclamation District is committed to preserving and nurturing public access and participation in meetings of the Board of Trustees; and

WHEREAS, all meetings of the Board of Trustees of Rock Creek Reclamation District are open and public, as required by the Ralph M. Brown Act (Cal. Gov. Code 54950 – 54963), so that any member of the public may attend, participate, and watch the District's Board of Trustees conduct their business; and

WHEREAS, the Brown Act, Government Code section 54953(e), makes provisions for remote participation in meetings by members of a legislative body by audio or video or both, without compliance with the requirements of Government Code section 54953(b)(3), subject to the existence of certain conditions; and

WHEREAS, a required condition of remote meetings is a declaration of a state of emergency by the Governor pursuant to Government Code section 8625, proclaiming the existence of conditions of disaster or of extreme peril to the safety of persons and property within the state caused by conditions as described in Government Code section 8558; and

WHEREAS, it is further required that state or local officials have imposed or recommended measures to promote social distancing, or, the legislative body meeting in person would present imminent risks to the health and safety of attendees; and

WHEREAS, such conditions now exist in the District, specifically, on March 4, 2020 the Governor proclaimed State of Emergency to exist in California due to the COVID-19 pandemic, which proclamation is still active; and

WHEREAS, state and local officials have recommended social distancing measures, including masks, to slow the spread of COVID-19 and the contagious Delta variant, and to protect the vulnerable and immunocompromised members of the community; and

WHEREAS, the Board of Trustees does hereby find that the state of emergency continues to directly impact the ability of members to meet in-person; and

WHEREAS, as a consequence of the State of Emergency and recommended social distancing measures, the Board of Trustees does hereby find that the Board of Trustees of Rock Creek Reclamation District shall conduct their meetings without compliance with paragraph (3) of subdivision (b) of Government Code section 54953, as authorized by subdivision (e) of section 54953, and that such board shall comply with the requirements to provide the public with access to the meetings as prescribed in paragraph (2) of subdivision (e) of section 54953; and

WHEREAS, the public may attend meetings and comment as described in meeting agendas.

NOW, THEREFORE, THE BOARD OF TRUSTEES OF ROCK CREEK RECLAMATION DISTRICT DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. Recitals. The Recitals set forth above are true and correct and are incorporated into this Resolution by this reference.

Section 2. Ratification of Governor's Proclamation of a State of Emergency. The Board hereby ratifies the Governor of the State of California's Proclamation of State of Emergency, effective as of its issuance date of March 4, 2020.

Section 3. Remote Teleconference Meetings. The staff and board of Rock Creek Reclamation District are hereby authorized and directed to take all actions necessary to carry out the intent and purpose of this Resolution including, conducting open and public meetings in accordance with Government Code section 54953(e) and other applicable provisions of the Brown Act.

Section 4. Effective Date of Resolution. This Resolution shall take effect immediately upon its adoption and shall be effective until the earlier of (i) 30 days from adoption of this Resolution, or such time the Board of Trustees adopts a subsequent resolution in accordance with Government Code section 54953(e)(3) to extend the time during which the board of Rock Creek Reclamation District may continue to teleconference without compliance with paragraph (3) of subdivision (b) of section 54953.

PASSED AND ADOPTED by the Board of Trustees of Rock Creek Reclamation District, this 15th day of November, 2021, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

Chair of the Board

ATTEST:

Secretary of the Board



**Vina
Groundwater Sustainability Agency
Agenda Transmittal**

Agenda Item: 3.1

Subject: Draft GSP Public Comments Received

Contact: Kamie Loeser

Phone: (530) 552-3590

Meeting Date: 11-15-21

Regular Agenda

Department Summary:

The Draft Vina Groundwater Sustainability Plan (GSP) was released for a 40-day public review period beginning on September 10, 2021 and ending October 19, 2021. As part of the public review process, the Vina GSA held two public workshops 1) an in-person workshop on October 4, 2021 and 2) a virtual workshop on October 13, 2021. In addition, the Vina GSA Stakeholder Advisory Committee (SHAC) also met on October 19, 2021 to provide comments on the draft GSP.

A Comment Tracking Table that includes all of the comments received during the 40-day public comment period was compiled. The Comment Tracking Table tabulates approximately 175 comments on the GSP, including comments received by email and during the public workshops. The Comment Tracking Table also identifies eight letters submitted by members of the public and seven letters submitted by agencies and organizations. The Comment Tracking Table is attached.

Key comment topics are identified in the attached Management Committee memo.

The Vina GSA Management Committee in coordination with the consultant team will review all comments received and respond accordingly. Comments that result in edits, additions, or deletions to the GSP will be documented in tracked changes. These revisions will also be noted in the Comment Tracking Table for ease of reference by the commenter and the Board.

The final Comment Tracking Table, including references to revisions to the GSP and responses, will be provided as an Appendix to the Final GSP that will be submitted to the Vina GSA Board for review and adoption in December 2021.

Fiscal Impact: Not applicable, part of GSP preparation.

Staff Recommendation: Review comments received. The Vina GSA Board may wish to discuss: 1) Strategy for responding to agency letters, particularly those that provide specific recommendations and 2) Comments that you think should be a high priority for addressing through revisions now.



Vina Groundwater Sustainability Agency

308 Nelson Avenue, Oroville, California 95965
(530) 552-3592 • VinaGSA@gmail.com

MEMORANDUM

DATE: November 10, 2021

TO: Vina GSA and Rock Creek Reclamation District GSA Board of Directors

FROM: Kamie N. Loeser, Director, Butte County Water and Resource Conservation

RE: Draft Vina Groundwater Sustainability Plan (GSP) Public Comments Received

Overview

The Draft Vina Groundwater Sustainability Plan (GSP) was released for a 40-day public review period beginning on September 10, 2021 and ending October 19, 2021. As part of the public review process, the Vina GSA held two public workshops 1) an in-person workshop on October 4, 2021 and 2) a virtual workshop on October 13, 2021. In addition, the Vina GSA Stakeholder Advisory Committee (SHAC) also met on October 19, 2021 to provide comments to the Vina GSA Management Committee and Geosyntec (consultant team) for review and consideration for incorporation into the GSP, as appropriate, prior to finalizing the document for review by the Vina GSA Board.

A Comment Tracking Table that includes all of the comments received during the 40-day public comment period is attached. The Comment Tracking Table tabulates approximately 175 comments on the GSP, including comments received by email and during the public workshops. The Comment Tracking Table also identifies eight letters submitted by members of the public and seven letters submitted by agencies and organizations. These seven agencies and organizations include:

1. Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, The Nature Conservancy, American Rivers and Union of Concerned Scientists.
2. California Department of Fish and Wildlife (CDFW)
3. Agriculture Groundwater Users of Butte County (AGUBC)
4. Audubon California
5. Butte Environmental Council (BEC)
6. AquAlliance
7. Glenn-Colusa Irrigation District (GCID)

The comment letters are cross-referenced in the table and included in their entirety as an attachment to the Comment Tracking Table.

Comments include grammatical edits, updates and revisions to tables and figures, suggested deletions and necessary points of clarification, and a general critique of the GSP and the preparation process.

Key comment topics include, but are not limited to:

- a. Minimum Thresholds (MTs) are set too low
- b. Measurable Objectives (MO) are set too low and should not be set below historical conditions
- c. Concern regarding Groundwater Dependent Ecosystems (GDEs) analysis and lack of data as well as undesirable results and need for additional monitoring
- d. Screening and well construction information for RMS wells, the need to expand the monitoring system
- e. The GSP should address flood water storage
- f. Concern over the complexities of surface water recharge, ownership of recharged water, and the need for recharge projects
- g. The need to monitor the inter-basin connection/subsurface flows and outflows
- h. Triggers for response to negative conditions and undesirable results and the schedule when action occurs
- i. Implementation schedule of PMAs
- j. Concern over data gaps, data gaps need to be clearly identified and plan to fill them
- k. Concern over domestic wells going dry in current drought conditions and what that would mean if the MO is set below historic conditions
- l. Sustainable yield estimates and calculations
- m. Changes or elimination to some of the suggested PMAs
- n. The GSP should identify more water conservation activities including water recycling, agricultural conservation and efficiency
- o. Concern that the basin is currently experiencing undesirable results

Public Comment Response Process

Due to limited time and resources, the level of effort available to respond to comments or produce significant revisions to the GSP at this stage in the process is limited. Responses to Comments will likely fall into one of three main categories:

1. Generally high-level response addressing how the issue was handled in the Plan and/or what future work may address the comment/concern.
2. Acknowledgement of the comment, such as "Thank you for your comment." This will occur if a comment is not specific to the GSP and consists of an editorial on the GSP, the preparation process, or provides a general opinion.
3. Revision to the GSP in response to the comment. Comments that identify points of confusion, needed clarifications, or corrections that lead to revisions.

The Vina GSA Management Committee in coordination with the consultant team will review all comments received and respond accordingly. Comments that result in edits, additions, or deletions to the GSP will be documented in tracked changes. These revisions will also be noted in the Comment Tracking Table for ease of reference by the commenter and the Board.

The final Comment Tracking Table, including references to revisions to the GSP and responses, will be provided as an Appendix to the Final GSP that will be submitted to the Vina GSA Board for review and adoption in December.

To focus efforts, the GSA Boards may wish to discuss:

1. Strategy for responding to agency letters, particularly those that provide specific recommendations.
2. Comments that you think should be a high priority for addressing through revisions now.



Groundwater Sustainability Plan
 Public Review Draft- September 10 to October 19, 2021
 Comment Tracking Table

	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
1	Eric Lundberg	Public Comments	GSP 3.2.2		3370	Managers should not have the flexibility to implement actions at "any time". Actions should have deadlines associated with seasons and agricultural activities. Actions should be taken before crops are planted, or at the beginning of an irrigation season.
2	Eric Lundberg	Public Comments	GSP 3.3.1		3392 - 3393	Change "environmental uses of groundwater occur" to "the environment and ecosystems within the GSA". Pumped groundwater has many benefits to the environment and ecosystems. For many crops, pumped groundwater offers as many benefits to the environment as GDEs. MTs and MOs should not be managed exclusively for the benefit of GDEs, but should also take into consideration the improvements and benefits that pumped groundwater offers to the ecosystem. "... environmental uses of groundwater" should not only consider the GDE but also the impacts pumped groundwater has on the ecosystem. An orchard has as much benefit to the environment as the urban forest.
3	Eric Lundberg	Public Comments	GSP 3.3.2		3412 - 3414	It is unreasonable for the VINA GSA to guarantee a well owner that his/her well will not go dry. By setting an MT and MO, well owners can know that a source of water will be protected, but that some additional well development to the MT or MO levels might be needed. Managers should encourage well owners to develop wells with the MT and MO levels in mind for a protected water source. "Sustainably constructed domestic wells" should take into consideration the MT and MO levels. It is the responsibility of the well owner for the maintenance of its well, not the GSA.
4	Eric Lundberg	Public Comments	GSP 5.2.3.4		4508 - 4515	I support storing flood water into storage locations. I would encourage the development of more ponds and lakes to capture flood water coming off the many creeks and rivers in the Vina GSA. However, I do not support the complexities associated with "recharge", so I would encourage the flood water storage to be utilized as a surface water supply for the Vina GSA.
5	Eric Lundberg	Public Comments	GSP 5.2.4.1		4544 - 4551	When PID has extra surface water, it seems only prudent for Vina GSA to utilize that excess.
6	Eric Lundberg	Public Comments	GSP 5.2.4.2		4573 - 4580	I support Vina GSA trying to utilize extra surface water from water right holders from outside of our GSA.
7	Eric Lundberg	Public Comments	GSP 5.2.4.4		4635 - 4639	Utilizing the Miocene Canal as a way of capturing surface water is both practical and sensible.
8	Eric Lundberg	Public Comments	GSP 5.2.4.6		4692 - 4697	I support utilizing all available water coming out of the wastewater treatment plant.
9	Eric Lundberg	Public Comments	GSP 5.2.4.11		4871 - 4876	I support trying to increase the surface water supply to the Vina Subbasin.
10	Eric Lundberg	Public Comments	GSP 5.3		4939	The timing of the "schedule to implement the management actions" must be appropriate for the pumpers affected by these actions. I would like to have the Vina GSA board be directed by a written policy as to when these actions can be taken.

Groundwater Sustainability Plan
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	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
11	Eric Lundberg	Public Comments	GSP 5.3.2		4949 - 4962	It is valuable to gather more information to understand the domestic well situation. However, I do not support the Vina GSA becoming involved by funding the improvement and deepening of domestic wells. It is the responsibility of the well owner for the maintenance of its well, not the GSA. The GSA should not be responsible for providing bottled water and potable water for sanitation. The responsibility of the GSA is to protect the water under our land and not the means to acquire it. I recommend omitting # 3 and # 4 from the PMA and the last sentence of the PMA.
12	Eric Lundberg	Public Comments	GSP 5.3.3		4970 - 4972	I do not support the amendment "requirements for well screens to account for MT" to the BC code. Well drillers need to understand the risks and consequences, but as long as they understand these risks, allow them to drill the well to the depth they think is best.
13	Eric Lundberg	Public Comments	GSP 5.3.5		4981 - 4983	Ponds and lakes are good for the environment, GDEs, and other shallow water systems. Ideally, they should be filled with surface water, but even if they are not, the water still stays inside the Vina GSA in some form. I do not support the Vina GSA encouraging Butte County to amend the zoning ordinance to prohibit the use of groundwater for ski lakes or any recreation that land owners desire on their property, such as swimming, fishing, water habitat, water plants, beauty, wading, floating, sailing, rowing, etc. I recommend omitting GSP 5.3.5.
14	Eric Lundberg	Public Comments	GSP 5.3.7		4991 - 5004	I recommend omitting GSP 5.3.7 and that the VINA GSA board support the development of groundwater irrigation districts like Tuscan Irrigation District that could deal more effectively with ground water level issues.
15	Eric Lundberg	Public Comments	GSP 5.5		5061	There does not seem to be any specific schedule requirements to "begin implementation of management actions". For some actions a schedule isn't important, but other actions may have serious negative effects on those who rely upon pumping. It should be clear when certain actions can be taken and when they cannot.
16	Eric Lundberg	Public Comments	GSP 6.1		5096 - 5131	These costs seem to be a duplication of the work that Butte County Water Resources already does. I would reduce these costs and work with BCWR department.
17	Eric Lundberg	Public Comments	GSP 6.5		5210	I would recommend annual reports to be submitted by February 1 instead of April 1. April 1 reporting does not allow adequate time for management actions to be taken before seasonal irrigation begins.
18	Ernest & Sharon Robinson	Public Comments				Thank you for giving us an opportunity to support the sustainable groundwater management act up for the required adoption by January 30, 2022. We are residents of Durham since 2007 and have our own well. We hope our support will help but our senior years hopefully will continue here in Durham.
19	Scott Brady	Public Comments			ES 8	Figure ES 8 suggests that management of the aquifer will deplete the aquifer more rather than restore it to a higher level. The draft plan's measurable objective is too low. Our objective should be to restore the aquifer to a level close to its historical average, ideally 120 feet above mean sea level, not further deplete it.

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	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
20	Scott Brady	Public Comments			Executive Summary	The attachment from page 10 of the Executive summary identifies the sustainable yield of pumping for agricultural use at 233,000 AF/year. This is not sustainable. While less than the current rate of pumping, 244,000 AF/year, there is a strong possibility/ probability that pumping at this level will further deplete the aquifer. This is especially true if the so-called "drought" really reflects the "new abnormal" of climate in the North Valley. Restoring and carefully stewarding this irreplaceable resource should lead to a more conservative estimate of sustained yield. Perhaps an 18% reduction in the existing pumping rate to around 200,000 AF/year would be a reasonable starting point. After all, Californians have been asked by Gov Newsom to reduce water use by 18% due to the drought. Let's start there as a sustainable yield.
21	Cliff Jacobson	Public Comments				Please review your use of the proposed PID intertie language in your plan. At this point, there is no planned PID Intertie. By your organization and everyone else, including the proposed Tuscan water district, constantly referring to available surface water from the Campfire, you are doing a big disservice to the residents of Paradise. Please stop
22	Grace Marvin	Public Comments				Do not see view any failure of wells as acceptable, i.e., 10 % of wells going dry is unacceptable. We should have minimum groundwater levels that <u>improve</u> over the years to protect humans and nature.
23	Grace Marvin	Public Comments				We need to protect the ownership of water by the county. Therefore, we cannot accept artificial recharge, since those doing the recharging come to own the groundwater. We do not want the profit motive, e.g., through private or corporate ownership, since that would mean that there would be an incentive to transfer water out of our county and the north state.
24	Susan Schrader	Public Comments			3306, Figure 3-2	First of all, I appreciate how thorough this document is. It is evidence of hard work and effort. However, i do have concern about the Minimum Threshold. When I look at Figure 3-2, Line 3306, our "current conditions" seem safely above the Measurable Objective (MO) and significantly above the Minimum Threshold (MT) where undesirable results may begin to occur. I think that by the time we get to the MT two years in a row in non-dry years, it will be too late. I notice adverse effects already as domestic wells dry up and trees die around town.
25	Susan Schrader	Public Comments				I've heard that the reason to set the MT so low is so that it will never be reached and, therefore DWR won't come in and take over. I think that is dangerous reasoning if true. We need to have a contingency plan as to what steps will be taken to mitigate undesirable results long before we get to the MT. This prediction for rain this year is tenuous for our area. La Nina will bring drier, warmer temperatures to the southwest and colder, wetter weather to the north. 26We are in the middle and given an even chance for either to occur in our area. I think the MT needs to be set higher to avert water shortage disaster.

Groundwater Sustainability Plan
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	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
26	Julian Zener	Public Comments				<p>At the October 4th workshop on the Vina public draft GSP, Dr. Christina Buck indicated that approximately 40 residential wells had already gone dry in the Vina sub basin. I fail to understand the rational or humanity of intentionally letting this number increase, probably exponentially, in the next year or two before any of the proposed GSP mitigation actions are taken. Yes, I understand that it takes time to implement structural portions of the GSP but conservations measures can be enacted almost immediately. Agricultural irrigation efficiency and if needed fallowing would achieve more than half of the needed 10,000 acre feet projected to reach sustainability. Please increase the measurable objective ground water level to avoid major hardship for residential well users and potential harm to our urban forest. Most likely, the drought will continue.</p>
27	Kathy Watje (1)	Public Comments				<p>I attended the Public Review Groundwater mtg. on Oct. 4, 2021 last Monday at the Masonic Lodge. The audience was invited to submit comments. I learned if "we" don't come up with anything doable the State will come in and dictate to Northern Californians what to do. We certainly don't need any more government overreach than we already have. Since this is supposed to be a 20-year sustainability plan and regardless of weather conditions, droughts, etc. we are supposed to figure out how to keep our groundwater levels at a level so all people have water who need it; whether it's the farmers or homeowners. I don't see how that can be done if the State of California, as a whole, keeps importing hundreds of thousands of people into our state and building more and more housing for them. This is a statewide issue and it becomes Northern California's issue because it is my understanding that we either sell or give water to the southern part of the state. As far as Northern California, Chico in particular, the city planning department or city council (I don't know which entity makes these decisions) has allowed hundreds if not close to a thousand new homes to be built in Butte County. There has to be a limit as to how many more homes can be built in these Northern Californian counties over the next 20 years if we are to maintain the water levels we say will be sustainable in our reports. My guess is it is all political and people trying to capitalize on making millions of dollars, particularly developers, by purchasing vacant land that is either not farmable for one reason or another or that the green belt lines are being ignored by the politicians. These developers need water for the homes they are building and I assume they dig massively deep wells in order to provide that water. There seems to be zero regulation regarding this and that has to stop or we will never have enough water in Butte County or Northern California to be sustainable. Thank you and I hope your committee receives a good number of comments that help in this very important decision ahead for Northern California.</p>

Groundwater Sustainability Plan
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	Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment
28	Pam Stoesser (1)	Public Comments	3			<p>I would like to speak to the subject of Minimum Threshold (MT) and what is shown in Chapter three of your Draft Plan. During the Public Workshop held in Chico on Monday Oct 4, the audience was told that the current groundwater sustainability MT for the Vina Subbasin is to be set at 50 feet below our historical lows. The chart doesn't show that number but it was told to us verbally by the staff. We were also told those historical lows are now, during this current severe drought. Many people spoke out in opposition to this setting. Here is how you bullet point the MT in your Plan: <i>MT– Quantitative threshold for each SI used to define the point at which undesirable results may begin to occur.</i> This is not accurate. We are already seeing undesirable results at our current groundwater levels. So I take great issue with the idea that what is happening now, at our current groundwater levels (not the MT set at 50 feet lower), i.e. domestic wells going dry, streams and rivers extremely low, and our struggling and dying trees, would not be considered undesirable results under this setting. That before the alarm goes off, things would have to get a lot worse.</p> <p>If the MT setting remains at 50 ft below current levels, I believe the wording of that definition needs to change to something like: <i>MT– Quantitative threshold for each SI used to define the point at which the level of undesirable results already occurring is unacceptable</i> (and then expressly state that actions are to be taken to insure we do not reach that point). I would rather see the MT set higher. I understand the argument against moving this number up, something to do with alarming the state to step in too soon. But if the number isn't moved up, there needs to be additional clarification added about what happens within the Margin of Operational Flexibility. Specifically what actions start happening when, as soon as we get below the green line into the Margin of Operational Flexibility. We cannot allow ourselves the chance of taking our groundwater levels down another 50 feet! A statement providing the intention of not reaching the MT is nowhere to be found. Please add.</p>
29	Pam Stoesser	Public Comments				See Vina DRAFT GSP Comment P2
29	Pam Stoesser	Public Comments				See Vina DRAFT GSP Comment P3
30	J. Pablo Ortiz-Partida, Ph.D.	NGO Consortium				See Vina DRAFT GSP Comment A1
31	April Dorman	CDFW				See Vina DRAFT GSP Comment A2
32	Vita Segalla	Public Comments				See Vina DRAFT GSP Comment P1

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33	Darren Rice	RCRD		5.2.3.4		PMA regarding Flood MAR. RCRD requests that methods of MAR considered under this PMA include direct injection via wells as a method of MAR. We recognize that this form of MAR may include additional characterization and impacts analysis as part of scoping. Flood MAR/Surface Water Supply and Recharge Scoping Under this project, Vina GSA and RCRD GSA will expand on the Flood MAR initiative, which was originally developed by the DWR to promote recharge programs that use fields, recharge basins, new or existing well structures and/or recharge ponds to divert high flows in creeks and streams. Individual recharge projects will eventually occur, but this particular project will focus on the initial scoping and identify specific recharge opportunities in the Vina Subbasin. At first, Vina GSA and RCRD GSA will focus their efforts on areas with the greatest need for recharge and seek grants and other funding sources to implement the projects. Interested landowners would be identified and participation in the program would be voluntary. Estimated Groundwater Offset and/or Recharge: Not applicable. Future recharge projects are possible based on results of scoping. Measurable Objective Expected to Benefit: Future increase of groundwater levels Project Status: This project is in the planning stages. Required Permitting and Regulatory Process: N/A Timetable for Initiation and Completion: 2022-2032 Expected Benefits and Evaluation: This project would develop the first steps of the Flood MAR initiative and recharge efforts for the Vina Subbasin region and identify specific groundwater recharge and management projects based on feasibility, need, and available funding. The initiation of this project would then lead to future recharge projects. How Project Will Be Accomplished/Evaluation of Water Source: This project will help to identify and develop specific recharge projects in the region, which will then individually determine recharge sources. Legal Authority: The project would be under the authority of the Vina GSA and RCRD GSA. Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1 and Proposition 68 Circumstances for Implementation: This project is a Planned Project that is anticipated to move forward. Trigger for Implementation and Termination: None Process for Determining Conditions Requiring the Project to Occur: This is a Planned Project that is anticipated to move forward.
34	Rich McGowan	AGUBC				See Vina DRAFT GSP Comment A3
35	Rich McGowan	AGUBC	ES		Lines 223 - 225	The draft GSP states that undesirable results occur if Minimum Thresholds (MTs) are exceeded in "... an established percentage of sites in the Subbasin's representative monitoring network." Have the GSAs established that percentage? If so, we request that the GSP include that percentage. If not, the GSAs should determine a percentage. Upon review of other draft GSPs in the Northern Sacramento Valley, we have found GSAs that suggest 25% for this purpose.
36	Rich McGowan	AGUBC	ES		Table ES-1	We are generally supportive of the methodology used to determine the Measurable Objectives (MO) and MTs for groundwater levels in the Vina North and Vina South

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						management areas, as stated. However, there is only 20 feet of operational flexibility for Representative Monitoring Sites (RMS) 21C001M for the Vina South management area. We recommend that this area be re-visited to consider lowering the MT to allow for more operational flexibility, recognizing that the goal is the MO.
37	Rich McGowan	AGUBC	ES		Figure ES-10	This figure appears to depict 16 RMS wells instead of 17 RMS wells, as noted preceding page. We request that the GSAs verify the correct number of RMS wells and correct, if needed.
38	Rich McGowan	AGUBC	Ch. 2		Lines 2902 - 2903	This section considers 243,000 AFY of groundwater pumping as "outflows" but the figure on this page seems to categorize this amount as "inflows." We request that the GSAs verify this amount and correct the information, if needed.
39	Rich McGowan	AGUBC	Ch. 2		Lines 3212 - 3225	We do not disagree with the draft GSP's conclusion that the sustainable yield is 233,000 AFY and the decrease of storage is 10,000 AFY. However, the explanation of the average specific storage value and range of storativity values is unclear, especially because Table 2-11 does not have a value of 233,000 AFY to point to as the estimated sustainable yield. We request that the GSAs revise this language to clarify the explanation regarding average specific storage value.
40	Rich McGowan	AGUBC	Ch. 5		Lines 4388 - 4398	The following bullet points should be inserted in this section: (1) "Project Status" should be added after "The Measurable Objective benefitted by the project." (2) "Process to Determine conditions requiring project to occur" should be added after "Implementation circumstances." Finally, the "Public noticing" bullet point at Line 4398 is not included in the project descriptions, so it should either be added to each description or removed as a bullet point in this section.
41	Rich McGowan	AGUBC	Ch. 5		Lines 4399 – 4400	Figures 5-1 and 5-2 show locations of planned and potential projects, but the figures do not seem very useful for that purpose as many projects seem to apply throughout the Subbasin. If the figures are left in, then the concept that no specific location applies at this time needs to be better described and presented in Figures 5-1 and 5-2.
42	Rich McGowan	AGUBC	Ch. 5		Figure 5-1	The project number in the table on the bottom left-hand side of this figure should reflect the same order as they are listed in Chapter 5. We request that the GSAs revise this figure to reflect this ordering. Further, we recommend that the GSAs revise "Flood-MAR" to "Flood-MAR Scoping" and "Additional Water to Creeks and Streams" to "Streamflow Augmentation." The names of the projects should be the same as listed in Chapter 5. Finally, two of the five projects identified in this figure (Agricultural Irrigation Efficiency and Flood-MAR Scoping) seem to apply throughout the Subbasin as opposed to specific locations, but the representation in this figure does not make that clear. We request that the GSAs revise this figure, accordingly.

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43	Rich McGowan	AGUBC	Ch. 5		Figure 5-2	We recommend that the GSAs add the following projects to the table on the bottom left-hand side of this figure: (1) "Community Monitoring Program" should be added after "Recharge from the Miocene Canal;" and (2) "Surface Water Supply and Recharge" should be added after "Removal of Invasive Species". Further, it is unclear whether the position of Numbers 10, 11, 12 and 13 at the northwest part of the Subbasin indicate that these projects would occur throughout the Subbasin. If so, then we recommend that the GSAs clarify that information. If not, then we do not believe that those will necessarily occur in that location or that their implementation will be limited to that location. If the position of these numbers is to identify projects that may occur throughout the Subbasin and/or do not have specific locations at this time, that should be applied to "Extend Orchard Redevelopment" and "Surface Water Supply and Recharge" as well, if not others. In addition, the location identified in the figure for "Agricultural Surface Water Supplies" is misleading because it would only be a possible location while there is a very real possibility that it could occur in other locations.
44	Rich McGowan	AGUBC	Ch. 5		Line 4418	The results of the survey mentioned in this section were not made available in September 2021. The GSAs should revise this language to reflect the month when the GSAs reasonably expect the results of this survey to be available.
45	Rich McGowan	AGUBC	Ch. 5		Lines 4477 – 4506	The "Streamflow Augmentation" project should be categorized as a "potential project" instead of a "planned project." The draft GSP expressly provides that this project is "in the planning stages." (Pg. 144, Line 4488.) Further, the draft GSP provides that before the project is started, a feasibility study must first be performed to "ensure that enough surface water would be available." Therefore, until this feasibility study is performed and its results are evaluated, it is premature to include this project as a "planned project."
46	Rich McGowan	AGUBC	Ch. 5		Line 4479	The project references transportation of excess untreated surface water from PID. Is this the same as what is contemplated by the PID Intertie project described later as a Potential Project? If so, it should either be removed here or the PID Intertie project should be removed since the references are duplicative.
47	Rich McGowan	AGUBC	Ch. 5		Line 4498	Regarding the "Streamflow Augmentation" project, it is unclear how the GSA determined an estimated fee of \$50 to \$100 per acre-foot for surface water supplies when a feasibility study has yet to be performed. If the GSA has not determined whether surface water is even available, how can it determine the fees associated with its purchase? Until this feasibility study is performed, we request that this estimated fee be removed.
48	Rich McGowan	AGUBC	Ch. 5		Lines 4639 - 4640	This section is not clear as to the sources of the 20% efficiency number. We request that the GSAs provide additional clarity regarding its establishment of this number.
49	Rich McGowan	AGUBC	Ch. 5		Lines 4695 – 4697	Why does this section limit the use of recycled wastewater to "non-crop vegetation in Chico?" Is there an established rule against this by the Regional Water Quality Control Board?

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50	Rich McGowan	AGUBC	Ch. 6		Figure 6-1	We request that the GSAs change "Floor MAR," at ID 42, to ""Flood MAR Scoping." Further, we request that the GSAs amend the timeline associated with this project. Because this project is only a study, we do not believe that it should take eight to nine years to complete.
51	Monroe Sprague	Public Comments	Chap 5	5.1	pg. 374	<p>Public Vina GSP Comments</p> <p>This citizen of Butte County, Vina GSA, requests a paragraph be added to our GSP for an Interim Milestone Action Plan (IMAC) with more specific and earlier triggers for adjustment actions as recommended by Kamie Loeser, Director, Butte County Department of Water and Resource Conservation.</p> <p>The purpose would be to define smaller segments in Operating Range on the hydrologic graph, example page 374, and raise our effective or functioning Minimum Threshold level. Our Real Objective should be to continue in the water level range we have had since 1975, which is above the Measurable Objective. Why would we want to use up or kill part of the goose that is giving us our golden aquifer? If we want to grow, increase productivity, etc., we need to use our eggs better.</p> <p>Thank you for working to maintain our public natural resource.</p>
52	Samantha Arthur	Audubon California				See Vina DRAFT GSP Comment A4
53	Annette Faurote	Public Comments				See Vina DRAFT GSP Comment P4
54	Holly Dawley	GCID				See Vina DRAFT GSP Comment A7
55	Margaret Scarpa	Butte Environmental Council				See Vina DRAFT GSP Comment A5
56	Michael Bolzowski	Cal Water	1	1.3.5.2	941	The GSP references that Cal Water published our UWMP in 2007 as written in the Chico 2030 General Plan, which was published in 2010. We may want to have a line added that the latest UWMP was just published in 2020.
57	Michael Bolzowski	Cal Water	1	1.3.5.2	944	The Master Plan will be updated in the near future along with a Reliability Study being planned for 2023 for the Cal Water Districts in the region.
58	Michael Bolzowski	Cal Water	2	2.3.8	3226	<p>The GSP does not specify a sustainable pumping yield.</p> <p>Line 82, the estimated sustainable yield for the Subbasin is 233,000 acre-feet per year and from Line 1392, Vina Subbasin Sum of Acres is 184,918 acres,</p> <p>This will give a pumping yield of 1.26 AF/acre. It may be good to have this shown in the report, though this maybe an oversimplification of the current conditions.. This can be added to eh recommendation of next steps as a future refinement.</p>

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59	Anne Dawson	Vina SHAC	Exec Summ.		254	The Vina Chico area MTs are established in accordance with the statement on Line 223. But the methodology used to establish the MTs for Vina North and Vina South are not discussed. What led to choosing a level of, say, 70ft bgs instead of 60ft? Was a percentage of domestic wells included in this? The word "majority" is included but not defined.
60	Anne Dawson	Vina SHAC	Exec Summ.		Table ES-1	Vina North has 2 RMS wells demonstrating Operating Margins of 80+ ft. This is excessive and unnecessary.
61	Anne Dawson	Vina SHAC	Exec Summ.			The first well in Vina South has the wrong number attached to the MT.
62	Anne Dawson	Vina SHAC	Exec Summ.			Again the Operating margins in Vina South are mostly over 60 ft.
63	Anne Dawson	Vina SHAC	Exec Summ.			I believe these massive operating ranges will come back to haunt us. We may be inviting the state to encourage surrounding basins to surrender their surface water and use GW. That depletes our aquifer, but it would have little effect on our GSP which will likely remain in compliance because the MO and MT are separated by such a large margin. Bottom line, I think we are risking a state takeover of our GW.
64	Anne Dawson	Vina SHAC	Chap 5	5.3.2	4948	I suspect the info described will be difficult to obtain. I believe we need to define a "sustainable" well. Perhaps current Butte County rules and well standards might be used to establish what is sustainable. Pre-1980 wells may have been deepened and are functioning just fine. They should be included. I would like to see a plan to financially help ALL domestic well owners impacted by SGMA. We use 4% of the GW but are being landed with almost 100% of the costs.
65	Anne Dawson	Vina SHAC	Chap 3	3.1	3341-44	Demand reduction is absent.
66	Anne Dawson	Vina SHAC	Chap 3	3.3.2	3414	Please consider changing this line to read "going dry or remaining dry during non-dry year conditions"
67	Anne Dawson	Vina SHAC	Chap 5	5.5		This plan has very generous operating margins. We are putting all our faith in a plan that will undoubtedly have shortcomings, and drought remains unpredictable. I am concerned that we have no backstop. If the plan is failing our remedies will have to employ demand reduction. This would be a contentious topic. It already takes a long time to get updated GW levels, it will take months to establish what to do if we are at risk of failing, and probably years to agree on the details. None of us wants to have to resort to demand reduction. But we don't want to have a delay of years in implementing a remedy. So let's put in place some guidelines to trigger a response. Then, if we have to act on it, we'll be able to proceed faster and those demand reductions would be lifted sooner.
68	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.3 Groundwater Levels Sustainable Management Criteria	Table 3-1	Proposed MT and MO for Lowering Groundwater Levels in the Chico Management Area are too low to protect against undesirable results. Consider revising definition of MT and MO to derive more protective trigger values. I am aware of four domestic supply wells within 1 mile of CWSCH02 which were constructed in 1986 to County standards and are less than 100-ft

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						total depth bgs (approx. 88-ft amsl). The current water level in the localized area as of October 2021 is at the MO of 105-ft elevation amsl. The operational flexibility range gives approximately 1 more drought year before these wells go dry at an elevation above the MT.
69	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.5 Water Quality Sustainable Management Criteria	Table 3-2	The water quality in the Chico Management Area has been documented to be high quality as it relates to dissolved solids. With specific conductance typically below 300 uS/cm, the proposed MO of 900 uS/cm allows an unacceptable level of degradation before action is initiated. Recommend setting MO to at a level such that action is taken before water quality approaches the secondary MCL. Setting the MO somewhere between 500-600 uS/cm with an MT between 900-1,000 uS/cm is warranted to protect agricultural water quality.
70	Jim Graydon	Private Well Owner	3. Sustainable Management Criteria	3.8 Interconnected Surface Water Sustainable Management Criteria		I encourage completion of the necessary studies to determine the principal factors impacting groundwater dependent ecosystems in the Chico Management Area. With additional local documentation, more specific and protective MT and MO can be set. Without riparian woodland and adjacent seasonal wetlands, Chico is a very different place.
71	Jim Graydon	Private Well Owner	Chapter 4: Monitoring Network	4.9: Representative Monitoring Sites for Sustainability Indicator	Table 4-5.	The RMS Well Construction Details for the 5 wells chosen for monitoring in the Chico Management Area are lacking total depth and screened interval information. 4 of the 5 wells are CWS production wells that are no doubt screened across multiple aquifer zones. There are numerous wells in the total depth range of 100 to 400 feet within the Chico Management Area that have known depths and screened intervals that would better represent the conditions in the basin (See DTSC's EnviroStor database at https://www.envirostor.dtsc.ca.gov/public/). Consider adding 2-3 additional RMS wells with known construction to the monitoring program in the Chico Management Area.
72	Jim Graydon	Private Well Owner	Chapter 5: PMAs	5.2.3.3: Streamflow Augmentation	Line 4484-4485	Add Lindo Channel to the list of surface water drainages that would receive augmented flow to disperse the groundwater benefits throughout the basin
73	Jim Brobeck (1)	Aqualliance	02 Executive summary	Section	49-51	"The interests and vulnerability of stakeholders and groundwater uses in these Management Areas vary based on the nature of the water demand (agricultural, domestic, municipal)" Water demand for the environment must be included. GDEs include upland and riparian valley oak groves, small stream flow, GD urban forests.
74	Jim Brobeck (2)	Aqualliance	2		143-144	"groundwater use has increased and as forces ranging from population growth to climate change play out," This sentence ignores the fact that increased cross-boundary flows that may result from expanded demand west of the river (primarily agriculture and water-market-driven aquifer exercise) is at play. This threat to meeting our management goals must be acknowledged and addressed in interbasin coordination/communication process yet to be developed.

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75	Jim Brobeck (3)	Aqualliance			153-154	"Groundwater storage in Subbasin is relatively stable except in the areas noted above with depressions." The identification of localized hydrograph trends is relevant, but it is important to recognize long-term basin declines that occur due to cross-boundary flows influence the baseline water levels. In general (depending on soil conditions and strata) the greater the distance or depth of groundwater pumping and water levels in the VGSA, the lower the magnitude but the longer the timescale of depletions. As a consequence, the ultimate effects in the Vina of pumping in nearby sigma subbasins can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist.
76	Jim Brobeck (4)	Aqualliance			166-167	165 "If the water table beneath the stream lowers as a result of groundwater pumping, the stream may disconnect entirely from the underlying aquifer." A stream that ceases to flow once it enters the alluvial basin is entering the aquifer at that point. The deeper the aquifer level the more of the streambed is dewatered and the earlier. So while a stretch of the creek may be "disconnected" the creek itself is still connected. Mr. Toccoy Dudley, a Department hydrogeologist with the Northern District in Red Bluff, wrote in 2000: At any location in the basin, the gradient between the surface water and groundwater system is directly proportional to the head differences (water surface elevation difference) between the two hydrologic systems. The larger the head differences the higher the gradient and the higher the recharge rate....The shorter the horizontal distance over which the head change occurs increases the recharge rate dramatically. An example of this would be pumping next to a river would induce a much higher recharge rate from the surface water system than the same pumping many miles away.....increased extraction causes the groundwater levels to decline, which increases the head difference between the groundwater and surface water systems, and consequently increases the gradient and recharge rate. In short, the more you pump, the more you can pump, to a point. Anecdotal and archeological evidence indicates the small streams of the Vina SB were perennial during pre-pumping eras.

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77	Jim Brobeck (5)	Aqualliance			249 figure ES-7	<p>249 The sample hydrograph is one of several that I have reviewed in other parts of the GSP that have disturbing MO and MT levels. The MO is below the historic low, not the appropriate level to designate the top of the operational range. The MT as defined in other parts of the GSP, is purported to designate “the point at which Undesirable Results may BEGIN to occur.” But undesirable results will begin much earlier in the operational range. The historic low of this hydrograph is above the 80' max rooting depth of native phreatophytes. The MT is significantly lower than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. The operational range proposed is pessimistic in meeting goals that would avoid triggering Undesirable Results. Wise resource management strives to improve conditions that have been degraded by human development. Accepting degraded status quo or planning for increased degradation may be realistic given the human inclination to ambitiously convert resources into useful products. But the term “sustainable” implies we have the capacity to identify and honor carrying capacity while devising demand flexibility strategies to meet evolving climate conditions. Robust Management Objectives reduce the probability of careening toward Management Thresholds. Our MO levels can strive to improve conditions without risk of State management takeover. § 354.30. Measurable Objectives (g) An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.</p>
78	Jim Brobeck (6)	Aqualliance	Chapter 2 Basin setting			Chapter 2 Basin setting
79	Jim Brobeck (7)	Aqualliance				<p>3251 The failure of the GSP to attempt an estimate of interbasin subsurface flow along the Western Boundaries invalidates the Water Budget on which much of the GSP uses as a foundation. It is inappropriate to explain that "Characterization of Interbasin Flows and Net Outflows along Western Boundary" is placed in the "Next Steps" category. Water Code § 354.16 explains "Groundwater Conditions Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following: (a) Groundwater elevation data demonstrating flow directions, lateral and vertical gradients, and regional pumping patterns, including: (1) Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin." Code § 354.18. "Water Budget (a) Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions..."</p>

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80						(3) Outflows from the groundwater system by water use sector, including ... subsurface groundwater outflow." Early basin-setting drafts of the Vina, Butte and Colusa sub-basins showed large discrepancies in the modeled subsurface aquifer outflow patterns. The Butte Basin Groundwater Model has no capacity to quantify subsurface GW flow out of the western boundary of the sub-basin. The present draft recognizes the data gap and inadequacy of regional modeling that characterizes the water budget of inflow and outflow. The Butte County Drought Task Force recognizes that Groundwater extractions outside the Vina boundaries such as the past and present Water Transfer Programs and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley may have enduring cumulative impacts on Vina's water budget. SGMA regulations require Each Plan to contain a water budget for the basin that identifies discharges including subsurface groundwater outflow.
81	Jim Brobeck (8)	Aqualliance				"2.1.2.4 Groundwater Recharge Areas 1415 "Groundwater recharge is the downward movement of water from the surface to the groundwater system." Some recharge occurs from upward movement. Piezometric pressure from the semi-confined portions of the Tuscan System allows water to move upward recharging into or supporting alluvial unconfined aquifers if sufficient pressure exists. Line 1940 explains: "In locations where groundwater levels in the shallower wells are lower than in the deeper wells, the gradient indicates upward movement of groundwater, with a similar relationship defining the volume of upward flow." Conversely the alluvial shallow aquifer can leak downwards if the piezometric elevation is reduced. Line 1937: "When groundwater levels in the shallower wells are higher than in the deeper completions, the gradient indicates downward movement of groundwater. The volume of downward flow is proportional to the gradient and the hydraulic conductivity between the shallow and deep measurement points." The USDA groundwater atlas [https://pubs.usgs.gov/ha/ha730/ch_b/text3.html] explains this well-known water fact: "By the early 1960's, intensive ground-water development had significantly lowered water levels and altered ground-water flow patterns in the Central Valley aquifer system. By far the most dramatic impact of development was in the San Joaquin Valley, where water-level declines in the confined part of the aquifer system were locally more than 400 feet (fig. 82). Although predevelopment flow was toward the San Joaquin River throughout most of the basin, large withdrawals from deep wells in the western and southern parts of the aquifer system changed the direction of horizontal flow in the confined part of the system until the water moved toward the withdrawal centers (fig. 83). Also, because the magnitude of the withdrawals caused hydraulic heads in the confined parts of the aquifer system to fall far below the altitude of the water table (fig. 84), the vertical hydraulic gradient was reversed over much of the San Joaquin Valley. Where these wells are

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						<p>open to the unconfined and confined aquifers, they allow virtually unrestricted vertical flow through the well bore (fig. 87). The amount of water that flows downward through one large-diameter well has been estimated to be equivalent to the natural leakage through the "E-clay" over an area of approximately 7 square miles. During the peak of the withdrawal season, the net downward flow may be, on average, as much as 0.3 cubic foot per second per well." Significant Depressurization of the regional confined aquifer can take place within and outside of the Vina sub basin. Well-casings that have perforations at shallow and deep levels increase the vertical flow. Lines 1456-1460 indicate there is this type of potentially interbasin leakage in the Vina SB "Aquifer testing conducted as part of the Lower Tuscan Aquifer study (Brown and Caldwell, 2013) indicated there is also the potential for Upper Watershed recharge in the shallow aquifer interval to move down to greater depths due to irrigation pumping, causing a mixing of recharge sources in the intermediate and possibly deeper aquifer zones in the Vina South Management Area."</p> <p>Line 1469 discusses "Additional recharge through management activities of flood flows or irrigation practices has potential in the Vina Subbasin..." but does not discuss how the recharged water can migrate through the deep aquifer into adjacent sub-basins that are being pumped. As a result, much of the water in the upper unconfined zone of the aquifer system that flowed laterally toward the river under predevelopment conditions leaked downward through the confining beds into the lower confined aquifer after development...Ground-water development in the San Joaquin Valley has reduced the effectiveness of the confining beds within the aquifer. Thousands of wells with casings perforated for much of their length have been drilled through the clay confining units.</p>
83	Jim Brobeck (9)	Aqualliance				<p>1522 2.1.5 Groundwater Producing Formations presents an incomplete overview of the producing geology and fails to quantify the robust yields of the Tuscan even while quantifying the production amounts available in less important aquifer units, line 1614: "Wells penetrating the sand and gravel units of the Riverbank and Modesto Formations produce up to about 1,000 gallons per minute (gpm)" The Update on the Stony Creek Fan aquifer Performance Testing [http://cetehama.ucdavis.edu/files/135217.pdf] indicated that that Lower Tuscan can produce 2,500-3,000 gpm. The GCID and others are exploiting/depressurizing this extremely productive aquifer. The cumulative yield of the wells exercising the lower Tuscan is undoubtedly impacting water levels in all aquifer layers in the 4-county basin.</p>

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84	Jim Brobeck (10)	Aqualliance				<p>Line 1736 2.1.8.2 Beneficial Uses "Water produced from the principal aquifer is primarily used to meet irrigation, domestic, and municipal water demand." This sentence should include "environmental demand". Groundwater and surface water are historically and, in many cases, currently connected. Beneficial uses must include the benefits to ecosystems including Groundwater Dependent upland vegetation. According to the State Water Board delineation of beneficial uses [https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/bp_ch2.html] 2.1.3 COLD FRESHWATER HABITAT (COLD)Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.2.1.14 PRESERVATION OF RARE AND ENDANGERED SPECIES (RARE)Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.2.1.18 FISH SPAWNING (SPWN) Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.</p> <p>2.1.19 WARM FRESHWATER HABITAT (WARM) Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.</p> <p>2.1.20 WILDLIFE HABITAT (WILD) Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl. Beneficial uses of streams that have intermittent flows, as is typical of many streams in the region, must be protected throughout the year and are designated as "existing."</p>
85	Jim Brobeck (11)	Aqualliance				<p>1866 2.2 Groundwater Conditions; • "Wells showing depths to first encountered groundwater deeper than 500 feet were eliminated from the data set." The rationale behind this limitation is unclear. If there is significant piezometric pressure identified in the water encountered below 500' it should be included in the analysis. The hydrographs in this section measure a shallow portion of the system. It is likely that groundwater flow volumes would be stimulated when the pressurized portion of the aquifer is depressurized by major production operations. The cumulative effect of these extractions may be the cause of the decline in the seasonally fluctuating regional aquifer levels. The failure to evaluate the effect of confined/semi-confined piezometric pressure dynamics on groundwater conditions must be remedied. Line 2143 identifies the existence and importance of this pressure in relation to subsidence but there is no other mention of piezometric pressure. "As the pressure created by the height of water (i.e., head) declines in response to groundwater withdrawals, aquitards between production zones are exposed to increased vertical loads." The measurement of piezometric pressure is</p>

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						important for groundwater monitoring. It allows us to determine the level and flow patterns of the groundwater. Omitting a discussion of piezometric pressure when discussing groundwater conditions in our region is like ignoring blood pressure during a human physical exam.
86	Jim Brobeck (12)	Aqualliance				1996 "Since the year 2000, there has been a cumulative decline in March 1 groundwater storage of about 400,000 acre-feet (AF). This indicates the cycles of groundwater pumping are not in balance with the cycles of recharge that replenish the aquifer, and that groundwater depletion has occurred consistent with long-term decline in groundwater levels." Without a regional GW model and a record of pumping throughout the Tuscan basin it is impossible to identify pumping in the VGSB as the sole demand resulting in the decline in GW storage.
87	Jim Brobeck (13)	Aqualliance				2017 "Development of groundwater quality-related Sustainable Management Criteria for the Vina Subbasin is not intended to duplicate or supplant the goals and objectives of ongoing programs including those by Butte County, the SWQOC and the State Drinking Water Information System (SDWIS) [SWRCB Geotracker/GAMA website, the California Department of Toxic Substances Control (DTSC) EnviroStor website, and the Environmental Protection Agency's (EPA) National Priorities List (NPL)]." GW pumping stimulates the movement of toxic plumes through the aquifer system. Advection is the movement of dissolved solute with flowing groundwater. The amount of contaminant being transported is a function of its concentration in the groundwater and the quantity of groundwater flowing, and advection will transport contaminants at different rates in each stratum. Who are the personnel in the VGSA that will be tracking these data and correlating it to various GW pumping regimes and flow patterns?
88	Jim Brobeck (14)	Aqualliance				2268 Figure 2-23: "Hydrographs for Nested Well Located Near Feather River" is the description of the figure but the text explains "As seen in this figure, the hydrograph for the nested well located adjacent to the Sacramento River..." Typographical error?

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89	Jim Brobeck (15)	Aqualliance				<p>2298 "There is no indication in the streamflow data to suggest groundwater interactions that contribute to the streamflow behavior. Similar conditions would be expected for other creeks that traverse the Vina Subbasin (Little Chico, Sycamore, Rock, and Butte Creek) since they flow across a similar fan topography and similar shallow subsurface geology. The overall conclusion from this study in relation to interconnected surface water is that, for significant portions of the year, the upland creeks in the Vina Subbasin would be classified as disconnected streams and the surface water would be considered "completely depleted" as defined under SGMA." Water code chapter 23 explains "(o) "Interconnected surface water" refers to surface water that is hydraulically connected <u>at any point</u> by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted." As I read Water Code it is clear that streams flowing out of the foothills are hydraulically connected until they reach a point where the aquifer has been depleted below stream level at which point the stream loses its connection to the aquifer. As the GW level declines the stretch of dewatered stream expands. Spatial and temporal dewatering monitoring is a critical GDE function of a GSA. The California Department of Fish and Wildlife has specific GDE recommendations that must be implemented in the VGSA [https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170185&inline] "GROUNDWATER DEPENDENT ECOSYSTEMS (GDES) 1. How will groundwater plans identify GDEs and address GDE protection? 2. How will GSAs determine if GDEs are being adversely impacted by groundwater management? 3. If GDEs are adversely impacted, how will groundwater plans facilitate appropriate and timely monitoring and management response actions? INTERCONNECTED SURFACE WATERS (ISW) 1. How will groundwater plans document the timing, quantity, and location of ISW depletions attributable to groundwater extraction and determine whether these depletions will impact fish and wildlife? 2. How will GSAs determine if fish and wildlife are being adversely impacted by groundwater management impacts on ISW? 3. If adverse impacts to ISW-dependent fish and wildlife are observed, how will GSAs facilitate appropriate and timely monitoring and management response actions." According to a study on small streams flowing through the Vina SB: "Nonnatal rearing of juvenile Chinook salmon was documented in several intermittent tributaries to the Sacramento River. Condition factors and length measurements of juvenile chinook captured in the intermittent tributaries were compared with those captured in the mainstem Sacramento River. The data suggests that juvenile chinook rearing in the tributaries grew faster and were heavier for their length than those rearing in the mainstem. Faster growing fish smolt earlier, and may enter the delta earlier in the year before low water and pumping degrade rearing habitat." Intermittent Streams as Rearing Habitat for Sacramento River Chinook Salmon. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs</p>

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						/exhibits/swrcb/swrcb_maslin1997.pdf The unregulated streams that flow into the Sacramento River are leaking into drained aquifers. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_282.pdf
90	Jim Brobeck (16)	Aqualliance				2.2.7 Groundwater Dependent Ecosystems 2488 Not Likely a GDE Due to Adjacency to Irrigated Agricultural Fields 2504 Not Likely a GDE Due to Dependence on Agricultural-dependent Surface Water GDEs were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, GDEs can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields - simultaneously and at different temporal/spatial scales. Basins with a stacked series of aquifers 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 principal aquifers, that support springs, surface water, and groundwater dependent ecosystems. Areas in proximity to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.
91	Jim Brobeck (17)	Aqualliance				2.3.4 Water Budget Estimates 2831 "Other components are more difficult to measure or do not have measured values readily available (e.g., deep percolation, subsurface flows, groundwater pumping, surface water-groundwater interaction, etc.) and are estimated using the BBGM." It is unclear how the BBGM estimates Western Boundary Net Outflows 56,100-65,000 AFY. This map from the first draft of the Vina Water Budget presentation last year estimated a total of 200k AFY flowing from the east out of Butte into Colusa. The first draft of the Butte Subbasin Preliminary Basin Setting Results indicated 261k AFY of water flow from the west into the Butte basin from Colusa. These large discrepancies in outflow estimates do not inspire confidence in the Water Budget, the identification of who is responsible for GW declines or the efficacy of proposed recharge efforts. "The ultimate effects of pumping can occur significantly after pumping starts, or even after"

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						<p>pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately."</p> <p>Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action, pp. 14-15.</p> <p>We know that interbasin flows are dependent on conditions in adjacent basins. "3014 Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." This significant data gap will present challenges as the impacts of GW pumping are not immediate and can take months or years to occur. The emerging California Water Market is a factor that is going to complicate regional water budget estimates.</p> <p>BCWRC's Drought Task Force intention to evaluate the cumulative impacts of Water Transfer Programs (including GW Substitution water market transactions) and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley is essential to understand sub basin water budgets.</p>

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92	Jim Brobeck (18)	Aqualliance				<p>3014 "Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." The subsurface outflow analysis must be expanded to include outflows into other nearby sub basins including Butte and Colusa. Increased GW extractions due to crop changes, "emergency" supplemental GW pumping and GW substitution transfers is likely to increase subsurface flows over time. Butte Counties nascent Drought Impacts Analysis Study plans to compile the 2021 water transfer programs (April 2021-December 2021) from Butte, Tehama, Glenn, Colusa, Yuba and Sutter counties. The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. Analysis of the transfer programs will evaluate the cumulative impacts of the programs' impacts on water supplies and demands. This type of annual evaluation must be ongoing as demand/supply conditions evolve and consider "timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately." [1] [1] Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action.</p>
93	Jim Brobeck (19)	Aqualliance				<p>Line 3016 Water Banking Stimulation of sub surface flows "It is anticipated that this data gap [sub surface flows] will be addressed through future refinements to the BBGM and through coordination and collaboration with neighboring subbasins as part of GSP implementation." The coordination and collaboration with neighboring subbasins is, at best, a forthright sharing of information and unbiased evaluation of model results. However, the VGSA would be naïve to ignore the special interests of key players in the Northstate Water World that may inspire some purveyors to profitably engage in the emerging California Water Market with less regard to the interests of GDEs and water users that are not participating in Transfer/sales that "exercise" the shared regional aquifer while promising to use PMAs to refill drained aquifer water banks.</p>

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94	Jim Brobeck (20)	Aqualliance				<p>3181 "It is anticipated that these uncertainties will be reduced over time through monitoring and additional data collection, refinements to the BBGM and other tools, and coordination with neighboring basins." The DGSP is deficient because significant monitoring infrastructure has yet to be funded and built in the shallowest portion of the aquifer system that GDEs rely upon. According to the 2007 DWR/NCWA Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework; "The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations."</p> <p>https://www.waterboards.ca.gov/waterrights//water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf</p>
95	Jim Brobeck (21)	Aqualliance				3266 3. SUSTAINABLE MANAGEMENT CRITERIA

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96	Jim Brobeck (22)	Aqualliance				<p>3298 • "MT– Quantitative threshold for each Sustainability Indicator used to define the point at which undesirable results may begin to occur." The stated definition is the most egregious violation of common sense in the DGSP. Undesirable results BEGIN to occur even before historic low levels (the approximate upper reach of the operational range) are occur. Domestic well failures, destruction of GDEs and chronic lowering of groundwater levels occur at historic GW levels and would be exacerbated if the aquifer is managed within the Operational Ranges being proposed. I find the Plan to be deficient in protecting beneficial uses. Historic low GW levels shown in most of the Appendix 3-B hydrographs are still above the 80' max rooting depth of native and urban forest trees. The Minimum Threshold as defined in the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable results will begin much earlier in the proposed operational range shown in most of the hydrographs. These MTs are significantly deeper than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." The operational range proposed will not avoid triggering this and other significant irreversible Undesirable Results. SGMA Regulations define "Measurable objectives" as "specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions..." Setting GW level MOs below historic low levels does not meet this requirement. Most of the proposed MOs are below historic low levels. This is not the appropriate level to designate the top of the operational range. SGMA Water Code § 354.30 explains "An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan." The managers assure the public that the goal of the VGSP is to maintain GW levels above or near the MOs or that if the MT is approached/transgressed PMAs would be employed to bring water levels back to the MO or higher. The definition of the MT shows the "Operational Range" as the defined goal. The proposed broad operational ranges fit the prescription for market driven groundwater banking but would result in many undesirable impacts to water users not participating in the rapidly emerging California Water Market.</p>

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97	Jim Brobeck (23)	Aqualliance				3415 "The quantitative Vina Subbasin Undesirable Result for the Chronic Lowering of Groundwater Levels occurs when: Two RMS wells within a management area reach their MT for two consecutive years of non-dry year-types." Two years of operating at the MT level would destroy GDEs including the urban forest of Chico. The insulting caveat that it would be acceptable to forgive the extreme MT levels if they occur during 2 consecutive dry years would allow GW levels to decline below the MT and implies that artificial recharge during "wet" years is a mitigating option. This is another example of an operation prescription for conjunctive use water bank marketing.
98	Jim Brobeck (24)	Aqualliance				3477 "Groundwater levels are typically lower during dry years and higher during wet years. Superimposed on this four- to seven-year short-term cycle is a long-term decline in groundwater levels. In other words, groundwater levels during more recent dry-year cycles are lower than groundwater levels in earlier dry-year cycles." The DGSP fails here to identify the cumulative impacts of increased pumping in the regional shared Tuscan aquifer system that is driving the long-term trend in driving down the fluctuating hydrograph record. Management of connected groundwater systems is challenging for several reasons. First, the cumulative GW depletions caused by pumping depends on the spatial scale: in general (depending on soil conditions and strata) the greater the distance or depth between groundwater pumping and a monitoring well, the lower the magnitude but the longer the timescale of depletions. Consequently, the ultimate effects of pumping can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades.
99	Jim Brobeck (25)	Aqualliance				3703 Outside Hydrologic Influence "hydrologic impacts outside of the Vina Subbasin, such as upper watershed development or fire-related changes in run-off, could result in impacts to streamflow, riparian areas, or GDEs that are completely independent of any connection to groundwater use or conditions within the Vina Subbasin." Since the deep Tuscan Aquifer System is recharged from the eastern basin foothills it is certainly appropriate to recognize impacts to groundwater use and conditions within the Vina SB resulting from fire related soil conditions and streamflow in the recharge area. [https://www.buttecounty.net/waterresourceconservation/SpecialProjects/StableIsotopeRechargeProject.aspx] Additionally, conditions in the down-gradient portion of the Tuscan System are worthy of evaluation as the VGSP evolves. The lower Tuscan Aquifer system is being developed as a water source west of the Sacramento River and is being evacuated with vigor especially during dry years. This may accelerate the rate of subsurface flow out of the Vina SB. The Glenn Colusa Irrigation District board pumped over 25K af of Tuscan groundwater for 2-3 months this summer to supplement their river allocation. This is on top of 10k af of

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						<p>groundwater substitution water transfers and even more surface water sales from "willing sellers" to "willing buyers" South Of Delta. The 35k/a/f is more water in 3 months than the Chico Urban Area pumps in a year. The State emergency declaration allows water purveyors like GCID to sidestep laws that require environmental review. GCID used district wells located 5-10 miles west of Chico that can pump 3KAF/minute. The Butte County Drought Task Force recognizes the importance of evaluating cumulative impacts of programs on water supplies and demands on the Vina SB may be significant and is initiating a "Drought Impacts Analysis Study" that will compile and analyze the 2021 Water Transfer Programs and the Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley. https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029</p>
100	Jim Brobeck (26)	Aqualliance				<p>3776 Upland GDE Designation "The Vina Subbasin specifically recognizes deep-rooted tree species, such as Valley Oak, that are common along riparian corridors in both upland streams and the Sacramento River. This connectivity is not well measured or understood in the Vina Subbasin at this time." The failure of the DGSP to accept the well-documented fact that deep rooted trees are not exclusively located along riparian corridors but are nonetheless dependent on the shallow aquifer. US Forest Service Index of Species Information for Valley Oak explains the wide distribution of the Valley Oak ecosystem: https://www.fs.fed.us/database/feis/plants/tree/quelob/all.html "Valley oak typically has several vertical roots that tap groundwater and extensive horizontal root branches. Vertical root depth has been measured as deep as 80 feet (262m) in some individuals. Best growth is attained when water tables are about 33 feet (10 m) below the surface. Historically, these forests extended 0.6 to 5.0 miles (1-8 km) on each side of major rivers. Valley oak cover was once extensive, extending through lowlands and into foothills." Limiting GDE evaluation to measurable impacts to interconnected streamflow is insufficient. California Code of Regulations, Title 23 § 351. Definitions.</p> <p>"(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.</p> <p>(m) "Groundwater dependent ecosystem" refers to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface."</p> <p>The DGSP, like other planning documents, promises on line 3785 "to fill these data gaps and the GSAs are committed to addressing these issues and develop appropriate SMCs for the Vina Subbasin." But like other co-equal goals that assure balancing water supply with</p>

