

AGENDA
BIG VALLEY GROUNDWATER BASIN ADVISORY COMMITTEE (BVAC)
Adin Community Center
655 Highway 299, Adin, CA 96009
March 4, 2020
4:00 p.m.

Lassen County BVAC Members

Aaron Albaugh, Board Representative
Jeff Hemphill, Alt. Board Representative
Kevin Mitchell, Public Representative
Duane Conner, Public Representative

Modoc County BVAC Members

Geri Byrne, Board Representative
Ned Coe, Alt. Board Representative
Jimmy Nunn, Public Representative
John Ohm, Public Representative

BVAC Secretary, Maurice L. Anderson, Director Lassen County Department of Planning and Building Services
(or designee)

Public comments are welcomed and encouraged. The BVAC Chair will invite comments by members of the public in attendance for each applicable agenda item when appropriate.

NOTE: No one shall address the BVAC until they are recognized by the Chairperson. The person addressing the BVAC shall stand before the BVAC at the podium and provide their name before offering remarks or input.

An open public comment period will be offered at the end of the meeting to allow members of the public to speak to non-agenda topics.

Convene in Special Session (call to order by the Chair)

Flag Salute

Roll Call (by the Secretary)

General Update by Secretary

Matters Initiated by Committee Members

Correspondence (unrelated to a specific agenda item)

Approval of Minutes (February 3, 2020)

SUBJECT #1:

Presentation to develop shared understanding of formation of Project Team, process for bringing together planning partners, and process for selecting/funding consultants.

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.

SUBJECT #2:

Presentation to introduce and discuss elements of a Groundwater Sustainability Plan (GSP), using draft outline for the Big Valley GSP.

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. Receive public comment.

SUBJECT #3:

Introduce the Tentative GSP Process and Schedule to discuss the roles and responsibilities of the BVAC and public; options for comment submittal, response to comments, and comment incorporation; proposed project timeline; and changes to regular meeting schedule.

ACTION REQUESTED:

- 1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
- 2. Advance the Tentative GSP Process and Schedule.
- 3. Establish new regular meeting schedule.
- 4. Receive public comment.

SUBJECT #4:

Introduce and discuss draft text for Public Draft Chapters 1 and 2 of the Big Valley GSP.

ACTION REQUESTED:

- 1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
- 2. Provide input on any missing information or inaccuracies.
- 3. Receive public comment.

SUBJECT #5:

Presentation providing overview of basin monitoring system: existing monitoring efforts and programs; process for selecting new monitoring well sites; information being collected (where and how often).

ACTION REQUESTED:

- 1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
- 2. Provide input on any missing information or inaccuracies.
- 3. Receive public comment.

SUBJECT #6:

High-level preview of Sustainability Indicators and Locally Defined Undesirable Results.

ACTION REQUESTED:

- 1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
- 2. Provide input on any missing information or inaccuracies.
- 3. Receive public comment.

Matters Initiated by the General Public (regarding subjects not on the agenda)

NOTE: No one shall address the BVAC until they are recognized by the Chairperson. The person addressing the BVAC shall stand before the BVAC at the podium and provide their name before offering remarks or input.

Establish next meeting date (if not established under Subject #3)

ADJOURN

For information regarding this agenda, contact the Lassen County Planning and Building Services Department at

(530) 251-8269; or the Modoc County Clerk of the Board's Office at (530) 233-6201.

You may also visit the project website at <http://bigvalleygsp.org/> where information regarding the above agenda items can be found.

Agenda posting locations:

Adin Community Center, 605 Highway 299, Adin, CA 96009

Lassen County Planning and Building Services, 707 Nevada Street, Suite 5, Susanville, CA 96130

Modoc County Clerk of the Board's Office, 204 S Court St #204, Alturas, CA 96101

Lassen County Clerk's Office, 220 S Lassen Street, Annex Building, Susanville, CA 96130

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Big Valley Groundwater Basin Advisory Committee (BVAC)

Unapproved Meeting Minutes

BVAC Members:

Lassen County BVAC – Aaron Albaugh, Board Representative; Jeff Hemphill, Alt. Board Representative; Kevin Mitchell, Public Representative; Duane Conner, Public Representative
Modoc County BVAC – Geri Byrne, Board Representative; Ned Coe, Alt. Board Representative; Jimmy Nunn, Public Representative; John Ohm, Public Representative

Monday, February 3, 2020

4:00 PM

Veterans Memorial Hall
657-575 Bridge St.
Bieber, CA 96009

BVAC ORGANIZATIONAL MEETING.

Present: Member Albaugh, Mitchell, Byrne, Nunn and Ohm.

Absent: Board Representative Conner (subsequently arrived at 4:09 p.m.)

Also in attendance: BVAC Secretary Maurice Anderson
BVAC staff Gaylon Norwood
BVAC staff Tiffany Martinez
BVAC Recorder Brooke Suarez
Modoc County Counsel Sean Cameron

BVAC Secretary Maurice Anderson called the meeting to order at 4:04 p.m. and asked for nominations for a Chairperson of the Big Valley Groundwater Basin Advisory Committee for 2020.

A motion was made by Representative Geri Bryne to nominate Representative Aaron Albaugh as Chairperson of the Big Valley Groundwater Basin Advisory Committee for 2020. The motion was seconded by Representative John Ohm. The motion was carried by the following vote:

Aye: 5 - Albaugh, Mitchell, Byrne, Nunn, Ohm

Secretary Anderson yielded the floor to Chairman Albaugh.

Flag Salute: Chairman Albaugh requested Jim Copp lead the Pledge of Allegiance.

Chairman Albaugh asked for nominations for a Vice Chairperson of the Big Valley Groundwater Basin Advisory Committee for 2020.

A motion was made by Jimmy Nunn to nominate Geri Bryne as Vice Chairperson of the Big Valley Groundwater Basin Advisory Committee for 2020. The motion was carried by the following vote:

Aye: 5 - Albaugh, Mitchell, Byrne, Nunn, Ohm

Matters initiated by committee members: None

Committee member Duane Conner arrived at 4:09 p.m.

Correspondence (unrelated to a specific agenda item): None

SUBJECT #1:

Team introductions: BVAC Secretary (and designee), Modoc County Representative, Modoc County Counsel, staff, consultants, facilitator and discussion of their respective roles in terms of execution of BVAC responsibilities.

ACTION REQUESTED:

1. Facilitate introductions.

Secretary Anderson facilitated introductions. Advisory committee was introduced and additional staff and project members were introduced: Secretary Anderson, Staff members Gaylon Norwood, Tiffany Martinez, Nancy McAllister, and Brooke Suarez, Modoc County Counsel Sean Cameron, GEI consultant Rodney Fricke. Woodard and Curran consultant John Ayres, U.C. Davis Cooperative Extension representative Laura Snell, GSP facilitator Judie Talbot.

SUBJECT #2:

Presentation regarding the Sustainable Groundwater Management Act (SGMA) and background information specific to the Big Valley Groundwater Basin, describing actions taken by the Lassen County Big Valley Groundwater Sustainability Agency (e.g. the Lassen County Board of Supervisors) and the Modoc County Big Valley Groundwater Sustainability Agency (e.g. the Modoc County Board of Supervisors).

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. Receive public comment.

Background information regarding Sustainable Groundwater Management Act (SGMA) and Big Valley Groundwater Basin was presented by Rodney Fricke. R. Fricke also presented the accomplishments completed to date by the Lassen County Big Valley Groundwater Sustainability Agency and the Modoc County Big Valley Groundwater Sustainability Agency.

Public Comment: Randy Hurd – Comments against GSP; Randy Veldhuizen – Comments against well placement; Randy Hurd – Water distribution concerns; Barbara Donahue – Comments for science of GSP.

SUBJECT #3

Introduce the “Memorandum of Understanding Forming the Big Valley Groundwater Basin Advisory Committee (BVAC) to Advise the Lassen and Modoc Groundwater Sustainability Agencies During the Development of the Groundwater Sustainability Plan Required Under the 2014 Sustainable Groundwater Management Act for the Big Valley Groundwater Basin,” and consider BVAC protocol.

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. Receive information regarding Chapter 9 (Meetings) of the Ralph M. Brown Act, (Government Code sections 54950-54963).
3. Receive information regarding the Political Reform Act/Fair Political Practices Commission.
4. Receive public comment.
5. Consider establishing MOU procedural requirements (e.g. regular meeting location(s). establishing regular meeting dates and times and/or any other procedural requirements of the adopted MOU or the Brown Act).
6. Provide additional direction if necessary.

The “Memorandum of Understanding Forming the Big Valley Groundwater Basin Advisory Committee (BVAC) to Advise the Lassen and Modoc Groundwater Sustainability Agencies During the Development of the Groundwater Sustainability Plan Required Under the 2014 Sustainable Groundwater Management Act for the Big Valley Groundwater Basin” was introduced in binder form by staff. BVAC staff member Gaylon Norwood confirmed that committee members need to fill out form 700 for their respective counties and introduced Exhibit *A About the Political Reform Act* into the record. Committee members Albaugh, Mitchell, Conner, Nunn, and Ohm requested information to be disseminated to them in paper form, and committee member Byrne requested information by email. Discussion was held among representatives to establish a regular meeting schedule: every first Wednesday of the month at 4:00 p.m. alternating between the locations of Beiber and Adin. Next meeting will be on Wednesday, March 4, 2020 at 4:00 p.m. in Adin.