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						<p>ecosystem health it is meeting the demand that takes precedence. In 2007 the DWR, NCWA and the State Water Board recognized the importance of habitat monitoring in their Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf</p> <p>"The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas....In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer."</p> <p>But there has been no investment in creating the network needed to collect baseline conditions or to monitor declines in this critical GDE preservation goal.</p>
101	Jim Brobeck (27)	Aqualliance				<p>5. PROJECT AND MANAGEMENT ACTIONS</p> <p>4412 5.2.3.1 Agricultural Irrigation Efficiency</p> <p>4414 Butte County agriculture is a keystone feature of culture in the Vina SB. The importance of maintaining the viability of irrigated agriculture is of paramount importance. The results of the Vina GSA, Agricultural Groundwater Users of Butte County, and Butte County Farm Bureau survey to evaluate current irrigation methods and practices, identify opportunities and methods to improve irrigation efficiency, determine potential issues preventing the adoption of efficiency practices, and provide recommendations for increasing participation in these practices were expected to be available in September 2021. A summary of the results would be helpful in evaluating opportunities to stabilize or reduce demand. Incentives to invest in efficient GW irrigation through grant funding and tax rebates are needed to maximize benefits. According to Valerie Kincaid "A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling)." Why is this not listed as a recharge project?</p>
102	Jim Brobeck (28)	Aqualliance				<p>4449 5.2.3.2 Project: Residential Conservation The Estimated Groundwater Offset and/or Recharge: 100 acre-feet/year is certainly below the potential for urban efficiency. The voluntary expansion of xeriscape replacement of turf is evident and the adoption of efficient water using appliances is inevitable. The managers should review the successful urban conservation data from last decade to evaluate more realistic estimates of potential offset amounts.</p>

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103	Jim Brobeck (29)	Aqualliance				<p>4079 " As discussed in Section 4.1, the GSAs in the Vina Subbasin intend to further evaluate the SMC for interconnected surface waters to avoid undesirable results to aquatic ecosystems and GDEs. As additional data are collected and evaluated, the Vina Subbasin commits to developing additional SMC and installation of monitoring points, as appropriate, for specific stream reaches and associated habitat where there is a clear connection to groundwater pumping in the principal aquifer." Restricting monitoring points and GDE considerations to riparian proximities is insufficient for the protection of deep-rooted vegetation, both native trees and the Chico urban forest. According to the USDA Forest Service "Urban forests help to filter air and water, control storm water, conserve energy, and provide animal habitat and shade. They add beauty, form, and structure to urban design. By reducing noise and providing places to recreate, urban forests strengthen social cohesion, spur community revitalization, and add economic value to our communities." [https://www.fs.usda.gov/managing-land/urban-forests] The shallowest portion of the aquifer system that sustains this vegetation extends beyond riparian corridors. The Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework [2007 DWR NCWA https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf] recognizes the importance of establishing a monitoring network in the shallowest portion of the aquifer for this purpose: "The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the</p>

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						entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations."
104	Jim Brobeck (30)	Aqualliance				<p>Chapter 4: MONITORING NETWORKS</p> <p>4218 Well "Construction Data – Well data such as perforation depths, construction date, and well depth was considered for selection." Many of the selected wells to not meet the above criteria for selection: 4262 Table 4-5. Groundwater Levels RMS Well Construction Details North MA: 3/6 of the wells do not have listed screen intervals. This makes it difficult to know what layer of aquifer is being monitored. Scientifically constructed multi-completion wells with defined screen depths/elevations is needed. The other 3 have screen intervals ranging from about 70' to almost 500'. While this type of well construction is suitable for production it is unsuitable for transparent depth/elevation monitoring of the aquifer system.</p> <p>Chico MA The well depths are undefined as are the screen depths. There is a notable lack in monitoring the shallow aquifer that supports the unirrigated Chico Urban forest.</p> <p>South MA: The screen intervals on two of the MC wells have appropriate 10' spacing allowing for better scientific analysis of monitoring data.</p>
105	Jim Brobeck (31)	Aqualliance				<p>5. PROJECT AND MANAGEMENT ACTIONS [cont.] 4477 5.2.3.3 Project: Streamflow Augmentation "The project would primarily take place at Comanche Creek, Butte Creek, Little Chico Creek, and Big Chico Creek." It is unclear how Little Chico Creek and Big Chico Creek would be integrated into this program since they are, apart from flood control infrastructure, unregulated by dams. If a project includes the application for a new right to recharge water, it will need to obtain a water right permit from the State Water Resources Control Board (SWRCB) through a surface water right application and a supplemental groundwater recharge form. The water right permit application would need to identify the "beneficial use" that the project intends to meet. Recharging groundwater is not considered a beneficial use, however, meeting the sustainable management criteria in a GSP may be determined to be a beneficial use. Since this project is in the "Planned" category and is expected to move forward and be completed there must be more detailed information available to the public. The project description should be clear on permits that would be required to be negotiated with regulatory agencies such as CFW and the State Water Board.</p>

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106	Jim Brobeck (32)	Aqualliance				<p>4507 5.2.3.4 Flood MAR/Surface Water Supply and Recharge Scoping</p> <p>This planned scoping project must include a detailed evaluation of the efficacy of up-gradient recharge efforts that may enhance extraction opportunities in down-gradient sub-basins that are developing new groundwater exploitation infrastructure to supply expanding permanent crop acres and engaging in water transfers that integrate the shared aquifer system into their transfer portfolio and have a history of using the same aquifer as an “emergency” supplemental water supply. The legal consequences of attempting MAR have been summarized by Ms. Kincaid and issues of aquifer privatization and potential water bank extirpation of Butte Chapter 33 protection remain unresolved and exacerbated by the expert analysis presented by the Public Policy Institute of California. “County export ordinances prevent beneficial trades. In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer.” https://www.ppic.org/publication/improving-californias-water-market/</p>

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107	Jim Brobeck (33)	Aqualliance				<p>All the projects outlined in lines 4408-4663, as well as 4870 5.2.4.11 Project: Surface Water Supply and Recharge, whether they are conservation (demand reduction) or recharge (supply augmentation) projects have the potential to carry the legal consequences of artificial recharge efforts. According to Kincaid [https://www.vinagsa.org/files/4441577c7/PMA+Legal+Implications+Discussion+Paper.pdf]</p> <p>"A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling). If a project uses or obtains a surface water supply and recharges into the aquifer, the project proponent would have a legal right to the recharged water. Water does not legally become "common" or "native" supply available to overlying groundwater right holders unless it is abandoned by the project proponent." The contentious issue of privatization of the aquifer that is used as a water bank must be resolved at the State level because local ordinances may be overridden by SGMA jurisdiction. The strategy of integrating the Tuscan Aquifer System into the State Water Supply is a long-standing threat to the balance of uses required to maintain the quality of life in the Vina SB. According to the Public Policy Institute of California [https://www.ppic.org/publication/improving-californias-water-market/] County export ordinances prevent beneficial trades. In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer.</p> <p>"Streamline transfer reviews while maintaining protections. Approval delays by federal, state, and local authorities often reflect uncertainties about the physical impact of a surface or groundwater transfer on other water users or the environment. Yet there are various ways to streamline the process while maintaining protections, for instance by conducting more up-front analysis of impacts through programmatic reviews, developing a "fast lane" for transfers below a certain size, developing a structured evaluative process for reviews, and establishing an after-the-fact process for balancing accounts to enable quicker approvals of time-sensitive activities.</p> <p>"Develop more equitable local rules for groundwater substitution transfers. Well-run groundwater substitution programs can expand long-term water availability by more actively using local groundwater storage. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to</p>

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108	Jim Brobeck (34)	Aqualliance				<p>amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer." The State may use emergency proclamation or legislative action to neutralize local control of water policy such as the Chapter 33 ordinance in Butte County. The broad operating range and historic low-level starting point (MO) that the VGSA consultants and staff have inserted into the VGSP will create the storage space needed to bank/sell water stored in the Butte Basin.</p> <p>The Kincaid white paper explains that Potential Management Actions "would allow the Vina GSA to protect the Vina subbasin and the implementation of the GSP from negative implications from artificial recharge projects through enactment of rules, ordinances and/or policies." But her estimation that ordinances or policies that the GSA may adopt to ensure recharge projects are operating without adverse impact to the basin offer no assurance that the VGSA would have the capacity to successfully navigate the State prerogative to manipulate the emerging water market that intends to "Streamline groundwater substitution and water transfer permitting and approval processes by allowing consolidated basin-level environmental reviews to facilitate water market transactions," [https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118]</p> <p>4664 5.2.4.5 Community Monitoring Program "This project would create routine water table monitoring programs for approximately 8,000 acres of Ecological Reserves in the region between lower Forest Ranch and Cohasset Road near Chico Airport, including the Big Chico Creek, Sheep Hollow, and Cabin Hollow tributaries." This project should be required to be implemented yesterday! Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. To identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain GDE species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.</p>

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109	Jim Brobeck (35)	Aqualliance				<p>4691 5.2.4.6 Project: Wastewater Recycling</p> <p>While this project requires time consuming permitting and coordination with regulatory agencies as well as significant infrastructure installations it will be helpful in keeping Chico's GW demand from expanding along with the urban development that is anticipated. Focusing purple pipe infrastructure on athletic field irrigation is a good target during dry seasons.</p>
110	Jim Brobeck (36)	Aqualliance				<p>4722 5.2.4.7 Project: Community Water Education Initiative</p> <p>A population that is well informed on watershed health, water use conservation and water policy is an excellent education goal. This project should identify regional responsible water use and climate responsive flexibility. The political science portion should dive into the history of California water policy; how it has shaped regional water infrastructure and the need for local vigilance in defending the hydrologic balance from insatiable demand from unfettered urban and agricultural expansion south of the Delta.</p>
111	Jim Brobeck (37)	Aqualliance				<p>4768 5.2.4.8 Project: Rangeland Management and Water Retention4802 5.2.4.9 Project: Fuel Management for Watershed Health4833 5.2.4.10 Project: Removal of Invasive Species</p> <p>Investments in the health of ecosystems that provide the water recharge for the Tuscan Aquifer System have been, like in the rest of the Sierra Cascade watershed, unwisely underfunded. An excerpt from the Sierra Nevada Ecosystem Project lays out the imbalance of resource extraction vs reinvestment. These projects would begin to address that imbalance. "Based on estimates of direct resource values as one input (not the total revenue produced by resource dependent activities), the Sierra Nevada ecosystem produces approximately \$2.2 billion worth of commodities and services annually. Water accounts for more than 60% of that total value. Other commodities [timber and grazing] account for 20% as do services. "Public timber and private recreation are the largest net contributors of funds to county governments both in total dollars and as a percentage of their total value. Around 2% of all resource values are presently captured and reinvested into the ecosystem or local communities through taxation or revenue sharing arrangements. The declining status of some aspects of the Sierra Nevada ecosystem suggests that this level of reinvestment is insufficient to ensure sustainable utilization of the ecosystem."</p> <p>https://pubs.usgs.gov/dds/dds-43/VOL_III/VIII_C23.PDF</p>

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112	Jim Brobeck (38)	Aqualliance				4870 5.2.4.11 Project: Surface Water Supply and Recharge While it is suggested that these projects will require a SWRCB permit; CEQA and others the State is on a path of “streamlining and acceleration of managed aquifer recharge and groundwater banking permitting processes” and to “Streamline groundwater substitution and water transfer permitting and approval processes to optimize the economic value of groundwater” . [https://data.ca.gov/dataset/californias-groundwater-update-2020-bulletin-118/resource/94f3a5f6-23f3-4aec-ab84-b546bf211bab] It is unclear if the legal and environmental consequences of this project will be adequately considered. The preservation of undisturbed critical vernal pool habitat is an ecological priority in some of the presumed areas of inundation.
113	Jim Brobeck (39)	Aqualliance				4973 5.3.4 Landscape Ordinance 4980 5.3.5 Prohibition of Groundwater Use for Ski (Recreational) Lakes These two common sense regulations would help meet our goals.
114	Jim Brobeck (40)	Aqualliance				4984 5.3.6 Expansion of Water Purveyors' Service Area Assuming that this is exclusively for residential development it is critical that service area expansion does not stimulate urban sprawl that intrudes on either green-line or gold-line open space.
115	Jim Brobeck (41)	Aqualliance				4990 5.3.7 Groundwater Allocation The consideration of groundwater allocation must be scientifically connected to the actual cause of failure to achieve sustainability goals by 2042. If cross-boundary water flows are causing declining levels in up-gradient portions by extractions in the down-gradient portion of the shared regional aquifer system there must be well designed/implemented monitoring/modeling systems in place that have the confidence of all involved.
116	Jim Brobeck (42)	Aqualliance				5005 5.4 Data Collection 5006 5.4.1 County Contour Mapping “As part of the efforts to collect the information necessary to fill the data gaps identified in Section 3, this project proposes to expand the existing monitoring program to include Butte, Glenn, Colusa, and Tehama counties and conduct these groundwater elevation surveys in the spring, summer, and fall. The monitoring program would gather data used to produce groundwater contours and estimates of lateral and vertical flow direction and volume. Producing this data for the four counties will help to identify interbasin flow patterns and influences on surface water flows and replenishment locations, thereby improving coordination between counties and water management decision-making.” This inter-basin effort must be implemented ASAP! A reliable inter-basin GW modeling is also at the top of the management list.

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117	Jim Brobeck (43)	Aqualliance				<p>6. PLAN IMPLEMENTATION</p> <p>5135 Table 6-5: Estimated Costs for Implementing Data Gaps "Interconnected Stream Monitoring \$100,000 – \$250,000" As mentioned in previous comments the immediate implementation of a network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels. Limiting the data gap to Interconnected Stream Monitoring would leave out GDEs that are outside of designated riparian zones. The shallow aquifer has an important role to play in keeping deep rooted trees, including the large trees in the Chico Urban Forest, that survive the regional dry months without supplemental irrigation. The USDA also recognizes that Urban Forests such as exists in Chico and other Butte County towns provide a range of valuable ecosystem services. I posit that the groundwater dependent trees of our towns ARE ecosystems. Many environmental challenges are exacerbated within the urban landscape, such as stormwater runoff and flood risk, chemical and particulate pollution of urban air, soil and water, the urban heat island, and summer heat waves. Chico's urban forest canopy mitigates these challenges. Research shows that urban trees are integral to the environmental quality of cities and towns.</p> <p>In April of 2007 Butte County resolved to adopt an oak woodlands management plan. http://www.buttecounty.net/Portals/10/Docs/Planning/Projects/OakWoodland/Chapter53_ButteCounty_OakWoodlandMitigationOrd_2018-10-29.pdf?ver=2018-10-29-165211-350 "Butte County supports significant acreage of oak woodland habitat. The historical importance of oaks is apparent in the names of towns, cities, streets and residential complexes throughout California. Butte County's oak woodlands enhance the natural and scenic beauty of the area, provide forage and shelter for more than 300 species of wildlife, facilitate nutrient cycling, moderate temperature extremes, reduce soil erosion, sustain water quality and increase the monetary and ecological value of property." Water Code § 1131t is the policy of the state that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses.</p>
118	Jim Brobeck (44)	Aqualliance				<p>5253 6.7 Interbasin Coordination 5271 1. Information Sharing</p> <p>"This will continue throughout GSP implementation and may include:</p> <ol style="list-style-type: none"> 1. Inform each other on changing conditions (i.e., surface water cutbacks, land use changes,

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						<p>policy changes that inform groundwater management)</p> <p>2. Share annual reports and interim progress reports</p> <p>3. Share data and technical information and work towards building shared data across and/or along basin boundaries (e.g., monitoring data, water budgets, modeling inputs and outputs, and Groundwater Dependent Ecosystems) Information Sharing must include the water-market/emergency GW pumping volumes/locations/timing that members of the North Sac River Corridor group intend to implement and a report on the final v/l/t of these extra demands on the shared aquifer system. These extra pumping demands are not unprecedented and have become a routine component of California's plan to use the Northern Sacramento Valley as a "reliable" source of supply.</p> <p>Butte County is on the verge of conducting a Drought Impacts Analysis Study that will evaluate the numerous 2021 Water Transfer Programs in Northern Sacramento Valley including the Supplemental Groundwater Pumping Operations. The study portends to accomplish an evaluation of cumulative impacts of programs on water supplies and demands in the inter-basin, but focus on the Vina Subbasin"</p> <p>https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029</p> <p>pdf Pg. 42-43</p> <p>The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. This report should be conducted every year, funded by SGMA interbasin coordination parties and be included in the VGSA Annual report submitted by April 1 for the prior year's activities.</p>
119	Jim Brobeck (45)	Aqualliance				<p>5295 3. Coordinate on mutually beneficial activities</p> <p>GSA's that overlie the Tuscan Aquifer Formation should provide cooperative funding for mutually beneficial watershed management in the recharge areas located in the foothills east of the valley floor.</p>

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120	Jim Brobeck (46)	Aqualliance				5314 5. Issue Resolution Process "Vina Subbasin will pursue development of an issue-resolution process with neighboring subbasins in the North Sac River Corridor group." This single sentence belies the potential for regional conflict over water management issues. The drama surrounding the nascent Tuscan Water District and the unpopular "Operational Range[s]" proposed in the DVGSP are examples of "issues" that have already emerged in this process. Conflict arising from expanded GW demand in the North Sac River Corridor group are being litigated between stakeholders and agencies. Achieving sustainability requires local agencies, stakeholders, and water users to make many difficult and potentially contentious decisions. These decisions are prone to conflict, particularly when pumping restrictions are viewed as infringing on property rights, or when fees are charged to support local management. Newly formed GSAs have additional layers of potential conflict. Questions regarding authority, streamlined legal and regulatory timelines, a lack of existing precedents and the need to represent agency and constituent interests have the potential to exacerbate conflicts under SGMA. In some cases, where authoritative interpretations of legal authority and limits have not been established yet, litigation may be necessary and warranted. The State prefers the Northern Sacramento Valley to quietly comply with the myth that this region is a source of "surplus" water that can peacefully serve the accelerating water market through conjunctive-use water banking. However, it is likely that conjunctive-use water banking would degrade the groundwater basin and groundwater users who are not involved in conjunctive use but are reliant on the same groundwater basin.
121	Jim Brobeck (47)	Aqualliance				See Vina Draft GSP Comment A6
122	Bruce Smith	Public Comments	BaS	1.1.6.1	553, 554 Fig. 1-9A	Important to note electric logs us1 To define formation boundaries in AEM cross section
123	Bruce Smith	Public Comments	BaS	1.1.8, 1.1.8.1	599-605	There are four principal aquifers i The Vina Subbasin. The shallow Aquifer, the intermediate aquifer And the upper and lower deep Aquifers. This data gap needs to Be better defined using well logs and cross sections and conceptual models that show flow paths. This section from 599-605 implies one principal aquifer. Gives the false impression that surface recharge then recharges other/lower aquifers. They may not be connected.
124	David Eaton	Public Comments				See Vina Draft GSP Comment P5
125	Debra Lucero	Public Comments				See Vina Draft GSP Comment P6
126	Lisa Creamer O'Donnell	Public Comments				See Vina Draft GSP Comment P7
127	Nancy Gillard-Bartels	Public Comments				See Vina Draft GSP Comment P8

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128	Jim Grayden	Self	3-SMC			Why are Cal Water wells in Chico the only ones chosen in the monitoring network as there are others available, particularly shallower monitoring wells. Also, Management objectives are probably not protective enough. Total Dissolved Solids and Electrical conductivity (TDS/EC) levels aren't protective as should be, need more than secondary MCLs
129	Commenter 5	Self	3-SMC			Already at a record low. MO is too low! We need to be better than where we are now
130	Todd Green	SHAC/Self	3-SMC			If Measurable Objectives level is the desirable level seem you are more talking it being a more strategic objective vs measurable. Why not use the average of historical lows the way the Butte Subbasin did where they take an average of levels?
131	Anne Dawson	SHAC/Self	3-SMC			Basing SMCs on the Minimum Thresholds (MT) vs desirable levels. How were they developed? . How was it decided? Need to stop using the word sustainable. More detail is needed on how the line was determined. Where wells are in relation to measuring use/topography etc. Need more data to show how you got there.
132	Jim Brobeck	SHAC/Self	3-SMC			In the draft GSP, the MT is the point where undesirable levels begin but undesirable results will occur earlier. Will the operational levels in the hydrographs in Appendix result in domestic wells going dry? Concerned about data gaps. I do not think that the hydrographs were shared with the Stakeholder Advisory Committee.
133	Bruce Smith	SHAC/Self	3-SMC			They say our aquifer is healthy but wells are going dry. There is massive groundwater pumping occurring on the other side of the Sacramento River. Well data needs to be posted on the DWR and County websites. On the verge of a crisis and need to take it seriously.
134	Commenter	Self	5-PMAs			Why not use the average of 5 years for the MO used by the Butte Subbasin?
135	Jim Brobeck	SHAC/Self	5-PMAs			Please summarize the legal ramifications of In-lieu and direct recharge scoping project. What incentives are available to encourage conservation on family farms? Residential conservation estimate of 100 AF is too low.
136	Gary Cole	SHAC/Self	5-PMAs			My experience is instream augmentation and recharge projects to address the 10,000 Acre Feet deficit will be hindered by the DWR permit process. Also concerned about ownership of recharge water.
137	Bill Loker	Self	Monitoring and Evaluation			Speakers have frequently mentioned that the measurable objective and sustained yield are "best Guesses" and subject to revisions with more data and experience. In my experience, initial numbers become benchmarks that are difficult to change. At the least, a very contentious process. I think a more conservation approach with more robust measurable objective and higher levers are needed.

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138	Jim McCabe	Self	PMAs	pg. 5 line 557/5- PMAs		Statement the "Vina GSA does not and will not have employees" the words "will not" \needs to be removed. For PMAs, Paradise intertie should be removed as there are cheaper solutions available, such as the diversion of PID water to Butte Creek. Butte County Chapter 33 has never been audited or enforced to determine noncompliance with the groundwater transfers laws. Enforcement of Chapter 33 could be a PMA that may fix the 10,000 AF deficiency
139	Norah Todenhagen	Self	3-SMC/MO	3-SMC/Exec Summary ES-7 on pg. 13		Unacceptable to set a MO below what we know are dangerous levels. Move the line to a more acceptable and representative level so that it is truly a measurable objective. Why aren't there identified alert levels in the GSP such as those found in the Best Management Objectives in the County's Chapter 1? Also trees won't survive at levels suggested
140	Joseph Connell	Self	PMAS			Legal issues related to who owns water when it is recharged must be dealt with by the State Water Board and the legislature. Without clarity on this topic, recharge projects could be non-starters by the GSA's. This is a statewide issue.
141	J.W. Cook	Senate				Great work. Use science. Thanks.
142	Marty Dunlap	public interest attorney	MO			The MO needs to be higher to reflect desired goals for a healthy aquifer (not based on historical lows and disregarding drought effects)
143	Marty Dunlap	public interest attorney	MTs			The MTs need to be raised to avoid long-term and irreversible impacts to the basin/aquifer.
144	Marty Dunlap	public interest attorney	MO/MT			The Chapter 33 of Butte County code delineates the Basin Management Objectives (BMOs) with alert levels and these protections need to be incorporated into the MO & MT.
145	Bill Loker	self	MA			Meter all wells that use groundwater, especially the largest groundwater users
146	Bill Loker	self	MO			MO needs to be set higher to protect our groundwater. Drought is not a transient feature of our area. Drought is potentially the "new abnormal." We need to be CAREFUL STEWARDS of our groundwater for TRUE SUSTAINABILITY.
147	Bill Loker	Self	MO/MT			The MO and sustainable yield allow too much exploitation of groundwater. Presenters say these "best guesses" can be modified with "more data." What is the process for changing these? In my experience, changing these benchmarks will be a very contentious process. Ag users are often more well represented and have more political access than domestic users. I have little confidence that change will be easy or more protective of the aquifer. Change the MO- raise it! Change the sustainable yield- lower it!
148	Pam Stoesser	Self	MO			Please explain the logic behind setting minimum groundwater levels below historic lows. This makes no sense!! Does this have to do with recharge?

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149	Pam Stoesser	Self	MTs			Minimum groundwater level thresholds must be above historic lows. This plan must protect domestic wells, streams, our urban forest, trees and wildlife. Conservation, conservation, conservation. Domestic well failure must not be acceptable. Implement groundwater pumping reductions up front, not last. No to "recharge" and ownership of our public water.
150	Richard Harriman	NCEDC	Funding			SGMA is a state-mandated program that should be paid for by the state with regular funding.
151	Richard Harriman	NCEDC	Mas			The GSP should adopt Management Actions that implement a Project that provides for measurement via electronic system to record pumping for all major groundwater pumbers for agriculture and commercial business.
152	Pam Stoesser	Self	3-SMC			1) How are we regulating people digging deeper wells? Is there a safety net in this plan to make it harder for people to do that? 2) She expressed that she was most bothered by the minimum threshold, exclaiming, "this bothers me the most," particularly the way this topic was presented. She related that when she attended the in-person workshop, it was confirmed that right now our groundwater is at historic lows. We learned and that the MT is set 50 feet below the historic low. This graph doesn't show that. 3) She addressed interconnectedness with aquifers and surface water. She stated, " it bothers me that there isn't more understanding about this before we move forward with the plan...I would like our urban forest to be prioritized as much or even more than agriculture moving forward. "
153	Kathy Faith	Self	PMAs			I appreciate all of the brains and perspectives involved, but this effort seems too late. For those whose wells go dry, that will be a huge deal. The MT line is too low. Would be possible for that line to be raised at some point in the process?
154	Anne Dawson	Self	PMAs			Although this subbasin isn't critical, it is high priority, and despite that, the board decided that they were not going to develop groundwater allocations. They have also said they will not implement triggers to institute groundwater allocation discussion. I am worried that with the drought and continued pumping, lots of domestic wells will go dry and there is no plan to stop it.
155	Anne Dawson	Self	PMAs			My primary concern is that there are no triggers in place to make allocation happen. It seems we are being left with the bill. We are the ones who will be spending thousands of dollars digging new and deeper wells, whereas agriculture will continue as before, unimpacted. There should be a better effort to spread the pain among all groups, rather than having domestic well owners shoulder the cost.
156	Jim Brobeck (A)	Self	MTs			I am reviewing the Vina GSP and I appreciate the work that has gone into its preparation. However, I find the Plan to be deficient in protecting beneficial uses. Historic low GW levels shown in most of the Appendix 3-B hydrographs are above the 80' max rooting depth of native and urban forest trees. The Minimum Threshold as defined in the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable

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						<p>results will begin much earlier in the proposed operational range shown in most of the hydrographs. These MTs are significantly deeper than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." The operational range proposed will not avoid triggering this and other significant irreversible Undesirable Results. SGMA Regulations define "Measurable objectives" as "specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions.. Setting GW level MOs below historic low levels does not meet this requirement. Most of the proposed MOs are below historic low levels, not the appropriate level to designate the top of the operational range. SGMA Water Code § 354.30 explains "An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan." The managers assure the public that the goal of the VGSP is to maintain GW levels above or near the MOs. But I have not seen this intention in writing. Instead, I see the term "Operational Range" as the defined goal. The proposed broad operational ranges fit the prescription for market driven groundwater banking but would result in many undesirable impacts to water users not participating in the rapidly emerging California Water Market.</p>
157	Debra Lucero	Self				I am concerned that there may be a false sense of protection and local control, but that the reality may be quite different when SGMA takes full affect. I am worried that people will be able to pump groundwater simply by claiming it is from initial rainfall that fell on their property.
158	Eric Wright	Self				I request that the climatic patterns and trends are incorporated by looking at the original areas around the subbasin.
159	Richard Harriman	Self	MTs			I agree with the comments of Jim Brobeck and Debra Lucero. If one looks at the MT's and then looks at the analysis in regard to trees in Chico area, this is the canary in the coal mine. The MT's have been set so low as to allow the canary in the mine to die before we even act. Sustainability, by definition, means that one learns to use what one has before one tries to bring in more to replace what has been overused. An analytical inconsistency exists in the model, in that there is a default towards supply before even exhausting conservation remedies. Conservation should be prioritized before seeking to bring in water from outside the aquifer. It is very challenging to make changes once bureaucratic action has been put in

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						motion; "works like the titanic. It has a lot of momentum going in one way. Once you want to slow it down, it takes a long time before you can get it to reverse."
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161	Vina GSA SHAC					See Vina GSA SHAC October 19, 2021 Meeting Summary

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GSP Workshops October 4 and October 13, 2021 - Clarifying Questions – Responses provided during Workshops						
162	Jim Brobeck	SHAC/Self	Introduction/S GMA Overview			How are comments to be incorporated into the Final Groundwater Sustainability Plan (GSP).
163	Commenter 1	Self	Introduction/S GMA Overview			When and how was authority to enforce GSPs given to DWR? Relationship of the Vina GSA JPA between Chico, Durham Irrigation District and the County? Is Rock Creek Reclamation District (RCRD) its own Management Area or part of the Vina GSA?
164	Commenter 2	Self	Introduction/S GMA Overview			No trust in the public process and not confident comments will be heard.
165	Jim Brobeck	SHAC/Self	2-Basin Setting			Given the data gaps, are you confident that the Butte Basin Groundwater Model (BBGWM) is adequate to set the water budget?
166	Commenter 3		2-Basin Setting			Who will fund and monitor all the data so that we get better information?
167	Commenter 1		2-Basin Setting			Is the Primary Aquifer the Lower Tuscan Aquifer? What is the definition of sustainable yield? Does what comes in equal what goes out?
168	Bruce Smith	SHAC/Self	2-Basin Setting			Is the Butte Basin Groundwater Model (BBGWM) based on DWR's cross sections? Will the AEM information be used and incorporated in the BBGWM?
169	Bill Loker	Self	3-SMC			How was the Measurable Objective (MO) set? Why is it so low? Concerned about how Management objectives in different Management Areas will be reconciled since we share one aquifer?
170	Commenter 4		3-SMC			Isn't salinity considered the same as seawater under SMC? Does the plan to gain more data mean drilling more wells?
171	Commenter 1	Self	3-SMC			What is the definition of shallow wells? You say that we have no projects going on right now. Who is "we"? Isn't groundwater being pumped now, aren't they projects?
172	Commenter 2	Self	3-SMC			Aren't our groundwater levels at historical levels? 60 wells have gone dry, correct? Are we at Minimum Threshold now? How Close? What about conservation?
173	Commenter 6		3-SMC			Heard there might be moratorium on wells? How many new wells are being drilled?
174	Commenter 2	Self	3-SMC			How long will projects take to raise the groundwater levels and fix the problem? Will we not do anything for 20 years?
175	Commenter 3	Self	3-SMC			Why are there no Chico residential wells in the monitoring network? Should we drill shallower wells for monitoring?
176	Richard Harriman	Self	3-SMC			Concerned with the definition of irreversible results such as subsidence? How do you determine the probability of overshooting the operational flexibility? If allow water levels to go too low you may overshoot the "operational flexibility" based on assumptions of duration of droughts. How would you prevent overshooting to avoid irreversible results to groundwater dependent ecosystems?

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GSP Workshops October 4 and October 13, 2021 - Clarifying Questions – Responses provided during Workshops					
177	Richard Coon		5-PMAs		In regards to the Flood-Mar project, if Rock Creek Reclamation District implement recharge projects who owns the water? What percentage of the water is considered native? Does the GSA set the percentages?
178	Commenter		5-PMAs		Does residential conservation include metering domestic wells?
179	Commenter 3		6- Implementation		Ag conservation is considered voluntary, what if they don't care? Does the plan have a big stick to enforce conservation?
180	Public Comment Period (see speaker cards)				
181	Lynn Haskell	self			Why are comments regarding the formation of the Tuscan Water District not being considered by the Vina GSA, the Board of Supervisors and LAFCo?
182	Richard Coon		Butte Co Chapter 33 & water transfers under SGMA		See Comment in Q&A Session - Mr. Coon left the meeting before the public comment session.
183	Bruce Smith	SHAC/Self	3-SMC	3.8	Statement on the interconnected streams slide states that "groundwater does not appear to be connected to upland streams" is incorrect and flawed.
184	Comment Cards				
185	Jeanne Christopherson	Self			All this work assumes we have time to react and that the future will continue to reflect patterns of water supply from the past. It is apparent that this is not so-- from unprecedented momentum of global warming. We have no choice. To wait for "voluntary" conservation, to wait for more data...Are we going to wait for a water crisis as large as the fires to descend upon us? We need to look at worst cast scenarios... water retention-universal cisterns at every house, mandatory conservation...swimming pools in every backyard and gardens, credits for these measures. And social urgency. Let's mobilize and stop tiptoeing.
186	Marty Dunlap	public interest attorney			Q: How do we ensure that the Vina GSA sustainability efforts to keep our region's groundwater robust are not integrated into statewide efforts to increase supply to areas that are depleted of adequate water?
187	Marty Dunlap	public interest attorney	PMAs		Q: What are the skills that qualify the Vina GSA Board to evaluate the data that impacts the project being considered under the GSP?
188	Bill Loker	self	Administration/ Plan Area		Agricultural pumping affects City of Chico water. The citizens of Chico are not well represented in this process. City of Chico is 21,000 acres/100K people and should have

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GSP Workshops October 4 and October 13, 2021 - Clarifying Questions – Responses provided during Workshops					
					proportional say in water use decisions! How will the City and their domestic water users be represented in these discussions?
189	Debra Lucero	Self	Introduction/S GMA Overview		Will public comments go to GSA staff first and which body, according to the statute, is required to provide answers to comments?
190	Grace Marvin	Self	Introduction/S GMA Overview		Will SHAC members know what the public is asking and will there will be a summary sheet provided before the plan is adopted?
191	Richard Harriman	Self	Introduction/S GMA Overview		Is the GSA's duty to the local area or is it to implement what DWR wants?
192	Debra Lucero	Self	2-Basin Setting		The draft states that there are 16 million acre feet of storage in the aquifer and asked, 'How can we know what is currently in the aquifer?'
193	Commenter		2-Basin Setting		How many acre feet are used for a 4-person household?
194	Pam Stoesser	Self	2-Basin Setting		The presentation touched on salinity and claimed that we don't have that issue here, but we would if wells were dug deep enough. How deep would that need to be? 1500-2000 ft.? Is that what farmers are doing?
195	Todd Greene	Self	2-Basin Setting		DWR bases their estimates on gas and oil electric wells, which is a concern is when you get to the east, where the marine units get closer.
196	Pam Stoesser	Self	2-Basin Setting		If there anything in place to ensure that people aren't drilling down far enough to compromise water quality?
197	Eric Wright	Self	2-Basin Setting		If the subbasin study accounts for what watersheds are percolating and recharging the subbasin, as well as what impacts property development at upper elevation is having on the water?
198	Eric Wright	Self	2-Basin Setting		How does different vegetation and different land use affects the subbasin storage capacity and sustainability?
199	Amy Raymond	Self	2-Basin Setting		There are 16 million acre feet in the 'bathtub,' and it may have taken 10,000 years to fill the bathtub.
200	Amy Raymond	Self	2-Basin Setting		A more interesting number might be the answer to how much water comes in and out of the bathtub over a year or multi-year period? What is the volume relative to what's recharging on an annual basis against what we're using?
201	Debra Lucero	Self	3-SMC		How deep are the wells are that are being monitored for water quality? Is it known how many wells in Butte County are more than 800 feet deep?
202	Nancy	Self	PMAs		Is the concept of equity being used in water reduction targeting?
203	Commenter	Self	PMAs		Who owns our groundwater now and how might that be altered? What dangers are in store for controlling the groundwater that we have?
204	Grace Marvin	Self	PMAs		Will we no longer have the same rights to the water once somebody else owns it?

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GSP Workshops October 4 and October 13, 2021 - Clarifying Questions – Responses provided during Workshops					
205	Debra Lucero	Self	PMAs		How is this playing out elsewhere in the state with domestic well owners whose wells have gone dry, with GSA's in charge of setting MT's, are they bringing those cases into the courts?
206	Pam Stoesser	Self	PMAs		What would trigger that last resort, groundwater allotment?
207	Commenter	Self			There was an article on the front page of the (didn't get the name of the publication) talking about the exceptional drought occurring in Butte County, where fields are left fallow, vegetable yields are low, fire season is costly, food aid is needed, etc. I am not surprised that the GSP is not spreading the pain more between big agriculture and residential. The reason for this is that the people writing these plans are the same people approving these plans. It seems like a real conflict of interest. How are we supposed to have confidence in our plan?"

From: [NGO Consortium](#)
To: VinaGSA@gmail.com
Cc: [Pablo Ortiz](#); [Melissa Rohde](#); [ddolan@gc.org](#); [E. J. Remson](#); [Ngodoo Atume](#); [Arthur, Samantha](#); [amerrill@americanrivers.org](#); [kculbert@americanrivers.org](#)
Subject: Comments on Draft Groundwater Sustainability Plan for Vina Subbasin
Date: Friday, October 15, 2021 10:24:32 AM
Attachments: [Public Comment Letter_DraftGSP_Vina.pdf](#)

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

Hello,

I am writing on behalf of Audubon California, Clean Water Action, Clean Water Fund, Local Government Commission, The Nature Conservancy, American Rivers and Union of Concerned Scientists with the attached comments on the draft Groundwater Sustainability Plan for this basin.

We know that SGMA plan development and implementation is a major undertaking, and we want every basin to be successful. We would be happy to meet with you to discuss our evaluation as you finalize your Plan for submittal to DWR. Feel free to contact us at ngos.sgma@gmail.com for more information or to schedule a conversation.

Sincerely,

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



October 19, 2021

Vina GSA
308 Nelson Avenue
Oroville, CA 95965

Submitted via email: VinaGSA@gmail.com

Re: Public Comment Letter for Vina Subbasin Draft GSP

Dear Christina Buck,

On behalf of the above-listed organizations, we appreciate the opportunity to comment on the Draft Groundwater Sustainability Plan (GSP) for the Vina 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 Vina 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,

Ngodo 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

Amy Merrill, Ph.D.
Acting Director, California Program
American Rivers

Kristan Culbert
Associate Director, California Central Valley River
Conservation
American Rivers

Attachment A

Specific Comments on the Vina 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, 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 **insufficient**. The GSP provides information on DACs, including identification by name and location on a map. However, the plan fails to clearly document the population of each DAC. In addition, the GSP fails to include the population dependent on groundwater as their source of drinking water in the subbasin.

Appendix 1-D of the GSP states that the Mechoopda Indian Tribe of Chico Rancheria is located in Vina Subbasin. The location and map of tribal lands, however, is not provided.

While the plan provides a density map of domestic wells in the subbasin (Figure 1-9), the GSP fails to provide depth of these wells (such as minimum well depth, average well depth, or depth range) within the subbasin.

These missing elements are required for the GSAs 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).
- Provide a map of tribal lands and describe the tribal population within the subbasin.
- Include a map showing domestic well locations and average well depth across the subbasin.

Interconnected Surface Waters

The identification of Interconnected Surface Waters (ISWs) is **insufficient**, due to lack of supporting information provided for the ISW analysis. GSP Section 2.2.6.2 (Evaluation of Surface Water Connectivity) describes well locations, proximity to streams, and screening depths that were used to evaluate surface water connectivity. However, Section 2.2.6.3 (Estimates of Surface

Water Connection Based on BBGM [Butte Basin Groundwater Model]) does not describe the data used in the BBGM model, such as the groundwater level monitoring well data and stream gauge data that were incorporated into the model. Additionally, no description was provided of the temporal (seasonal and interannual) variability of the data used to calibrate the model. This information should be provided in the GSP to support the conclusions presented.

Figure 2-26 presents a map of stream reaches in the subbasin, showing the percentage of months of either a gaining or losing condition in the subbasin as predicted by the BBGM model. Based on the color coding it appears that all surface water is considered to be connected, but the percentage of connection for many of the upland streams and tributaries in the subbasin are labeled 0%. Therefore it is not clear what is an ISW and what is not based on this map. We recommend that these labels are clarified in the text so it is more clear which stream segments are retained as ISWs or potential ISWs in the GSP and to include a description of the logic behind determining which reaches are and are not ISWs. Note the regulations [23 CCR §351(o)] define ISW as “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”. “At any point” has both a spatial and temporal component. Even short durations of interconnections of groundwater and surface water can be crucial for surface water flow and supporting environmental users of groundwater and surface water.

RECOMMENDATIONS

- Describe the legend labels used on Figure 2-26 in the GSP text to make clear which stream segments are retained as ISWs or potential ISWs in the GSP.
- Further describe the groundwater elevation data and stream flow data used in the BBGM analysis. Ensure depth-to-groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) are used to determine the range of depth and capture the variability in environmental conditions inherent in California’s climate.
- To confirm and illustrate the results of the groundwater modeling, overlay the stream reaches shown on Figure 2-26 with depth-to-groundwater contour maps to illustrate groundwater depths and the groundwater gradient near the stream reaches. Show the location of groundwater wells used in the analysis.
- For the depth-to-groundwater contour maps, use 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. This will provide accurate contours of depth to groundwater along streams and other land surface depressions where GDEs are commonly found.
- Describe data gaps for the ISW analysis in the ISW section, in addition to the discussion in the HCM section (2.1.9.2). On Figure 2-26, include reaches with data gaps as potential ISWs.

Groundwater Dependent Ecosystems

The identification of Groundwater Dependent Ecosystems (GDEs) is **insufficient**. The GSP does not discuss how the Natural Communities Commonly Associated with Groundwater dataset (NC dataset) was verified with the use of groundwater data from the shallow aquifer. Without an analysis of groundwater data to verify the NC dataset polygons, it will be difficult or impossible to adequately monitor and manage the subbasin's GDEs throughout GSP implementation.

The GSP took initial steps to identify and map GDEs using the NC dataset and other sources. However, we found that some mapped features in the NC dataset were improperly disregarded. NC dataset polygons were incorrectly removed in areas adjacent to irrigated fields or due to the presence of surface water supplies. However, this removal criteria is flawed since GDEs, in addition to groundwater, can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields – simultaneously and at different temporal/spatial scales. NC dataset polygons adjacent to irrigated land or surface water supplies can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields or surface water.

The GSP did not discuss the flora or fauna species present in the subbasin's GDEs, except to acknowledge the presence of Valley oak (*Quercus lobata*) in the subbasin. We commend the GSAs for retaining all Valley oak polygons in the NC dataset based on the recognition that they can access groundwater at deeper depths.

RECOMMENDATIONS

- Provide a comprehensive set of maps for the subbasin's GDEs. For example, provide a map of the NC Dataset. On the map, label polygons retained, removed, or added to/from the NC dataset (include the removal reason if polygons are not considered potential GDEs, or include the data source if polygons are added). Discuss how local groundwater data was used to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. 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.
- 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 DEM to estimate depth-to-groundwater contours across the landscape.
- 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. It is not clear from the description in the GSP whether NC dataset polygons labeled as ‘Not Likely a GDE’ are retained as potential GDEs.

- Include an inventory of the fauna and flora present within the subbasin's GDEs (see Attachment C of this letter for a list of freshwater species located in the Vina Subbasin). Note any threatened or endangered species.

Native Vegetation and Managed Wetlands

Native vegetation and managed wetlands are water use sectors that are required^{1,2} to be included in the water budget. The integration of these ecosystems into the water budget is **sufficient** because the groundwater demands of native vegetation and managed wetlands are included in the historical, current, and projected water budgets. Additional clarification is needed on why the current and projected water demands for managed wetlands are approximately half the water demands represented in the historical water budget (Table 2-7). These ecosystems will have continued or higher water needs in the future to provide habitat for migratory birds.

RECOMMENDATION
<ul style="list-style-type: none"> Revisit the current and projected water demands for managed wetlands, which are represented in the GSP as approximately half the historical water demands. Provide a justification for these water budget values for managed wetlands in Table 2-7. Also, provide the water budget model documentation referenced in the GSP (BCDWRC 2021).

B. Engaging Stakeholders

Stakeholder Engagement during GSP development

Stakeholder engagement during GSP development is **insufficient**. SGMA's requirement for public notice and engagement of stakeholders³ is not fully met by the description in the Communication and Engagement Plan (Appendix 1-D).

The Communication and Engagement Plan documents representation of tribal and environmental interests during the GSP development process. A tribal staff member from the Mechoopda Indian Tribe of Chico Rancheria has represented the tribe during GSP development and participates as a member of the Vina GSA Management Committee. Additionally, there is an environmental representative on the GSA Advisory Committee.

However, we note the following deficiencies with the overall stakeholder engagement process:

- The opportunities for public involvement and engagement with DACs and drinking water users are described in very general terms. They include meetings open to the public, including GSA Board meetings, meetings in conjunction with the Reclamation District,

¹ "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)]

² "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]

³ "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)]

subbasin-wide technical meetings, Farm Bureau Water Forum meeting, City of Chico meetings, and Regional Water Management Group meetings. No specific outreach targeted to DACs is described in the GSP.

- The GSP describes an Engagement Matrix in Appendix 1-F for engaging with DACs, tribes, and environmental stakeholders through the implementation phase. However, Appendix 1-F was not included in the Draft GSP.

RECOMMENDATION
<ul style="list-style-type: none">• In the Communication and Engagement Plan, describe active and targeted outreach to engage DAC members, drinking water users, environmental stakeholders and consultation to tribes through 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.

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 results⁴ and establishing minimum thresholds.^{5,6}

Disadvantaged Communities and Drinking Water Users

For chronic lowering of groundwater levels, the GSP discusses minimum thresholds impact on domestic wells (see Section 3.3.2 Minimum Thresholds). The GSP states (p. 103): “*In recent years, Butte County has documented a number of domestic wells that have “gone dry,” meaning groundwater levels have fallen below the depth of the well installation and/or pump. This occurred during summer months of recent drought years and heightened concern among some stakeholders. As a result, domestic well reliability and protection are the focus of the Groundwater Levels MT.*” The GSP discusses the use of the DWR domestic well database and sets minimum threshold levels protective of domestic wells by establishing a representative zone for each RMS well.

The GSP does not however, sufficiently describe or analyze direct or indirect impacts on DACs or tribes when defining undesirable results, nor does it describe how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results to DACs and tribes in the subbasin.

⁴ “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)]

⁵ “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)]

⁶ “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)]

For degraded water quality, salinity is the only constituent of concern (COC) for which SMC are established in the Vina Subbasin. The minimum threshold is set to the upper limit of the Secondary Maximum Contaminant Level (SMCL) for specific conductance based on the state secondary drinking water standards. The GSP states (p. 108): “*Other constituents, as discussed in Section 2.2.4, are managed through existing management and regulatory programs within the Subbasin, such as the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) and the Irrigated Lands Regulatory Program (ILRP), which focus on improving water quality by managing septic and agricultural sources of salinity and nutrients. Additionally, point-source contaminants are managed and regulated through a variety of programs by the Regional Water Quality Control Board (RWQCB), Department of Toxic Substances Control (DTSC), and the U.S. Environmental Protection Agency (EPA).*” However, SMC should be established for all COCs including chemicals of emerging concern (CEC) in the subbasin impacted or exacerbated by groundwater use and/or management, in addition to coordinating with water quality regulatory programs.

The GSP only includes a very general discussion of impacts to drinking water users when defining undesirable results and evaluating the impacts of proposed minimum thresholds. The GSP does not, however, mention or discuss direct and indirect impacts on DACs, drinking water users or tribes when defining undesirable results for degraded water quality, nor does it evaluate the cumulative or indirect impacts of proposed minimum thresholds on beneficial users.

RECOMMENDATIONS

Chronic Lowering of Groundwater Levels

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

Degraded Water Quality

- Describe direct and indirect impacts on drinking water users, DACs, 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.”⁷
- Evaluate the cumulative or indirect impacts of proposed minimum thresholds for degraded water quality on drinking water users, DACs, and tribes.
- Set minimum thresholds and measurable objectives for all water quality constituents within the subbasin that can be impacted and/or exacerbated as a result of groundwater use or groundwater management. Ensure they align with drinking water standards⁸.

⁷ 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.

⁸ “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)]

Groundwater Dependent Ecosystems and Interconnected Surface Waters

Sustainable management criteria for chronic lowering of groundwater levels provided in the GSP do not consider potential impacts to environmental beneficial users. The GSP neither describes nor analyzes direct or indirect impacts on environmental users of groundwater when defining undesirable results. This is problematic because without identifying potential impacts to GDEs, minimum thresholds may compromise, or even destroy, these environmental beneficial users. Since GDEs are present in the subbasin, they must be considered when developing SMC for chronic lowering of groundwater levels.

The GSP recognizes a data gap with respect to the interconnected surface water SMC. The GSP states (p. 113): *"The GSAs in the Vina Subbasin intend to further evaluate this SMC to avoid undesirable results to aquatic ecosystems and GDEs. To that end, an Interconnected Surface Water SMC framework has been developed for the GSP as described below. This framework will guide future data collection efforts to fill data gaps, either as part of GSP projects and management actions or plan implementation."*

While the data gap is being filled, the SMC for depletion of interconnected surface water are established by proxy using groundwater levels. The GSP states (p. 115): *"Therefore, at this time, Groundwater Levels SMC are used by proxy and the MT for interconnected surface water is the same as for groundwater levels: Two RMS wells reach their MT for two consecutive non-dry year-types."* However, no analysis or discussion is presented to describe how the SMC will affect GDEs, or the impact of these minimum thresholds on GDEs in the subbasin. Furthermore, the GSP makes no attempt to evaluate the impacts of the proposed minimum threshold on environmental beneficial users of surface water. The GSP does not explain how the chosen minimum thresholds and measurable objectives avoid significant and unreasonable effects on surface water beneficial users in the subbasin, such as increased mortality and inability to perform key life processes (e.g., reproduction, migration).

RECOMMENDATIONS

- Define chronic lowering of groundwater SMC directly for environmental beneficial users of groundwater. 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 results⁹ in the subbasin. Defining undesirable results is the crucial first step before the minimum thresholds¹⁰ can be determined.
- When establishing SMC for the basin, consider that the SGMA statute [Water Code §10727.4(l)] specifically calls out that GSPs should include "impacts on groundwater dependent ecosystems".

⁹ "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)]

¹⁰ 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)]

- 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 reached¹¹. 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^{6,12}.

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 Regulations¹³ 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.

The integration of climate change into the projected water budget is **insufficient**. The GSP incorporates climate change into the projected water budget using DWR change factors for 2030 and 2070. However, the plan does not consider multiple climate scenarios (e.g., the 2070 extremely wet and extremely dry climate scenarios) in the projected water budget. The GSP should clearly and transparently incorporate the extremely wet and dry scenarios provided by DWR into projected water budgets or select more appropriate extreme scenarios for the subbasin. While these extreme scenarios may have a lower likelihood of occurring, their consequences could be significant, therefore they should be included in groundwater planning.

The GSP includes climate change into key inputs (e.g., precipitation, evapotranspiration, and surface water flow) of the projected water budget. However, the sustainable yield is based on historic pumping rates instead of the projected water budget with climate change incorporated. If the water budgets are incomplete, including the omission of extremely wet and dry scenarios, and sustainable yield is not calculated based on climate change projections, 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.

¹¹ “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)]

¹² 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

¹³ “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)]

RECOMMENDATIONS

- Integrate climate change, including extremely wet and dry scenarios, into all elements of the projected water budget to form the basis for development of sustainable management criteria and projects and management actions.
- Calculate sustainable yield based on the projected water budget with climate change incorporated.
- 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 Sites (RMSs) in the monitoring network that represent water quality conditions and shallow groundwater elevations around DACs, domestic wells, tribes, GDEs, and ISWs in the subbasin.

Figure 4-5 (Groundwater Level RMS Wells) and Figure 4-6 (Water Quality RMS Wells) show that no monitoring wells are located across portions of the subbasin near DACs, domestic wells, and tribes (see maps provided in Attachment E). Beneficial users of groundwater may remain unprotected by the GSP without adequate monitoring and identification of data gaps in the shallow aquifer. The Plan therefore fails to meet SGMA's requirements for the monitoring network¹⁴.

The GSP provides some discussion of data gaps for GDEs and ISWs in Sections 4.10 (Network Assessment and Improvements) and Section 6.1.3 (Data Analysis), however 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, GDEs, and ISWs to clearly identify potentially impacted areas. Increase the number of RMSs in the shallow aquifer across the subbasin as needed to adequately monitor all groundwater condition indicators. Prioritize proximity to DACs, domestic wells, tribes, and GDEs when identifying new RMSs.
- 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.

¹⁴ "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)]

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.

The GSP includes projects and management actions with explicit benefits to the environment. The plan also includes a domestic well mitigation program. However, the mitigation program is described as a potential project instead of a proposed project that will be implemented within the GSP planning horizon.

RECOMMENDATIONS

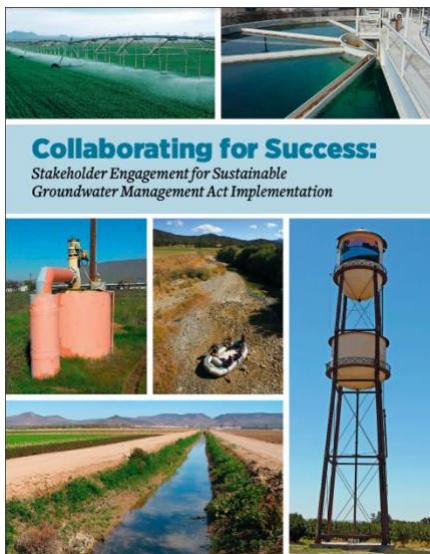
- Clarify the planning horizon of the described domestic well mitigation program to ensure that it will proactively monitor and protect drinking water wells through GSP implementation. Refer to Attachment B for specific recommendations on how to implement a drinking water well mitigation program.
- For 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 GSAs 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”¹⁵.
- Develop management actions that incorporate climate and water delivery uncertainties to address future water demand and prevent future undesirable results.

¹⁵ 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



Collaborating for Success:

*Stakeholder Engagement for Sustainable
Groundwater Management Act Implementation*

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 ²¹ ? a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems. d. Private well communities.		
2 Land use policies and practices. ²² 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? ²³		
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 PFUs/PFOAs? ²⁴		
4 Incorporating drinking water needs in the water budget. ²⁵ Does the water projected water budget specifically address 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).		

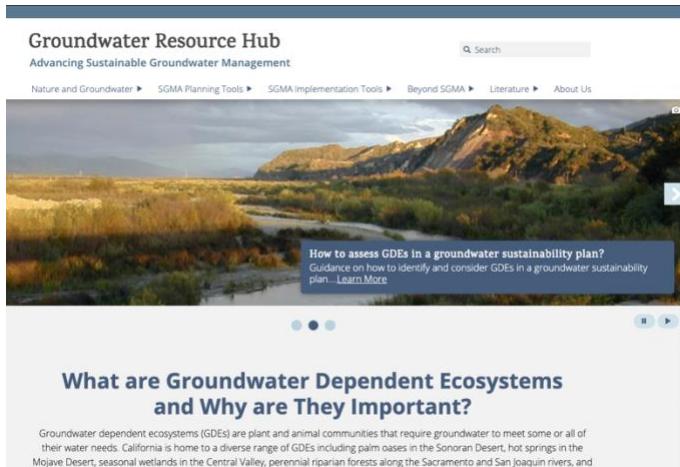
The [Human Right to Water Scorecard](#) was developed by Community Water Center, Leadership Counsel for Justice and Accountability and Self Help Enterprises to aid Groundwater Sustainability Agencies (GSAs) in prioritizing drinking water needs in SGMA. The scorecard identifies elements that must exist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

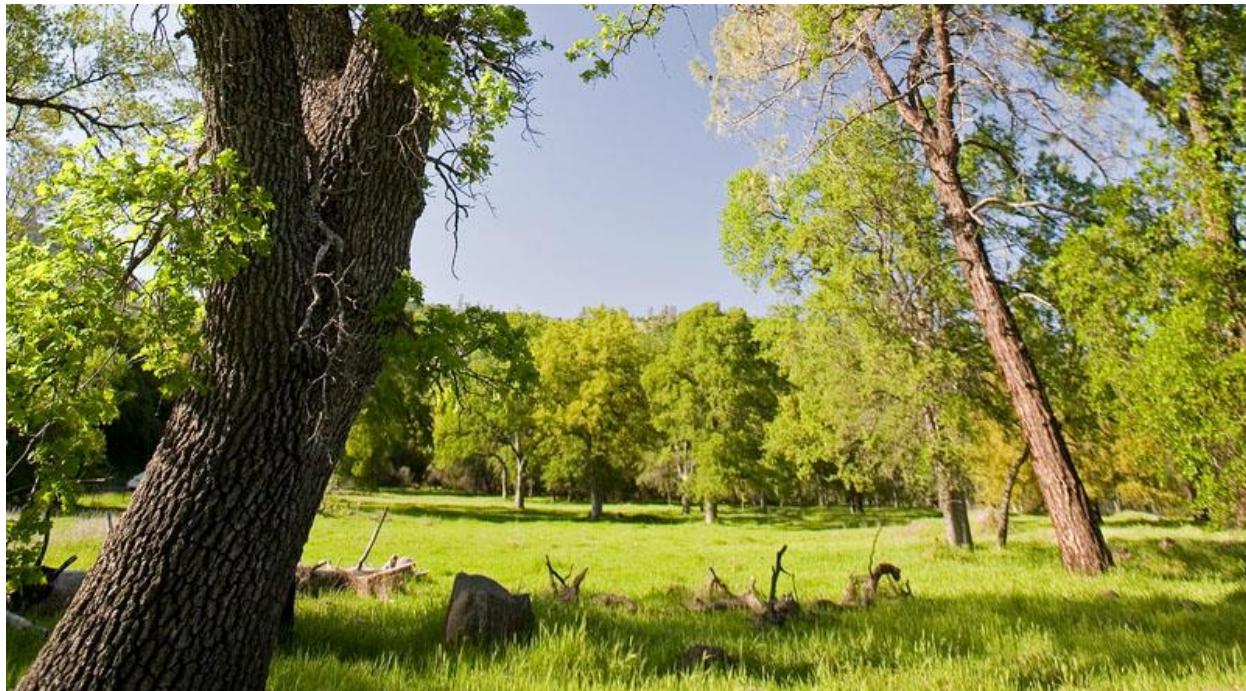
Groundwater Resource Hub



The screenshot shows the homepage of the Groundwater Resource Hub. At the top, there's a navigation bar with links like "Nature and Groundwater", "SGMA Planning Tools", "SGMA Implementation Tools", "Beyond SGMA", "Literature", and "About Us". Below the navigation is a large landscape photograph of a valley with mountains in the background. Overlaid on the image is a blue box containing the text: "How to assess GDEs in a groundwater sustainability plan? Guidance on how to identify and consider GDEs in a groundwater sustainability plan... Learn More". Below this box are three small circular navigation dots. Underneath the image, there's a section titled "What are Groundwater Dependent Ecosystems and Why are They Important?" with some descriptive text and a link to learn more.

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 phreatophytes¹, 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:

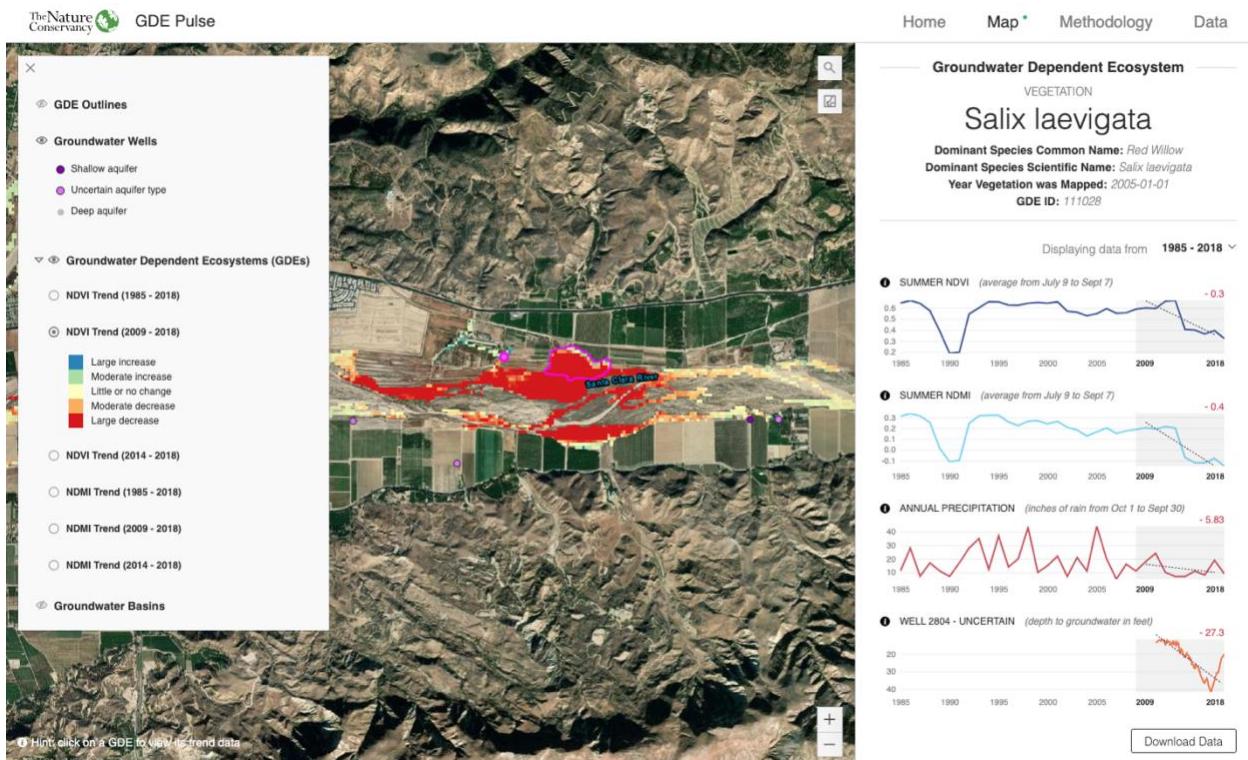
1. California phreatophyte rooting depth data (included in the NC Dataset)
2. Global phreatophyte rooting depth data
3. Metadata
4. References

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.

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:

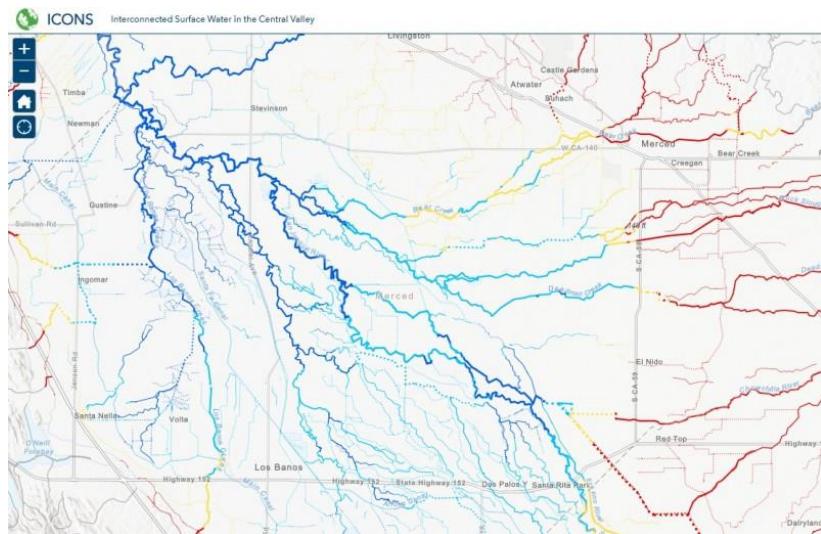
Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate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



[ICONOS](#) 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 Vina Subbasin

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 Vina Subbasin. 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. 2015¹. 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 BIOS² as well as on The Nature Conservancy’s science website³.

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
<i>Coccyzus americanus occidentalis</i>	Western Yellow-billed Cuckoo	Candidate - Threatened	Endangered	
<i>Riparia riparia</i>	Bank Swallow		Threatened	
<i>Actitis macularius</i>	Spotted Sandpiper			
<i>Aechmophorus clarkii</i>	Clark's Grebe			
<i>Agelaius tricolor</i>	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
<i>Aix sponsa</i>	Wood Duck			
<i>Anas acuta</i>	Northern Pintail			
<i>Anas americana</i>	American Wigeon			
<i>Anas clypeata</i>	Northern Shoveler			
<i>Anas crecca</i>	Green-winged Teal			
<i>Anas cyanoptera</i>	Cinnamon Teal			
<i>Anas platyrhynchos</i>	Mallard			
<i>Anas strepera</i>	Gadwall			
<i>Anser albifrons</i>	Greater White-fronted Goose			
<i>Ardea alba</i>	Great Egret			
<i>Ardea herodias</i>	Great Blue Heron			
<i>Aythya affinis</i>	Lesser Scaup			
<i>Aythya americana</i>	Redhead		Special Concern	BSSC - Third priority
<i>Aythya collaris</i>	Ring-necked Duck			
<i>Aythya valisineria</i>	Canvasback		Special	
<i>Botaurus lentiginosus</i>	American Bittern			
<i>Bucephala albeola</i>	Bufflehead			

¹ Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoS ONE, 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>

<i>Bucephala clangula</i>	Common Goldeneye			
<i>Butorides virescens</i>	Green Heron			
<i>Calidris mauri</i>	Western Sandpiper			
<i>Calidris minutilla</i>	Least Sandpiper			
<i>Chen caerulescens</i>	Snow Goose			
<i>Chen rossii</i>	Ross's Goose			
<i>Chroicocephalus philadelphia</i>	Bonaparte's Gull			
<i>Cinclus mexicanus</i>	American Dipper			
<i>Cistothorus palustris palustris</i>	Marsh Wren			
<i>Cygnus columbianus</i>	Tundra Swan			
<i>Egretta thula</i>	Snowy Egret			
<i>Empidonax traillii</i>	Willow Flycatcher	Bird of Conservation Concern	Endangered	
<i>Fulica americana</i>	American Coot			
<i>Gallinago delicata</i>	Wilson's Snipe			
<i>Gallinula chloropus</i>	Common Moorhen			
<i>Geothlypis trichas trichas</i>	Common Yellowthroat			
<i>Grus canadensis</i>	Sandhill Crane			
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Bird of Conservation Concern	Endangered	
<i>Himantopus mexicanus</i>	Black-necked Stilt			
<i>Icteria virens</i>	Yellow-breasted Chat		Special Concern	BSSC - Third priority
<i>Laterallus jamaicensis coturniculus</i>	California Black Rail	Bird of Conservation Concern	Threatened	
<i>Limnodromus scolopaceus</i>	Long-billed Dowitcher			
<i>Lophodytes cucullatus</i>	Hooded Merganser			
<i>Megacyrle alcyon</i>	Belted Kingfisher			
<i>Mergus merganser</i>	Common Merganser			
<i>Numenius americanus</i>	Long-billed Curlew			
<i>Nycticorax nycticorax</i>	Black-crowned Night-Heron			
<i>Oxyura jamaicensis</i>	Ruddy Duck			
<i>Pandion haliaetus</i>	Osprey		Watch list	
<i>Pelecanus erythrorhynchos</i>	American White Pelican		Special Concern	BSSC - First priority
<i>Phalacrocorax auritus</i>	Double-crested Cormorant			
<i>Plegadis chihi</i>	White-faced Ibis		Watch list	
<i>Pluvialis squatarola</i>	Black-bellied Plover			
<i>Podiceps nigricollis</i>	Eared Grebe			
<i>Podilymbus podiceps</i>	Pied-billed Grebe			
<i>Recurvirostra americana</i>	American Avocet			

<i>Setophaga petechia</i>	Yellow Warbler			BSSC - Second priority
<i>Tachycineta bicolor</i>	Tree Swallow			
<i>Tringa melanoleuca</i>	Greater Yellowlegs			
<i>Tringa solitaria</i>	Solitary Sandpiper			
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
<i>Branchinecta conservatio</i>	Conservancy Fairy Shrimp	Endangered	Special	IUCN - Endangered
<i>Branchinecta lynchi</i>	Vernal Pool Fairy Shrimp	Threatened	Special	IUCN - Vulnerable
<i>Lepidurus packardi</i>	Vernal Pool Tadpole Shrimp	Endangered	Special	IUCN - Endangered
<i>Linderiella occidentalis</i>	California Fairy Shrimp		Special	IUCN - Near Threatened
<i>Branchinecta mackini</i>	Alkali Fairy Shrimp			
<i>Branchinecta mesovallensis</i>	Midvalley Fairy Shrimp		Special	
Cambaridae fam.	Cambaridae fam.			
<i>Hyalella</i> spp.	<i>Hyalella</i> spp.			
FISH				
<i>Oncorhynchus mykiss irideus</i>	Coastal rainbow trout			Least Concern - Moyle 2013
<i>Acipenser medirostris</i> ssp. 1	Southern green sturgeon	Threatened	Special Concern	Endangered - Moyle 2013
<i>Oncorhynchus mykiss</i> - CV	Central Valley steelhead	Threatened	Special	Vulnerable - Moyle 2013
<i>Oncorhynchus tshawytscha</i> - CV spring	Central Valley spring Chinook salmon	Threatened	Threatened	Vulnerable - Moyle 2013
<i>Oncorhynchus tshawytscha</i> - CV winter	Central Valley winter Chinook salmon	Endangered	Endangered	Vulnerable - Moyle 2013
HERPS				
<i>Actinemys marmorata</i> marmorata	Western Pond Turtle		Special Concern	ARSSC
<i>Anaxyrus boreas</i> boreas	Boreal Toad			
<i>Rana boylii</i>	Foothill Yellow-legged Frog	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
<i>Rana draytonii</i>	California Red-legged Frog	Threatened	Special Concern	ARSSC
<i>Spea hammondii</i>	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
<i>Taricha granulosa</i>	Rough-skinned Newt			

Taricha torosa	Coast Range Newt		Special Concern	ARSSC
<i>Thamnophis couchii</i>	Sierra Gartersnake			
<i>Thamnophis gigas</i>	Giant Gartersnake	Threatened	Threatened	
<i>Thamnophis sirtalis sirtalis</i>	Common Gartersnake			
INSECTS & OTHER INVERTS				
<i>Ablabesmyia</i> spp.	<i>Ablabesmyia</i> spp.			
<i>Acentrella turbida</i>	A Mayfly			
<i>Ambrysus</i> spp.	<i>Ambrysus</i> spp.			
<i>Anax junius</i>	Common Green Darner			
<i>Antocha</i> spp.	<i>Antocha</i> spp.			
<i>Apedilum</i> spp.	<i>Apedilum</i> spp.			
<i>Argia agrioides</i>	California Dancer			
<i>Argia emma</i>	Emma's Dancer			
<i>Argia lugens</i>	Sooty Dancer			
<i>Argia nahuana</i>	Aztec Dancer			
<i>Argia</i> spp.	<i>Argia</i> spp.			
<i>Argia vivida</i>	Vivid Dancer			
<i>Asioplax</i> spp.	<i>Asioplax</i> spp.			
Baetidae fam.	Baetidae fam.			
<i>Baetis</i> spp.	<i>Baetis</i> spp.			
<i>Baetis tricaudatus</i>	A Mayfly			
<i>Berosus</i> spp.	<i>Berosus</i> spp.			
<i>Brechmorhoga mendax</i>	Pale-faced Clubskimmer			
<i>Brillia</i> spp.	<i>Brillia</i> spp.			
<i>Caenis latipennis</i>	A Mayfly			
<i>Caenis</i> spp.	<i>Caenis</i> spp.			
<i>Callibaetis</i> spp.	<i>Callibaetis</i> spp.			
<i>Camelobaetidius warreni</i>	A Mayfly			
<i>Cardiocladius</i> spp.	<i>Cardiocladius</i> spp.			
Centroptilum spp.	Centroptilum spp.			
<i>Cheumatopsyche</i> spp.	<i>Cheumatopsyche</i> spp.			
<i>Chimarra</i> spp.	<i>Chimarra</i> spp.			
Chironomidae fam.	Chironomidae fam.			
<i>Chironomus</i> spp.	<i>Chironomus</i> spp.			
<i>Cladotanytarsus</i> spp.	<i>Cladotanytarsus</i> spp.			
Coenagrionidae fam.	Coenagrionidae fam.			
Corixidae fam.	Corixidae fam.			
<i>Cricotopus nostocicola</i>				Not on any status lists
<i>Cricotopus</i> spp.	<i>Cricotopus</i> spp.			
<i>Cryptochironomus</i> spp.	<i>Cryptochironomus</i> spp.			
<i>Despaxia augusta</i>	Smooth Needlefly			
<i>Dicotendipes</i> spp.	<i>Dicotendipes</i> spp.			
<i>Diphetor hageni</i>	Hagen's Small Minnow Mayfly			
<i>Dolophilodes</i> spp.	<i>Dolophilodes</i> spp.			
Dytiscidae fam.	Dytiscidae fam.			

<i>Ecdyonurus criddlei</i>	A Mayfly			
<i>Elmidae fam.</i>	<i>Elmidae fam.</i>			
<i>Enallagma carunculatum</i>	Tule Bluet			
<i>Enallagma civile</i>	Familiar Bluet			
<i>Enallagma cyathigerum</i>				Not on any status lists
<i>Epeorus spp.</i>	<i>Epeorus spp.</i>			
<i>Ephemerellidae fam.</i>	<i>Ephemerellidae fam.</i>			
<i>Erythemis collocata</i>	Western Pondhawk			
<i>Falco quilleri</i>	A Mayfly			
<i>Falco spp.</i>	<i>Falco spp.</i>			
<i>Glossosoma spp.</i>	<i>Glossosoma spp.</i>			
<i>Gomphus kurilis</i>	Pacific Clubtail			
<i>Gumaga spp.</i>	<i>Gumaga spp.</i>			
<i>Helicopsyche spp.</i>	<i>Helicopsyche spp.</i>			
<i>Helochares normatus</i>				Not on any status lists
<i>Heptageniidae fam.</i>	<i>Heptageniidae fam.</i>			
<i>Hetaerina americana</i>	American Rubyspot			
<i>Hydrobius fuscipes</i>				Not on any status lists
<i>Hydropsyche californica</i>	A Caddisfly			
<i>Hydropsyche spp.</i>	<i>Hydropsyche spp.</i>			
<i>Hydropsychidae fam.</i>	<i>Hydropsychidae fam.</i>			
<i>Hydroptila spp.</i>	<i>Hydroptila spp.</i>			
<i>Hydroptilidae fam.</i>	<i>Hydroptilidae fam.</i>			
<i>Ischnura cervula</i>	Pacific Forktail			
<i>Ischnura denticollis</i>	Black-fronted Forktail			
<i>Ischnura perparva</i>	Western Forktail			
<i>Labrundinia spp.</i>	<i>Labrundinia spp.</i>			
<i>Laccobius spp.</i>	<i>Laccobius spp.</i>			
<i>Larsia spp.</i>	<i>Larsia spp.</i>			
<i>Lepidostoma spp.</i>	<i>Lepidostoma spp.</i>			
<i>Leptoceridae fam.</i>	<i>Leptoceridae fam.</i>			
<i>Leptohyphidae fam.</i>	<i>Leptohyphidae fam.</i>			
<i>Leucotrichia pictipes</i>	A Micro Caddisfly			
<i>Libellula forensis</i>	Eight-spotted Skimmer			
<i>Libellula luctuosa</i>	Widow Skimmer			
<i>Libellula pulchella</i>	Twelve-spotted Skimmer			
<i>Libellula saturata</i>	Flame Skimmer			
<i>Libellulidae fam.</i>	<i>Libellulidae fam.</i>			
<i>Liodessus obscurellus</i>				Not on any status lists
<i>Macromia magnifica</i>	Western River Cruiser			
<i>Microcyloepus similis</i>				Not on any status lists
<i>Microcyloepus spp.</i>	<i>Microcyloepus spp.</i>			
<i>Micropsectra spp.</i>	<i>Micropsectra spp.</i>			
<i>Microtendipes spp.</i>	<i>Microtendipes spp.</i>			

Mideopsis spp.	Mideopsis spp.			
Mystacides alafimbriatus	A Caddisfly			
Mystacides spp.	Mystacides spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Nilothauma spp.	Nilothauma spp.			
Ochrotrichia spp.	Ochrotrichia spp.			
Oecetis disjuncta	A Caddisfly			
Oecetis spp.	Oecetis spp.			
Ophiogomphus bison	Bison Snaketail			
Optioservus spp.	Optioservus spp.			
Oxyethira spp.	Oxyethira spp.			
Pachydiplax longipennis	Blue Dasher			
Paltothemis lineatipes	Red Rock Skimmer			
Pantala hymenaea	Spot-winged Glider			
Parakiefferiella spp.	Parakiefferiella spp.			
Paraleptophlebia spp.	Paraleptophlebia spp.			
Paraphaenocladius spp.	Paraphaenocladius spp.			
Paratanytarsus spp.	Paratanytarsus spp.			
Peltodytes spp.	Peltodytes spp.			
Pentaneura spp.	Pentaneura spp.			
Petrophila spp.	Petrophila spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Plathemis lydia	Common Whitetail			
Polycentropus spp.	Polycentropus spp.			
Polypedilum spp.	Polypedilum spp.			
Procloeon spp.	Procloeon spp.			
Progomphus borealis	Gray Sanddragon			
Protoptila spp.	Protoptila spp.			
Psectrocladius spp.	Psectrocladius spp.			
Psephenus falli				Not on any status lists
Pseudochironomus spp.	Pseudochironomus spp.			
Pseudosmittia spp.	Pseudosmittia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Rhyacophila spp.	Rhyacophila spp.			
Sanfilippodytes spp.	Sanfilippodytes spp.			
Serratella micheneri	A Mayfly			
Sialis spp.	Sialis spp.			
Simulium spp.	Simulium spp.			
Sperchon spp.	Sperchon spp.			
Stenochironomus spp.	Stenochironomus spp.			
Stenocolus scutellaris				Not on any status lists
Stictotarsus spp.	Stictotarsus spp.			
Sympetrum corruptum	Variegated Meadowhawk			
Tanyptus spp.	Tanyptus spp.			
Tanytarsus spp.	Tanytarsus spp.			

<i>Telebasis salva</i>	Desert Firetail			
<i>Tinodes spp.</i>	<i>Tinodes spp.</i>			
<i>Tramea lacerata</i>	Black Saddlebags			
<i>Tricorythodes spp.</i>	<i>Tricorythodes spp.</i>			
<i>Tvetenia spp.</i>	<i>Tvetenia spp.</i>			
<i>Zaitzevia spp.</i>	<i>Zaitzevia spp.</i>			
MAMMALS				
<i>Castor canadensis</i>	American Beaver			Not on any status lists
<i>Lontra canadensis canadensis</i>	North American River Otter			Not on any status lists
<i>Neovison vison</i>	American Mink			Not on any status lists
<i>Ondatra zibethicus</i>	Common Muskrat			Not on any status lists
MOLLUSKS				
<i>Anodonta californiensis</i>	California Floater		Special	
<i>Ferrissia spp.</i>	<i>Ferrissia spp.</i>			
<i>Gonidea angulata</i>	Western Ridged Mussel		Special	
<i>Gyraulus spp.</i>	<i>Gyraulus spp.</i>			
<i>Helisoma spp.</i>	<i>Helisoma spp.</i>			
<i>Lymnaea spp.</i>	<i>Lymnaea spp.</i>			
<i>Margaritifera falcata</i>	Western Pearlshell		Special	
<i>Menetus opercularis</i>	Button Sprite			CS
<i>Physa spp.</i>	<i>Physa spp.</i>			
<i>Pisidium spp.</i>	<i>Pisidium spp.</i>			
<i>Sphaeriidae fam.</i>	<i>Sphaeriidae fam.</i>			
PLANTS				
<i>Limnanthes floccosa californica</i>	Shippee Meadowfoam	Endangered	Endangered	CRPR - 1B.1
<i>Limnanthes floccosa floccosa</i>	Woolly Meadowfoam		Special	CRPR - 4.2
<i>Orcuttia pilosa</i>	Hairy Orcutt Grass	Endangered	Endangered	CRPR - 1B.1
<i>Orcuttia tenuis</i>	Slender Orcutt Grass	Threatened	Endangered	CRPR - 1B.1
<i>Rhynchospora californica</i>	California Beakrush		Special	CRPR - 1B.1
<i>Sagittaria sanfordii</i>	Sanford's Arrowhead		Special	CRPR - 1B.2
<i>Tuctoria greenei</i>	Green's Awnless Orcutt Grass	Endangered	Rare	CRPR - 1B.1
<i>Alisma triviale</i>	Northern Water-plantain			
<i>Alnus rhombifolia</i>	White Alder			
<i>Alnus rubra</i>	Red Alder			
<i>Alopecurus aequalis aequalis</i>	Short-awn Foxtail			
<i>Alopecurus carolinianus</i>	Tufted Foxtail			
<i>Alopecurus geniculatus geniculatus</i>	Meadow Foxtail			
<i>Alopecurus saccatus</i>	Pacific Foxtail			

<i>Ammannia coccinea</i>	Scarlet Ammannia			
<i>Ammannia robusta</i>	Grand Redstem			
<i>Arundo donax</i>	NA			
<i>Azolla filiculoides</i>	NA			
<i>Baccharis salicina</i>				Not on any status lists
<i>Bacopa rotundifolia</i>	NA			
<i>Bergia texana</i>	Texas Bergia			
<i>Boehmeria cylindrica</i>	NA			Not on any status lists
<i>Callitricha heterophylla bolanderi</i>	Large Water-starwort			
<i>Callitricha longipedunculata</i>	Longstock Water-starwort			
<i>Callitricha marginata</i>	Winged Water-starwort			
<i>Carex densa</i>	Dense Sedge			
<i>Carex feta</i>	Green-sheath Sedge			
<i>Carex nudata</i>	Torrent Sedge			
<i>Carex vulpinoidea</i>	NA			
<i>Cephalanthus occidentalis</i>	Common Buttonbush			
<i>Ceratophyllum demersum</i>	Common Hornwort			
<i>Chamaecyparis lawsoniana</i>				Not on any status lists
<i>Cicendia quadrangularis</i>	Oregon Microcala			
<i>Crassula aquatica</i>	Water Pygmyweed			
<i>Cryptis vaginiflora</i>	NA			
<i>Cyperus bipartitus</i>	Shining Flatsedge			
<i>Cyperus erythrorhizos</i>	Red-root Flatsedge			
<i>Cyperus flavescens</i>	NA			
<i>Cyperus fuscus</i>	NA			
<i>Cyperus squarrosus</i>	Awned Cyperus			
<i>Damasonium californicum</i>				Not on any status lists
<i>Darmera peltata</i>	Umbrella Plant			
<i>Datisca glomerata</i>	Durango Root			
<i>Downingia bella</i>	Hoover's Downingia			
<i>Downingia bicornuta</i>	NA			
<i>Downingia cuspidata</i>	Toothed Calicoflower			
<i>Downingia ornatissima</i>	NA			
<i>Downingia pusilla</i>	Dwarf Downingia		Special	CRPR - 2B.2
<i>Echinochloa oryzoides</i>	NA			
<i>Echinodorus berteroii</i>	Upright Burhead			
<i>Elatine brachysperma</i>	Shortseed Waterwort			
<i>Elatine californica</i>	California Waterwort			
<i>Elatine heterandra</i>	Mosquito Waterwort			
<i>Elatine rubella</i>	Southwestern Waterwort			

<i>Eleocharis acicularis</i> <i>acicularis</i>	Least Spikerush			
<i>Eleocharis acicularis</i> <i>graciliscesns</i>	Least Spikerush			
<i>Eleocharis acicularis</i> <i>occidentalis</i>				Not on any status lists
<i>Eleocharis atropurpurea</i>	Purple Spikerush			
<i>Eleocharis bella</i>	Delicate Spikerush			
<i>Eleocharis coloradoensis</i>				Not on any status lists
<i>Eleocharis engelmannii</i> <i>engelmannii</i>	Engelmann's Spikerush			Not on any status lists
<i>Eleocharis flavescens</i> <i>flavescens</i>	Pale Spikerush			
<i>Eleocharis macrostachya</i>	Creeping Spikerush			
<i>Eleocharis parishii</i>	Parish's Spikerush			
<i>Eleocharis quadrangulata</i>	NA			
<i>Eleocharis radicans</i>	Rooted Spikerush			
<i>Eleocharis rostellata</i>	Beaked Spikerush			
<i>Elodea canadensis</i>	Broad Waterweed			
<i>Epilobium campestre</i>	NA			Not on any status lists
<i>Epilobium cleistogamum</i>	Cleistogamous Spike-primrose			
<i>Epipactis gigantea</i>	Giant Helleborine			
<i>Eryngium aristulatum</i> <i>aristulatum</i>	California Eryngo			
<i>Eryngium articulatum</i>	Jointed Coyote-thistle			
<i>Eryngium castrense</i>	Great Valley Eryngo			
<i>Eryngium vaseyi</i> <i>vallicola</i>				Not on any status lists
<i>Eryngium vaseyi vaseyi</i>	Vasey's Coyote-thistle			Not on any status lists
<i>Euphorbia hooveri</i>	NA			Not on any status lists
<i>Euthamia occidentalis</i>	Western Fragrant Goldenrod			
<i>Fimbristylis autumnalis</i>	NA			
<i>Gratiola ebracteata</i>	Bractless Hedge-hyssop			
<i>Gratiola heterosepala</i>	Boggs Lake Hedge-hyssop		Endangered	CRPR - 1B.2
<i>Hypericum anagalloides</i>	Tinker's-penny			
<i>Isoetes howellii</i>	NA			
<i>Isoetes nuttallii</i>	NA			
<i>Isoetes orcuttii</i>	NA			
<i>Juncus acuminatus</i>	Sharp-fruit Rush			
<i>Juncus dubius</i>	Mariposa Rush			
<i>Juncus effusus pacificus</i>				
<i>Juncus uncialis</i>	Inch-high Rush			

<i>Juncus usitatus</i>	NA			Not on any status lists
<i>Lasthenia fremontii</i>	Fremont's Goldfields			
<i>Lasthenia glabrata coulteri</i>	Coulter's Goldfields		Special	CRPR - 1B.1
<i>Leersia oryzoides</i>	Rice Cutgrass			
<i>Lemna minor</i>	Lesser Duckweed			
<i>Lemna minuta</i>	Least Duckweed			
<i>Limnanthes alba alba</i>	White Meadowfoam			
<i>Limnanthes douglasii douglasii</i>	Douglas' Meadowfoam			
<i>Limnanthes douglasii rosea</i>	Douglas' Meadowfoam			
<i>Limosella acaulis</i>	Southern Mudwort			
<i>Lindernia dubia</i>	Yellowseed False Pimpernel			
<i>Lipocarpha micrantha</i>	Dwarf Bulrush			
<i>Ludwigia palustris</i>	Marsh Seedbox			
<i>Ludwigia peploides montevidensis</i>	NA			Not on any status lists
<i>Ludwigia peploides peploides</i>	NA			Not on any status lists
<i>Lycopus americanus</i>	American Bugleweed			
<i>Lythrum portula</i>	NA			
<i>Marsilea vestita vestita</i>	NA			Not on any status lists
<i>Mimulus cardinalis</i>	Scarlet Monkeyflower			
<i>Mimulus glaucescens</i>	Shield-bract Monkeyflower		Special	CRPR - 4.3
<i>Mimulus guttatus</i>	Common Large Monkeyflower			
<i>Mimulus latidens</i>	Broad-tooth Monkeyflower			
<i>Mimulus pilosus</i>				Not on any status lists
<i>Mimulus tricolor</i>	Tricolor Monkeyflower			
<i>Myosurus minimus</i>	NA			
<i>Myosurus sessilis</i>	Sessile Mousetail			
<i>Myriophyllum aquaticum</i>	NA			
<i>Najas gracillima</i>	NA			
<i>Najas guadalupensis guadalupensis</i>	Southern Naiad			
<i>Navarretia heterandra</i>	Tehama Navarretia			
<i>Navarretia intertexta</i>	Needleleaf Navarretia			
<i>Navarretia leucocephala leucocephala</i>	White-flower Navarretia			
<i>Panicum acuminatum acuminatum</i>				Not on any status lists
<i>Panicum dichotomiflorum</i>	NA			
<i>Paspalum distichum</i>	Joint Paspalum			
<i>Perideridia kelloggii</i>	Kellogg's Yampah			

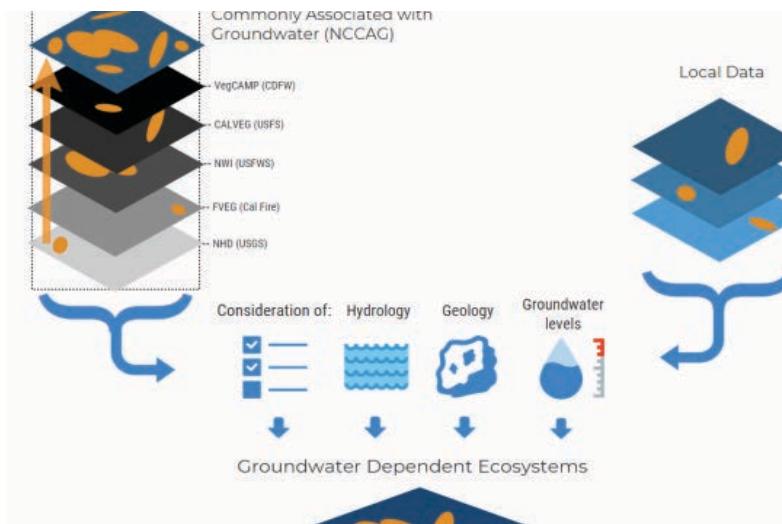
<i>Persicaria hydropiper</i>	NA			Not on any status lists
<i>Persicaria hydropiperoides</i>				Not on any status lists
<i>Persicaria lapathifolia</i>				Not on any status lists
<i>Persicaria maculosa</i>	NA			Not on any status lists
<i>Persicaria punctata</i>	NA			Not on any status lists
<i>Phyla lanceolata</i>	Fog-fruit			
<i>Phyla nodiflora</i>	Common Frog-fruit			
<i>Pilularia americana</i>	NA			
<i>Plagiobothrys austinae</i>	Austin's Popcorn-flower			
<i>Plagiobothrys greenei</i>	Greene's Popcorn-flower			
<i>Plagiobothrys humistratus</i>	Dwarf Popcorn-flower			
<i>Plagiobothrys leptocladus</i>	Alkali Popcorn-flower			
<i>Plantago elongata elongata</i>	Slender Plantain			
<i>Platanus racemosa</i>	California Sycamore			
<i>Pogogyne douglasii</i>	NA			
<i>Pogogyne zizyphoroides</i>				Not on any status lists
<i>Potamogeton diversifolius</i>	Water-thread Pondweed			
<i>Potamogeton foliosus foliosus</i>	Leafy Pondweed			
<i>Potamogeton nodosus</i>	Longleaf Pondweed			
<i>Potamogeton pusillus pusillus</i>	Slender Pondweed			
<i>Psilocarphus brevissimus brevissimus</i>	Dwarf Woolly-heads			
<i>Psilocarphus oregonus</i>	Oregon Woolly-heads			
<i>Ranunculus aquatilis aquatilis</i>	White Water Buttercup			
<i>Ranunculus aquatilis diffusus</i>				Not on any status lists
<i>Ranunculus hystericulus</i>				Not on any status lists
<i>Ranunculus pusillus pusillus</i>	Pursh's Buttercup			
<i>Ranunculus sardous</i>	NA			
<i>Ranunculus sceleratus</i>	NA			
<i>Rorippa palustris palustris</i>	Bog Yellowcress			
<i>Rotala ramosior</i>	Toothcup			
<i>Rumex conglomeratus</i>	NA			
<i>Sagittaria latifolia latifolia</i>	Broadleaf Arrowhead			
<i>Sagittaria longiloba</i>	Longbarb Arrowhead			

<i>Sagittaria montevidensis</i>				Not on any status lists
<i>calycina</i>				
<i>Salix babylonica</i>	NA			
<i>Salix exigua exigua</i>	Narrowleaf Willow			
<i>Salix gooddingii</i>	Goodding's Willow			
<i>Salix laevigata</i>	Polished Willow			
<i>Salix lasiandra lasiandra</i>				Not on any status lists
<i>Salix lasiolepis lasiolepis</i>	Arroyo Willow			
<i>Salix melanopsis</i>	Dusky Willow			
<i>Schoenoplectus acutus occidentalis</i>	Hardstem Bulrush			
<i>Schoenoplectus mucronatus</i>	NA			
<i>Schoenoplectus tabernaemontani</i>	Softstem Bulrush			
<i>Sequoia sempervirens</i>				
<i>Sidalcea calycosa calycosa</i>	Annual Checker-mallow			
<i>Sidalcea hirsuta</i>	Hairy Checker-mallow			
<i>Spirodela polyrhiza</i>	NA			
<i>Stachys stricta</i>	Sonoma Hedge-nettle			
<i>Stuckenia pectinata</i>				Not on any status lists
<i>Symphytum bracteolatum</i>				Not on any status lists
<i>Typha domingensis</i>	Southern Cattail			
<i>Typha latifolia</i>	Broadleaf Cattail			
<i>Utricularia macrorhiza</i>	Greater Bladderwort			
<i>Utricularia minor</i>	Lesser Bladderwort		Special	CRPR - 4.2
<i>Veronica anagallis-aquatica</i>	NA			
<i>Wolffia brasiliensis</i>	Pointed Watermeal		Special	CRPR - 2B.3
<i>Zannichellia palustris</i>	Horned Pondweed			



I DENTIFYING 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) online¹ 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.



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 California³. 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 dataset⁴ on the Groundwater Resource Hub⁵, 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/GDE_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

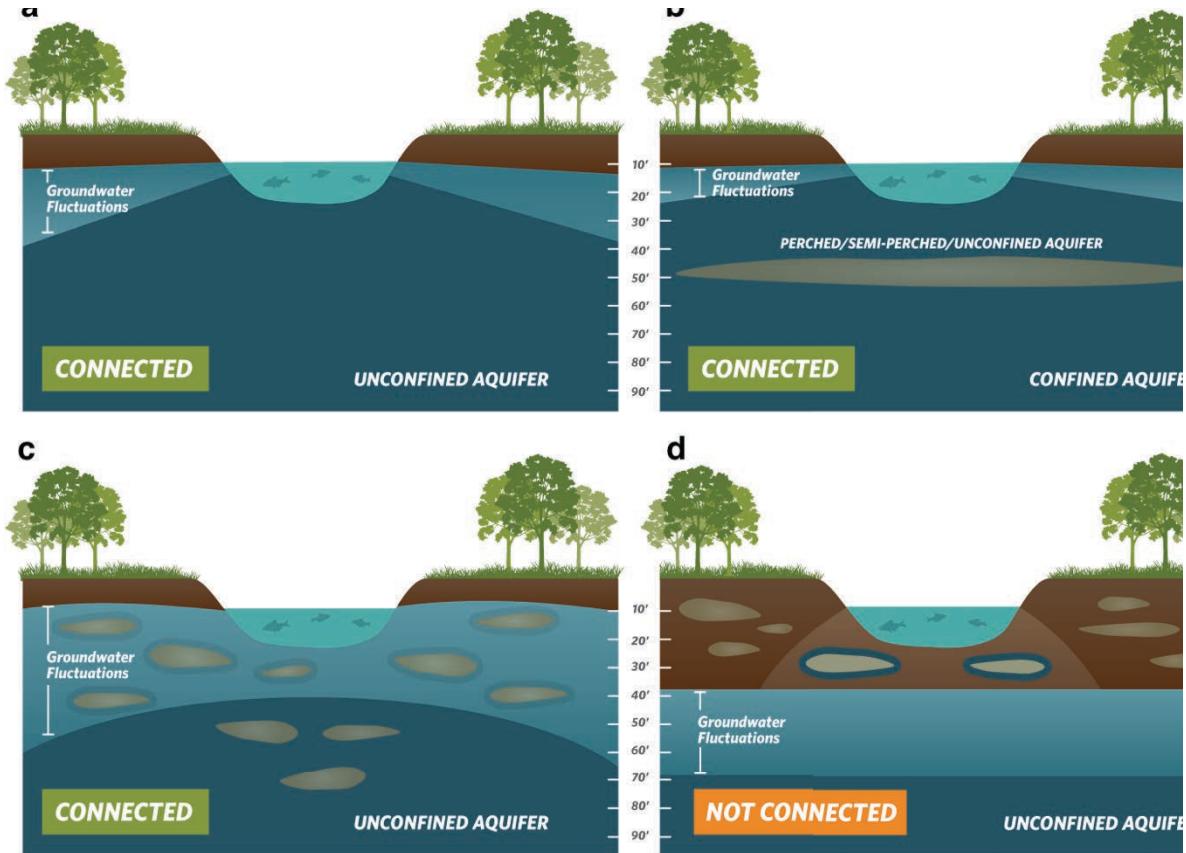


Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. (b) Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. 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 budgets⁶ 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 baseline⁷ 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 approach⁸ 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 document⁴, 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 feet⁴ 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 Viewer⁹. 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.

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⁶ DWR. 2016. Water Budget Best Management Practice. Available at:

https://water.ca.gov/LegacyFiles/groundwater/sqm/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 GSPs⁴).

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 animals¹⁰, which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSA 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).

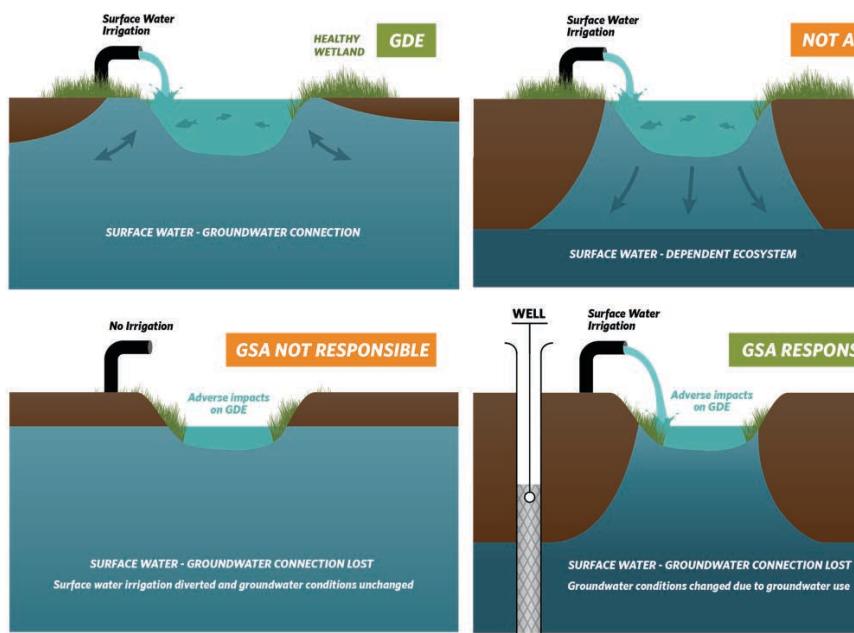


Figure 4. Ecosystems often rely on both groundwater and surface water and are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (Left) An ecosystem that was once dependent on an interconnected surface water system, 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.

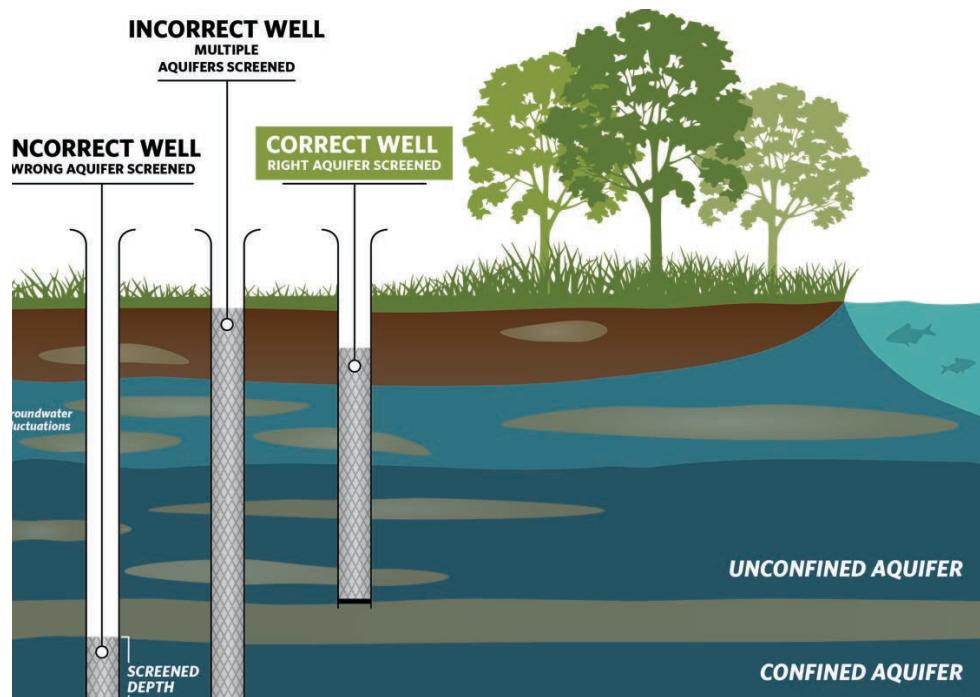


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

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

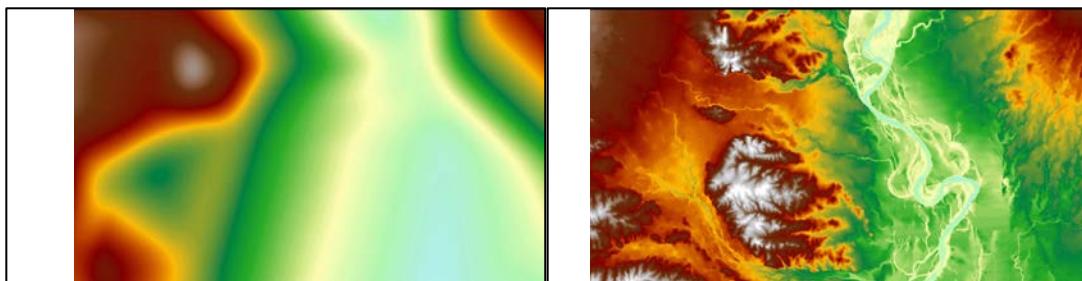
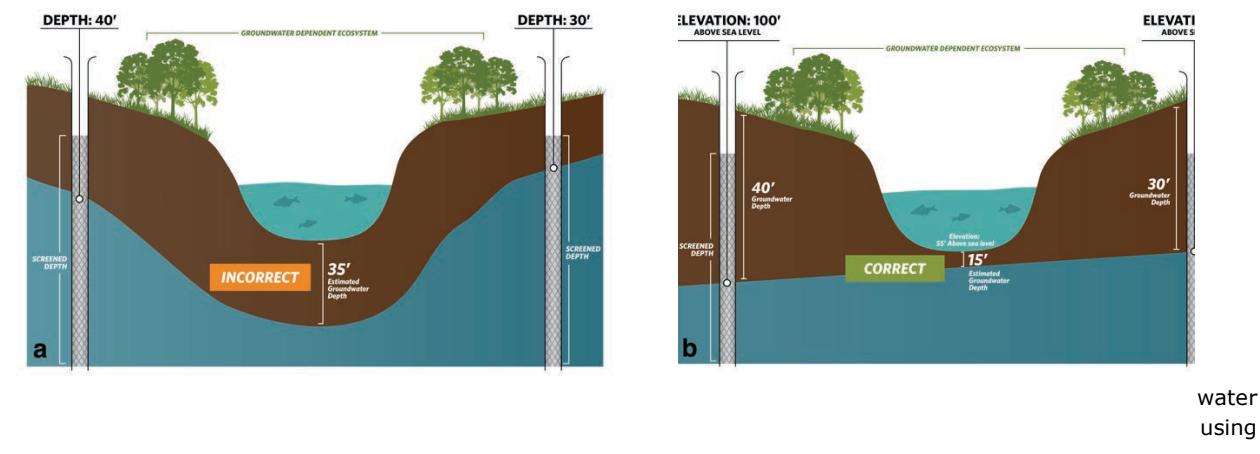


Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation 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://viewer.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 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

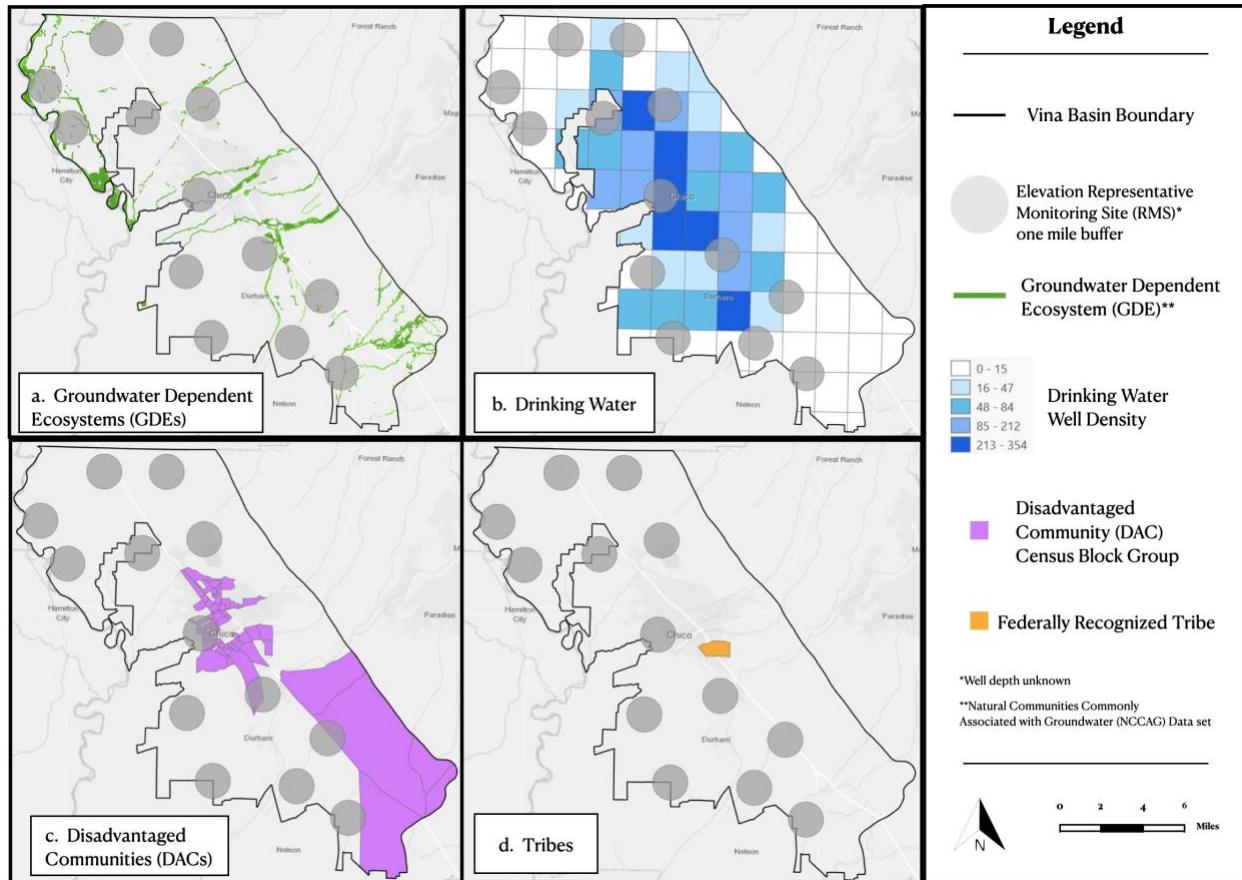


Figure 1. Groundwater elevation representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

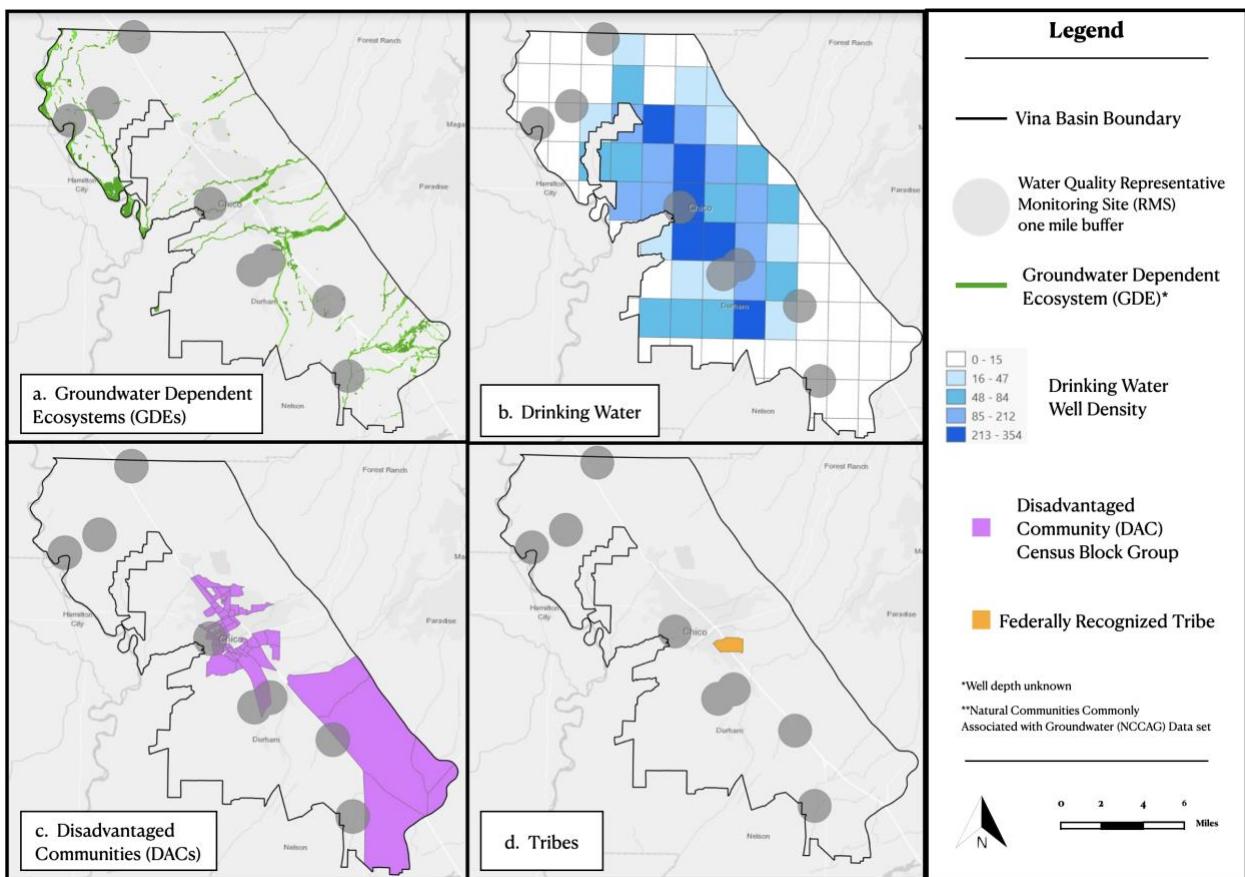


Figure 2. Groundwater quality representative monitoring sites in relation to key beneficial users: a) Groundwater Dependent Ecosystems (GDEs), b) Drinking Water users, c) Disadvantaged Communities (DACs), and d) Tribes.

From: Dorman_April@Wildlife
To: VinaGSA@gmail.com
Cc: Grover_Joshua@Wildlife; Holmes_Robert@Wildlife; Mrvine_Angela@Wildlife; [Garcia_Jennifer@Wildlife](mailto>Garcia_Jennifer@Wildlife); Seapy_Briana@Wildlife; Gibbons_Bridget@Wildlife; Altare_Craig@DWR; Spangler_Debbie@DWR; Durham_Winley_Stork_Natalie@Waterboards; Rick.Rogers@noaa.gov
Subject: Vina Subbasin Draft Groundwater Sustainability Plan
Date: Thursday, October 7, 2021 2:47:19 PM
Attachments: [image001.png](#)
[Vina_DraftGSP_CDFW_10-4-21.pdf](#)

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

Hello,

Please see the attached document regarding CDFW comments on the Vina Subbasin Draft Groundwater Sustainability Plan.

Sincerely,

April Dorman - Office Technician
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State of California – Natural Resources Agency
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



October 7, 2021

Butte County Department of Water & Resource Conservation
Vina Subbasin
308 Nelson Avenue
Oroville, CA 95965
Email: VinaGSA@gmail.com

Subject: COMMENTS ON THE VINA SUBBASIN DRAFT GROUNDWATER SUSTAINABILITY PLAN

The California Department of Fish and Wildlife's (Department) North Central Region is providing comments on the Vina Subbasin Draft Groundwater Sustainability Plan (GSP) prepared by the Vina Groundwater Sustainability Agency (GSA) and Rock Creek Reclamation District GSA pursuant to the Sustainable Groundwater Management Act (SGMA).

As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species (Fish & Game Code §§ 711.7 and 1802).

Development and implementation of GSPs under SGMA represents a new era of California groundwater management. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters, including ecosystems on Department-owned and -managed lands within SGMA-regulated basins.

SGMA and its implementing regulations afford ecosystems and species specific statutory and regulatory consideration, including the following as pertinent to Groundwater Sustainability Plans:

- GSPs must **consider impacts to groundwater dependent ecosystems (GDEs)** (Water Code § 10727.4(l); see also 23 CCR § 354.16(g));
- GSPs must consider the interests of all beneficial uses and users of groundwater, including environmental users of groundwater (Water Code § 10723.2) and GSPs must **identify and consider potential effects on all beneficial uses and users of groundwater** (23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3));
- GSPs must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water** (23 CCR § 354.22 *et seq.* and Water Code §§ 10721(x)(6) and 10727.2(b)) and describe monitoring networks that can identify adverse

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- impacts to beneficial uses of interconnected surface waters (23 CCR § 354.34(c)(6)(D)); and
- GSPs must account for groundwater extraction for all water use sectors, including managed wetlands, managed recharge, and native vegetation (23 CCR §§ 351(al) and 354.18(b)(3)).

Furthermore, the Public Trust Doctrine imposes a related but distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to navigable surface waters and surface waters tributary to navigable surface waters are also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses (Environmental Law Foundation v. State Water Resources Control Board (2018), 26 Cal. App. 5th 844). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for navigable interconnected surface waters and their tributaries, and interconnected surface waters that support fisheries, including the level of groundwater contribution to those waters.

In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, the Department values SGMA groundwater planning that carefully considers and protects groundwater dependent ecosystems (GDEs) and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

COMMENT OVERVIEW

The Department is writing to support ecosystem preservation in compliance with SGMA and its implementing regulations based on Department expertise and best available information and science.

The Department recognizes and appreciates the effort of the GSAs to characterize subbasin groundwater conditions based on the data available. However, the Department believes the GSP could improve its consideration of environmental users of groundwater and establish more protective management criteria. Accordingly, the Department recommends that Vina Subbasin GSAs address the following comments before submitting the GSP to the Department of Water Resources (DWR).

COMMENTS AND RECOMMENDATIONS

The Department comments are as follows:

1. **Comment #1 Groundwater Dependent Ecosystems (Groundwater Conditions, 2.2 Groundwater Dependent Ecosystems, starting page 67):** GDE identification, required by 23 CCR § 354.16(g), is based on methods that risk exclusion of ecosystems that may depend on groundwater.

a. *Issues:*

- i. **“Not Likely a GDE” Area Identification:** The methodology used to classify potential GDE areas within the Natural Communities Commonly Associated with Groundwater (NCCAG) dataset primarily involved desktop review of aerial imagery from four drought years: 2007, 2009, 2013, and 2015 (line 2515). Potential GDE areas were classified as “Not Likely a GDE” if the areas were located within 150 feet of perennial surface water supplies, 150 feet of rice fields, 50 feet of other irrigated agriculture, or 150 feet of agricultural-dependent surface waters. This GDE-elimination method may disregard a GDE’s adaptability and opportunistic approach to accessing water in which the vegetation may rely on *both* surface water and groundwater between seasons and years. Without additional analysis that compares the potential rooting depths of groundwater dependent vegetation with the depth to groundwater below the ground surface, there is insufficient information to categorize these potential GDE areas as “Not Likely a GDE.” The GDE analysis also classifies potential GDEs from the NCCAG dataset as “Not Likely a GDE” if the vegetation “did not indicate surviving conditions” over the four drought years reviewed for the analysis. During drought years, it is likely that GDEs were experiencing adverse impacts due to combined groundwater depletion and reduced surface water availability. For instance, in 2015, groundwater extraction increased to replace more than 70% of lost agricultural water supplies (Lund 2018); additional groundwater pumping during drought years may have lowered the groundwater table below the rooting zone of GDEs that had previously been able to access groundwater, leading to significant impacts or mortality. The GSP states that impacts or minimum threshold exceedances that occur during dry water year types would not constitute an undesirable result (See Comment #2(iv)). It is inappropriate to simultaneously abdicate management responsibility for impacts to groundwater users during dry water year types (see Comment #2(iv)) while at the same time relying on impacts that occurred during drought years to categorize potential GDE areas as “Not Likely a GDE.”
- ii. **Special Status Species:** SGMA defines GDEs as ecological communities *or species* that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface [23 CCR § 351 (m)]. The GSP does not identify or discuss species that may be present within the

subbasin that rely on groundwater, groundwater dependent ecosystems, or interconnected surface waters.

- iii. Tree Species: In discussing potential impacts of groundwater depletions on GDEs or interconnected surface waters, the GSP refers to “deep-rooted tree species” (lines 189, 3406, 3698). This phrasing is narrow and excludes consideration of all vegetation types that may be groundwater dependent or supported by interconnected surface waters apart from tree species.

b. *Recommendations:*

- i. “Not Likely a GDE” Area Identification: To assess potential GDE areas located near surface waters or irrigated areas, the GSP should incorporate a comparison of potential rooting depths with the groundwater surface elevation. Analysis of groundwater surface elevations should include multiple years that are representative of multiple water year types. The GDE analysis as it relates to survivability during drought years should consider the impacts of drought and increased pumping on groundwater elevation and compare those levels to GDE rooting depths. A more robust analysis would also incorporate other metrics of GDE health, including Normalized Difference Vegetation Index (NDVI) to compare between potential GDE areas and known non-groundwater dependent vegetation, rather than simply reviewing aerial imagery for indications of survival. Until sufficient information is presented to support the classification of these areas as “Not Likely a GDE,” the areas should be conservatively classified as “Uncertain.” The Department appreciates the GSP’s acknowledgement that Valley Oak (*Q. lobata*) can access groundwater at a variety of depths and inclusion of areas containing Valley Oak communities as “Likely GDE.”
- ii. Special Status Species: The Department recommends the GSP include a list of special status species that may be present within the Vina Subbasin and an assessment of each species’ likely groundwater dependence. The GSP should also include a spatial assessment of special status species within the subbasin to characterize which surface waters or GDE areas provide these species habitat or forage; this level of GDE-species-relationship assessment enables GSAs to prioritize GDE monitoring and management decisions.
- iii. Tree Species: The Department recommends the GSP language referring to “deep-rooted tree species” be updated to be inclusive of groundwater dependent vegetation more broadly.

2. Comment #2 Sustainable Management Criteria (Sustainable Management Criteria; 3.3

Groundwater Levels Sustainable Management Criteria, 3.8 Interconnected Surface Water Sustainable Management Criteria): Interconnected surface water (ISW) sustainable management criteria (SMC) is unlikely to protect against undesirable results for groundwater dependent ecosystems and fish and wildlife beneficial uses and users of groundwater and interconnected surface waters.

a. *Issues:*

- i. Groundwater Level Proxy Metric: The GSP identifies a data gap related to interconnected surface waters within the subbasin and therefore defaults to using groundwater levels as a proxy metric. However, the GSP does not provide evidence that “significant correlation exists between groundwater level elevations” and depletions of interconnected surface waters [23 CCR § 354.36(b)(1)]. In its discussion of available monitoring data from nested or multi-completion wells within the subbasin, the GSP identifies well 23N01W31M, located adjacent to the Sacramento River (page 47, line 1947). The GSP indicates that the shallowest of the 4 nested wells, screened from 65 to 75 feet below ground surface (bgs), is likely in direct continuity with river levels, while the deeper three wells display greater fluctuation and generally track one another, indicating less direct continuity with the river. While the Department recognizes the lack of available data and uncertainty surrounding aquifer heterogeneity as it relates to vertical conductivity between aquifer zones, if a significant correlation is lacking between the shallower aquifer zones that are likely interconnected with surface waters and deeper zones where pumping occurs and that are monitored for the groundwater level sustainable management criteria (SMCs), use of groundwater levels as a proxy metric for ISW depletions may misinform groundwater management activities and poorly predict instream habitat conditions for fish and wildlife species.
- ii. ISW Framework: The Department acknowledges the GSP’s identification of the data gap related to interconnected surface water and appreciates the development of a framework to guide data collection efforts. However, while the ISW Framework identifies the types of measurements and data necessary to better characterize groundwater-surface water interactions within the subbasin, it does not discuss the methods that will be used to identify the number or locations of groundwater monitoring wells or stream gages.

- iii. Minimum Thresholds and Measurable Objectives: Minimum thresholds (MTs) and measurable objectives (MOs) for groundwater levels, and by proxy for depletions of interconnected surface water, are not likely to prevent undesirable results for environmental beneficial uses and users of groundwater and interconnected surface water, including groundwater dependent ecosystems. For representative monitoring sites, measurable objectives are set to the groundwater level projected to occur in 2030 based on the trendline of historical data; management to this level would result in groundwater levels falling below historic lows for many of the monitoring wells. The GSP states that the year 2030 was chosen due to the assumption that it would take until this date to implement projects and management actions (line 3490). While the Department acknowledges that some planned PMAs involving supply augmentation may require this length of time to implement, other projects or management actions related to conservation could be implemented in a shorter timeframe, allowing the GSAs to establish more protective MOs rather than defaulting to the trend of long-term groundwater decline, which SGMA was designed to combat. MTs for groundwater levels, which the GSP asserts are designed to be protective of domestic wells, are set far below MOs, and would allow groundwater levels to fall significantly before experiencing what the GSP considers an undesirable result. For instance, within the Vina North Management Area, the MT for representative monitoring site 25C001M is set 80 feet below the MO (Table 3-1, page 107). In setting groundwater level SMCs as proxy metrics for the depletion of interconnected surface waters, the GSP fails to analyze or discuss potential impacts of the established criteria on the rate or volume of surface water depletions or on groundwater dependent ecosystems in areas that have historically demonstrated shallow groundwater levels accessible to environmental users. Under the established SMCs that allow for continued groundwater decline from current conditions, the Department expects that fish and wildlife beneficial uses and users of groundwater and interconnected surface waters could lose access to shallow groundwater water supplies and experience significant and unreasonable impacts prior to the minimum thresholds being reached, including decline of GDEs and ISW habitat suitable for cold water fisheries. The established SMCs would allow groundwater levels to drop well below levels that occurred in 2015, which was the second of back-to-back critically dry water years in the

Sacramento Valley during which time vegetated and aquatic GDEs experienced adverse impacts including stressed or dying riparian vegetation, poor instream habitat availability, and increased water temperatures (DFW 2019). The Department does not believe groundwater levels above the proposed minimum thresholds and below the proposed measurable objectives (in the margin of operational flexibility) will allow the basin to achieve sustainability, particularly with respect to avoiding undesirable results for fish and wildlife beneficial uses and users of groundwater and interconnected surface water.