Public Comment: None

SUBJECT #4

Introduce the 2017 Proposition 1 Sustainable Groundwater Planning (SGWP) Grants and provide a report on their status:

- Agreement Number 4600012669, providing funding for the preparation of a Groundwater Sustainability Plan (GSP) for the Big Valley Groundwater Basin and monitoring well installation; Introduce the associated agreement between Lassen County and GEI Consultants, Inc. for professional services.
- Agreement Number 4600012693, providing funding for drilling four monitoring well clusters and corresponding monitoring devices, a groundwater recharge feasibility study,

water quality monitoring, and stakeholder engagement and outreach. Introduce the associated agreement between Modoc County, University of California Cooperative Extension (Modoc County), and the North Cal-Neva Resource Conservation Council and Development.

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or consultant (GEI).
2. Receive public comment.
3. Provide direction if necessary.

The 2017 Proposition 1 Sustainable Groundwater Planning Grant funds and projects that have been initiated with the funds were discussed between committee members, GEI, and staff. Discussion was held on the future of planning for the Sustainable Groundwater Plan (GSP). The scientific information that is being gathered will continue to help with the development of the GSP. A draft of the GSP should be complete by the end of the summer 2021. The Advisory Committee will have to provide update reports annually to the Department of Water Resources (DWR) once the GSP is in place. Discussion regarding roles to develop the GSP was held between the Advisory Committee and consultants. DWR representative Ian Espinosa was questioned regarding what feedback DWR would provide to a GSP submission to the State of California.

Public Comment: Rosemary Nelson – Water rate concerns; Kim from Fish and Wildlife – Concerns regarding who will be making the ultimate decisions.

Matters Initiated by the General Public: None

Adjournment: There being no further business, Chairman Albaugh adjourned the meeting at 5:53 p.m.

Memorandum

GSP Development Description Memo

Subject: Guide for Development of GSP

Prepared for: Lassen and Modoc County Groundwater Sustainability Agencies
Big Valley Groundwater Basin Advisory Committee

Prepared by: David Fairman

Reviewed by: Rodney Fricke

Date: 2-27-2020

This Memorandum (Memo) has been prepared to help guide members of the Big Valley Groundwater Sustainability Agencies (GSAs) and the Big Valley Groundwater Basin Advisory Committee (BVAC) understand how the Groundwater Sustainability Plan (GSP) is planned to be developed for the Big Valley Groundwater Basin (BVGB). This Memo discusses the rationale and process for developing the GSP, provides a tentative GSP process and schedule (**Attachment A**), provides an annotated outline of the GSP (**Attachment B**), provides drafts of Chapters 1 and 2 of the GSP (**Attachment C**), and provides some sample sustainability goals from GSPs written for basins in other parts of California (**Attachment D**).

1 Regulatory Driven Plan Development

The emergency GSP regulations (regulations)¹ identify the content required in a GSP and require many analyses, statements, justifications, and figures. The regulations are prescriptive in many aspects but allow significant flexibility in other aspects. The California Department of Water Resources' (DWR's) best management practices (BMPs) and guidance documents² help clarify some of the required content, but the actual structure of the document is left to the discretion of the GSAs. Because GSPs will be reviewed by a regulator, the GSP is being developed keeping GSP content roughly where it would be found according to the regulations. In order to ensure that the GSP covers all of the required regulatory components, DWR has provided an "elements guide" that allows GSAs to document where each element of the regulations are addressed in the GSP.³ The elements guide for this GSP will be completed at the end of the GSP development, and will be included in at the front of the document.

2 Order and Content of Chapters

The DWR regulations for development of GSPs provides requirements by regulation section. These regulation sections provide a loose outline for the development of GSPs. They may not, however, create a report structure that is easily comprehensible for a reader. As a result, GSP structure will be modified somewhat from the order of the regulation elements and from the GSP outline provided by DWR.²

¹ <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainability-Plans>

² <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents>

³ https://sgma.water.ca.gov/portal/resources/data/Elements_Guide_Template.xlsx

Modifications to the outline were made to increase readability, while continuing to cover all the requirements of the regulations.

Below are descriptions of the 13 Chapters proposed for development of the GSP. A more detailed Annotated Outline is included in **Attachment B**. The highlighted text in parenthesis indicates the anticipated level of input and involvement of stakeholders on each of the chapters. See Section 3 below for more description.

1. **Introduction (minimal)** – Introduces the purpose of the GSP, describes the basin and its prioritization.
2. **Agency Information (minimal)** – Describes the GSAs’ structures and authority to develop the GSP.
3. **Description of Plan Area (low)** – Describes the Basin and surrounding areas in more detail than the introduction including jurisdictional areas, land use, and existing land use plans. This section introduces the existing monitoring networks.
4. **Hydrogeologic Conceptual Model (low)** – Describes the physical geology of the GSP area. What formations are present, regional structural settings, boundaries of the basin, physical barriers to flow like faults and folds. Used to help interpret groundwater conditions and water budget sections.
5. **Groundwater Conditions (low)** – Describes the amount and movement of groundwater through the basin, includes changes in historic levels, contour maps, etc. Also describes groundwater quality (including anthropogenic components) and land subsidence. Includes an evaluation of the interconnection of rivers and streams to groundwater and identification of groundwater dependent ecosystems.
6. **Water Budget (low)** – Provides information about the amount of water moving through the basin, historically, currently, and in the future. Inflows, outflows, consumptive uses, such as Evapotranspiration (ET), groundwater pumping, and so on are estimated in this section. These estimates will be based on analytical approaches, and a numerical groundwater model is not planned for the Big Valley GSP.
7. **Sustainable Management Criteria (high)**
 - a. **Sustainability Goal** – This is a narrative that provides a statement about the goal of the GSP, which is avoiding undesirable results and benefitting beneficial users in ways relevant to the basin.
 - b. **Undesirable Results** – These are statements about what an undesirable result is. These statements are general and are used to guide the establishment of the monitoring network and sustainability thresholds. This allows for the specific ways an undesirable result can occur to be addressed by establishing minimum thresholds in the monitoring network for each locally driven issue in the six sustainability indicators:
 - i. **Groundwater Levels**
 - ii. **Groundwater Storage**
 - iii. **Sea Water Intrusion**
 - iv. **Degraded Water Quality**

v. **Subsidence**

vi. **Depletions of Interconnected Surface Water**

- c. **Minimum Thresholds** – a level set that if monitoring goes below indicates that conditions in that location have a potential to have an undesirable result – after a certain percentage (determined by locals) of measuring points are below the minimum threshold, the basin is considered to have an undesirable result occurring.
- d. **Margin of Operational Flexibility (MoOF)** – The MoOF is the buffer between the minimum threshold and the measurable objective. It is used to establish where the measurable objective is by creating a buffer that allows the basin to operate a number of years without reaching minimum thresholds.
- e. **Measurable Objective** – The target level for each monitoring point that provides an adequate MoOF for operation during dry years.
- f. **Interim Milestone** – If conditions must improve to reach the measurable objective, the interim milestones provide ‘check in’ points every 5 years until the measurable objective is reached.

8. Monitoring Networks (moderate)

- a. **Objectives** – The objective of the monitoring network is to be able to detect undesirable results.
- b. **Rationales** – The rationale of the monitoring network is to explain how the proposed network can detect undesirable results.
- c. **Network Descriptions for each Sustainability Indicator**
 - i. Relationship to management areas
 - ii. Monitoring density and frequency
 - iii. Maps and tables of monitoring network
 - iv. Monitoring protocols
 - v. If proxy monitoring is used (using levels to detect results for other sustainability indicators), the reasoning must be justified here
- d. **Monitoring Summary and Improvement Plan**
 - i. Details data gaps and plans to fill data gaps.

9. Projects and Management Actions (high) – describes the projects and actions considered by the GSA, identifies which are selected for implementation, and analyzes those selected for implementation.