- iv. Undesirable Results: The GSP defines an undesirable result for depletions of interconnected surface waters as “avoiding significant and unreasonable depletion of surface water flows caused by groundwater pumping that significantly impacts beneficial uses.” Though the GSP includes a list of potential impacts to environmental uses and users as identified by stakeholders (page 113, line 3692), the GSP does not include any discussion or analysis of whether the established SMCs sufficiently avoid these identified potential impacts to GDEs or environmental users of interconnected surface waters. Additionally, the GSP notes that groundwater levels that fall below the minimum threshold during hydrologically dry or critically dry years are not considered to be an indicator of undesirable results (page 104, line 3424). This means proposed indicators of undesirable results (i.e., SMC) for groundwater levels and depletions of interconnected surface water effectively do not exist for dry water years. This absence of undesirable results indicators for certain water years means beneficial users of groundwater and interconnected surface water may experience significant and unreasonable effects throughout the duration of dry or critical water years before the undesirable results are ‘identified’ and managed. Accordingly, there is no groundwater management accountability during the most challenging of years for water resource managers and fish and wildlife beneficial users alike. Moreover, the frequency and intensity of dry water year types is expected to increase in California (Mann & Gleick, 2015), meaning if accepted as is, this GSP would have no groundwater management accountability during increasingly prevalent and challenging periods of dryness without the certainty of subsequent wet periods.
- v. SMC Triggers: The GSP states that for the established SMCs, if observed data “trend toward the locally defined MT, this will trigger action on part of the GSAs.” It is unclear over what time period data will need to be

collected in order to establish a ‘trend’ toward the SMCs, and what action will be triggered.

b. *Recommendations:*

- i. **Groundwater Level Proxy Metric:** To justify use of groundwater elevations as a proxy metric for depletions of interconnected surface water until additional data can be collected, the GSP should specify how groundwater elevations are significantly correlated to surface water depletions. Alternatively, if groundwater elevation is not a defensible proxy, the GSP should: 1) specify their plans for better approximating the volume and timing of ISW depletions attributable to groundwater extraction [23 CCR § 354.28(c)(1)] using the anticipated data collection that will fill the ISW data gap (See Comment #5); and 2) select more conservative interim SMC to protect ISW until such time as more information is available.
- ii. **ISW Framework:** The Department recommends that the GSP identify discrete timing and locations for planned groundwater and streamflow monitoring sites as needed to address the identified ISW data gap. Installation of wells and gages and data collection should be completed prior to the first 5-year plan update (See Comment #5).
- iii. **Minimum Thresholds and Measurable Objectives:** The Department recommends the GSP identify representative monitoring sites located near interconnected surface waters and/or groundwater dependent ecosystems and reselect minimum thresholds that would better protect environmental uses and users of groundwater, rather than enabling immense declines in groundwater over the implementation horizon.
- iv. **Undesirable Results:** The Department recommends that the GSP include additional information related to how environmental beneficial users of groundwater may experience the effects of undesirable results. For instance, the GSP should explicitly discuss the relationship between the proxy groundwater level SMCs, modeled monthly depletions of interconnected surface waters, water temperatures, and the impacts of lowering groundwater levels below historic lows on groundwater dependent ecosystems. The GSP should also identify undesirable results indicators for dry and critically dry water years for all sustainability indicators.
- v. **SMC Triggers:** While the Department appreciates that the GSP includes discussion of triggers that will initiate GSA action to avoid reaching minimum thresholds, the Department recommends establishing specific

trigger metrics for each sustainability indicator that when reached, would initiate GSA action, and defining the actions to be taken. For environmental users of groundwater, including groundwater dependent ecosystems, triggers should include not only groundwater levels but also physical indicators such as NDVI.

3. Comment #3 Monitoring Network (Monitoring Networks, 4.9.1 Groundwater Levels, 4.10 Network Assessments and Improvements): The groundwater level monitoring network may not sufficiently monitor impacts to groundwater dependent ecosystems.

- a. *Issue:* The GSP uses both the groundwater level SMCs and representative monitoring network as a proxy for evaluating impacts to interconnected surface waters and GDEs until additional information can be collected. The GSP primarily considered domestic well protection when establishing SMCs for groundwater levels and selecting representative monitoring sites. It is unclear whether any of the selected groundwater level monitoring wells are located near areas with likely groundwater dependent ecosystems and if plan implementation will involve comparing water depths in representative monitoring sites to the rooting depths of nearby GDE communities.
- b. *Recommendation:* The Department recommends that the GSP assess the groundwater level monitoring network, and by proxy, the monitoring network for interconnected surface waters, for its ability to characterize potential impacts and undesirable results for groundwater dependent ecosystems (See Comment 2(iv)). If wells within the representative monitoring network are not located near identified groundwater dependent ecosystems, a discrete number of groundwater monitoring wells should be installed to capture groundwater trends that would affect priority GDEs. Additional analysis related to the locations of special status species within the subbasin and the groundwater dependent ecosystems that support them can be used to prioritize areas for increased monitoring (See Comment 1(ii)).

4. Comment #4 Project and Management Actions (Project and Management Actions; 5.2.2 Project Implementation; starting page 138): Project and management actions (PMAs) may not be sufficient to achieve sustainability, and timelines for pursuing additional PMAs are needed.

- a. *Issue:* The Department recognizes that the GSP identifies Potential Projects that are in the planning phase and may be implemented in addition to the four Planned Projects if necessary to achieve sustainability in the subbasin. However, the GSP fails to identify specific metrics or timelines that would trigger the

- implementation of additional PMAs. The Streamflow Augmentation project (5.2.3.3, page 144) relies on excess surface water being made available from the Upper Watershed and would involve potentially lengthy permitting and regulatory review to change water rights as necessary. The GSP states that this project is expected to reduce groundwater demand by 1,000 to 5,000 acre-feet per year, or up to half of the projected 10,000 acre-foot per year overdraft within the subbasin. Should unexpected delays occur, or if sufficient surface water is unavailable in the Upper Watershed, additional PMAs will be necessary.
- b. *Recommendation:* The GSP should include details on specific metrics, targets, and timelines that if not reached with implementation of the planned PMAs will trigger the implementation of additional PMAs. The Department recommends identifying the projects, including those aimed at reducing demand through conservation, that could be implemented on shorter timescales if needed for the subbasin to achieve sustainability.

5. Comment # 5 Interconnected Surface Water Data Gap (Plan Implementation; 6.3 Schedule for Implementation; starting page 167): A more detailed time schedule for collecting additional data and revising the sustainable management criteria for depletion of interconnected surface water is needed.

- a. *Issue:* The GSP identifies information related to the depletion of interconnected surface water as a data gap, and the plan proposes a framework to collect additional information needed to revise the ISW SMCs. The GSP states that “an aggressive schedule” has been provided to fill the data gap in Section 6. However, the only time schedule related to filling identified data gaps identified during Department review is in Figure 6-1, which displays an “Interconnected Stream Monitoring” Data Gap filling effort start date of February 1, 2022, and an end date of April 1, 2042. No discrete time schedule is provided for installation of necessary groundwater wells and stream gages, refinement of the characterization of interconnected surface waters within the subbasin, and updates to the SMCs.
- b. *Recommendation:* The GSP should include a detailed time schedule for completing each action as outlined in the ISW SMC Framework to characterize interconnected surface waters in the subbasin and establish appropriate SMCs. The ISW SMC Framework should be completed prior to the first 5-year plan update so that management criteria can be effectively established to protect environmental users of groundwater and interconnected surface waters throughout the implementation period.

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CONCLUSION

In conclusion, though the draft GSP accurately identifies the need to improve monitoring of shallow groundwater and interconnected surface water systems, the GSP lacks a robust analysis of potential impacts to environmental beneficial users and should establish more protective management criteria. The Department recommends that the Vina Subbasin GSAs address the above comments before GSP submission to DWR to best prepare for the following regulatory criteria for plan evaluation:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [23 CCR § 355.4(b)(1)] (See Comments #1, 2, 3)
2. The GSP does not identify reasonable measures and schedules to eliminate data gaps. [23 CCR § 355.4(b)(2)] (See Comments #3, 5)
3. The interests of the beneficial uses and users of groundwater in the basin, and the land uses and property interests potentially affected by the use of groundwater in the basin, have not been considered. [23 CCR § 355.4(b)(4)] (See Comments #1, 2, 3)
4. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. [23 CCR § 355.4(b)(5)] (See Comment #4)

The Department appreciates the opportunity to provide comments on the Vina Subbasin Draft GSP. Please contact Bridget Gibbons, Environmental Scientist, by email at Bridget.Gibbons@wildlife.ca.gov with any questions.

Sincerely,

DocuSigned by:

Jennifer Garcia

B35A7660DD7848B...

Kevin Thomas
Regional Manager, North Central Region

Enclosures (Literature Cited)

ec:

California Department of Fish and Wildlife

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Vina Subbasin
October 7, 2021
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Vina Subbasin
October 7, 2021
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Literature Cited

Department of Fish and Wildlife. 2019. Statewide Drought Response: Stressor Monitoring.

Lund, Jay, et al. Lessons from California's 2012-2016 Drought. 2018. *Journal of Water Resources Planning and Management*. 144(10). [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0000984](https://doi.org/10.1061/(ASCE)WR.1943-5452.0000984)

Mann, Michael E. & Gleick, Peter H. 2015. Climate change and California drought in the 21st century. *Proceedings of the National Academy of Sciences of the United States of America*. 112(13): 3858-3859.



October 19, 2021

VIA E-MAIL AND U.S. MAIL

Board of Directors
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Oroville, CA 95965
VinaGSA@gmail.com

Board of Directors
Rock Creek Reclamation District GSA
5130 Anita Road
Chico, CA 95973
rockcreekreclamation@gmail.com

Re: Comments to Draft Groundwater Sustainability Plan

Dear Board Members:

The purpose of this letter is to provide Vina Groundwater Sustainability Agency (Vina GSA) and Rock Creek Reclamation District Groundwater Sustainability Agency (Rock Creek GSA), collectively the “GSAs,” with the comments of the Agricultural Groundwater Users of Butte County (AGUBC) to the GSAs’ draft groundwater sustainability plan (GSP). In addition, this letter reiterates some of the past comments AGUBC submitted to the GSAs that remain unresolved.

First and foremost, we appreciate the dedication and hard work by the GSAs’ management staff and Ad Hoc Committees, as well as their consultants, in putting together this draft GSP. Further, we appreciate the previous opportunities to comment on individual draft chapters of the GSP as they were developed, as well as this opportunity to comment on the comprehensive draft GSP. It is clear that the GSAs have taken past comments into consideration. We hope the following comments are constructive and will likewise be considered in finalizing the draft GSP for submission to the Department of Water Resources (DWR). In considering the following comments, we recognize that this draft GSP is a “living” document and will undergo updates and modifications as more information is gathered to help the Vina Subbasin reach sustainability by 2042 and beyond.

Provided are our specific comments:

1. We support the overall approach for Minimum Thresholds (MT) and Measurable Objectives (MO) for the Chronic Lowering of Groundwater Levels.

The polygon approach to define areas related to the selected representative monitoring sites (RMS) helps to avoid overlap of information and tie in land and aquifer characteristics with the RMS. We anticipate that this polygon approach may be further refined with more information. Further, the MTs and MOs that have been established for the Vina North and Vina South management areas provide sufficient operating flexibility to help the landowners realistically achieve the goal of the MOs and protect sustainably constructed domestic wells, while allowing for flexibility to weather the next 20 years as we endeavor together to reach sustainability. Consequently, we concur with the approach taken in establishing the Sustainable Management Criteria (SMC) for chronic lowering of groundwater levels and encourage continued application of the methodologies expressed in the draft GSP for all management areas.

2. The draft GSP contains numerous data gaps affecting future GSP implementation.

While we appreciate the time and effort the GSAs have committed to preparing this draft GSP, there are still numerous data gaps that must be addressed, which is acknowledged in several places in the draft GSP. Moreover, some of these data gaps exist in crucial areas of the draft GSP. For example, Section 3.8 of the SMC chapter regarding the Interconnected Surface Water SMC lacks: (1) the “definition of stream reaches and associated priority habitat;” (2) “streamflow measurements to develop profiles at multiple time periods;” and (3) “measurements of groundwater levels directly adjacent to stream channels, first water bearing aquifer zone, and deeper aquifer zones.” (Pg. 113; Lines 3707 – 3711.) This one section alone is missing three crucial points of information that will likely dramatically change this SMC once developed. Furthermore, the draft GSP acknowledges in the SMC chapter that additional data regarding domestic well information will be needed to refine the data set in monitoring the chronic lowering of groundwater levels criteria. (Pg. 104; Lines 3445 – 3454.) These are just two examples of the data gaps contained (and acknowledged) throughout the draft GSP.

We look forward to the GSAs addressing and filling in the data gaps throughout the draft GSP and request that the GSAs provide ample opportunity for stakeholders to engage with the GSAs as they address these data gaps and revise the GSP in the coming years. Such engagement should not be limited to discussions with the Vina Stakeholder Advisory Committee (Vina SHAC) but should involve workshops and targeted discussions with stakeholder groups, where

applicable (such as the Butte County Farm Bureau and the AGUBC), to get important feedback. To that end, the draft GSP should be revised to reflect that commitment.

3. The draft GSP should provide additional clarity regarding how groundwater allocations will be imposed, if at all.

We thank the GSAs for including a public review component as part of the groundwater allocation implementation process. While we understand that implementation of groundwater allocations is a “last resort” (Pg. 160, Line 4992), we believe that public participation will be a crucial component of this management action, should it ever be explored.

Currently, Section 5.3.7 of the Projects and Management Actions chapter regarding Groundwater Allocations provides, in relevant part, that “[t]he implementation of [groundwater allocations] would be based on an evaluation by the Joint Management Committee (see Appendix X).” (Pg. 160, Lines 4995 – 4996.) This section then goes on to provide that “the GSAs will consider [groundwater allocations] through a public process ultimately decided by the GSA Boards.” (Pg. 160, Lines 5002 – 5004.)

While we are supportive of this process, we note that the draft GSP does not include an “Appendix X.” We assume that “Appendix X” was meant as a placeholder until the GSAs knew exactly which appendix number would be used for the coordination agreement between the two GSAs. We request that the GSAs confirm whether this assumption is correct, and, if so, that the GSAs revise the draft GSP to reflect the correct appendix number. If, however, this assumption is not correct, then we are left unsure as to the contents of this document. And to the extent that “Appendix X” describes the factors the Joint Management Committee will evaluate in making its determination regarding this management action and how the Joint Management Committee will weigh those evaluations, we request that the GSAs include that information in the draft GSP.

4. The draft GSP should remove its use of the phrase “suitable habitat.”

In our August 23, 2021 letter, we brought to the GSAs’ attention its use of the undefined phrase “suitable habitat.” In that letter, we requested that the GSAs remove this phrase and instead reflect the language used in other GSPs that DWR has already approved. In response to that letter, the GSAs removed this phrase from Section 3.4 of the SMC chapter regarding the Groundwater Storage SMC. While we appreciate that revision, we believe additional language is necessary to provide clarity regarding the scope of the term “environmental uses.” To alleviate this concern, we recommend that the GSAs revise Section 3.4 to provide as follows:

Revised Section 3.4

“Sustained groundwater storage volumes are insufficient to support rural areas and communities, the agricultural economic base of the region, and environmental uses *of groundwater*.”

Further, the phrase “suitable habitat” is still used in two other sections of the draft GSP. In describing the emphasis of management objectives for SMCs, Section 3.1 provides that:

“Sustainable management criteria within the Vina Subbasin emphasize management objectives related to domestic, municipal, and agricultural wells as well as *suitable habitat*.”

(Pg. 101; Lines 3333 – 3335; emphasis added.)

Additionally, Section 3.5 of the SMC chapter regarding the Water Quality SMC still relies on this phrase in describing undesirable results. Specifically, Section 3.5.1 provides, in relevant part, that an undesirable result coming from degraded water quality is experienced if:

“Groundwater pumping compromises the long-term viability of rural areas and small communities, the agricultural economic base of the region, and environmental uses for *suitable habitat*. . .”

(Pg. 108, Lines 3556 – 3558; emphasis added.)

We again request that the GSAs remove the phrase “suitable habitat” from both Sections 3.1 and 3.5.1. As an alternative, we recommend that the GSAs revise these two sections to reflect the recommended revision to Section 3.4:

Revised Section 3.1

“Sustainable management criteria within the Vina Subbasin emphasize management objectives related to domestic, municipal, and agricultural wells as well as *environmental uses of groundwater*.”

Revised Section 3.5.1

“Groundwater pumping compromises the long-term viability of rural areas and small communities, the agricultural economic base of the region, and *environmental uses of groundwater*.”

Vina GSA
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While not a perfect resolution, we believe these recommended revisions would help focus the issue and allow for further discussion as data gaps are filled and monitoring conducted as described in the draft GSP.

5. There are some portions of the draft GSP that require further clarification and/or modification to avoid confusion.

Finally, there are several additional areas of the draft GSP that require further clarification and/or modification. Attached is a “comment tracking sheet,” as provided by the GSAs, detailing these requests for clarification and/or modification. Of these comments, we believe the two following comments deserve highlight:

- (i) Comment Regarding Chapter 2, Lines 3212 – 3225; and
- (ii) Comment Regarding Chapter 5, Lines 4477 0 4506.

Thank you for the opportunity to provide these comments. We appreciate the significance of the considerations and decisions the GSAs must undertake, and we look forward to working with you further regarding these matters.

Very truly yours,



Richard McGowan,
On behalf of the AGUBC Board of
Directors



Audubon | CALIFORNIA

October 19, 2021

Butte County Department of Water & Resource Conservation
RE: Vina Subbasin GSP
308 Nelson Avenue
Oroville, CA 95965

Sent via email to: VinaGSA@gmail.com

Re: Comments on the Draft Groundwater Sustainability Plan for the Vina Groundwater Sustainability Agency

To Vina Subbasin Groundwater Sustainability Agencies,

Audubon California appreciates the opportunity to provide public comment on the draft Groundwater Sustainability Plan (GSP) for the Vina Subbasin. Audubon California is a statewide nonprofit organization with a mission to protect birds and the places they need. Our organization has a long history of solutions-focused work in the Central Valley in collaboration with state and federal agencies, water districts, non-profits, and landowners. Audubon is reviewing draft GSPs as a stakeholder for the environment with a particular focus on managed wetlands. We are commenting on draft GSPs to provide technical assistance to Groundwater Sustainability Agencies (GSAs) to improve their GSPs prior to their final submission to the Department of Water Resources in January 2022. Audubon would also like to identify areas of opportunity to partner with landowners and GSAs to provide groundwater and wildlife habitat benefits in the implementation of the Sustainable Groundwater Management Act (SGMA).

Over 90 percent of historic wetlands in the Central Valley have been replaced with agriculture or urban development. Disconnected from natural water sources as a consequence of surface water diversions and groundwater over-pumping, wetland landowners must utilize surface water deliveries or pump groundwater to provide flooded habitat. But managed wetlands provide outsized public trust benefits for their minor water use.

The remaining wetlands in the Central Valley are a critical component of the Pacific Flyway, supporting millions of migratory waterfowl, hundreds of thousands of shorebirds, and state listed species like the Tricolored Blackbird. Central Valley managed wetlands are part of California's commitment to national and international Pacific Flyway agreements and provide significant public trust benefits, including habitat for migratory birds, recharge of overdrafted aquifers, carbon sequestration, and recreation opportunities for birders, hunters, and disadvantaged communities.

Managed wetlands require specific consideration in GSPs under SGMA statute and regulations, as detailed below. GSAs are required to identify managed wetlands as beneficial users of groundwater and as land uses and property interests and should recognize this land use consistent with other active users of surface and groundwater. The overall basin water budget must include managed wetlands as a specific water use sector and the GSP is required to consider the effects of the GSP on managed wetlands as a beneficial user or land use.

When GSPs fail to adequately consider the water needs and recharge contributions of managed wetlands, projects and management actions may ignore managed wetlands, their need for protection as public trust resources, and their potential to be part of sustainability solutions. If future actions include groundwater allocations, managed wetlands face the potential of being excluded if not recognized in the GSP, risking further loss in critical wetland acreage.

SGMA Requirements Related to Managed Wetlands

A primary requirement for GSAs during GSP development is the consideration of the interests of “all beneficial uses and users of groundwater” [Water Code Section 10723.2], which includes “[e]nvironmental users of groundwater” [Water Code Section 10723.2(e)].

Articulated into the SGMA regulations, the concept of beneficial uses and users of groundwater is first represented in CCR, Title 23, Section 354.10. Notice and Communication, which directs the GSP to “...include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following: (a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.” [emphasis added].

Furthermore, the SGMA regulations provide a definition that explicitly includes managed wetlands as a beneficial user where:

“‘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.” CCR, Title 23, Section 351(al) [emphasis added].

GSA are then directed to include all water user sectors in the description of the GSP area and to quantify groundwater use by these sectors in the historic, current and projected budgets [emphasis added]:

CCR §354.8. Description of Plan Area: Each Plan shall include a description of the geographic areas covered, including the following information:

- (a) One or more maps of the basin that depict the following, as applicable:
 - (4) Existing land use designations and the identification of water use sector and water source type.

and,

CCR §354.18. Water Budget:

- (b) 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.

Given these explicit requirements, GSAs are required to identify and map managed wetlands and include their water needs in water budgets in the GSP.

Furthermore, each GSP is also required to describe “undesirable results” where such included:

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“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.”
CCR, Title 23, Section 354.26(b)(3) [emphasis added]

Comment Overview

GSAAs are required to consider public trust resources in their GSPs, including managed wetlands. In reviewing the Vina Subbasin draft GSP, we see VGSA is working hard to minimize the impacts to it growers in the subbasin. It is essential these efforts also include the managed wetlands. As beneficial users of water these habitats provide essential waterbird food and critical habitat, often requiring the application of surface or groundwater similar to cropped lands.

While the Butte Basin Groundwater Model (BBGM) used to prepare historic, current and future water budgets includes reference to managed wetlands acreage and demand (a draft version of the BBGM model documentation, as provided in October 2021, was reviewed), the resulting representation in the GSP is limited and leads to confusion regarding the future of managed wetlands in the Vina Subbasin. This is most prominently represented in *Table 2-7: Water Budget Summary: Land and Surface Water System*, on page 80, but further described for the historic and current conditions in Table 2A-1, on page A-3.¹ As represented in both the inflow and outflow portions of the table, quantities listed for managed wetlands under the “historical” heading are significantly greater than quantities listed under the “current” and various future conditions. We are unable to find any basis for this reduction beyond anecdotal references in the BBGM about a recent model update affecting hydraulic conductivity.²

Absent additional explanation as to why these quantities are significantly lower, the GSP appears to anticipate a reduction in managed habitat acres and function. Clarification regarding total assumed acres and expected applied water requirements would address this concern.

Our comments are summarized as follows:

1. Identification of managed wetlands: Audubon appreciates that VGSA has identified and specifically included managed wetlands in maps and water budgets. However, details regarding managed wetland acres and assumed evapotranspiration (ET) rates are lacking.
2. Water budget: Inclusion of managed wetlands as a specific component of the water budgets (e.g. Table 2-7) is appreciated. While reference is made to the BBGM regarding assumptions, review of the BBGM model documentation did not reveal details regarding the assumed managed wetland acres within the Vina subbasin under historic, current, or future water budgets nor the assumed ET and related details that would drive the calculation. As such, Audubon is concerned that the future conditions inadequately account for the water needs of managed wetlands, which are likely increasing under climate change.
3. Identification of data gaps: The lack of information regarding the water needs for managed wetlands should be identified as a data gap in the GSP. Specifically, on page 74, the GSP notes that agricultural demands (including managed wetlands) and groundwater pumping were estimated using the BBGM. The BBGM indicates ET was determined using remote sensing data

¹ Table 2A-1 provides annual values for the water budget for 2000 through 2018. Inflow and outflow quantities for managed wetlands are consistent across this period until 2015 through 2018 when values are significantly reduced with no explanation.

² “...a reduced hydraulic conductivity value was assigned to each element for ponded land uses (rice and wetlands) to avoid unreasonably high applied water estimates due to high deep percolation rates.” Butte Basin Groundwater Model: Model Documentation v1.0, August 2021, page 18.

and corresponding crop coefficients, but does not list a crop coefficient for managed wetlands. The appropriate water needs of managed wetlands do not appear to have been adequately represented in the water budgets, particularly given the unexplained reduction in water demands for managed wetlands in current and future water budgets.

4. Consideration of managed wetlands: While managed wetlands are appropriately included in the GSP separate from groundwater dependent ecosystems, there is no discussion of the impacts of the GSP on managed wetlands. Again, the reduction in water from the historic to current and future water budgets points to a serious reduction in habitat acreage or function, but there is no discussion of wetland impacts. The GSP would also be strengthened by including information on the role managed wetlands can have as part of projects and management action solutions. Managed wetlands provide opportunities for multi-benefit recharge and need to be part of any investigations into groundwater allocations and resulting policies.

Draft Groundwater Sustainability Plan Page-by-Page Comments

Additional page-by-page comments on VGSA's draft GSP are detailed below. We welcome any follow up questions and look forward to seeing the issues raised below addressed in the final GSP submission in January 2022.

Figure 1-6: Land use map should also show the location of managed wetlands.

P. 22: Does the category “surface water users” include any managed wetlands that apply surface water to meet the managed wetland water needs or are managed wetlands only included in the category “environmental users of groundwater”?

P. 68: The category “Not Likely a GDE Due to Supplemental Water Supplies” indicates a determination was made for managed wetlands that rely on supplemental water to meet applied water needs. Elsewhere in the GSP, information regarding whether this supplemental water is pumped groundwater or applied surface water is lacking (see related comment for page 22). Additional details regarding the managed wetland acres, applied water needs, and water sources should be referenced. As noted previously in this comment letter, review of the BBGM indicates the information is not clearly documented in this referenced document either.

P. 73, Table 2-6: Why were surface water diversions for the current condition baseline water budget limited to 2015 and 2016? These years reflect low surface water availability due to drought constraints and State Water Resources Control Board imposed water right curtailments. For managed wetlands that may rely on surface water, this would be a misrepresentation of current and long-term needs. Combined with information in Table 2-7 and Table 2A-1 where the water budgets for these two years show significantly lower inflow and outflow quantities for managed wetlands than for prior years, there is concern that the current budget underestimates managed wetland water needs. Since the current condition assumptions regarding water supplies are carried forward to the future conditions, the misrepresentation of managed wetland water supplies due to limiting to 2015 and 2016 may incorrectly affect future water budgets and results.

P. 74: The bullets explaining the water budget procedures do not provide the necessary details regarding assumptions specifically made for managed wetlands. For instance, groundwater pumping is estimated by estimating total demand then subtracting applied surface water quantities – referencing the BBGM as the source document for the assumptions. Upon reviewing the BBGM draft documentation, the details regarding these assumptions are also not provided so it is

Audubon California – Comments on Draft GSP for Vina Subbasin

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unclear what assumptions were made to calculate managed wetland demands and what surface water quantities were available. There needs to be improved documentation in the BBGM if it is a primary source for the water budgets presented in the GSP.

P. 80, Table 2-7: Inflow and outflow components for the row labeled “managed wetlands” shows a significant decrease in quantities between the historic water budget and the current and future water budgets. As noted in prior comments, the basis for this significant reduction in unclear and raises concerns that the total acres or the total water needs are misrepresented or otherwise artificially decreased.

P. 82, Table 2-8: The same concern as expressed for Table 2-7 is presented in this table.

P. 83: The GSP notes that evapotranspiration (ET) is from several beneficial uses, including managed wetlands. However, details regarding the ET assumptions for managed wetlands are lacking. These special habitats can have several different water needs depending on how they are managed and the target species they are intended to benefit (e.g. fall flood up for habitat versus spring irrigation for waterbird feed). This same statement is repeated for each water budget condition on subsequent pages in the GSP (e.g. future conditions). This comment applies to each.

P. 145, Flood MAR/Surface Water Supply and Recharge Scoping: Please include Audubon as a participant in scoping for recharge opportunities. Managed wetlands can provide unique opportunities to create recharge and habitat benefits.

P. 160, Groundwater Allocation: This potential action should indicate that considerations of public benefit needs, such as managed wetlands, will be included when evaluating any groundwater extraction limits.

Thank you for your consideration of Audubon California’s comments. If you would like to discuss these comments as you update your GSP, please do not hesitate to contact me at (916) 737-5707 or via email at samantha.arthur@audubon.org.

Sincerely,



Samantha Arthur
Working Lands Program Director
Audubon California

Butte County Department of Water & Resource Conservation
RE: Vina Subbasin GSP
308 Nelson Avenue
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VinaGSA@gmail.com

October 19, 2021
Vina DRAFT GSP
Comment A5

Thank you for the opportunity to comment on the Vina GSA GSP.

The Butte Environmental Council (BEC) represents hundreds of members, most of whom are Butte County voters, and thousands of followers on digital media. BEC's stance on the issue is outlined below, and also speaks for the thousands of local voters and stakeholders that will be affected by this issue should it come to pass.

Below please find the details addressing the **matters of concern** of the Vina GSA GSP submitted on behalf of the Butte Environmental Council:

1. Overestimating Water Supply

The Butte Environmental Council is concerned that the basin settings does not take into account climate change and the changing water supply. With warmer weather, we will have reduced water supply from the Sierra Snowpack, with up to 48-65% by the end of the century¹. Droughts will likely become more frequent and persistent in the 21st century. With precipitation changes, and extreme events, there are projected to be more intense rainfall, and more intense flooding that will change how much water percolates down into our aquifers. With these changes, the Vina GSA needs to be conservative with the estimates of water that the subbasin will recharge annually. With the potential overestimation of the water supply, undesirable results will occur.

2. Groundwater Dependent Ecosystem & the City of Chico Urban Forest

The Butte Environmental Council is concerned that the City of Chico Urban Forest is not included as a potential Groundwater Dependent Ecosystem, to be protected and ensure healthy groundwater levels. The Urban Forest, which is a climate change adaptation and mitigation strategy, used to draw down carbon, shield residents from the scorching heat on sidewalks, and reduce residents energy bills, utilizes the shallow portion of the Tuscan Aquifer after establishment. This critical green infrastructure needs to be protected and the groundwater levels need to reach the roots of the Urban Forest.

3. Prioritization of Demand Management

Demand management and reuse of water need to be prioritized and a central part of our groundwater management toolkit, not just supply expansion. The Butte Environmental Council does not support taking surface water to use instead of groundwater, especially from PID. There could be complications once the Town of Paradise has rebuilt, and has the increased water demand. With the fact that the subbasin is only in 10,000 acre feet of overdraft, and that the Chico residents

¹ <https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Change-and-Water>

were able to conserve 32% during the last drought, demand management projects need to be implemented before any water supply expansion projects are implemented.

Below please find the details addressing the **matters of support** of the Vina GSA GSP submitted on behalf of the Butte Environmental Council:

1. Wastewater Recycling Project

Wastewater recycling is a great project that reduces the demand and stress on the groundwater supply, and needs less treatment than water used for potable use.

2. Residential Conservation Project

Demand management through residential conservation is an excellent strategy to stay within the groundwater supply boundaries of the basin. The City of Chico/CalWater was able to reduce their water consumption by 32%² by way of residential conservation.

3. Agricultural Irrigation Efficiency Project

Agricultural irrigation efficiencies can also protect water quality, and reduce demand on the aquifer. Water conservation and efficiencies within agriculture in the subbasin needs to be a key component of reaching groundwater sustainability. With adoption of efficient irrigation practices that could reduce groundwater demand up to 4,000 acre feet annually, and that the Vina subbasin is in overdraft of 10,000 acre feet, this project alone could be a major element of getting the basin to sustainable groundwater levels.

4. Community Monitoring Program and Community Water Education Initiative

Educating the community on what is happening with water and bringing awareness to the importance of water in Butte County is critical to creating buy-in on water conservation practices, and ensuring groundwater sustainability.

5. Rangeland Management and Fuel Management for Watershed Health Projects

Regenerative grazing practices improve water holding capacity and can improve recharge ability within the basin by increasing organic matter in the soil. Regenerative farming practices, such as cover cropping, no-till, and compost application can further improve water utilization on farmland. The Butte Environmental Council supports the rangeland management, but encourages the Vina GSA to include regenerative farming practices in the menu of projects to get to sustainable groundwater levels. Each 1% increase in soil organic matter would increase water holding capacity by 27,000 gallons of water per acre, thereby improving water utilization and reducing water demand on both rangeland and farmland³.

Fuel reduction and management can improve groundwater recharge and water quality.

6. Removal of Invasive Species Project

This is an excellent project. Removal of high water consuming invasive species like arundo can reduce water demand, increasing the amount of water available for groundwater recharge.

² <http://projects.scp.org/applications/monthly-water-use/california-water-service-company-chico-district/>

³ https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1082147.pdf

7. Inclusion of Valley Oaks in the Sustainability Indicators

Groundwater-dependent ecosystems are an important consideration under SGMA, and it is important to protect the shallowest positions of the aquifer upon which critical groundwater dependent ecosystems rely. The valley oaks are a keystone species in the area, and the canopy of the urban forest is vital for climate adaptation and mitigation. We seek to ensure that groundwater dependent ecosystems are protected in the region, and support the inclusion of Valley Oaks in the minimum thresholds for declining groundwater levels in the Vina GSA GSP.

Butte Environmental Council (BEC) has been a leading 501(c)(3) environmental non-profit in Butte County since 1975, dedicated to environmental issues that threaten the land, air, and water of our communities. BEC is a grassroots organization supported by over 200 paying members, hundreds of volunteers and donors, dozens of local business sponsors, over 3,500 followers on social media, and over 4,000 subscribers to our monthly electronic newsletter. Throughout each year, BEC offers citizens many chances to engage in environmental education, advocacy and stewardship. BEC provides position statements when the organization's leaders recognize a regional environmental threat to citizens.

Thank you for the opportunity to provide comments on this important project. Please contact our Executive Director, Caitlin Dalby, at caitlin.dalby@becnet.org with any questions.

Board of Directors

Butte Environmental Council

(530) 891-6424

www.becnet.org



AQUALLIANCE

DEFENDING NORTHERN CALIFORNIA WATERS

October 17, 2021

Vina GSA
Vinagsa.org

RE: Comments on the draft *Vina Groundwater Sustainability Plan*

Executive Summary

The summary states:

"The interests and vulnerability of stakeholders and groundwater uses in these Management Areas vary based on the nature of the water demand (agricultural, domestic, municipal)" Water demand for the environment must be included. GDEs include upland and riparian valley oak groves, small stream flow, GD urban forests.

"groundwater use has increased and as forces ranging from population growth to climate change play out," This sentence ignores the fact that increased cross-boundary flows that may result from expanded demand west of the river (primarily agriculture and water-market-driven aquifer exercise) is at play. This threat to meeting our management goals must be acknowledged and addressed in interbasin coordination/communication process yet to be developed.

"Groundwater storage in Subbasin is relatively stable except in the areas noted above with depressions." The identification of localized cones of depression is valid but it is important to recognize long-term basin declines that occur due to cross-boundary flows influence the baseline water levels. In general (depending on soil conditions and strata) the greater the distance or depth of groundwater pumping and water levels in the VGSA, the lower the magnitude but the longer the timescale of depletions.

Consequently, the ultimate effects in the Vina of pumping west of the river can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist.

"If the water table beneath the stream lowers as a result of groundwater pumping, the stream may disconnect entirely from the underlying aquifer." A stream that ceases to flow once it enters the alluvial basin is entering the aquifer at that point. The deeper the aquifer level the more of the streambed is dewatered and the earlier. So while a stretch of the creek may be "disconnected" the creek itself is still connected. Mr. Toccoy Dudley, a Department hydrogeologist with the Northern District in Red Bluff, wrote in 2000:At any location in the basin, the gradient between the surface water and groundwater system is directly proportional to the head differences (water surface elevation difference) between the two hydrologic systems. The larger the head differences the higher the gradient and the higher the recharge rate....The shorter the horizontal distance over which the head change occurs increases the recharge rate dramatically. An example of this would be pumping next to a river would induce a much higher recharge rate from the surface water system than the same pumping many miles away.....increased extraction causes the groundwater levels to decline, which increases the head

difference between the groundwater and surface water systems, and consequently increases the gradient and recharge rate. In short, the more you pump, the more you can pump, to a point. Anecdotal and archeological evidence indicates the small streams of the Vina SB were perennial during pre-pumping eras.

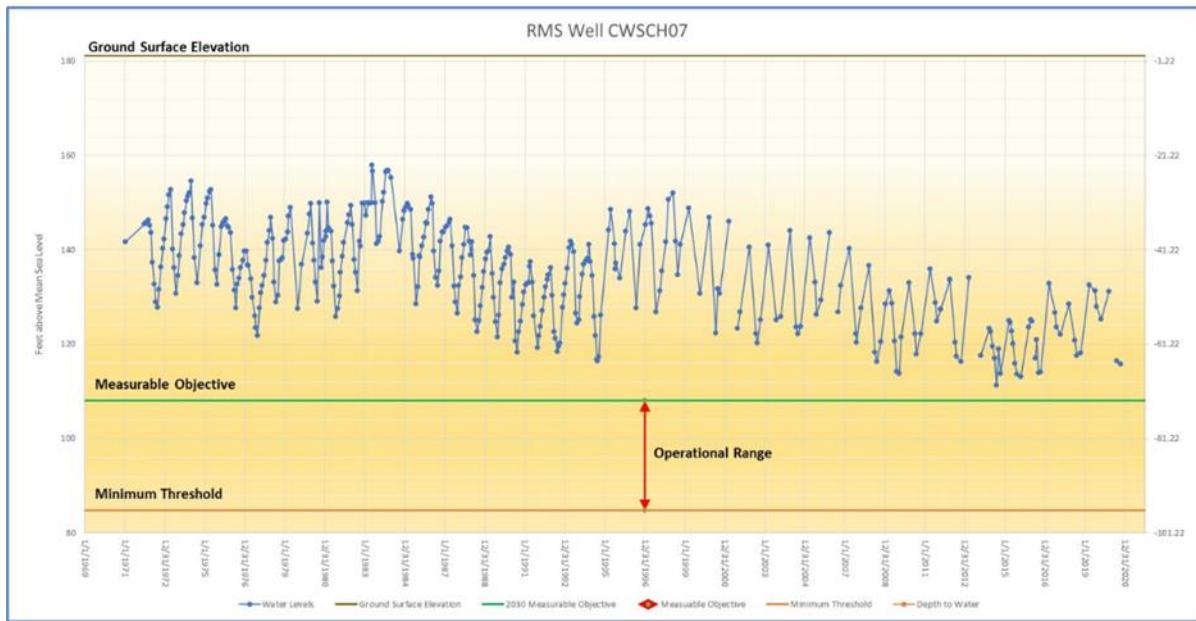


Figure ES-7: Representative Monitoring Site For Groundwater Levels With Relationship Of Measurable Objectives, Minimum Thresholds and Operational Range

The sample hydrograph is one of several that I have reviewed in Appendix 3-b of the GSP that have disturbing MO and MT levels. The MO is below the historic low, not the appropriate level to designate the top of the operational range. The MT as defined in other parts of the GSP, is purported to designate “*the point at which Undesirable Results may BEGIN to occur.*” But undesirable results will begin much earlier in the operational range. The historic low of this hydrograph is above the 80’ max rooting depth of native phreatophytes. The MT is significantly lower than 80’ bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. The operational range proposed is pessimistic in meeting goals that would avoid triggering Undesirable Results. Wise resource management strives to improve conditions that have been degraded by human development. Accepting degraded status quo or planning for increased degradation may be realistic given the human inclination to ambitiously convert resources into useful products. But the term “sustainable” implies we have the capacity to identify and honor carrying capacity while devising demand flexibility strategies to meet evolving climate conditions. Robust Management Objectives reduce the probability of careening toward Management Thresholds. Our MO levels can strive to improve conditions without risk of State management takeover. Water code § 354.30. Measurable Objectives (g) An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.

Chapter 2 Basin Setting

2.3.4 Water Budget Estimates

2831 "Other components are more difficult to measure or do not have measured values readily available (e.g., deep percolation, subsurface flows, groundwater pumping, surface water-groundwater interaction, etc.) and are estimated using the BBGM." It is unclear how the BBGM estimates Western Boundary Net Outflows 56,100- 65,000 AFY.

This map from the first draft of the Vina Water Budget presentation last year estimated a total of 200k AFY flowing from the east out of Butte into Colusa. The first draft of the Butte Subbasin Preliminary Basin Setting Results indicated 261k AFY of water flow from the west into the Butte basin from Colusa. These large discrepancies in outflow estimates do not inspire confidence in the Water Budget, the identification of who is responsible for GW declines or the efficacy of proposed recharge efforts.

"the ultimate effects of pumping can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately." Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action, pp. 14-15.

We know that interbasin flows are dependent on conditions in adjacent basins. "3014 Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." This significant data gap will present challenges as the impacts of GW pumping are not immediate and can take months or years to occur. The emerging California Water Market is a factor that is going to complicate regional water budget estimates.

BCWRC's Drought Task Force intention to evaluate the cumulative impacts of Water Transfer Programs (including GW Substitution water market transactions) and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley is essential to understand sub basin water budgets.3251 The failure of the GSP to attempt an estimate of interbasin subsurface flow along the Western Boundaries invalidates the Water Budget on which much of the GSP uses as a foundation. It is inappropriate to explain that "*Characterization of Interbasin Flows and Net Outflows along Western Boundary*" is placed in the "Next Steps" category. Water Code § 354.16 explains "Groundwater Conditions Each Plan shall provide a description of current and historical groundwater conditions in the basin, including data from January 1, 2015, to current conditions, based on the best available information that includes the following: (a) Groundwater elevation data demonstrating flow directions, lateral and vertical gradients, and regional pumping patterns, including: (1) Groundwater elevation contour maps depicting the groundwater table or potentiometric surface associated with the current seasonal high and seasonal low for each principal aquifer within the basin." Code § 354.18. "Water Budget (a) Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions...(3) Outflows from the groundwater system by water use sector, including ... subsurface groundwater outflow." Early basin-setting drafts of the Vina, Butte and Colusa sub-basins showed large discrepancies in the modeled subsurface aquifer outflow patterns. The Butte Basin Groundwater Model has no capacity to quantify subsurface GW flow out of the western boundary of the sub-basin. The present draft recognizes the data gap and inadequacy of regional modeling that characterizes the water budget of inflow and outflow.

SGMA regulations require Each Plan to contain a water budget for the basin that identifies discharges including subsurface groundwater outflow. The Butte County Drought Task Force recognizes that Groundwater extractions outside the Vina boundaries such as the past and present Water Transfer Programs and Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley may have enduring cumulative impacts on Vina's water budget.

2.1.2.4 Groundwater Recharge Areas

"Groundwater recharge is the downward movement of water from the surface to the groundwater system." Some recharge occurs from upward movement. Piezometric pressure from the semi-confined portions of the Tuscan System allows water to move upward recharging into or supporting alluvial unconfined aquifers if sufficient pressure exists. Line 1940 explains; *"In locations where groundwater levels in the shallower wells are lower than in the deeper wells, the gradient indicates upward movement of groundwater, with a similar relationship defining the volume of upward flow."* Conversely the alluvial shallow aquifer can leak downwards if the piezometric elevation is reduced. Line 1937: *"When groundwater levels in the shallower wells are higher than in the deeper completions, the gradient indicates downward movement of groundwater. The volume of downward flow is proportional to the gradient and the hydraulic conductivity between the shallow and deep measurement points."* The USDA groundwater atlas [https://pubs.usgs.gov/ha/ha730/ch_b/B-text3.html] explains this well-known water fact: "By the early 1960's, intensive ground-water development had significantly lowered water levels and altered ground-water flow patterns in the Central Valley aquifer system. By far the most dramatic impact of development was in the San Joaquin Valley, where water-level declines in the confined part of the aquifer system were locally more than 400 feet. Although predevelopment flow was toward the San Joaquin River throughout most of the basin, large withdrawals from deep wells in the western and southern parts of the aquifer system changed the direction of horizontal flow in the confined part of the system until the water moved toward the withdrawal centers. Also, because the magnitude of the withdrawals caused hydraulic heads in the confined parts of the aquifer system to fall far below the altitude of the water table, the vertical hydraulic gradient was reversed over much of the San Joaquin Valley. As a result, much of the water in the upper unconfined zone of the aquifer system that flowed laterally toward the river under predevelopment conditions leaked downward through the confining beds into the lower confined aquifer after development...Ground-water development in the San Joaquin Valley has reduced the effectiveness of the confining beds within the aquifer. Thousands of wells with casings perforated for much of their length have been drilled through the clay confining units. Where these wells are open to the unconfined and confined aquifers, they allow virtually unrestricted vertical flow through the well bore. The amount of water that flows downward through one large-diameter well has been estimated to be equivalent to the natural leakage through the "E-clay" over an area of approximately 7 square miles. During the peak of the withdrawal season, the net downward flow may be, on average, as much as 0.3 cubic foot per second per well." Significant Depressurization of the regional confined aquifer can take place within and outside of the Vina sub basin. Well-casings that have perforations at shallow and deep levels interrupt the confining layers and increase the vertical flow. Lines 1456-1460 indicate there is this type of potentially interbasin leakage in the Vina SB *"Aquifer testing conducted as part of the Lower Tuscan Aquifer study (Brown and Caldwell, 2013) indicated there is also the potential for Upper Watershed recharge in the shallow aquifer interval to move down to greater depths due to irrigation pumping, causing a mixing of recharge sources in the intermediate and possibly deeper aquifer zones in the Vina South Management Area."* Line 1469 discusses *"Additional*

recharge through management activities of flood flows or irrigation practices has potential in the Vina Subbasin..." but does not discuss how the recharged water can migrate through the deep aquifer into adjacent sub-basins that are being pumped.

2.1.5 Groundwater Producing Formations presents an incomplete overview of the producing geology and fails to quantify the robust yields of the Tuscan even while quantifying the production amounts available in less important aquifer units, line 1614: "*Wells penetrating the sand and gravel units of the Riverbank and Modesto Formations produce up to about 1,000 gallons per minute (gpm)*" The Update on the Stony Creek Fan aquifer Performance Testing [<http://cetehama.ucdavis.edu/files/135217.pdf>] indicated that that Lower Tuscan can produce 2,500-3,000 gpm. The GCID and others are exploiting/depressurizing this extremely productive aquifer. The cumulative demand of the wells exercising the lower Tuscan is undoubtably impacting water levels in all aquifer layers in the 4-county basin.

2.1.8.2 Beneficial Uses "*Water produced from the principal aquifer is primarily used to meet irrigation, domestic, and municipal water demand.*" This sentence should include "*environmental demand*". Groundwater and surface water are historically and, in many cases, currently connected. Beneficial uses must include the benefits to ecosystems including Groundwater Dependent upland vegetation.

According to the State Water Board delineation of beneficial uses:

[https://www.waterboards.ca.gov/rwqcb2/water_issues/programs/planningtmdls/basinplan/web/bp_ch2.html]

2.1.3 COLD FRESHWATER HABITAT (COLD)

Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

2.1.14 PRESERVATION OF RARE AND ENDANGERED SPECIES (RARE)

Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.

2.1.18 FISH SPAWNING (SPWN)

Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

2.1.19 WARM FRESHWATER HABITAT (WARM)

Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

2.1.20 WILDLIFE HABITAT (WILD)

Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

Beneficial uses of streams that have intermittent flows, as is typical of many streams in the region, must be protected throughout the year and are designated as "existing."

2.2 Groundwater Conditions; • "*Wells showing depths to first encountered groundwater deeper than 500 feet were eliminated from the data set.*" The rationale behind this limitation is unclear. If there is significant piezometric pressure identified in the water encountered below 500' it should be included in the analysis. The hydrographs in this section measure a shallow portion of the system. It is likely that the groundwater flow volumes would be stimulated when the pressurized portion of the aquifer is

depressurized by major production operations. The cumulative effect of these extractions may be the cause of the decline in the seasonally fluctuating regional aquifer levels. The failure to evaluate the effect of confined/semi-confined piezometric pressure dynamics on groundwater conditions must be remedied. line 2143 identifies the existence and importance of this pressure in relation to subsidence but there is no other mention of piezometric pressure. *"As the pressure created by the height of water (i.e., head) declines in response to groundwater withdrawals, aquitards between production zones are exposed to increased vertical loads."* The measurement of piezometric pressure is important for groundwater monitoring. It allows us to determine the level and flow patterns of the groundwater. Omitting a discussion of piezometric pressure when discussing groundwater conditions in our region is like ignoring blood pressure during a human physical exam.

Line 1996

"Since the year 2000, there has been a cumulative decline in March 1 groundwater storage of about 400,000 acre-feet (AF). This indicates the cycles of groundwater pumping are not in balance with the cycles of recharge that replenish the aquifer, and that groundwater depletion has occurred consistent with long-term decline in groundwater levels." Without a regional GW model and a record of pumping throughout the Tuscan basin it is impossible to identify pumping in the VGSB as the sole demand resulting in the decline in GW storage.

Line 2017

"Development of groundwater quality-related Sustainable Management Criteria for the Vina Subbasin is not intended to duplicate or supplant the goals and objectives of ongoing programs including those by Butte County, the SVWQC and the State Drinking Water Information System (SDWIS) [SWRCB Geotracker/GAMA website, the California Department of Toxic Substances Control (DTSC) EnviroStor website, and the Environmental Protection Agency's (EPA) National Priorities List (NPL)]." GW pumping stimulates the movement of toxic plumes through the aquifer system. Advection is the movement of dissolved solute with flowing groundwater. The amount of contaminant being transported is a function of its concentration in the groundwater and the quantity of groundwater flowing, and advection will transport contaminants at different rates in each stratum. Who are the personnel in the VGSA that will be tracking these data and correlating it to various GW pumping regimes and flow patterns?

Line 2298

"There is no indication in the streamflow data to suggest groundwater interactions that contribute to the streamflow behavior. Similar conditions would be expected for other creeks that traverse the Vina Subbasin (Little Chico, Sycamore, Rock, and Butte Creek) since they flow across a similar fan topography and similar shallow subsurface geology. The overall conclusion from this study in relation to interconnected surface water is that, for significant portions of the year, the upland creeks in the Vina Subbasin would be classified as disconnected streams and the surface water would be considered "completely depleted" as defined under SGMA." Water code chapter 23 explains "(o) "Interconnected surface water" refers to 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." As I read Water Code it is clear that streams flowing out of the foothills are hydraulically connected until they reach a point where the aquifer has been depleted below stream level at which point the stream loses as it recharges the evacuated aquifer. As the GW level declines the stretch of dewatered stream expands. Spatial and temporal dewatering monitoring is a critical GDE function of a GSA. The California

Department of Fish and Wildlife has specific GDE recommendations that must be implemented in the VGSA: [<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170185&inline>]

“GROUNDWATER DEPENDENT ECOSYSTEMS (GDES)

1. How will groundwater plans identify GDEs and address GDE protection?
2. How will GSAs determine if GDEs are being adversely impacted by groundwater management?
3. If GDEs are adversely impacted, how will groundwater plans facilitate appropriate and timely monitoring and management response actions?

INTERCONNECTED SURFACE WATERS (ISW)

1. How will groundwater plans document the timing, quantity, and location of ISW depletions attributable to groundwater extraction and determine whether these depletions will impact fish and wildlife?
2. How will GSAs determine if fish and wildlife are being adversely impacted by groundwater management impacts on ISW?
3. If adverse impacts to ISW-dependent fish and wildlife are observed, how will GSAs facilitate appropriate and timely monitoring and management response actions.”

According to a study on small streams flowing through the Vina SB: “Nonnatal rearing of juvenile Chinook salmon was documented in several intermittent tributaries to the Sacramento River. Condition factors and length measurements of juvenile chinook captured in the intermittent tributaries were compared with those captured in the mainstem Sacramento River. The data suggests that juvenile chinook rearing in the tributaries grew faster and were heavier for their length than those rearing in the mainstem. Faster growing fish smolt earlier, and may enter the delta earlier in the year before low water and pumping degrade rearing habitat.” Intermittent Streams as Rearing Habitat for Sacramento River Chinook Salmon.

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/exhibits/swrcb/swrcb_maslin1997.pdf

The unregulated streams that flow into the Sacramento River are leaking into drained aquifers. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained “since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it’s going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams.”

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_282.pdf

2.2.7 Groundwater Dependent Ecosystems

2488 Not Likely a GDE Due to Adjacency to Irrigated Agricultural Fields

2504 Not Likely a GDE Due to Dependence on Agricultural-dependent Surface Water

GDEs were incorrectly removed in areas adjacent to irrigated fields due to the presence of surface water. However, GDEs can rely on multiple water sources – including shallow groundwater receiving inputs from irrigation return flow from nearby irrigated fields - simultaneously and at different temporal/spatial scales. Basins with a stacked series of aquifers 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 principal aquifers, that support springs, surface water, and groundwater dependent ecosystems. Areas in proximity to irrigated land can still potentially be reliant on shallow groundwater aquifers, and therefore should not be removed solely based on their proximity to irrigated fields.

3014 "Western boundary net outflows represent Sacramento River gains from groundwater and subsurface outflows to the Corning Subbasin. The split between these outflows is uncertain at this time and identified as a data gap." The subsurface outflow analysis must be expanded to include outflows into other nearby sub basins including Butte and Colusa. Increased GW extractions due to crop changes, "emergency" supplemental GW pumping, and GW substitution transfers is likely to increase subsurface flows over time. Butte Counties nascent Drought Impacts Analysis Study plans to compile the 2021 water transfer programs (April 2021-December 2021) from Butte, Tehama, Glenn, Colusa, Yuba and Sutter counties.

The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. Analysis of the transfer programs will evaluate the cumulative impacts of the programs' impacts on water supplies and demands. This type of annual evaluation must be ongoing as demand/supply conditions evolve and consider "timescales involved in aquifer responses to pumping and other stresses can be on the order of decades, making it difficult to associate cause with effect. As such, monitoring must account for this lag in impacts. In general, the longer the timeframe for effects to be observed at a given monitoring point once they become evident, the longer those effects will persist, even if the pumping causing the effects is halted immediately." [1]

[1] Davids Engineering 2014. Prepared for NCWA, Sacramento Valley Groundwater Assessment Active Management – Call to Action.

Line 3016 Water Banking Stimulation of sub surface flows "It is anticipated that this data gap [sub surface flows] will be addressed through future refinements to the BBGM and through coordination and collaboration with neighboring subbasins as part of GSP implementation." The coordination and collaboration with neighboring subbasins is, at best, an forthright sharing of information and unbiased evaluation of model results. However, the VGSA would be naïve to ignore the special interests of key players in the Northstate Water World that may inspire some purveyors to profitably engage in the emerging California Water Market with less regard to the interests of GDEs and water users that are not participating in Transfer/sales that "exercise" the shared regional aquifer while promising to use PMAs to refill drained aquifer water banks.

3181 Habitat Monitoring Deficit "It is anticipated that these uncertainties will be reduced over time through monitoring and additional data collection, refinements to the BBGM and other tools, and coordination with neighboring basins." The DGSP is deficient because significant monitoring infrastructure has yet to be funded and built in the shallowest portion of the aquifer system that GDEs rely upon. According to the 2007 DWR/NCWA Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework; "The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of

groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations."

https://www.waterboards.ca.gov/waterrights//water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf

3266 3. SUSTAINABLE MANAGEMENT CRITERIA

3298 • "MT– Quantitative threshold for each Sustainability Indicator used to define the point at which undesirable results may begin to occur." The stated definition is the most egregious violation of common sense in the DGSP. Undesirable results BEGIN to occur even before historic low levels (the approximate upper reach of the operational range) are occur. Domestic well failures, destruction of GDEs and chronic lowering of groundwater levels occur at historic GW levels and would be exacerbated if the aquifer is managed within the Operational Ranges being proposed. I find the Plan to be deficient in protecting beneficial uses. Historic low GW levels shown in most of the Appendix 3-B hydrographs are still above the 80' max rooting depth of native and urban forest trees. The Minimum Threshold as defined in the GSP, is purported to designate "the point at which Undesirable Results may BEGIN to occur." But undesirable results will begin much earlier in the proposed operational range shown in most of the hydrographs. These MTs are significantly deeper than 80' bgs. Furthermore, the lower water table will dewater longer reaches of streams earlier in the season and persist later in the year. Dan Wendell of The Nature Conservancy, a panelist at a workshop held by the California Natural Resources Agency, explained "since the 1940s, groundwater discharge to streams in the Sacramento Valley has decreased by about 600,000 acre-feet per year due to groundwater pumping, and it's going to decrease an additional 600,000 acre-feet in coming years under status quo conditions due to the time it takes effects of groundwater pumping to reach streams." The operational range proposed will not avoid triggering this and other significant irreversible Undesirable Results.

SGMA Regulations define "Measurable objectives" as "specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions.." Setting GW level MOs below historic low levels does not meet this requirement. Most of the proposed MOs are below historic low levels. This is not the appropriate level to designate the top of the operational range. SGMA Water Code § 354.30 explains "An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan." The managers assure the public that the goal of the VGSP is to maintain GW levels above or near the MOs or that if the MT is approached/transgressed PMAs would be employed to bring water levels back to the MO or higher. The definition of the MT shows the "Operational Range" as the defined goal. The proposed broad

operational ranges fit the prescription for market driven groundwater banking but would result in many undesirable impacts to water users not participating in the rapidly emerging California Water Market.

3415 Water Bank Prescription "*The quantitative Vina Subbasin Undesirable Result for the Chronic Lowering of Groundwater Levels occurs when: Two RMS wells within a management area reach their MT for two consecutive years of non-dry year-types.*" Two years of operating at the MT level would destroy GDEs including the urban forest of Chico. The insulting caveat that it would be acceptable to forgive the extreme MT levels if they occur during 2 consecutive dry years would allow GW levels to decline below the MT and implies that artificial recharge during "wet" years is a mitigating option. This is another example of an operation prescription for conjunctive use water bank marketing.

3477 Cumulative impacts of regional pumping "*Groundwater levels are typically lower during dry years and higher during wet years. Superimposed on this four- to seven-year short-term cycle is a long-term decline in groundwater levels. In other words, groundwater levels during more recent dry-year cycles are lower than groundwater levels in earlier dry-year cycles.*" The DGSP fails here to identify the cumulative impacts of increased pumping in the regional shared Tuscan aquifer system that is driving the long-term trend in driving down the fluctuating hydrograph record. Management of connected groundwater systems is challenging for several reasons. First, the cumulative GW depletions caused by pumping depends on the spatial scale: in general (depending on soil conditions and strata) the greater the distance or depth between groundwater pumping and a monitoring well, the lower the magnitude but the longer the timescale of depletions. Consequently, the ultimate effects of pumping can occur significantly after pumping starts, or even after pumping has ceased. The timescales involved in aquifer responses to pumping and other stresses can be on the order of decades.

3703 Outside Hydrologic Influence "*hydrologic impacts outside of the Vina Subbasin, such as upper watershed development or fire-related changes in run-off, could result in impacts to streamflow, riparian areas, or GDEs that are completely independent of any connection to groundwater use or conditions within the Vina Subbasin.*" Since the deep Tuscan Aquifer System is recharged from the eastern basin foothills it is certainly appropriate to recognize impacts to groundwater use and conditions within the Vina SB resulting from fire related soil conditions and streamflow in the recharge area.

[<https://www.buttecounty.net/waterresourceconservation/SpecialProjects/StableIsotopeRechargeProject.aspx>]

Additionally, conditions in the down-gradient portion of the Tuscan System are worthy of evaluation as the VGSP evolves. The lower Tuscan Aquifer system is being developed as a water source west of the Sacramento River and is being evacuated with vigor especially during dry years. This may accelerate the rate of subsurface flow out of the Vina SB. The Glenn Colusa Irrigation District pumped over 25K af of Tuscan groundwater for 2-3 months this summer to supplement their river allocation. This is on top of 10k af of groundwater substitution water transfers and even more surface water sales from "willing sellers" to "willing buyers" South Of Delta. The 35k/a/f is more water in 3 months than the Chico Urban Area pumps in a year. The State emergency declaration allows water purveyors like GCID to sidestep laws that require environmental review. GCID used district wells located 5-10 miles west of Chico that can pump 3KAF/minute. The Butte County Drought Task Force recognizes the importance of evaluating cumulative impacts of programs on water supplies and demands on the Vina SB may be significant and is

initiating a “Drought Impacts Analysis Study” that will compile and analyze the 2021 Water Transfer Programs and the Supplemental Groundwater Pumping Operations in the Northern Sacramento Valley.
https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029

3776 Upland GDE Designation *“The Vina Subbasin specifically recognizes deep-rooted tree species, such as Valley Oak, that are common along riparian corridors in both upland streams and the Sacramento River. This connectivity is not well measured or understood in the Vina Subbasin at this time.”* The failure of the DGSP to accept the well-documented fact that deep rooted trees are not exclusively located along riparian corridors but are nonetheless dependent on the shallow aquifer.