- a. **Selection Process Description (if used):**
- b. **Analysis of Selection Options:**
 - i. Public Notice and Outreach Process
 - ii. Permitting and Regulatory Process
 - iii. Benefits
 - iv. Source and Reliability of Water

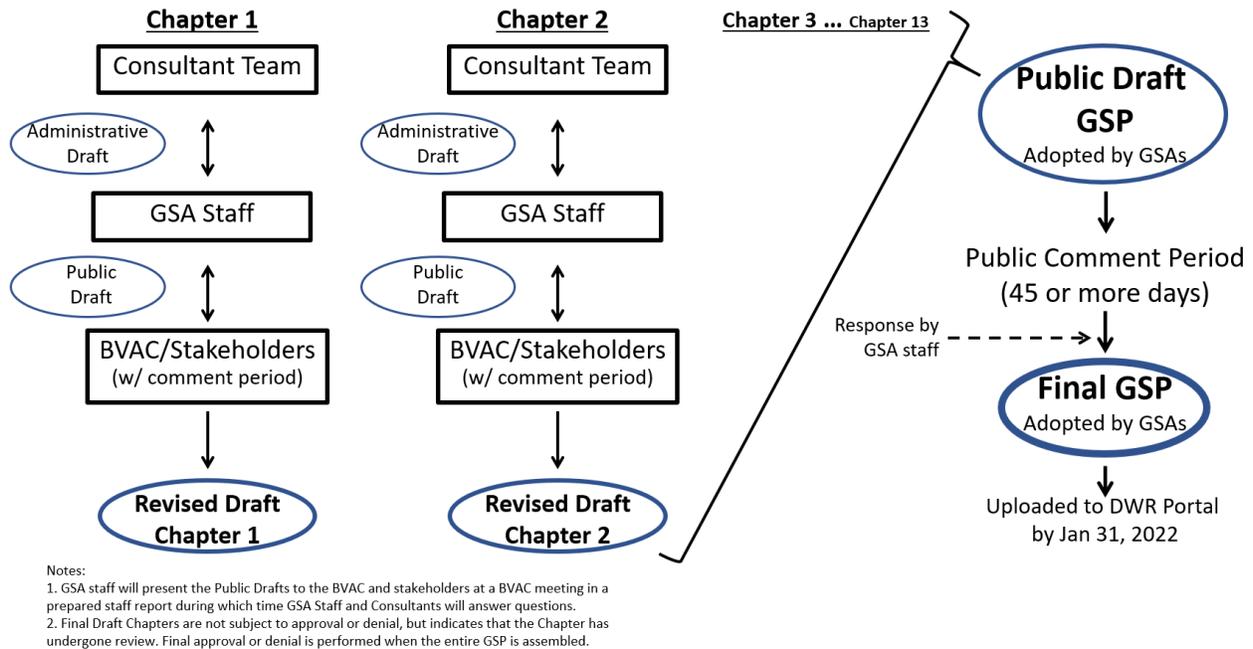
- v. Legal Authority Required
 - vi. Costs and Funding
 - vii. CEQA/NEPA Considerations
 - c. **Explanation of Benefits** - Explanation of how the implemented projects will cause the GSA to avoid undesirable results
- 10. Implementation Plan (moderate)**
- a. **Implementation Planning**
 - i. Schedule of GSA operations activities (monitoring updates, model runs, board meetings, etc)
 - ii. Schedule of projects and management actions (when will something be built, for example)
 - b. **Implementation Costs**
 - i. Costs incurred by GSA operation
 - ii. Costs incurred by projects and management actions
 - c. **Funding**
 - i. How implementation costs will be met by the GSA
 - ii. Economic impacts caused by GSP implementation on parties in the basin
 - d. **Annual Reports** – What goes into the annual reports, and how they will be prepared
 - e. **5 Year Update Reports** – What goes into the 5-year update reports and how they will be prepared
- 11. Notice and Communications (moderate)** – This contains a description of the GSAs’ decision-making process, documentation of the public process followed in developing the GSP, and description of how the GSAs engaged all stakeholders.
- 12. Interagency Agreements (low)** – The GSAs may choose to develop an agreement to memorialize the implementation of the plan between the two Counties. This section will contain such an agreement along with the MOU establishing the BVAC.
- 13. Reference List (minimal)**

3 Chapter Review Process

The GSP will undergo an incremental review process as each Chapter is developed. A qualifier that describes the anticipated amount of stakeholder involvement, input, and review required for each Chapter is noted above: **minimal**, **low**, **moderate**, or **high**. Each Chapter will undergo development from an “Administrative Draft Chapter” (internal between Consultants and GSA staff) to “Public Draft Chapter” (presentation to BVAC and public) to “Revised Draft Chapter” (BVAC and public comments addressed) and will then be set aside by the BVAC, as shown in **Figure 1** below. It should be noted that once a Revised Public Draft Chapter is set aside by the BVAC, that does not mean that it has been approved or recommended, only that the Chapter has undergone a level of review appropriate for continuing to the next Chapter. This indicates that the Chapter will generally not be re-visited until the end when the entire document is assembled, unless there is a compelling reason to do so. Informational updates on GSP development status may occasionally be presented to the GSA Boards of Supervisors (BOSs) during this

process. **Figure 2** below shows a tentative schedule for GSP development with color-coding to indicate the level of stakeholder input at each stage (same color coding as above). A tentative GSP process and schedule is also outlined in **Attachment A**.

Figure 1: Review Process for GSP Development



4 Completed GSP Review Process

Once the full 13-Chapter “Draft GSP” is developed, it will be presented to the GSA governing bodies (County Boards of Supervisors (BOSs)) with the BVAC’s recommendation. Next, when direction is received from both GSA governing bodies to do so, the document will be circulated for public review as the “Public Draft GSP.” We recommend a 45-day public comment period, at minimum. Please note that, by statute, there is also a 90-day public consultation period for cities and counties. However, because there are no incorporated cities in the BVGB and the two counties are the GSAs, this consultation is not needed (since both GSAs are responsible for preparing the GSP). After the public comment period, the GSAs and their consultant team will address all comments received and assemble the “Revised Draft GSP” for presentation to GSA governing bodies (BOSs) for approval. The approved “Final GSP” must then be submitted to DWR, no later than the January 31, 2022 statutory deadline.

5 Chapters 1 and 2

The first two chapters are included as **Attachment C**. These chapters include an introduction to the GSP and information about the agencies (GSAs) that are developing the GSP and their authority to do so. These two chapters contain very standard information and we do not anticipate that it will elicit significant feedback.

6 Sample Sustainability Goals and Undesirable Results

The first six chapters cover the Plan Area (Chapters 1 through 3) and Basin Setting (Chapters 4 through 6) and provide the framework for the GSP. While there will likely be some feedback on these sections, we anticipate the level of stakeholder input to continue to be relatively low and generally focus on residents clarifying information gathered by the consultant team and perhaps supplementing with information that wasn't readily available. These chapters should fundamentally be data-driven with interpretations limited to having a factual and scientific basis. The Basin Setting, which comprises Chapters 4 through 6 need to be signed by a California licensed Professional Geologist or Engineer.

Chapter 7 is the first chapter where substantial stakeholder input is expected and needed. This chapter introduces the six Sustainability Indicators (SIs) defined in SGMA, describes an overarching "Sustainability Goal" for the GSP, and defines what constitute "Undesirable Results" for each of the six indicators. In order to get the GSA staff, the BVAC members, and other stakeholders thinking toward how to define these for Big Valley, we have provided **Attachment D**, which contains examples of Sustainability Goals and Undesirable Results for other basins within the state. We recommend presenting these to the BVAC and stakeholders at the next meeting to begin discussion around these topics.

7 Attachment A: Tentative GSP Process Schedule

Tentative GSP Process and Schedule

Proposed to the Big Valley Groundwater Advisory Committee (BVAC) on March 4, 2020

This document is intended to introduce a tentative process and Big Valley Groundwater Basin Advisory Committee (BVAC) meeting schedule for considering Groundwater Sustainability Plan (GSP) content as it is drafted (versus waiting for the entire draft GSP to be prepared). Meetings of the BVAC serve as a forum for public comment and involvement in the GSP process. Developing the GSP will take an incremental approach, with multiple opportunities for dialog and comment. The following process is anticipated:

Introduction of new content

- New “Public Draft Chapters” will be presented at BVAC meetings. To the greatest extent possible, content and documents that are included in meeting packets will be posted on the BigValleyGSP.org website in advance of the corresponding meeting, and will be publicly available prior to the meeting in the offices of the Groundwater Sustainability Agencies (GSAs).
- Presentations or information not available prior to the meeting will typically be posted to the website after the meeting.
- Available meeting materials will be posted to the calendar date for the respective meeting. As the process evolves, other folders may be created on the website to help organize and locate materials.

Immediate opportunities for input and dialog

- At BVAC meetings, BVAC members can provide initial responses to new Public Draft Chapters, including:
 - Questions for clarification
 - Comments and suggestions
 - Direction to staff
- Members of the community are also encouraged to provide input at the BVAC meetings.
- Public Draft Chapters will have line numbers, making it easier to reference specific text.

Follow-up opportunities for input

- BVAC members and public can continue to submit comments on a Public Draft Chapter after the BVAC meeting to be incorporated into the “Revised Draft Chapter” prior to the next meeting.

Again, the dates indicated below are tentative. This schedule does not introduce all of the content that will be presented for any particular BVAC meeting. The intent of this document is to list, as accurately as possible, specific dates when it is anticipated that the various chapters of the GSP will be presented to the BVAC and public.

This schedule will be updated/confirmed for each regular meeting of the BVAC. Readers are urged to review the most current version when considering the tentative dates introduced below.

The bold dates indicate regularly scheduled BVAC meetings (assuming the proposal presented on March 4, 2020, to change the frequency to every other month is approved).