US Forest Service Index of Species Information for Valley Oak explains the wide distribution of the Valley Oak ecosystem: <https://www.fs.fed.us/database/feis/plants/tree/quelob/all.html>

“Valley oak typically has several vertical roots that tap groundwater and extensive horizontal root branches. Vertical root depth has been measured as deep as 80 feet (262m) in some individuals. Best growth is attained when water tables are about 33 feet (10 m) below the surface. Historically, these forests extended 0.6 to 5.0 miles (1-8 km) on each side of major rivers. Valley oak cover was once extensive, extending through lowlands and into foothills.”

Limiting GDE evaluation to measurable impacts to interconnected streamflow is insufficient.

California Code of Regulations, Title 23 § 351. Definitions.

“(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.

(m) “Groundwater dependent ecosystem” refers to ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface.”

The DGSP, like other planning documents, promises on line 3785 “to fill these data gaps and the GSAs are committed to addressing these issues and develop appropriate SMCs for the Vina Subbasin.” But like other co-equal goals that assure balancing water supply with ecosystem health it is meeting the demand that takes precedence. In 2007 the DWR, NCWA and the State Water Board recognized the importance of habitat monitoring in their Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf

“The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas....In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer.”

But there has been no investment in creating the network needed to collect baseline conditions or to monitor declines in this critical GDE preservation goal.

5. PROJECT AND MANAGEMENT ACTIONS

4412 5.2.3.1 Agricultural Irrigation Efficiency

4414 Butte County agriculture is a keystone feature of culture in the Vina SB. The importance of maintaining the viability of irrigated agriculture is of paramount importance. The results of the Vina GSA,

Agricultural Groundwater Users of Butte County, and Butte County Farm Bureau survey to evaluate current irrigation methods and practices, identify opportunities and methods to improve irrigation efficiency, determine potential issues preventing the adoption of efficiency practices, and provide recommendations for increasing participation in these practices were expected to be available in September 2021. A summary of the results would be helpful in evaluating opportunities to stabilize or reduce demand. Incentives to invest in efficient GW irrigation through grant funding and tax rebates are needed to maximize benefits. According to Valerie Kincaid "A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling)." Why is this not listed as a recharge project?

4449 5.2.3.2 Project: Residential Conservation The Estimated Groundwater Offset and/or Recharge: 100 acre-feet/year is certainly below the potential for urban efficiency. The voluntary expansion of xeriscape replacement of turf is evident and the adoption of efficient water using appliances is inevitable. The managers should review the successful urban conservation data from last decade to evaluate more realistic estimates of potential offset amounts.

4079 "As discussed in Section 4.1, the GSAs in the Vina Subbasin intend to further evaluate the SMC for interconnected surface waters to avoid undesirable results to aquatic ecosystems and GDEs. As additional data are collected and evaluated, the Vina Subbasin commits to developing additional SMC and installation of monitoring points, as appropriate, for specific stream reaches and associated habitat where there is a clear connection to groundwater pumping in the principal aquifer." Restricting monitoring points and GDE considerations to riparian proximities is insufficient for the protection of deep-rooted vegetation, both native trees and the Chico urban forest. According to the USDA Forest Service "Urban forests help to filter air and water, control storm water, conserve energy, and provide animal habitat and shade. They add beauty, form, and structure to urban design. By reducing noise and providing places to recreate, urban forests strengthen social cohesion, spur community revitalization, and add economic value to our communities."

[<https://www.fs.usda.gov/managing-land/urban-forests>]

The shallowest portion of the aquifer system that sustains this vegetation extends beyond riparian corridors. The Sacramento Valley Water Resource Monitoring, Data Collection and Evaluation Framework 2007 DWR NCWA

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/CSPA%20et%20al/part2/aqua_280.pdf] recognizes the importance of establishing a monitoring network in the shallowest portion of the aquifer for this purpose: "The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels and an appropriate level of interaction between surface water and groundwater resources. The lowering of groundwater levels due to natural climatic changes or the interception of groundwater underflow to surface water systems due to the increased groundwater extraction associated with water management programs, have the potential to impact the native habitat areas. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. In order to identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be

developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain wetlands species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.”

4477 5.2.3.3 Project: Streamflow Augmentation

“The project would primarily take place at Comanche Creek, Butte Creek, Little Chico Creek, and Big Chico Creek.” It is unclear how Little Chico Creek and Big Chico Creek would be integrated into this program since they are, apart from flood control infrastructure, unregulated by dams. If a project includes the application for a new right to recharge water, it will need to obtain a water right permit from the State Water Resources Control Board (SWRCB) through a surface water right application and a supplemental groundwater recharge form. The water right permit application would need to identify the “beneficial use” that the project intends to meet. Recharging groundwater is not considered a beneficial use, however, meeting the sustainable management criteria in a GSP may be determined to be a beneficial use.

Since this project is in the “Planned” category and is expected to move forward and be completed there must be more detailed information available to the public. The project description should be clear on permits that would be required to be negotiated with regulatory agencies such as CFW and the State Water Board.

4507 5.2.3.4 Flood MAR/Surface Water Supply and Recharge Scoping

This planned scoping project must include a detailed evaluation of the efficacy of up-gradient recharge efforts that may enhance extraction opportunities in down-gradient sub-basins that are developing new groundwater exploitation infrastructure to supply expanding permanent crop acres and engaging in water transfers that integrate the shared aquifer system into their transfer portfolio and have a history of using the same aquifer as an “emergency” supplemental water supply. The legal consequences of attempting MAR have been summarized by Ms. Kincaid and issues of aquifer privatization and potential water bank extirpation of Butte Chapter 33 protection remain unresolved and exacerbated by the expert analysis presented by the Public Policy Institute of California. **“County export ordinances prevent beneficial trades.** In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer.”

<https://www.ppic.org/publication/improving-californias-water-market/>

All the projects outlined in lines 4408-4663, as well as 4870 5.2.4.11 Project: Surface Water Supply and Recharge, whether they are conservation (demand reduction) or recharge (supply augmentation)

projects have the potential to carry the legal consequences of artificial recharge efforts. According to Kincaid [<https://www.vinagsa.org/files/4441577c7/PMA+Legal+Implications+Discussion+Paper.pdf>]

"A project proponent maintains the right to water that is recharged whether it results from recharge projects or groundwater demand reduction projects (e.g., conservation, recycling). If a project uses or obtains a surface water supply and recharges into the aquifer, the project proponent would have a legal right to the recharged water. Water does not legally become "common" or "native" supply available to overlying groundwater right holders unless it is abandoned by the project proponent." The contentious issue of privatization of the aquifer that is used as a water bank must be resolved at the State level because local ordinances may be overridden by SGMA jurisdiction. The strategy of integrating the Tuscan Aquifer System into the State Water Supply is a long-standing threat to the balance of uses required to maintain the quality of life in the Vina SB. According to the Public Policy Institute of California, "County export ordinances prevent beneficial trades. In the absence of state regulation of groundwater, county ordinances have protected local parties against injury from groundwater-related exports. But their export permitting hurdles are so high that they impede any transfers, including those that present no significant risk to local groundwater sustainability. In Butte County, for instance, it would take 18 months to go through all the steps to obtain a permit for a same-year groundwater substitution transfer.

"Streamline transfer reviews while maintaining protections. Approval delays by federal, state, and local authorities often reflect uncertainties about the physical impact of a surface or groundwater transfer on other water users or the environment. Yet there are various ways to streamline the process while maintaining protections, for instance by conducting more up-front analysis of impacts through programmatic reviews, developing a "fast lane" for transfers below a certain size, developing a structured evaluative process for reviews, and establishing an after-the-fact process for balancing accounts to enable quicker approvals of time-sensitive activities.

"Develop more equitable local rules for groundwater substitution transfers. Well-run groundwater substitution programs can expand long-term water availability by more actively using local groundwater storage. Once GSAs establish sustainability plans that address undesirable impacts of pumping, it should be possible to ease the coarser restrictions on this practice found in most county ordinances—which effectively preclude trades if they entail water leaving the county. If counties with restrictive groundwater export ordinances fail to amend their laws to conform to SGMA, the legislature should consider preempting local laws that discriminate against out-of-county uses or place undue burdens on groundwater and groundwater-substitution transfers that would not jeopardize sustainable groundwater management of the source aquifer."

The State may use emergency proclamation or legislative action to neutralize local control of water policy such as the Chapter 33 ordinance in Butte County. The broad operating range and historic low-level starting point (MO) that the VGSA consultants and staff have inserted into the VGSP will create the storage space needed to bank/sell water stored in the Butte Basin. The Kincaid white paper explains that Potential Management Actions "would allow the Vina GSA to protect the Vina subbasin and the implementation of the GSP from negative implications from artificial recharge projects through enactment of rules, ordinances and/or policies." But her estimation that ordinances or policies that the GSA may adopt to ensure recharge projects are operating without adverse impact to the basin offer no assurance that the VGSA would have the capacity to successfully navigate the State prerogative to manipulate the emerging water market that intends to "Streamline groundwater substitution and water transfer permitting and approval processes by allowing consolidated basin-level environmental reviews

to facilitate water market transactions," [<https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118>]

4664 5.2.4.5 Community Monitoring Program "*This project would create routine water table monitoring programs for approximately 8,000 acres of Ecological Reserves in the region between lower Forest Ranch and Cohasset Road near Chico Airport, including the Big Chico Creek, Sheep Hollow, and Cabin Hollow tributaries.*" This project should be required to be implemented yesterday! Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. To identify potential habitat impacts associated with potential changes in water management practices, a program-specific network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. In evaluating impacts to certain GDE species, it is important to discern both the rate of groundwater level change, as well as the cumulative change over the entire year. Data collection and monitoring frequency should be appropriately selected to support the temporal and long-term evaluations.

4691 5.2.4.6 Project: Wastewater Recycling

While this project requires time consuming permitting and coordination with regulatory agencies as well as significant infrastructure installations it will be helpful in keeping Chico's GW demand from expanding along with the urban development that is anticipated. Focusing purple pipe infrastructure on athletic field irrigation is a good target during dry seasons.

4722 5.2.4.7 Project: Community Water Education Initiative

A population that is well informed on watershed health, water use conservation and water policy is an excellent education goal. This project should identify regional responsible water use and climate responsive flexibility. The political science portion should dive into the history of California water policy; how it has shaped regional water infrastructure and the need for local vigilance in defending the hydrologic balance from insatiable demand from unfettered urban and agricultural expansion south of the Delta.

4768 5.2.4.8 Project: Rangeland Management and Water Retention

4802 5.2.4.9 Project: Fuel Management for Watershed Health

4833 5.2.4.10 Project: Removal of Invasive Species

Investments in the health of ecosystems that provide the water recharge for the Tuscan Aquifer System have been, like in the rest of the Sierra Cascade watershed, unwisely underfunded. An excerpt from the Sierra Nevada Ecosystem Project lays out the imbalance of resource extraction vs reinvestment. These projects would begin to address that imbalance.

"Based on estimates of direct resource values as one input (not the total revenue produced by resource dependent activities), the Sierra Nevada ecosystem produces approximately \$2.2 billion

worth of commodities and services annually. Water accounts for more than 60% of that total value. Other commodities [timber and grazing] account for 20% as do services.

“Public timber and private recreation are the largest net contributors of funds to county governments both in total dollars and as a percentage of their total value. Around 2% of all resource values are presently captured and reinvested into the ecosystem or local communities through taxation or revenue sharing arrangements. The declining status of some aspects of the Sierra Nevada ecosystem suggests that this level of reinvestment is insufficient to ensure sustainable utilization of the ecosystem.”

https://pubs.usgs.gov/dds/dds-43/VOL_III/VIII_C23.PDF

4870 5.2.4.11 Project: Surface Water Supply and Recharge While it is suggested that these projects will require a SWRCB permit; CEQA and others the State is on a path of “streamlining and acceleration of managed aquifer recharge and groundwater banking permitting processes” and to “Streamline groundwater substitution and water transfer permitting and approval processes to optimize the economic value of groundwater”.

<https://data.ca.gov/dataset/californias-groundwater-update-2020-bulletin-118/resource/94f3a5f6-23f3-4aec-ab84-b546bf211bab>

It is unclear if the legal and environmental consequences of this project will be adequately considered. The preservation of undisturbed critical vernal pool habitat is an ecological priority in some of the presumed areas of inundation.

4973 5.3.4 Landscape Ordinance

4980 5.3.5 Prohibition of Groundwater Use for Ski (Recreational) Lakes

These two common sense regulations would help meet our goals.

4984 5.3.6 Expansion of Water Purveyors’ Service Area

Assuming that this is exclusively for residential development it is critical that service area expansion does not stimulate urban sprawl that intrudes on either green-line or gold-line open space.

4990 5.3.7 Groundwater Allocation

The consideration of groundwater allocation must be scientifically connected to the actual cause of failure to achieve sustainability goals by 2042. If cross-boundary water flows are causing declining levels in up-gradient portions by extractions in the down-gradient portion of the shared regional aquifer system, there must be well designed/implemented monitoring/modeling systems in place that have the confidence of all involved.

5005 5.4 Data Collection

5006 5.4.1 County Contour Mapping

“As part of the efforts to collect the information necessary to fill the data gaps identified in Section 3, this project proposes to expand the existing monitoring program to include Butte, Glen, Colusa, and Tehama counties and conduct these groundwater elevation surveys in the spring, summer, and fall. The monitoring program would gather data used to produce groundwater contours and estimates of lateral and vertical flow direction and volume. Producing this data for the four counties will help to identify interbasin flow patterns and

influences on surface water flows and replenishment locations, thereby improving coordination between counties and water management decision-making.” This inter-basin effort must be implemented ASAP! A reliable inter-basin GW modeling is also at the top of the management list.

6. PLAN IMPLEMENTATION

5135 Table 6-5: Estimated Costs for Implementing Data Gaps

“Interconnected Stream Monitoring \$100,000 – \$250,000” As mentioned in previous comments the immediate implementation of a network of shallow monitor monitoring wells should be developed to detect changes in water levels over the shallowest portion of the aquifer. Baseline habitat monitoring is an important data collection objective because it allows for a better understanding of the existing water resource requirements of the native habitat and the evaluation of potential impacts associated with potential changes in water resource management practices. The long-term health of riparian vegetation, wetland species, and number of other native habitat are commonly associated with maintaining a minimum range of groundwater levels. Limiting the data gap to Interconnected Stream Monitoring would leave out GDEs that are outside of designated riparian zones. The shallow aquifer has an important role to play in keeping deep rooted trees, including the large trees in the Chico Urban Forest, that survive the regional dry months without supplemental irrigation.

The USDA also recognizes that Urban Forests such as exists in Chico and other Butte County towns provide a range of valuable ecosystem services. I posit that the groundwater dependent trees of our towns ARE ecosystems. Many environmental challenges are exacerbated within the urban landscape, such as stormwater runoff and flood risk, chemical and particulate pollution of urban air, soil and water, the urban heat island, and summer heat waves. Chico’s urban forest canopy mitigates these challenges. Research shows that urban trees are integral to the environmental quality of cities and towns.

In April of 2007 Butte County resolved to adopt an oak woodlands management plan. “Butte County supports significant acreage of oak woodland habitat. The historical importance of oaks is apparent in the names of towns, cities, streets and residential complexes throughout California. Butte County’s oak woodlands enhance the natural and scenic beauty of the area, provide forage and shelter for more than 300 species of wildlife, facilitate nutrient cycling, moderate temperature extremes, reduce soil erosion, sustain water quality and increase the monetary and ecological value of property.”

http://www.buttecounty.net/Portals/10/Docs/Planning/Projects/OakWoodland/Chapter53_ButteCounty_OakWoodlandMitigationOrd_2018-10-29.pdf?ver=2018-10-29-165211-350

Water Code § 113: “It is the policy of the state that groundwater resources be managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses.”

5253 6.7 Interbasin Coordination

5271 1. Information Sharing

“This will continue throughout GSP implementation and may include:

- 1. Inform each other on changing conditions (i.e., surface water cutbacks, land use changes, policy changes that inform groundwater management)*
- 2. Share annual reports and interim progress reports*
- 3. Share data and technical information and work towards building shared data across and/or along basin boundaries (e.g., monitoring data, water budgets, modeling inputs and outputs, and Groundwater Dependent Ecosystems”)*

Information Sharing must include the water-market/emergency GW pumping volumes/locations/timing that members of the North Sac River Corridor group intend to implement and a report on the final v/l/t of these extra demands on the shared aquifer system. These extra pumping demands are not unprecedented and have become a routine component of California's plan to use the Northern Sacramento Valley as a “reliable” source of supply.

Butte County is on the verge of conduction a Drought Impacts Analysis Study that will evaluate the numerous 2021 Water Transfer Programs in Northern Sacramento Valley including the Supplemental Groundwater Pumping Operations. The study portends to accomplish an evaluation of cumulative impacts of programs on water supplies and demands in the inter-basin, but focus on the Vina Subbasin"

https://buttecounty.granicus.com/MetaViewer.php?view_id=2&clip_id=1006&meta_id=157029
pdf Pg 42-43

The report will include a brief description of the programs, amount of water transferred, recipient of water, whether surface water or groundwater substitution is utilized, destination of transferred water, etc. including maps. This report should be conducted every year, funded by SGMA interbasin coordination parties and be included in the VGSA Annual report submitted by April 1 for the prior year's activities.

5295 3. Coordinate on mutually beneficial activities

GSA's that overlie the Tuscan Aquifer Formation should provide cooperative funding for mutually beneficial watershed management in the recharge areas located in the foothills east of the valley floor.

5314 5. Issue Resolution Process

“Vina Subbasin will pursue development of an issue-resolution process with neighboring subbasins in the North Sac River Corridor group.”

This single sentence description of the process to identify and resolve “issues” belies the potential for regional conflict over water management issues. The drama surrounding the nascent Tuscan Water District and the unpopular “Operational Range[s]” proposed in the DVGSP are examples of “issues” that have already emerged in this process. Conflict arising from expanded GW demand in the North Sac River Corridor group are being litigated between stakeholders and agencies. Achieving sustainability requires local agencies, stakeholders, and water users to make many difficult and potentially contentious decisions. These decisions are prone to conflict, particularly when pumping restrictions are viewed as infringing on property rights, or when fees are charged to support local management. Newly formed GSAs have additional layers of potential conflict. Questions regarding authority, streamlined legal and regulatory timelines, a lack of existing precedents and the need to represent agency and constituent interests have the

potential to exacerbate conflicts under SGMA. In some cases, where authoritative interpretations of legal authority and limits have not been established yet, litigation may be necessary and warranted. The State prefers the Northern Sacramento Valley to quietly comply with the myth that this region is a source of “surplus” water that can peacefully serve the accelerating water market through conjunctive-use water banking. However, it is likely that conjunctive-use water banking would degrade the groundwater basin and groundwater users who are not involved in conjunctive use but are reliant on the same groundwater basin.

Chapter 4: MONITORING NETWORKS

4218 Well “Construction Data – Well data such as perforation depths, construction date, and well depth was considered for selection.” Many of the selected wells to not meet the above criteria for selection:

4262 Table 4-5. Groundwater Levels RMS Well Construction Details

North MA: 3/6 of the wells do not have listed screen intervals. This makes it difficult to know what layer of aquifer is being monitored. Scientifically constructed multi-completion wells with defined screen depths/elevations is needed. The other 3 have screen intervals ranging from about 70' to almost 500'. While this type of well construction is suitable for production it is unsuitable for transparent depth/elevation monitoring of the aquifer system.

Chico MA The well depths are undefined as are the screen depths. There is a notable lack in monitoring the shallow aquifer that supports the unirrigated Chico Urban Forest.

In summary:

The VGSP must strive to develop and use the best modeling/monitoring processes that recognize the influence of the upland recharge area and the downslope aquifer extraction that influences the ability of this GSA to achieve a robust sustainability goal that does not collapse during the inevitable dry periods that the historic record reveals and the climate destabilization models predict. The hydrologic and geologic science used must not be cast aside by the political science that drives California Water Policy that views the Butte County as an underutilized export source that can be “exercised” by conjunctive water banking. The environment, the urbanites and the rural community require a reliable water table that can't be displaced, even during consecutive dry years.

Jim Brobeck, Water Policy Analyst, AquAlliance



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Thaddeus L. Bettner, P.E.

DATE: October 25, 2021

TO: Colusa Groundwater Authority
Glenn Groundwater Authority
Corning Subbasin Groundwater Sustainability Agency
Tehama County Flood Control & Water Conservation District
Groundwater Sustainability Agency
Butte Subbasin Groundwater Sustainability Agencies (all eleven)
Vina and Rock Creek Reclamation District Groundwater Sustainability
Agencies

FROM: Holly Dawley, GCID Water Resources Manager

SUBJECT: Support for Groundwater Sustainability Plans and Concern about
Groundwater Surface Water Interactions

Glenn-Colusa Irrigation District (GCID) is located in the heart of the Sacramento Valley; we are the largest and one of the oldest diverters of water from the Sacramento River. GCID diverts water from the Sacramento River through a 65-mile long irrigation canal into a complex system of nearly 500 miles of laterals. The water is delivered to more than 1,200 families who farm approximately 141,000 acres of valuable, productive agricultural land. More than \$270 million of agricultural products are produced annually on Glenn-Colusa Irrigation District farms, helping to sustain an estimated 12,000 jobs in the region. GCID is also the sole source of surface water deliveries for three wildlife refuges - the Sacramento, Delevan and Colusa National Wildlife Refuges that comprise over 20,000 acres of critical wildlife habitat. Winter water supplied by GCID to thousands of acres of rice land also provides a rich oasis for migrating waterfowl.

GCID is an active member of the Colusa Groundwater Authority, the Glenn Groundwater Authority, and the Corning Subbasin Groundwater Sustainability Agency.

Support for Groundwater Sustainability Plans

GCID appreciates the opportunity to provide comment to your agency for Groundwater Sustainability Planning in the Sacramento Valley (Valley). As a member of three Groundwater Sustainability Agencies (GSAs) within the Valley, GCID staff have valued our participation in the development of two Draft Groundwater Sustainability Plans (GSPs) and support a collaborative approach to management across a shared resource. We support the adoption of the GSPs by each of the GSAs to meet the January 31, 2022, deadline and we look forward to continued participation during implementation.

Concern about Groundwater Surface Water Interactions

While we support the adoption of the GSPs, this communication serves as a formal written comment to highlight and express a particular area of concern that could lead

to the development of an incomplete decision framework and compromise the stability afforded to groundwater users in the various Sacramento Valley subbasins and more specifically to surface water users and senior water right holders which includes our District. We are writing to express deep concern regarding the lack of consideration in the GSPs about stream-aquifer interactions and impacts from unrestricted groundwater pumping.

This year in response to historically dry conditions, GCID and our fellow Sacramento River Settlement Contractors (SRSCs) took a multitude of voluntary actions significantly reducing the supply to our water users. These actions collaboratively supported watershed objectives in the face of declining storage and identified environmental concerns. While GCID and its partners were working daily for months with Central Valley Project (CVP) operators and State resource agencies to reduce surface water use and stabilize flows in the Sacramento River to help with Delta outflows and environmental needs, groundwater pumpers accessed the resource unabated impacting the stream flows we were actively working to stabilize.

As a significant contributor to groundwater recharge within the Valley, we only utilize that resource in years of shortage. We contribute every year to over 100,000 acre-feet (*Colusa GSP Draft, Appendix 3D, pg. 27*) of groundwater recharge even in Shasta critically dry years. However, we only utilize the resource when our surface water supplies are diminished by drought. Even with all of our voluntary surface water reductions in 2021, we only utilized 20,000 ac-ft of groundwater, while taking over 20,000 acres of land out of production to balance our supply and demand.

According to the Draft GSPs for Vina, Butte, Corning, and Colusa Subbasins, current year estimates of groundwater pumping, summarized in the table below, are over 1 million acre-feet per year (ac-ft/yr) in the region that surrounds our District.

Table 1. Groundwater Pumping in Subbasins in and around GCID (TAF)

	Historical	Current	Future, No Climate Change	Future, 2030 Climate Change	Future, 2070 Climate Change
Butte ^a	142.2	162.8	162.6	189.4	210.5
Vina ^b	243.5	209.2	215.8	225.9	238
Colusa ^c	502	499	499	525	559
Corning ^d	132.3	153		159.3	167.3
<i>Totals (TAF)</i>	<i>1020</i>	<i>1024</i>	<i>877.4</i>	<i>1099.6</i>	<i>1174.8</i>

Notes

^aButte Groundwater Sustainability Plan, Public Review Draft, Section 2, pg. 2-65

^bVina Groundwater Sustainability Plan, Public Final Draft, Section 2, pg. 82

^cColusa Groundwater Sustainability Plan, Final Draft Report, Section 3, pg. 3-96

^dCorning Groundwater Sustainability Plan, Public Review Draft, Section 4, pg. 4-69

This groundwater pumping impacts groundwater storage as evidenced by declining groundwater levels and impacts surface-groundwater interactions as evidenced by decreased streamflow and more reaches becoming losing streams. These numbers

indicate a need to understand the origin of groundwater pumping and the potential impacts to the subbasins as water users pull from a shared resource. In looking at these pumping numbers, a particular concern that becomes palpable is that all the GSPs identify increased groundwater pumping which will result in groundwater storage impacts and will result in increased streamflow depletion.

After reviewing the documents, senior surface water rights holders and their operations seem to be a minor share of the use of the resource, but a significant contributor to the replenishment of the resource. We ask that as GSAs move from planning to implementation and continue to look for opportunities to leverage surface water over groundwater, you consider those members and partners with senior water rights and stable contracts that contribute to our shared aquifers and provide high quality environmental habitat. We look forward to better identifying and quantifying this benefit for the subbasins during implementation. Further, we ask that GSAs work with their County partners to consider land use planning and accountability.

Thank you for your consideration of these concerns. We urge you to consider language to address or at least acknowledge this issue in the GSPs. We look forward to working through this issue during implementation.

From: [Vita Segalla](#)
To: VinaGSA@gmail.com
Subject: GSP comment
Date: Thursday, October 14, 2021 2:20:47 PM

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

Hello -

I attended the public zoom meeting last night - 10/13. I am in agreement with those who spoke regarding the idea that the minimum threshold is too severe/low. That current suggested minimum threshold could easily present problems - and not only for those with wells. Plants and wildlife have to have accessible water. We need to preserve our urban forest and landscape and the integrity and beauty of our local region - all of which is linked to our groundwater levels and how they are accessed. Natural recharge takes time and we are in a drought period and global warming which threatens the ability to recharge an aquifer that is being extensively drained. Artificial recharging as a proposed possible option is not desirable and would become a giant legal circus.

I also would like to suggest that agriculture - our biggest user of the aquifer - be cut back to meet the need for water retention in the groundwater table. We, the residents, are modifying our usage and so should ag businesses.

Thank you -
Vita Segalla
1448 Normal Ave
Chico, CA 95928

From: [Pam Stoesser](#)
To: [Vina Groundwater Sustainability Agency & Rock Creek Reclamation District](#)
Cc: [Pam Stoesser](#)
Subject: Re: Vina GSP Comments
Date: Monday, October 18, 2021 5:26:46 PM

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

On Monday, October 18, 2021, 05:07:41 PM PDT, Pam Stoesser <pam.chico@sbcglobal.net> wrote:

Get Tough on Cutbacks & Conservation

I am so worried as I read through your Vina Draft GSP. So much manipulation of our water can't be good. I firmly believe that the more we mess with nature, moving our water here and there, the more damage we are creating. Please stop and reconsider that some of these damaging actions would be better achieved through conservation measures. It's time we all acknowledge the fact that there is less to go around, and we all need to cut back...especially the biggest users, agriculture. The pain of cutbacks must be shared proportionately.

Please prioritize and fund all of the proposed Conservation PMAs presented to the Vina GSA on 02 Sept 2021, including:

- Agricultural Irrigation Efficiency - mandatory
- Residential Conservation - mandatory
- Streamflow Augmentation - so good for the salmon!
- Extend Orchard Replacement - use this incentive now
- Water Recycling - make it happen asap
- Community Water Education Initiative Education and Outreach - mandatory
- Rangeland Management and Water Retention Conservation - mandatory
- Fuels Management for Watershed Health - mandatory
- Removal of Invasive Species Conservation - gradual
- Agricultural Water Allocations - phase in immediately - no pain no gain!

Please make these conservation actions mandatory where noted...NOT voluntary. A voluntary program is really an insult to the precious resource we are trying to save. Show us you are serious...because this is serious, including water allocations for large farmers.

As Amer Hussain discussed at the virtual public workshop, once a goal is set, it's awfully difficult for even the most severely over-drafted districts to reset those goals. There's too much push-back at that point. This plan needs to be tough on standards out-of-the-gate, and then ease up restrictions as we can see our plan is effective....not the reverse.

Respectfully,

Pam Stoesser
Chico Resident

From: Pam Stoesser
To: Vina Groundwater Sustainability Agency & Rock Creek Reclamation District
Subject: Vina GSP Comment
Date: Tuesday, October 19, 2021 12:35:00 PM

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.
Very interesting concept...we already pay certain farmers not to grow. Why not try it to reduce demand on water? This could be one of the PMAs.

[As drought worsens, California farmers are being paid not to grow crops](#)



As drought worsens, California farmers are being paid not to grow crops

Agricultural fields lie across the Palo Verde Valley in Blythe, Calif.

Agricultural fields lie across the Palo Verde Valley in Blythe, Calif. The Metropolitan Water District of Southern California is working with local growers to leave some fields fallow in exchange for cash payments.(Luis Sinco / Los Angeles Times)

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BY [IAN JAMES](#) STAFF WRITER OCT. 10, 2021 6 AM PT

BLYTHE, Calif. — Green fields of alfalfa and cotton rolled past as Brad Robinson drove through the desert valley where his family has farmed with water from the Colorado River for three generations. Stopping the truck, he stepped onto a dry, brown field where shriveled remnants of alfalfa crunched under his boots. The water has been temporarily shut off on a portion of Robinson's land. In exchange, he's receiving \$909 this year for each acre of farmland left dry and unplanted. The water is instead staying in

Lake Mead, near Las Vegas, to help slow the unrelenting decline of the largest reservoir in the country.

Robinson and other growers in the Palo Verde Irrigation District are taking part in a new \$38-million program funded by the federal Bureau of Reclamation, the Metropolitan Water District of Southern California and other water agencies in Arizona and Nevada. The farmers are paid to leave a portion of their lands dry and fallow, and the water saved over the next three years is expected to translate into 3 feet of additional water in Lake Mead, which has [declined to its lowest levels](#) since it was filled in the 1930s following the construction of Hoover Dam.

"Honestly, I think I could make more money farming. But for the sake of the Colorado River, I think it's the right thing to do," Robinson said. "The river's going through a bad time right now."

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The arrangement is one of a growing number of programs that are springing up along the river to find water savings in agricultural areas. As reservoirs continue to decline, managers of water districts are looking to start or scale up similar land-fallowing programs in other areas, paying farmers not to farm temporarily on some fields and using the water to ease shortages.

Although the program in the Palo Verde Valley amounts to a minuscule boost for the shrinking Colorado River, the approach has been praised by water officials and local growers as one way of adapting to a river that yields less after years of severe drought [intensified by the warming climate](#). Robinson and other growers in Palo Verde say they hope their participation may encourage other water agencies to start similar initiatives and enlist more farmers to fallow land to help address the increasingly dire condition of the river.

Even as they take part in the program, some farmers remain suspicious of the powerful Metropolitan Water District and its intentions in their community. The MWD has bought thousands of acres of farmland around the town of Blythe over the years and has recently agreed to buy more land, eliciting fears among farmers that the water agency in Los Angeles could one day seek to take more water and dry up a larger portion of their valley.

"They've got a large portion of this valley. Why do they need more?" asked farmer Charles Van Dyke.

The Colorado River has long been chronically over-allocated, with so much water diverted to supply farms and cities that the river has for decades rarely reached the sea in Mexico. Most of that diverted water — [approximately 70%](#) — irrigates farmland, and much of that water flows to thirsty crops such as hay and cotton, which are [exported in large quantities](#).

Brad Robinson walks on a field



Brad Robinson walks on a field that he has left fallow in Blythe as part of a program between area growers and the Metropolitan Water District. (Luis Sinco / Los Angeles Times)

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SINCE 2000, THE RIVER'S FLOW HAS SHRUNK DURING ONE OF THE DRIEST 22-YEAR PERIODS IN CENTURIES. SCIENTISTS HAVE DESCRIBED THE LAST TWO DECADES AS A [MEGADROUGHT](#), AND ONE THAT'S BEING WORSENER BY THE HEATING OF THE PLANET WITH THE BURNING OF FOSSIL FUELS. RESEARCHERS HAVE WARNED THAT LONG-TERM "[ARIDIFICATION](#)" OF THE COLORADO RIVER BASIN MEANS THE REGION MUST ADAPT TO A RIVER THAT PROVIDES LESS WATER.



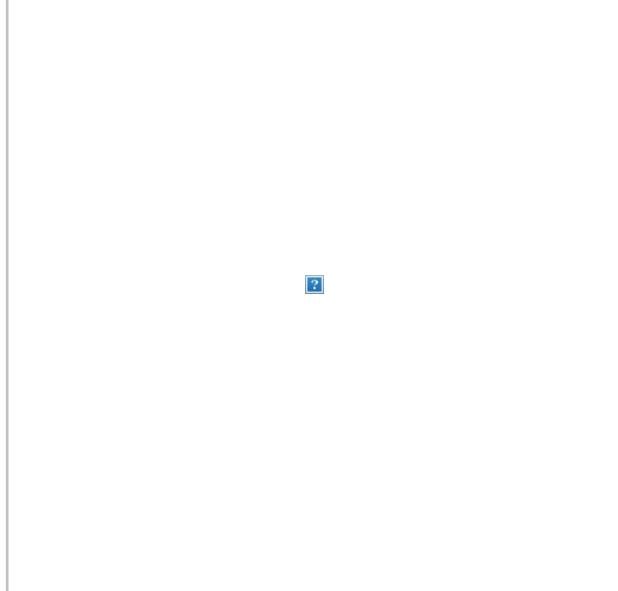


Supercharged by climate change, 'megadrought' points to drier future in ...

Global warming turned what would have been a moderate 19-year drought into one of most severe 'megadroughts' of ...

The water level in Lake Mead has declined 27 feet since January 2020. The reservoir now stands at just 34% of full capacity, placing it at a shortage level that will trigger mandatory water cutbacks next year for Arizona, Nevada and Mexico.

A boater gets an up-close view of previously submerged surfaces at Lake Mead.



[?]

A boater gets a view of previously submerged surfaces at Lake Mead. The lake's water level has dropped 27 feet since January 2020.(Allen J. Schaben / Los Angeles Times)

The lake's water level is projected to continue falling. The [latest estimates](#) from the federal government show the water in Lake Mead could drop an additional 30 feet by August 2023, a level that would require water cuts in California.

Since 2005, Robinson and other farmers in the Palo Verde Valley have left portions of their lands dry and unplanted under a [35-year deal](#) with the Metropolitan Water District, which has paid them more than \$180 million for water that was sent flowing through the Colorado River Aqueduct to cities in Southern California. Under the new deal, much of the water will instead be left in Lake Mead to try to reduce risks of the reservoir falling to critically low levels.

For managers of the MWD, the program offers flexibility, enabling them to pay for more land-fallowing in years when they need more water.

Each year, the MWD calls for a certain percentage of the valley's farmlands, up to a maximum of 28%, to be left fallow. Starting this year, the water from a portion of those lands is staying in Lake Mead.

Old farm equipment stands at the edge of a field in Blythe.



Old farm equipment stands at the edge of a field in Blythe. Since 2005, farmers in the Palo Verde Valley have left portions of their lands dry and unplanted under a 35-year deal with the Metropolitan Water District.(Luis Sinco / Los Angeles Times)

Similar programs have taken shape in several areas along the Colorado River.

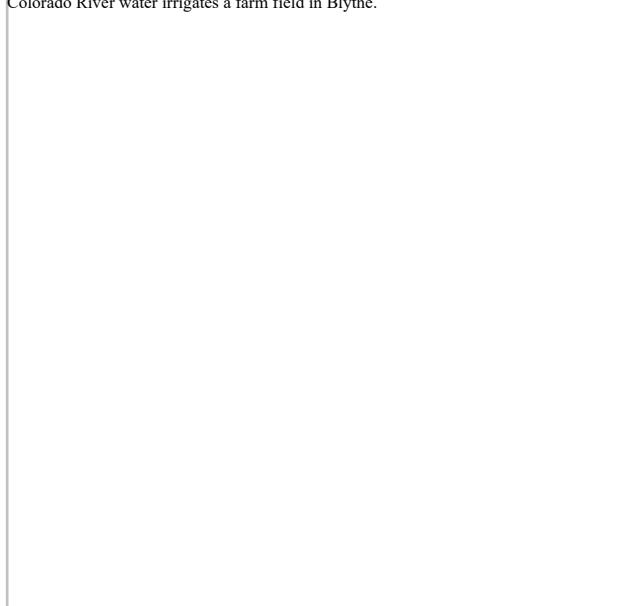
Last year, the MWD began paying farmers in the smaller Bard Water District not to plant water-intensive crops such as alfalfa [in the spring and summer](#), while they continue growing higher-value winter crops such as lettuce, broccoli and cauliflower.

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And the MWD's board is considering paying for [seasonal fallowing](#) under another [proposed agreement](#) with the Quechan Indian Tribe, whose reservation borders Arizona, California and Mexico, and includes farms that produce hay and vegetable crops.

Other initiatives are underway across the river in Arizona. Under agreements aimed at slowing the decline of Lake Mead, leaders of the Colorado River Indian Tribes have been [leaving some farmlands dry](#), and landowners in the Mohave Valley Irrigation and Drainage District have also been forgoing some water in exchange for payments.

Colorado River water irrigates a farm field in Blythe.



Colorado River water irrigates a farm field in Blythe.(Luis Sinco / Los Angeles Times)

To support more fallowing of land in the Palo Verde Valley, the federal government is contributing half the funding — \$19 million — while the rest is coming from the Central Arizona Project, the Southern Nevada Water Authority and the MWD.

"This is just the beginning," MWD General Manager Adel Hagekhalil said when the deal was announced in August. "We're working to develop other innovative ideas to keep as much water as possible in Lake Mead."

The program demonstrates how urban and agricultural water districts can work together to deal with shortages, said Bill Hasencamp, MWD's manager of Colorado River resources.

"A lot of other states and other regions are looking to those programs as examples of what can be done elsewhere," Hasencamp said. "We want to set a good example of how farmland can be productive in the era of shrinking water supplies."

Reducing reliance on the Colorado River, he said, will require bigger water-saving efforts in cities and farming communities alike. The MWD supplies water to cities and water districts across Southern California that serve about 19 million people. The agency's figures show that between 2011 and 2020, its water use declined about 7% — in part thanks to the lasting effects of conservation campaigns during the 2012-2016 drought.

Because the latest estimates show Lake Mead is likely to continue declining, Hasencamp said, "we're going to need to do more."

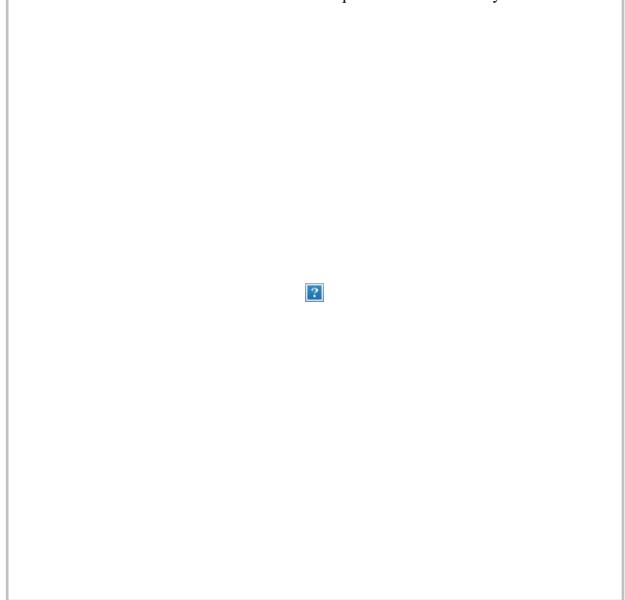


The Colorado River churns through the Palo Verde Diversion Dam near Blythe. Some river water is channeled from the dam to local farm fields.(Luis Sinco / Los Angeles Times)

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Robinson, who is a board member of the Palo Verde Irrigation District, runs a family business that his grandfather founded in 1960. He now farms on about 3,200 acres around Blythe, including land he owns and leases. His fields produce cotton that is exported, alfalfa that is trucked to dairies in California, Bermuda grass that is baled to feed horses, and honeydews and other melons that are sold in supermarkets.

Farmer Brad Robinson looks over his cotton crop in the fields near Blythe.



Farmer Brad Robinson looks over his cotton crop in the fields near Blythe.(Luis Sinco / Los Angeles Times)

"In a perfect world, a farmer wants to farm," Robinson said. "But the reality of the situation is that we have a certain amount of population and people, and don't have unlimited water. So ... the two sides are going to have to work together."

The fields that are left dry are rotated every one to five years. And for the farmers, the cash payments provide a stable chunk of income that isn't subject to price swings.

"We're not getting rich off this. But it helps enough on the bad years," when crop prices are low, Robinson said. "I've never laid anybody off because of the fallow program, and I never intend to do so."

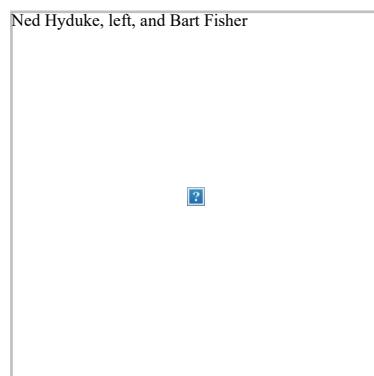
The program is far from a cure-all, and will need to be combined with other steps, said Chuck Cullom, manager of Colorado River programs at the Central Arizona Project. For example, water agencies in Arizona and Nevada have offered to invest in a proposed water recycling project in Southern California. And Cullom's agency has been investing in testing water-saving irrigation technologies on Arizona farms.

"We all share the river. We all share risk," Cullom said. "As the system becomes more vulnerable, we need all of the sectors to work together."

The sorts of deals that temporarily leave farmland dry help by adding flexibility to the water system, but they also raise questions as the West grapples with the effects of climate change, including hotter, more intense droughts, said Newshe Ajami, director of urban water policy at Stanford University.

"If you're experiencing drought after drought, and the droughts are getting hotter and drier, how long can you fallow land?" Ajami said. "I think it's a Band-Aid. It's a temporary solution to a more long-term problem we are having."

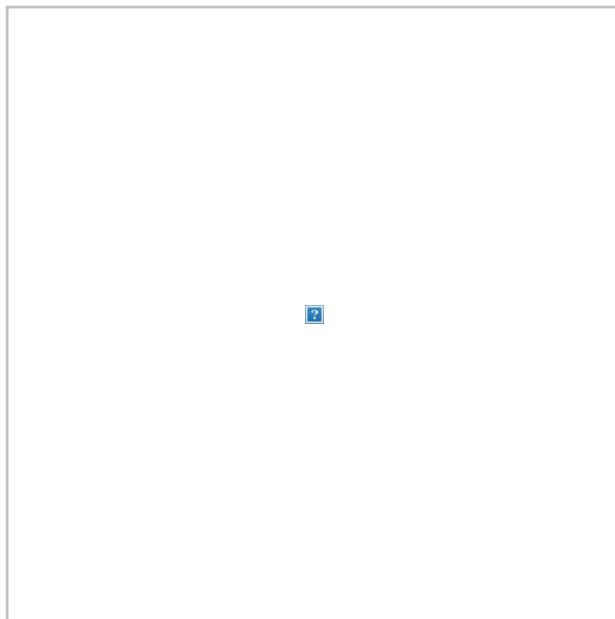
Ned Hyduke, left, and Bart Fisher



Ned Hyduke, left, general manager of the Palo Verde Irrigation District, looks at a map of fallow farm fields around Blythe with Bart Fisher, the vice president of the irrigation district board.(Luis Sinco / Los Angeles Times)

Some Arizona farmers are already facing cutbacks in water deliveries from the river because they hold the lowest-priority water rights.

The farmers in Blythe, in contrast, hold some of the oldest water rights on the river, dating to 1877, when investor Thomas Blythe filed a claim to use water from the river. Based on that history, the growers of the Palo Verde Valley have a first-priority position among California water districts and would be among the last in line for cuts.



Farmer Bart Fisher shares a laugh with a worker while looking over seeding operations at one of his fields in Blythe.(Luis Sinco / Los Angeles Times)

"We should be the last ones to worry about water," said Bart Fisher, a farmer who is vice president of the irrigation district board. "But if there's no water in the river, it really doesn't matter."

Fisher, who runs a farming business that his grandfather founded in 1917, said even with such solid water rights, he and other growers have reason to be concerned about the river's worsening crisis.

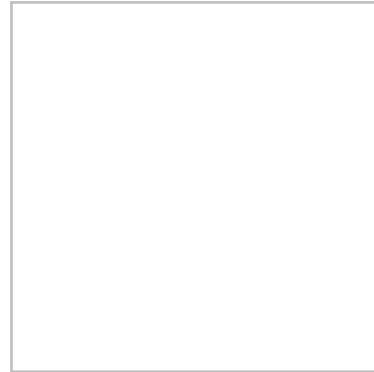
"It looks grim, actually. I was born in Blythe and I've been here all my life, and we've never been so threatened," Fisher said, looking across a dry field where bits of garlic, remnants of the last harvest, were scattered in the soil.

He also grows broccoli, melons, wheat and hay, all of which rely on Colorado River water flowing through the canals.

"We could conceivably come to a place on the Colorado River where there is not water for anybody's needs," Fisher said. "We're going to diminish reservoir levels to levels that we haven't seen before, and the question then is, how do we respond?"

He said he hopes to see more deals emerge. If four or five other agricultural water districts pitch in, he said, their contributions could quickly add up to 10 feet or 15 feet of additional water in Lake Mead, which would make a big difference.

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A formerly sunken bench rests on the shore near the Hemenway Harbor launch ramp amid signs of the drought's effect on Lake Mead in Nevada.(Allen J. Schaben / Los Angeles Times)

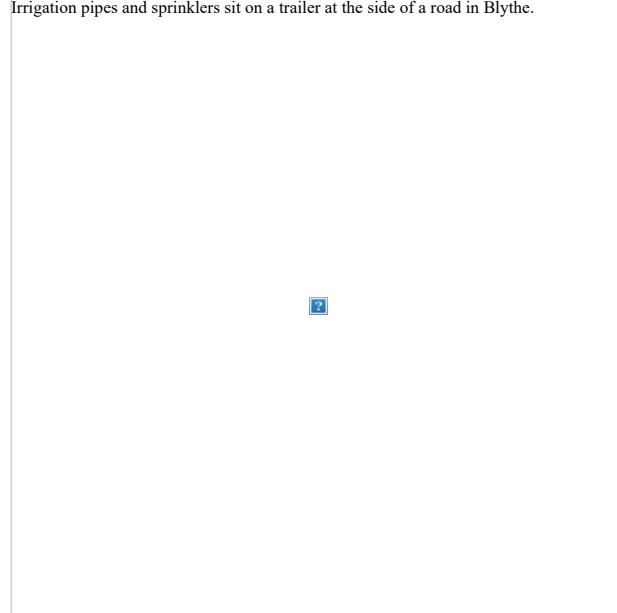
But even as Fisher and other farmers continue to participate in the MWD program and receive payments, they've also voiced concerns.

Under the deal, the MWD provided \$6 million to establish a locally run [community improvement fund](#) in Blythe that has provided grants and business loans in an effort to boost the local economy. Fisher said in retrospect, that one-time payment hasn't been enough.

Fisher drove down the main avenue, Hobsonway, where he passed shuttered businesses, including a motel, gas station, restaurant and several stores, all with boarded-up windows.

"I think we would do it a little differently today," Fisher said. "We would ask for more community support" from the MWD.

Irrigation pipes and sprinklers sit on a trailer at the side of a road in Blythe.



Irrigation pipes and sprinklers sit on a trailer at the side of a road in Blythe.(Luis Sinco / Los Angeles Times)

To the farmers' dismay, the MWD has bought large pieces of farmland in the Palo Verde Valley. The largest purchase, 12,000 acres in 2015, made the MWD the largest landowner in the irrigation district. The MWD says it now [owns about 29,000 acres](#) in the area.

The agency leases the land that isn't left dry to growers, offering reduced rent to farmers who plant crops that consume less water.

The problem with the MWD owning so much land, Fisher said, is that it ends up paying less to landowners in the valley. He said this deprives the area of approximately \$6 million to \$8 million annually that would otherwise be going to local businesses and fueling the economy.

"When [the MWD] fallows their own land, they keep the money. So it doesn't make its way into our community. And it's a lot for a little community like this," Fisher said.

Worried by the MWD's land dealings, leaders of the Palo Verde Irrigation District [sued the agency in 2017](#), but then [dropped the lawsuit](#) in 2018.

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Recently, farmers objected when they learned of an MWD proposal to buy an [additional 702-acre property](#) from Cox Family Farms. The MWD board endorsed the purchase last month.

"We've told them that we think it's a very bad idea. It's bad for the community, and frankly, it's a predatory practice on their part," Fisher said. "It's just disappointing. It's sort of counter to the spirit by which we originally engaged with them to negotiate the fallow program."

At the MWD, however, officials [have discussed](#) the potential for additional purchases of farmland along the river in areas with high-priority senior rights as a way to reduce water use in agriculture and free up water for urban Southern California in dry times.

"It would allow us to play a long game with climate change by holding and leasing land for decades," Brad Coffey, manager of water resources management, said during a September [committee meeting](#).

Board members discussed whether to actively pursue future land purchases.

"I believe that if someone wants to sell us that land, that we should always answer the door," board member Larry Dick said. "We'll do it responsibly. We're not going to take that land and take it out of production forever."

Russell Lefevre, another board member, asked how the land purchases are viewed by the farmers.

"They did express concern about us buying land," said Hasencamp, MWD's manager of Colorado River resources. "We are working with them to try to alleviate some of those concerns."

Lefevre said he would support seeking out other land deals. He said he wonders "if we can move this methodology to other areas," such as the Coachella and Imperial valleys.

Thomas, Autum

From: Annette Faurote <afaurote@gmail.com>
Sent: Tuesday, October 19, 2021 3:16 PM
To: vinagsa@gmail.com
Subject: Vina GSP Comments

[ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.]

Thank you for considering our comments. Please make these comments part of the permanent public record.

I am concerned that the Vina GSA proposal doesn't go far enough in addressing sustainability. In contrast to the Vina GSA proposal, serious sustainability begins now, today. Not after we have pumped down our water table to dangerous depths. We need to seriously consider the direction we are heading with climate change and longer droughts. (Currently, next year is predicted to be a La Niña year refer to: <https://www.climate.gov/news-features/blogs/enso/july-2021-enso-update-la-ni%C3%BCa-watch>) which means next year will also likely be a drought). The current VINA proposal does not fully address the climate change reality and the prolonged droughts that accompany climate change.

The figures **on page 107** discussing water surface elevation shows that our water table is trending downward. It discusses the MO and MT. As defined here **the “operation range” is too deep**. With this proposed “operational range” there is the very real possibility that we could lose deep rooted trees, part of the Chico Urban forest. And also, and very seriously, we would lose too many domestic wells. **The operational range is much too deep and should be based on early levels (perhaps 2000 or 2005, at least 2010) before we pumped our aquifer to the current low levels.**

The current proposals heavily favour agriculture, which we all know is important, but equally important are our human community, our domestic wells and urban forest.

Has there been an Environmental Impact Report (EIR)? It would seem by substantially lowering the aquifer as proposed in VINA GSA we are affecting the local ecosystems as well as disrupting homeowners that use wells.

As said in comments by The Nature Conservancy,

"Potential Effects on Environmental Beneficial Users. SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. " Because effects on plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs."

215.5 Says "Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of surface water" must be seriously considered. I don't feel this has been adequately addressed. The report says in line 1740: "Relatively shallow groundwater in some areas of the subbasin support Groundwater Dependent Ecosystems and stream flows".

Thus, an EIR must be completed to understand the changes we are considering.

Thank you for addressing all of the above issues.

Sincerely,

Annette Faurote
Chico, Ca 95928

Sent from [Mail](#) for Windows

From: [David A Eaton](#)
To: vinagsa@gmail.com
Cc: [David A Eaton](#)
Subject: comments | draft of Vina Basin Sustainable Groundwater Plan (SGP)
Date: Tuesday, October 19, 2021 11:02:56 PM

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

Greetings colleagues. Below are my comments on the draft **Vina Basin Sustainable Groundwater Plan (SGP)**.

Thank you for the chance to contribute to these deliberations.

Sincerely, David Eaton (1080 East Lassen Avenue, Chico CA 95928)

COMMENTS

A. The “Measurable Objective” of 100 feet above mean sea level for the groundwater level is too LOW. The level of the past twenty years is already diminished from historical ‘normals’. The downward trend of the aquifer is evident in the materials provided.

We should not be depleting the aquifer more under the Draft SGP. Rather **let us restore our aquifer to** something resembling its historic average: let us say something like **140 feet above sea level**.

B. The hydrological consultants cited estimate current pumping from the Vina sub-basin is 244k acre-feet per year, with all but 20k acre-feet for agricultural use. They estimate the **current overdraft as about 10k acre-feet per year**.

They then propose a **sustainable yield estimate at 233k acre-feet per year**. BUT this is **dangerously high**. This estimate is based on a recent period in which the aquifer has been in continued decline, and especially if recent and projected climatic trends continue, pumping at this level will bring **further reduction of the groundwater level**.

Please, **let us adopt a more conservative estimate for this sustained yield!** Using a modest ballpark figure of eighteen percent reduction in overall water use going forward, for example, as recently proposed by Governor Newsom, this could be about **200,000 acre-feet per year**.

Our groundwater is an irreplaceable, finite, and precious resource in our part of California. **Let us protect it effectively for generations to come.**

Thank you for your time and consideration! I look forward to learning what steps the members of your commission take to protect our shared resources, and in the meantime I thank you for your time and consideration.

Sincerely, David Eaton, PhD, MPH (Department of Anthropology, CSU Chico, email daeaton@csuchico.edu)

Thomas, Autum

From: Debra Lucero <debra@debralucero.us>
Sent: Tuesday, October 19, 2021 5:37 PM
To: VinaGSA@gmail.com
Subject: Comments on the Vina GSA Plan

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

1. I remain concerned about the low levels of the MO's and the MT's in this plan.

This is not an aspirational plan and perhaps one that will further be a detriment to our shared aquifer. It is quite concerning that our beloved valley oaks and other heritage trees that are non-irrigated and are icons of Butte County are not being considered. There will be domestic well failures, chronic lowering of groundwater levels, die-off of groundwater dependent ecosystems.

2. I remain concerned about the 10,000AF water budget.

I would like to understand how this number was arrived at; I was told it was set via DWR's climate change model that actually predicts more rainfall in the upcoming years. I would like to see a drier model utilized as well as a wetter model. We should have at least two options but regardless - a complete understanding as to how this water budget was set is needed.

3. I remain concerned about the undue influence of the Rock Creek Reclamation District on the Vina GSA Board when joint meetings are held.

The balance of power is clearly out of whack - leaning heavily toward industrial agriculturalists leaving 110,000 residents in the City of Chico with little to no voice and small farmers and domestic well owners with even less voice.

4. I remain concerned there are no “triggering” conditions to initiate conservation or demand reduction PMA's.

These need to be spelled out.

5. I remain concerned that the current drought has had no forbearance on this process.

We are told by technical staff and others that this need not be a concern since this is a long-range planning process yet it has been mentioned that we've already hit some of our lowest MT's. Is this true?

6. I remain concerned about the lack of current well data and the timeliness of the data.

There needs to be better coordination between environmental health, BC Water & Resource Conservation Department and DWR.

7. I remain concerned about the lack of current and fluid data regarding output of local water via groundwater transfers, riparian rights, SGMA credits, etc.

8. I remain concerned about the two consecutive dry years in a row to trigger MT's.

This seems irresponsible - particularly in a drought like we're in now. How many domestic wells have to go dry? Is this a loophole? Who is responsible for dry domestic well users or farmers? Who pays for this in the end if the Vina GSA sets MO's and MT's that are so low we begin to see negative effects?

9. I remain concerned about the one well for groundwater quality management in the North Vina subbasin.

Is this enough?

10. I remain concerned there is no mention of the groundwater markets being discussed up and down the state.

There is no analysis of this in the Vina GSP and it is critical to our area. It will be a reality to us in the north state to supply those in the San Joaquin Valley and Southern California with water. How will it affect pumping in our subbasins? How will water rights holders in Butte County participate? What are the possibilities? How will this affect our outflows and our modeling?

11. I remain concerned about the Vina SHAC process.

There have been at least two occasions where significant material was presented to the Vina GSA Board of Directors without review by the SHAC. Several members have expressed discontent with this process.

Debra Lucero
Butte County Supervisor District 2
dlicero@buttecounty.net
www.debralucero.us
530-552-2030

Thomas, Autum

From: gracefultherapy@aol.com
Sent: Tuesday, October 19, 2021 6:44 PM
To: VinaGSA@gmail.com
Subject: Vina GSP Comments

ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.

To whom this is directed:

1. I remain concerned about the low levels of the MO's and the MT's in this plan.

This is not an aspirational plan and perhaps one that will further be a detriment to our shared aquifer. It is quite concerning that our beloved valley oaks and other heritage trees that are non-irrigated and are icons of Butte County are not being considered. There will be domestic well failures, chronic lowering of groundwater levels, die-off of groundwater dependent ecosystems.

2. I remain concerned about the 10,000AF water budget.

I would like to understand how this number was arrived at; I was told it was set via DWR's climate change model that actually predicts more rainfall in the upcoming years. I would like to see a drier model utilized as well as a wetter model. We should have at least two options but irregardless - a complete understanding as to how this water budget was set is needed.

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This seems irresponsible - particularly in a drought like we're in now. How many domestic wells have to go dry? Is this a loophole? Who is responsible for dry domestic well users or farmers? Who pays for this in the end if the Vina GSA sets MO's and MT's that are so low we begin to see negative effects?

9. I remain concerned about the one well for groundwater quality management in the North Vina subbasin. Is this enough?

10. I remain concerned there is no mention of the groundwater markets being discussed up and down the state. There is no analysis of this in the Vina GSP and it is critical to our area. It will be a reality to us in the north state to supply those in the San Joaquin Valley and Southern California with water. How will it affect pumping in our

subbasins? How will water rights holders in Butte County participate? What are the possibilities? How will this affect our outflows and our modeling?

11. I remain concerned about the Vina SHAC process.

There have been at least two occasions where significant material was presented to the Vina GSA Board of Directors without review by the SHAC. Several members have expressed discontent with this process.

Thomas, Autum

From: Giovanna Bartels <vannanancy@yahoo.com>
Sent: Tuesday, October 19, 2021 5:43 PM
To: VinaGSA@gmail.com
Subject: Vina GSP Comments

[ATTENTION: This message originated from outside **Butte County**. Please exercise judgment before opening attachments, clicking on links, or replying.]

As a participant in Vine GSA's. Groundwater Sustainability Plans (Plan) October 13, 2021 Zoom meeting I offer the follow:

Protecting residential wells from running dry should be a top concern of the GSA, yet the Plan actually sets acceptable percentages for their failures. This is unacceptable. Thereby, instituting across the board water conservation actions and raising the Plan's "minimum groundwater level thresholds" to protect residents and the environment must be facilitated. With water conservation plans and methods celebrating decades of use and success it is shocking and absurd that the GSA representatives seemed opposed in supporting them and were solely focused on the Plan.

I was disturbed by the GSA representatives inability to answer a question as to whether groundwater rights holders would have equal access to injected surface water into the aquifer. Clearly, the public is not properly informed on this important issue.

Finally, the public was left confused as to who could be in charge of handling future Plans and updates. It was said several times that residents would have a voice in future plans during review periods, however this would not be the case if a private water district should take over this duty and Institute a 1-vote per acre system. Knowing who and how a public trust resource is managed is essential to the public's rights and it should be mandatory that this be spelled out to current water right's holders.

Respectfully,
Nancy Gillard-Bartels
10754 Lone Pine Ave
Chico, CA 95928
530-966-5234

[Sent from Yahoo Mail on Android](#)



Public Comments Summary Presentation

Kamie Loeser
Director
Butte County Water and Resource Conservation

Vina GSA and Rock Creek Reclamation District GSA Board meeting
November 4, 2021



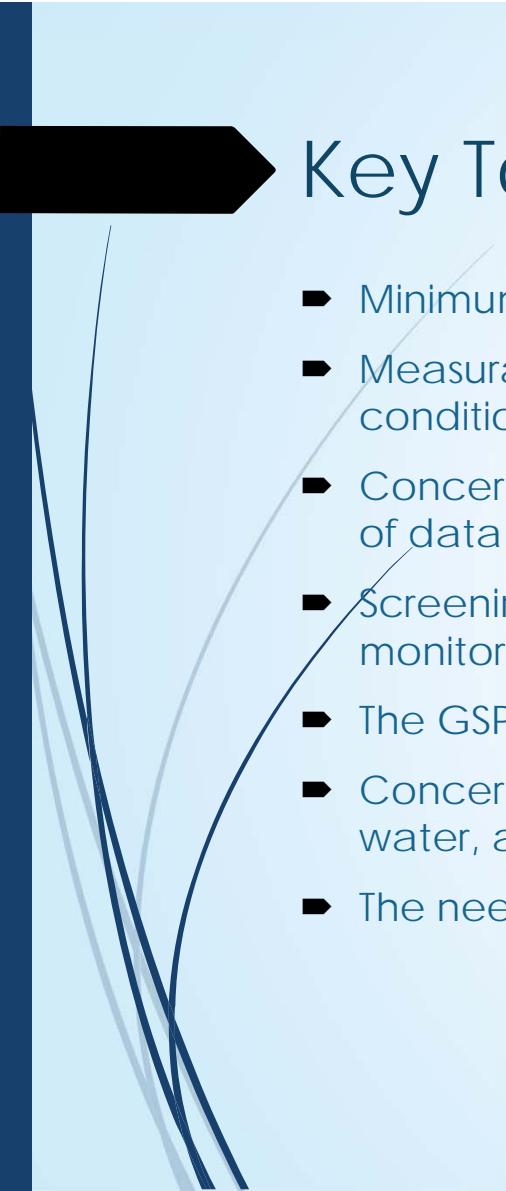
Overview

- ▶ 40-day public review period beginning on September 10, 2021 and ending October 19, 2021
- ▶ 2 public workshops
 - ▶ 1) an in-person workshop on October 4, 2021
 - ▶ 2) a virtual workshop on October 13, 2021
- ▶ SHAC also met on October 19, 2021 to provide comments to the Vina GSA Management Committee and Geosyntec (consultant team)



Comments Received

- ▶ Approximately 175 comments either using the tracking sheet, email, or letters as well as comments provided during public workshops.
- ▶ 7 letters from agencies/organizations
- ▶ 8 letters from general public
- ▶ Letter comments were cross-referenced in the Comments Tracking Table and counted as one comment.