Dates presented in italics at the end of this document after the dashed line describe the steps required after BVAC involvement (i.e. after the BVAC has made a recommendation to the two GSAs).

The last section of this document provides “notes” that further explain the proposed review process and schedule.

March 4, 2020 – Introduce Public Draft Chapters 1 & 2 (*Introduction & Agency Information*); Start “comment period” (see notes below) for Public Draft Chapters 1 & 2

March 31, 2020 – End of comment period for Public Draft Chapters 1 & 2; begin incorporation of comments for Public Draft Chapters 1 & 2

May 6, 2020 – Present Revised Draft Chapters 1 & 2 for BVAC to “set aside” (see notes); Introduce Public Draft Chapter 3 (*Description of Plan Area*); Start comment period for Public Draft Chapter 3

June 2, 2020 – End of comment period for Public Draft Chapter 3; begin incorporation of comments for Public Draft Chapter 3

July 1, 2020 – Present Revised Draft Chapter 3 for BVAC to set aside; Introduce Public Draft Chapters 4 & 5 (*Hydrogeologic Conceptual Model & Groundwater Conditions*); Start comment period for Public Draft Chapters 4 & 5

August 4, 2020 – End of comment period for Public Draft Chapters 4 & 5; begin incorporation of comments for Public Draft Chapters 4 & 5

September 2, 2020 – Present Revised Draft Chapters 4 & 5 for BVAC to set aside; Introduce Public Draft Chapter 6 (*Water Budget*); Start comment period for Public Draft Chapter 6

October 6, 2020 – End of comment period for Public Draft Chapter 6; begin incorporation of comments for Public Draft Chapter 6

November 4, 2020 – Present Revised Draft Chapter 6 for BVAC to set aside; Introduce Public Draft Chapter 7 (*Sustainable Management Criteria*); Start comment period for Public Draft Chapter 7

December 1, 2020 – End of comment period for Public Draft Chapter 7; begin incorporation of comments for Public Draft Chapter 7

January 6, 2021 – Present Revised Draft Chapter 7 for BVAC to set aside; Introduce Public Draft Chapter 8 (*Monitoring Networks*); Start comment period for Public Draft Chapter 8

February 2, 2021 – End of comment period for Public Draft Chapter 8; begin incorporation of comments for Public Draft Chapter 8

March 3, 2021 – Present Revised Draft Chapter 8 for BVAC to set aside; Introduce Public Draft Chapter 9 (*Projects and Management Actions*); Start comment period for Public Draft Chapter 9

April 6, 2021 – End of comment period for Public Draft Chapter 9; begin incorporation of comments for Public Draft Chapter 9

May 5, 2021 – Present Revised Draft Chapter 9 for BVAC to set aside; Introduce Public Draft Chapters 10-13 (*Implementation Plan, Notice and Communications, Interagency Agreements, & Reference List*); Start comment period for Public Draft Chapters 10-13

June 1, 2021 – End of comment period for Public Draft Chapters 10-13; begin incorporation of comments for Public Draft Chapters 10-13

July 7, 2021 – Present Revised Draft Chapters 10-13 for BVAC to set aside; **BVAC vote to recommend approval of “Draft GSP” (all Revised Draft Chapters) to GSA**

The GSA meeting dates proposed below are hypothetical, as they have not been approved by the GSAs. The dates are intended to present possible meeting dates, recognizing that the approved “Final GSP” must be submitted to the DWR by January 31, 2022.

July 20, 2021 – The Draft GSP will be presented to the two GSAs; the two GSAs initiate a comment period for the “Public Draft GSP” (minimum 45 days, maximum 90 days)

By October 19, 2021 – End of the comment period for the Public Draft GSP; potential Board agenda item for GSAs to discuss comments/edits; begin incorporation of comments for GSA approval of “Revised Draft GSP”

*By December 2021 – Approval of the Final GSP by both GSAs and direction to submit the Final GSP to the Department of Water Resources (DWR) by the **January 31, 2022** deadline*

NOTES:

- If the BVAC determines it is necessary, a special meeting could be conducted between any regularly scheduled (every other month) BVAC meeting.
- The schedule above allows two months for each Chapter, including Chapters identified as requiring high input from stakeholders (i.e. *Sustainable Management Criteria, Projects and Management Actions*), in order to align with regularly scheduled BVAC meetings. It is anticipated that some components of the GSP, especially more complex information and components related to the abovementioned Chapters, will be discussed at meetings

prior to the date on which the associated Chapter is fully prepared and formally introduced. For example, monitoring has been discussed prior to introduction of the associated Chapter. Additionally, it is anticipated that Sustainability Indicators and Undesirable Results will be discussed before full assembly and introduction of the associated chapter. This schedule references only the progression of the review of the individual Chapters of the GSP. In actuality, it is anticipated that additional information and discussion will occur at each BVAC meeting. Those interested should consult the pertinent agenda.

- After initial review, comment, and revision by the BVAC, each Revised Draft Chapter of the GSP will be temporarily “set aside” until the entire document is assembled. Once set aside, further discussion will generally not occur for that Chapter until the entire Draft GSP is prepared. Comments may be submitted after the identified period for each Public Draft Chapter, but it is requested that comments be submitted during the identified review period to improve the ability of staff and the BVAC to respond while that particular Chapter is being discussed. Comments submitted outside this review period may not be addressed until the entire Draft GSP document is assembled (after the BVAC has considered all individual Chapters). The BVAC will not make a final recommendation to the two GSAs until the entire Draft GSP is prepared.

8 Attachment B: GSP Annotated Outline

DRAFT Big Valley Groundwater Basin Groundwater Sustainability Plan Annotated Outline

Abbreviations and Acronyms

Regulation Elements Guide

Executive Summary (§ 354.4)

Chapter 1 Introduction to Big Valley Groundwater Sustainability Plan (§ 354.2-4)

- 1.1. Purpose of the Groundwater Sustainability Plan
- 1.2. Description of Big Valley Groundwater Basin
- 1.3. Basin Prioritization

Chapter 2 Agency Information (§ 354.6)

- 1.4. Agency Names and Mailing Addresses
- 1.5. Agency Organization and Management Structure
- 1.6. Contact Information for Plan Manager
- 1.7. Authority of Agencies
 - 1.7.1. Memorandum of Understanding

Chapter 3 Description of Plan Area (§ 354.8)

- 1.8. Big Valley Groundwater Basin Introduction
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Groundwater Sustainability Plan

Big Valley Groundwater Basin

February 2020

PUBLIC DRAFT



Prepared for:
Lassen and Modoc County Groundwater Sustainability Agencies

GEI 
Consultants
Consulting
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Scientists


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UC  **University of California**
CE Agriculture and Natural Resources  Cooperative Extension

North Cal-Neva Resource Conservation and Development Council

Groundwater Sustainability Plan
PUBLIC DRAFT CHAPTERS 1-2
Big Valley Groundwater Basin

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Figure 1-1 Big Valley Subbasin and Surrounding Subbasins

4

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Appendix A Resolutions Establishing Lassen and Modoc Counties as the GSAs for the BVGB

Appendix B MOU Establishing the Big Valley Groundwater Advisory Committee

Abbreviations and Acronyms

Basin	Big Valley Groundwater Basin
bgs	Below Ground Surface
BVGB	Big Valley Groundwater Basin
BVAC	Big Valley Groundwater Basin Advisory Committee
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CEDEN	California Environmental Data Exchange Network
CIMIS	California Irrigation Management Information System
DDW	Division of Drinking Water, State Water Resources Control Board
DWR	Department of Water Resources
ETo	Evapotranspiration
° F	degrees Fahrenheit
ft	feet
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IRWMP	Integrated Regional Water Management Program
MCL	Maximum Contaminant Level
MOU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration
NCDC	National Climatic Data Center
NOAA	National Oceanic and Atmospheric Administration
NWIS	National Water Information System
PG&E	Pacific Gas and Electric
PRWA	Pit River Watershed Alliance
RWMG	Regional Water Management Group
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act of 2014
SWAMP	Surface Water Ambient Monitoring Program
SWRCB	California State Water Resources Control Board
SWQL	Secondary Water Quality Limits
USGS	United States Geologic Survey
USTs	Underground Storage Tanks
SWRCB	State Water Resources Control Board
WQCP	Water Quality Control Plan

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Executive Summary (§ 354.4)

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1. Introduction to Big Valley Groundwater Sustainability Plan (§ 354.2-4)

1.1 Purpose of the Groundwater Sustainability Plan

In 2014, the State of California enacted the Sustainable Groundwater Management Act (SGMA). This law requires medium- and high-priority groundwater basins in California to take actions to ensure they are managed sustainably. The Big Valley Groundwater Basin (BVGB or Basin) was prioritized as medium-priority and is required to comply with SGMA. Satisfying the requirements of SGMA generally requires four activities:

1. Formation of at least one Groundwater Sustainability Agency (GSA) to fully cover a basin. Multiple GSAs are acceptable and Big Valley has two GSAs.
2. Development of a Groundwater Sustainability Plan (GSP or Plan) that fully covers the basin.
3. Implementation of the GSP and management to achieve quantifiable objectives.
4. Regular reporting to the California Department of Water Resources (DWR).