Key Topics

- ▶ Minimum Thresholds (MTs) are set too low
- ▶ Measurable Objectives (MO) are set too low and should not be set below historical conditions
- ▶ Concern regarding Groundwater Dependent Ecosystems (GDEs) analysis and lack of data as well as undesirable results and need for additional monitoring
- ▶ Screening and well construction information for RMS wells, the need to expand the monitoring system
- ▶ The GSP should address flood water storage
- ▶ Concern over the complexities of surface water recharge, ownership of recharged water, and the need for recharge projects
- ▶ The need to monitor the inter-basin connection/subsurface flows and outflows



Key Topics

- ▶ Triggers for response to negative conditions and undesirable results and the schedule when action occurs
- ▶ Implementation schedule of PMAs
- ▶ Concern over data gaps, data gaps need to be clearly identified and plan to fill them
- ▶ Concern over domestic wells going dry in current drought conditions and what that would mean if the MO is set below historic conditions
- ▶ Sustainable yield estimates and calculations
- ▶ Changes or elimination to some of the suggested PMAs
- ▶ The GSP should identify more water conservation activities including water recycling, agricultural conservation and efficiency
- ▶ Concern that the basin is currently experiencing undesirable results



Response Process

- ▶ Responses to Comments will likely fall into one of three main categories:
 1. Generally high-level response addressing how the issue was handled in the Plan and/or what future work may address the comment/concern.
 2. Acknowledgement of the comment, such as "Thank you for your comment."
 3. Revision to the GSP in response to the comment. Comments that identify points of confusion, needed clarifications, or corrections that lead to revisions.
- ▶ Revisions will also be noted in the Comment Tracking Table
- ▶ The final Comment Tracking Table will be provided as an Appendix to the Final GSP

Example Responses

Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment	Response, Edit, Change	Responder
Commenter 3	Self	3 - SMC	-	-	Why are there no Chico residential wells in the monitoring network? Should we drill shallower wells for monitoring?	There are 2 residential wells in the RMS network for groundwater levels in the Vina subbasin with total depths of 165 and 195 feet. Section 5.4.4 Interconnected Surface Water/Associated Impacts on Groundwater Dependent Ecosystems and Section 3.8 describes the intent to install additional wells and other monitoring networks including shallow wells.	Kelly Peterson
Eric Lundberg	Public Comments	GSP 5.2.4.1		4544 - 4551	When PID has extra surface water, it seems only prudent for Vina GSA to utilize that excess.	Comment Noted. No changes to the GSP were made. The Commenter is noting their support of a Potential Project identified in Chapter 5.	Kamie Loeser
Commenter Name	Commenter Organization	Chapter #	Section	Line #(s) or Figure #	Comment	Response, Edit, Change	Responder
Michael Bolzowski	Cal Water	1	1.3.5.2	941	The GSP references that Cal Water published our UWMP in 2007 as written in the Chico 2030 General Plan, which was published in 2010. We may want to have a line added that the latest UWMP was just published in 2020.	The Commenter references a quoted section from the Chico 2030 General Plan. Therefore the following notation will be added after line 946: <u>*Per California Water Code, which requires urban water suppliers to update their plan once every five years, the Cal Water Urban Water Management Plan (UWMP) was updated and adopted in 2020.</u>	Kamie Loeser



Discussion

- To focus efforts, the GSA Boards may wish to discuss:
 - Strategy for responding to agency letters, particularly those that provide specific recommendations.
 - Comments that you think should be a high priority for addressing through revisions now.



**Vina
Groundwater Sustainability Agency
Agenda Transmittal**

Agenda Item: 3.1.1

Subject: Consideration of an alternative Measurable Objective

Contact: Christina Buck

Phone: (530) 552-3593

Meeting Date: 11-15-21

Regular Agenda

Department Summary:

During the public comment period, a number of comments expressing concern for how low the MO is set began to emerge. This included a number of Stakeholder Advisory Committee (SHAC) members. In response, the Management Committee prepared alternatives for the SHAC's discussion and consideration at their October 19th and November 4th meetings. The details of their discussion can be found in the October 19, 2021 SHAC Meeting summary and the draft November 4, 2021 meeting summary which are included in this Board packet. The SHAC was split in their support for retaining the 2030 MO vs. replacing it with the 2010-2020 MO alternative at both recent meetings.

The attached Management Committee memo provides a comparison of two Measurable Objectives for the Board's consideration.

The "2030 MO" in the public review draft GSP was established by the GSA Boards with input from the Stakeholder Advisory Committee and members of the public in the spring of 2021. As stated in the GSP, "The GSAs' established MO intended to preserve the desired condition throughout the Vina Subbasin while offering flexibility in GSP implementation.

The alternative MO is based on measured groundwater levels in each representative monitoring well from 2010-2020. This will be referred to as the "2010-2020 MO". The 2010-2020 MO is based on an average of all available groundwater level measurements from 2010-2020 calculated for each Representative Monitoring Site (RMS) well.

Interim Milestones (IM) are targets set in increments of 5 years over the implementation period of the GSP offering a path to sustainability. For this reason, the MO and IM are like guideposts." [GSP Lines 3378-3382]

Fiscal Impact: None

Staff Recommendation: Consider approval of the 2010-2020 Measurable Objectives (MOs) and associated Interim Milestones (IM) for inclusion in the Vina Groundwater Sustainability Plan (GSP). If approved, the 2030 trend MOs as defined in the Public Draft GSP for Groundwater Level Sustainable Management Criteria (SMC) would be replaced in the GSP by the 2010-2020 average groundwater level MOs as defined below for each Representative Monitoring Site.



Water and Resource Conservation

Kamela Loeser, Director

308 Nelson Avenue
Oroville, California 95965

T: 530.552.3595
F: 530.538.3807

buttecounty.net/waterresourceconservation
bcwater@buttecounty.net

MEMORANDUM

DATE: November 9, 2021

TO: Vina GSA Board

FROM: Christina Buck, Assistant Director Department of Water and Resource Conservation

RE: Consideration of an alternative Measurable Objective

Action Requested

Consider approval of the 2010-2020 Measurable Objectives (MOs) and associated Interim Milestones (IM) for inclusion in the Vina Groundwater Sustainability Plan (GSP). If approved, the 2030 trend MOs as defined in the Public Draft GSP for Groundwater Level Sustainable Management Criteria (SMC) would be replaced in the GSP by the 2010-2020 average groundwater level MOs as defined below for each Representative Monitoring Site.

Measurable Objectives Defined

As defined in the GSP Regulations, “Measurable objectives” refer to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.

Section 354.30 of the GSP Regulations further states that:

- a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.
- b) Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.
- c) Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.
- d) An Agency may establish a representative measurable objective for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual measurable objectives as supported by adequate evidence.
- e) Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management

over the planning and implementation horizon.

- f) Each Plan may include measurable objectives and interim milestones for additional Plan elements described in Water Code Section 10727.4 where the Agency determines such measures are appropriate for sustainable groundwater management in the basin.
- g) An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.

Note: Authority cited: Section 10733.2, Water Code.

Reference: Sections 10727.2, 10727.4, and 10733.2, Water Code.

Background

In response to public comments received and heard at the GSP Public Workshops in October, the Management Committee prepared for the GSA Boards' consideration an alternative MO based on measured groundwater levels in each representative monitoring well from 2010-2020. This will be referred to as the "2010-2020 MO". The 2010-2020 MO is based on an average of all available groundwater level measurements from 2010-2020 calculated for each Representative Monitoring Site (RMS) well.

The public review draft of the Vina Subbasin GSP defines the MO for the Groundwater Level SMC as:

the groundwater level based on the groundwater trend line for the dry periods (since 2000) of observed short-term climatic cycles extended to 2030.

The "2030 MO" in the public review draft GSP was established by the GSA Boards with input from the Stakeholder Advisory Committee and members of the public in the spring of 2021. As stated in the GSP, "The GSAs' established MO intended to preserve the desired condition throughout the Vina Subbasin while offering flexibility in GSP implementation. Interim Milestones (IM) are targets set in increments of 5 years over the implementation period of the GSP offering a path to sustainability. For this reason, the MO and IM are like guideposts." [Lines 3378-3382]

For comparison of the 2010-2020 MO and the 2030 MO, Attachment 1 provides graphs of the two MOs for each RMS well in the Vina Subbasin. The full description of the MO in the public review draft GSP is also attached for reference (Attachment 2).

During the public comment period, a number of comments expressing concern for how low the MO is set began to emerge. This included a number of Stakeholder Advisory Committee (SHAC) members. In response, the management committee prepared alternatives for the SHAC's discussion and consideration at their October 19th and November 4th meetings. The details of their discussion can be found in the October 19, 2021, SHAC Meeting summary and the draft November 4, 2021, meeting summary which are included at the end of this Board packet as the SHAC update. The SHAC was split in their support for retaining the 2030 MO vs. replacing it with the 2010-2020 MO alternative at both recent meetings.

October 19, 2021

Those in support of the 2030 MO included G. Sohnrey, S. Lewis, J. Parsley, E. Markey, C. Madden

Those in support of the 2010-2020 MO included A. Dawson, T. Greene, B. Smith, J. Brobeck

November 4, 2021

Those in support of the 2030 MO included G. Sohnrey, S. Lewis, J. Parsley, S. Geopp, E. Markey,

Those in support of the 2010-2020 MO included A. Dawson, T. Greene, B. Smith, J. Brobeck (with reservation)

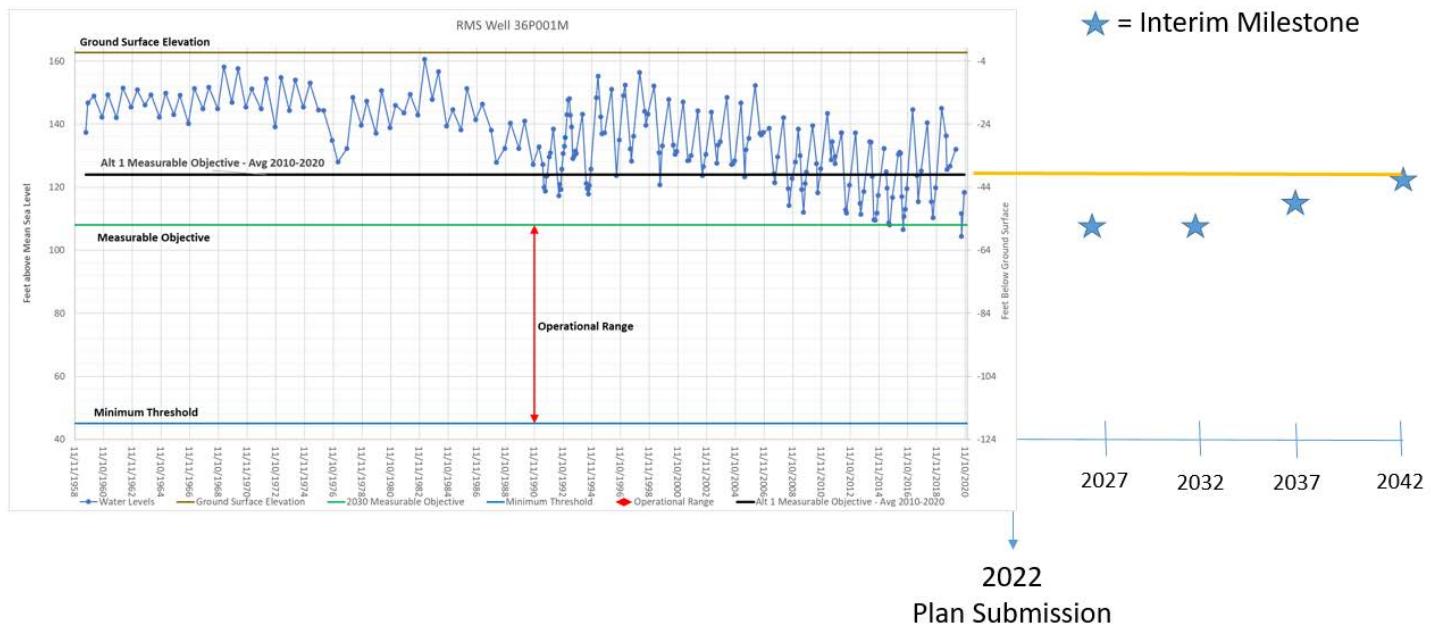
It should be noted that the GSAs are not required by SGMA to address undesirable results that occurred before January 1, 2015, and sustainability must be achieved by 2042.

Considerations and opposing viewpoints

2010-2020 MO

Many who support the 2010-2020 MO, prefer for the management goal of the subbasin to be groundwater levels that are within the range of previously observed groundwater levels. This is in line with the approach taken in the neighboring subbasins of Corning, Colusa, and Butte. Staying in the realm of historical groundwater level conditions as a goal is likely more protective of domestic well users, groundwater dependent ecosystems, and other environmental benefits. The 2010-2020 MO is likely to require a greater level of effort in terms of resources and projects and management actions to reverse the declining trend and increase groundwater levels. Setting the Interim Milestones to the current 2030 MO and then working back up to the 2010-2020 MO over the course of GSP implementation provides one path for achieving sustainability by 2042. Using these IMs with the 2010-2020 MO is likely to require projects and management actions that provide greater than the estimated deficit of 10,000 acre-feet per year during the implementation period.

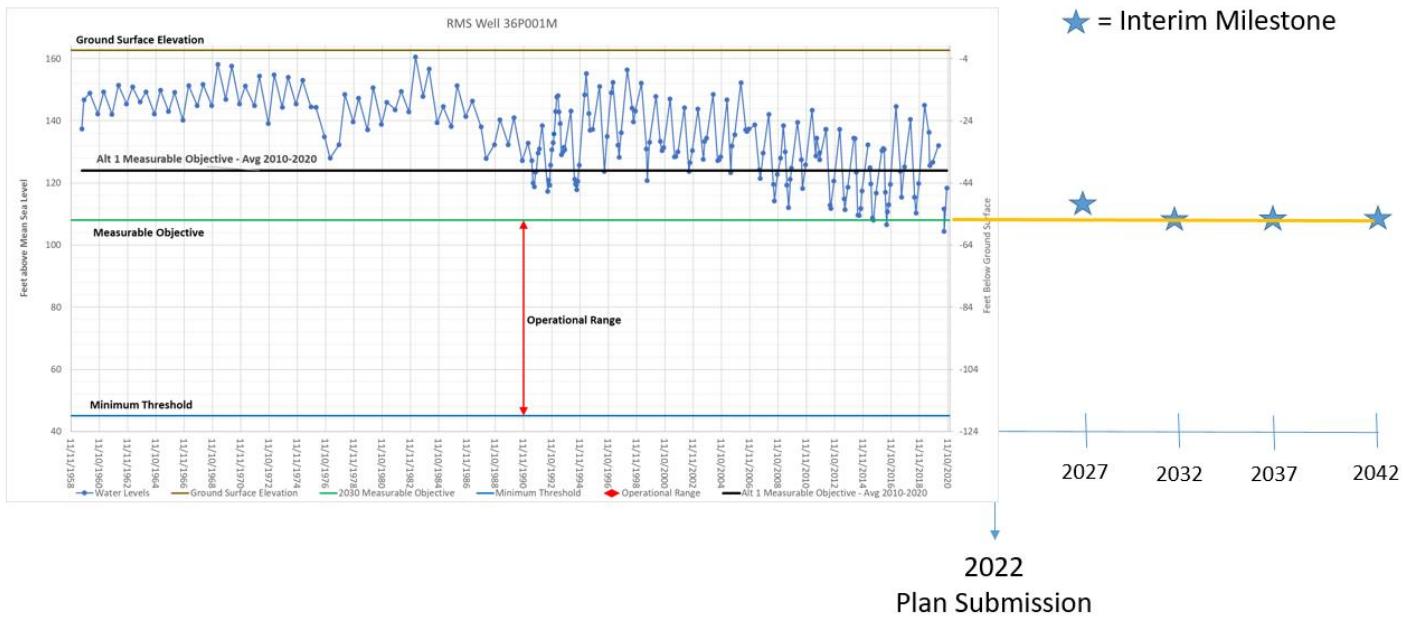
Example of 2010-2020 MO with IMs



2030 MO

The 2030 MO acknowledges the current declining trends in groundwater levels and identifies a reasonable level to stabilize groundwater conditions. Projects and actions will be needed to address the declining trend in groundwater levels and this MO provides the time to develop the resources (money and capacity) to implement projects and management actions to sustain the basin. Therefore, there is likely more certainty of success in achieving the 2030 MO.

Example of 2030 MO with IMs



Requested Action

Consider approval of the 2010-2020 Measurable Objectives and associated Interim Milestones for inclusion in the Vina Groundwater Sustainability Plan. If approved, the 2030 MO would be replaced in the GSP by the 2010-2020 MOs for each Representative Monitoring Site.

Attachments

1. Slides showing amended Table 3-1 and Hydrographs with both 2030 MO and 2010-2020 MO
 2. Measurable Objective Excerpt from Public Review Draft GSP

Item 3.1.1 - Attachment 1

Consideration of 2010-2020 Measurable Objective for Groundwater Levels SMC

Joint GSA Board Meeting Materials

November 15, 2021

Prepared 11/9/2021

2010-2020 MO and IM

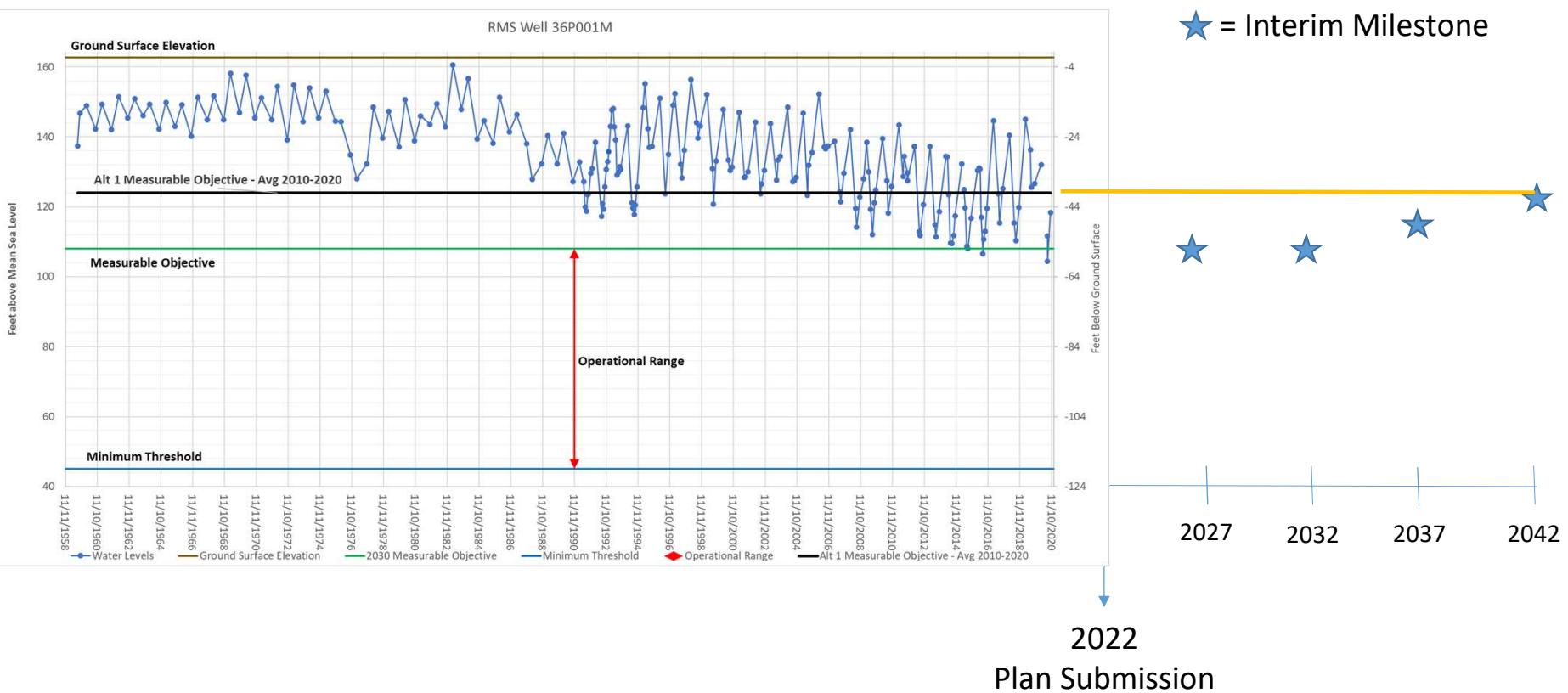
- An alternative MO, the “2010-2020 MO”, based on average 2010-2020 measured groundwater levels in each RMS well is shown on the following hydrographs. The “2030 MO” based on projected levels to 2030 is also shown on the graphs for comparison (as documented in the Public Review Draft of the GSP).
- If the 2010-2020 MO is adopted by the Boards, staff recommends keeping the 2027 and 2032 IM as defined in Table 3-1 (see next slide). However, 2037 IM would be set roughly halfway between the 2032 IM and the 2010-2020 MO.
- Spring levels would be compared against the MO/IM during annual report evaluations

IM= Interim Milestone

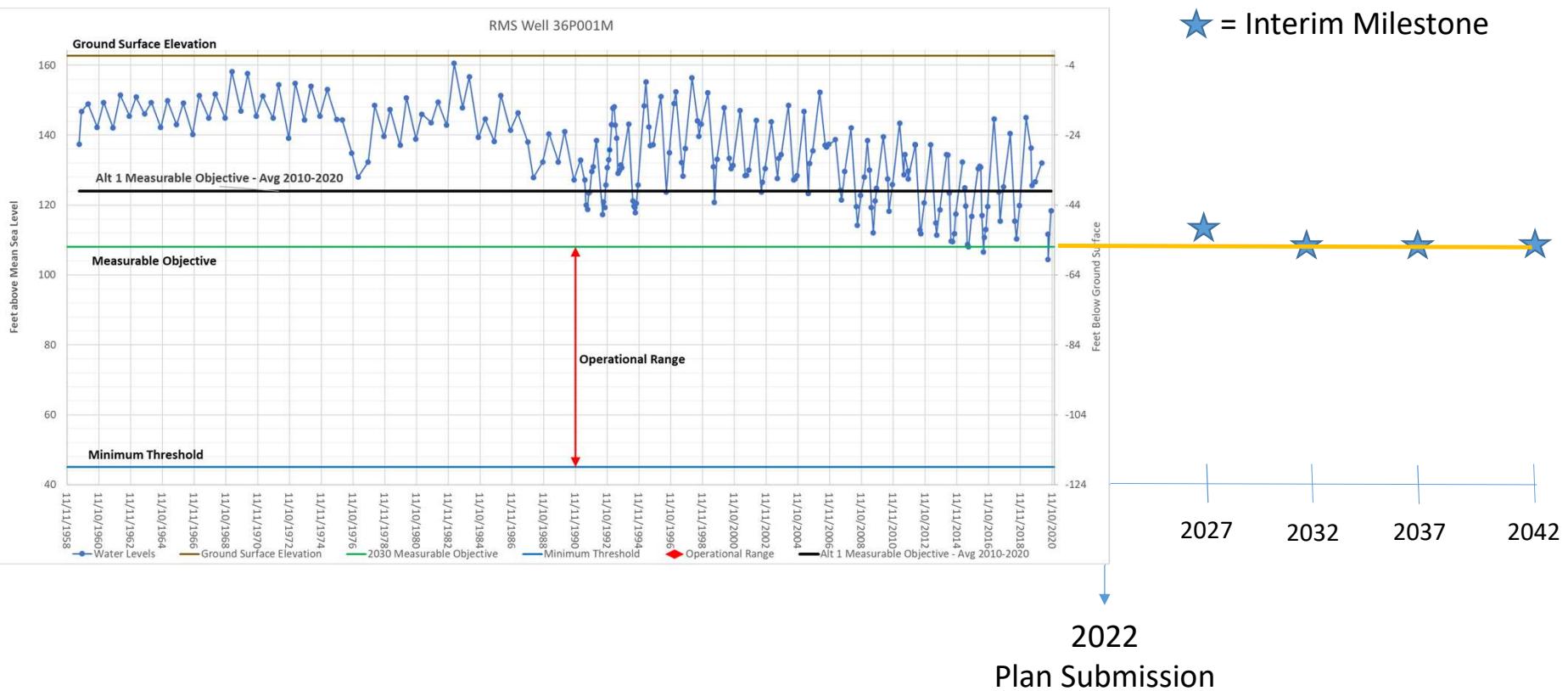
MO= Measurable Objective

RMS= Representative Monitoring Site

Example of 2010-2020 MO with IMs



Example of 2030 MO with IMs



Amended Table 3-1
with 2010-2020 MO
shown in green
column ("Alt 1 MO")

Table 3-1: Groundwater Levels SMC by RMS in Feet Above Mean Sea Level							
v.10/29/2021							
RMS Well ID	MT	Alt 1 MO	MO	IM			
				2027	2032	Alt 2037	2037
Vina Subbasin – North Management Area							
25C001M	50	135	130	131	130	132	130
10E001M	80	154	136	139	136	145	136
07H001M ^a	72	163	136	145	136	150	136
05M001M	31	127	115	116	115	121	115
36P001M	45	124	108	110	108	116	108
33A001M	72	143	125	126	125	134	125
Vina Subbasin – Chico Management Area							
CWSCH01b	85	121	106	108	106	113	106
CWSCH02		121	105	108	105	113	105
CWSCH03		119	108	110	108	113	108
CWSCH07		TBD	108	109	108	TBD	108
28J005		124	108	109	108	116	108
28J003M **		130	110	111	110	120	110
Vina Subbasin – South Management Area							
21C001M	10	90	64	66	64	77	64
18C003M	65	151	130	134	130	140	130
10C002M	20	98	92	95	92	95	92
24C001M	18	105	77	82	77	91	77
09L001M	30	109	91	94	91	100	91
26E005M	36	108	95	96	95	101	95
Note:							
^a MO is associated with GSP Well ID 18A001M.							
** to replace 28J005							

Groundwater Level RMS Wells

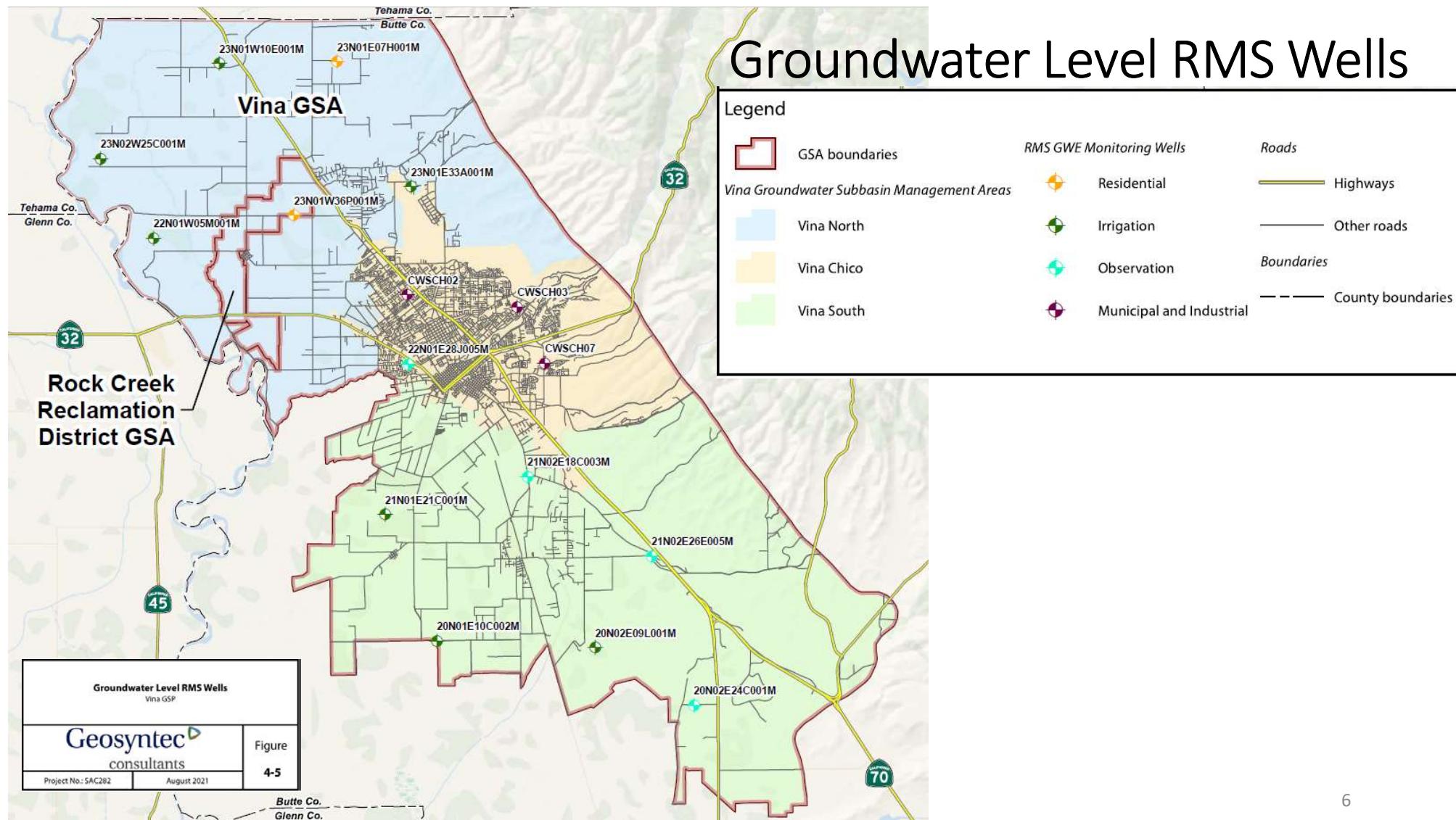


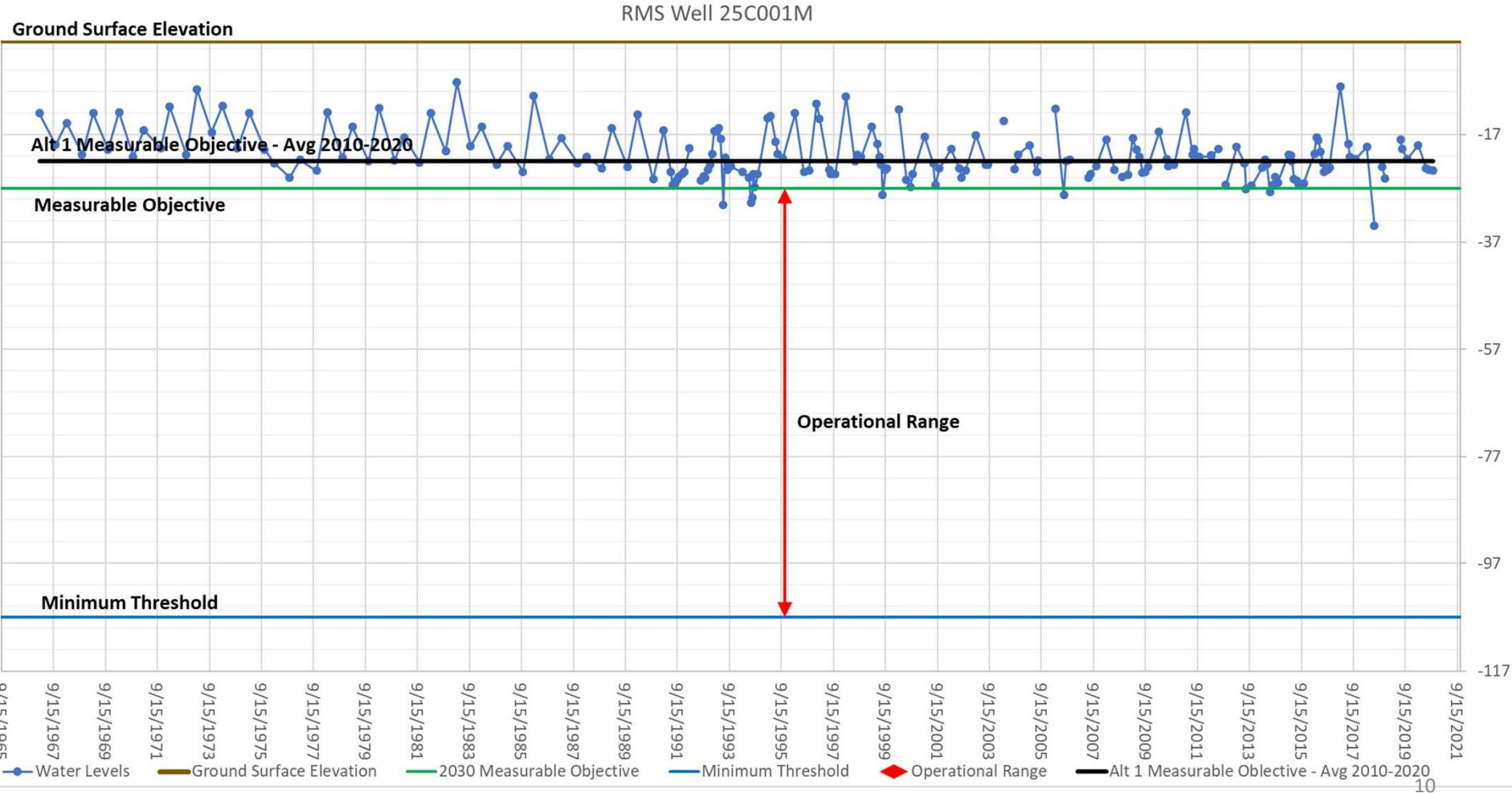
Table 4-5: Groundwater Levels RMS Well Construction Details						
v.10/29/2021						
RMS Well ID	State Well Number (Site Name)	Total Depth (feet bgs)	Screened Interval (feet bgs)	Reference Point Elevation ¹ (fe)	Reference Point Description	Ground Surface Elevation ¹ (feet)
Vina Subbasin – North Management Area						
25C001M	23N02W25C001M	243	N/A	161.2	Hole cut in side of casing	157.4
10E001M	23N01W10E001M	668	600-668	190.68	One inch hole inside pump base	189.38
07H001M	23N01E07H001M	195	115-195	283	Top of casing, remove blue cap	282
05M001M	22N01W05M001M	200	N/A	153.28	Hole in pump south side	151.48
36P001M	23N01W36P001M	165	N/A	164.35	Top of casing crack in north side	162.75
33A001M	23N01E33A001M	506	53-506	252.34	One inch hole in top of casing	252.34
Vina Subbasin – Chico Management Area						
CWSCH01b	CWSCH01b	>600	---	200	N/A	---
CWSCH02	CWSCH02	>600	---	183	N/A	---
CWSCH03	CWSCH03	>600	---	258	N/A	---
CWSCH07	CWSCH07	<600	---	270	N/A	---
28J005M	22N01E28J005M	948	740-800	179.79	Top of casing easterly 1" casing	178.89
28J003M **	22N01E28J003M	320	200-279	179.79	Top of casing easterly 1" casing	178.29
Vina Subbasin – South Management Area						
21C001M	21N01E21C001M	565	240-300 448-508	133.64	Hole in pump base west side	133.34
18C003M	21N02E18C003M	240	130-140 160-170 190-200	191.15	Top of shortest PVC casing	189.07
10C002M	20N01E10C002M	210	20-120	128.35	Top of casing south side	127.35
24C001M	20N02E24C001M	155	124-134	159.65	Top of casing, northern-most piezo	157.75
09L001M	20N02E09L001M	710	460-710	143.83	Hole in pump base, southeast side	139.33
26E005M	21N02E26E005M	315	265-275 280-290	184.44	Top of next to shortest PVC casing	182.26
** Replace 28J005						