Two GSAs were established in the Basin: County of Modoc GSA and County of Lassen GSA, each covering the portion of the Basin in their respective jurisdictions. This document is a single GSP, developed jointly by both GSAs for the entire Basin. This GSP describes the Big Valley Groundwater Basin, develops quantifiable management criteria that accounts for the interests of the Basin's beneficial groundwater uses and users, and identifies projects and management actions to ensure sustainability.

1.2 Description of Big Valley Groundwater Basin

The Big Valley Groundwater Basin is identified by DWR in Bulletin 118 as Basin No. 5-004 (DWR, 2016). The Basin is one of many small, isolated basins in the north-eastern region of California. The boundary between Lassen and Modoc Counties runs across the Basin. Each county formed a GSA for its respective portion of the Basin and the counties are working together to manage the Basin under a single GSP.

The Basin, shown on **Figure 1-1**, encompasses an area of approximately 144 square miles with Modoc County comprising 40 square miles (28%) on the north and Lassen County comprising 104 square miles (72%) on the south. The Basin includes the towns of Adin and Lookout in Modoc County and the towns of Bieber and Nubieber in Lassen County. The Ash Creek State Wildlife Area is located in both counties and occupies 22.5 square miles in the center of the basin in the marshy/swampy areas along Ash Creek.

33 The BVGB is isolated and does not share a boundary with another groundwater basin. However,
 34 Ash Creek flows into Big Valley from the Round Valley Groundwater Basin at the town of Adin.
 35 The two basins are separated by about a half-mile gap.

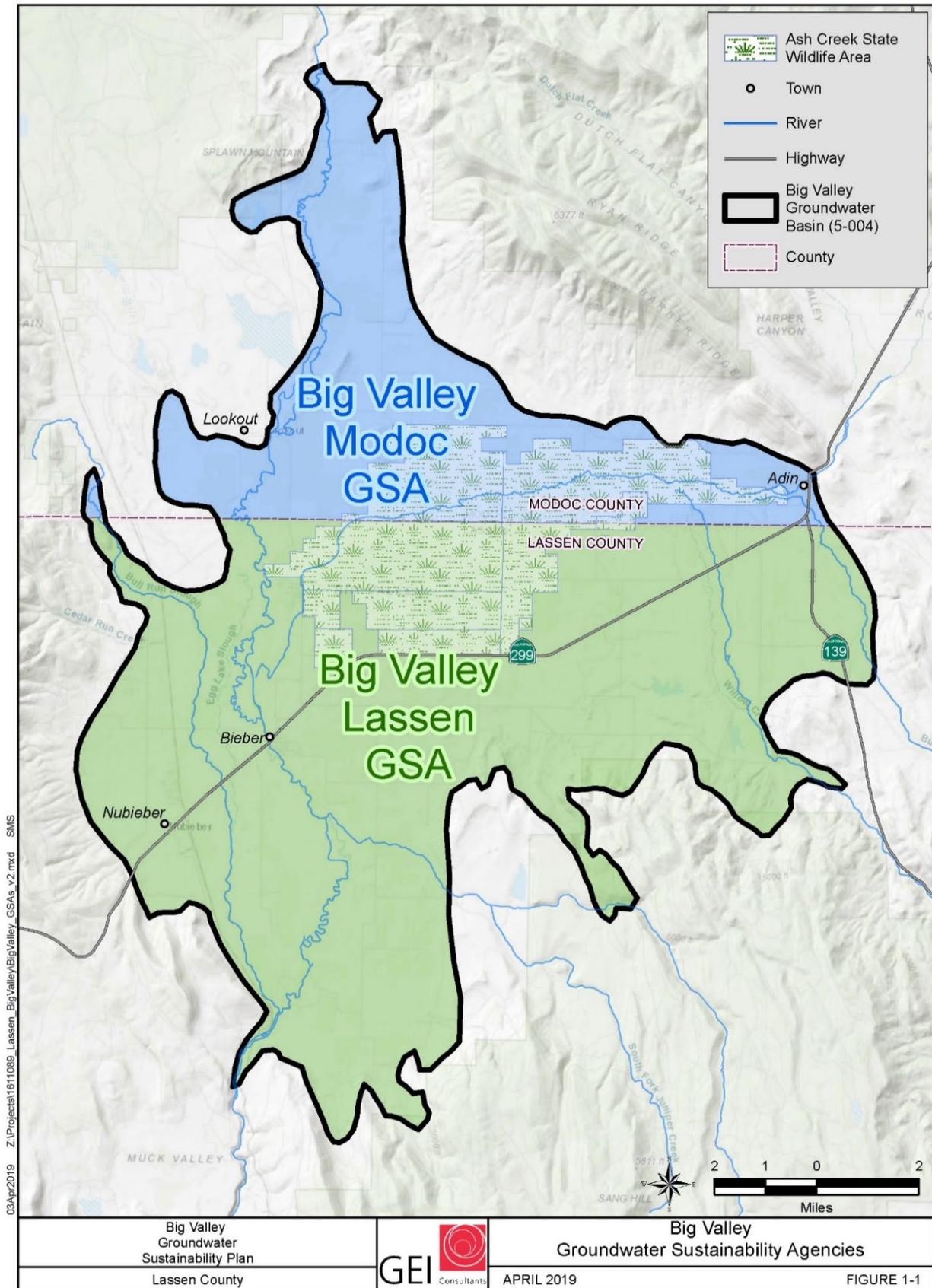
36 The surface expression of the Basin boundary is defined as the contact of the valley sedimentary
 37 deposits with the surrounding volcanic rocks. The sediments in the Basin are comprised of
 38 mostly Plio-Pleistocene alluvial deposits and Quaternary lake deposits eroded from the volcanic
 39 highlands and some volcanic layers interbedded within the alluvial and lake deposits. The Basin
 40 is surrounded by Tertiary- and Miocene-age volcanic rocks of andesitic, basaltic and pyroclastic
 41 composition. The boundary between the BVGB and the surrounding volcanic rocks generally
 42 correlates with a relatively steep change in topography along the margin of the valley.

43 **1.3 Basin Prioritization**

44 DWR prioritized groundwater basins throughout California during 2014, 2018 (draft) and 2019,
 45 using various criteria, including population; number of wells; irrigated acreage; groundwater
 46 levels, use, and reliance; impacts (e.g. subsidence, water quality, seawater intrusion) and other
 47 information. Table 1-1 summarizes the ranking process, where eight primary criteria were scored
 48 with values between 0 and 5. The BVGB is ranked by DWR (2019) as a medium-priority basin
 49 due primarily to its area of irrigated lands and dependence on groundwater as well as declining
 50 groundwater levels. Therefore, BVGB is subject to the provisions of SGMA and is required to
 51 develop a GSP. DWR publishes its most updated prioritizations and ranking criteria on its
 52 website and BVGB scores can be found via a dashboard mapping tool
 53 (<https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization>;
 54 <https://gis.water.ca.gov/app/bp-dashboard/final/>).

Criteria	2014	2018	2019	Comment
2010 Population	1	1	1	
Population Growth	0	0	0	
Public Supply Wells	1	1	1	
Total # of Wells	1.5	2	2	
Irrigated Acreage	4	3	3	
Groundwater Reliance	3	3.5	3.5	
Impacts	3	3	2	Declining water levels, water quality
Other Information	0	7	2	Streamflow and habitat points
Total Score	13.5	20.5	14.5	Medium-priority each year

55



56
57

Figure 1-1 Big Valley Subbasin and Surrounding Subbasins

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60 **2. Agency Information (§ 354.6)**

61 The two Big Valley GSAs were established for the entire Big Valley Groundwater Basin to
62 jointly develop, adopt, and implement a single GSP for the BVGB pursuant to SGMA and other
63 applicable provisions of law.

64 **2.1 Agency Names and Mailing Addresses**

65 The following contact information is provided for each GSA pursuant to California Water Code
66 §10723.8.

Modoc County
204 S. Court Street
Alturas, CA 96101
(530) 233-6201

tiffanymartinez@co.modoc.ca.us

Lassen County
Department of Planning and Building Services
707 Nevada Street, Suite 5
Susanville, CA 96130
(530) 251-8269

landuse@co.lassen.ca.us

67 **2.2 Agency Organization and Management Structure**

68 The two GSAs, Lassen and Modoc Counties, were established in 2017 to comply with the
69 SGMA. **Appendix A** contains the resolutions forming the two agencies. Each GSA is governed
70 by a five-member Board of Supervisors. In 2019, the two GSAs established the Big Valley
71 Groundwater Basin Advisory Committee (BVAC) through a Memorandum of Understanding
72 (MOU), included as **Appendix B**. The membership of the BVAC is comprised of:

- 73 • One member of the Lassen County Board of Supervisors selected by said Board
- 74 • One alternate member of the Lassen County Board of Supervisors selected by said Board
- 75 • One member of the Modoc County Board of Supervisors selected by said Board
- 76 • One alternate member of the Modoc County Board of Supervisors selected by said Board
- 77 • Two public members selected by the Lassen County Board of Supervisors. Said members
78 must either reside or own property within the Lassen County portion of the Big Valley
79 Groundwater Basin
- 80 • Two public members selected by the Modoc County Board of Supervisors. Said members
81 must either reside or own property within the Modoc County portion of the Big Valley
82 Groundwater Basin

83 The decisions made by the BVAC are not binding, but the committee serves the important role of
84 providing formalized, local stakeholder input and guidance to the GSA governing bodies, GSA
85 staff, and consultants in developing and implementing the GSP.

86 **2.3 Contact Information for Plan Manager**

87 The plan manager is from Lassen County and can be contacted at:

88

89 Gaylon Norwood

90 Assistant Director

91 Lassen County Department of Planning and Building Services

92 707 Nevada Street, Suite 5

93 Susanville, CA 96130

94 (530) 251-8269

95 gnorwood@co.lassen.ca.us

96

97 **2.4 Authority of Agencies**

98 The GSAs were formed in accordance with the requirements of California Water Code §10723 *et*
99 *seq.* Both GSAs are local public agencies organized as general law counties under the State
100 Constitution and have land use responsibility for their respective portions of the Basin. The
101 resolutions of formation for the GSAs are included in **Appendix A**.

102 **2.4.1 Memorandum of Understanding**

103 In addition to the MOU establishing the BVAC, the two GSAs may to enter into an agreement to
104 jointly implement the GSP for the Basin. However, this agreement is not a requirement of the
105 SGMA.

10 Attachment D: Sample Sustainability Goals and Undesirable Results

4.1 Sustainability Goal

§354.24 Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.

The sustainability goal of the Kings Sub-basin and this GSA is to ensure that by 2040 the basin is being managed to maintain a reliable water supply for current and future beneficial uses without experiencing undesirable results. This goal will be met by balancing water demand with available water supply to stabilize declining groundwater levels without significantly and unreasonably impacting water quality, land subsidence, or interconnected surface water. The goal of the basin is to correct and end the long-term trend of a declining water table understanding that water levels will fluctuate based on the season, hydrologic cycle, and changing groundwater demands within the basin and its proximity.

The conditions with the Kings subbasin and this GSA will be considered sustainable when:

- The basin is continuously operated within its sustainable yield.
- The current rate of decline of the groundwater table within the basin monitoring network indicator wells has been corrected and the multi-year trend of water elevations in these wells has been stabilized.
- Groundwater management activities prevent undesirable results to groundwater levels, groundwater storage, groundwater quality, land subsidence and interconnected surface water..

4.2 Groundwater Levels

4.2.1 Undesirable Results

4.2.1.1 Criteria to Define Undesirable Results

Regulation Requirements:

§354.26 (a) Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.

The terms “significant and unreasonable” are not defined by regulations, rather the conditions leading to this classification are determined by the GSA, beneficial users, and the basin they are a part of. The process used to develop criteria for determining undesirable results began with discussions with stakeholders and landowners.

The GSAs within the Kings Subbasin have defined the Undesirable Result for groundwater levels to be significant and unreasonable when either the water level has declined to a depth that a new productive well cannot be constructed or when the water level has declined to a depth that water quality cannot be treated for beneficial use.

4.3 Groundwater Storage

The groundwater level minimum threshold elevations across the NKGSA and Subbasin were used to estimate the amount of groundwater in storage from the Minimum Thresholds to the Interim Milestones and Measurable Objectives. An undesirable result would occur if the total amount of water in storage was less than the estimated amount of groundwater in storage below the minimum thresholds. Since the Subbasin plans to maintain water levels above the minimum threshold and only periodically use the storage between the minimum threshold and measurable objective, the total amount of groundwater in storage below the minimum threshold was not calculated.

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4.4 Seawater Intrusion – Not Applicable

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4.6 Water Quality

An undesirable result would be the significant and unreasonable reduction in groundwater quality as it relates to groundwater pumping and recharge projects such that the groundwater is no longer generally suitable for agricultural irrigation and domestic use. The NKGSA only has authority related to groundwater pumping policies, however the NKGSA will review and analyze publicly available routine groundwater monitoring data reported by the community and non-community public supply wells, as it becomes available, in order to monitor if groundwater pumping may be exacerbating groundwater quality concerns and where to enforce pumping restrictions should it become necessary. Section 5 of this GSP describes the NKGSA monitoring well network.

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4.6 Land Subsidence

An undesirable result for land subsidence would be the significant and unreasonable loss of functionality of structures, infrastructure, and major damage to roads within the Kings Basin due to land subsidence. This could include, for example, water distribution systems, and canal banks failing or taking critical damage. There are five major highways located within the NKGSA: State Route 41, State Route 99, State Route 145, State Route 168, and State Route 180. Existing surface water conveyance infrastructure includes FID canals and structures and the Friant Kern Canal. It would be undesirable if subsidence caused the canals to lose significant conveyance capacity.

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4.6 Interconnected Surface Water and Groundwater

San Joaquin River

As discussed in Section 4.6.1, the San Joaquin River does not appear to be hydraulically connected to groundwater in the reaches of the NKGSA and therefore under regulation §354.26 (d) setting sustainable management criteria for surface water is not required. Additionally, the existing San Joaquin River Restoration program will continue to ensure certain flow rates in the river along the NKGSA and release water to accommodate all river losses (evaporation, seepage, riparian diversions and groundwater pumping induced seepage). Undesirable results to surface water related to groundwater pumping are not likely to occur.

Kings River

As discussed in Section 4.6.1, the existing river management program will continue to be utilized to guide the fisheries and management of the Kings Rivers. SGMA based sustainable management criteria does not appear to be applicable with regards to the Kings River as the various river programs guarantee certain flow rates in the rivers and release water to accommodate all river losses (evaporation, seepage, riparian diversions and groundwater pumping induced seepage). Undesirable results to surface water related to groundwater pumping are not likely to occur.

Excerpts from Eastern San Joaquin Groundwater Authority

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3.1 SUSTAINABILITY GOAL

The California Water Code (Water Code) defines sustainable groundwater management as “the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results” (CA Water Code §10721). The planning and implementation horizon includes a 20-year implementation period until 2040 where sustainability is achieved and a 50-year planning period where pumping is maintained within the sustainable yield. The sustainability goal reflects this requirement and succinctly states the Groundwater Sustainability Agencies’ (GSAs’) objectives and desired conditions of the Subbasin.

The sustainability goal description for the Eastern San Joaquin Subbasin is *to maintain an economically-viable groundwater resource for the beneficial use of the people of the Eastern San Joaquin Subbasin by operating the Subbasin within its sustainable yield or by modification of existing management to address future conditions. This goal will be achieved through the implementation of a mix of supply and demand type projects consistent with the GSP*

implementation plan (see Chapter 6: Projects and Management Actions and Chapter 7: Plan Implementation).

Groundwater levels in the Subbasin may continue to decline during the implementation period. However, as projects are implemented and basin operations are modified, sustainable groundwater management will be achieved, and levels will stabilize on a long-term average basis. The Subbasin will be managed to prevent undesirable results throughout the implementation period, despite the possible decline of groundwater elevations. This sustainability goal is supported by locally-defined minimum thresholds that will avoid undesirable results. Demonstration of stable groundwater levels on a long-term average basis combined with the absence of undesirable results will ensure the Subbasin is operating within its sustainable yield (see Section 2.3.6) and the sustainability goal will be achieved.

UNDESIRABLE RESULTS

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3.2.1 Chronic Lowering of Groundwater Levels

An undesirable result for chronic lowering of groundwater levels in the Eastern San Joaquin Subbasin is experienced if sustained groundwater levels are too low to satisfy beneficial uses within the Subbasin over the planning and implementation horizon of this GSP (see Section 1.3.1 for a discussion of beneficial uses and users). Potential impacts and the extent to which they are considered significant and unreasonable were determined by the ESJGWA Board with input by the Advisory Committee, Workgroup, and members of the public. During development of the GSP, potential undesirable results identified by stakeholders included a significant and unreasonable:

- Number of wells going dry
- Reduction in the pumping capacity of existing wells
- Increase in pumping costs due to greater lift
- Need for deeper well installations or lowering of pumps
- Adverse impacts to environmental uses and users, including interconnected surface waters and groundwater-dependent ecosystems (GDEs)

An undesirable result is considered to occur during GSP implementation when at least 25 percent of representative monitoring wells used to monitor groundwater levels (5 of 20 wells in the Subbasin) fall below their minimum level thresholds for two consecutive years that are categorized as non-dry years (below-normal, above-normal, or wet), according to the San Joaquin Valley Water Year Hydrologic Classification.

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3.2.2 Reduction in Groundwater Storage

The ESJGWA has determined that an undesirable result for the reduction of groundwater storage is experienced if sustained groundwater storage volumes are insufficient to satisfy beneficial uses within the Subbasin over the planning and implementation horizon of this GSP (see Section 1.3.1 for a discussion of beneficial uses and users).