Hydrographs for Representative Monitoring Wells

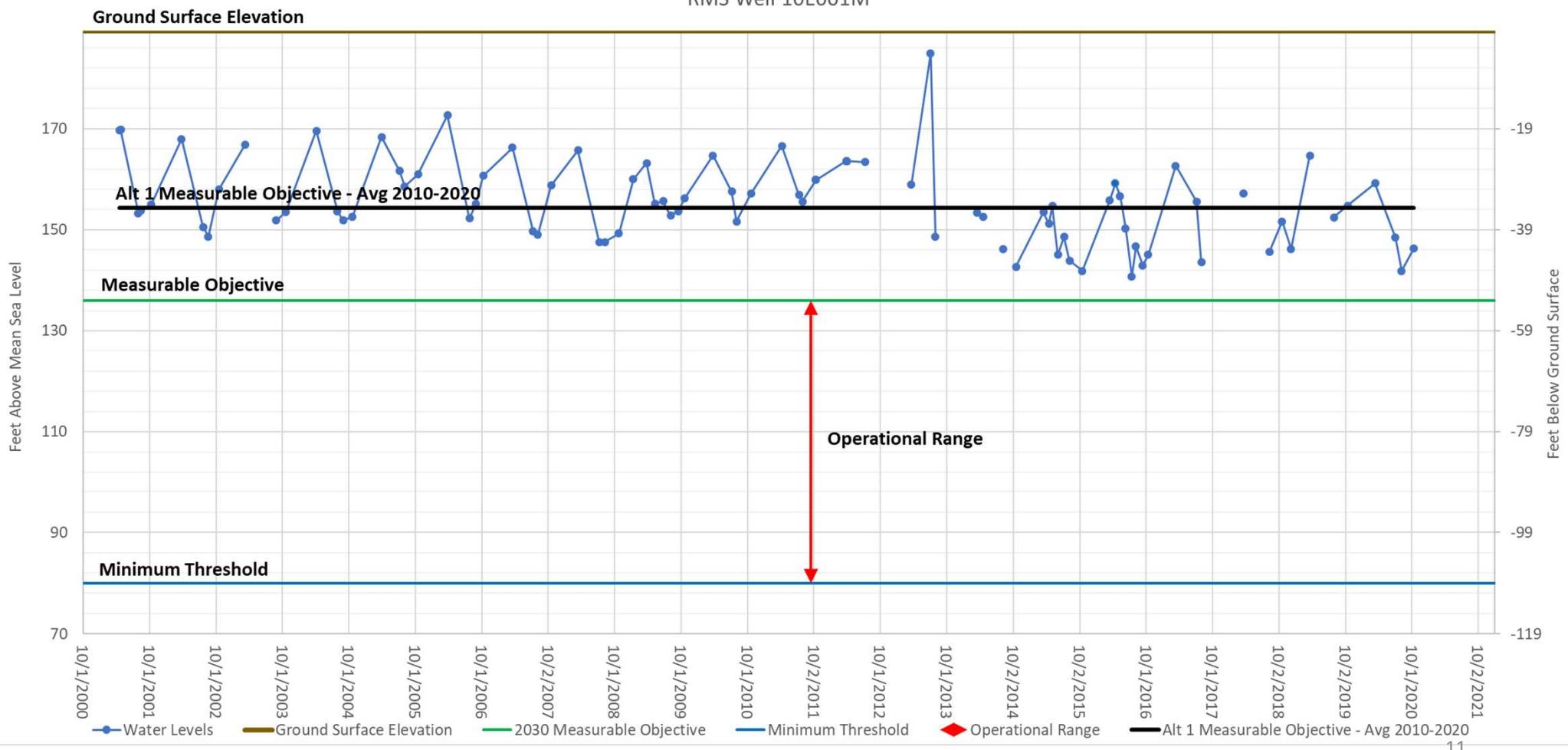
Vina Subbasin

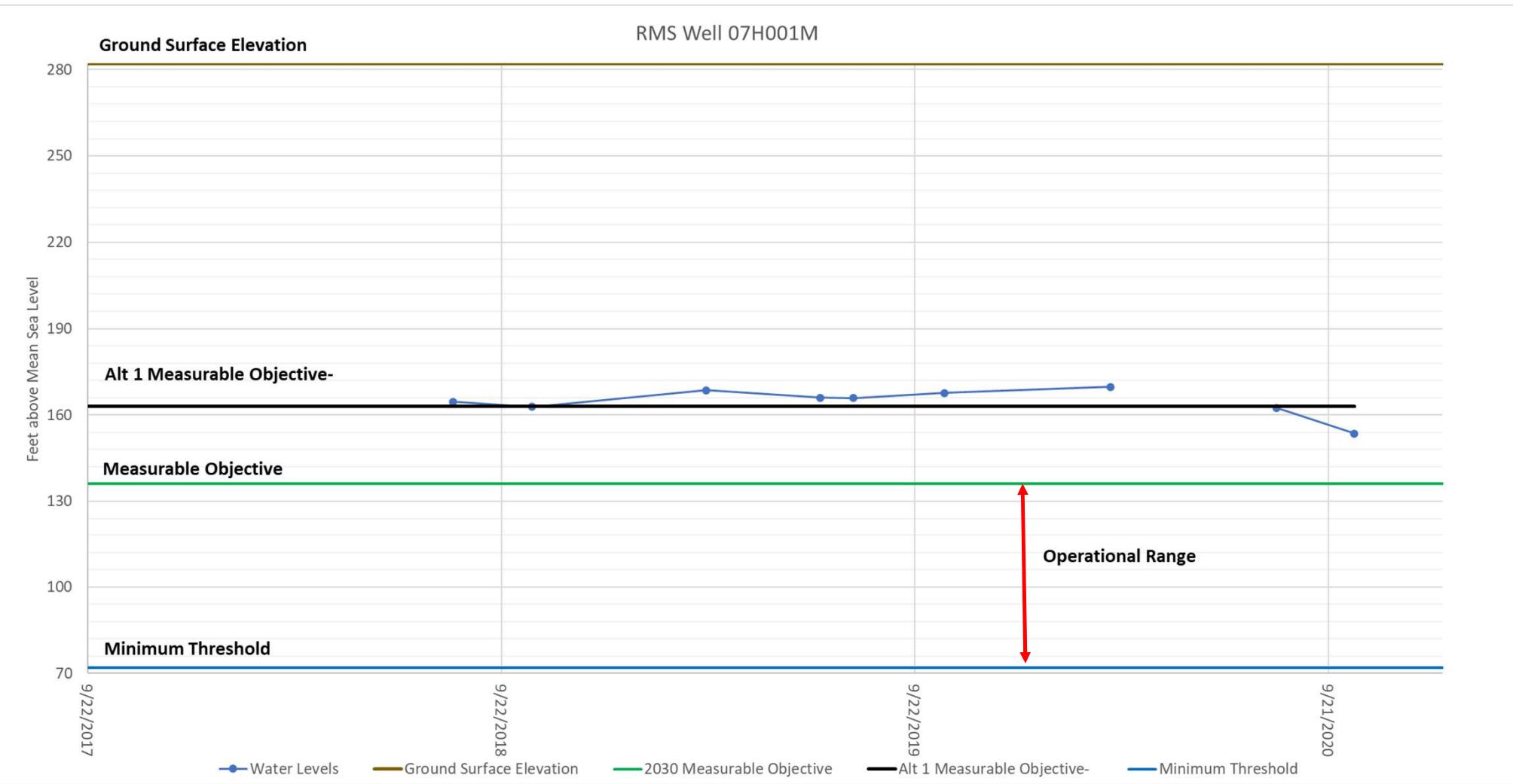
v. 11/9/2021

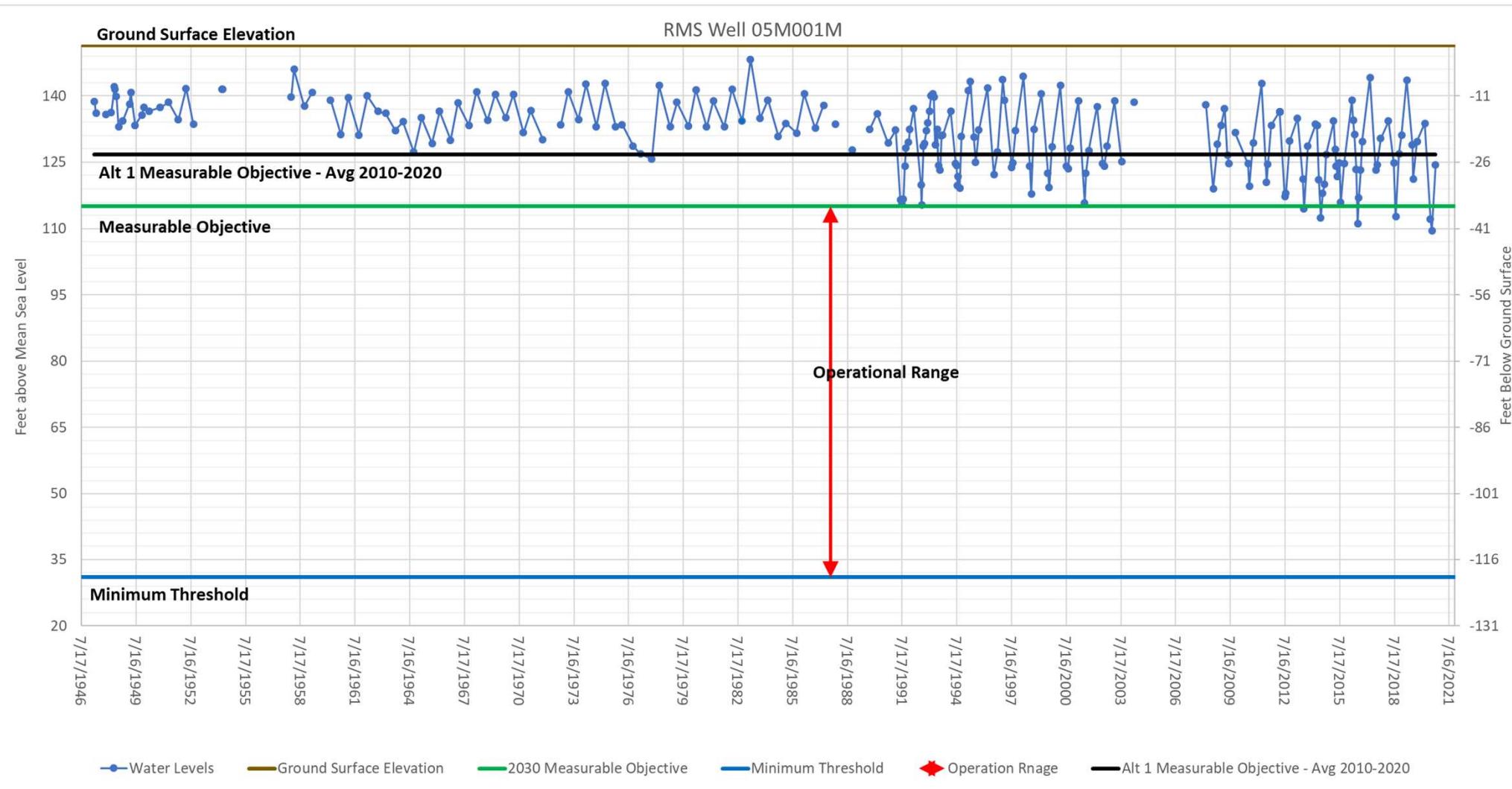
Vina North Management Area

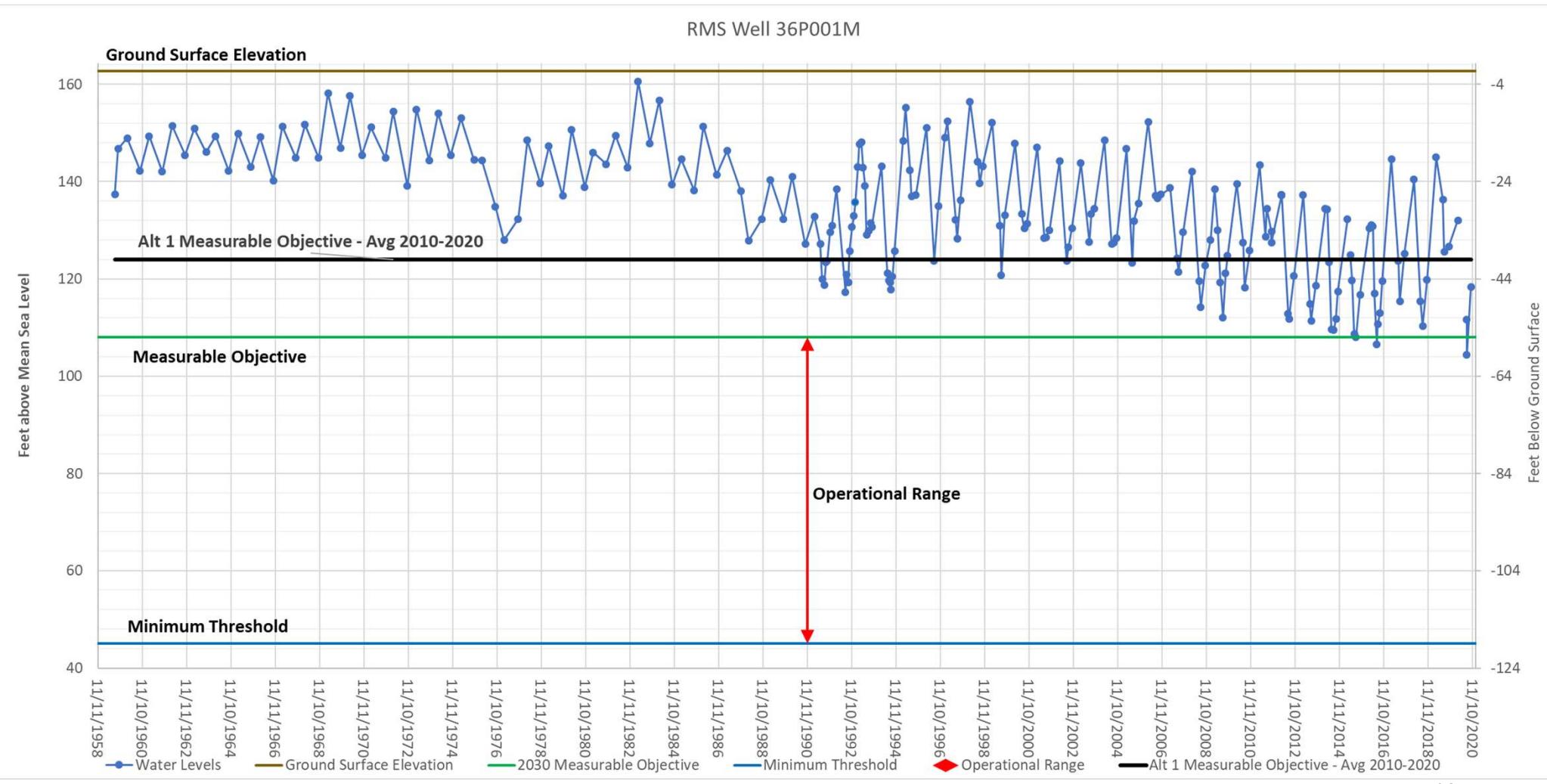


RMS Well 10E001M

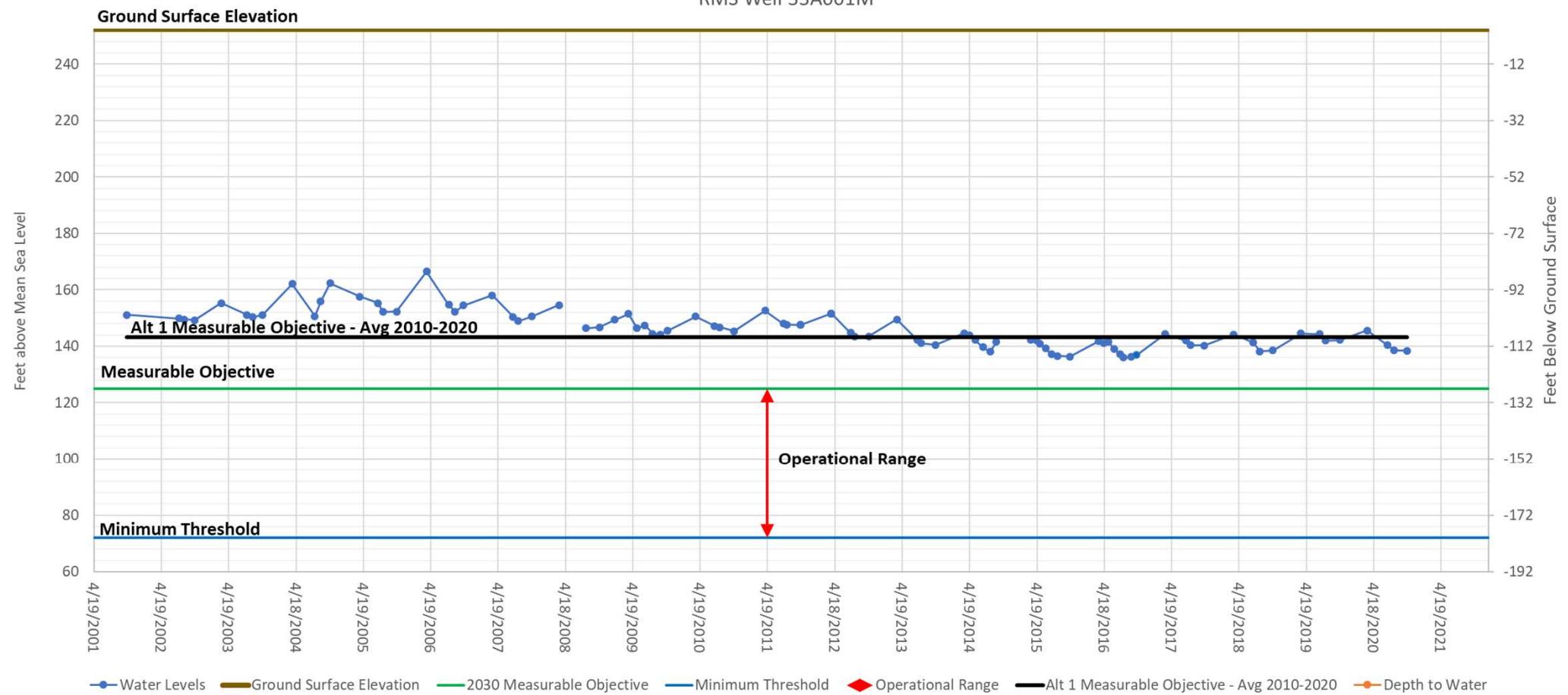




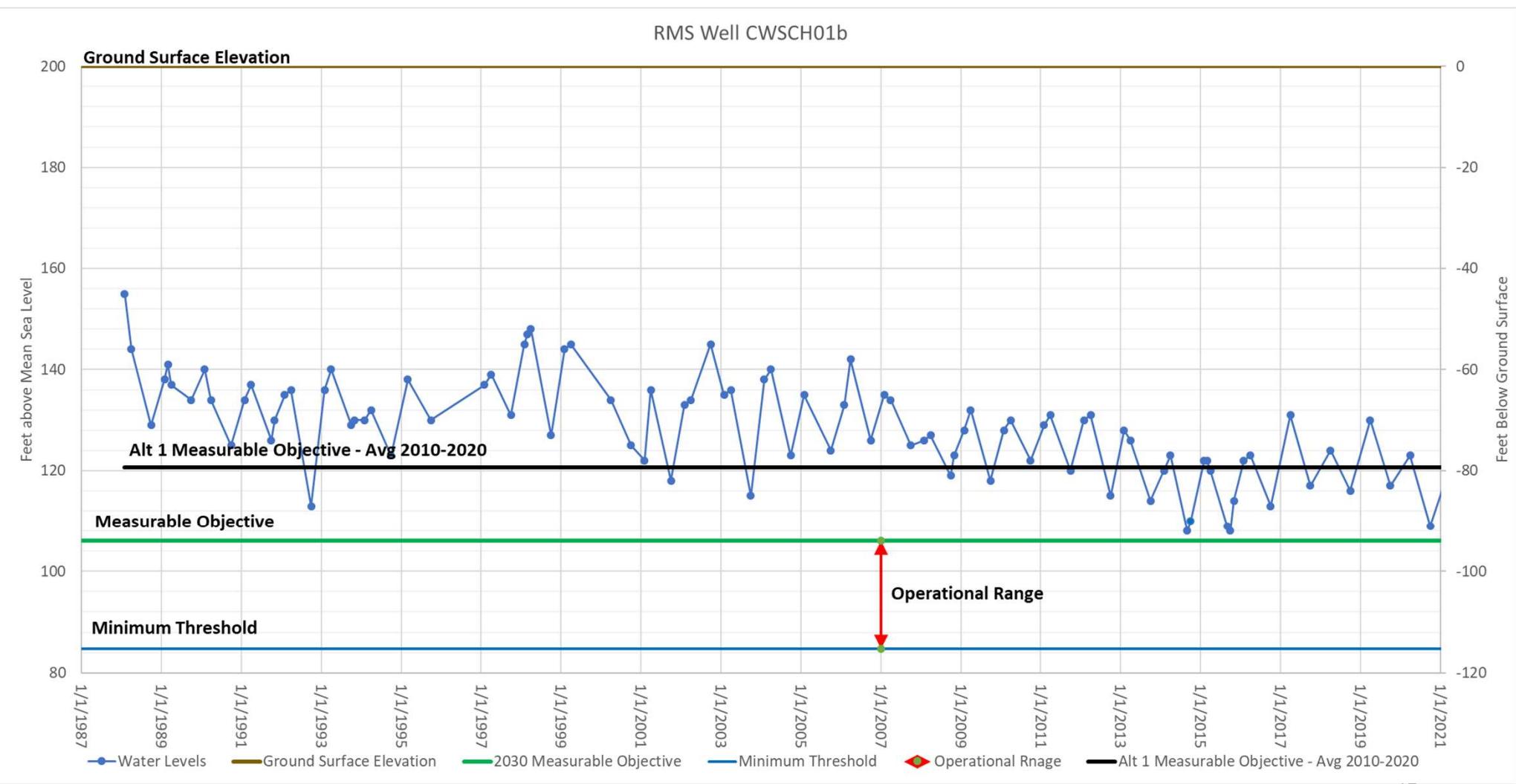




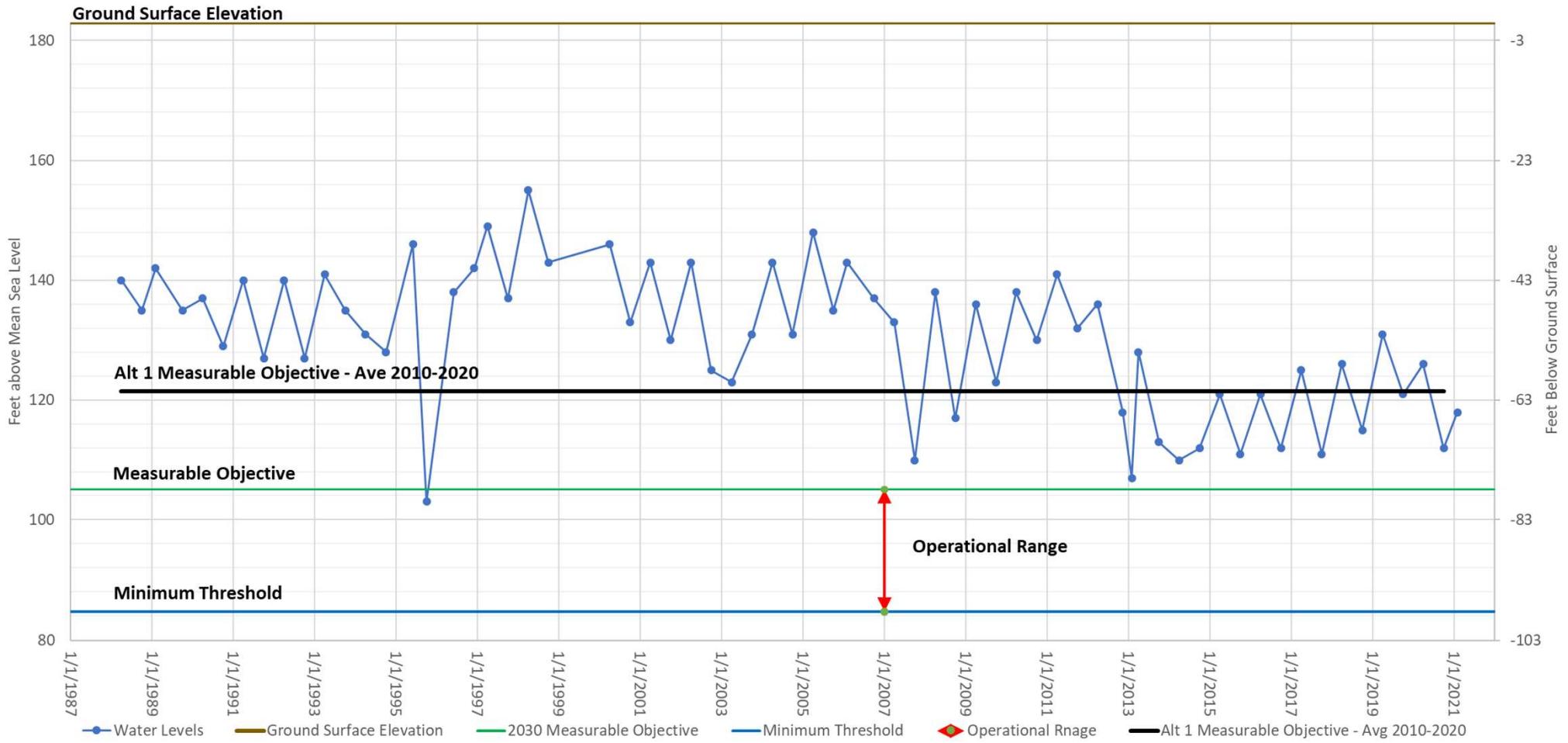
RMS Well 33A001M



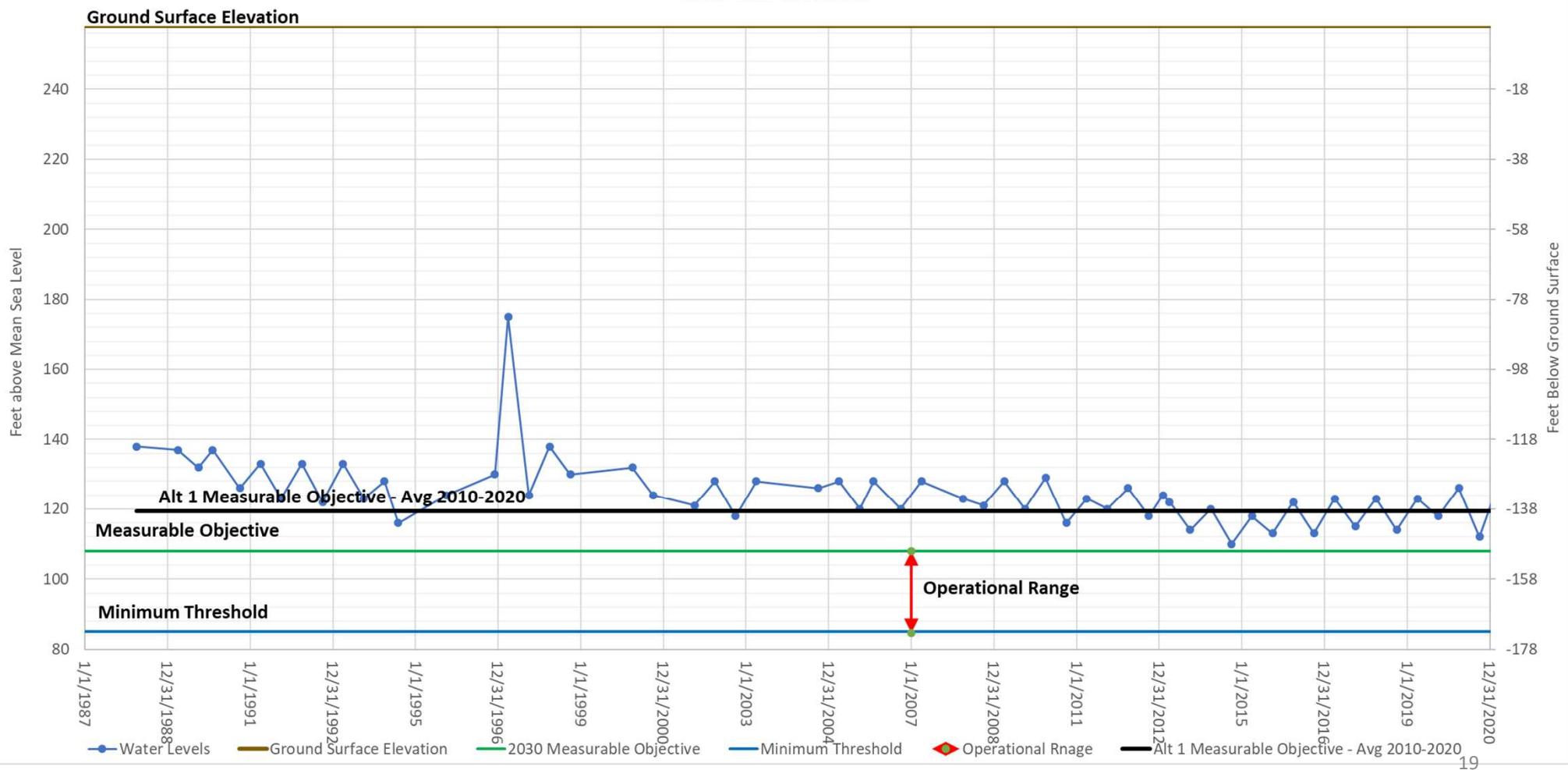
Vina Chico Management Area

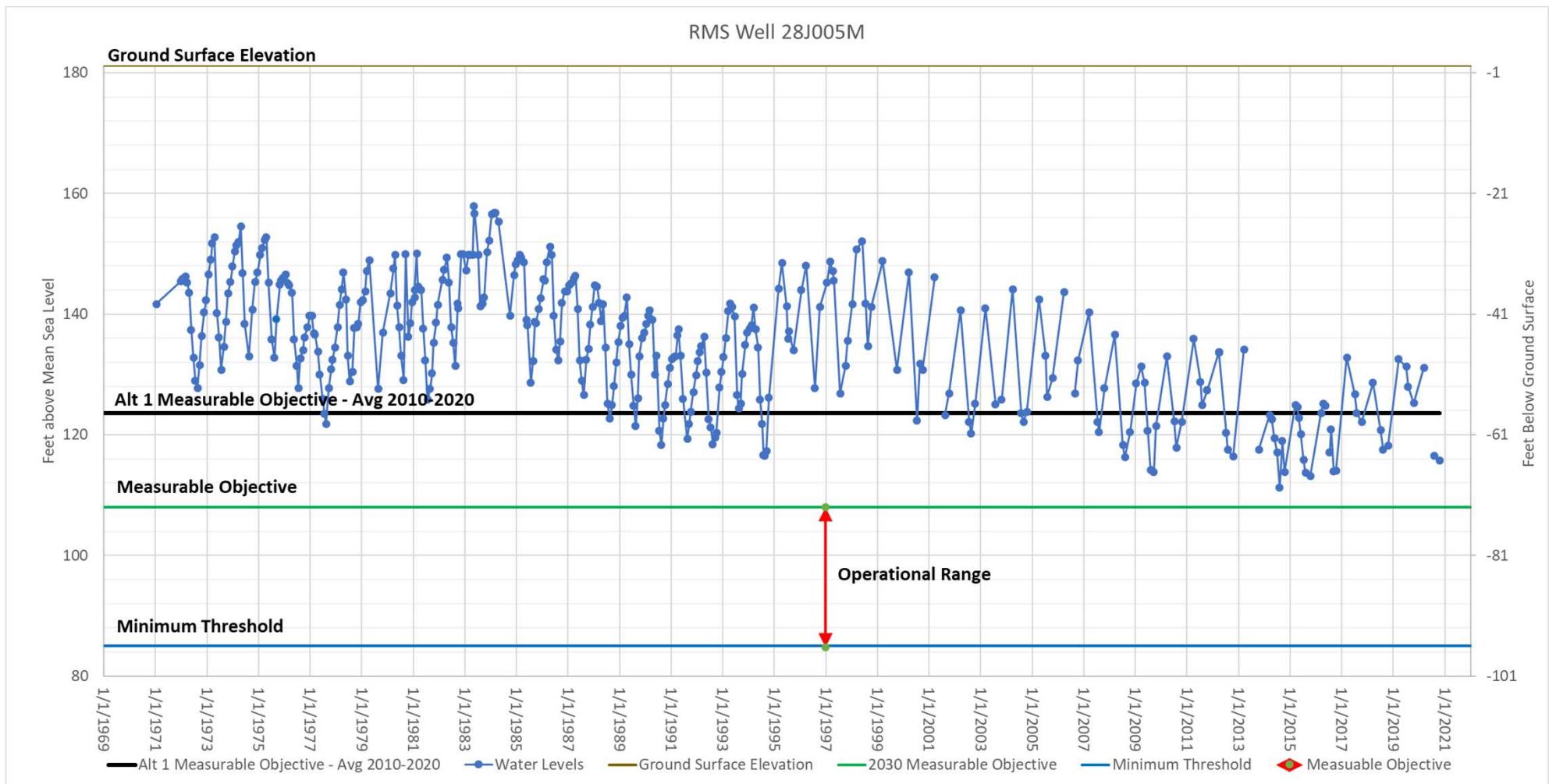


RMS Well CWSCH02



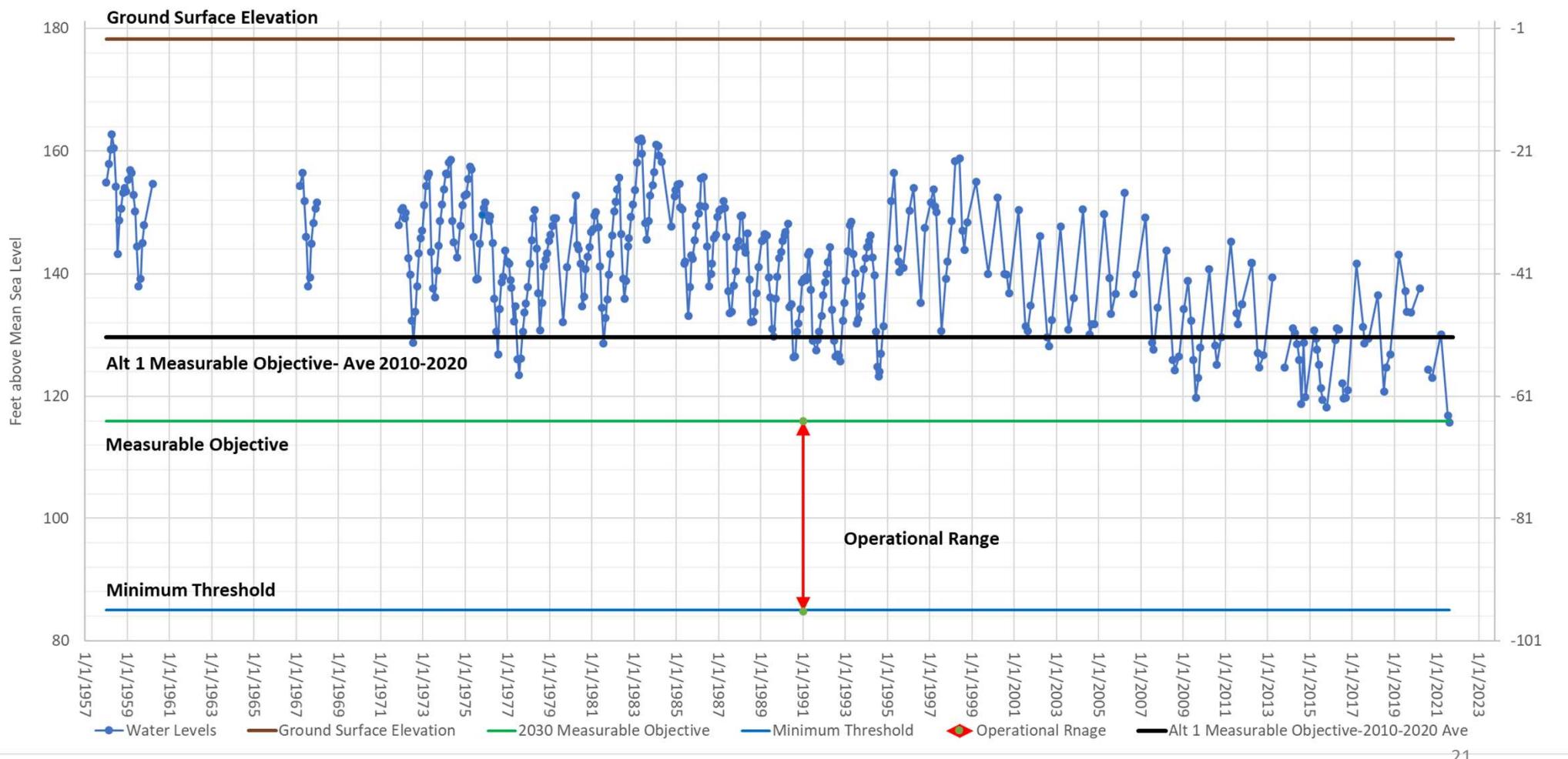
RMS Well CWSCH03



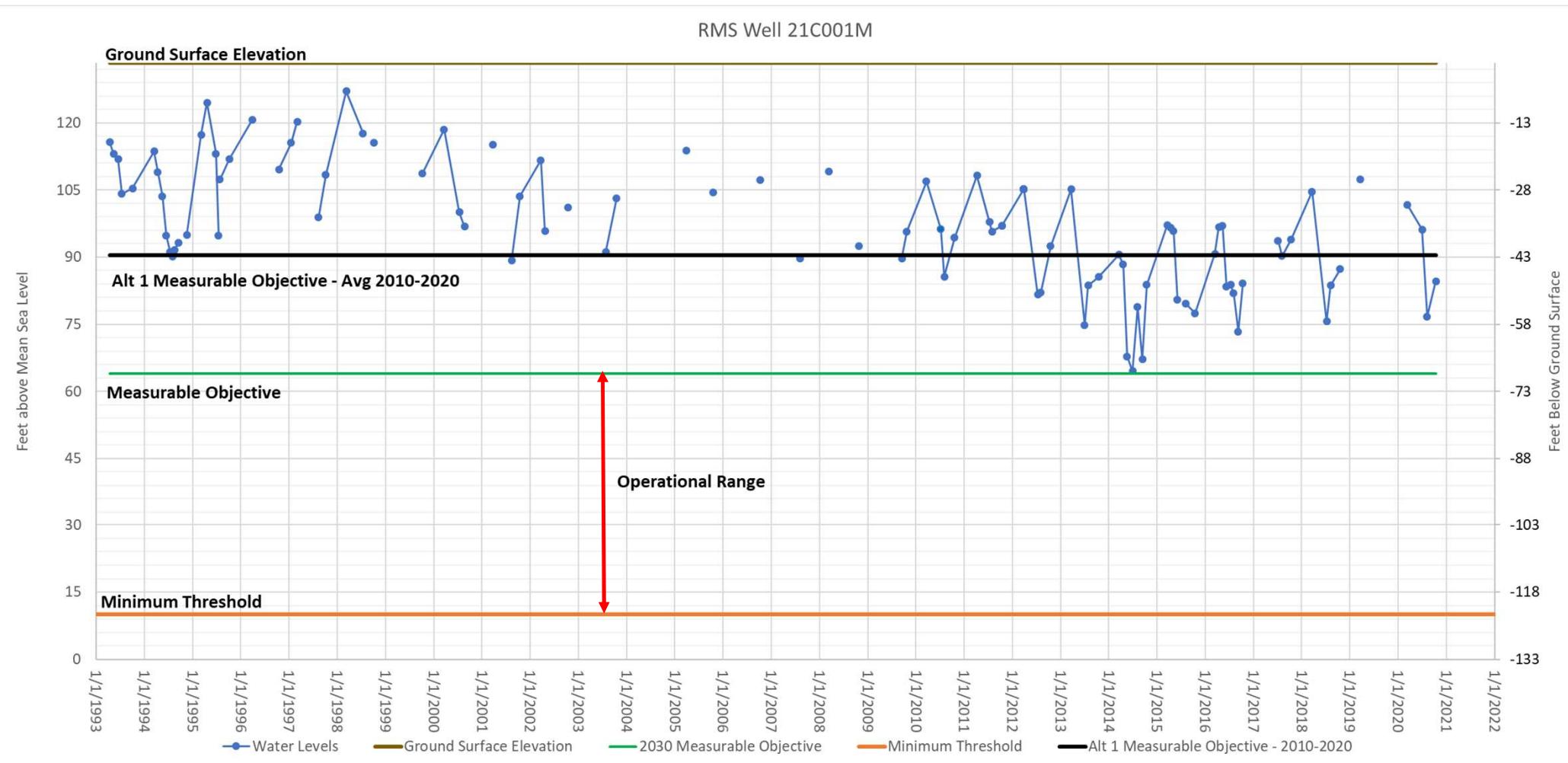


** Replaced by 28J003

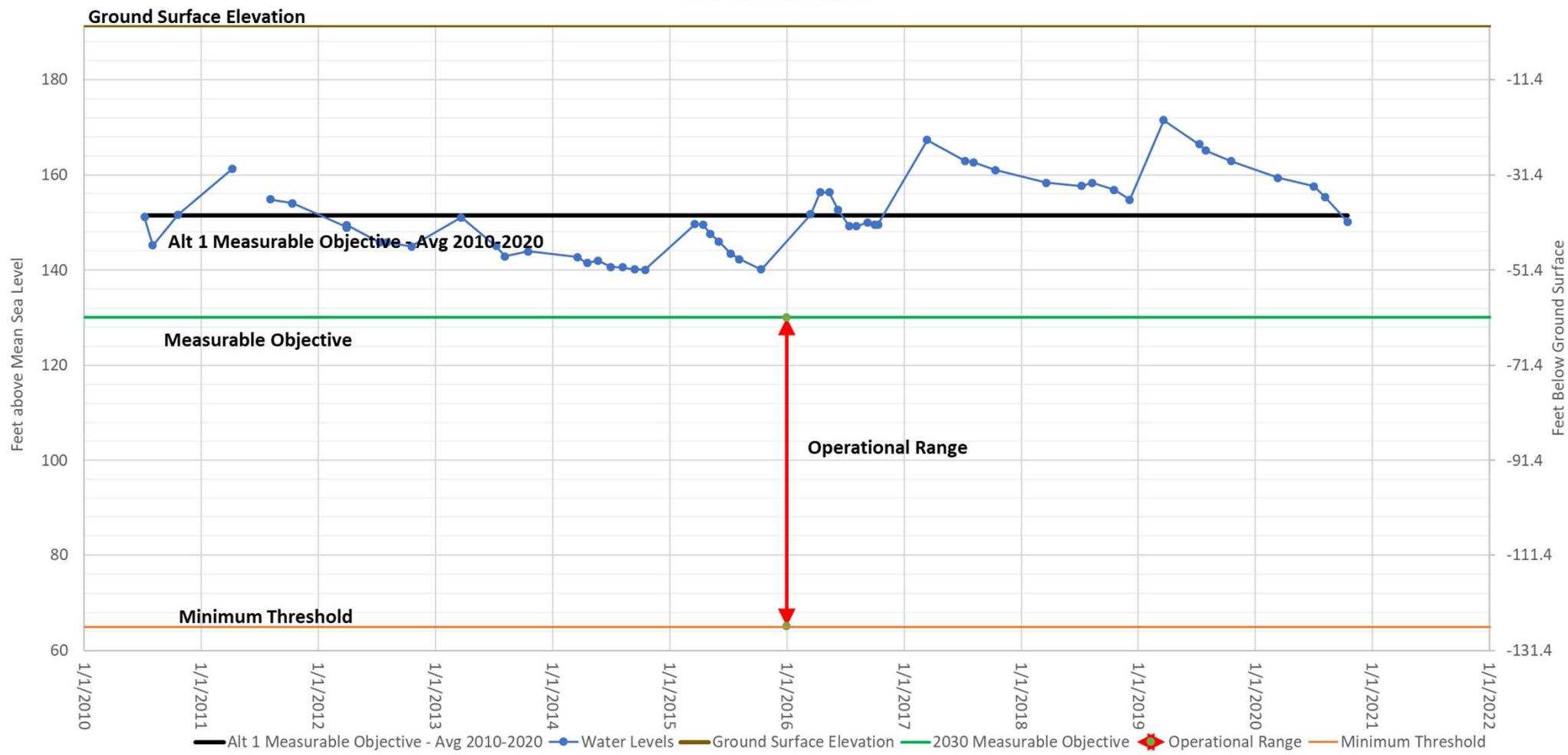
RMS Well 28J003M

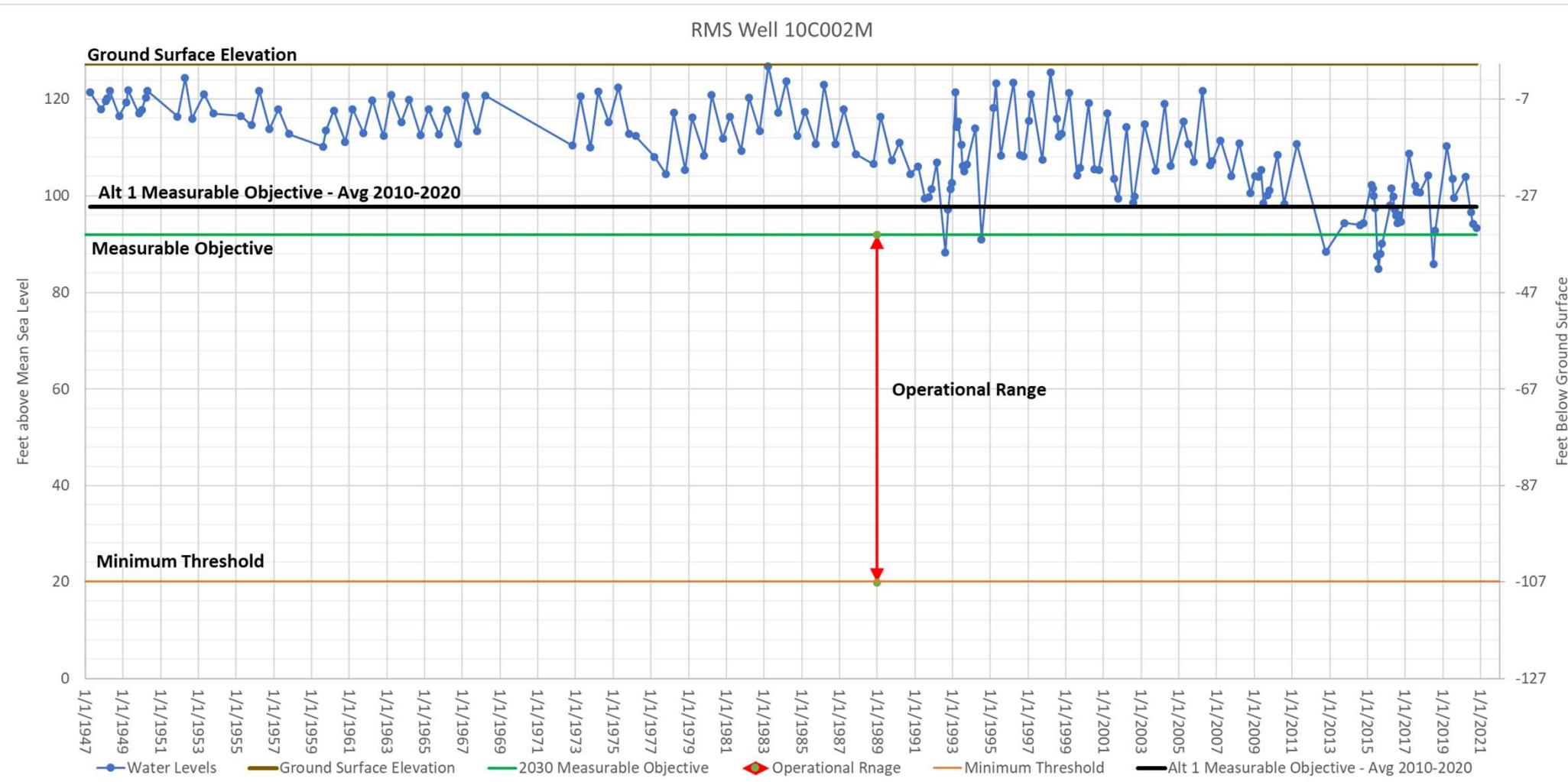


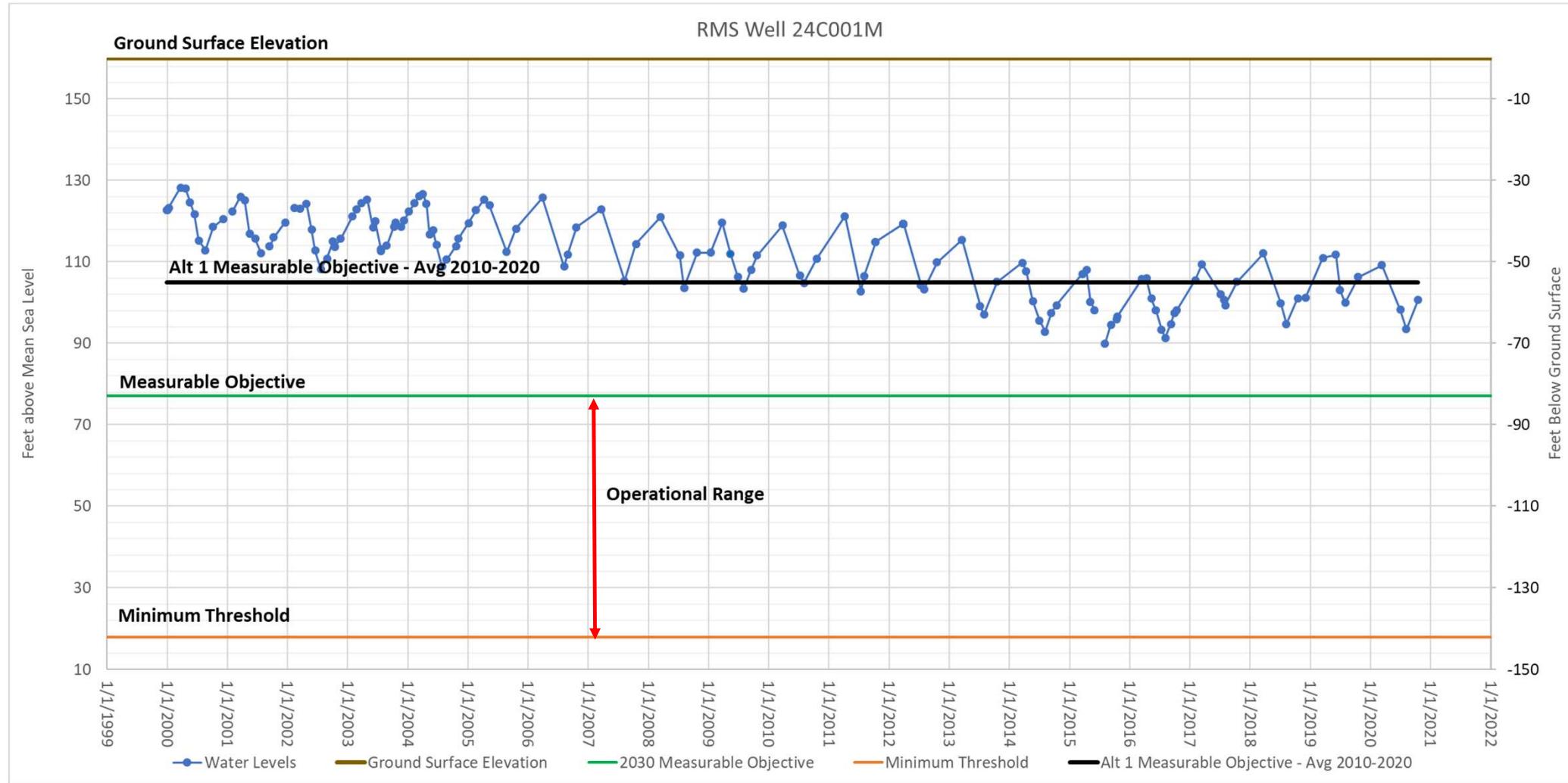
Vina South Management Area

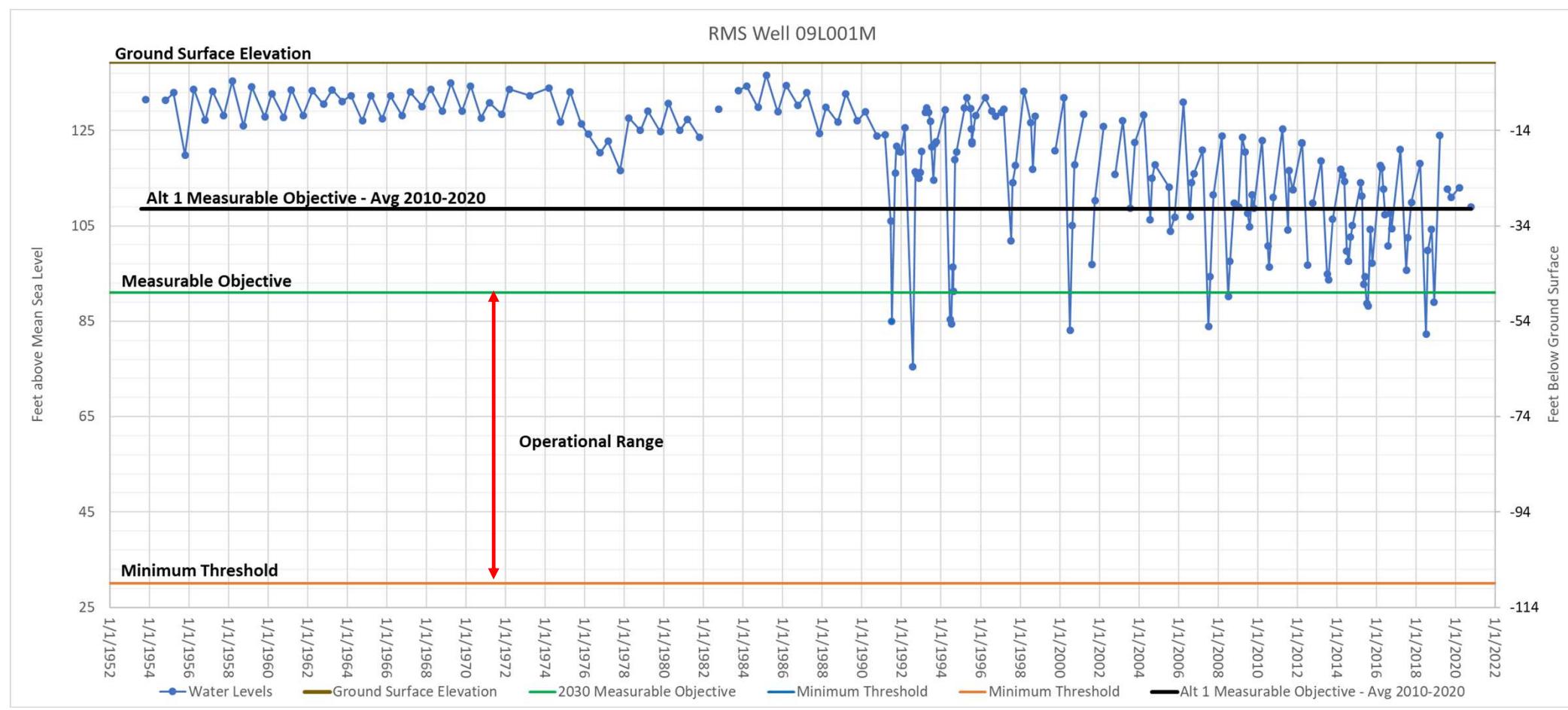


RMS Well 18C003M

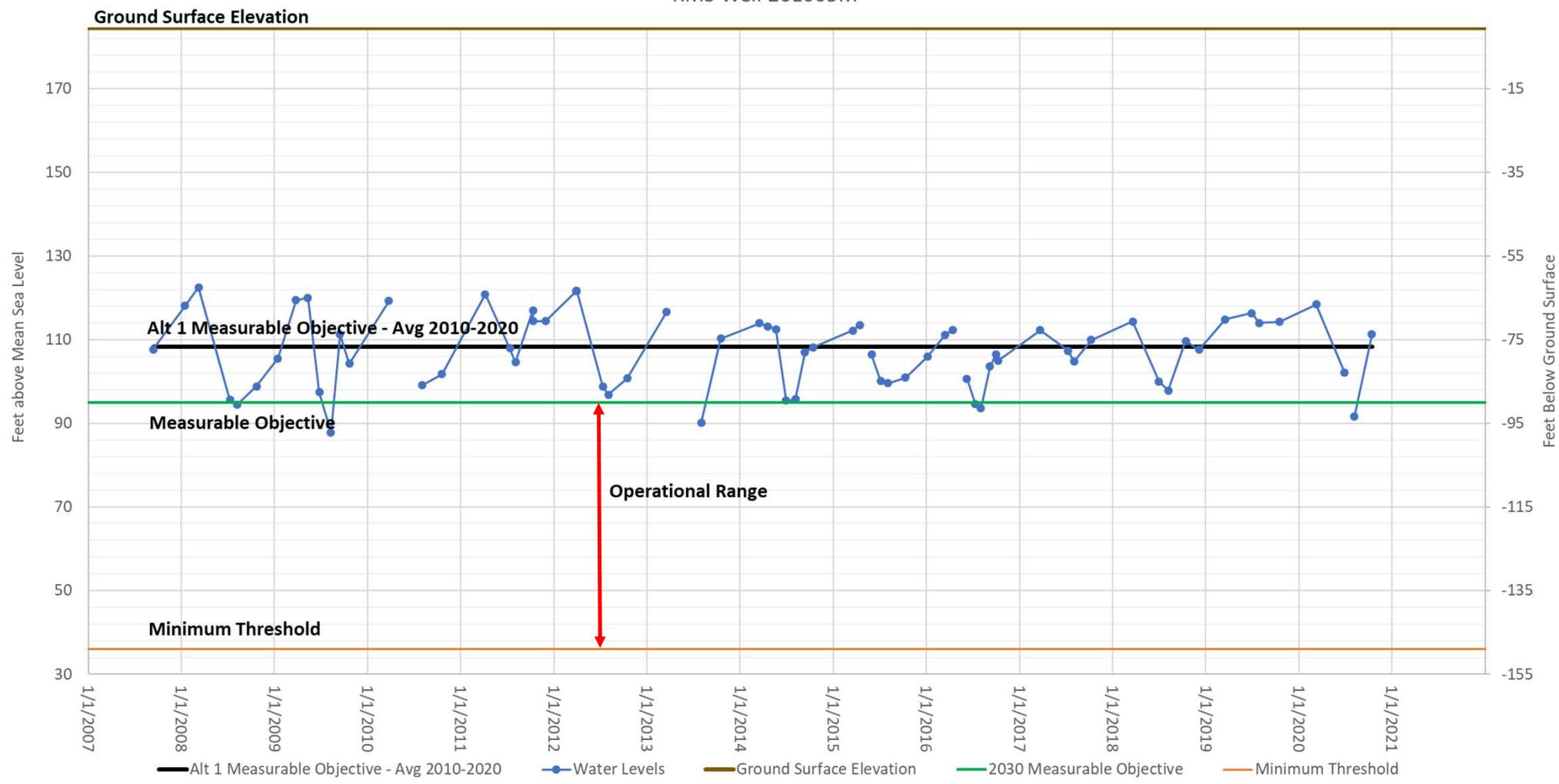








RMS Well 26E005M



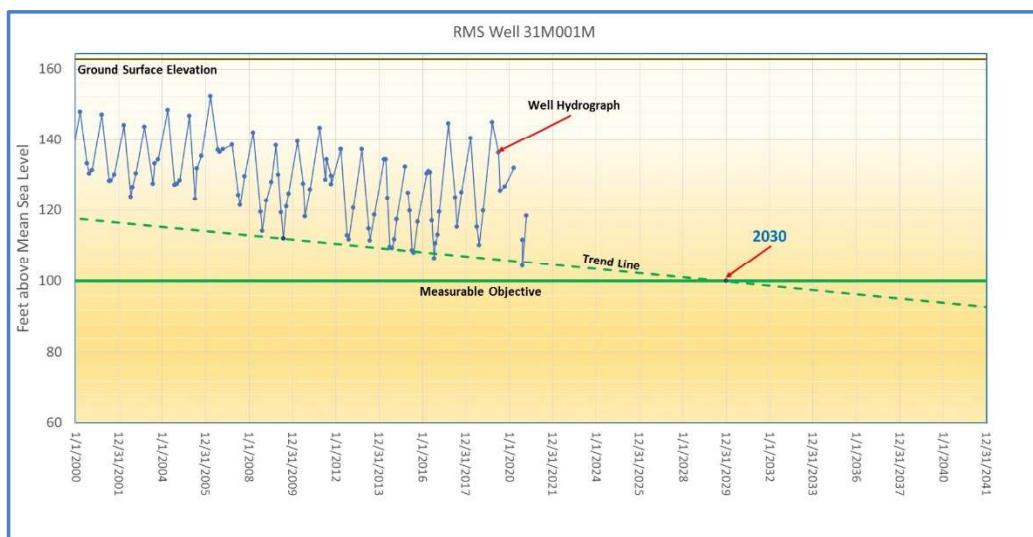
3461 of the RMS network. For example, the higher the density of RMS wells in a Management Area,
3462 the smaller the polygons. Each polygon is a different shape and size, determined by the
3463 distribution of the RMS wells in the Management Area. Ground surface elevation was also
3464 considered. The result is a more refined dataset that more proximately reflects the relationship of
3465 domestic wells with each RMS well. In addition, rather than just looking at a percentage of
3466 domestic wells to protect, the elevation levels were examined in comparison to what would be
3467 considered sustainable domestic wells as defined above for the area. The result is setting an MT
3468 for each RMS well that better corresponds with elevation changes and provides operational
3469 flexibility between the MO and the MT.

3470 **3.3.3 Measurable Objectives**

3471 The Groundwater Levels MO represent quantitative targets that establish a point above the MT
3472 allowing for a range of active management to prevent undesirable results and reflect the desired
3473 state for groundwater levels at the year 2042. To establish the MO, the water-level hydrograph of
3474 observed groundwater levels at each RMS was evaluated. The historical record at these locations
3475 shows cyclical fluctuations of groundwater level over a four- to seven-year cycle consistent with
3476 variations in water year type according to the Sacramento Valley Water Year Hydrologic
3477 Classification. Groundwater levels are typically lower during dry years and higher during wet
3478 years. Superimposed on this four- to seven-year short-term cycle is a long-term decline in
3479 groundwater levels. In other words, groundwater levels during more recent dry-year cycles are
3480 lower than groundwater levels in earlier dry-year cycles.

3481 The wet-dry cycles are climatically induced, and the GSAs has no ability to change this cyclical
3482 behavior; there will always be short-term cyclical fluctuations in groundwater levels. The MO
3483 are therefore intended to address the long-term trend of the “peaks and valleys” of the short-term
3484 cycles and stop the long-term decline in groundwater levels during dry years. Because the GSAs
3485 cannot immediately augment water supply and/or increase efficiency of water application, some
3486 continuation of the long-term decline in groundwater levels is possible in the near future.
3487 Currently (in 2021), the Vina Subbasin appears to be coming out of a wet period of a short-term
3488 cycle (2017 and 2019 being wet years) and beginning the next dry period of a short-term cycle
3489 starting in 2020. The MO was therefore based on the trend line of observed historical data
3490 extended to the year 2030. The year 2030 was chosen as a reasonable time frame in which the
3491 GSAs could implement projects and management actions to address long-term groundwater level
3492 decline while recognizing that groundwater levels may experience another dry period of the
3493 short-term cycle in the intervening years. The MO for the Groundwater Levels SMC is:

3494 *the groundwater level based on the groundwater trend line for the dry periods (since
3495 2000) of observed short-term climatic cycles extended to 2030.*



3496

3497 **Figure 3-3: Illustration of Long-term Trend Using Historical Water Levels Extended to**
 3498 **2030 for Development of Measurable Objectives**

3499 The projection of groundwater levels for each RMS was based on a simple non-statistical linear
 3500 projection of the observed data (Figure 3-3). Generally, the lowest groundwater levels of a given
 3501 cycle were used for the projection, unless they appeared to be outliers relative to the general
 3502 long-term trend of the non-dry years in the cycle.

3503 IM for groundwater levels between 2022 and 2042 were interpolated based on the linear
 3504 projection of groundwater level at each RMS. By projecting based on the dry years in the cycle,
 3505 the observed groundwater levels may be higher than the IM. This will be addressed in the annual
 3506 reports and interim GSP updates based on what occurs with respect to the short-term cycles in
 3507 the future. Appendix 3-B contains the hydrographs for each RMS.

3508 3.3.4 Summary

3509 To achieve the sustainability goal and therefore preserve the desired condition for the
 3510 groundwater basin over time, the GSAs, in setting Groundwater Levels SMC, will implement
 3511 appropriate projects and/or management actions as necessary to maintain groundwater levels
 3512 within operational flexibility to limit the decline in groundwater levels to certain values and
 3513 manage groundwater levels within certain ranges at each RMS shown in Table 3-1. (See Section
 3514 4, Figure 4-5, and Table 4-6 for relevant information on the RMS for groundwater levels.)

3515

Table 3-1: Groundwater Levels SMC by RMS in Feet Above Mean Sea Level

RMS Well ID	MT	MO	IM		
			2027	2032	2037
Vina Subbasin – North Management Area					
25C001M	50	130	131	130	130
10E001M	80	136	139	136	136
07H001M ^a	72	136	145	136	136
05M001M	31	115	116	115	115
36P001M	45	108	110	108	108
33A001M	72	125	126	125	125
Vina Subbasin – Chico Management Area					
CWSCH01b	85	106	108	106	106
28J001M		110	111	110	110
CWSCH03		108	110	108	108
CWSCH02		105	108	105	105
CWSCH07		108	109	108	108
Vina Subbasin – South Management Area					
21C001M	10	64	66	64	64
18C003M	65	130	134	130	130
10C002M	20	92	95	92	92
24C001M	18	77	82	77	77
09L001M	30	91	94	91	91
26E005M	36	95	96	95	95

Note:

^a MO is associated with GSP Well ID 18A001M.

3517

3.4 Groundwater Storage Sustainable Management Criteria

Groundwater Storage SMC are those meant to address the reduction of groundwater storage caused by groundwater pumping. The locally defined undesirable result, MT, and MO are discussed in the next sections.



Reduction of Storage

3522 3.4.1 Undesirable Result

3523 An undesirable result coming from the reduction of groundwater storage is
3524 experienced if:

3525 sustained groundwater storage volumes are insufficient to support rural areas and
3526 communities, the agricultural economic base of the region, and environmental uses.

This undesirable result is closely related to that associated with groundwater levels. Because groundwater levels and groundwater storage are closely related, measured changes in groundwater levels can serve as a proxy for changes in groundwater storage. For this reason, the SMC developed for groundwater levels are used for groundwater storage to ensure avoidance of the undesirable result.



**Vina
Groundwater Sustainability Agency
Agenda Transmittal**

Agenda Item: 3.1.2

Subject: Proposed Management Action – Interim Milestone Action Plan

Contact: Kamie Loeser

Phone: (530) 552-3590

Meeting Date: 11-15-21

Regular Agenda

Department Summary:

During the GSP public review process, comments regarding the timing and implementation of PMAs were submitted. As a result of comments, and upon further review of Section 5, the Management Committee determined that additions to the adopted GSP could detail the identification of triggers and timing of implementation for PMAs. Therefore, in response to these considerations, the Management Committee is proposing that a new Management Action, the Interim Milestone Action Plan (IMAP), be included in the GSP.

The purpose of the IMAP is to better identify, refine, and expand the following required components of planned and potential PMAs (as per SGMA regulations, Section 354.44):

- the triggers for implementation and termination of a project or management action,
- circumstances for implementation, and
- the process for determining conditions requiring a project to occur.

The addition of the IMAP Management Action was presented to the SHAC for their review and comment at their November 4, 2021 meeting. The details of their discussion can be found in the SHAC Meeting summaries which are included in this Board packet or in the audio / video recording (at timestamp 55 minutes). Of the members present, the SHAC was split in their support for adding the IMAP to the GSP. Among the SHAC comments in favor of including the IMAP is that it is an additional planning tool that would allow for the refinement of PMAs; however, there were concerns including but not limited to how the IMAP would be funded, when it would be implemented, and who would create the IMAP.

Fiscal Impact: The initiation of the preparation of the IMAP would be dependent upon funding. The cost of the preparation of the IMAP is unknown at this time.

Staff Recommendation: Consider adding the Interim Milestone Action Plan as a new Management Action in Section 5 of the Vina Groundwater Sustainability Plan.



Vina Groundwater Sustainability Agency
308 Nelson Avenue, Oroville, California 95965
(530) 552-3592 • VinaGSA@gmail.com

MEMORANDUM

DATE: November 10, 2021

TO: Vina GSA Board of Directors

FROM: Kamie N. Loeser, Director, Butte County Water and Resource Conservation

RE: Proposed GSP Management Action - Interim Milestone Action Plan

Overview

Section 5 of the GSP includes projects and management actions (PMAs) that, when implemented, will assist the GSA in achieving the sustainability goal for the subbasin. PMAs are specific actions that may be utilized to meet interim milestones (IMs), address the continued exceedance of measurable objectives (MOs) or minimum thresholds (MTs), or when undesirable results have occurred or are imminent (SGMA Regulations 354.44(b)(1)).

PMAs should also identify the following:

- a description of the measurable objective that is expected to benefit
- required permitting and regulatory process
- timetable for initiation and completion
- expected benefits and evaluation
- how project will be accomplished/evaluation of water source
- legal authority
- estimated costs and plans to meet costs
- circumstances for implementation
- trigger for implementation and termination
- process for determining conditions requiring the project to occur

Proposed Management Action: Interim Milestone Action Plan

During the GSP public review process, comments regarding the timing and implementation of PMAs were submitted. As a result of those comments and upon further review of Section 5, the Management Committee determined that additions to the adopted GSP could detail the identification of triggers and timing of implementation for PMAs. Therefore, in response to these considerations, the Management Committee is proposing that a new Management Action, the Interim Milestone Action Plan (IMAP), be included in the GSP.

The purpose of the IMAP is to better identify, refine, and expand the following required components of planned and potential PMAs (as per SGMA regulations, Section 354.44):

- the triggers for implementation and termination of a project or management action,
- circumstances for implementation, and
- the process for determining conditions requiring a project to occur.

The IMAP would focus on specific actions, including but not limited to identified PMAs, that would be implemented between the time of adoption of the GSP and the five year Interim Milestones (IMs). The Management Committee anticipates that annual reports and / or five-year updates will include a comparison of planned basin conditions versus actual basin conditions as well as an assessment to determine if the Subbasin would likely meet the five-year IM goals. If it is anticipated, through the results of ongoing monitoring, that IMs may not be achieved as planned, there may be a need for the GSAs to initiate or expand PMAs, or identify additional corrective actions to ensure that the five-year IMs and, ultimately, MOs will be met by 2042. This type of adaptive management gives the GSAs flexibility for implementing PMAs to ensure that the Subbasin is progressing toward achieving its sustainability goal.

The IMAP would identify quantitative and qualitative triggers for corrective action implementation. The IMAP would also, if not already identified in the GSP, specify the timing for implementation of PMAs, as well as identify additional corrective actions that may be taken by the GSAs to address downward trending conditions. The following table describes how the IMAP would further meet the requirements of SGMA.

SGMA Regulation 354.44(b)(1)(A)	Interim Milestone Action Plan
Circumstances under which projects or management actions shall be implemented	Based on the triggers identified, the IMAP will specify the timing for implementation of PMAs and identify additional corrective actions that may be taken.
The criteria that would trigger implementation and termination of a project or management action	Identify quantitative and qualitative triggers for corrective action implementation and termination.
Process for determining conditions requiring a project to occur	The IMAP will outline the process that will occur when certain triggers are reached and PMAs or additional corrective actions will need to be taken. The identification of which PMAs and / or corrective actions that will require implementation will depend on the severity of the deviation from achieving the IM.

Provided below is an example of how triggers could be identified in the IMAP. *Please note that this example uses salt water intrusion, which is not applicable to the Vina Subbasin.*

Measurable Objective (i.e., for each Undesirable Result or Other Planning Objective)		
Interim Milestone	Triggers	Actions
Groundwater levels in monitoring wells at XX coastline must average at least X feet above sea level to avoid sea water intrusion.	Initial Trigger Might correspond to the identified IM value; trigger value might indicate that the actual conditions are consistent or paralleling planned conditions. (Ex. GW levels fluctuate on annual average at X feet above sea level)	Actions at this trigger value may be used to further evaluate data if uncertainty exists, or advance other planned activities to provide a margin of safety to ensure continued success toward planned conditions.
	Mid-Level Trigger(s) Groundwater levels fluctuate XX feet below threshold value resulting in inland advancement of saline waters	Action(s) may need to be designed to address conditions that are possibly threatening the sustainability goal, where actual conditions are deviating negatively from planned conditions. Example actions could include increased monitoring, conservation measures, mandatory demand reduction measures. The severity of the action(s) may depend on the final trigger value.
	Final Trigger Groundwater levels fluctuate XX feet below the IM value resulting in inland advancement of saline water.	Action(s) at this trigger might be designed to address conditions where it's clear based on the trigger value the sustainability goal is being threatened (actual conditions are clearly deviating negatively from planned conditions) and there is an immediate need to address conditions to avoid significant and unreasonable results.

Source: DWR SGMA Discussion Paper, June 26, 2015.

Proposed Management Action for GSP Section 5.3

The preparation of the IMAP would be dependent on funding availability and would potentially be initiated in 2022 as part of GSP implementation. A proposed description of the Interim Milestone Action Plan to be considered for inclusion in the GSP Management Action is as follows:

5.3.8 Interim Milestone Action Plan (IMAP)

The Interim Milestone Action Plan (IMAP) would identify the Interim Milestone (IM) targets, a series of triggers, and corresponding actions that would be implemented if it is determined that the Subbasin will not likely achieve identified IMs. Quantitative and qualitative triggers would be set and have corresponding corrective actions to appropriately address impacts and rectify negative trends. Actions could include the implementation of specific PMAs identified in the GSP, other corrective actions identified in the IMAP, identification of additional measures, or a combination thereof.

The preparation and implementation of the IMAP will ensure that the GSAs implement PMAs and other reasonable measures that would avoid undesirable results, reach IM goals every five years, maintain or achieve the MOs, and ensure sustainable groundwater management by 2042.

SHAC Discussion and Recommendations

The addition of the IMAP Management Action was presented to the SHAC for their review and comment at their November 4, 2021 meeting. The details of their discussion can be found in the SHAC Meeting summaries, which are included in this Board packet or beginning at 55 minutes in the audio / video recording located on the Vina GSA website. Of the members present, the SHAC was split in their support for adding the IMAP to the GSP. Among the SHAC comments in favor of including the IMAP is that it is an additional planning tool that would allow for the refinement of PMAs; however, there were concerns including but not limited to; how the IMAP would be funded, when it would be implemented, and who would create the IMAP.

Those in support of adding the IMAP Management Action included T. Greene (CSU Chico), E. Markey (Cal Water), B. Smith (Business Rep), J. Brobeck (Environmental Rep) with reservation (supports if SHAC has more input on designating IMs), and A. Dawson (Domestic Well User).

Those not in favor of adding the IMAP Management Action included J. Parsley, S. Lewis (Agricultural Rep), G. Sohnrey (Agricultural Rep) (because he does not know who is paying, what the time frame is, and who is providing the info; too many questions remaining), and S. Goepp (Domestic Well User).

Requested Action

Consider adding the Interim Milestone Action Plan (IMAP) as a new Management Action in the Vina Groundwater Sustainability Plan, Section 5.



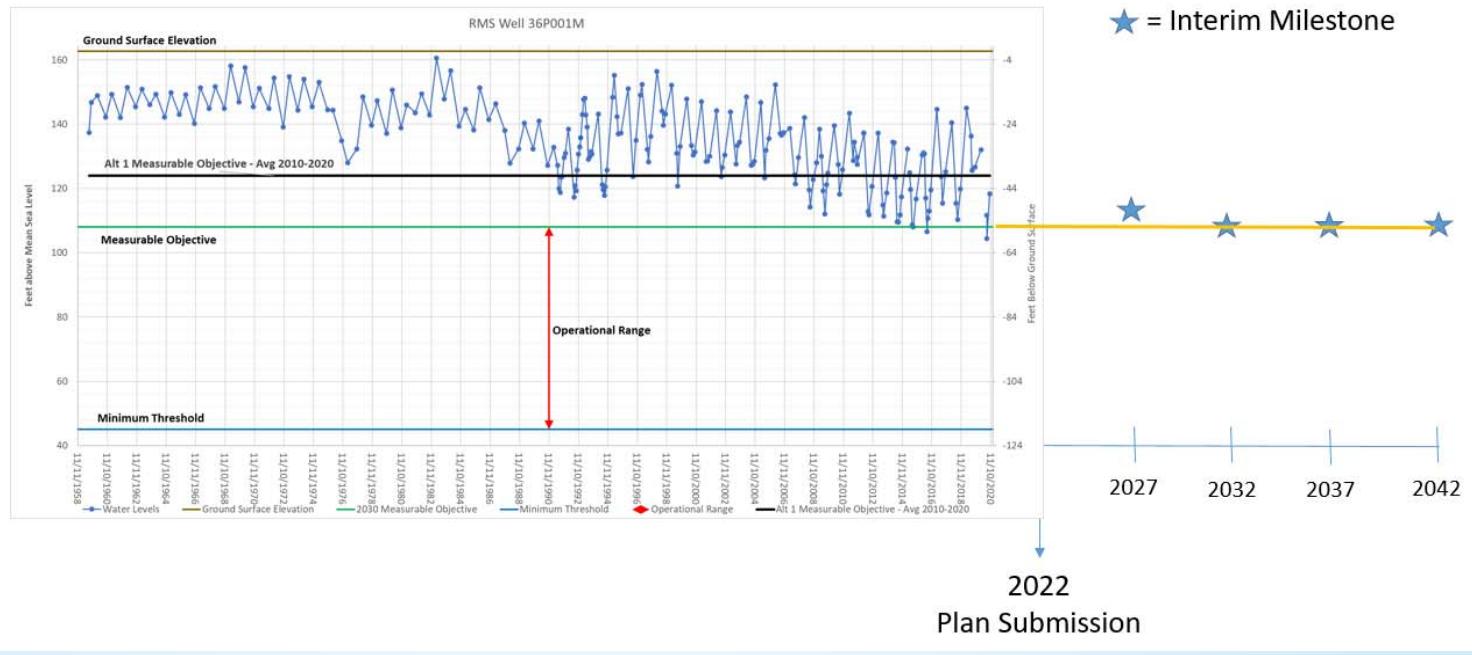
Management Action: Interim Milestone Action Plan

Kamie Loeser
Director
Butte County Water and Resource Conservation

Vina GSA and Rock Creek Reclamation GSA Boards
November 15, 2021

What are Interim Milestones?

- IMs are target values that represent measurable groundwater conditions, in increments of five years
- IMs are set for each Representative Monitoring Site (RMS) so that the GSAs can monitor their progress towards maintaining or achieving the MOs





Projects & Management Actions:

- ▶ PMAs are specific activities/actions that may be used to:
 1. Meet interim milestones (IMs)
 2. Address the continued exceedance of measurable objectives (MOs) or minimum thresholds (MTs), or
 3. Be initiated when undesirable results have occurred or are imminent.



PMAs should identify:

- ▶ a description of the measurable objective that is expected to benefit
- ▶ required permitting and regulatory process
- ▶ **timetable for initiation and completion**
- ▶ expected benefits and evaluation
- ▶ how project will be accomplished/evaluation of water source
- ▶ legal authority
- ▶ estimated costs and plans to meet costs
- ▶ **circumstances for implementation**
- ▶ **trigger for implementation and termination**
- ▶ process for determining conditions requiring the project to occur



Why the Interim Milestone Action Plan?

- ▶ Based on public comments and management committee review of the GSP
- ▶ Management Action to further refine the GSP planning process
- ▶ Further address SGMA requirements for PMAs
 - ▶ **timetable for initiation and completion**
 - ▶ **circumstances for implementation**
 - ▶ **trigger for implementation and termination**
 - ▶ **process for determining conditions requiring the project to occur**



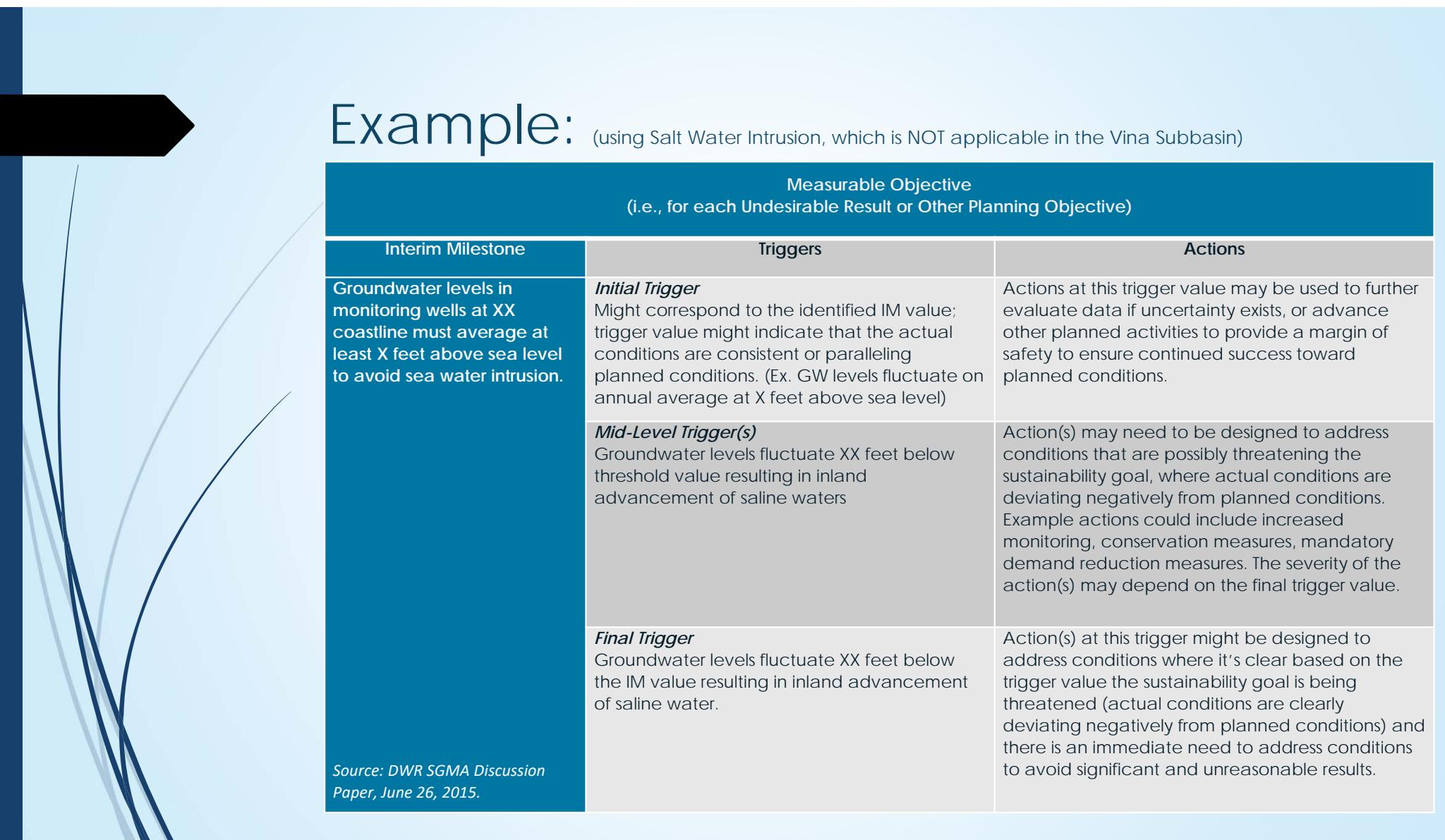
What is the IMAP?

- ▶ The IMAP would identify:
 1. Quantitative and qualitative triggers for corrective action implementation if negative trends are occurring,
 2. The timing for implementation of GSP PMAs, and
 3. Other specific corrective actions that may be taken by the GSAs to address downward trending conditions.



Triggers with Corresponding Actions:

- ▶ Would be developed at different levels in order to evaluate and document what actions will be taken if targets are not met.
- ▶ Would be established at various levels to account for the severity of action that could be required to correct the trajectory that each threshold is “off” the planned condition.
- ▶ Outline the decision-making process outlined in the GSP related to how, when, and why the corresponding actions will be implemented.
- ▶ EXAMPLE TABLE



Example:

(using Salt Water Intrusion, which is NOT applicable in the Vina Subbasin)

Measurable Objective (i.e., for each Undesirable Result or Other Planning Objective)		
Interim Milestone	Triggers	Actions
Groundwater levels in monitoring wells at XX coastline must average at least X feet above sea level to avoid sea water intrusion.	<i>Initial Trigger</i> Might correspond to the identified IM value; trigger value might indicate that the actual conditions are consistent or paralleling planned conditions. (Ex. GW levels fluctuate on annual average at X feet above sea level)	Actions at this trigger value may be used to further evaluate data if uncertainty exists, or advance other planned activities to provide a margin of safety to ensure continued success toward planned conditions.
	<i>Mid-Level Trigger(s)</i> Groundwater levels fluctuate XX feet below threshold value resulting in inland advancement of saline waters	Action(s) may need to be designed to address conditions that are possibly threatening the sustainability goal, where actual conditions are deviating negatively from planned conditions. Example actions could include increased monitoring, conservation measures, mandatory demand reduction measures. The severity of the action(s) may depend on the final trigger value.
	<i>Final Trigger</i> Groundwater levels fluctuate XX feet below the IM value resulting in inland advancement of saline water.	Action(s) at this trigger might be designed to address conditions where it's clear based on the trigger value the sustainability goal is being threatened (actual conditions are clearly deviating negatively from planned conditions) and there is an immediate need to address conditions to avoid significant and unreasonable results.