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3.2.3 Degraded Water Quality

An undesirable result for degraded water quality in the Eastern San Joaquin Subbasin is experienced if SGMA-related groundwater management activities cause significant and unreasonable impacts to the long-term viability of domestic, agricultural, municipal, environmental, or other beneficial uses over the planning and implementation horizon of this GSP.

Undesirable results occur during GSP implementation when more than 25 percent of representative monitoring wells (3 of 10 sites) exceed the minimum thresholds for water quality for two consecutive years and where these concentrations are the result of groundwater management activities.

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3.2.4 Seawater Intrusion

An undesirable result for seawater intrusion in the Eastern San Joaquin Subbasin is experienced if sustained groundwater salinity levels caused by seawater intrusion and due to groundwater management practices are too high to satisfy beneficial uses within the basin over the planning and implementation horizon of this GSP.

Undesirable results are considered to occur during GSP implementation when 2,000 mg/L chloride reaches an established isocontour line and where these concentrations are caused by intrusion of a seawater source as a result of groundwater management activity.

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3.2.5 Land Subsidence

An undesirable result for land subsidence in the Eastern San Joaquin Subbasin is experienced if the occurrence of land subsidence substantially interferes with beneficial uses of groundwater and infrastructure within the Subbasin over the planning and implementation horizon of this GSP.

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3.2.6 Depletions of Interconnected Surface Water

The undesirable result for depletions of interconnected surface water in the Eastern San Joaquin Subbasin is depletions that result in reductions in flow or levels of major rivers and streams that are hydrologically connected to the basin such that the reduced surface water flow or levels have a significant and unreasonable adverse impact on beneficial uses and users of the surface water within the Subbasin over the planning and implementation horizon of this GSP.

Excerpts from Greater Kaweah Groundwater Sustainability Agency

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3.3 Sustainability Goal

The broadly stated sustainability goal for the Kaweah Subbasin is for each GSA to manage groundwater resources to preserve the viability of existing agricultural enterprises of the region, domestic wells, and the smaller communities that provide much of their job base in the Sub-basin, including the school districts serving the communities. The goal will also strive to fulfill the water needs of existing and amended county and city general plans that commit to continued economic and population growth within Tulare County and within portions of Kings County.

UNDESIRABLE RESULTS

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3.4 Groundwater Levels

With respect to water-level declines, undesirable results occur when one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations. Should this occur, a determination shall be made of the then-current GSA water budgets and resulting indications of net reduction in storage. Similar determinations shall be made of adjacent GSA water budgets in neighboring subbasins to ascertain the causes for the occurrence of the undesirable result.

The potential effects of lowered groundwater levels, when approaching or exceeding minimum thresholds and thus becoming an Undesirable result, are reduced irrigation water supplies for agriculture and for municipal systems through loss of well capacity, loss or degradation of water supplies for smaller community water systems and domestic wells due to well failures, increased energy consumption due to lowered water levels, and the adverse economic consequences of the aforementioned effects such as increased energy usage to extract groundwater from deeper levels.

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3.5 Groundwater Storage

The water-level sustainability indicator is used as the driver for calculated changes in groundwater storage. As such, when one-third of the Subbasin representative monitoring sites for water levels exceed their respective minimum thresholds, an undesirable result for storage will be deemed to occur. Given assumed hydrogeologic parameters of the Subbasin, direct correlations exist between changes in groundwater levels and estimated changes in groundwater storage, and groundwater levels are to serve as a metric for groundwater storage reductions as well.

3.6 Land Subsidence

The primary criteria and metric will be the annual rate of reduction in land surface elevation and areal extent of such elevation changes. An undesirable result will occur when one-third of all Subbasin subsidence monitoring sites exceed their respective minimum thresholds.

Subsidence becomes a land-surface problem when it is differential in nature i.e., elevation shifts across the areal extent of infrastructure deemed of high importance. For example, subsidence linearly along a major highway is manageable if gradual in its occurrence. In contrast, localized subsidence traversing across a highway, if sizable, would cause major cracking of the pavement surface and become a significant hazard to travelers. The same comparisons may be made for other infrastructure as well.

3.7 Degraded Water Quality

Should one-third of all Subbasin designated water quality monitoring sites exhibit a minimum threshold exceedance, and those exceedances are all associated with GSA actions, an undesirable result will be deemed to occur. Groundwater quality degradation will be evaluated relative to established MCLs or other agricultural constituents of concern by applicable regulatory agencies. The metrics for degraded water quality shall be measured for compliance with the respective MCL or the agricultural water quality objective depending on the dominant groundwater use. These metrics will address the following constituents where applicable:

- Arsenic
- Nitrate
- Chromium-6
- DBCP
- TCP
- PCE
- Sodium
- Chloride
- Perchlorate
- TDS

3.8 Interconnected Surface Waters

No interconnected surface waters have been identified in any Kaweah Subbasin GSAs as described more thoroughly in the basin setting. Thus, criteria were not established.

3.9 Seawater Intrusion

Seawater intrusion will not occur in the Kaweah Subbasin as described more thoroughly in the basin setting. Thus, criteria were not established.

Chowchilla Subbasin 5-022.05

Sustainability Goal (Reg. § 354.24)

Goal Description

The sustainability goal for the Chowchilla subbasin is to implement a package of projects and management actions that will, by 2040, balance long-term groundwater system inflows with outflows based on a 50-year period representative of average historical hydrologic conditions. The six sustainability indicators, established measurable objectives, and minimum thresholds will ensure that no undesirable results of significant and unreasonable economic, social, or environmental impacts occur as a result of GSP activities, as defined based on local values expressed in this GSP.

Undesirable Results (Reg. § 354.26)

The regulations define undesirable results as occurring when significant and unreasonable effects are caused by groundwater conditions occurring throughout the subbasin for a given sustainability indicator during the sustainability period. This section provides a description of undesirable results for the relevant sustainability indicators, including:

- Cause of groundwater conditions that would lead to undesirable results
 - Criteria used to define undesirable results based on minimum thresholds
 - 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
- A summary of criteria used to define undesirable results is provided below in Table 3-8, and detailed discussion of each sustainability indicator is provided in subsequent sections of this Chapter.

Chronic Lowering of Groundwater Levels

The cause of basin groundwater conditions that would result in significant and unreasonable lowering of groundwater levels is excessive overall average annual groundwater pumping and other outflows from the subbasin that continue to exceed average annual inflows, thus continuing the long-term trend of lowering groundwater levels. Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives. Significant and unreasonable lowering of groundwater levels are those conditions that: 1) Cause significant financial burden to local agricultural interests or others who rely on subbasin groundwater resources, 2) Cause groundwater level conditions at private domestic wells that cannot be mitigated, and 3) Interfere with other sustainability indicators.

For the Chowchilla Subbasin, the chronic lowering of groundwater levels undesirable result is defined as a relationship between frequency of groundwater elevation minimum threshold exceedances at a given RMS, and the number of RMS locations experience the exceedances at the same time. Using the Fall measurements (assumed to be collected in October), a groundwater elevation undesirable result is defined to occur when greater than 30% of the RMS each exceed the groundwater level minimum thresholds for the same two consecutive Fall readings. Given a total of 36 RMS sites, a total of 11 or more the RMS would need to exceed MTs as defined above to constitute an undesirable result for chronic lowering of groundwater levels. As the number of RMS evolves over time (e.g., adding nested monitoring well sites), the total number of RMS that have to exceed their MTs will change accordingly.

The definition of undesirable results under SGMA provides flexibility in defining sustainability. Increasing the percentage of allowed minimum threshold exceedances provides more flexibility but may lead to significant and unreasonable conditions for a number of beneficial users. Reducing the percentage of allowed minimum thresholds exceedances ensures strict adherence to minimum thresholds but reduces flexibility due to uncertainty related to hydrogeologic conditions. The 30 percent criterion was selected to balance the interest of beneficial use with the practical aspect of groundwater management uncertainty.

Table 3-8. Summary of MTs, MOs and undesirable results.

Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Chronic Lowering of Groundwater Levels (Eastern Management Area)	The lower of a) projected lowest future groundwater level at end of estimated 10-year drought or b) lowest modeled groundwater level from projected with projects model simulation (2019-2090)	Projected average future groundwater level from projected with projects model simulation (2040-2090)	30 percent of wells below minimum threshold for two consecutive fall measurements
Chronic Lowering of Groundwater Levels (Western Management Area)	The higher of (a) projected lowest future groundwater level at end of estimated 10-year drought or b) or recent groundwater level lows)	Projected average future groundwater level from projected with projects model simulation (2040-2090)	30 percent of wells below minimum threshold for two consecutive fall measurements
Reduction of Groundwater Storage	No long-term reduction in groundwater storage based on measured groundwater levels	Projected average future groundwater level from projected with projects model simulation (2040-2090)	30 percent of wells below minimum threshold for two consecutive fall measurements
Land Subsidence (Western Management Area)	The higher of (a) projected lowest future groundwater level at end of estimated 10-year drought or b) or recent groundwater level lows)	Projected average future groundwater level from projected with projects model simulation (2040-2090)	50 percent of Western MA Lower Aquifer wells below minimum threshold for two consecutive fall measurements
Land Subsidence* (Eastern Management Area)	Not Applicable	Not Applicable	Not Applicable
Seawater Intrusion	Not Applicable	Not Applicable	Not Applicable
Degraded Water Quality	Nitrate = 10 mg/L or existing level plus 20% (whichever is greater) Arsenic = 10 µg/L or existing level plus 20% (whichever is greater) TDS = 500 mg/L or existing level plus 20% (whichever is greater)	Current constituent concentrations	10 percent of wells above the minimum threshold for the same constituent due to GSP projects and/or management actions, based on average of most recent three year period
Depletion of Interconnected Surface Water	Not Applicable	Not Applicable	Not Applicable

*Ongoing subsidence surveys being conducted by others will be reviewed on an annual basis to determine if significant and unreasonable impacts are occurring related to subsidence in this area. If necessary, minimum thresholds will be established to address potential future land subsidence issues.

Conditions other than excessive regional basin wide pumping (plus other outflows) greater than average annual inflows that may lead to an undesirable result include extensive and, unanticipated drought. Minimum thresholds were established based on historical groundwater levels and reasonable estimates of future groundwater levels (including a future drought longer than historic droughts). Extensive, unanticipated droughts (beyond that accounted for already, or earlier in the Implementation Period or Sustainability Period than assumed herein) may lead to excessively low groundwater levels and undesirable results.

Reduction in Groundwater Storage

The cause of basin groundwater conditions that would result in significant and unreasonable reduction in groundwater storage is excessive overall groundwater pumping and other outflows from the subbasin that exceed average annual inflows. Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives. Significant and unreasonable reduction in groundwater storage occurs when there is: 1) Long term reduction in groundwater storage during the sustainability period (i.e., after 2040), or 2) Interference with other sustainability indicators.

Reduction of groundwater storage in the Subbasin has the potential to impact the beneficial uses and users of groundwater by limiting the volume of groundwater available for agriculture, municipal, industrial and domestic use. The undesirable results of reduction in groundwater storage are the same as those previously described for chronic lowering of groundwater levels. Continuing the current rate of loss of groundwater in storage could also impact other sustainability indicators such as groundwater quality. Reduction in groundwater storage is significant and unreasonable if its sufficient in magnitude to lower the rate of production in pre-existing groundwater wells below that needed to meet the minimum required to support overlying beneficial users and where means of obtaining sufficient groundwater or imported resources are not technically or financially feasible for the well owner to absorb, either independently or with assistance from the GSA or other available assistance (grants). A proposed domestic well mitigation plan incorporated into this GSP would be designed to mitigate the effects on domestic well owners of declining groundwater levels that would result from actions of this Plan (**Appendix 3.C**). Conditions that may lead to an undesirable result for the reduction in groundwater storage sustainability indicator include an extensive and unanticipated drought. Similar to groundwater levels, which act as a proxy for the groundwater storage sustainability indicator, minimum thresholds were established based on historical groundwater levels and reasonable estimates of future groundwater elevations that would occur with the GSP projects and management actions, and accounting for a future drought longer than historic droughts. Extensive, unanticipated droughts (beyond that accounted for already, or earlier in the Implementation Period or Sustainability Period than assumed herein) may lead to excessively low groundwater elevations and undesirable results.

The practical effect of the reduction in groundwater storage undesirable result is that it encourages no net change in groundwater elevation and storage during average hydrologic conditions and over the longterm

during the Sustainability Period. Therefore, during average hydrologic conditions and over the longterm, beneficial uses and users will have access to the same amount of groundwater in storage that exists in a basin with average inflows equal to average outflows, and the undesirable result will not have a negative effect on the beneficial users and uses of groundwater. Pumping at the long-term sustainable yield during dry years will temporarily lower groundwater elevations and reduce the amount of groundwater in storage. Groundwater storage would then be replenished during wet years. Therefore, basin groundwater users can expect significant fluctuations in groundwater levels above the minimum threshold.

Land Subsidence

The cause of basin groundwater conditions that would result in significant and unreasonable land subsidence is excessive overall average annual groundwater pumping and other outflows from the subbasin that exceed average annual inflows and results in groundwater levels below historic lows in areas that have already experienced significant impacts to infrastructure (i.e., the Western Management Area). Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives. Significant and unreasonable land subsidence results in significant impacts to infrastructure.

The SGMA regulations state that the subsidence undesirable result is a quantitative combination of subsidence minimum threshold exceedances. For the Western Management Area of the Subbasin, significant continued subsidence that impacts infrastructure is unacceptable. To address the inherent data uncertainty, undesirable results for subsidence in the Western Management Area are defined by having more than 50 percent of Western Management Area Lower Aquifer RMS exceeding their respective MTs for the same two consecutive Fall readings (i.e. 4 of the current 7 RMS for the Lower Aquifer in the Western Management Area). Historic water level data and modeling results indicate that a significant shift in pumping from the Lower Aquifer to the Upper Aquifer will be necessary to achieve land subsidence MT thresholds. In addition, several successful recharge projects and overall demand reduction (as described elsewhere in this GSP) will also be needed to meet subsidence minimum thresholds.

Conditions that lead to an undesirable result of a significant and unreasonable amount for land subsidence have historically occurred during periods with groundwater pumping in excess of sustainable yield in areas where critical infrastructure exists. This is of particular concern in the Lower Aquifer where the Corcoran Clay exists. Conditions that may lead to an undesirable result include extensive, unanticipated drought. Minimum thresholds were established based on not going below historical groundwater elevations. However, extensive, unanticipated droughts may lead to excessively low groundwater elevations and subsidence. The subsidence minimum thresholds are set to initially minimize and eventually stop ongoing subsidence that could continue to harm infrastructure.

Degraded Water Quality

The cause of basin groundwater conditions that would result in significant and unreasonable degraded water quality is implementation of a GSP project or management action that causes levels of key groundwater quality constituents to increase to concentrations exceeding the MCLs for drinking water. Municipal and domestic supply (MUN) is a designated beneficial use for groundwater in the Subbasin; therefore, groundwater quality degradation is considered significant and unreasonable based on adverse impacts to this beneficial use. Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives. Significant and unreasonable degradation of water quality occurs when beneficial uses for groundwater are adversely impacted by constituent concentrations increasing to levels above the drinking water MCLs for one of the key constituents of interest previously identified in Section 2 of the GSP (nitrate, arsenic, TDS) at indicator wells in the representative groundwater quality monitoring network due to implementation of a GSP project or management action. There are no known significant and large-scale groundwater quality contamination plumes in the regional aquifers within the Subbasin; therefore, exacerbating plume migration or impacting the ability to contain localized contamination plumes is not a significant concern for GSP projects and management actions.

Degraded water quality is significant and unreasonable if the magnitude of degradation precludes the use of groundwater for existing beneficial use(s). Therefore, an undesirable result for degraded groundwater quality occurs when groundwater quality exceeds an established MCL and minimum threshold for arsenic, nitrate, or TDS for a significant duration of time and at a significant number of representative monitoring

sites and is the direct result of projects or management actions undertaken as part of the GSP implementation. An exceedance of a minimum threshold at a given representative monitoring site is defined based on the average concentration over a three-year monitoring period. An undesirable result for degraded groundwater quality is greater than 10 percent of representative groundwater quality monitoring wells exceeding the minimum threshold for a given key constituent related to a GSP project or management action.

A notable condition that may lead to an undesirable result for degraded groundwater quality sustainability indicator is the following:

Enhanced Groundwater Recharge - Active recharging of groundwater through use of recharge basins or Flood-MAR activities could cause localized mounding of groundwater near recharge sites resulting in altered flow directions and potentially movement of chemical constituents towards wells in concentrations that exceed relevant water quality standards. Enhanced groundwater recharge activities may also impact groundwater quality by leaching of constituents from the unsaturated zone and into groundwater. This mechanism may be of particular importance when considering enhanced groundwater recharge on actively or formerly cultivated lands where high residual concentrations of nutrients, especially nitrogen, may exist in the unsaturated zone and may be susceptible to leaching into the groundwater resulting in degraded groundwater quality conditions. Water of poor quality characteristics should not be used for enhanced recharge activities. Altered chemical conditions from enhanced recharge projects could also lead to changes in groundwater chemistry.

Depletion of Surface Water

The surface water depletion sustainability criterion is not applicable to this subbasin. As discussed in Section 3.2.5, the San Joaquin River is adjacent to, but not a part of, the San Joaquin River Riparian GDE Unit and is in a net-losing condition, with surface flow likely contributing directly to the shallow groundwater system that supports the vegetation in the unit. Current evidence indicates that groundwater pumping from the regional aquifer is unlikely to affect surface water flows in the subbasin. However, the shallow groundwater system adjacent to and disconnected from the San Joaquin River, which supports the GDE unit, does have at least the potential (albeit quite muted) to be affected by regional groundwater pumping. Therefore, hydrologic and biologic GDE monitoring are incorporated as discussed elsewhere in this GSP.

Seawater Intrusion

The seawater intrusion sustainability criterion is not applicable to this subbasin.