Source: DWR SGMA Discussion Paper, June 26, 2015.



5.3 Management Actions

► *5.3.8 Interim Milestone Action Plan (IMAP)*

The Interim Milestone Action Plan (IMAP) would identify the Interim Milestone (IM) targets, a series of triggers, and corresponding actions that would be implemented if it is determined that the Subbasin will not likely achieve identified MOs. Quantitative and qualitative triggers would be set and have corresponding corrective actions to appropriately address impacts and rectify negative trends. Actions could include the implementation of specific PMAs identified in the GSP, other corrective actions identified in the IMAP, identification of additional measures, or a combination thereof.

The preparation and implementation of the IMAP will ensure that the GSAs implement PMAs and other reasonable measures that would avoid undesirable results, reach IM goals every five years, maintain or achieve the MOs, and ensure sustainable groundwater management by 2042.



SHAC Discussion

- ▶ The SHAC was split in their support for adding the IMAP
- ▶ Comments in favor of including the IMAP is that it is an additional planning tool that would allow for the refinement of PMAs.
- ▶ Concerns over how the IMAP would be funded, when it would be implemented, and who would create the IMAP.



Requested Action

- Consider the Interim Milestone Action Plan (IMAP) Management Action for inclusion in the Vina Groundwater Sustainability Plan.



Vina
Groundwater Sustainability Agency
Agenda Transmittal

Agenda Item: 3.1.3

Subject: Language revisions on Section 5.1 of the Projects and Management Actions Chapter of the draft Vina GSA Groundwater Sustainability Plan

Contact: Kelly Peterson Phone: (530) 552-3595 Meeting Date: November 15, 2021 Regular Agenda

Department Summary: The Vina GSA Management Committee received a memo and a red-line version of suggested edits to the Projects and Management Actions (PMA) Chapter of the draft Vina Subbasin Groundwater Sustainability Plan (GSP) on 11/10/21 from the Rock Creek Reclamation District's Ad-hoc Committee along with a request for the items to be included for both Boards' consideration at the 11/15/21 meeting. These proposed revisions and items are attached.

Additionally, the legal counsels from both the Vina GSA and Rock Creek Reclamation District GSA worked together to provide proposed revisions to the first paragraph of the PMA Chapter Section 5.1. This revised language was presented to the Vina GSA Stakeholder Advisory Committee (SHAC) on 10/19/21 and is also attached.

During the SHAC meeting, RCRD GSA's legal counsel Mr. Wallace provided background information, noting that the first sentence added was derived directly from the SGMA regulations and is probably more in line with what DWR is looking for in the GSP. He also noted that they added a few words to more explicitly state that the Vina GSA and RCRD GSA Boards have the groundwater demand knob and the groundwater supply knob.

The SHAC weighed in on the proposed revisions to Section 5.1. Those SHAC members in support of the changes included G. Sohnrey (Ag Rep), S. Lewis (Ag Rep), J. Parsley (Ag Rep), A. Dawson (Domestic well Rep), B. Smith (Business Rep), E. Markey (Calwater Rep), C. Madden (Butte College Rep), T. Greene (CSU Chico Rep). Those who abstained was J. Brobeck (Environmental Rep).

Fiscal Impact: None

Staff Recommendation: Consider the proposed revisions to the PMA Chapter of the Vina Subbasin GSP

M E M O R A N D U M

TO: Vina GSA and Rock Creek RD GSA
FROM: Rock Creek RD GSA Ad Hoc Committee
DATE: November 10, 2021
RE: Recommended Revisions to the Draft PMA Chapter

The purpose of this memorandum is to transmit to you, in anticipation of the November 15, 2021, joint hearing on the draft Groundwater Sustainability Plan (GSP), our recommendations regarding changes to the status of certain projects and management actions identified in Chapter 5 of the draft GSP. Attached and below are our proposed revisions and comments suggesting relocation of certain projects and management actions within Chapter 5. These revisions and comments were prompted by public comments made regarding portions of Chapter 5, which resulted in our review of the purposes and categorization of projects as identified. To this end, some clarifying revisions were made.

Further, in reviewing the identified projects and management actions, as well as the explanations of what constitutes a "planned" versus a "potential" project (lines 4377-4385), it seemed that some of these activities should be re-categorized in Chapter 5. For example, the streamflow augmentation project should be grouped with other *potential* projects because this project is not ready to proceed given that the project status is described as being in the "planning stages." (Line 4491.) We did add to this description that the planning stage is "initial" based on our understanding of the current status. In any event, this project seems to be better placed as potential projects as they are still in the early planning stage.

We also suggest refinement of the explanations of what are "planned" and "potential" projects. Planned projects seem to be those that are *anticipated* to move forward while potential projects seem to be those that *may* move forward as feasibility and project requirements are determined.

Additionally, you may wish to consider a statement reflecting that the order of projects provided in Chapter 5 does not indicate any order of preference or sequencing. In other words, the project descriptions are provided in no particular order within each category.

Our intent in making these proposed revisions is not to substantively change the draft Chapter 5. Instead, we are suggesting a refinement of what constitutes a "planned" versus a "potential" project, and then re-categorizing certain of the proposed projects and management actions. Below is a table of the suggested re-categorizations based on the identified status of the various projects. Such re-categorization will require placement modifications in the table of Chapter 5 and the subsequent placement of the descriptions of the projects.

If approved by the Boards, the modifications recommended herein (and the attached redline of the PMA chapter) will likely require additional edits by staff for consistency beyond those proposed below and contained in the attached redline document.

PROJECT	Current Categorization	Proposed Categorization
Streamflow Augmentation	Planned Project	Potential Project
Extend Orchard Replacement	Potential Project	Conceptual Project
Recharge from the Miocene Canal	Potential Project	Conceptual Project
Community Water Education Initiative	Potential Project	Planned Project
Fuels Management for Watershed Health	Potential Project	Planned Project

4319 **5. PROJECT AND MANAGEMENT ACTIONS**

4320 This Section includes relevant projects and management actions information to satisfy CCR Title
4321 23 § 354.42 and 354.44. The projects and management actions described in this Section will help
4322 achieve the Vina Subbasin's sustainability goal.

4323 **5.1 Projects, Management Actions, and Adaptive Management Strategies**

4324 The objective and purpose of the GSP is to achieve groundwater sustainability in the Vina
4325 Subbasin. This will require projects aimed at increasing water supplies and decreasing
4326 groundwater dependence, as well as management actions designed to reduce groundwater
4327 demand. The Vina GSA and the RCRD GSA have identified projects and management actions
4328 tailored to benefit the Vina Subbasin's groundwater supply and quality for the benefit of rural
4329 areas, communities, agricultural users and the environment. The approach targets both increasing
4330 supply and reducing demand. The GSP identifies groundwater monitoring programs to monitor
4331 groundwater conditions, investigation of additional water sources to supplement the use of
4332 groundwater, and conservation and educational programs to reduce groundwater demand.

4333 **5.2 Projects**

4334 **5.2.1 Project Identification**

4335 Projects were identified through a lengthy outreach effort involving the SHAC and the GSAs.
4336 The process included soliciting input from governmental agencies, water purveyors, and local
4337 landowners. The Vina GSA's website allowed project proponents to input the available
4338 information on each project.

4339 The majority of projects submitted were proposed by the Vina GSA, with some being a joint
4340 effort with the RCRD GSA. Some of the projects also include other proponents, such as
4341 California State University, Chico (CSUC), PG&E, Cal Water, local agricultural farmers, and
4342 others. The list of proponents and other entities involved in the projects is included in Table 5-1
4343 below. The schedule to implement the projects is likely to vary depending upon subbasin
4344 conditions and the expected benefits of PMAs may also vary year to year.

4345 The provided project information was compiled into an initial draft list with similar and
4346 overlapping projects combined as appropriate. The draft list was presented to the SHAC in their
4347 July 15, 2021, meeting and to the GSAs Boards at their August meetings. The projects were then
4348 evaluated based on the following criteria:

- 4349 • Project addresses one or more of the Undesirable Results
- 4350 • Project is implementable with respect to technical complexity, regulatory complexity,
4351 institutional consideration, and public acceptance
- 4352 • Project is implementable within the SGMA timeframe
- 4353 • Project benefits Underrepresented Communities (URCs)
- 4354 • Project is in an area where water quality is suitable for use

4355 5.2.2 Project Implementation

4356 The purpose of planning and implementing projects is to ensure the subbasin achieves
4357 sustainability. Projects are categorized in three categories - Planned, Potential, and **Longer-term**
4358 **or**-Conceptual – based on current stage of planning or implementation. This Section includes
4359 Planned, **and** Potential, **projects, Longer term or and** Conceptual projects may be added in the
4360 future once identified. The specific Projects included in the GSP will be implemented, operated,
4361 and owned by the individual project proponent(s). Through annual reports, GSP updates, and the
4362 evaluation of interim milestones, minimum thresholds, and measurable objectives, the GSAs will
4363 evaluate whether the implementation of Projects is sufficient to achieve sustainability.
4364 Depending on how Projects are achieving sustainability, or otherwise impacting the ability of the
4365 subbasin to achieve sustainability, the GSAs may prioritize the development of projects, seek
4366 funding for prioritized projects, or develop guidelines for existing projects.

4367 5.2.2.1 List of Projects

4368 Several projects to achieve the Vina Subbasin's sustainability goal were identified. The initial set
4369 of projects was reviewed by the SHAC. A final list of 15 possible projects is included in this
4370 GSP and they are categorized into several project types, including direct and in-lieu recharge,
4371 intra-basin water transfers, water recycling, demand conservation and monitoring. Projects are
4372 further classified into three categories based on project status: Planned, Potential, and **Longer-**
4373 **term or** Conceptual, as defined below. All projects, regardless of status, remain subject to
4374 available funding, any required CEQA compliance, and any required approvals. The list of
4375 possible projects identified in this GSP are an initial list that may be further expanded or
4376 modified as the GSAs work toward sustainability by 2042.

- 4377 • Planned Projects – Currently, 4 Planned Projects have been identified. Projects in this
4378 category will are anticipated to move forward to help achieve the region's sustainability
4379 before 2042.
- 4380 • Potential Projects – Currently, 11 Potential Projects have been identified. Projects in this
4381 category are currently in the initial planning stages and may move forward if funding
4382 becomes available as feasibility and project requirements are satisfied determined.
4383 Potential Projects represent a “menu of options” for the Subbasin to achieve long-term
4384 sustainability and offset the remaining imbalance above and beyond implementation of
4385 the Planned Projects.
- 4386 • **Longer-term or** Conceptual Projects – No specific projects have been identified since
4387 projects in this category are in the early conceptual planning states and would require
4388 significant additional work to move forward. **Longer-term/**Conceptual Projects represent
4389 potential future projects that could conceptually provide a benefit to the Subbasin in the
4390 future, but that would need to be further developed.

4391 This subsection of the GSP satisfies the requirements of CCR title 23 § 354.44. Consistent with
4392 SGMA requirements, the project descriptions for projects contain information regarding:

- 4393 • The Measurable Objective benefitted by the project
- 4394 • Permitting and regulatory processes

- 4395 • Timetable for initiation and completion
4396 • Expected benefits
4397 • How the project will be accomplished
4398 • Legal authority
4399 • Estimated costs and plans to meet costs
4400 • Implementation circumstances
4401 • Public noticing

4402 Table 5-1 provides a summary of the 15 projects. Full descriptions are included below. Figures
4403 5-1 and 5-2 show the locations of these planned and potential projects.

4404

4405

Table 5-1: List of SGMA Projects

Project Name	Project Type	Identified Project Proponent and Other Potential Participating Entities	Measurable Objective Expected to Benefit	Current Status	Timetable (initiation and completion)	Estimated Costs	Expected Groundwater Demand Reduction (Acre-Feet/year)
Planned Projects							
5.2.3.1 Agricultural Irrigation Efficiency	Conservation	Vina GSA; local landowners, other entities TBD	Groundwater Levels	Planning Stage	2022-2025	TBD	Up to 4,000 acre-feet (based on a reduction up to 2%)
5.2.3.2 Residential Conservation	Conservation	Cal Water Chico, Vina GSA, local landowners, other entities TBD	Groundwater Levels	Planning Stage	2022-2025	TBD	100
5.2.3.3 Streamflow Augmentation	Direct Recharge, In-Lieu Recharge	Vina GSA, RCRD GSA, PID, PG&E, local landowners, other entities TBD	Groundwater Levels, Surface Water Depletion	Initial Planning Stage	2022-2025	\$50-\$100 per acre-foot	1,000-5,000
5.2.3.4 <u>Scoping for Flood Managed Aquifer Recharge (FloodMAR)/Surface Water Supply and Recharge Scoping</u>	Direct Recharge, In-lieu Recharge	Vina GSA, RCRD GSA, local landowners, other entities TBD	Groundwater Levels	Planning Stage	2022-2032	TBD	N/A
Potential Projects							
5.2.4.1 Paradise Irrigation District Intertie	In-Lieu Recharge	Vina GSA; PID, Cal Water, local landowners, other entities TBD	Groundwater Levels	Planning Stage	TBD, after Spring 2022	TBD	5,000
5.2.4.2 Agricultural Surface Water Supplies	Intra-Basin Water Transfer	Vina GSA, RCRD, local landowners, other entities TBD	Groundwater Levels	Planning Stage	2025-2032	TBD	2,000 – 3,000
5.2.4.3 Extend Orchard Replacement	Conservation	Vina GSA, local landowners, other entities TBD	Groundwater Levels	Conceptual Planning Stage	TBD	TBD	4,000-8,000
5.2.4.4 Recharge from the Miocene Canal	Direct Recharge	Vina GSA PG&E, Butte County, local landowners, other entities TBD	Groundwater Levels	Conceptual Planning Stage	2025	TBD	2,000 acre-feet based on 10,000 acre-feet available for recharge (20% efficiency)
5.2.4.5 Community Monitoring Program	Monitoring	Vina GSA, CSUC, Chico Ecological Reserves, local landowners, other entities TBD	Groundwater Levels	Planning Stage	2022-2025	TBD	N/A
5.2.4.6 Recycled Wastewater	Direct Recharge, Water Recycling	Vina GSA, City of Chico, local landowners, other entities TBD	Groundwater Levels	Planning Stage	2030-2038	TBD	5,000
5.2.4.7 Community Water Education Initiative	Education and Outreach	Vina GSA, CSUC, CWE, Chico State Enterprises, local landowners, other entities TBD	Groundwater Levels, Groundwater Storage, Water Quality, Land Subsidence, Surface Water Depletion, Education and Outreach	Ready for Implementation	Currently ongoing, expansion by 2023 depending on funding	Component 1: \$50-100K annually Component 2: \$10,000-\$200,000 annually Component 3: \$10,000-\$25,000 annually	TBD
5.2.4.8 Rangeland Management	Conservation	Vina GSA, CSUC, Chico State Enterprises, other entities TBD	Groundwater Levels	Planning Stage	Baseline data collection (2021-2022) Development of Master Management Plan (2022-2024)	TBD	TBD
5.2.4.9 Fuels Management for Watershed Health	Conservation	Vina GSA, CSUC, Chico State Enterprises, local	Groundwater Levels, Groundwater Storage, Water Quality, Surface Water Depletion	Part of project currently	450 acres ongoing; 4,000 acres 2021-2030; 6,000 to 10,000 acres 2025-2040	\$8.0 million - \$14.0 million	TBD

Project Name	Project Type	Identified Project Proponent and Other Potential Participating Entities	Measurable Objective Expected to Benefit	Current Status	Timetable (initiation and completion)	Estimated Costs	Expected Groundwater Demand Reduction (Acre-Feet/year)
		landowners, other entities TBD		ongoing, rest in planning stage			
5.2.4.10 Removal of Invasive Species	Conservation	Vina GSA, CSUC, Chico State Enterprises, other entities TBD	Groundwater Levels	Planning Stage	Inventory and mapping of properties: 2022-2023 Development of invasive management for water retention plan: 2023-2024 Identify and secure funding: 2022-2026 Implement projects and measure results: 2025 and beyond	TBD	TBD
5.2.4.11 Surface Water Supply and Recharge	Direct Recharge	Vina GSA, RCRD GSA, local landowners, other entities TBD	Groundwater Levels	Planning Stage	Sand Creek / Lindo Channel – 2022-2032; Other projects – 2022 – 2042	TBD	1,000 acre-feet / project

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4411 **5.2.3 Planned Projects**

4412 Projects categorized as Planned Projects are expected to move forward and be completed to
4413 achieve the Subbasin's sustainability goal by 2042. The estimated groundwater supply from
4414 these projects is expected to offset the projected overdraft of 10,000 AF per year.

4415 **5.2.3.1 Agricultural Irrigation Efficiency**

4416 A survey is currently being conducted in North and South Vina by the Vina GSA, Agricultural
4417 Groundwater Users of Butte County, and Butte County Farm Bureau in order to evaluate current
4418 irrigation methods and practices, identify opportunities and methods to improve irrigation
4419 efficiency, determine potential issues preventing the adoption of efficiency practices, and
4420 provide recommendations for increasing participation in these practices. The results of this
4421 survey are expected to be available in September 2021, with implementation of the project
4422 expected to be initiated between 2024 and 2030. Recommendations from the survey will be
4423 made available to the local agricultural community and implementation of the practices will be
4424 voluntary. The Vina GSA along with participating partners will pursue grant funds to help
4425 implement these practices. It is estimated that the adoption of more efficient practices could
4426 reduce groundwater demand by up to 2%, which translates to a reduction in groundwater demand
4427 of up to 4,000 AF per year.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA; local landowners, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	-Up to 4,000 acre-feet/year

4428

4429 Measurable Objective Expected to Benefit: This project will address declining water levels and
4430 the declining volume of groundwater stored in the aquifer. The main objective of the project is to
4431 reduce groundwater demand by modifying irrigation practices.

4432 Project Status: This project is in the planning stages.

4433 Required Permitting and Regulatory Process: None

4434 Timetable for Initiation and Completion: Project will be initiated in 2024

4435 Expected Benefits and Evaluation: A survey that consolidates data on the adoption of irrigation
4436 methods and practices by agricultural groundwater users will identify where more efficient
4437 practices can be implemented. This can help focus efforts and finances on areas where a
4438 reduction in overall groundwater demand is needed and feasible.

4439 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4440 conservation project. No additional water source will be utilized for this project.

4441 Legal Authority: The project would be under the authority of Vina GSA and potential future
4442 participating partners.

4443 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1, Proposition 68,
4444 USDA, Drought Resiliency Grants

4445 Circumstances for Implementation: This project is a Planned Project that is anticipated to move
4446 forward.

4447 Trigger for Implementation and Termination: The project will be initiated after the
4448 recommendations from the initial survey results are available.

4449 Process for Determining Conditions Requiring the Project to Occur: As mentioned above, the
4450 survey is already underway and once analysis is complete, recommendations based off of the
4451 results will be made available for voluntary implementation.

4452 **5.2.3.2 Project: Residential Conservation**

4453 Cal Water Chico, which provides water to the City of Chico via groundwater, proposed a series
4454 of conservation projects under their 2020 UWMP including toilet replacement, urinal valve and
4455 bowl replacement, clothes washer replacement, residential conservation kits, smart controllers,
4456 high efficiency irrigation nozzles, and turf buy-back.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Cal Water Chico, Vina GSA, local landowners, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	100 acre-feet/year

4457

4458 Measurable Objective Expected to Benefit: Groundwater Levels

4459 Project Status: This project is in the planning stages.

4460 Required Permitting and Regulatory Process: None

4461 Timetable for Initiation and Completion: 2022-2025

4462 Expected Benefits and Evaluation: The implementation of several different conservation projects
4463 for residential areas is expected to reduce groundwater demand by 100 AF per year in Chico.

4464 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4465 conservation project implemented by Cal Water in residential areas. No additional water source
4466 will be utilized for this project.

4467 Legal Authority: The project would be under the authority of Vina GSA and Cal Water Chico.
4468 Cal Water Chico would initiate the conservation programs.

4469 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1, Proposition 68,
4470 Drought Resiliency Grants, Cal Water

4471 Circumstances for Implementation: This project is a Planned Project that is anticipated to move
4472 forward. As scenarios change, the Potential Projects can come online to bring additional
4473 resources for adaptive management. Implementation of Potential Projects will be based on long-
4474 term management or changing needs of the GSA or Subbasin.

4475 Trigger for Implementation and Termination: Increased groundwater demand due to an
4476 increasing number of planned residential developments in Chico (according to the City of Chico
4477 and Butte County General Plans).

4478 Process for Determining Conditions Requiring the Project to Occur: This is a Planned Project
4479 that is anticipated to move forward.

4480 **5.2.3.3 Project: Streamflow Augmentation**

4481 Under the management of the Vina GSA, this project would transport excess untreated surface
4482 water from PID, PG&E, and / or other water right holders in the upper watershed to various parts
4483 of the Vina Subbasin through creeks and streams. The goal of the project would be to provide
4484 additional water sources to riparian water holders such as Durham Mutual, Rancho Esquon,
4485 M&T Ranch, and Gorrill Ranches as well as increase stream flows and direct and in-lieu
4486 recharge. Prior to the start of the project, Vina GSA would conduct an investigation and
4487 feasibility study to ensure that enough surface water would be available. The project would
4488 primarily take place at Comanche Creek, Butte Creek, Little Chico Creek, and Big Chico Creek.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, RCRD GSA, PID, PG&E, local landowners, other entities TBD
Project Type:	Direct Recharge, In-Lieu Recharge
Estimated Groundwater Offset and/or Recharge:	1,000 – 5,000 acre-feet/year

4489

4490 Measurable Objective Expected to Benefit: Groundwater Levels, Surface Water Depletion

4491 Project Status: This project is in the initial planning stages.

4492 Required Permitting and Regulatory Process: SWRCB Water Right Permit, CEQA

4493 Timetable for Initiation and Completion: 2022-2025

4494 Expected Benefits and Evaluation: Additional sources of surface water would help to increase
4495 surface water levels in creeks and streams, groundwater levels via direct and in-lieu recharge,
4496 and overall water availability for riparian water holders.

4497 How Project Will Be Accomplished/Evaluation of Water Source: The additional water sources
4498 would come from any available surface water from PID, PG&E, and other water right holders in
4499 the upper watershed.

4500 Legal Authority: The project would be under the authority of Vina GSA.

4501 Estimated Costs and Plans to Meet Costs: \$50 - \$100/acre-foot, funding via California Wildlife
4502 Conservation Board, Resource Renewal Institute, Proposition 1, Proposition 68, Vina fee

4503 Circumstances for Implementation: This project is a Planned Potential Project ~~that is anticipated~~
4504 ~~to move forward~~. As scenarios change, the Potential Projects can come online to bring additional
4505 resources for adaptive management. Implementation of Potential Projects will be based on long-
4506 term management or changing needs of the GSA or Subbasin.

4507 Trigger for Implementation and Termination: None

4508 Process for Determining Conditions Requiring the Project to Occur: This is a Planned Potential
4509 Project ~~that is anticipated to move forward.~~

4510 **5.2.3.4 Scoping for Flood MAR/Surface Water Supply and Recharge Scoping**

4511 Under this project, Vina GSA and RCRD GSA will expand on the Flood MAR initiative, which
4512 was originally developed by the DWR to promote recharge programs that use fields, recharge
4513 basins, and/or recharge ponds to divert high flows in creeks and streams. Individual recharge
4514 projects will eventually occur, but this particular project will focus on the initial scoping and
4515 identify specific recharge opportunities in the Vina Subbasin. At first, Vina GSA and RCRD
4516 GSA will focus their efforts on areas with the greatest need for recharge and seek grants and
4517 other funding sources to implement the projects. Interested landowners would be identified and
4518 participation in the program would be voluntary.

4519 Estimated Groundwater Offset and/or Recharge: Not applicable. Future recharge projects are
4520 possible based on results of scoping.

4521 Measurable Objective Expected to Benefit: Future increase of groundwater levels

4522 Project Status: This project is in the planning stages.

4523 Required Permitting and Regulatory Process: N/A

4524 Timetable for Initiation and Completion: 2022-2032

4525 Expected Benefits and Evaluation: This project would develop the first steps of the Flood MAR
4526 initiative and recharge efforts for the Vina Subbasin region and identify specific groundwater
4527 recharge and management projects based on feasibility, need, and available funding. The
4528 initiation of this project would then lead to future recharge projects.

4529 How Project Will Be Accomplished/Evaluation of Water Source: This project will help to
4530 identify and develop specific recharge projects in the region, which will then individually
4531 determine recharge sources.

4532 Legal Authority: The project would be under the authority of the Vina GSA and RCRD GSA.

4533 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1 and Proposition 68

4534 Circumstances for Implementation: This project is a Planned Project that is anticipated to move
4535 forward.

4536 Trigger for Implementation and Termination: None

4537 Process for Determining Conditions Requiring the Project to Occur: This is a Planned Project
4538 that is anticipated to move forward.

4539

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, RCRCD GSA, local landowners, other entities TBD
Project Type:	Direct Recharge, In-Lieu Recharge
Estimated Groundwater Offset and/or Recharge:	N/A

4540

4541 **5.2.4 Potential Projects**

4542 Projects categorized as Potential Projects are currently in the initial planning stages and may
 4543 move forward as feasibility and project requirements are determined~~if funding becomes~~
 4544 ~~available~~. Potential Projects represent a “menu of options” for the Subbasin to achieve long-term
 4545 sustainability and offset the remaining imbalance above and beyond implementation of the
 4546 Planned Projects.

4547 **5.2.4.1 Project: Paradise Irrigation District Intertie**

4548 After the devastation of the 2018 Camp Fire in Paradise, California, PID lost 95% of their
 4549 customers. In order to help PID sustain their business, this project proposes that PID supply Cal
 4550 Water, which serves the City of Chico, with water from one of their surface waters sources.
 4551 Currently, Chico’s only water source is groundwater, and their annual demand is 25,000 AF. The
 4552 additional water source would help offset the groundwater demand and help groundwater levels
 4553 stabilize in the Vina Subbasin. The SWRCB is currently conducting a study through Spring 2022
 4554 to help PID evaluate their options for long-term sustainability. This study will include the
 4555 feasibility of the PID-Cal Water Intertie project.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA; PID, Cal Water, local landowners, other entities TBD
Project Type:	In-Lieu Recharge
Estimated Groundwater Offset and/or Recharge:	5,000 acre-feet/year

4556

4557 Measurable Objective Expected to Benefit: Groundwater Levels

4558 Project Status: This project is in the initial planning stages.

4559 Required Permitting and Regulatory Process: County encroachment permit, CEQA

4560 Timetable for Initiation and Completion: TBD, after Spring 2022

4561 Expected Benefits and Evaluation: An additional source for Chico from surface water would
 4562 help offset the demand on groundwater in the Vina Subbasin and allow groundwater levels to
 4563 stabilize. In addition, this would help PID’s business after they lost customers during the Camp
 4564 Fire.

4565 How Project Will Be Accomplished/Evaluation of Water Source: This project will allow PID to
 4566 provide a surface water source to the City of Chico to help offset groundwater demand.
 4567 Groundwater is currently the only source of water for Chico.

4568 Legal Authority: The project would be under the authority of Vina GSA, PID, and Cal Water

4569 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1, Proposition 68, State
4570 Revolving Fund, Federal Infrastructure Funds

4571 Circumstances for Implementation: The decision to move forward with the project will based on
4572 discussions with PID.

4573 Trigger for Implementation and Termination: PID's loss of customers from the Camp Fire,
4574 decreasing groundwater levels in the Subbasin, increasing groundwater demand in Chico

4575 Process for Determining Conditions Requiring the Project to Occur: The implementation

4576 **5.2.4.2 Project: Agricultural Surface Water Supplies**

4577 Under this project, surface water from water right holders in the neighboring Butte Subbasin and
4578 the upper watershed would provide water for the Vina North and South areas. Some of these
4579 surface water sources would include the Sacramento River and Lake Oroville. Surface water
4580 would help agricultural users reduce their groundwater usage. Agricultural users may need to
4581 install a dual irrigation system that allows them to switch between groundwater and surface
4582 water depending on the availability of the surface water. Implementation of some of the projects
4583 could also lead to recharge opportunities, as additional water may be available during off-peak
4584 irrigation season.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, RCRD, local landowners, other entities TBD
Project Type:	Intra-Water Basin Transfer
Estimated Groundwater Offset and/or Recharge:	2,000 – 3,000 acre-feet/year

4585

4586 Measurable Objective Expected to Benefit: Groundwater Levels Project Status: This project is in
4587 the initial planning stages.

4588 Required Permitting and Regulatory Process: Projects with diversions of surface water will
4589 require a SWRCB Water Right Permit, CEQA, others TBD

4590 Timetable for Initiation and Completion: 2025-2032

4591 Expected Benefits and Evaluation: Surface water sources from neighboring basins would
4592 decrease the Vina Subbasin's dependence on groundwater and allow groundwater levels to
4593 stabilize.

4594 How Project Will Be Accomplished/Evaluation of Water Source: The water sources for this
4595 project would include available surface water from the Butte Subbasin and upper watershed
4596 (Sacramento River, Lake Oroville, etc.).

4597 Legal Authority: The project would be under the authority of Vina GSA, the RCRD GSA, local
4598 landowners or other entities TBD.

4599 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1 and Proposition 68

4600 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4601 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve

4602 long-term sustainability and offset the remaining imbalance above and beyond implementation
4603 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4604 additional resources for adaptive management.

4605 Trigger for Implementation and Termination: None

4606 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4607 Projects will be based on long-term management or changing needs of the GSA or Subbasin.

4608 **5.2.4.3 Extend Orchard Replacement**

4609 Under this project, various funding sources would incentivize local growers to increase the
4610 duration of their current fallowing practice between orchard removal and replanting by one
4611 growing season. The extra time would allow the soil to fallow and decrease the overall demand
4612 on groundwater and other water sources. Additionally, this program may also reduce the need for
4613 soil treatments such as fumigation and expand recycling options for the previous orchard. This
4614 project has the potential to fallow between 1,600 and 3,200 acres per year in North and South
4615 Vina. As envisioned, this project would be dependent on the availability of financial incentives
4616 and willingness of landowners to participate. Participation in the program would be voluntary.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, local landowners, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	4,000 – 8,000 acre-feet/year

4617

4618 Measurable Objective Expected to Benefit: Groundwater Levels

4619 Project Status: This project is still in the early conceptual planning stages.

4620 Required Permitting and Regulatory Process: None

4621 Timetable for Initiation and Completion: TBD. The timetable would be dependent on the
4622 availability of financial incentives and willingness of farmers to participate.

4623 Expected Benefits and Evaluation: By increasing the time between orchard removal and
4624 replanting, the soil may be allowed to fallow, restoring its fertility, and decreasing its water
4625 demand. This would decrease the overall use of groundwater in the Subbasin.

4626 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4627 conservation project. No additional water source will be utilized for this project.

4628 Legal Authority: The project would be under the Vina GSA, local landowners and other entities
4629 TBD.

4630 Estimated Costs and Plans to Meet Costs: TBD; funding via Proposition 1, Proposition 68,
4631 USDA, National Resource Conservation Service (NRCS)

4632 Circumstances for Implementation: This is a potential project in the early planning stages and
4633 would require significant additional work to move forward.

4634 Trigger for Implementation and Termination: None
4635 Process for Determining Conditions Requiring the Project to Occur: The project proponents are
4636 in the process of determining the feasibility of this project including the possibility of securing
4637 the necessary finances to move forward.

4638 **5.2.4.4 Recharge from the Miocene Canal**

4639 During the 2018 Camp Fire, the upper Miocene Canal, which is operated by PG&E, was
4640 destroyed. Under this project, the upper canal would be rebuilt and re-watered. Additionally,
4641 PG&E would sell the Miocene Canal system by mid-2022 and modify the system to increase
4642 water supply reliability. One such modification might include establishing recharge ponds along
4643 the west side of the Miocene Canal in areas conductive to recharging the Vina South Subbasin.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA PG&E, Butte County, local landowners, other entities TBD
Project Type:	Direct Recharge
Estimated Groundwater Offset and/or Recharge:	2,000 acre-feet/year based on 10,000 acre-feet available for recharge (20% efficiency)

4644
4645 Measurable Objective Expected to Benefit: Groundwater Levels
4646 Project Status: This project is still in the early conceptual planning stages.
4647 Required Permitting and Regulatory Process: CEQA, SWRCB Water Rights Permit
4648 Timetable for Initiation and Completion: After 2025
4649 Expected Benefits and Evaluation: Rebuilding the upper Miocene Canal and making
4650 improvements to the overall system would increase recharge into the Vina South Subbasin and
4651 surface water availability for other uses.
4652 How Project Will Be Accomplished/Evaluation of Water Source: This project would be initiated
4653 by PG&E, who would obtain water from the same water sources that currently supply the
4654 Miocene Canal.
4655 Legal Authority: The project would be under the authority of Vina GSA and PG&E.
4656 Estimated Costs and Plans to Meet Costs: TBD, funding via state and federal grants
4657 Circumstances for Implementation: This project is a ~~Longer-term~~/Conceptual Project, meaning it
4658 is in the early conceptual planning stages and would require significant additional work to move
4659 forward. ~~Longer-term~~/Conceptual Projects represent potential future projects that could
4660 conceptually provide a benefit to the Subbasin in the future. As scenarios change, ~~Longer-~~
4661 ~~term~~/Conceptual Projects can come online to bring additional resources for adaptive
4662 management. The project proponents are in the process of determining the feasibility of this
4663 project including the possibility of securing the necessary finances to move forward.
4664 Trigger for Implementation and Termination: None

4665 Process for Determining Conditions Requiring the Project to Occur: Implementation of ~~Longer~~
4666 ~~term~~/Conceptual Projects will be based on long-term management or changing needs of the GSA
4667 or Subbasin.

4668 **5.2.4.5 Community Monitoring Program**

4669 This project would create routine water table monitoring programs for approximately 8,000 acres
4670 of Ecological Reserves in the region between lower Forest Ranch and Cohasset Road near Chico
4671 Airport, including the Big Chico Creek, Sheep Hollow, and Cabin Hollow tributaries.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, CSUC, Chico Ecological Reserves, local landowners, other entities TBD
Project Type:	Monitoring
Estimated Groundwater Offset and/or Recharge:	N/A

4672

4673 Measurable Objective Expected to Benefit: Groundwater Levels

4674 Project Status: This project is in the initial planning stages.

4675 Required Permitting and Regulatory Process: None.

4676 Timetable for Initiation and Completion: The establishment of these new monitoring programs is
4677 planned to take place between 2022 and 2025.

4678 Expected Benefits and Evaluation: Routine water table monitoring programs will track overall
4679 water table trends in the region and provide important, up-to-date data for making decisions on
4680 water management.

4681 How Project Will Be Accomplished/Evaluation of Water Source: CSUC and Chico Ecological
4682 Reserves will implement the monitoring programs on a routine basis through their university
4683 programs. No additional water source will be utilized for this project.

4684 Legal Authority: The project would be under the authority of CSUC and Chico Ecological
4685 Reserves.

4686 Estimated Costs and Plans to Meet Costs: TBD, funding sources TBD

4687 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4688 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
4689 long-term sustainability and offset the remaining imbalance above and beyond implementation
4690 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4691 additional resources for adaptive management.

4692 Trigger for Implementation and Termination: None

4693 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4694 Projects will be based on long-term management or changing needs of the GSA or Subbasin.

4695 **5.2.4.6 Project: Wastewater Recycling**
4696 The City of Chico currently operates a wastewater treatment plant with a treatment capacity of
4697 12 million gallons (36 AF) per day and discharges 13,000 AF per year of the treated wastewater
4698 to the Sacramento River (in accordance with their waste discharge permit from the California
4699 Water Resources Control Board). Under this project, the city would review the feasibility of
4700 diverting some of their recycled wastewater from the Sacramento River to recharge ponds and/or
4701 non-crop vegetation in Chico.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, City of Chico, local landowners, other entities TBD
Project Type:	Direct Recharge, Water Recycling
Estimated Groundwater Offset and/or Recharge:	5,000 acre-feet/year

- 4702
- 4703 Measurable Objective Expected to Benefit: Groundwater Levels
- 4704 Project Status: This project is in the initial planning stages.
- 4705 Required Permitting and Regulatory Process: SWRCB Water Right permit, CEQA, National
4706 Pollutant Discharge Elimination System (NPDES) permit, others TBD
- 4707 Timetable for Initiation and Completion: 2030-2038
- 4708 Expected Benefits and Evaluation: This project would divert treated wastewater, that would
4709 otherwise be pumped into the Sacramento River, towards recharge ponds and non-crop
4710 vegetation. This would increase groundwater recharge, decrease groundwater demand for
4711 farming, and help groundwater levels stabilize in the region.
- 4712 How Project Will Be Accomplished/Evaluation of Water Source: This project would be initiated
4713 by the Vina GSA and the City of Chico, and the water source for this project would be the
4714 treated wastewater from the City of Chico's wastewater treatment plant.
- 4715 Legal Authority: The project would be under the authority of Vina GSA and the City of Chico.
- 4716 Estimated Costs and Plans to Meet Costs: TBD, funding via Proposition 1, Proposition 68, and
4717 SWRCB
- 4718 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4719 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
4720 long-term sustainability and offset the remaining imbalance above and beyond implementation
4721 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4722 additional resources for adaptive management.
- 4723 Trigger for Implementation and Termination: None
- 4724 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4725 Projects will be based on long-term management or changing needs of the GSAs or Subbasin.

4726 **5.2.4.7 Project: Community Water Education Initiative**

4727 The Community Water Education Initiative, proposed by CSUC's CWE, would consist of two
4728 main components:

- 4729 1. Community Water Education Project – The CWE would lead this component of the
4730 project to expand on community outreach and education associated with water-related
4731 topics and issues of the region. CWE would focus on topics such as regional
4732 groundwater issues, connectivity of surface and groundwater, decision-making during
4733 drought years, basic aquifer knowledge, and more, and target agricultural well users,
4734 domestic well users, and municipal customers. The scope would also include
4735 technical seminars and field trips, as well as creating educational materials such as
4736 fact sheets, printed materials, and website content.
- 4737 2. Big Chico Creek Watershed Tour – CWE currently hosts a Big Chico Creek
4738 Watershed Tour every year that lasts for four days (2 weekends in March and April)
4739 and that takes participants from the watershed's headwaters to the Big Chico Creek
4740 Ecological Reserve, through CSUC campus, and to its confluence with the
4741 Sacramento River. During the program, participants learn about the watershed,
4742 explore various water issues, and help CSUC faculty research the health of the
4743 watershed. Under this project, CSUC proposes to expand the program to include
4744 community members and more groundwater education, with a focus on the Vina
4745 Subbasin, with the goal to help community members better understand their role in
4746 sustainable groundwater management.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, CSUC, CWE, Chico State Enterprises, local landowners, other entities TBD
Project Type:	Education and Outreach
Estimated Groundwater Offset and/or Recharge:	N/A

4747
4748 Measurable Objective Expected to Benefit: Groundwater Levels, Groundwater Storage, Water
4749 Quality, Land Subsidence, Surface Water Depletion, Education and Outreach

4750 Project Status: This project is ready for implementation. Possible expansion by 2023 depending
4751 on funding.

4752 Required Permitting and Regulatory Process: None

4753 Timetable for Initiation and Completion: Currently measuring and providing community
4754 education with the possibility of expansion by 2023 depending on funding.

4755 Expected Benefits and Evaluation: This project would expand the education and outreach on
4756 important watershed and groundwater issues in the region, helping community members better
4757 understand their role in sustainable water management.

4758 How Project Will Be Accomplished/Evaluation of Water Source: This is an education and
4759 outreach project provided through CSUC that does not require a water source.

4760 Legal Authority: The project would be under the authority of CSUC's CWE.

4761 Estimated Costs and Plans to Meet Costs: \$50-100K annually (Component 1); \$10,000-\$200,000
4762 annually (Component 2); \$10,000-\$25,000 annually (Component 3). Funding via Proposition 1
4763 and Proposition 68

4764 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4765 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
4766 long-term sustainability and offset the remaining imbalance above and beyond implementation
4767 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4768 additional resources for adaptive management.

4769 Trigger for Implementation and Termination: None

4770 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4771 Projects will be based on long-term management or changing needs of the GSAs or Subbasin.

4772 **5.2.4.8 Project: Rangeland Management and Water Retention**

4773 Under this project, CSUC and Chico State Enterprises would initiate a study of
4774 adaptive/regenerative grazing practices on 2,000 or more acres in the region. The study, which
4775 would take place between 2021 and 2022, would measure soil compaction, erosion, groundwater
4776 retention, and biological diversity. If this study finds that water retention engineering projects
4777 would be feasible in the region, based on the collected data on local soil, then CSUC would
4778 create a master management plan and take necessary steps to complete the water retention
4779 projects.

4780 This project would take place in two locations across 3,850 acres of historical rangeland between
4781 Musty Buck Ridge and the Cohasset Road.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, CSUC, Chico State Enterprises, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	TBD

4782

4783 Measurable Objective Expected to Benefit: Groundwater Levels

4784 Project Status: This project is currently in the initial planning stages.

4785 Required Permitting and Regulatory Process: CEQA and/or NEPA depending on project impact

4786 Timetable for Initiation and Completion: Baseline data collection (2021-2022); Development of
4787 Master Management Plan (2022-2024)

4788 Expected Benefits and Evaluation: This project would evaluate characteristics of local soil and
4789 the feasibility to initiate water retention projects. Water retention would help increase the overall
4790 water supply for the region.

4791 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4792 conservation project through CSUC. No additional water source will be utilized for this project.

4793 Legal Authority: The project would be conducted by CSUC.

4794 Estimated Costs and Plans to Meet Costs: TBD, funding via state funding through watershed
4795 health grants, federal funding through USDA, private funding TBD

4796 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4797 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
4798 long-term sustainability and offset the remaining imbalance above and beyond implementation
4799 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4800 additional resources for adaptive management.

4801 Trigger for Implementation and Termination: Once the study is complete on soil compaction,
4802 erosion, groundwater retention, and biological diversity, and it shows that water retention is
4803 feasible, then a master management plan will be developed.

4804 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4805 Projects will be based on long-term management or changing needs of the GSAs or Subbasin.

4806 **5.2.4.9 Project: Fuel Management for Watershed Health**
4807 This project would involve fuel management in the Upper Watershed, including multiple sites on
4808 the 3,950-acre Big Chico Creek Ecological Reserve, 1,500 acres above the Reserve in the Big
4809 Chico Creek Watershed, and on private land within the watershed. Fuel reduction projects are
4810 currently ongoing at 460 acres. Further fuel reduction is planned for an additional 4,000 acres
4811 between 2021 and 2030 and another 6,000 to 10,000 acres for 2025 through 2040 with the City
4812 of Chico Parks Department and other private landowners.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, CSUC, Chico State Enterprises, local landowners, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	TBD
Other Potential Participating Entities	CSUC, Chico State Enterprises

4813

4814 Measurable Objective Expected to Benefit: Groundwater Levels, Groundwater Storage, Water
4815 Quality, Surface Water Depletion

4816 Project Status: Part of this project is currently ongoing, with other parts in the planning stages.

4817 Required Permitting and Regulatory Process: CEQA

4818 Timetable for Initiation and Completion: 450 acres have ongoing fuel reduction; 4,000 acres
4819 planned for 2021-2030; 6,000 to 10,000 acres planned for 2025-2040

4820 Expected Benefits and Evaluation: Improved fuel management would prevent inadvertent
4821 spillage and the degradation of water quality.

4822 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4823 conservation project conducted by CSUC. No additional water source will be utilized for this
4824 project.

4825 Legal Authority: The project would be conducted by CSUC.

- 4826 Estimated Costs and Plans to Meet Costs: \$8.0 million - \$14.0 million (based on \$2,000 and
 4827 \$3,500 per acre with a target of 4,000 acres); funding via CAL FIRE, Sierra Nevada
 4828 Conservancy, California Fire Safe Council, other state, and federal funding agencies
- 4829 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
 4830 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
 4831 long-term sustainability and offset the remaining imbalance above and beyond implementation
 4832 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
 4833 additional resources for adaptive management.
- 4834 Trigger for Implementation and Termination: None
- 4835 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
 4836 Projects will be based on long-term management or changing needs of the GSAs or Subbasin.
- 4837 5.2.4.10 Project: Removal of Invasive Species**
- 4838 Invasive species negatively impact the natural ecosystem in several ways, including consuming
 4839 water and hampering recharge. Under this project, invasive species and native grasses in
 4840 meadows and oak savannahs would be mapped between 2022 and 2023. This would then be
 4841 followed by the development of an invasive management for water retention plan between 2023
 4842 and 2024, the acquisition of funding between 2022 and 2026, and the implementation of invasive
 4843 species removal projects after 2025. This project would take place in the Upper Watershed at
 4844 approximately 8,000 acres between lower Forest Ranch and the Chico Airport, including the Big
 4845 Chico Creek, Sheep Hollow, and Cabin Hollow drainages.

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, CSUC, Chico State Enterprises, other entities TBD
Project Type:	Conservation
Estimated Groundwater Offset and/or Recharge:	TBD

- 4846
- 4847 Measurable Objective Expected to Benefit: The project will address declining water levels and
 4848 the declining volume of groundwater stored in the aquifer.
- 4849 Project Status: This project is currently in the initial planning stages.
- 4850 Required Permitting and Regulatory Process: CEQA and/or NEPA depending on project location
 4851 and impact
- 4852 Timetable for Initiation and Completion:
- 4853 Inventory and mapping of properties: 2022-2023
- 4854 Development of invasive management for water retention plan: 2023-2024
- 4855 Identify and secure funding: 2022-2026
- 4856 Implement projects and measure results: 2025 and beyond

4857 Expected Benefits and Evaluation: The removal of invasive species would benefit the natural
4858 ecosystem and prevent them from negatively affecting the amount of available water and the
4859 ability for water to recharge.

4860 How Project Will Be Accomplished/Evaluation of Water Source: This project is a demand-side
4861 conservation project conducted through CSUC. No additional water source will be utilized for
4862 this project.

4863 Legal Authority: The project would be conducted by CSUC.

4864 Estimated Costs and Plans to Meet Costs: TBD, funding via state and federal wildfire resiliency
4865 grants

4866 Circumstances for Implementation: This project is a Potential Project, meaning it is currently in
4867 the planning stages. Potential Projects represent a “menu of options” for the Subbasin to achieve
4868 long-term sustainability and offset the remaining imbalance above and beyond implementation
4869 of the Planned Projects. As scenarios change, the Potential Projects can come online to bring
4870 additional resources for adaptive management.

4871 Trigger for Implementation and Termination: None

4872 Process for Determining Conditions Requiring the Project to Occur: Implementation of Potential
4873 Projects will be based on long-term management or changing needs of the GSAs or Subbasin.

4874 **5.2.4.11 Project: Surface Water Supply and Recharge**

4875 Projects under this category would involve activities that increase the surface water supply to the
4876 Vina Subbasin through: (1) direct application of surface water to crops along the lines of the
4877 Agricultural Surface Water Supplies Project described above; (2) application of surface water
4878 and/or flood water to land surface (i.e. existing orchards) for recharge purposes, sometimes
4879 referred to as Flood MAR projects; (3) surface water and/or flood water application to recharge
4880 basins and/or recharge ponds; or (4) other applications.

4881 The following are examples of potential projects in the Subbasin:

4882 Sand Creek Project – This project would take place in the North Chico and Nord areas and
4883 would involve obtaining data that would later be used to develop mitigation measures for
4884 flooding and recharge. The data may also be used to decide future actions towards habitat
4885 restoration and runoff management to sustain groundwater. This project is currently developing a
4886 Decision Support Tool to determine future construction scope and feasibility.

4887 Lindo Channel – This project would divert water from Big Chico Creek when flow exceeds 75
4888 cubic feet per second and store the water in the Lindo Channel. The Lindo Channel can then be
4889 used as a recharge source for other areas and potentially provide 2,000 acre-feet.

4890 Other additional recharge projects would be developed by the Vina GSA, the RCRD GSA, local
4891 landowners and / or entities TBD

4892 Estimated Groundwater Offset and/or Recharge: 1,000 acre-feet/year per project.

4893 Measurable Objective Expected to Benefit: increase of groundwater levels by enhancing in-lieu
4894 recharge opportunities.

4895 Project Status: The Sand Creek project and Lindo Channel project are in the initial planning
4896 stages. Other projects to be developed in the future.

4897 Required Permitting and Regulatory Process: Projects with diversions of surface water will
4898 require a SWRCB permit; CEQA and others TBD

4899 Timetable for Initiation and Completion: Sand Creek and Lindo Channel – 2022-2032; Other
4900 projects – 2022 – 2042.

4901 Expected Benefits and Evaluation: This project would reduce reliance on native groundwater
4902 supply.

4903 How Project Will Be Accomplished/Evaluation of Water Source: Evaluate and analyze results of
4904 scoping project for potential locations of recharge activity. The Sand Creek project and Lindo
4905 Channel project are in the planning stages. The Lindo Channel project is anticipated to divert
4906 water from Big Chico Creek to the Lindo Channel, which can then be used as a recharge source
4907 on-site or at other locations. The Sand Creek project is anticipated to divert water from the creek
4908 to a recharge basin.

4909 Legal Authority: The projects would be under the authority of the Vina GSA, the RCRD GSA,
4910 local landowners and / or other entities TBD.

4911 Estimated Costs and Plans to Meet Costs: TBD, potential funding via Proposition 1 and
4912 Proposition 68

4913 Circumstances for Implementation: These projects are Potential Projects to bring additional
4914 resources for adaptive management. Potential Projects represent a “menu of options” for the
4915 Subbasin to achieve long-term sustainability and offset the remaining imbalance above and
4916 beyond implementation of the Planned Projects. As scenarios change, the Potential Projects can
4917 come online to bring additional resources for adaptive management.

4918 Trigger for Implementation and Termination: None

4919 Process for Determining Conditions Requiring the Project to Occur: The Sand Creek project and
4920 Lindo Channel project are in the planning stages and will be implemented assuming that
4921 feasibility is determined. Implementation of Potential Projects will be based on long-term
4922 management or changing needs of the GSAs or Subbasin.

4923

Project Summary	
Identified project proponent(s) and other potential participating entities:	Vina GSA, RCRD GSA, local landowners, other entities TBD
Project Type:	Direct Recharge, In-Lieu Recharge
Estimated Groundwater Offset and/or Recharge:	1,000 acre-feet/project

4924

4925 **5.2.5 Longer-term or Conceptual Projects**

4926 Projects categorized as ~~Longer term or~~-Conceptual Projects are in the early conceptual stages
 4927 and would require significant additional work to move forward. ~~Longer term~~/Conceptual
 4928 Projects represent potential future projects that could conceptually provide a benefit to the
 4929 Subbasin in the future, but that would need to be further developed.

4930 **5.2.6 Notification Process**

4931 The GSAs will continue to conduct public outreach and will be responsible for notification of the
 4932 projects. Regular updates will be provided to the GSA Boards and presented on the websites
 4933 www.vinagsa.org and rockcreekreclamation.org as projects are implemented. Outreach is likely
 4934 to include public notices, meetings, website, social media, and email lists.

4935 **5.3 Management Actions**

4936 In order to achieve sustainable groundwater management, management actions can be
 4937 implemented to focus on reduction of groundwater demand. The management actions can
 4938 include increased data collection, education and outreach, regulatory policies, incentive
 4939 programs, and enforcement actions.

4940 An evaluation of potential GSA actions (projects or management actions) will occur on an
 4941 annual basis relying on information reported in the annual report. The following sections will
 4942 present a suite of management action options that the GSA may consider during GSP
 4943 implementation. The schedule to implement the management actions is likely to vary depending
 4944 upon subbasin conditions and the expected benefits of PMAs may also vary year to year.

4945 **5.3.1 General Plan Updates**

4946 The Vina GSAs will cooperate with Butte County and the City of Chico with updates to their
 4947 General Plans. The Vina GSA will participate and collaborate as appropriate with land use
 4948 agencies during general plan updates to ensure that land use planning recognizes the Vina GSP.
 4949 The GSAs will collaborate to ensure that the important components of the GSP are addressed by
 4950 in the general plans. The recognition and use of groundwater sustainability practices would
 4951 remain consistent.

4952 **5.3.2 Domestic Well Mitigation**

4953 If an increasing number of domestic groundwater wells go dry in the Subbasin, the GSAs could
 4954 propose a series of steps to help mitigate this issue. The following steps are proposed under this
 4955 management action:

- 4956 1. Establish a voluntary registry of domestic wells.
- 4957 2. Compile domestic well logs, screen depths, and locations.

- 4958 3. Secure financial resources to improve, deepen or replace select domestic wells.
4959 4. Provide emergency response to homes with dry domestic wells, including supplying
4960 bottled water and potable water for sanitation. Priority would be given to
4961 disadvantaged communities dependent on groundwater as a drinking water resource.

4962 Creating a registry of domestic wells in the region, with information on well location and screen
4963 depths, would help the GSAs compile important data into a centralized location. This would
4964 allow the GSAs to determine which wells need to be updated to the current standards and which
4965 may need to be deepened, as well as to help them prioritize certain communities for emergency
4966 response.

4967 **5.3.3 Well Permitting Ordinance**

4968 According to the current Butte County code, domestic wells are required to be screened below
4969 the groundwater levels measured during the 1989 to 1994 drought. This management action
4970 proposes the GSAs will work with Butte County to amend the well ordinance as it relates to
4971 small and large diameter wells to take into consideration the hydrogeologic conceptual model
4972 based on best available data (i.e. Airborne Electromagnetic Survey data), adopted sustainable
4973 management criteria, historical groundwater conditions, and impacts of new wells on existing
4974 wells. The code could be amended with requirements for well screens to account for Minimum
4975 Thresholds established for the Vina Subbasin. This would improve water supply reliability of
4976 future agricultural and domestic wells.

4977 **5.3.4 Landscape Ordinance**

4978 Butte County and/or the City of Chico would enact an ordinance requiring new residential,
4979 commercial, and industrial development to use drought-resistant species for landscaping and to
4980 limit the size of grass lawns that require regular irrigation. The ordinance would focus efforts and
4981 money on reducing the amount of water used for landscape irrigation and swimming pools while
4982 promoting xeriscaping. The reduction in irrigation for landscaping and swimming pools would
4983 allow groundwater use for other purposes in the Subbasin.

4984 **5.3.5 Prohibition of Groundwater Use for Ski (Recreational) Lakes**

4985 In the Vina Subbasin, there are several ski lakes that are currently supplied with groundwater.
4986 The Vina GSA would encourage Butte County to amend the zoning ordinance to prohibit the use
4987 of groundwater for future ski lakes.

4988 **5.3.6 Expansion of Water Purveyors' Service Area**

4989 The Vina GSA would encourage the expansion of water purveyors' service area to areas across
4990 the Subbasin that are reliant on private groundwater wells. This would require action by
4991 individual water purveyors, support of residents, and governmental approval. By expanding the
4992 service area of water purveyors, areas that rely solely on groundwater would have another source
4993 of water and would reduce groundwater extraction.

4994 **5.3.7 Groundwater Allocation**

4995 SGMA requires that GSPs describe the projects and management actions to be implemented as
4996 part of bringing the Subbasin into sustainability. As a last resort, in the event that the proposed
4997 projects fail to achieve interim milestones and the subbasin is projected to not be able to achieve

4998 sustainability goals by 2042, the GSAs may need to consider implementation of groundwater
4999 allocations to manage groundwater demand. The implementation of this management action
5000 would be based on an evaluation by the Joint Management Committee (see Appendix X). The
5001 consideration of groundwater allocation would be based on the groundwater budgets and updated
5002 monitoring data throughout the subbasin as presented in annual reports.

5003 Groundwater allocation management actions could include, but are not limited to, targeted
5004 maximum extraction levels to address specific minimum threshold violations or subbasin-wide
5005 adjustments to extractions to address overall chronic lowering of groundwater levels. Should the
5006 GSAs determine that groundwater allocation management actions are necessary, the GSAs will
5007 consider such management actions through a public process ultimately decided by the GSA
5008 Boards.

5009 **5.4 Data Collection**

5010 **5.4.1 County Contour Mapping**

5011 As part of the efforts to collect the information necessary to fill the data gaps identified in
5012 Section 3, this project proposes to expand the existing monitoring program to include Butte,
5013 Glen, Colusa, and Tehama counties and conduct these groundwater elevation surveys in the
5014 spring, summer, and fall. The monitoring program would gather data used to produce
5015 groundwater contours and estimates of lateral and vertical flow direction and volume. Producing
5016 this data for the four counties will help to identify interbasin flow patterns and influences on
5017 surface water flows and replenishment locations, thereby improving coordination between
5018 counties and water management decision-making.

5019 Routine water table monitoring programs will track overall water table trends in the region and
5020 provide important, up-to-date data for making decisions on water management. Establishing
5021 these programs amongst the four counties will aid in the exchange of data and improve regional
5022 coordination on various water projects. The expanded water monitoring programs will be
5023 established by Vina and RCRD GSAs, with assistance from the four counties.

5024 **5.4.2 Update the Butte Basin Groundwater Model**

5025 The existing Butte Basin Groundwater Model covers the Vina, Butte, and Wyandotte Creek
5026 Subbasins. The second project to help fill the identified data gaps will consist of (1) updating the
5027 Butte Basin Groundwater Model with newly acquired data; and (2) using the updated version of
5028 the model to run simulations and better establish the basin's measurable objectives.

5029 Some of the new data to be added is the airborne electromagnetic (AEM) data and data on the
5030 different hydraulic conductivities of each layer of the aquifer. The AEM data will be used,
5031 among other things, to adjust the various surfaces in the model to better present the aquifer's
5032 hydrogeologic layers.

5033 Once the model has been updated with the new data, it will be better suited for running
5034 simulations of different water or land management scenarios as well as predictions for climate
5035 and precipitation fluctuations. Lateral and vertical connectivity between aquifer layers and
5036 connections to surface water features will be more accurate and help identify areas of the basin
5037 where groundwater recharge may be needed. Overall, this will help shape management actions
5038 by focusing their efforts on those particular areas. Ongoing updates to the model will emphasize

5039 the importance of accurate and up-to-date data and help continue monitoring efforts such as
5040 measuring water levels and stream flows.

5041 An updated groundwater model is vital for running accurate simulations that may be used to
5042 make important decisions regarding groundwater allocation, pumping, recharge, and other
5043 activities. The model should contain the most up-to-date data to represent the basin realistically
5044 and accurately.

5045 **5.4.3 Community Monitoring Program**

5046 As discussed in Section 4.10, the MT for groundwater levels is based on the depths of domestic
5047 wells. The dataset used for this assessment is limited and likely includes wells no longer in use or
5048 poorly maintained. To resolve this data gap, the GSAs will conduct surveys of domestic wells
5049 within the Subbasin to assess if the wells are still active and well construction details. As
5050 domestic well construction information may be limited, selected wells may be video logged to
5051 obtain additional information.

5052 The GSAs will also maintain a record of verifiable domestic wells that go dry during the
5053 implementation period that will include depth of these wells, screen intervals, and available
5054 maintenance records. These data will be used to modify the MT over the implementation period,
5055 as appropriate.

5056 **5.4.4 Interconnected Surface Water/Associated Impacts on Groundwater Dependent 5057 Ecosystems**

5058 Also discussed in Section 4.10 was the lack of sufficient data to analyze interaction of streams
5059 and pumping within the primary aquifer system. Additional wells and other monitoring networks
5060 will be installed, as appropriate, following the framework discussed in Section 3.8.

5061 **5.5 Adaptive Management Strategies**

5062 The Vina GSAs will be requesting annual reports from the project proponents to evaluate
5063 progress on implementation. If the projects are not progressing or if monitoring efforts
5064 demonstrate that those projects are not achieving their targets, the GSAs will evaluate the need
5065 for additional or modified projects and to begin implementation of management actions.

5066 **5.6 Potential Available Funding Mechanisms**

5067 As listed above in the individual project descriptions, several funding mechanisms have been
5068 identified to help with the planning and implementation of the GSP projects. The following is an
5069 abbreviated list of some of the funding mechanisms proposed:

5070

5071

Project Type	Funding Type	Program	Dates
IRWM (projects included in an adopted IRWMP)	Implementation Grant	Proposition 1, Water Quality, Supply, and Infrastructure Improvement Act of 2014	Round 2 solicitation expected in late 2021
Recharge Projects	Planning and construction grants	Proposition 68, California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access for All Act of 2018	Round 2 solicitation to be released early 2022
Wastewater treatment for URC projects	Planning and construction grants	Small Community Grant Fund	Applications accepted continuously
Public water systems improvement	Planning and construction grants	Drinking water grants	Applications accepted continuously
Land Conservation	USDA Farm Service Agency	Conservation Reserve Program	Applications accepted continuously

5072

5073

Revisions received from Vina GSA and RCRD GSA Legal Counsels for paragraph in Section 5.1 of the Project and Management Action (PMA) Chapter 5.

(Bold Italics indicate additions to paragraph, deletions are indicated by strikeouts)

"The objective and purpose of the GSP is to achieve groundwater sustainability in the Vina Subbasin. ~~This will require projects aimed at increasing water supplies and decreasing groundwater dependence, as well as management actions designed to reduce groundwater demand.~~ ***This will require projects and management actions aimed at avoiding undesirable results, achieving measurable objectives, and responding to changing conditions in the basin.***

The Vina GSA and the RCRD GSA have identified projects and management actions tailored to benefit the Vina Subbasin's groundwater supply and quality for the benefit of rural areas, communities, agricultural users and the environment. The approach targets both ***identifying and*** increasing ***alternative sources of*** supply and reducing ***groundwater*** demand. The GSP identifies groundwater monitoring programs to monitor groundwater conditions, investigation of additional water sources to supplement the use of groundwater, and conservation and educational programs to reduce groundwater demand.